CGH TRANSPORTATION

MARCH 12, 2026

Mattamy SGGC Subdivision Plant
145 Burnhamthorpe Road
Scoped Transportation Impact Study

Mattamy SGGC Plant
Transportation Brief

Prepared for:

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PN: 2026-004

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1 Introduction

This Scoped Transportation Impact Study (TIS) has been prepared in support of the Zoning By-Law and Draft Plan of Subdivision application for the proposed Stelumar Advanced Manufacturing Inc. Plant in the Mattamy SGGC Subdivision lands in North Oakville. This project schedule currently projects a submission of the Zoning and Draft Plan of Subdivision in the first quarter of 2026, with servicing and building construction starting in the third quarter of 2026.

The current plan will only consider the 4.36-hectare Block 3 of the Mattamy SGGC Subdivision, which will include the modular home manufacturing facility expected to ship approximately 20 modular boxes per day. The employment lands in Block 4 and Block 5 will be included in this draft plan application but currently have limited information available. Further commentary on Block 4 and Block 5 will be provided in a future submission when more details are available. The employment lands in Block 2 and the residential uses in the Block 7 transitional area will not be included in this draft plan and will be deferred to a future application.

The subject development is located on the north side of the segment of William Halton Parkway between Burnhamthorpe Road and Sixth Line, south of Highway 407. There is an approximate 150,000 square foot industrial building proposed, supported by 152 at-grade parking spaces. All parking spaces are provided on-site. The exact gross floor area and number of parking spaces is subject to refinement.

There are three accesses proposed on the north side of William Halton Parkway. The primary full-moves access, expected to service both heavy vehicles and passenger vehicles, will align with the proposed Preserve Drive extension noted as “Street A” on the concept plan. A secondary access approximately 200 metres to the east of the primary access will be provided for passenger vehicles only to facilitate an alternate access route into the parking lot and restricted to right-in/left-in/right-out. A tertiary access approximately 270 metres to the west of the primary access will be provided and restricted to right-in/right-out via the existing median on William Halton Parkway. Access to the development will be guided by the Halton Region Access Management Guidelines where applicable.

For the purposes of this report, it has been assumed that the proposed development will be built and operational by 2026. Therefore, the analysis horizons will include the 2026 existing conditions horizon, a build-out horizon consisting of the existing plus site volumes, and a build-out horizon of consisting of the existing plus site and background development volumes (referred to as “future total sensitivity”). Figure 1 illustrates the site context. The preliminary concept plan is shown in Figure 2. Please note this concept plan is subject to change and is considered a draft.

The scope of this TIS has been sent to both Town of Oakville and Halton Region transportation staff. The Terms of Reference as well as resulting email correspondence discussing the scope of work has been included in Appendix A.

Figure 1: Site Context

Figure 2: Concept Plan

S.G.G.C.
North Oakville

Employment Sketch

12.06 acre site
(4.88 hectares)

150,000 sq ft footprint
3.89 ac storage yard

HIGHWAY 407

407 TRANSITWAY

ADDITIONAL LANDS
OWNED BY APPLICANT

Storage Yard Boundary

Drainage Boundary

Trailer Access In

Proposed Site Boundary

#152 parking spots

Storage Yard
3.98 ac

Trailer Access Out

150,000 sq ft
Industrial Building

Employment Generating
and Supporting Area
1.87 ha

Employment Generating
and Supporting Area
0.99 ha

SWM Pond
2.76 ha

NHS

WILLIAM HALTON PARKWAY

544,011.2 mm

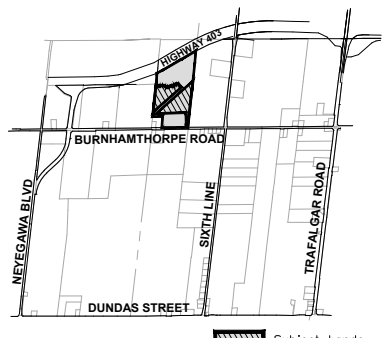
594,502.8 mm

370,812.4 mm

22,000.0 mm

BURNHAMTHORPE ROAD

ADDITIONAL LANDS
OWNED BY APPLICANT



KEY MAP
N.T.S.

Subject Lands
Additional Lands Owned By Applicant

mattamyHOMES

March 5, 2026
Scale - 1:2000

KORSIAK | Urban Planning

S:\Korsiak & Company\MATTAMY\North Oakville\S.G.G.C\Concept\2026-03\SGGC - Employment Sketch - Mar 5 26 - sm.dwg

2 Study Area

The Study Area will consist of the following intersections:

- William Halton Parkway at Sixth Line (Existing, Roundabout)
- William Halton Parkway at Burnhamthorpe Road (Existing, Signalized)

The following accesses are proposed for the development:

- Site Access #1 at William Halton Parkway (Proposed – Full-movement)
- Site Access #2 at William Halton Parkway (Proposed – Right-in/left-in/right-out)
- Site Access #3 at William Halton Parkway (Proposed – Right-in/right-out)

3 Existing Conditions

3.1 Area Road Network

Burnhamthorpe Road

Burnhamthorpe Road is a Town of Oakville minor collector road within the Study Area that was formerly a Halton Region road. The new William Halton Parkway has replaced the regional road function of Burnhamthorpe Road to serve as the North Oakville transportation corridor. The section of Burnhamthorpe Road to the southeast of William Halton Parkway has a two-lane rural cross section with gravel shoulders. The Burnhamthorpe Road Character Study protects for a 24-metre right of way for this section of Burnhamthorpe Road. No dedicated pedestrian or cycling facilities are provided. A 40 km/h posted speed limit applies to Burnhamthorpe Road on the curved roadway segment transitioning to a 60 km/h posted speed limit approaching the straight roadway segment.

William Halton Parkway

William Halton Parkway has a four-lane urban cross-section within the Study Area. A raised concrete median is provided for the four-lane section. The Halton Region Transportation Master Plan (TMP) identifies William Halton Parkway within the Study Area as a class C2 Urban road and therefore protects for a 35-metre right-of-way. A 60 km/h posted speed limit applies. Bike lanes are present on both sides of the road. Sidewalks are provided on the north side of William Halton Parkway, and multi-use pathways are provided on the south side of William Halton Parkway. It is anticipated that sidewalks and multi-use pathways will be provided continuously within the Study Area shortly. Sections of William Halton Parkway were previously a town road, Burnhamthorpe Road. It is noted that the construction for Phase 2 - Stage 1 of the project between Neyagawa Boulevard and Third Line to complete the road connection to the west is underway.

Sixth Line

Sixth Line is a Town of Oakville minor arterial road with a two-lane rural cross-section. The Town of Oakville Official Plan protects a 26-metre right-of-way for minor arterial roads. A 60 km/h posted speed limit applies. There are paved shoulders provided on both sides of the road. No dedicated pedestrian or cycling facilities are provided. At the roundabout intersection, there are sidewalks and multi-use pathways provided intermittently. It is expected that Sixth Line will undergo a widening to a four-lane intersection south of William Halton Parkway.

3.2 Existing Intersections

Sixth Line at William Halton Parkway

The intersection of Sixth Line at William Halton Parkway is a four-legged roundabout intersection. The eastbound and westbound approaches consist of one shared left/through lane and one shared through/right lane. The northbound and southbound approaches consist of one shared left/through lane and one auxiliary shared through/right lane. The roundabout circle has two lanes. Pedestrian crossovers with a median island are provided on each leg. Intermittent bike lanes are provided on both sides of William Halton Parkway, terminating prior to the roundabout on both sides. Figure 3 illustrates the intersection of Fourth Line at William Halton Parkway.

Figure 3: Sixth Line at William Halton Parkway

William Halton Parkway at Burnhamthorpe Road

The intersection of William Halton Parkway at Burnhamthorpe Road is an unsignalized three-legged intersection with stop control on the south leg of the intersection. The northbound approach consists of an auxiliary left-turn lane and a right-turn lane. The eastbound approach consists of two through lanes, and an auxiliary right-turn lane. The westbound approach consists of an auxiliary left-turn lane, and two through lanes. A paved multi-use pathway is provided on the south side of William Halton Parkway, and on-road bike lanes are provided on the north and south sides of William Halton Parkway. No turn restrictions are noted. Figure 4 illustrates the intersection of the William Halton Parkway at Burnhamthorpe Road.

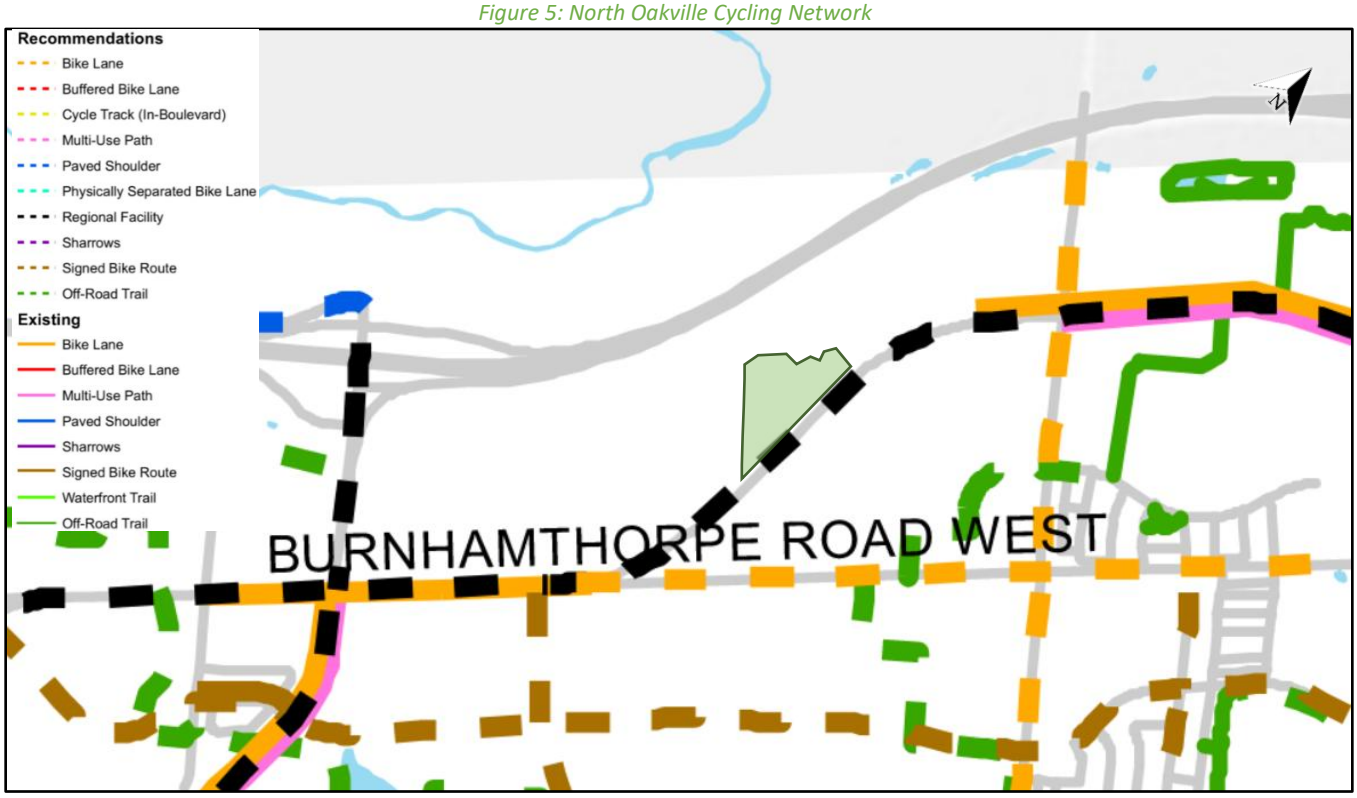
Figure 4: William Halton Parkway at Burnhamthorpe Road

3.3 Cycling and Pedestrian Facilities

Within the Study Area, bike lanes are present on both sides of William Halton Parkway. Multi-use pathways are provided on the south side of William Halton Parkway. Pedestrian crosswalks are shown on all approaches at both study area intersections of Burnhamthorpe Road and William Halton Parkway and Sixth Line at William Halton Parkway.

The existing and recommended cycling network infrastructure is presented in Figure 5 below.

Figure 5: North Oakville Cycling Network



Source: Oakville Transportation Master Plan (2025) - Proposed Active Transportation Cycling Network Map
Accessed on February 25th, 2026 at: https://www.oakville.ca/transportation-roads/transportation-roads-studies-and-plans/transportation-master-plan/

There are regional facilities, likely the existing facilities, indicated by the dashed black line on the map recommended along William Halton Parkway. Bike lanes are also recommended, indicated by the dashed orange lines, along Sixth Line and Burnhamthorpe Road.

3.4 Existing Transit

While there are no local Oakville Transit routes operating within the Study Area, Oakville Transit provides door-to-door paratransit service called care-A-van for persons with disabilities. Service is provided by low-floor, fully accessible 26-foot buses supplemented in partnership with local taxi providers. Drivers will leave the vehicle and escort the customer to the first accessible entrance of the unit.

The nearest transit facility is the GO Transit Carpool located at Trafalgar Road and Highway 407, approximately two kilometres east of the development. Table 1 below summarizes the details of GO Bus Routes servicing this location.

Table 1: Existing Transit Details

GO Bus Route	Details
#1	Travels between the Trafalgar Rd and Highway 407 Carpool lot and Oakville GO Station.
#21A	Runs along Trafalgar Road between Milton GO and Oakville GO.
#40	Runs along Highway 403 and Highway 407 between Hamilton GO and Richmond Hill Centre.
#41	Runs between Hamilton GO and Pickering GO via Highway 403, Highway 407 and Highway 401.
#47	Runs between Hamilton GO and Highway 407 Bus Terminal in Vaughan via Highway 403 and Highway 407.
#56	Runs between Oakville GO and Oshawa GO via Trafalgar Road, Highway 407 and Simcoe Street in Oshawa.

3.5 Existing Peak Hour Travel Demand

Given the industrial land use of the proposed development, the AM and PM peak periods have been selected as the analysis time periods. To understand the existing AM and PM peak hour traffic volumes, turning movement counts for the Study Area intersections have been provided by the Halton Region.

Table 2 summarizes the data collection date of the turning movement counts at each Study Area intersection.

Table 2: Turning Movement Count (TMC) Data Dates

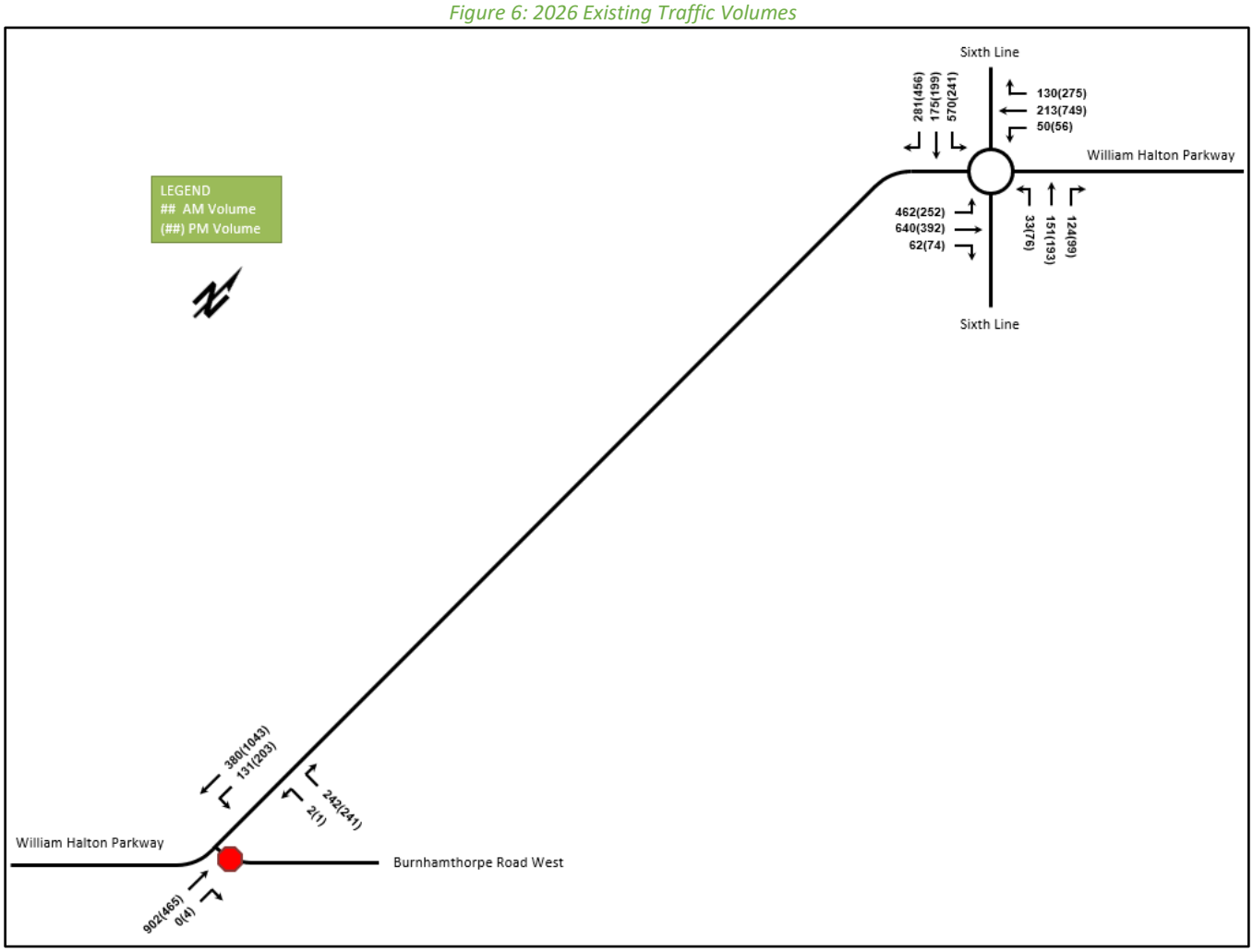
Location	Count Date
William Halton Parkway at Sixth Line	October 24th, 2024
William Halton Parkway at Burnhamthorpe Road	November 12th, 2025

As shown above, the turning movement counts have been collected over a year apart and therefore balancing was required to be applied to the counts. The William Halton Parkway at Burnhamthorpe Road intersection was noted to have approximately 800 more eastbound AM trips and 800 more westbound PM trips than the other William Halton Parkway traffic count. There were no noted roadways in between the two intersections that would have diverted trips. Volume imbalances were addressed by using the most recent and higher traffic count of William Halton Parkway at Burnhamthorpe Road to scale up the volumes of the other intersection, William Halton Parkway at Sixth Line. The traffic patterns of the William Halton Parkway at Sixth Line traffic count was used to distribute the additional traffic volumes added to the intersection. Turning movement count data is included in Appendix B.

As the counts were collected prior to the existing horizon year, a per annum compound annual growth rate was applied to the traffic counts to project the volumes at the existing horizon. A growth rate was selected based on correspondence with the Town and Region. It was discussed that a background CAGR of 2% between 2025 and 2031 would be used for the Halton Region roads, and a CAGR of 3% between 2025 and 2045 would be applied to Town owned roads.

Figure 6 illustrates the 2026 existing vehicle traffic volumes.

Figure 6: 2026 Existing Traffic Volumes



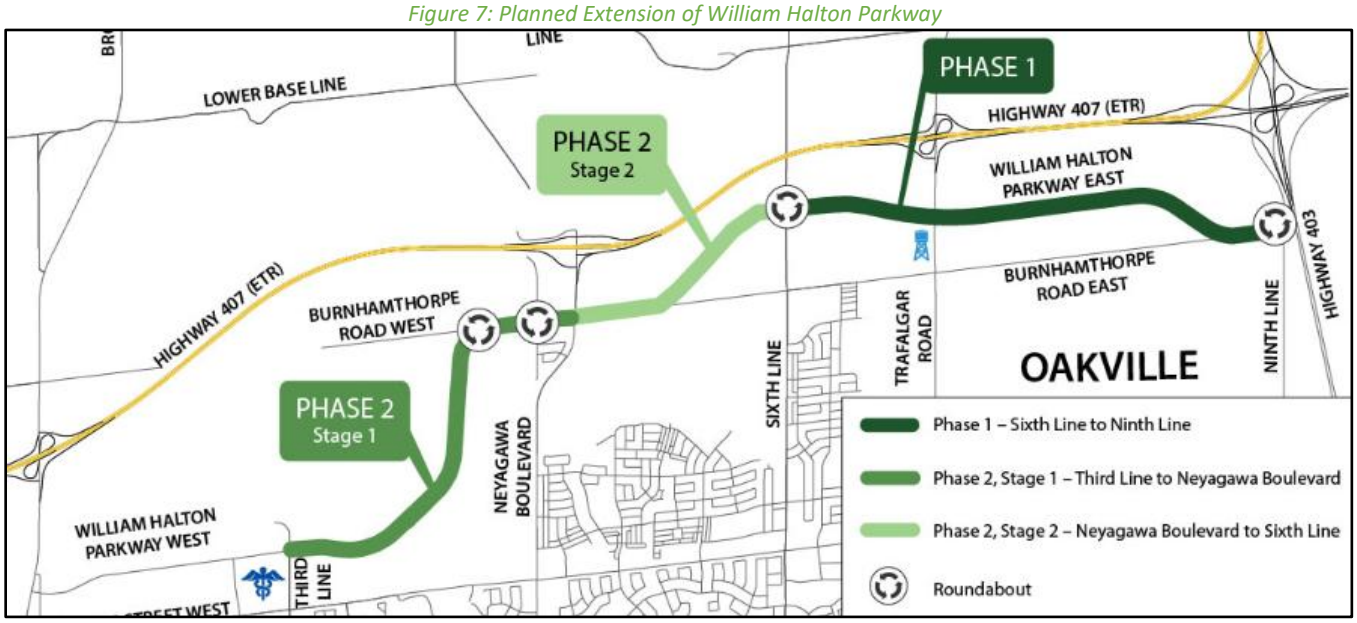
4 Future Background Conditions

4.1 Planned Conditions

4.1.1 William Halton Parkway Extension

As discussed in Section 3.1, William Halton Parkway within the Study Area is a Region of Halton arterial road with a four-lane cross-section. The William Halton Parkway Extension Project will create a new east-west corridor from Bronte Road (Regional Road 25) to Ninth Line (Regional Road 13) and has been split into three phases of design and construction as shown in Figure 7 below. Phase 1 and Phase 2, Stage 2 of the William Halton Parkway Extension Project, which is between Neyagawa Boulevard and Ninth Line has been completed. Phase 2, Stage 1 of the project, which will take place southwest of the development between Third Line and Neyagawa Boulevard, was originally planned for completion in 2024, with an updated anticipated end in June 2026. At the time of writing this study, the Sixteen Mile Creek Bridge towards the west end of the Phase 2, Stage 1 segment of the project is incomplete.

Figure 7: Planned Extension of William Halton Parkway



Source: Halton Region Construction Projects - William Halton Parkway Extension Project
Accessed on February 25th, 2026 at: https://www.halton.ca/for-residents/roads-construction/construction-projects/william-halton-parkway-extension-project

The proposed cross-section of the William Halton Parkway extension can be seen in Figure 8 and shows two proposed vehicle travel lanes in each direction, bikes lanes, a sidewalk, and a multi-use pathway. This cross section is consistent with what has been built out and is expected to be used for the remaining segments of the roadway still under construction.

Figure 8: Proposed William Halton Parkway Cross Section

Source: Halton Region Construction Projects - William Halton Parkway Extension Project
Accessed on February 25th, 2026 at: https://www.halton.ca/for-residents/roads-construction/construction-projects/william-halton-parkway-extension-project

4.1.2 Burnhamthorpe Road

Burnhamthorpe Road west of Sixth Line is currently designated as a regional arterial road under the jurisdiction of Halton Region. However, its function as the north Oakville transportation corridor will be replaced by William Halton Parkway. A Class Environmental Assessment was conducted to develop a new road design for the section between Ninth Line and Sixteen Mile Creek of Burnhamthorpe Road to better serve the needs of the north Oakville community once its responsibility is transferred to the Town.

While the intersection of Burnhamthorpe Road and William Halton Parkway has recently been completed including pavement markings and active transportation facilities, the signalization of the intersection has not been

completed. As it is expected that the intersection will ultimately be signalized as per the findings of the Burnhamthorpe Road Character Study and Municipal Class Environmental Assessment (2014), it will be considered as a signalized intersection in both the 2028 and 2033 future analysis horizons.

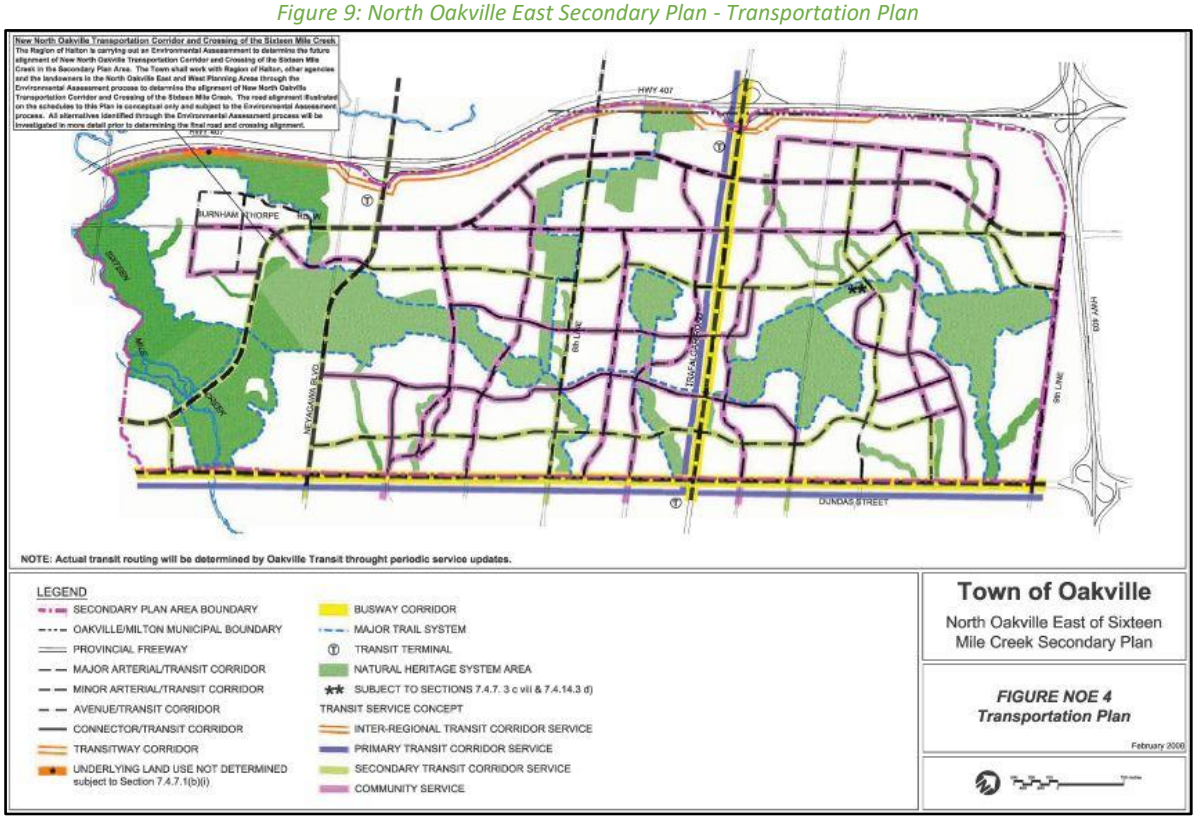
4.1.3 Sixth Line

The Town of Oakville Transportation Master Plan Update (November 2025) has noted that Sixth Line is planned for a four-lane road widening from Dundas Street to William Halton Parkway. The timing of the corridor study is noted to be completed in the "short-term", a range of 2026 to 2035. There are currently no specified dates for start of construction.

4.1.4 North Oakville East Secondary Plan – Transportation Plan

The North Oakville East Secondary Plan includes transit routes along key corridors within the Study Area. Figure 9 illustrates the North Oakville East Secondary Plan Transportation Plan. Within the Study Area, Community Service Corridors are planned along William Halton Parkway, Burnhamthorpe Road, and the Preserve Drive extension. Additionally, within the Study Area Secondary Transit Corridor service is planned along Sixth Line.

Figure 9: North Oakville East Secondary Plan - Transportation Plan



Source: North Oakville East Secondary Plan (2008)

4.1.5 Other Study Area Developments

For the purposes of this transportation brief, the only background development that will be considered for the development is the previous overarching study that the site was a part of. The TIS for the Neighborhood 9, 10, 11 Developments was last submitted in 2020 and was deemed outdated. This development is included only to determine the turn-lane design of the intersection of the Proposed Site Access / Preserve Drive extension at William Halton Parkway. This is the only major trip generating background development that projected trips at this intersection.

4.1.5.1 Neighbourhood 9, 10, 11 Developments

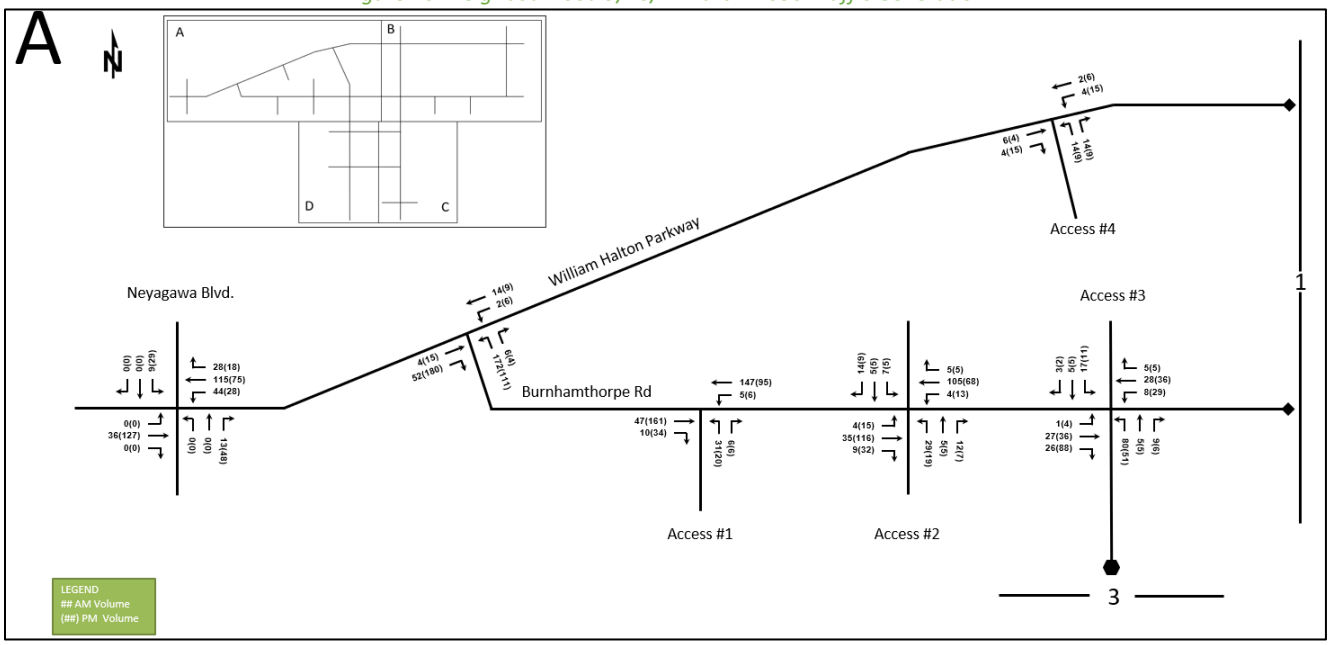
The proposed Neighbourhood 9/10/11 developments in North Oakville covers a vast area on both sides of Burnhamthorpe Road. The site encloses everything south of the extension of William Halton Parkway, north of North Park Boulevard, and west of Sixth Line. The following information has been taken from the *Neighbourhood 9/10/11 Transportation Impact Study (2020)*, prepared by CGH Transportation. The developments consist of:

- Timsin Holding Corp. – 29 single family detached units and 18 townhouse units
- Docasa Group Ltd. – 200 single detached residential units and 110 townhouse units
- Star Oak Developments Ltd. – 105 single family detached units and 63 townhouse units
- Digram Developments Inc. – 172 townhouse units and 110 apartment units
- ARGO (West Morrison Creek) Ltd. – 85 single family detached units and 162 townhouse units
- Crosstrail Estates Inc. and TWKD Developments Inc. – 244 townhouse units
- Mattamy Homes Preserve North – 369 single family detached units and 22 townhouses
- Mattamy Homes / SGGC – 202 townhouse units and 75 apartment units
- G.C. Family Investments – 10 townhouse units

The combined development includes a total of 788 single detached homes, 1003 townhouses, and 175 mid-rise units. The projected completion date is 2024, and therefore site generated traffic will be considered in both the 2028 and 2033 future analysis horizons. The development is anticipated to total 851 and 1114 two-way vehicle trips during the AM and PM peak hour.

Figure 10 illustrates the projected 2030 site traffic generation of the Neighbourhood 9/10/11 Development, respectively. The projected 2030 volumes will be considered as part of the analysis. The volumes below have been approved by the Town of Oakville.

Figure 10: Neighbourhood 9/10/11 Part A 2030 Traffic Generation



Source: Neighbourhood 9/10/11 Transportation Impact Study; CGH Transportation; 2020

5 Forecasting

5.1 Development-Generated Travel Demand

5.1.1 Trip Generation and Mode Shares

The Institute of Transportation Engineers (ITE) Trip Generation Manual 12th Edition has been reviewed to determine the appropriate trip generation rates and rate equations for the proposed development. The Manufacturing land use was selected for the site based on the proposed land uses. The methodology used to determine whether to use average rate or fitted curve equation relied on the availability of a fitted curve equation (i.e. where a fitted curve equation is not available, the average rate was used) as well as Figure 4.2: Process for Selecting Average Rate or Equation in Trip Generation Manual Data, in the ITE Trip Generation Handbook, 3rd Edition.

The ITE trip generation rates and directional splits are summarized for both passenger vehicles and trucks in Table 3. The GFA is an approximation that is subject to change as the development proceeds.

Table 3: ITE Trip Generation Vehicle Trip Rates

ITE Land Use	ITE Land Use Code	GFA (ft^2)	Vehicle Type	Peak Period	Estimation Method	In	Out	Trip Rate
Manufacturing	140	150,000	All Vehicles	AM	Average Rate	75%	25%	T = 0.51(X)
				PM	Fitted Curve	29%	71%	T = 0.84(X) - 29.93
			Truck	AM	Average Rate	56%	44%	T = 0.03(X)
				PM	Fitted Curve	41%	59%	T = 0.02(X)

**Note: T = Vehicle Trips, X = 1,000 ft^2*

Using the above vehicle trip rates, the total vehicle trip generation for the development is summarized in Table 4.

Table 4: Total Vehicle Trip Generation - ITE

Land Use	Vehicle Type	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Manufacturing (LUC 140)	All Vehicles	57	20	77	28	68	96
	Trucks	3	2	5	1	2	3
	Passenger Vehicles	54	18	72	27	66	93

As shown in the Table above, 77 AM and 96 PM new peak hour two-way vehicle trips are projected as a result of the proposed development. The trips generated mainly consist of passenger vehicles. Based on the trip generation, the AM peak hour generates the most truck trips and the PM peak hour generates the most total vehicle trips.

5.1.2 Trip Distribution

5.1.2.1 Passenger Vehicle Trip Distribution

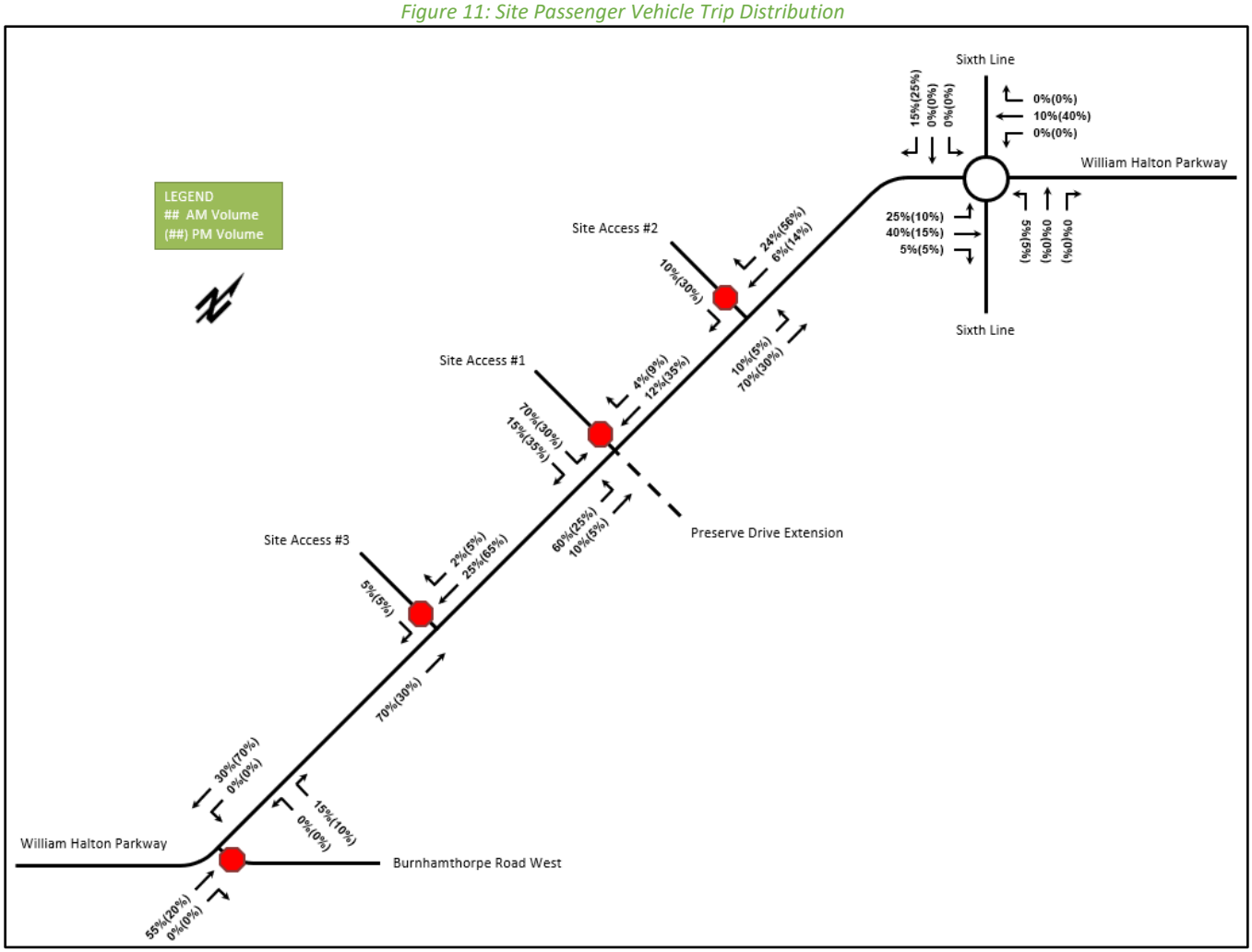
To understand the travel patterns of the developments, the travel patterns exhibited in the existing volumes were used as a reference as the majority of the construction for William Halton Parkway was completed recently. The percentages of trips to each direction are kept constant between analysis horizons. Table 5 summarizes the passenger vehicle trip distribution.

Table 5: Passenger Vehicle Trip Distribution

To/From	Percent of Trips	
	AM Peak Hour	PM Peak Hour
North	15%	15%
South	20%	20%
East	45%	20%
West	20%	45%
Total	100%	100%

Based on the table above, the resultant passenger vehicle trip distribution on the Study Area road network is shown in Figure 11 below.

Figure 11: Site Passenger Vehicle Trip Distribution



5.1.2.2 Truck Trip Distribution

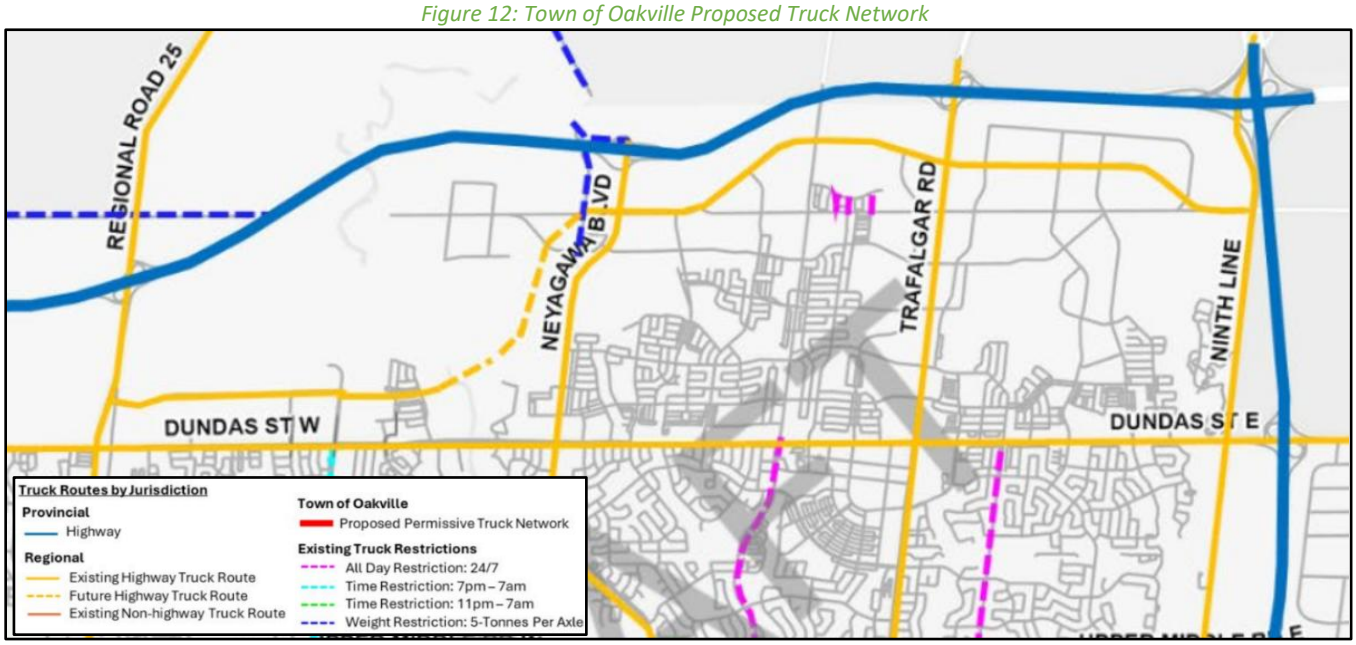
The trip distribution for trucks was determined separately from the passenger vehicle trip distribution, given that there are constraints for truck routing. It was noted as a concern as part of correspondence with the Town that truck movements related to the site and any potential impacts on residential neighbourhoods should be evaluated. William Halton Parkway is a Halton Regional Road, which are classified to be major arterial roadways.

As such, Regional Roads have been noted by Halton Region staff to have the following properties:

- *Serve mainly inter-regional and regional travel demands;*
- *May serve as an Intensification Corridor;*
- *Accommodate all truck traffic;*
- *Accommodate higher order transit services and high occupancy vehicle lanes;*
- *Connect Urban Areas in different municipalities;*
- *Carry high volumes of traffic;*
- *Distribute traffic to and from Provincial Freeways Highways;*
- *Accommodate active transportation.*

Based on the above, truck traffic is noted to be permitted on all Regional Roads, being one of the many functions of the Regional Road network. The trucks routing to and from the proposed development on William Halton Parkway will be assessed with regards to the potential impacts on the Local and Regional infrastructure. Trucks routing from the proposed development are expected to adhere to the Town's permissive truck network, which mainly utilizes Regional Roads and Provincial Highways. The Town of Oakville's existing and proposed permissive truck network from the *Town of Oakville Transportation Master Plan (2025) Appendix H: Goods Movement* is illustrated in Figure 12 below.

Figure 12: Town of Oakville Proposed Truck Network



As shown in the image above, William Halton Parkway is a part of the Town's permissive truck network. Although Burnhamthorpe Road and Sixth Line aren't valid truck routes, William Halton Parkway connects to multiple north-south Regional Roads, the nearest being Neyagawa Boulevard to the west and Trafalgar Road to the east. These north-south Regional Roads also have interchanges providing access to Highway 407. It is also noted in the image above that the future Preserve Drive extension will not be part of the permissive truck route. Therefore, even if the Preserve Drive extension is built out there will be no truck trips assigned.

Preliminary information about the proposed development's inbound and outbound truck deliveries was provided. Inbound materials are expected to be provided five to ten times per day, primarily during the day shift. Inbound deliveries are expected to originate from the Stelumar factory in Mississauga, accounting for half of the deliveries where the other half is shipments from various inbound suppliers. Outbound modules are expected to be shipped

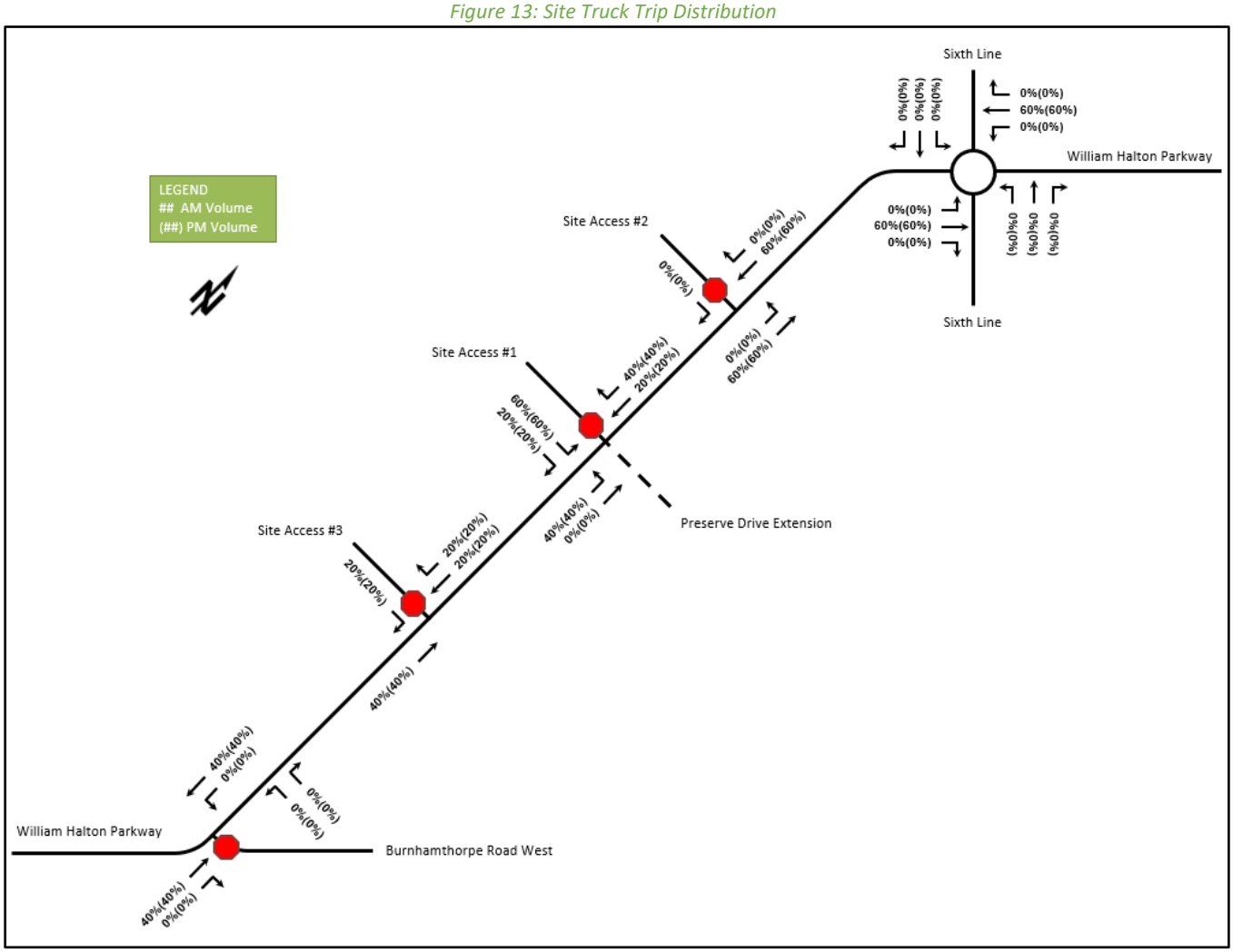
out at a rate of approximately 20 modules per day. These modules will serve Greater Toronto Area (GTA) – West subdivisions over a long-term period (10+ years). These locations include Oakville, Mississauga, Brampton, Milton, Kitchener-Waterloo, Burlington, and other extended GTA locations. Based on the information regarding the inbound materials and outbound modules in addition to the permissive truck routes as per the Town and Region, the truck trip distribution was determined and summarized in Table 6 below. Given that there are no Study Area intersections whereby the trucks can travel north or south, only the east and west distributions are provided.

Table 6: Truck Trip Distribution

To/From	Percent of Trips	
	AM Peak Hour	PM Peak Hour
East	60%	60%
West	40%	40%
Total	100%	100%

The resultant truck trip distribution on the Study Area road network is shown in Figure 13 below.

Figure 13: Site Truck Trip Distribution



5.1.3 Trip Assignment

Using the trip distribution outlined in the section above, turning movement splits, intersection and access turning restrictions, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. The resulting site trip generation for the subject development in all analysis horizons is shown in Figure 14 and Figure 15 for Passenger Vehicles and Trucks, respectively.

Figure 14: Site Passenger Vehicle Trip Assignment

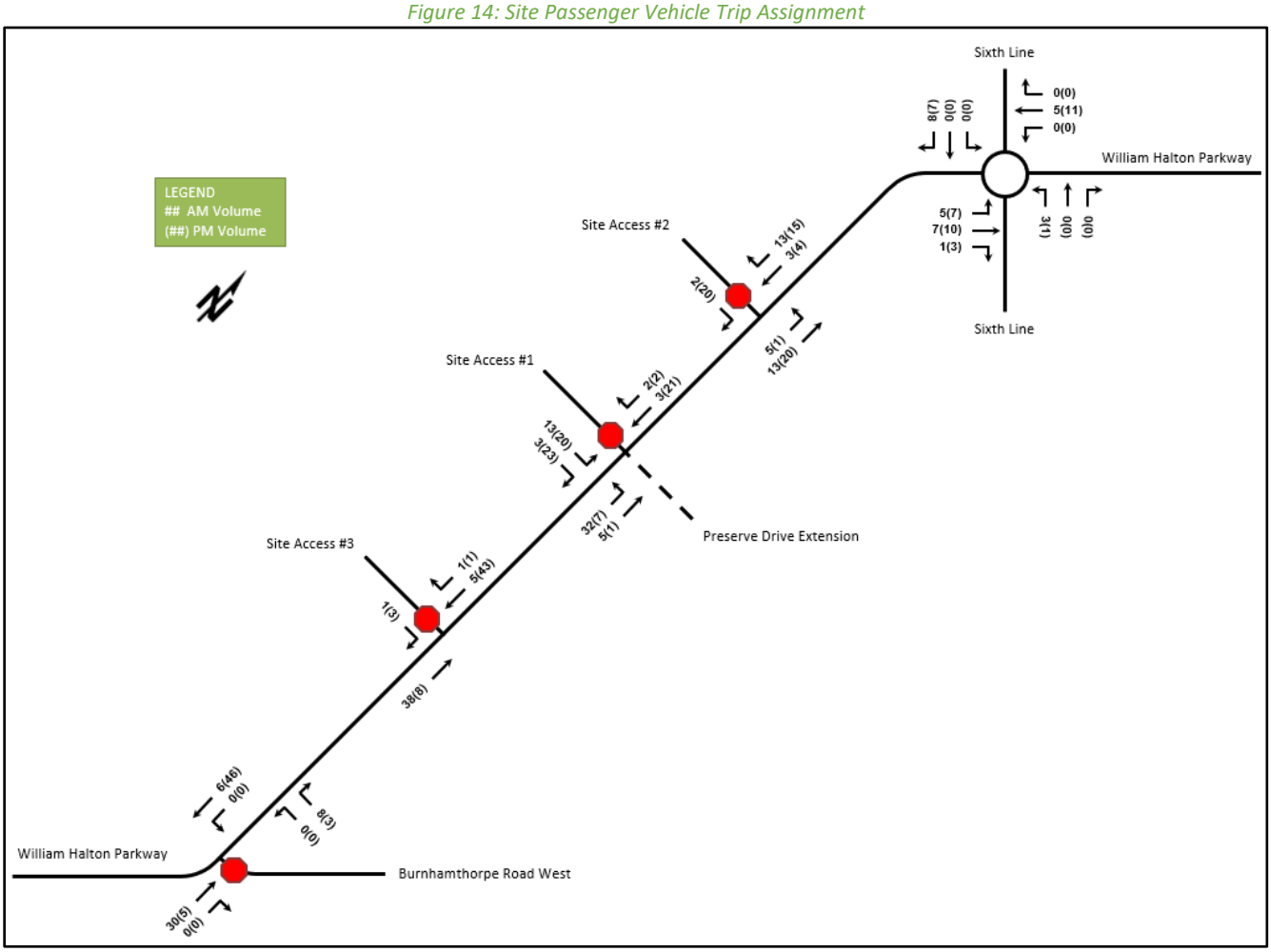
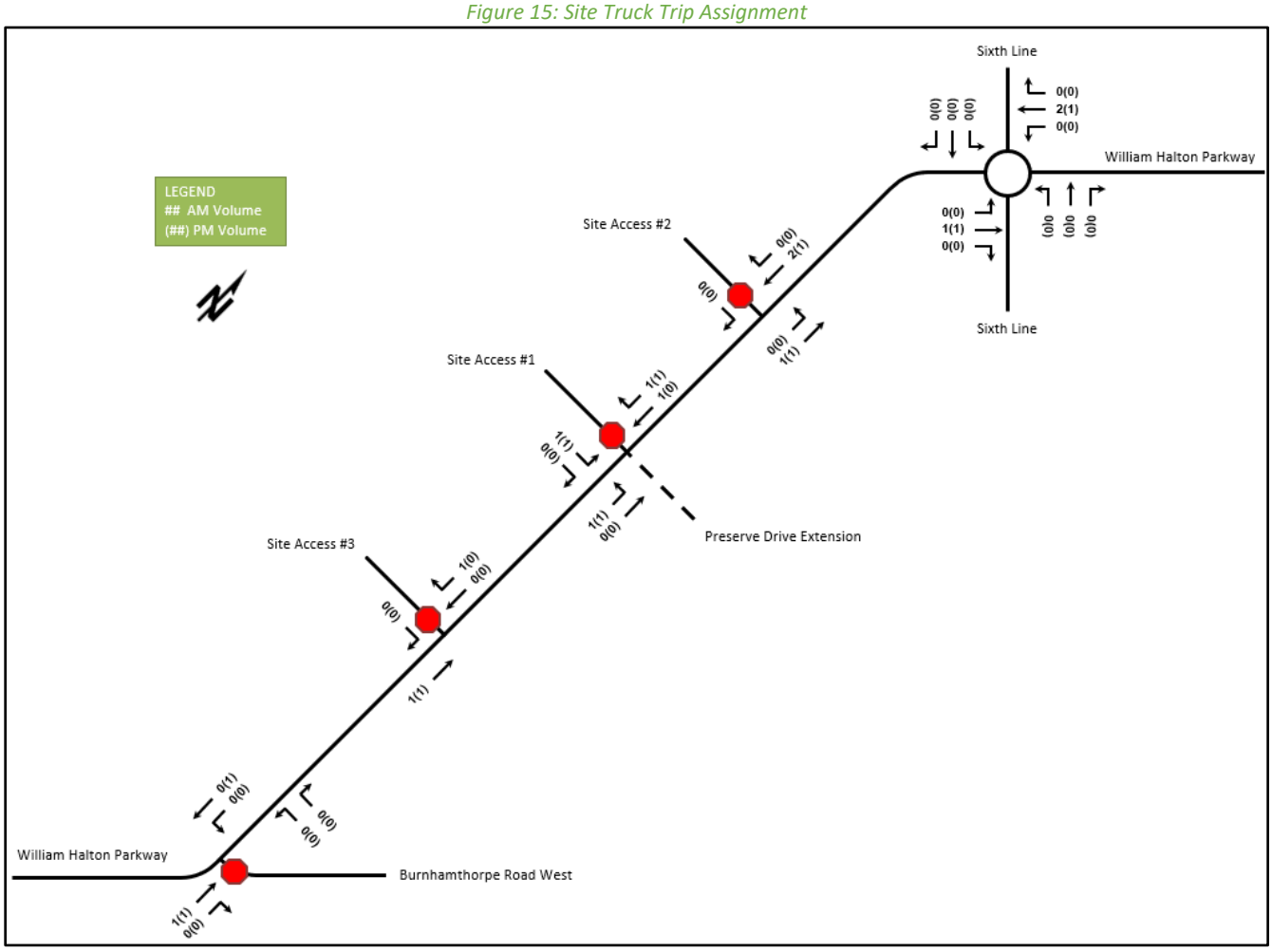


Figure 15: Site Truck Trip Assignment



5.1.4 Future Traffic Travel Demands

The site generated passenger vehicle and truck traffic has been combined with the 2026 existing traffic volumes to estimate the total traffic volumes for the existing plus site scenario, as illustrated in Figure 16. Additionally, to consider a scenario that includes westbound left-turn volumes for the purposes of intersection design, a horizon was considered that included the background development volumes, as illustrated in Figure 17.

Given that the construction timing and traffic patterns associated with the Preserve Drive extension are unknown, it has been assumed that all site traffic will utilize William Halton Parkway. A sensitivity scenario with the addition of the Preserve Drive extension completed was considered as part of this report to determine the adequate length for back-to-back left-turn lanes on William Halton Parkway. Further discussion on the access spacing is provided in Section 6.3.3.

Figure 16: Existing Plus Site Traffic Volumes

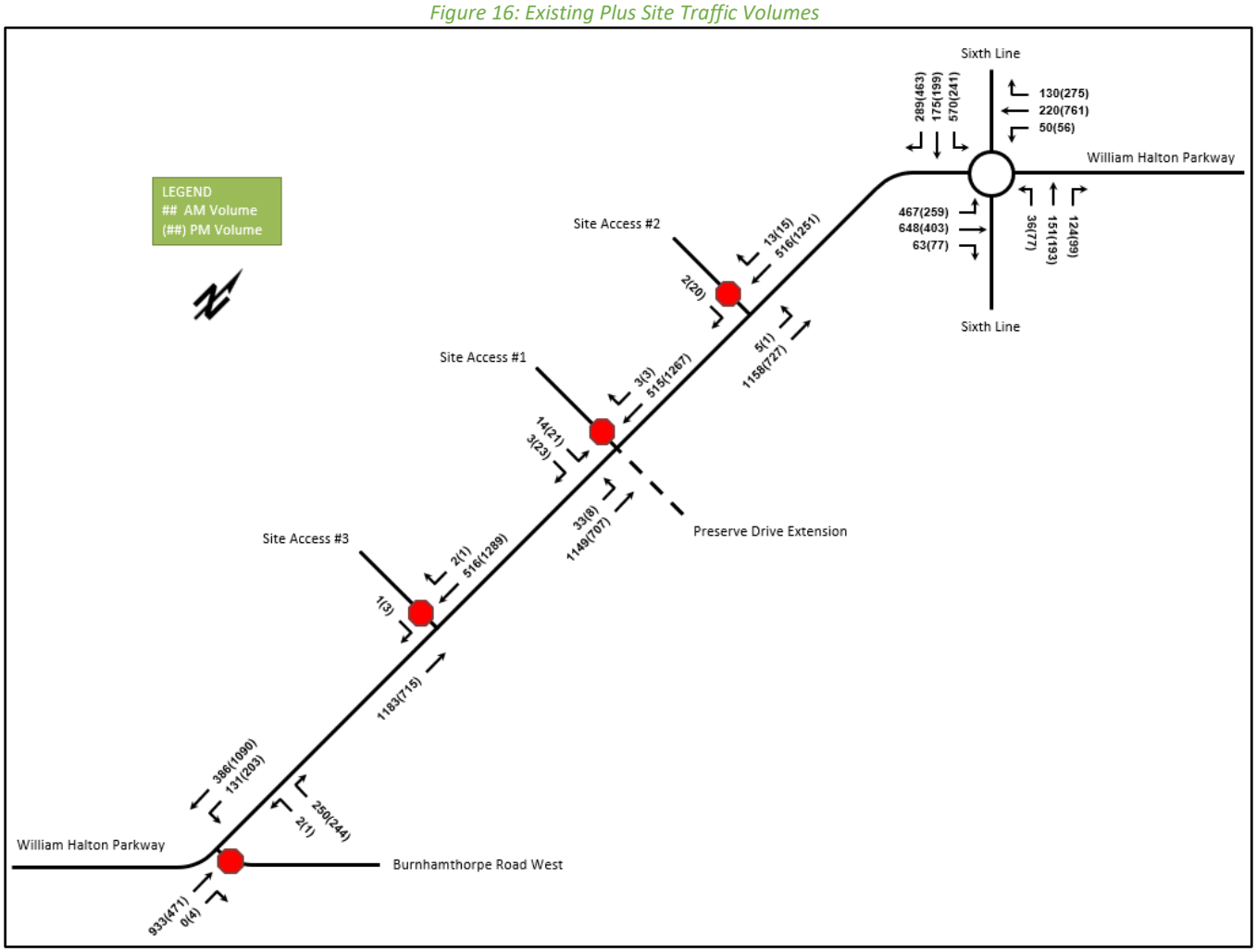
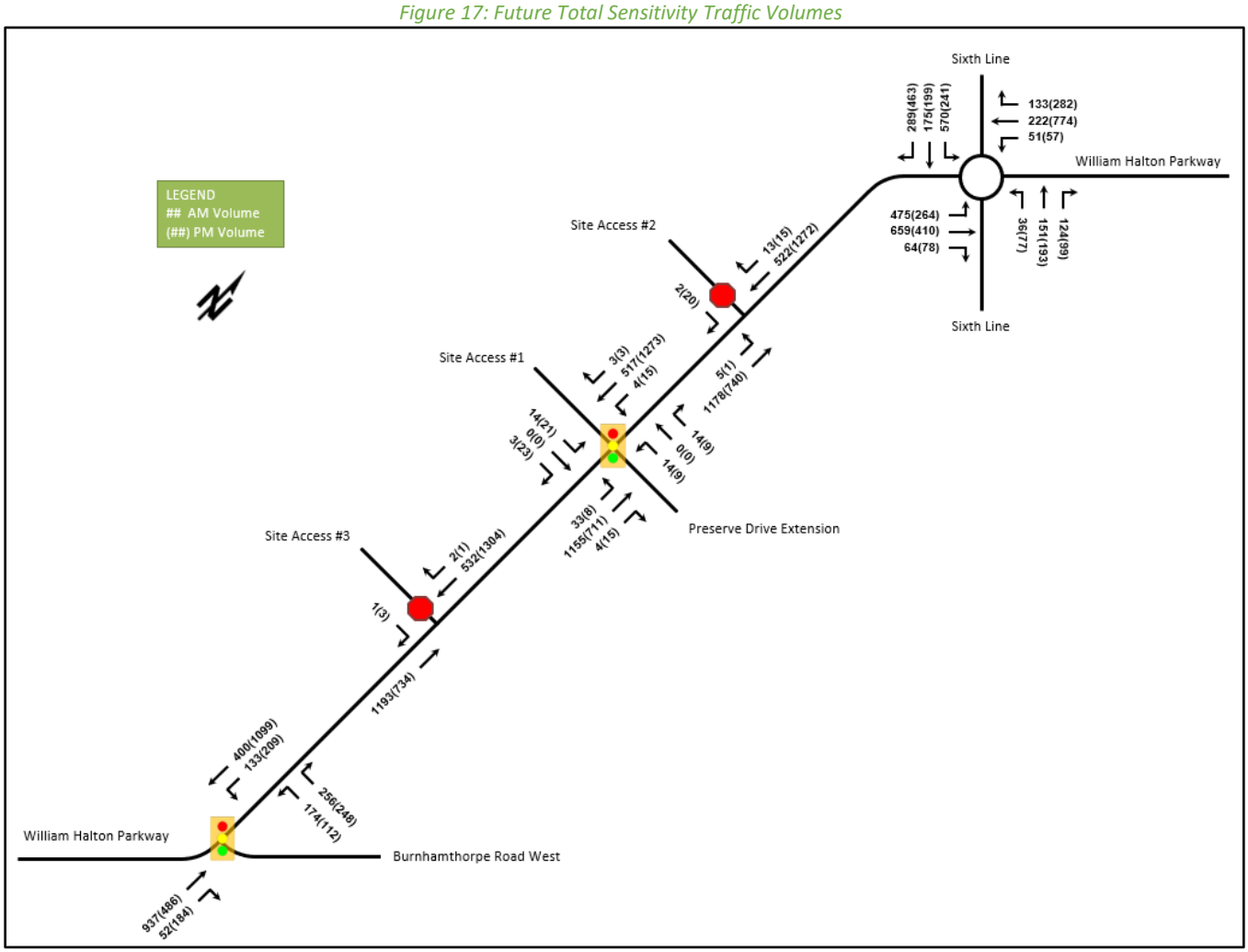


Figure 17: Future Total Sensitivity Traffic Volumes



6 Development Design

6.1 Site Circulation

The proposed concept plan has been reviewed to assess the vehicular movements at the site accesses and throughout the site. These drawings will be updated as the site plan is refined to show more details. This future update will include tests for the loading spaces and any critical parking spaces.

Turning templates were tested using AutoTURN for three design vehicles, including a WB-19 vehicle, a HSU, and a passenger vehicle. As there are currently no access curbs shown, the turning template drawings illustrated the minimum curb radii that would be required to complete the turns, up to a curb radius of 20 metres to support the heavy vehicles, shown at the primary and tertiary access. This curb radii falls within the requirements of the Halton Region Access Management Guideline (2015), which states that the maximum right-turn radius for a rural industrial driveway is 24.0 metres.

As shown in the turning template drawings, the turning paths indicate the design vehicles are able to circulate through the accesses and the driveways. Turning template drawings are included in Appendix C.

6.2 Parking Supply

The proposed development is currently shown to have 152 vehicle parking spaces provided in a single at-grade parking lot. As the concept plan is still in its early stages, the parking provisions in terms of number of stalls and type of stall is still subject to change.

Table 7 summarizes the required and provided parking for the proposed site as per the Town of North Oakville Zoning By-Law requirements.

Table 7: North Oakville Zoning By-Law Parking Requirements

Land Use	GFA	Parking Rate	Required Parking	Provided Parking	Difference
Industrial Use (Light or General	150,000 ft^2 (13,936 m^2)	For a premises with a leasable floor area in excess of 7,500 square metres: **1.00 / 200 square metres of leasable floor area minimum**	70	152	+82
		Total	**70**	**152**	**+82**

As shown above, the North Oakville parking requirements are met in excess by 82 parking spaces. While it has been noted that the parking is subject to change, given the amount provided in excess it is expected that minor adjustments to the parking provided will not result in any parking deficiencies. Additionally, the accessible parking provisions are not yet identified as details of the parking lot is limited, however for a range of 151 to 200 provided spaces, six accessible parking spaces are required. The excess parking will be able to accommodate any accessible parking requirements.

6.3 Site Access Analysis

6.3.1 Number of Permissible Accesses

The Transportation Association of Canada (TAC)'s Geometric Design Guide for Canadian Roads – Chapter 8 has been reviewed to determine the number of driveways permitted for a property. The typical design guideline states that for a property frontage between 51 and 150 metres of frontage, the maximum number of driveways is three whereas for property frontage greater than 150 metres, the maximum number of driveways would be four or more. For these maximums it is noted that a traffic impact study would be required to determine the location and elements of driveways for large developments. Additionally, for industrial or commercial uses the guidelines mention that it would be "good practice" to provide separate driveways for the loading and parking areas.

The subject industrial development has a property frontage of about 540 metres and proposes three accesses, far exceeding the threshold required to warrant three driveways as per TAC guidelines. Additionally, it was proposed such that Site Access #2 would be primarily for accessing the parking lot, whereas the other two accesses would support loading activities by providing a respective nearby site access to the two separate building accesses.

6.3.2 Access Configuration

Site Access #1 is proposed on William Halton Parkway and will be a full movement access. The access will be placed across from the Preserve Drive extension, forming a four-legged intersection.

Site Access #2 is proposed on William Halton Parkway and will be a restricted access, currently proposed as a right-in/left-in/right-out. The existing median on William Halton Parkway will be used to restrict the access, but is proposed to be opened to allow for the left-in movement.

Site Access #3 is proposed on William Halton Parkway and will be a restricted access, currently proposed as a right-in/right-out. The existing median on William Halton Parkway will be used to restrict the access.

6.3.3 Access Spacing

The access spacing for the site accesses has been reviewed using Halton Region's Access Management Guideline (January 2015). William Halton Parkway which is classified as a Corridor (C2), for which a full-movement access requires a spacing of 300 metres and a right-in/right-out access requires a spacing of 115 metres according the Region's guidelines.

Site Access #1 is proposed as a full movement access to be located on the north side of William Halton Parkway across the road from the Preserve Drive extension forming a four-legged intersection. Site Access #1 is located approximately 580 metres east of Burnhamthorpe Road and 580 metres west of Sixth Line, measured from stop-bar to stop-bar. This spacing exceeds the requirements in the Region's guidelines for a full-moves access given there are no other existing driveways noted and is approximately equidistant to the major intersection on either side of the access maximizing the distance.

Site Access #2 is proposed as a right-in/left-in/right-out to be located on the north side of William Halton Parkway forming a three-legged intersection. The Region's access guideline does not provide a minimum spacing requirement for a right-in/left-in/right-out access. Site Access #2 is located approximately 200 metres east of the proposed Site Access #1 location and approximately 330 metres west of Sixth Line, measured from stop-bar to stop-bar. The spacing from Sixth Line exceeds Regional requirements, however the spacing to Site Access #1 falls between the requirements for a full-moves and right-in/right-out access. The intersection spacing has been compared to the required intersection spacing within the Transportation Association of Canada's Geometric Design Guide for Canadian Roads – Chapter 9. The required minimum spacing between adjacent intersections along an arterial road is 200 metres to allow for minimum lengths of back-to-back storage for left-turning vehicles at adjacent intersections. This 200 metre requirement is met by the proposed spacing between the site accesses. It will be confirmed through the operational analysis if the left-turn lane design is sufficient within a 200 metre spacing.

Site Access #3 is proposed as a right-in/right-out to be located on the north side of William Halton Parkway forming a three-legged intersection. Site Access #2 is located approximately 270 metres west of the proposed Site Access #1 location and approximately 240 metres east of Burnhamthorpe Road measured from stop-bar to stop-bar. This spacing exceeds the requirements in the Region's guidelines for a right-in/right-out access.

6.3.4 Access Sight Distance

No significant vertical or horizontal curvature is present on the boundary road network that would be anticipated to impose limitations on the sight lines at the proposed accesses.

6.3.5 Access Geometrics

The access geometrics will be reviewed in detail when a detailed site plan is prepared. This includes but is not limited to curb radii, driveway widths, and throat length.

7 Operational Analysis

To understand the operational characteristics of the Study Area intersections, Synchro (Version 11), and Sidra (Version 9.1) have been used to model the Study Area intersections. The vehicle LOS for roundabouts modelled in Sidra has been based on the HCM 2010 average delay criteria.

The Heavy Vehicle percentage (HV %) has been calculated for each turning movement at the Study Area intersections. All Heavy Vehicle percentages calculated to be less than 2% were entered into the Synchro model as 2% in order to produce a conservative analysis. At intersections where no Heavy Vehicle percentage is available, 2% has been used.

Pedestrian volumes were provided for intersections with turning movement count information in the existing horizon. These volumes were carried through to the future analysis.

Peak Hour Factors (PHF) have been applied as per the Synchro default PHF of 0.90. All other parameters have been coded using accepted best practices and default parameters where applicable.

LOS has been defined using the HCM definition for LOS at signalized intersections shown below in Table 8 and unsignalized intersections shown below in Table 9.

Table 8: Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (Seconds/Vehicle)
A	≤10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

Table 9: Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Second/Vehicle)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Criteria for critical movements and critical intersections for both signalized and unsignalized intersections will be defined by both Town of Oakville and Halton Region guidelines for all Study Area intersections. The Town of Oakville Terms of Reference (TOR) for Transportation Impact Studies (TIS) and Transportation Functional Design Studies (2009) defines critical movements as v/c ratios of 0.85 for overall intersection operations, v/c ratios of 1.00 for individual through or turning movements, queues for individual movements that exceed available turning lane storage, and queues for through lanes that block vehicles from entering turning lanes. Critical movements at unsignalized intersections are defined as individual movements exceeding level of service (LOS) E based on average delay.

Halton Region Transportation Impact Study Guidelines (2011) define critical movements as v/c ratio of 0.85 or above for overall intersection operations, through movements, or shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. Critical movements at unsignalized intersections are defined as individual movements exceeding LOS D based on average delay. Critical movements are also defined as individual movements with 95th percentile queue lengths projected to exceed available turning lane storage for signalized and unsignalized intersections.

Therefore, at signalized intersections, critical movements and intersections are identified using Halton Region's criteria for v/c ratios of 0.85 or above for overall intersection operations, through movements, and shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. At unsignalized intersections, critical movements are also identified as individual movements exceeding LOS D based on average delay, as per Halton Region's criteria. Critical movements for both signalized and unsignalized intersections are also identified as individual movements with queues exceeding available turning lane storage and queues for through lanes blocking vehicles from entering turning lanes, as per the Town of Oakville's guidelines. Critical movements have been noted in red in the operational analysis tables below.

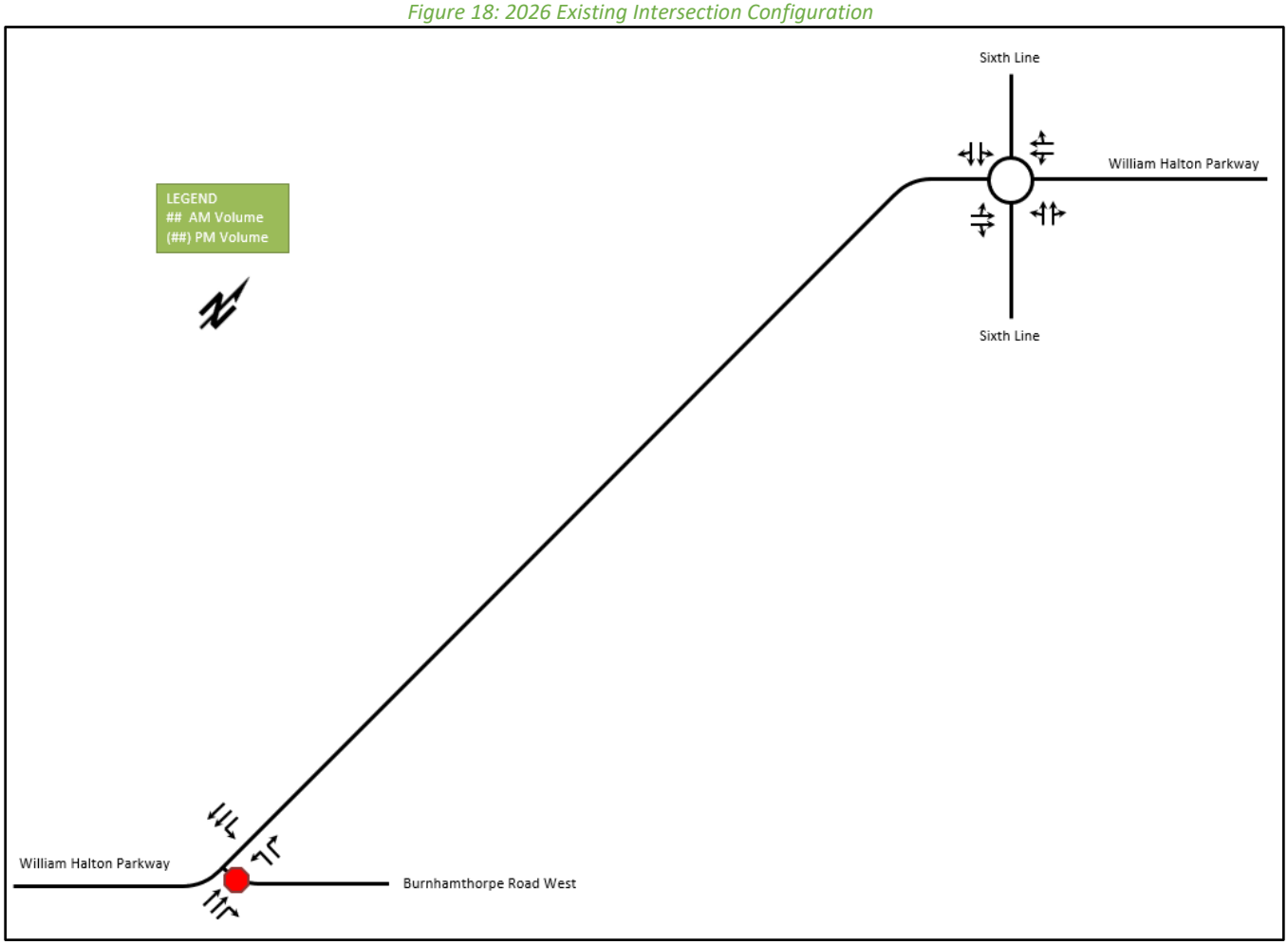
Mitigation measures will be considered at over capacity movements (v/c ratios equal to or greater than 1.00, 95th percentile queues that exceed provided storage lengths, and LOS F at unsignalized intersections) identified in the analysis.

7.1 2026 Existing Conditions

7.1.1 2026 Existing Intersection Configuration

The existing configurations at the Study Area intersections are illustrated in Figure 18 as described in Section 3.2.

Figure 18: 2026 Existing Intersection Configuration



7.1.2 2026 Existing Conditions Operational Analysis

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development as well as the surrounding background developments on the Study Area road network. The Study Area intersections have been designed based on aerial photos and turning lane storage lengths have been rounded to the closest five metres. The analyzed intersection configurations are reflective of those illustrated in Figure 18 above.

Table 10 summarizes the operational analysis of the 2026 existing conditions, and Table 11 summarizes the 95th percentile queue analysis. The 2026 existing Synchro and Sidra worksheets have been included in Appendix D.

Table 10: 2026 Existing Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del. (s)	LOS	V/C	Del. (s)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	E	0.71	47	C	0.43	15
	Westbound	B	0.35	10	D	**0.87**	34
	Southbound	C	0.75	17	**F**	**1.18**	131
	Eastbound	**F**	**1.33**	185	B	0.58	15
	Overall	**F**	**1.33**	**87**	**F**	**1.18**	**56**
William Halton Parkway at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0.29	0	-	0.15	0
	EBR	-	0.00	0	-	0.00	0
	WBL	B	0.21	12	A	0.22	9
	WBT	-	0.12	0	-	0.34	0
	NBL	E	0.02	47	E	0.01	49
	NBR	C	0.52	19	C	0.36	13
	Overall	**A**	**-**	**4**	**A**	**-**	**3**

Table 11: 2026 Existing Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	-	22	13
	Westbound	-	10	94
	Southbound	-	77	236
	Eastbound	-	426	30
William Halton Parkway at Burnhamthorpe Road *(Unsignalized)*	EBT	-	0	0
	EBR	20	0	0
	WBL	50	7	7
	WBT	-	0	0
	NBL	25	1	1
	NBR	-	23	13
Notes:	*# - 95th percentile queue exceeds capacity* *m - Volume for 95th percentile queue is metered by upstream signal*			

As shown above, the existing Study Area intersections operate with critical movements.

In both the AM and PM peak periods, the overall operations of the intersection of Sixth Line at William Halton Parkway have a LOS of F and a v/c ratio greater than 1.00. These critical and over-capacity movements are expected given the high volumes projected at this intersection. These over-capacity movements may also be reflective of having to use the volumes of an adjacent intersection in lieu of up-to-date traffic counts for the intersection. The traffic patterns of the intersection of Sixth Line at William Halton Parkway may have changed over time since more construction has been completed. Given that actual intersection operations may be acceptable, no mitigation measures have been proposed for the roundabout at this time. It is expected that any mitigation measures proposed for the roundabout will lead to negligible improvements given the high traffic volumes.

At the intersection of Burnhamthorpe Road at William Halton Parkway, the northbound left movement has a LOS E in both the AM and PM peak hours, however there are minimal queues and significant residual capacity available. It is expected that the poor LOS is due to the high through volumes on William Halton Parkway. This is expected to be resolved once the intersection is signalized as part of the future improvements. The overall intersection operations are acceptable in both peak hours, at LOS A overall.

7.2 Existing Plus Site Conditions

7.2.1 Existing Plus Site Intersection Control

Using the Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the following unsignalized intersections were reviewed:

- Site Access #1 at William Halton Parkway
- Site Access #2 at William Halton Parkway
- Site Access #3 at William Halton Parkway
- Burnhamthorpe Road West at William Halton Parkway

A summary of the traffic control signal warrant analysis can be found in Table 12. Traffic control warrant sheets have been included in Appendix E.

Table 12: Existing Plus Site Signalization Warrant Summary

Intersection	Horizon	Warranted?
Site Access #1 / Preserve Drive at William Halton Parkway	EX + Site	No
	EX + Site & BD	No
Site Access #2 at William Halton Parkway	EX + Site	No
	EX + Site & BD	No
Site Access #3 at William Halton Parkway	EX + Site	No
	EX + Site & BD	No
Burnhamthorpe Road West at William Halton Parkway	EX + Site	No
	EX + Site & BD	No

As indicated above, intersection signalization warrants are not met for the access intersections on William Halton Parkway or the intersection of Burnhamthorpe Road at William Halton Parkway following the addition of site trips to the existing conditions or the addition of background development trips. However, it has been noted that signalization will be considered for the Site Access #1 intersection beyond the opening date of the facility, by the Region. During construction, it should be acceptable for the intersection to remain unsignalized.

7.2.2 Existing Plus Site Intersection Design

While the intersection configuration will remain mostly consistent with the existing scenario, this scenario will consider the necessity of left-turn lanes at the accesses via a warrant analysis. Left-turn lane warrants for unsignalized intersections were examined at Site Access #1 at William Halton Parkway and Site Access #2 at William Halton Parkway. To determine if a left-turn lane is warranted, the MTO Geometric Design Standards for Ontario Highways, Section E, left-turn lane warrant nomographs were examined.

At both the Site Access #1 intersection and the Site Access #2 intersection, an eastbound left-turn lane was found to be warranted. The left-turn lanes were designed using Transportation Association of Canada (TAC) guidelines to determine an adequate length that includes appropriate distance from intersection centreline, minimum storage, parallel/deceleration, and taper lengths. Left-turn lane warrants have been included in Appendix F.

The required storage length is based on the queuing analysis. For the purposes of a preliminary design, a 15 metre storage length will be considered the minimum and will be extended based on the queuing results in the operational analysis of the intersections. The parallel length is based on the required braking distance of 75 metres for a design speed of 80 km/h in the TAC guidelines for deceleration. It is assumed that up to two thirds of the taper length can be contributed to the deceleration length. The taper length is based on the taper ratio outlined in the Halton Region Access Management Guidelines (2015) and the TAC guidelines. The taper ratio for a design speed of 80 km/h is a minimum of 15:1 based on the lane width.

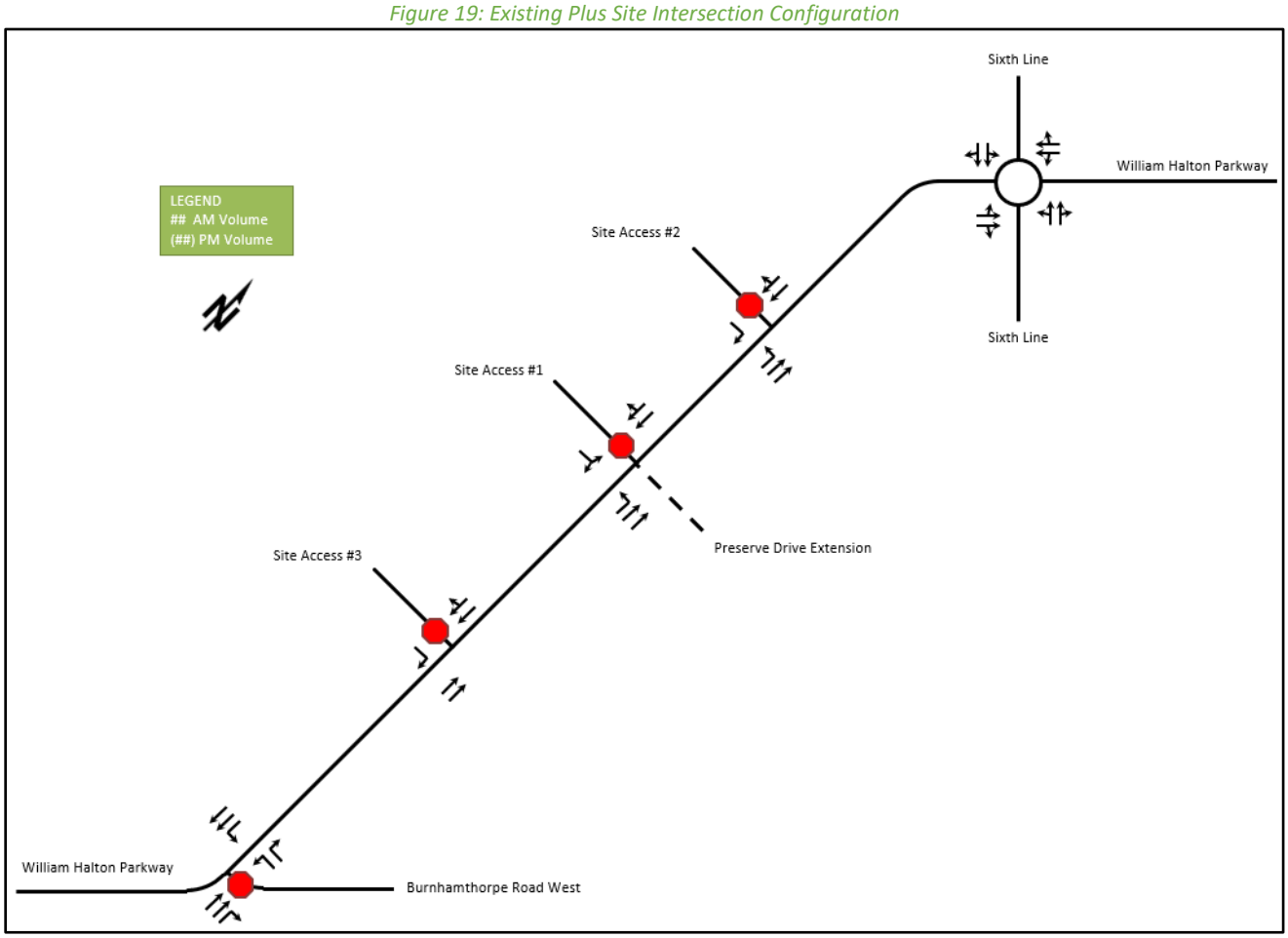
The eastbound left-turn lane at the signalized intersection was coded to have a total length of 122.5 metres. The 122.5 metre length includes a 15 metre distance from the intersection centreline, an assumed 15 metre minimum storage length for queuing, 40 metre parallel lane for deceleration, and a 52.5 metre taper length.

The eastbound left-turn lane at the unsignalized intersection was coded to have a total length of 130 metres. The 130 metre length includes a 15 metre distance from the intersection centreline, an assumed 15 metre minimum storage length for queuing, 25 metre parallel lane for deceleration, and a 75 metre taper length. This taper length calculation assumes that the left-turn lane will utilize 5.0 metres from the existing median to design the left-in turn restriction.

The Halton Region Access Management Guidelines (2015) indicate that a right-turn lane may be warranted at accesses that have sufficient volume of decelerating vehicles, have right turn volume at signalized intersections of 10% of the through traffic volume, or have constrained sight distance approaching the access. These conditions were not satisfied at any of the site access intersections. As such, auxiliary right-turn lanes into the site have not been considered.

The assumed 2028 and 2033 future intersection configurations prior to any recommended mitigation measures are illustrated in Figure 19.

Figure 19: Existing Plus Site Intersection Configuration



7.2.3 2026 Existing Plus Site Conditions Operational Analysis

The existing plus site conditions have been examined to determine the traffic conditions with just the addition of the proposed development. This will isolate the impact of the subject development on the traffic network.

Table 13 summarizes the operational analysis of 2026 existing plus site conditions and the 95th percentile queue for each movement are shown in Table 14. The 2026 existing plus site Synchro and Sidra worksheets have been included in Appendix G.

Table 13: 2026 Existing Plus Site Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	E	0.71	48	C	0.44	16
	Westbound	B	0.35	11	**E**	**0.89**	36
	Southbound	C	0.76	17	**F**	**1.22**	145
	Eastbound	**F**	**1.35**	194	C	0.59	15
	Overall	**F**	**1.35**	**91**	**F**	**1.22**	**61**
William Halton Parkway at Burnhamthorpe Road (*Unsignalized*)	EBT	-	0.30	0	-	0.15	0
	EBR	-	0.00	0	-	0.00	0
	WBL	B	0.22	12	A	0.22	9
	WBT	-	0.13	0	-	0.36	0
	NBL	E	0.02	50	**F**	0.01	52
	NBR	C	0.55	21	B	0.37	13
	Overall	**A**	**-**	**4**	**A**	**-**	**3**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Site Access #1 / Preserve Drive at William Halton Parkway *(Unsignalized)*	EBL	A	0.04	9	B	0.02	13
	EBT	-	0.38	0	-	0.23	0
	WBL/T	-	0.22	0	-	0.55	0
	WBT/R	-	0.11	0	-	0.28	0
	SBL/R	E	0.14	36	F	0.55	87
	Overall	**A**	**-**	**1**	**A**	**-**	**2**
Site Access #2 at William Halton Parkway *(Unsignalized)*	EBL	A	0.01	0	B	0.00	13
	EBT	-	0.38	0	-	0.24	0
	WBT	-	0.22	0	-	0.55	0
	WBT/R	-	0.12	0	-	0.28	0
	SBR	B	0.00	10	C	0.06	15
	Overall	**A**	**-**	**0**	**A**	**-**	**0**
Site Access #3 at William Halton Parkway *(Unsignalized)*	EBT	-	0.39	0	-	0.23	0
	WBT	-	0.22	0	-	0.56	0
	WBT/R	-	0.11	0	-	0.28	0
	SBR	B	0.00	10	B	0.01	15
	Overall	**A**	**-**	**0**	**A**	**-**	**0**

Table 14: 2026 Existing Plus Site Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	-	22	13
	Westbound	-	11	102
	Southbound	-	78	262
	Eastbound	-	447	32
William Halton Parkway at Burnhamthorpe Road (*Unsignalized)*	EBT	-	0	0
	EBR	30	0	0
	WBL	30	7	7
	WBT	-	0	0
	NBL	30	1	1
	NBR	-	25	13
Site Access #1 / Preserve Drive at William Halton Parkway *(Unsignalized)*	EBL	55	1	1
	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBL/R	-	4	19
Site Access #2 at William Halton Parkway *(Unsignalized)*	EBL	40	1	0
	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	1	2
Site Access #3 at William Halton Parkway *(Unsignalized)*	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	0	1
Notes:	*# - 95th percentile queue exceeds capacity* *m - Volume for 95th percentile queue is metered by upstream signal*			

As shown above, following the addition of site trips to the existing volumes, the Study Area intersections operate slightly worse than existing conditions, with additional critical and over-capacity movements.

At the intersection of Sixth Line at William Halton Parkway the westbound approach deteriorates to LOS E in the PM peak hour. The movements remain over capacity, and the addition of the site trips contributes 0.03 in the AM

peak hour and 0.04 in the PM peak hour to the v/c ratio. The impacts to the intersection due to the site are minimal and the intersection already had poor operations in the existing conditions. As mentioned previously in the existing conditions operational analysis, the results are reflective of the high projected volumes based on the adjacent intersection counts. No mitigation measures will be proposed at this time given that actual existing intersection volumes may be acceptable and any proposed improvements will lead to negligible improvements given the high traffic flows.

At the intersection of Burnhamthorpe Road at William Halton Parkway, the northbound left movement deteriorates to a LOS F in the PM peak hour, however there are minimal queues and significant residual capacity available. It is expected that the poor LOS is due to the high through volumes on William Halton Parkway. This is expected to be resolved once the intersection is signalized as part of the future improvements. The overall intersection operations are acceptable in both peak hours, at LOS A overall.

At the intersection of Site Access #1 at William Halton Parkway, the shared southbound left/right movement operates at a LOS E in the AM peak hour and LOS F in the PM peak hour, however there is significant residual capacity available. It is expected that the poor LOS is due to the high through volumes on William Halton Parkway. This is expected to be resolved once the intersection is signalized as part of the future improvements. The overall intersection operations are acceptable in both peak hours, at LOS A overall. Therefore, the intersection can operate without signalization in the interim condition prior to the planned signalization in the ultimate condition.

At the intersection of Site Access #2 at William Halton Parkway, the overall intersection operations are acceptable in both peak hours, at LOS A overall.

At the intersection of Site Access #3 at William Halton Parkway, the overall intersection operations are acceptable in both peak hours, at LOS A overall.

7.3 Future Total Sensitivity Conditions

7.3.1 Future Total Sensitivity Intersection Control

To understand the future impacts of the addition of the extension of Preserve Drive to William Halton Parkway, along with the future signalization of both Preserve Drive at William Halton Parkway and Burnhamthorpe Road at William Halton Parkway, a sensitivity analysis has been undertaken. This includes the signalization of the intersections of Site Access #1 / Preserve Drive at William Halton Parkway and Burnhamthorpe Road at William Halton Parkway. The signalization of the Burnhamthorpe Road at William Halton Parkway intersection is expected to occur in the future and is consistent with the recommendations for the intersection of William Halton Parkway and Burnhamthorpe Road within the Burnhamthorpe Character Study & Municipal Class Environmental Assessment (2014).

To provide a temporary signalization plan, the cycle lengths and signal timing splits were optimized using Synchro.

7.3.2 Future Total Sensitivity Intersection Configuration

While the intersection configuration will remain mostly consistent with the existing plus site scenario, this scenario will consider the necessity of a left-turn lane for Preserve Drive via a warrant analysis. As it is expected that a left-turn lane will be required to facilitate turning movements on William Halton Parkway which has high volumes, this sensitivity scenario includes the volumes from the previous Neighbourhood 9/10/11 traffic study. This will inform the design of the left-turn lane and confirm if adequate space is provided to accommodate the back-to-

back westbound left-turn lane at Site Access #1 and eastbound left-turn lane at Site Access #2 on William Halton Parkway.

A left-turn lane warrant for the westbound left-turn was examined at Site Access #1 at William Halton Parkway. To determine if a left-turn lane is warranted, the MTO Geometric Design Standards for Ontario Highways, Section E, left-turn lane warrant nomographs was examined.

At the Site Access #1 intersection, the westbound left-turn lane was found to be warranted. This is consistent with the intersection configuration of the previous Neighbourhood 9/10/11 traffic study. The left-turn lanes were designed using Transportation Association of Canada (TAC) guidelines to determine an adequate length that includes appropriate distance from intersection centreline, minimum storage, parallel/deceleration, and taper lengths. Left-turn lane warrants have been included in Appendix F.

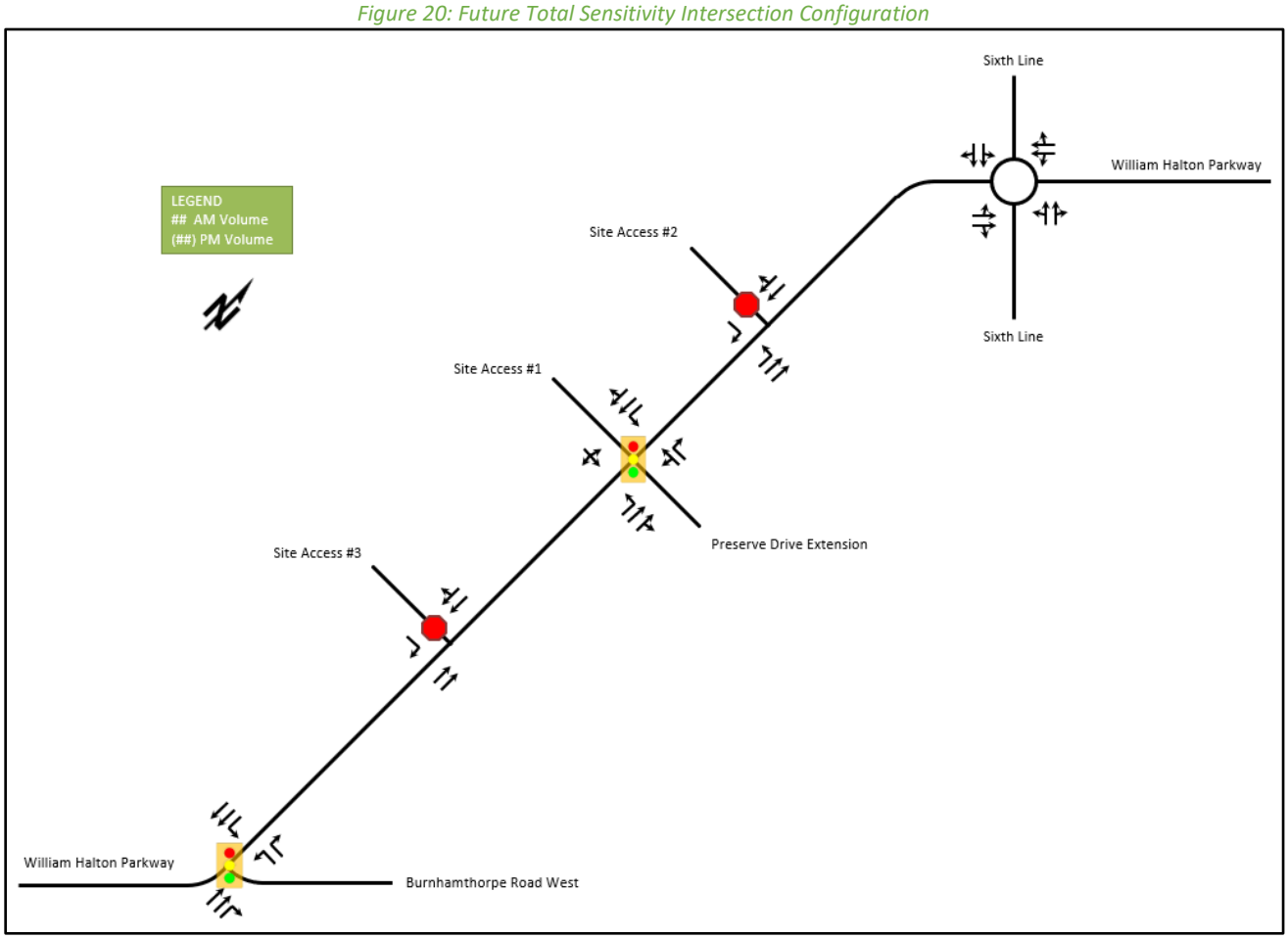
The required storage length is based on the queuing analysis. For the purposes of a preliminary design, a 15 metre storage length will be considered the minimum and will be extended based on the queuing results in the operational analysis of the intersections. The parallel length is based on the required braking distance of 75 metres for a design speed of 80 km/h in the TAC guidelines for deceleration. It is assumed that up to two thirds of the taper length can be contributed to the deceleration length. The taper length is based on the taper ratio outlined in the Halton Region Access Management Guidelines (2015) and the TAC guidelines. The taper ratio for a design speed of 80 km/h is a minimum of 15:1 based on the lane width.

The westbound left-turn lane at the signalized intersection was coded to have a total length of 122.5 metres. The 122.5 metre length includes a 15 metre distance from the intersection centreline, an assumed 15 metre minimum storage length for queuing, 40 metre parallel lane for deceleration, and a 52.5 metre taper length.

The intersection configuration of Preserve Drive was carried over from the previous Neighbourhood 9/10/11 traffic study.

The future total sensitivity intersection configuration is illustrated in Figure 20.

Figure 20: Future Total Sensitivity Intersection Configuration



7.3.3 Future Total Sensitivity Operational Analysis

The proposed development and background development volumes have been added to the existing volumes to project the overall conditions on the Study Area road network for a sensitivity scenario.

Table 15 summarizes the operational analysis the future total sensitivity scenario conditions and Table 16 summarizes the 95th percentile queue for each movement. Future total sensitivity scenario Synchro and Sidra worksheets have been included in Appendix H.

Table 15: Future Total Sensitivity Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	E	0.71	47	C	0.44	16
	Westbound	B	0.36	11	E	**0.91**	40
	Southbound	C	0.76	18	**F**	**1.25**	159
	Eastbound	**F**	**1.38**	205	C	0.59	15
	Overall	**F**	**1.38**	**96**	**F**	**1.25**	**65**
William Halton Parkway at Burnhamthorpe Road (*Signalized)*	EBT	B	0.58	11	A	0.30	8
	EBR	A	0.04	7	A	0.14	7
	WBL	C	0.74	33	C	0.56	24
	WBT	A	0.25	8	C	0.68	25
	NBL	B	0.38	18	B	0.24	17
	NBR	C	0.49	21	B	0.19	16
	Overall	**B**	**0.65**	**13**	**B**	**0.52**	**18**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Site Access #1 / Preserve Drive at William Halton Parkway (*Signalized*)	EBL	A	0.11	8	B	0.08	16
	EBT/R	B	0.81	17	B	0.46	19
	WBL	A	0.03	8	A	0.06	7
	WBT/R	A	0.36	10	B	0.81	16
	NBL/T	B	0.03	12	B	0.02	14
	NBR	B	0.01	12	B	0.01	14
	SBL/T/R	B	0.01	12	B	0.06	14
	Overall	**B**	**0.48**	**14**	**B**	**0.53**	**17**
Site Access #2 at William Halton Parkway *(Unsignalized)*	EBL	A	0.01	9	B	0.00	13
	EBT	-	0.39	0	-	0.24	0
	WBT	-	0.23	0	-	0.55	0
	WBT/R	-	0.13	0	-	0.29	0
	SBR	B	0.00	11	C	0.06	16
	Overall	**A**	**-**	**0**	**A**	**-**	**1**
Site Access #3 at William Halton Parkway *(Unsignalized)*	EBT	-	0.39	0	-	0.24	0
	WBT	-	0.23	0	-	0.57	0
	WBT/R	-	0.12	0	-	0.28	0
	SBR	A	0.00	10	B	0.00	11
	Overall	**A**	**-**	**0**	**A**	**-**	**0**

Table 16: Future Total Sensitivity Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Sixth Line at William Halton Parkway *(Roundabout)*	Northbound	-	22	13
	Westbound	-	11	112
	Southbound	-	78	283
	Eastbound	-	472	32
William Halton Parkway at Burnhamthorpe Road (*Signalized*)	EBT	-	52	23
	EBR	30	4	7
	WBL	30	#41	m26
	WBT	-	19	100
	NBL	30	31	21
	NBR	-	38	14
Site Access #1 / Preserve Drive at William Halton Parkway (*Signalized*)	EBL	55	6	m3
	EBT/R	-	77	55
	WBL	55	2	4
	WBT/R	-	27	88
	NBL/T	-	5	4
	NBR	-	2	2
	SBL/T/R	-	3	8
Site Access #2 at William Halton Parkway *(Unsignalized)*	EBL	40	1	0
	EBT	-	0	0
	WBT	-	0	0
	WBT/R	-	0	0
	SBR	-	1	2
Site Access #3 at William Halton Parkway *(Unsignalized)*	EBT	-		
	WBT	-		
	WBT/R	-		
	SBR	-		
Notes:	*# - 95th percentile queue exceeds capacity* *m - Volume for 95th percentile queue is metered by upstream signal*			

As shown above, in the future total sensitivity scenario with signalization added to intersections, the Preserve Drive extension completed with respective westbound left-turn lane provided at the William Halton Parkway intersection, and the addition of the overarching Neighbourhood 9/10/11 background development the Study Area intersections operate similarly to the existing plus site conditions.

At the intersection of Sixth Line at William Halton Parkway the critical movements remain the same. The intersection already had poor operations in both the existing and existing plus site conditions. As mentioned in the previous operational analyses, the results are reflective of the high projected volumes based on the adjacent intersection counts. No mitigation measures will be proposed at this time given that actual existing intersection volumes may be acceptable and any proposed improvements will lead to negligible improvements given the high traffic volumes.

At the intersection of Burnhamthorpe Road at William Halton Parkway, the signalization of the intersection is projected to resolve the critical movements based on LOS for both the AM and PM peak hours. The addition of the background development has resulted in critical queues for the westbound left and northbound left movements in the AM peak hour. The overall intersection operations are acceptable in both peak hours, at LOS A overall.

At the intersection of Site Access #1 at William Halton Parkway, the signalization of the intersection has resolved the critical movements based on LOS for both the AM and PM peak hours. The overall intersection operations are acceptable in both peak hours, at LOS B overall.

At the intersection of Site Access #2 at William Halton Parkway, the overall intersection operations are acceptable in both peak hours, at LOS A overall.

At the intersection of Site Access #3 at William Halton Parkway, the overall intersection operations are acceptable in both peak hours, at LOS A overall.

Notably, the queues for the back-to-back left-turn lanes at the accesses do not exceed 15 metres. Therefore, the previously assumed 15 metre required storage length minimums as part of the left-turn lane preliminary design is acceptable and no revisions are necessary. Given that the back-to-back turning lanes and overall access intersections operate well, the proposed access spacing accommodates the proposed design.

8 Recommendations

Some infrastructure improvements along William Halton Parkway have been proposed for the road network given the site context, signal warrant, and turning lane warrant analysis.

On opening day for the proposed development, the following intersection modifications have been proposed:

- An auxiliary eastbound left-turn lane and westbound left-turn lane for Site Access #1 / Preserve Drive at William Halton Parkway
- An auxiliary eastbound left-turn lane for Site Access #2 at William Halton Parkway
- Signalization of Site Access #1 / Preserve Drive at William Halton Parkway

It is recommended that the need for additional future improvements should be provided through better public transit and active transportation infrastructure which supports the increase in non-auto mode shares and possibly reduces the number of vehicles using the intersections.

9 Conclusions

This Scoped Transportation Impact Study (TIS) has examined the trip generation, access requirements, truck routing, parking, and Study Area road network impact of the proposed Mattamy SGGC Subdivision Stelumar Manufacturing Plant development. The Scoped TIS has shown the following:

a) The proposed industrial development is an approximately 150,000 square foot Stelumar Manufacturing Plant located in the Mattamy SGGC Subdivision, with constructed noted to begin in late 2026.
b) The Neighbourhood 9/10/11 development will be considered as a background development. The proposed development was part of the Neighbourhood 9/10/11 development which had a TIS completed in 2020 which was deemed outdated.
c) Traffic counts were provided by Halton Region. A per annum compound annual growth rate (CAGR) was applied to the traffic counts to project the volumes at the existing horizon. A CAGR of 2% was applied to Halton Region roads and a CAGR of 3% was applied to Town owned roads.
d) To estimate the impact of the subject development on the Study Area, a trip generation exercise has been undertaken. Given the nature of the proposed land use, passenger vehicle and truck trip generation was separated. In the AM peak hour, there were five truck and 72 passenger vehicle new peak hour two-way vehicle trips. In the PM peak hour, there were three truck trips and 93 passenger vehicle new peak hour two-way vehicle trips. Overall, 77 AM and 96 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.
e) The truck trips were assigned to the road network to illustrate how the truck traffic will follow appropriate truck routing guidelines. It was noted that Halton Regional Roads support truck traffic and are generally a part of the Town's permissive truck network. Given that William Halton Parkway is a Regional Road, the trucks have been routed to stay on the Town's permissive truck network.
f) The proposed development provides 152 at-grade parking spaces. With respect to the North Oakville's Zoning By-law requirements, this is an excess of 82 spaces. The provision of accessible parking spaces and loading spaces to be confirmed when a more detailed site plan is available. Given the excess in the high-level concept plan any adjustments to the parking supply should not affect the development.
g) There are three new accesses proposed on William Halton Parkway. The primary access is full moves proposed to align with the future Preserve Drive Extension. The secondary access is right-in/left-in/right-out proposed approximately 200 metres east of the primary access for passenger vehicles to access the

parking lot. The tertiary access is right-in/right-out proposed approximately 270 metres west of the primary access.

h) The access spacing was checked against the Halton Region Access Management guidelines and the Transportation Association of Canada (TAC) guidelines. The spacing of the primary full moves access and the tertiary right-in/right-out access meet Regional and TAC guidelines. The 200 metre spacing of the secondary access falls between the requirements of a full movement and right-in/right-out access of the Regional guidelines, but meets the requirements of the TAC guidelines. The operational analysis found that the projected queues could be accommodated by the left-turn lane designs within the proposed access spacing.

i) The development volumes were analyzed at three horizons including existing conditions, existing plus site traffic, and a future total sensitivity scenario (existing plus site and background development).

j) The intersection of Sixth Line at William Halton Parkway operated poorly in all scenarios, with projected volumes from the adjacent intersection resulting in high traffic flows that may not accurately reflect existing conditions. No mitigation measures were proposed given that and improvements would be negligible due to the high traffic volumes for the roundabout.

k) The intersection of Burnhamthorpe Road at William Halton Parkway operated well overall in both peak hours of all scenarios at a LOS of B or greater. While the northbound left approach operated with a LOS E prior to signalization, the critical movement was resolved following signalization.

l) All three site accesses operated well overall in both peak hours of all scenarios at a LOS of B or greater. While Site Access #1 operated with a shared southbound left/right with LOS E in the AM peak hour and LOS F in the PM peak hour prior to signalization, the critical movement was resolved following signalization. Site Access #1 operated well in the interim without signalization, and therefore signalization can be deferred to opening day rather than during construction.

The Mattamy SGGC Subdivision Stelumar Manufacturing Plant development will have a minor impact on the Study Area road network with all the recommended network upgrades implemented. It is therefore recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

Reviewed By:

Johnson Ly, Transportation Analyst
CGH Transportation Inc.
P: 647-781-8337
E: Johnson.Ly@CGHTransportation.com

Mark Crockford, P.Eng.
CGH Transportation Inc.
P: 905-251-4070
E: Mark.Crockford@CGHTransportation.com

Appendix A

TOR Correspondence

Technical Memorandum

To:	Town of Oakville Halton Region	Date:	2026-02-09
Cc:	Mark Crockford – CGH Transportation		
From:	Johnson Ly – CGH Transportation	Project Number:	2026-004

Re: North Oakville SGGC Plant Transportation Brief – Consolidated Terms of Reference

CGH Transportation has been retained to undertake transportation consulting services for the proposed Stelumar Advanced Manufacturing Inc. Plant in the proposed Mattamy SGGC Subdivision located in North Oakville. The modular home manufacturing facility development project is undergoing accelerated construction timelines with support from the Town of Oakville Mayor. This project schedule currently projects a submission of the Zoning and Draft Plan of Subdivision in 2026 Q1, with servicing and building construction starting in 2026 Q3.

The current plan will only consider the 4.36-hectare Block 3 of the Mattamy SGGC Subdivision, which will include the modular home manufacturing facility expected to ship approximately 20 modular boxes per day. The employment lands in Block 4 and Block 5 will be included in this draft plan application but currently have limited information available. Further commentary on Block 4 and Block 5 will be provided in a future submission when more details are available. The employment lands in Block 2 and the residential uses in the Block 7 transitional area will not be included in this draft plan and will be deferred to a future application.

The subject development is located on the north side of the segment of William Halton Parkway between Burnhamthorpe Road and Sixth Line, south of Highway 407. There is an approximate 150,000 square foot industrial building proposed, supported by approximately 152 at-grade parking spaces. The exact GFA and number of parking spaces is subject to refinement.

The is one access proposed on the north side of William Halton Parkway, expected to align with the proposed Preserve Drive extension. The preliminary concept plan is shown in Attachment 1. Please note this concept plan is subject to change and is considered a draft. It has been circulated for discussion purposes only.

The following consolidated Terms of Reference has been prepared to outline the scope of work to be reviewed by the Halton Region (the “Region”) and the Town of Oakville (the “Town”). This includes the Terms of Reference comments circulated to Mattamy from the Region and Town. Please let us know if you have any comments or questions.

Transportation Impact Study Requirements (TIS):

The study will be prepared in accordance with the Halton Region's *Guidelines for the Preparation of Traffic Impact Studies* and North Oakville's *Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies*. While this development is located in the Neighbourhood 9/10/11 area as defined in the TIS previously submitted by CGH Transportation in 2022, it has been noted to be outdated by Region and Town staff. The scope of work outlined in this Terms of Reference will consider a Scoped Transportation Impact Study or Transportation Brief.

Study Area:

- An overview of the transportation system existing conditions will be documented (including transit, cycling, pedestrian, and automobile modes).
- A summary of existing transportation planning policies within the Study Area will be identified.
- An overview of the Study Area road network will be provided including the road classification and descriptions of:
    - William Halton Parkway
    - Burnhamthorpe Road
    - Sixth Line
- The following intersections will be included in the Transportation Impact Study:
    - William Halton Parkway at Sixth Line – (Existing Roundabout)
    - William Halton Parkway at Burnhamthorpe Road – (Existing Unsignalized)
    - William Halton Parkway at Site Access / Preserve Drive Extension – (Future)

Analysis Assumptions:

- Horizon years: 2026 (Existing) and Buildout (Addition of Site Trips).
- AM and PM peak hours will be analyzed.

Existing Study Area Multimodal Conditions:

- Turning Movement Count (TMC) data for all Study Area intersections will be used to determine existing 2026 volumes. The Halton Region has provided TMCs for the intersections of William Halton Parkway at Sixth Line (October 2024) and William Halton Parkway at Burnhamthorpe Road (November 2025).
- There are currently no signalized intersections that require Signal Timing Plans to be requested from Halton Region's and the Town of Oakville's traffic signal operations division.

Planned Transportation Improvements:

- The William Halton Parkway Extension Project creates a new east-west corridor that will replace the regional arterial status that is currently held by Burnhamthorpe Road. The corridor is planned to include sidewalks, multi-use pathways, and bike lanes. The project was projected to be completed following two phases. Phase 1 of the William Halton Parkway Extension Project between Sixth Line and Ninth Line was completed in November 2020. Phase 2 – Stage 2 of the project was completed in November 2023, while Stage 1 was anticipated to be completed by December 2024. Phase 2 in its entirety is projected to be completed in June 2026. The east-west through traffic travel pattern within the Study Area for this project will potentially change in the future horizons.
    - Following the completion of Phase 2, Burnhamthorpe Road will be under the jurisdiction of the Town of Oakville as a character road. The *Burnhamthorpe Road Character Study & Municipal Class Environmental Assessment (2014)* was conducted to develop a new road design for Burnhamthorpe Road between Ninth Line and Sixteen Mile Creek. As construction for Burnhamthorpe Road is expected to begin in 2027, the improvements along Burnhamthorpe Road will be considered in all future analysis horizons.

Background Growth:

- **The recommended growth rate is requested for the Regional roads and Town roads.**
    - Based on previous reports, a background CAGR of 2% between 2025 and 2031, and 1% between 2031 and 2041 was used for the Halton Region roads and a CAGR of 3% between 2025 and 2045 was applied to Town owned roads.

Development Site Trip Distribution and Assignment:

- Trip Generation: ITE Trip Generation Manual 12th Edition and Site Projections (Employee Count, Shift Times, etc.)
    - Total trip generation of the proposed development will be determined using ITE 12th Edition trip generation separated by auto and truck volumes.
    - The number of employees and shift times will indicate the impact of the development during the peak periods, as operations may occur primarily in off-peak hours.
- Trip Distribution and Assignment: Transportation Tomorrow Survey (TTS), existing traffic routing patterns and access to major transportation infrastructure.
    - As the industrial uses of the site are projected to generate a higher volume of heavy vehicle traffic, the truck routing will be reviewed in detail.
    - The truck movements to and from the site will be examined to determine any potential impacts on roadways, intersections, and residential neighbourhoods.
    - As the site is expected to primarily utilize the Regional Road network made of major arterial roadways, it is expected that major truck routing impacts will be minimized.
    - Any necessary mitigation measures will be included in the recommendations.

Development Design:

- The site access for the development is the north leg of the future intersection of the Preserve Drive extension (noted as Street 'A' on the Draft Plan of Subdivision) and William Halton Parkway.
    - Access geometrics will be confirmed according to the Halton Region's *Access Management Guideline (2015)* and the Transportation Association of Canada (TAC) *Geometric Design Guideline (2017).* The access spacing, throat length, curb radii, and driveway width will be reviewed.
- Required/recommended road improvements either as a result of the development impacts, or general non-development improvements will be identified.
    - The necessity of signalization will be confirmed, with the construction of signalization infrastructure to be implemented when the factory is operational.
    - This includes the need for left-turn lanes and right-turn lanes/tapers will be confirmed.
    - Based on the above the design, cross-section, right-of-way requirements, and lane-configuration of the north leg of the access intersection will be developed.
- A parking review based on the proposed land uses will be completed in accordance with the applicable Zoning By-law requirements. If necessary, a parking plan will be considered.
- Site circulation will be evaluated using AutoTURN Vehicle Turning Simulation Software for the passenger vehicles and heavy vehicles. Turning templates drawings will be developed demonstrating the maneuverability of design vehicles on internal driveways, parking/loading spaces, and the site access.

The Transportation Brief will include:

- Site Plan and Map
- Type and Size of Proposed Land Uses
- Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services)
- Existing Traffic Conditions (Site Operating Characteristics, Analysis Periods)
- Site Generated Traffic (Trip Generation/Distribution/Assignment, Truck Routing)
- Existing Plus Site Traffic Demand
- Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios)
- Traffic Impacts (Tables – Total Traffic with/without Mitigation)
- Development Design (Access Review, Access Design, Parking Review)
- Recommendations
- Conclusions

Johnson Ly

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: February 19, 2026 4:20 PM
To: Johnson Ly; Krusto, Matt; Syed Rizvi; robert.thun@oakville.ca
Cc: Mark Crockford; Tyrone Dollano; Mike Dickie; jorser@dsel.ca; constance@korsiak.com; leigh.musson@oakville.ca; Paul Barrette; catherine.buckerfield@oakville.ca; khalil.barakzai@oakville.ca
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference
Attachments: 2026-004 Mattamy SGGC Plant Terms of Reference 2026-02-09.pdf

Hello Johnson,
The proposed Terms of Reference are satisfactory to the Region. All of our preliminary comments have been incorporated.

Thank you for circulating,

Ayesha

From: Johnson Ly <johnson.ly@cghtransportation.com>
Sent: Tuesday, February 10, 2026 2:30 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Syed Rizvi <syed.rizvi@oakville.ca>; robert.thun@oakville.ca
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Tyrone Dollano <tyrone.dollano@cghtransportation.com>; Mike Dickie <mike.dickie@mattamycorp.com>; jorser@dsel.ca; constance@korsiak.com; leigh.musson@oakville.ca; Paul Barrette <paul.barrette@oakville.ca>; catherine.buckerfield@oakville.ca; khalil.barakzai@oakville.ca
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Hello all,

Please find attached our Terms of Reference for the Mattamy SGGC project for your review.
We have incorporated all the preliminary comments from the previous emails including the truck routing concerns.

Please let us know if you have any questions or comments.

Kind regards,

Johnson Ly, Transportation Analyst
CGH Transportation Inc.
P: 647-781-8337
E: Johnson.Ly@CGHTransportation.com

From: Robert Thun <robert.thun@oakville.ca>
Sent: Friday, January 30, 2026 8:59 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>; 'Mike Dickie' <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>; Paul Barrette <paul.barrette@oakville.ca>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>; Khalil Barakzai <khalil.barakzai@oakville.ca>
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Hi Mike

In addition to the comments from Halton Region and town Transportation staff, a matter was raised by Councillor Nanda at the PIM last night related to truck movements to and from the modular site and any potential impacts on residential neighbourhoods . This also needs to be assessed.

Thanks Rob

Robert Thun, **B.Sc., MCIP, RPP**
Senior Planner, **Current Planning - West District**
Planning & Development
Town of Oakville | 905-845-6601, ext. 3029 | f: 905-338-4414 | www.oakville.ca

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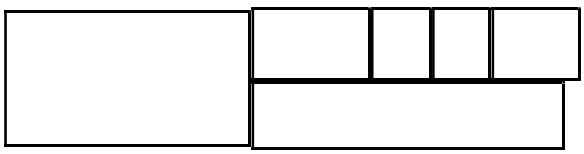
http://www.oakville.ca/privacy.html

Ayesha Khan
Project Manager I – Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866



From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Friday, January 30, 2026 8:53 AM
To: 'Mike Dickie' <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>; Paul Barrette <paul.barrette@oakville.ca>; Robert Thun <robert.thun@oakville.ca>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>; Khalil Barakzai <khalil.barakzai@oakville.ca>
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Hi Mike,

The preliminary transportation staff review comments on the development proposal from Halton Region and Town of Oakville are provided below:

Halton Region Comments

Below please find our Transportation Development Review's preliminary comments. Once the applicant's 1st draft terms of reference is submitted, we will have additional comments.

- Based on the previous Transportation Impact Study dated May 2020 (Neighbourhood 9/10/11), this study is now considered outdated. Additionally, the north leg of the William Halton Parkway at Preserve Drive extension/Mattamy access was not part of the 2020 study. Therefore a new updated study will be required for the approval of this development, as part of the Rezoning/DPS application and not deferred to Site Plan.
- The new study must assess the Mattamy north side access requirements for the Modular Plant. This includes but not limited to: *potential need for EBLT lane, WBLT lane, RT lanes/tapers, traffic signals, design/cross-section of the north access*.
- It is the preference of Halton Region and the Town of Oakville that this access is to be signalized for opening day - this based on providing safe access to the Regional road network and to guarantee safe operating conditions. This has been Halton's similar approach to other locations where low to moderate site volume access to the Regional road was approved.
- For the Mattamy North Side Modular site trip generation, please ensure proxy site volumes are used for the assessment of the intersection. If there are no proxy site examples available, please clearly outline how the site volumes are derived.
- Halton Region's study area intersections to be included as part of the new study include:
    - WHP at Preserve Dr extension
    - WHP at Sixth Line
    - WHP at Burnhamthorpe Rd

Attached for use in the new Transportation Study are the 2025 turning movement counts for the William Halton Parkway at Burnhamthorpe Road intersection and, the 2024 turning movement count for the William Halton Parkway at Sixth Line intersection.

Town of Oakville Comments

- It is noted that Neighbourhood 9/10/11 Traffic Impact Study does not covers the portion of proposed development north of WHP. The TIS should be updated accordingly to include all vehicular traffic and to access the impacts of complete development on the adjacent transportation network.
- The TIS shall evaluate transportation impacts associated with all proposed lands including employment uses, transitway and supporting infrastructure.
- The TIS shall confirm roadway cross-sections, right-of-way requirements, lane configurations, turning lanes, and auxiliary lanes required to support the development.
- Town staff supports Halton Region's requirement that the William Halton Parkway and Preserve Drive intersection be signalized for opening day. Signalization is necessary to ensure safe and efficient heavy vehicular traffic, pedestrian, and cyclist movements, particularly given the operating characteristics of the Regional roadway and the proposed site access configuration.
- Oversize vehicle movements associated with the site construction activities shall be subject to the applicable authorities oversize/overweight permitting requirements. All required permits and approved routing must be obtained prior to the commencement of work and site operations. The routing plan shall demonstrate compliance with roadway geometry and municipal infrastructure constraints.
- A parking plan shall be provided for all land uses in accordance with the applicable Zoning By-law requirements.

Please feel free to contact me if you have any questions.

Thanks,

Syed

Syed Rizvi, **M.Sc., P. Eng**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Mike Dickie <Mike.Dickie@mattamycorp.com>
Sent: Thursday, January 29, 2026 10:03 AM
To: Khalil Barakzai <khalil.barakzai@oakville.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>
Subject: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Thank you Matt

Good morning Khalil/Syed,

I was just in a meeting with Matt and other Region staff members. Matt advised that the Region has just provided a ToR for our property. can you please forward to myself and Mark at your earliest convenience. Mark is currently working on updating his previous TIS

Many thanks

Mike

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: Thursday, January 29, 2026 9:37 AM
To: Mike Dickie <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>
Subject: Re: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway

Hi Mike,

Here is Khalil's contact info at the Town : khalil.barakzai@oakville.ca

Khalil Barakzai, (He/Him), P.Eng., PMP

Manager - Transportation Planning

Transportation and Engineering

Matt

From: Hilder, Alex
Sent: 28 January 2026 3:34 PM
To: Hilder, Alex <Alex.Hilder@halton.ca>; MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>; Kenth, Dave <Dave.Kenth@halton.ca>; Williamson, John <John.Williamson@halton.ca>; Stewart, Nathan <Nathan.Stewart@halton.ca>; McIntosh, John <John.McIntosh@halton.ca>; Mike Dickie <mike.dickie@mattamycorp.com>; Jesse Orser <jorser@dsel.ca>; Brian Betts <bbetts@dsel.ca>
Cc: Brian Martin <Brian.Martin@Stelumar.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway
When: 29 January 2026 09:00-10:00.
Where: Microsoft Teams Meeting

Matt Krusto
Supervisor, Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

-----Original Appointment-----
From: Hilder, Alex <Alex.Hilder@halton.ca>
Sent: Wednesday, January 28, 2026 2:15 PM
To: Hilder, Alex; Hilder, Alex; MacKenzie, Ronald; Kenth, Dave; Williamson, John; Stewart, Nathan; McIntosh, John; Mike Dickie; Jesse Orser; Brian Betts
Cc: Brian Martin; Khan, Ayesha
Subject: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway
When: Thursday, January 29, 2026 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

From: Hilder, Alex <Alex.Hilder@halton.ca>
Sent: 23 January 2026 15:42:10 (UTC-05:00) Eastern Time (US & Canada)
To: MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>; Kenth, Dave <Dave.Kenth@halton.ca>; Williamson, John <John.Williamson@halton.ca>; Stewart, Nathan <Nathan.Stewart@halton.ca>; McIntosh, John <John.McIntosh@halton.ca>; Mike Dickie <mike.dickie@mattamycorp.com>; Jesse Orser <jorser@dsel.ca>; Brian Betts <bbetts@dsel.ca>
Cc: Brian Martin <Brian.Martin@Stelumar.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Subject: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway
When: 29 January 2026 09:00-10:00.
Where: Microsoft Teams Meeting

Hello,

Mattamy SGGC Subdivision – Stelumar Manufacturing Plant (William Halton Parkway)

Mattamy would like to meet to provide a high-level overview of the Mattamy SGGC Subdivision project and discuss any initial questions or concerns from the Region's Road Operations group and the Project Manager for the William Halton Parkway corridor in north Oakville regarding the anticipated works along William Halton Parkway.

Background

A high-priority Mattamy development project will be coming to Development Services early this year with accelerated construction timelines. The subdivision is located in north Oakville, with Block 3 identified as the initial area of focus.

Mattamy plans to construct a modular home manufacturing facility capable of producing more than 5,000 modules annually to support their GTA subdivisions. The Town of Oakville, particularly the Mayor, has expressed strong support for advancing the project quickly.

The current schedule includes a zoning and draft plan of subdivision submission in Q1, followed by servicing and building construction beginning in Q3.

Discussions with Regional Water Operations have identified Capital Project W17, planned watermain works along Burnhamthorpe Road and William Halton Parkway from Neyagawa Boulevard to Sixth Line, as an important infrastructure component supporting water supply in the area.

Servicing for the Mattamy SGGC Subdivision will include local watermain and sanitary sewer extensions along a future north–south local road, as well as watermain works on William Halton Parkway to connect to the 1200 mm transmission main at Burnhamthorpe Road and William Halton Parkway, providing a second feed to the Stelumar facility which will be a portion of W17.

Looking forward to the discussion.

Alex

Microsoft Teams meeting

Join:

https://teams.microsoft.com/meet/23562515268552?p=nUzAq2bKOcwT5t6DOe

Meeting ID: 235 625 152 685 52

Passcode: JK27qV6v

Need help? | System reference

Dial in by phone

+1 437-703-4196,,141505522# Canada, Toronto

Find a local number

Phone conference ID: 141 505 522#

For organisers: Meeting options | Reset dial-in PIN

Johnson Ly

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: February 25, 2026 2:36 PM
To: Johnson Ly; Khan, Ayesha; Krusto, Matt; Robert Thun
Cc: Mark Crockford; Tyrone Dollano; Mike Dickie; jorser@dsel.ca; constance@korsiak.com; Leigh Musson; Paul Barrette; Catherine Buckerfield; Khalil Barakzai
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Follow Up Flag: Follow up
Flag Status: Completed

Hi Johnson,

Thank you for sharing the Terms of Reference (TOR). Transportation staff have completed the review of the submitted TOR for the proposed project.

Overall, the TOR addresses the majority of the preliminary comments provided. However, the following item remains outstanding and should be incorporated into the Traffic Impact Study (TIS):

- **Oversize/Overweight Vehicle Movements:**
  Oversize and overweight vehicle movements associated with site construction activities shall comply with all applicable permitting requirements from the relevant authorities. All necessary permits and approved routing must be secured prior to the commencement of construction and site operations. The proposed routing plan should clearly demonstrate compatibility with roadway geometry and municipal infrastructure constraints.

Thanks,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Johnson Ly <johnson.ly@cghtransportation.com>
Sent: Tuesday, February 10, 2026 2:30 PM
To: Khan, Ayesha <ayesha.khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Syed Rizvi <syed.rizvi@oakville.ca>; Robert Thun <robert.thun@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Tyrone Dollano <tyrone.dollano@cghtransportation.com>; Mike Dickie <mike.dickie@mattamycorp.com>; jorser@dsel.ca; constance@korsiak.com; Leigh Musson <leigh.musson@oakville.ca>; Paul Barrette <paul.barrette@oakville.ca>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>; Khalil Barakzai <khalil.barakzai@oakville.ca>
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Hello all,

Please find attached our Terms of Reference for the Mattamy SGGC project for your review.
We have incorporated all the preliminary comments from the previous emails including the truck routing concerns.

Please let us know if you have any questions or comments.

Kind regards,

Johnson Ly, Transportation Analyst
CGH Transportation Inc.
P: 647-781-8337
E: Johnson.Ly@CGHTransportation.com

From: Robert Thun <robert.thun@oakville.ca>
Sent: Friday, January 30, 2026 8:59 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>; 'Mike Dickie' <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>; Paul Barrette <paul.barrette@oakville.ca>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>; Khalil Barakzai <khalil.barakzai@oakville.ca>
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

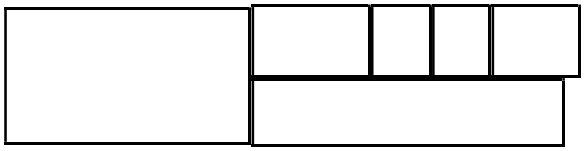
Hi Mike

In addition to the comments from Halton Region and town Transportation staff, a matter was raised by Councillor Nanda at the PIM last night related to truck movements to and from the modular site and any potential impacts on residential neighbourhoods . This also needs to be assessed.

Thanks Rob

Robert Thun, B.Sc., MCIP, RPP
Senior Planner, Current Planning - West District
Planning & Development
Town of Oakville | 905-845-6601, ext. 3029 | f: 905-338-4414 | www.oakville.ca

Ayesha Khan
Project Manager I – Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866



From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: Friday, January 30, 2026 8:53 AM
To: 'Mike Dickie' <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>; Paul Barrette <paul.barrette@oakville.ca>; Robert Thun <robert.thun@oakville.ca>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>; Khalil Barakzai <khalil.barakzai@oakville.ca>
Subject: RE: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Hi Mike,

The preliminary transportation staff review comments on the development proposal from Halton Region and Town of Oakville are provided below:

Halton Region Comments

Below please find our Transportation Development Review's preliminary comments. Once the applicant's 1st draft terms of reference is submitted, we will have additional comments.

- Based on the previous Transportation Impact Study dated May 2020 (Neighbourhood 9/10/11), this study is now considered outdated. Additionally, the north leg of the William Halton Parkway at Preserve Drive extension/Mattamy access was not part of the 2020 study. Therefore a new updated study will be required for the approval of this development, as part of the Rezoning/DPS application and not deferred to Site Plan.
- The new study must assess the Mattamy north side access requirements for the Modular Plant. This includes but not limited to: *potential need for EBLT lane, WBLT lane, RT lanes/tapers, traffic signals, design/cross-section of the north access.*
- It is the preference of Halton Region and the Town of Oakville that this access is to be signalized for opening day - this based on providing safe access to the Regional road network and

to guarantee safe operating conditions. This has been Halton's similar approach to other locations where low to moderate site volume access to the Regional road was approved.
- For the Mattamy North Side Modular site trip generation, please ensure proxy site volumes are used for the assessment of the intersection. If there are no proxy site examples available, please clearly outline how the site volumes are derived.
- Halton Region's study area intersections to be included as part of the new study include:
    - WHP at Preserve Dr extension
    - WHP at Sixth Line
    - WHP at Burnhamthorpe Rd

Attached for use in the new Transportation Study are the 2025 turning movement counts for the William Halton Parkway at Burnhamthorpe Road intersection and, the 2024 turning movement count for the William Halton Parkway at Sixth Line intersection.

Town of Oakville Comments

- It is noted that Neighbourhood 9/10/11 Traffic Impact Study does not covers the portion of proposed development north of WHP. The TIS should be updated accordingly to include all vehicular traffic and to access the impacts of complete development on the adjacent transportation network.
- The TIS shall evaluate transportation impacts associated with all proposed lands including employment uses, transitway and supporting infrastructure.
- The TIS shall confirm roadway cross-sections, right-of-way requirements, lane configurations, turning lanes, and auxiliary lanes required to support the development.
- Town staff supports Halton Region's requirement that the William Halton Parkway and Preserve Drive intersection be signalized for opening day. Signalization is necessary to ensure safe and efficient heavy vehicular traffic, pedestrian, and cyclist movements, particularly given the operating characteristics of the Regional roadway and the proposed site access configuration.
- Oversize vehicle movements associated with the site construction activities shall be subject to the applicable authorities oversize/overweight permitting requirements. All required permits and approved routing must be obtained prior to the commencement of work and site operations. The routing plan shall demonstrate compliance with roadway geometry and municipal infrastructure constraints.
- A parking plan shall be provided for all land uses in accordance with the applicable Zoning By-law requirements.

Please feel free to contact me if you have any questions.

Thanks,

Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer

Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Mike Dickie <Mike.Dickie@mattamycorp.com>
Sent: Thursday, January 29, 2026 10:03 AM
To: Khalil Barakzai <khalil.barakzai@oakville.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>; Leigh Musson <leigh.musson@oakville.ca>; Mark Crockford <mark.crockford@cghtransportation.com>; Constance Ratelle <constance@korsiak.com>; Jesse Orser <jorser@dsel.ca>
Subject: [EXTERNAL] Mattamy SGGC Transportation Terms of Reference

Thank you Matt

Good morning Khalil/Syed,

I was just in a meeting with Matt and other Region staff members. Matt advised that the Region has just provided a ToR for our property. can you please forward to myself and Mark at your earliest convenience. Mark is currently working on updating his previous TIS

Many thanks

Mike

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: Thursday, January 29, 2026 9:37 AM
To: Mike Dickie <Mike.Dickie@mattamycorp.com>
Cc: Khan, Ayesha <Ayesha.Khan@halton.ca>
Subject: Re: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway

Hi Mike,

Here is Khalil's contact info at the Town : khalil.barakzai@oakville.ca

Khalil Barakzai, (He/Him), P.Eng., PMP

Manager - Transportation Planning

Transportation and Engineering

Matt

From: Hilder, Alex
Sent: 28 January 2026 3:34 PM
To: Hilder, Alex <Alex.Hilder@halton.ca>; MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>; Kenth, Dave <Dave.Kenth@halton.ca>; Williamson, John <John.Williamson@halton.ca>; Stewart, Nathan <Nathan.Stewart@halton.ca>; McIntosh, John <John.McIntosh@halton.ca>; Mike Dickie <mike.dickie@mattamycorp.com>; Jesse Orser <jorser@dsel.ca>; Brian Betts <bbetts@dsel.ca>
Cc: Brian Martin <Brian.Martin@Stelumar.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway
When: 29 January 2026 09:00-10:00.
Where: Microsoft Teams Meeting

Matt Krusto
Supervisor, Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

-----Original Appointment-----
From: Hilder, Alex <Alex.Hilder@halton.ca>
Sent: Wednesday, January 28, 2026 2:15 PM
To: Hilder, Alex; Hilder, Alex; MacKenzie, Ronald; Kenth, Dave; Williamson, John; Stewart, Nathan; McIntosh, John; Mike Dickie; Jesse Orser; Brian Betts
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Sent: 23 January 2026 15:42:10 (UTC-05:00) Eastern Time (US & Canada)
To: MacKenzie, Ronald <Ronald.MacKenzie@halton.ca>; Kenth, Dave <Dave.Kenth@halton.ca>; Williamson, John <John.Williamson@halton.ca>; Stewart, Nathan <Nathan.Stewart@halton.ca>; McIntosh, John <John.McIntosh@halton.ca>; Mike Dickie <mike.dickie@mattamycorp.com>; Jesse Orser <jorser@dsel.ca>; Brian Betts <bbetts@dsel.ca>
Cc: Brian Martin <Brian.Martin@Stelumar.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Subject: [EXTERNAL] Discussion on Mattamy SGGC Servicing and Upcoming Works on William Halton Parkway
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Looking forward to the discussion.

Alex

Microsoft Teams meeting

Join:

https://teams.microsoft.com/meet/23562515268552?p=nUzAq2bKOcwT5t6DOe

Meeting ID: 235 625 152 685 52

Passcode: JK27qV6v

Need help? | System reference

Dial in by phone

+1 437-703-4196,,141505522# Canada, Toronto

Find a local number

Phone conference ID: 141 505 522#

For organisers: Meeting options | Reset dial-in PIN

Appendix B

Turning Movement Count Data

William Halton Pkwy @ Sixth Line

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

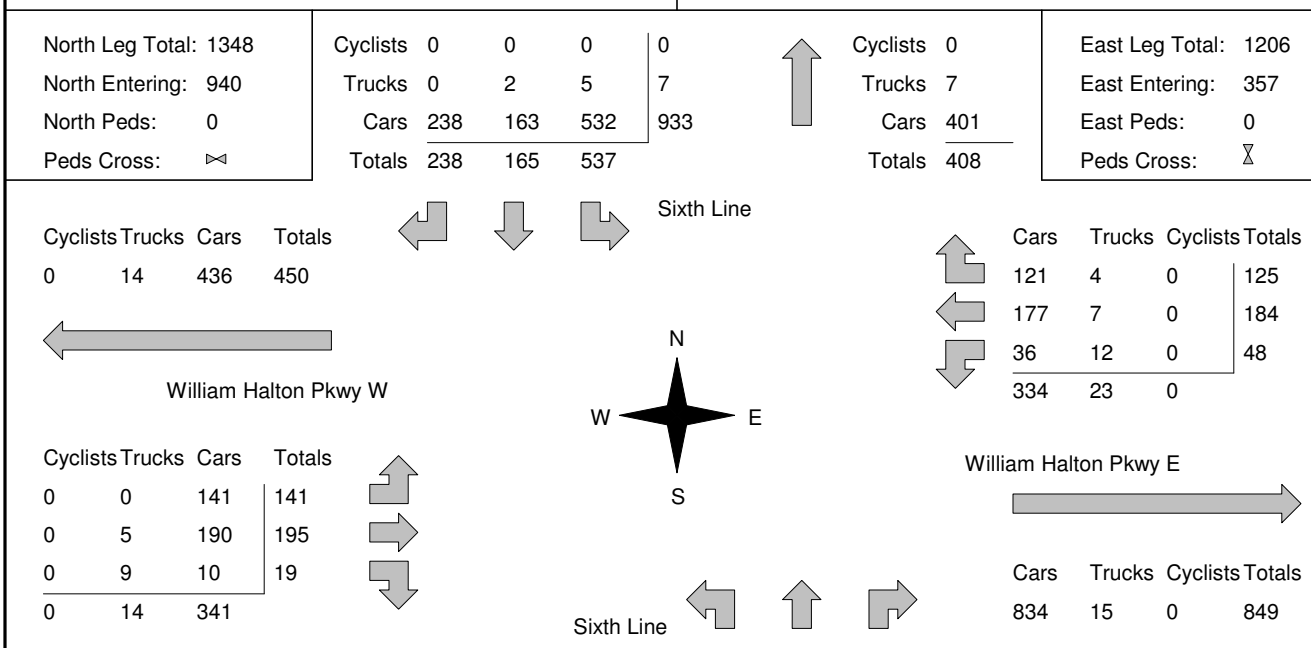
Municipality: Halton Region
Site #: 1006781100
Intersection: Sixth Line & William Halton Pkwy
TFR File #: 1
Count date: 24-Oct-2024

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Sixth Line runs N/S



Comments

William Halton Pkwy @ Sixth Line

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

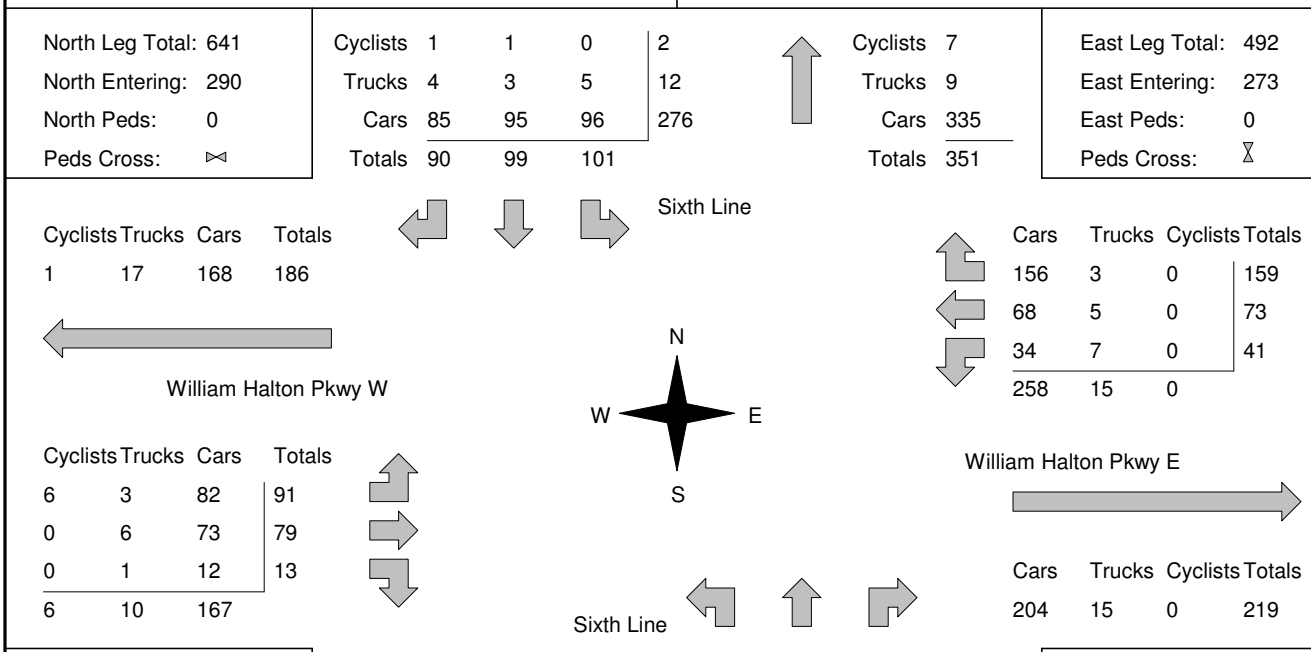
Municipality: Halton Region
Site #: 1006781100
Intersection: Sixth Line & William Halton Pkwy
TFR File #: 1
Count date: 24-Oct-2024

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Sixth Line runs N/S



Comments

William Halton Pkwy @ Sixth Line

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

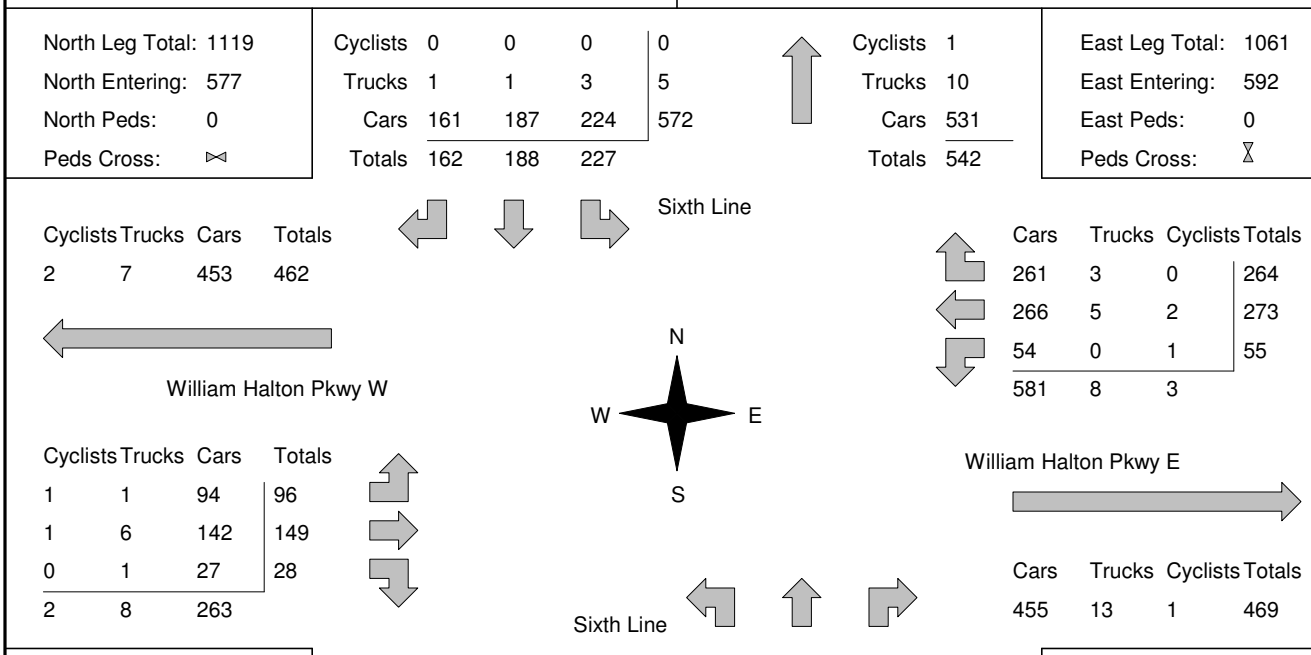
Municipality: Halton Region
Site #: 1006781100
Intersection: Sixth Line & William Halton Pkwy
TFR File #: 1
Count date: 24-Oct-2024

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Sixth Line runs N/S



Comments

William Halton Pkwy @ Sixth Line

Total Count Diagram

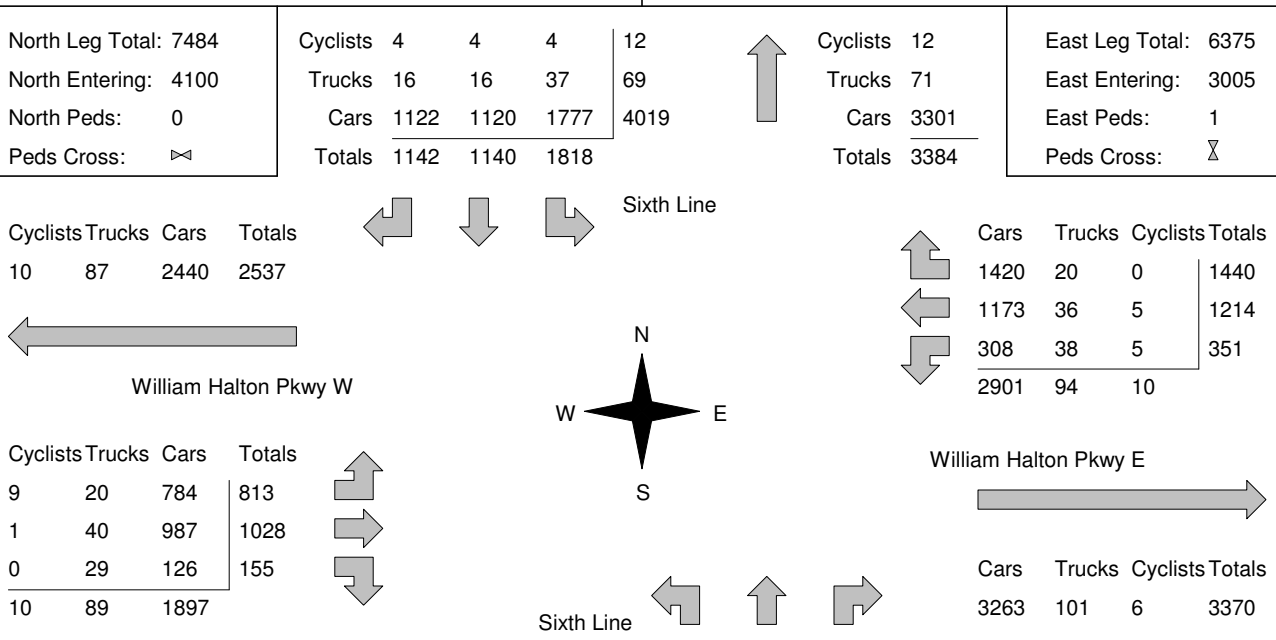
Municipality: Halton Region
Site #: 1006781100
Intersection: Sixth Line & William Halton Pkwy
TFR File #: 1
Count date: 24-Oct-2024

Weather conditions:
Clear/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: Sixth Line runs N/S



Comments

William Halton Pkwy @ Burnhamthorpe Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Halton Region
Site #: 1006820100
Intersection: William Halton Pkwy & Burnhamthor
TFR File #: 1
Count date: 12-Nov-2025

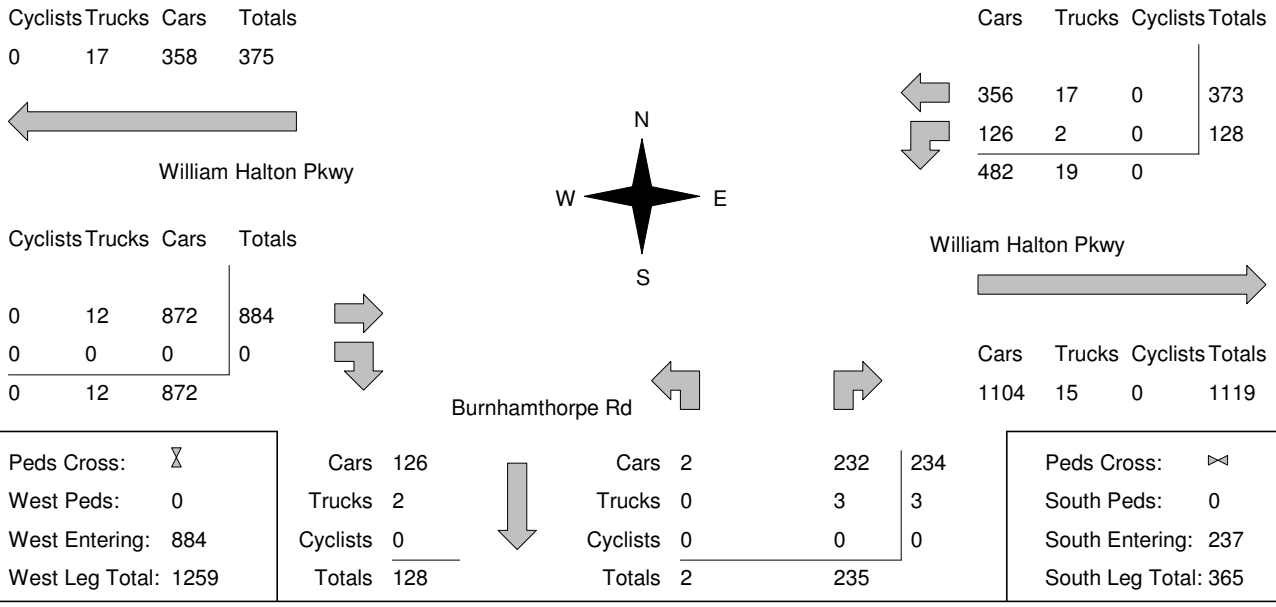
Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: William Halton Pkwy runs W/E

East Leg Total: 1620
East Entering: 501
East Peds: 0
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 884
West Leg Total: 1259

Cars 126
Trucks 2
Cyclists 0
Totals 128

Cars 2 232 234
Trucks 0 3 3
Cyclists 0 0 0
Totals 2 235

Peds Cross:
South Peds: 0
South Entering: 237
South Leg Total: 365

Comments

William Halton Pkwy @ Burnhamthorpe Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Halton Region
Site #: 1006820100
Intersection: William Halton Pkwy & Burnhamthor
TFR File #: 1
Count date: 12-Nov-2025

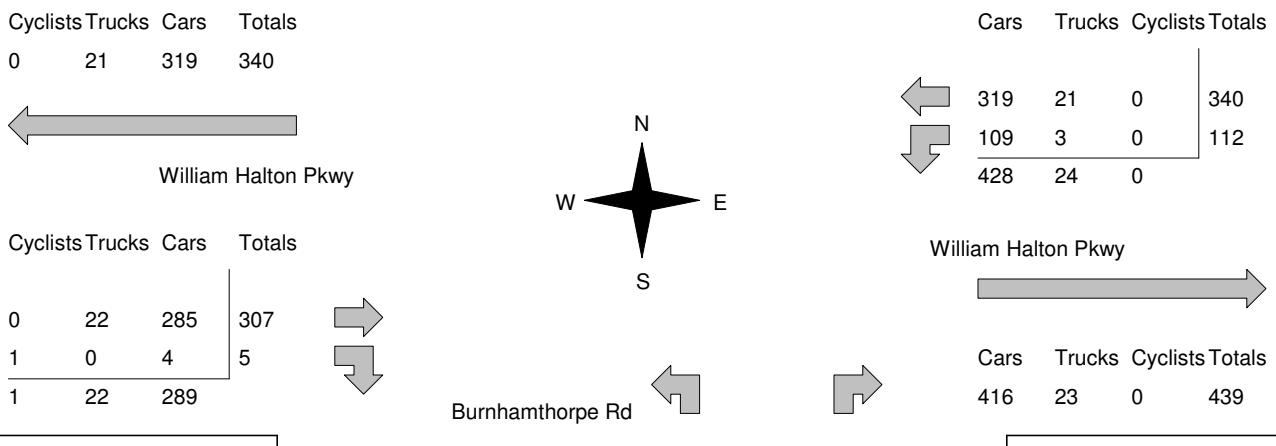
Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: William Halton Pkwy runs W/E

East Leg Total: 891
East Entering: 452
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 312
West Leg Total: 652

Cars 113
Trucks 3
Cyclists 1
Totals 117

Cars 0 131 131
Trucks 0 1 1
Cyclists 0 0 0
Totals 0 132

Peds Cross: ⋈
South Peds: 0
South Entering: 132
South Leg Total: 249

Comments

William Halton Pkwy @ Burnhamthorpe Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Halton Region
Site #: 1006820100
Intersection: William Halton Pkwy & Burnhamthor
TFR File #: 1
Count date: 12-Nov-2025

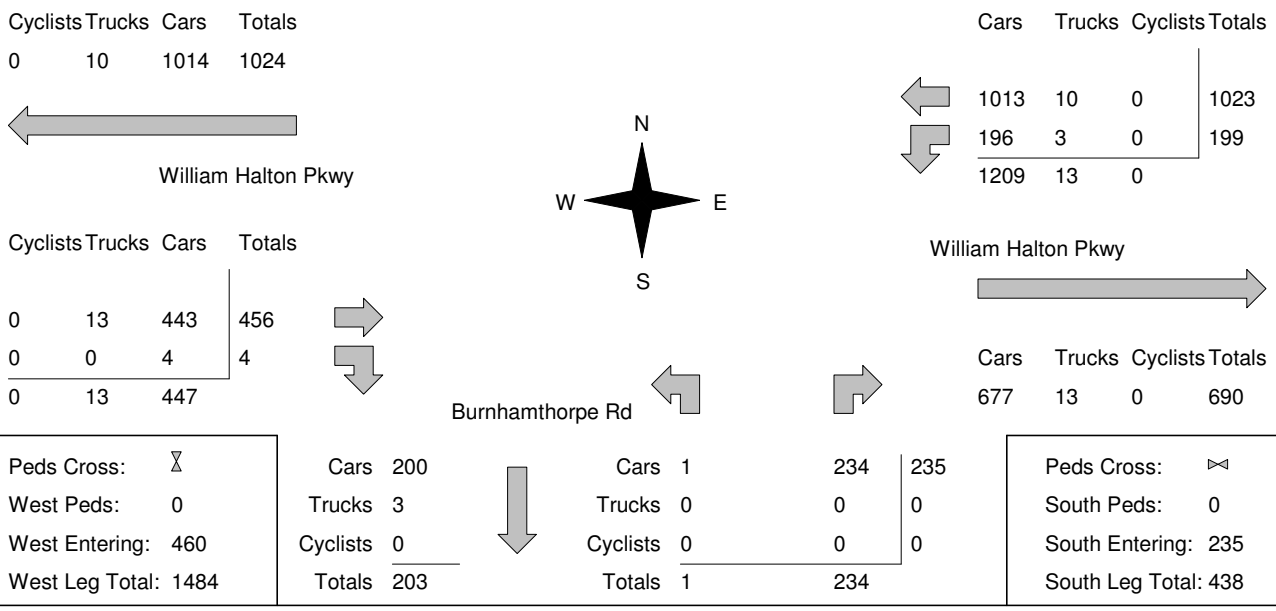
Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: William Halton Pkwy runs W/E

East Leg Total: 1912
East Entering: 1222
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 460
West Leg Total: 1484

Cars 200
Trucks 3
Cyclists 0
Totals 203

Cars 1 234 235
Trucks 0 0 0
Cyclists 0 0 0
Totals 1 234

Peds Cross: ⋈
South Peds: 0
South Entering: 235
South Leg Total: 438

Comments

William Halton Pkwy @ Burnhamthorpe Rd

Total Count Diagram

Municipality: Halton Region
Site #: 1006820100
Intersection: William Halton Pkwy & Burnhamthor
TFR File #: 1
Count date: 12-Nov-2025

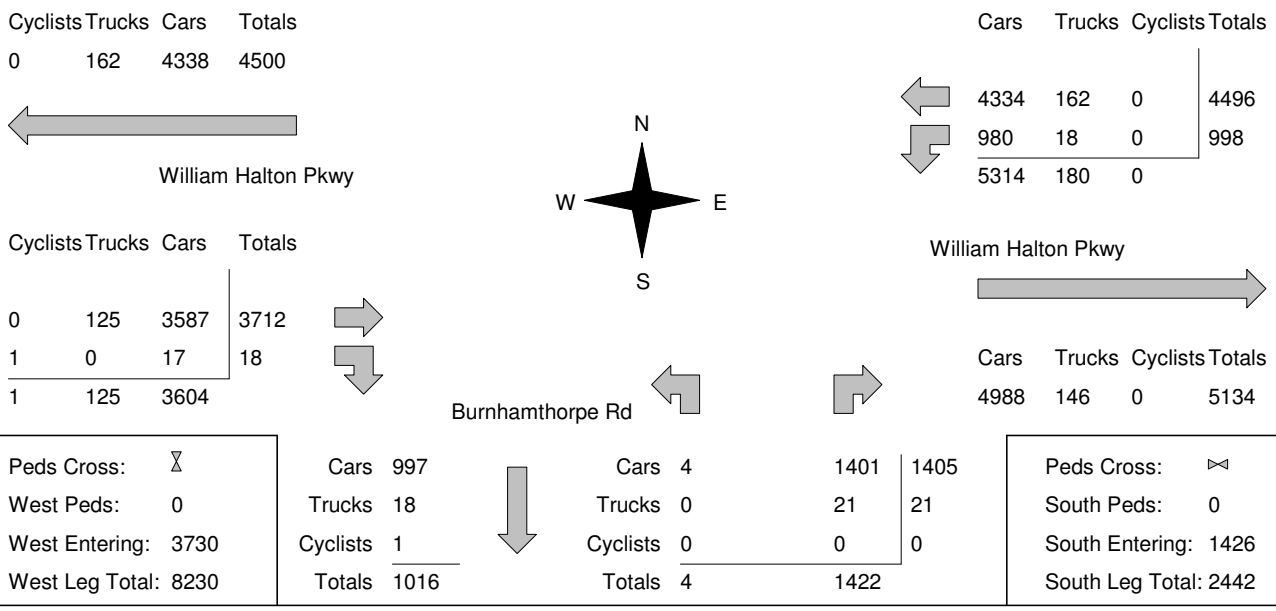
Weather conditions:
Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Non-Signalized Intersection ****

Major Road: William Halton Pkwy runs W/E

East Leg Total: 10628
East Entering: 5494
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 3730
West Leg Total: 8230

Cars 997
Trucks 18
Cyclists 1
Totals 1016

Cars 4 1401 1405
Trucks 0 21 21
Cyclists 0 0 0
Totals 4 1422

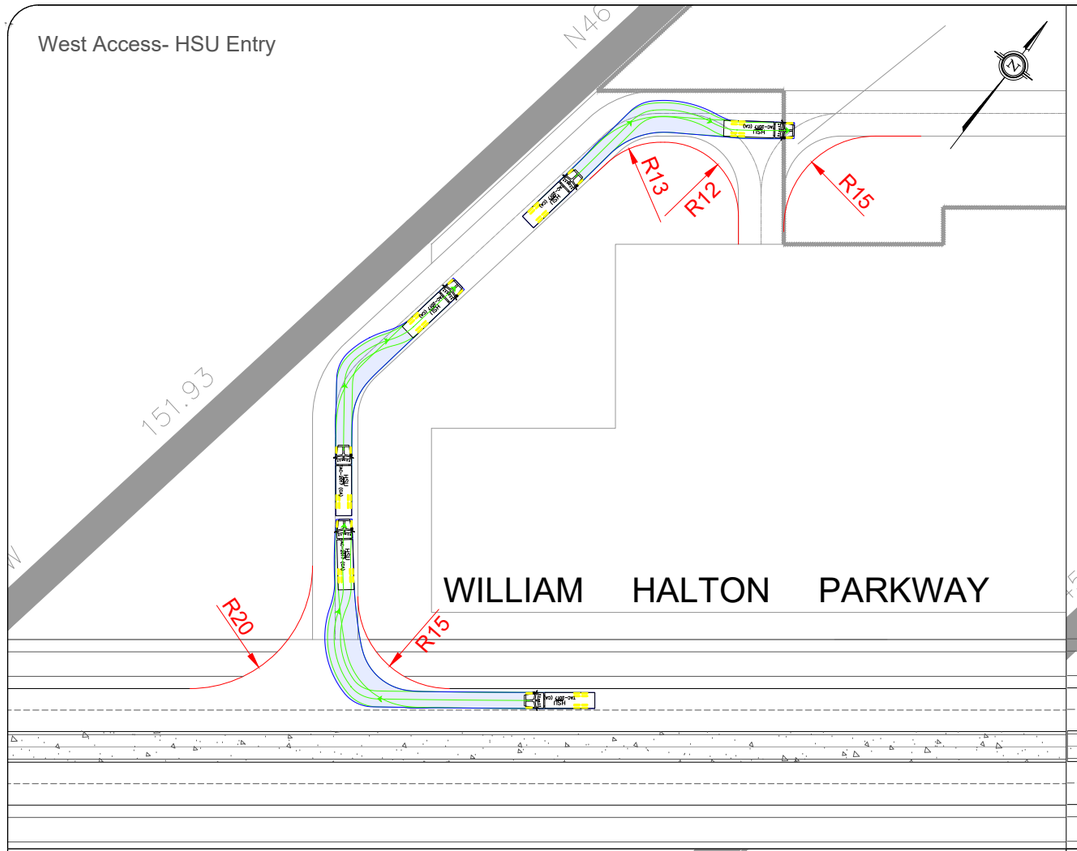
Peds Cross: ⋈
South Peds: 0
South Entering: 1426
South Leg Total: 2442

Comments

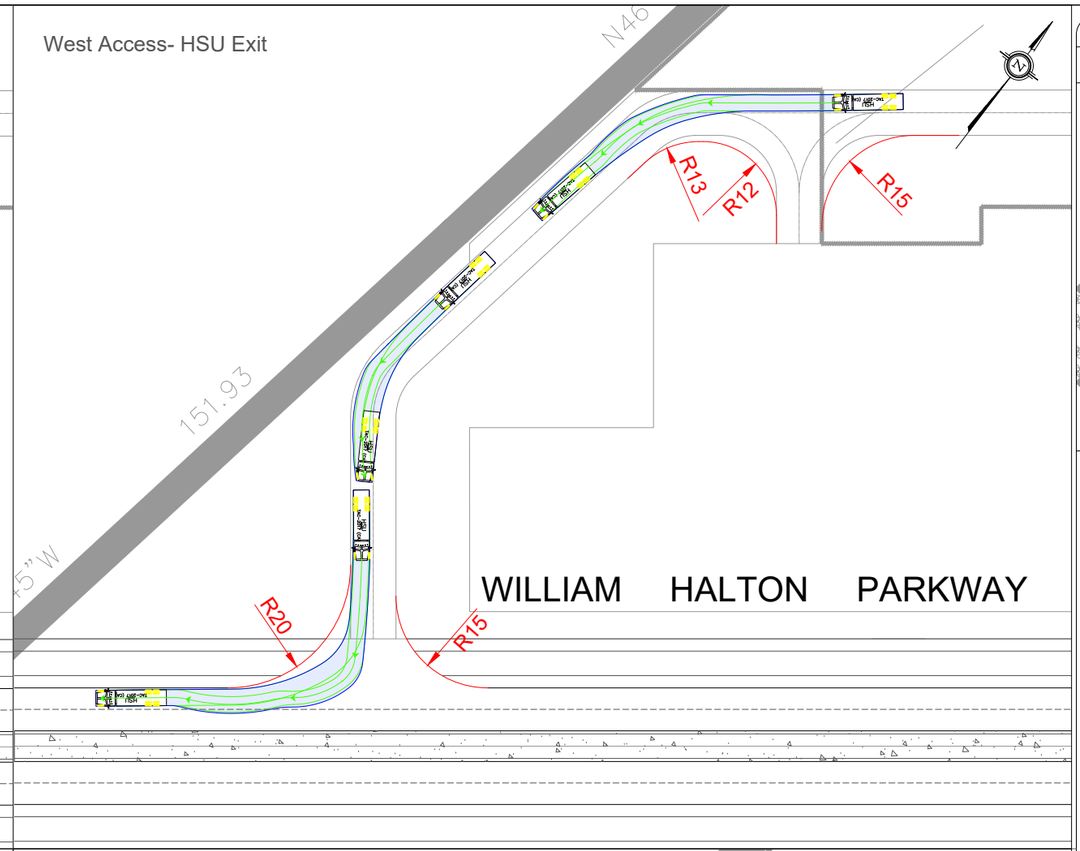
Appendix C

Turning Template Drawings

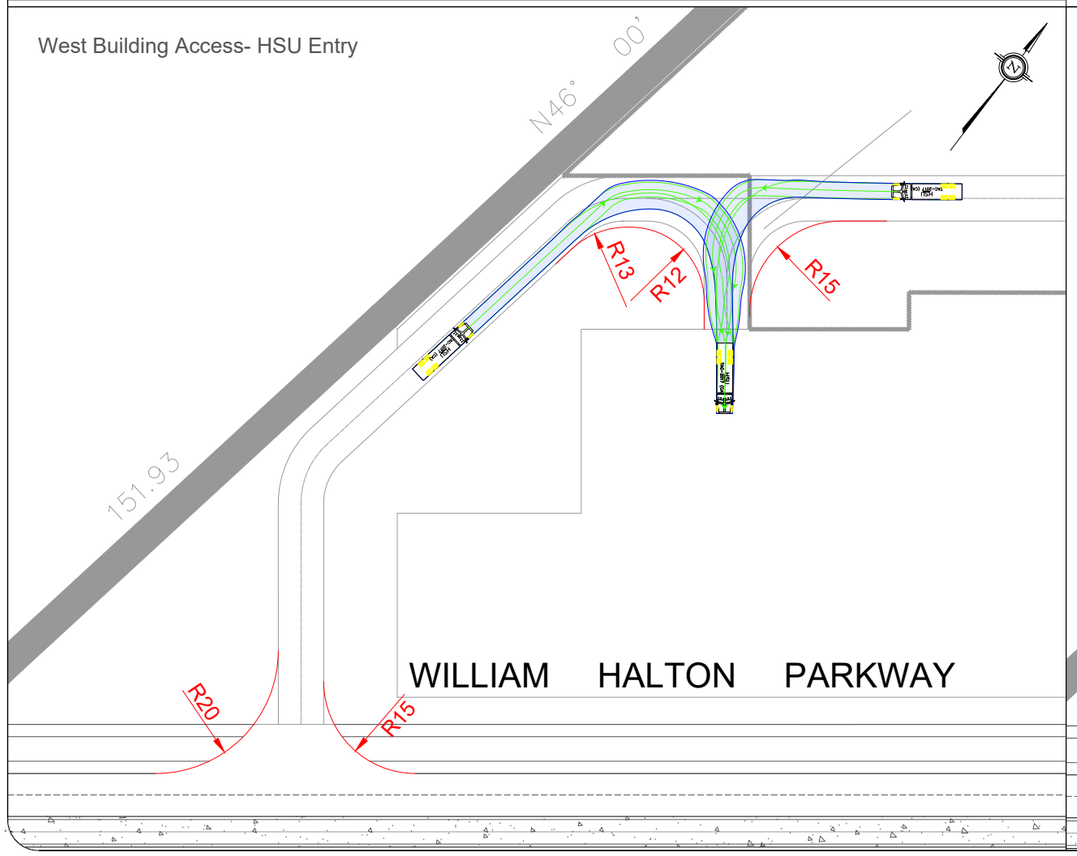
West Access- HSU Entry



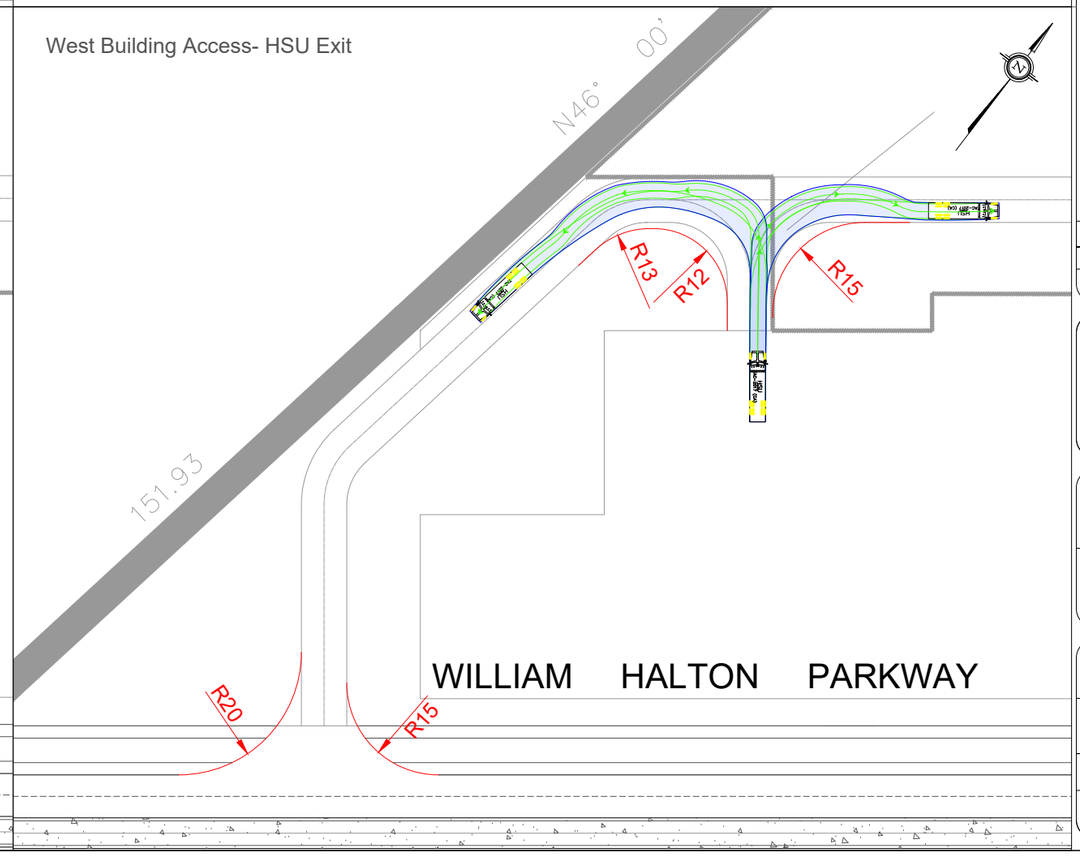
West Access- HSU Exit



West Building Access- HSU Entry

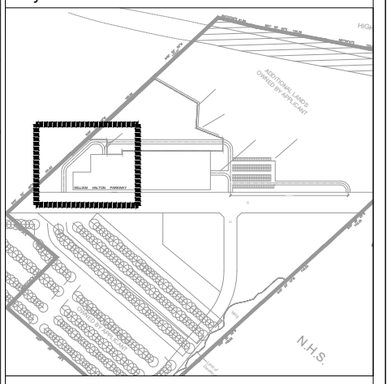


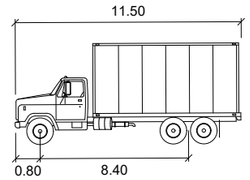
West Building Access- HSU Exit



Notes:

Key Plan:





HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

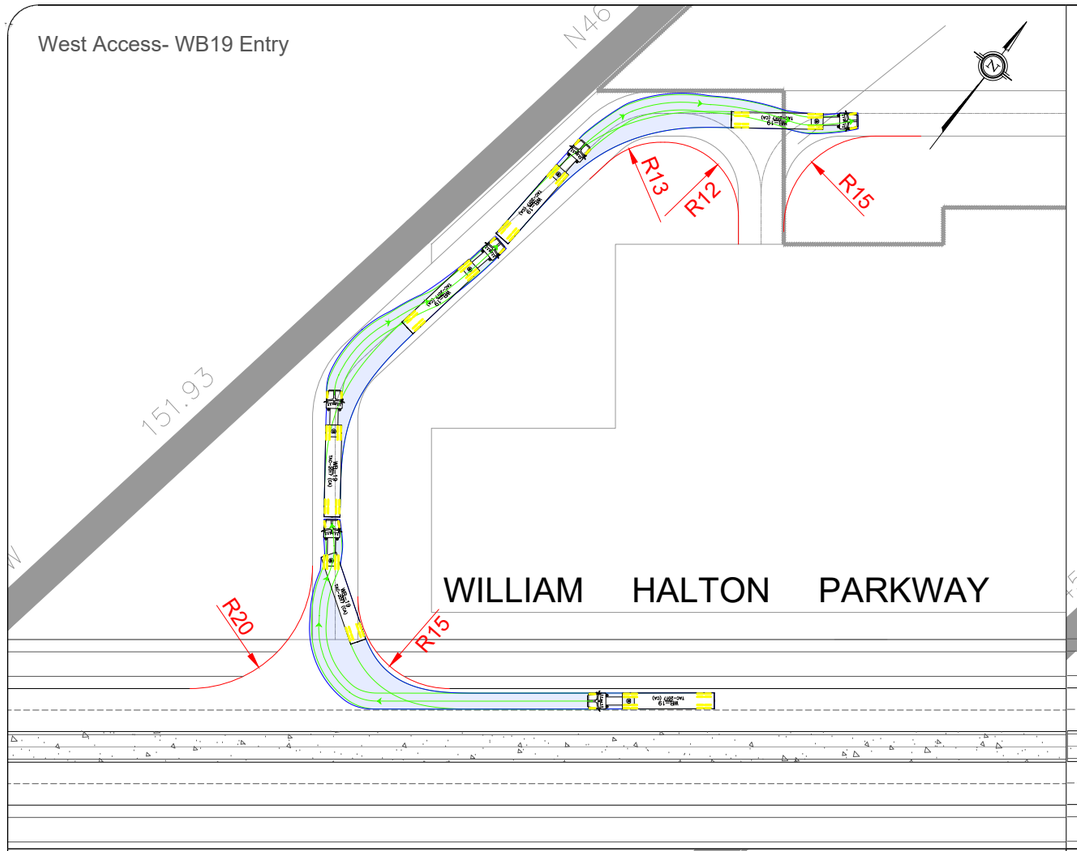
SITE: 145 Burnhamthorpe Road West

TITLE: HSU West Side of Site Turning Templates

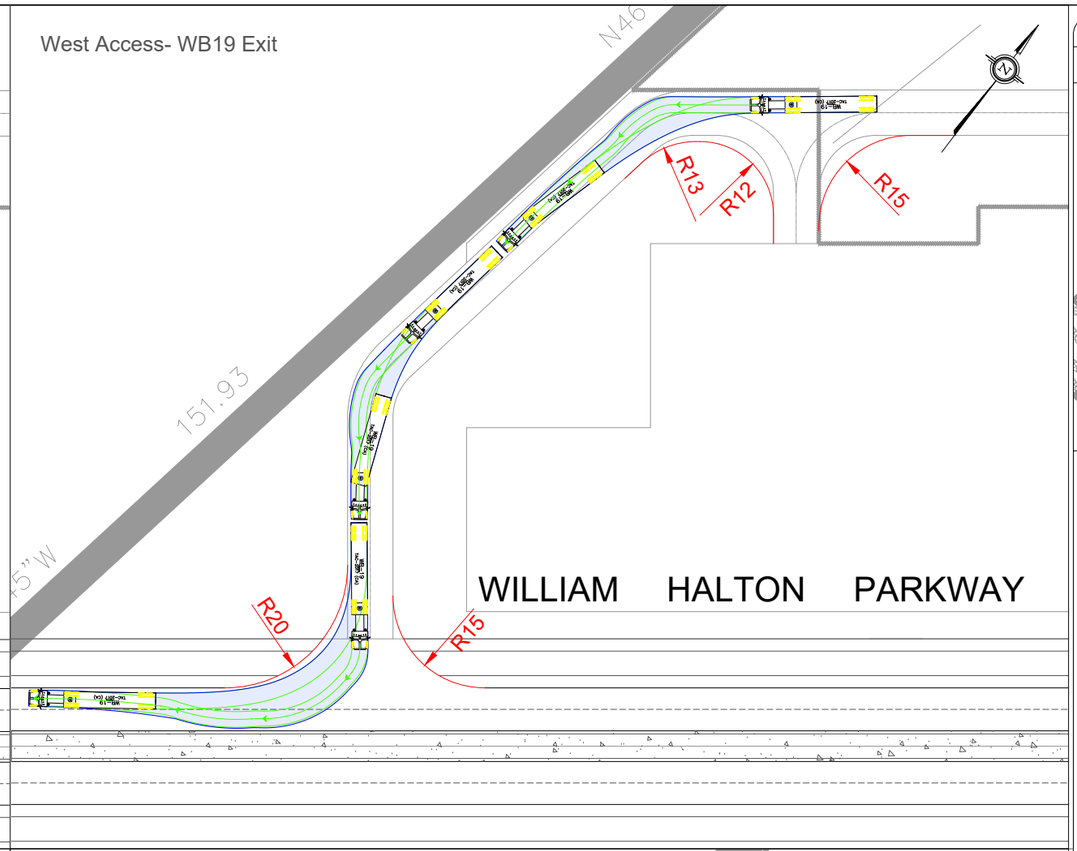
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	001	01

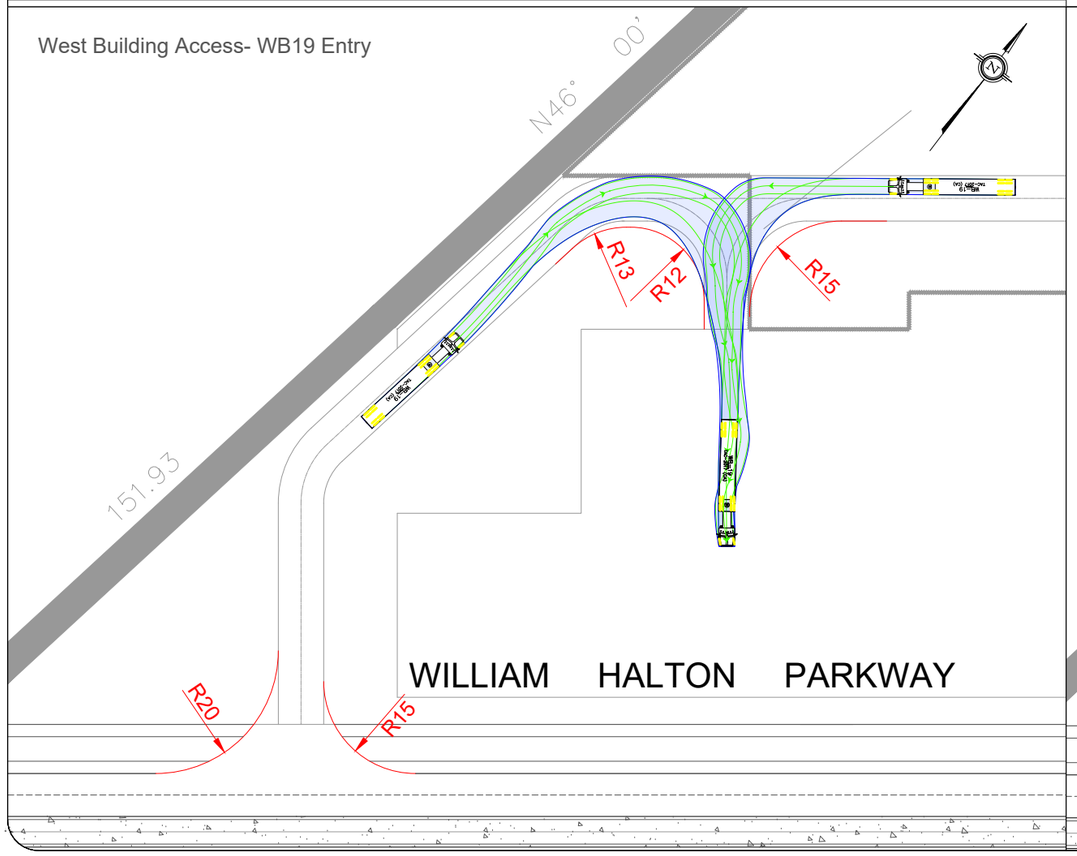
West Access- WB19 Entry



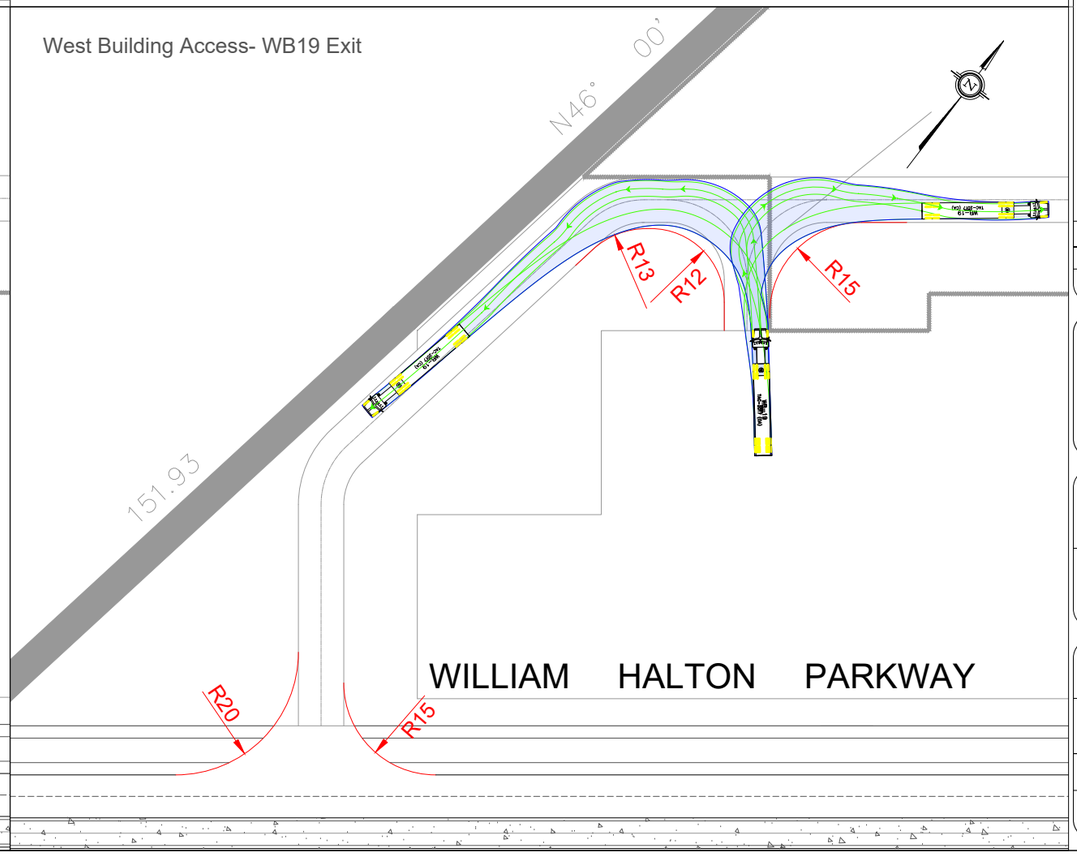
West Access- WB19 Exit



West Building Access- WB19 Entry

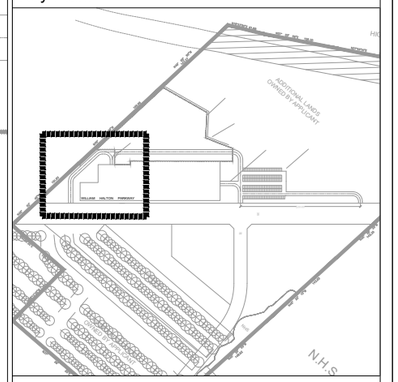


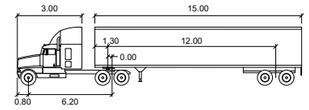
West Building Access- WB19 Exit



Notes:

Key Plan:





WB-19

meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.9
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

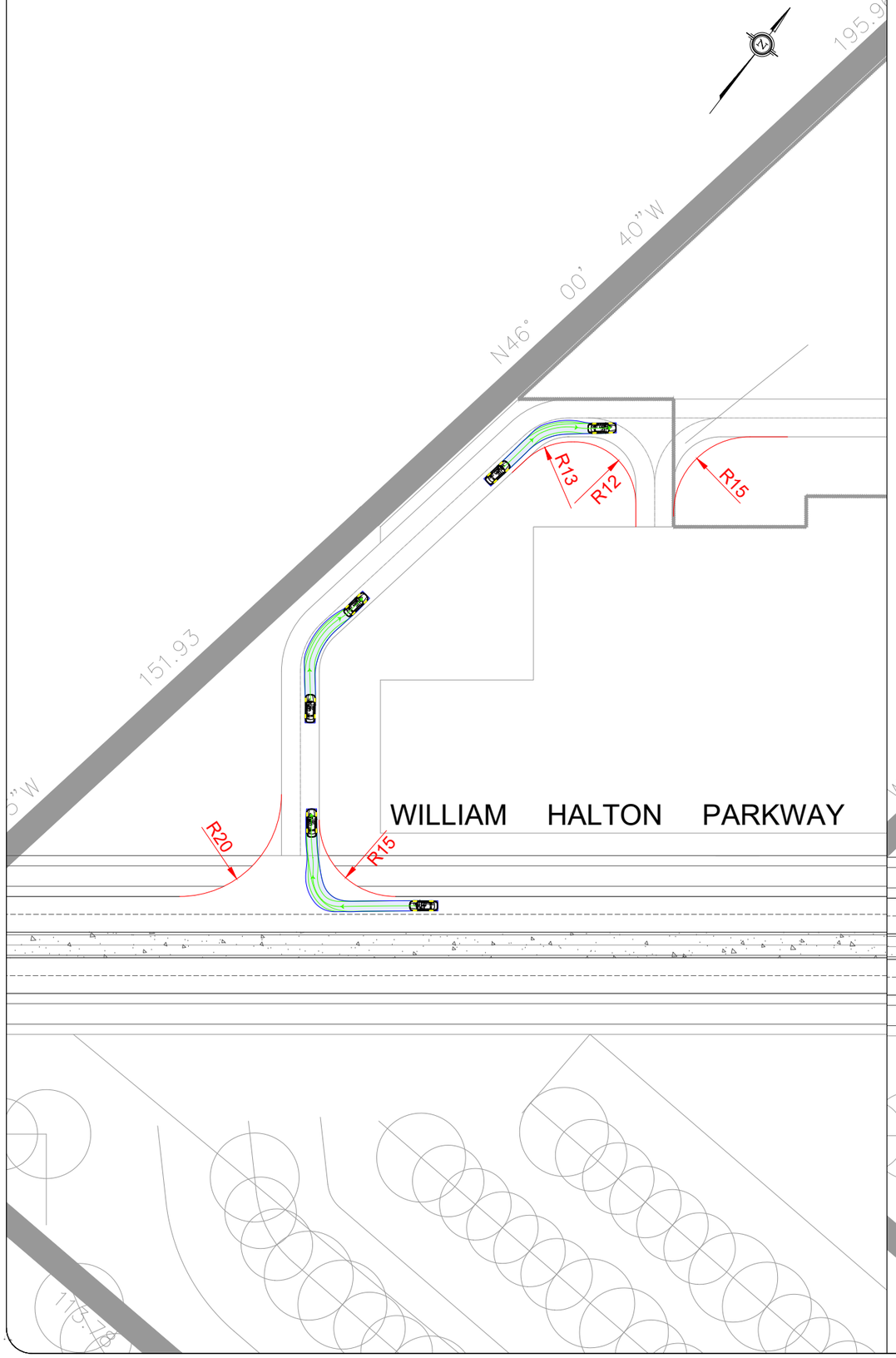
SITE: 145 Burnhamthorpe Road West

TITLE: WB19 West Side of Site Turning Templates

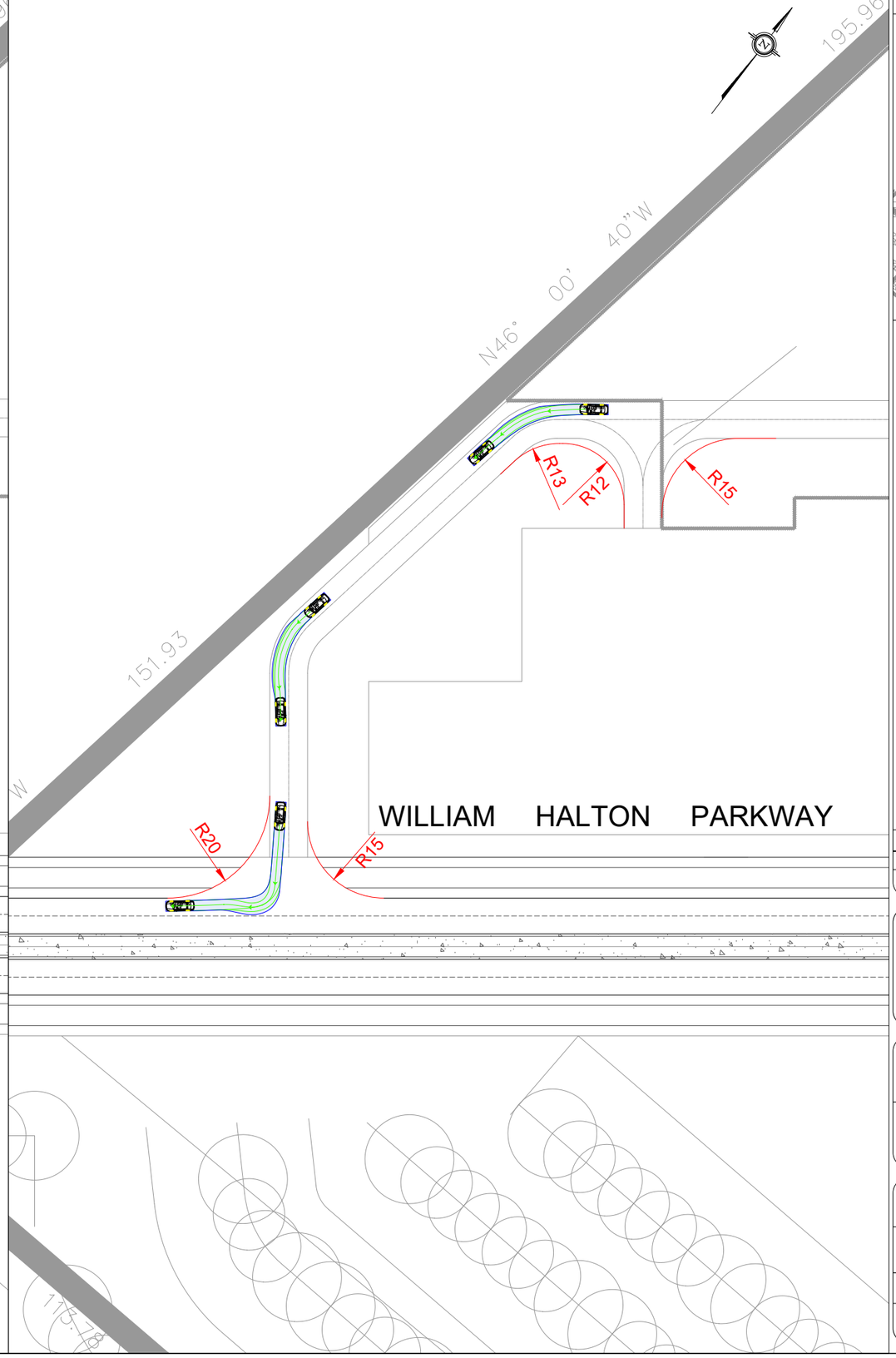
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	002	01

West Access- Passenger Vehicle Entry

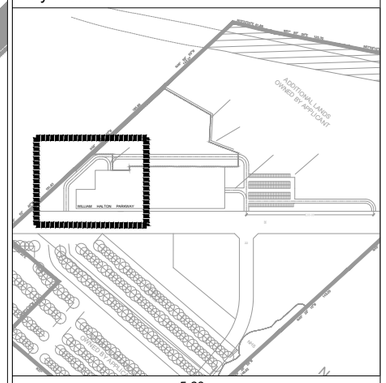


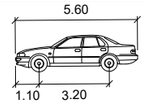
West Access- Passenger Vehicle Exit



Notes:

Key Plan:





P

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

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

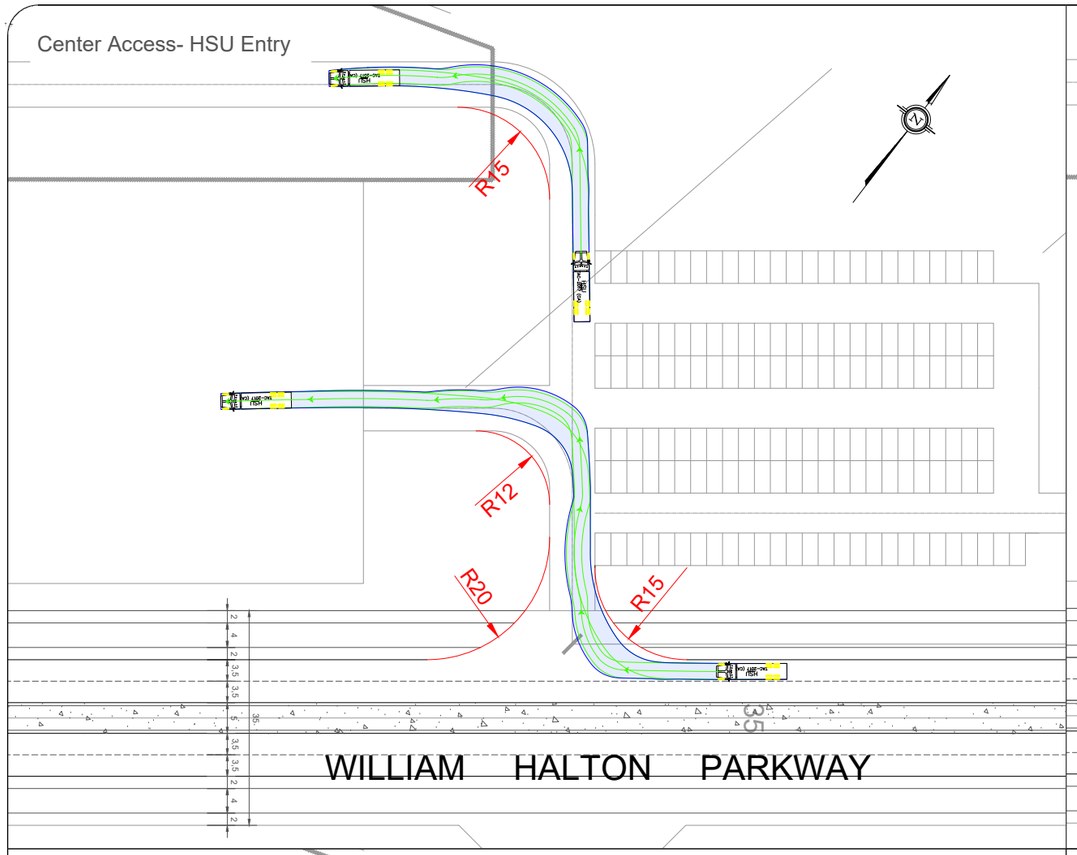
SITE: 145 Burnhamthorpe Road West

TITLE: Passenger Vehicle West Side of Site Turning Templates

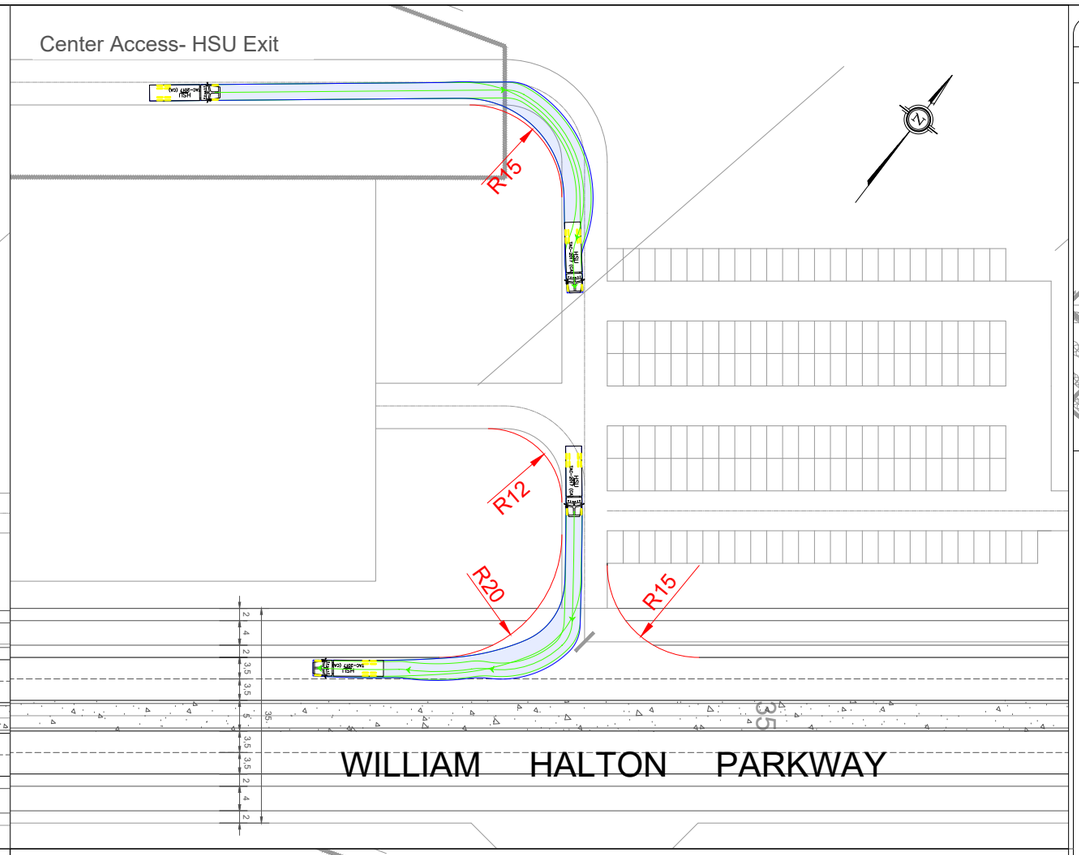
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	003	01

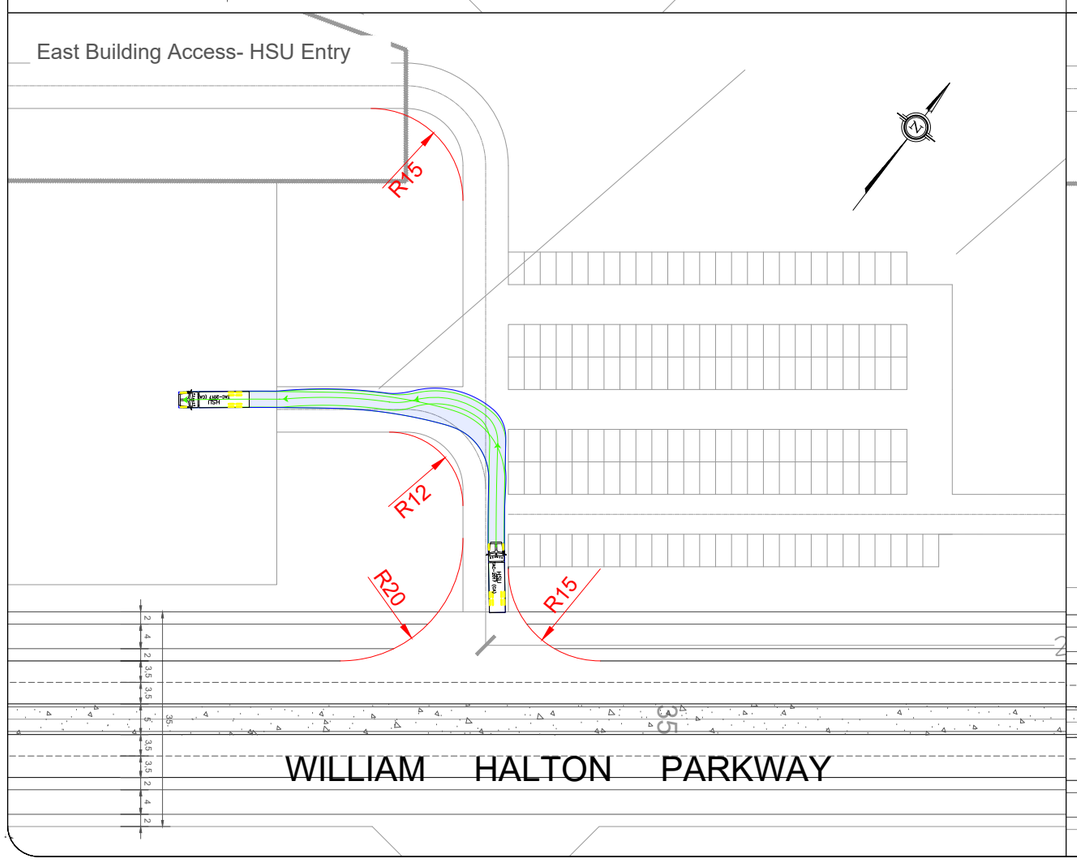
Center Access- HSU Entry



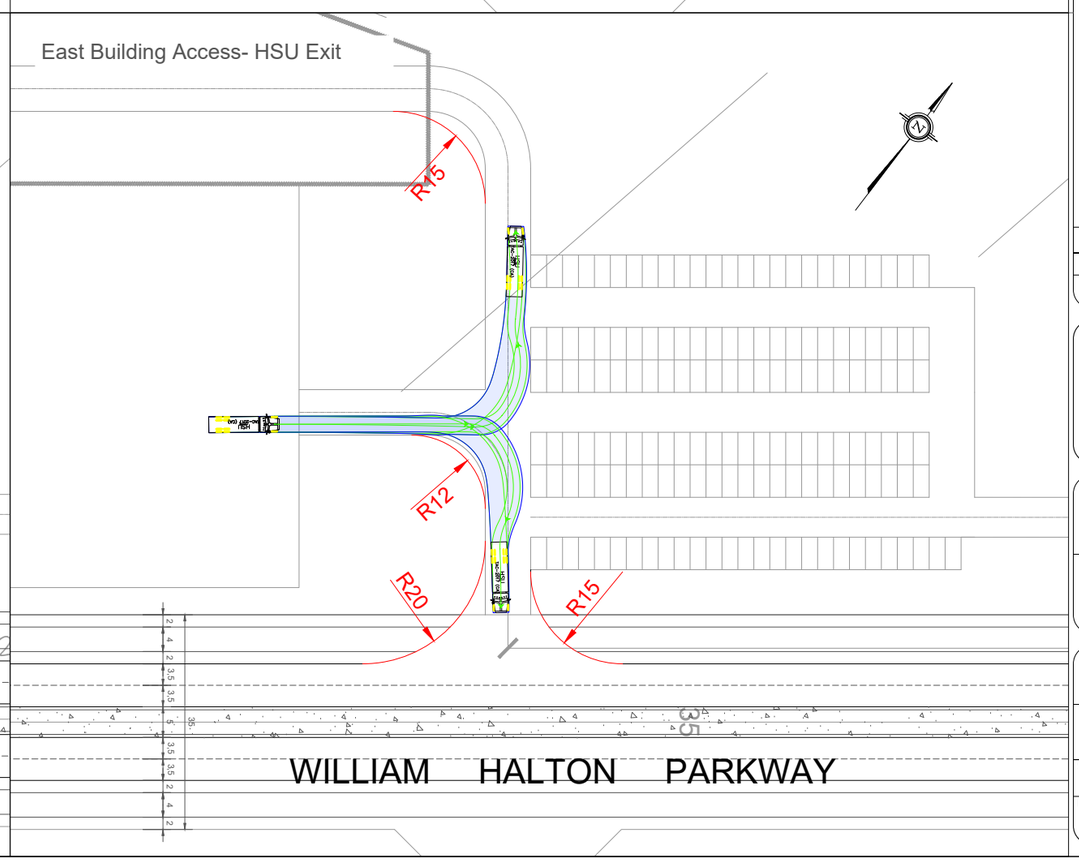
Center Access- HSU Exit



East Building Access- HSU Entry

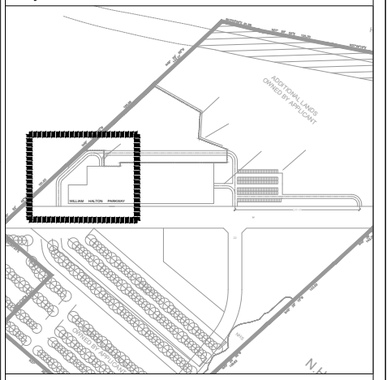


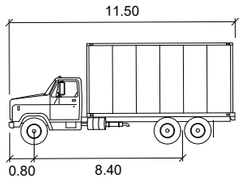
East Building Access- HSU Exit



Notes:

Key Plan:





HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

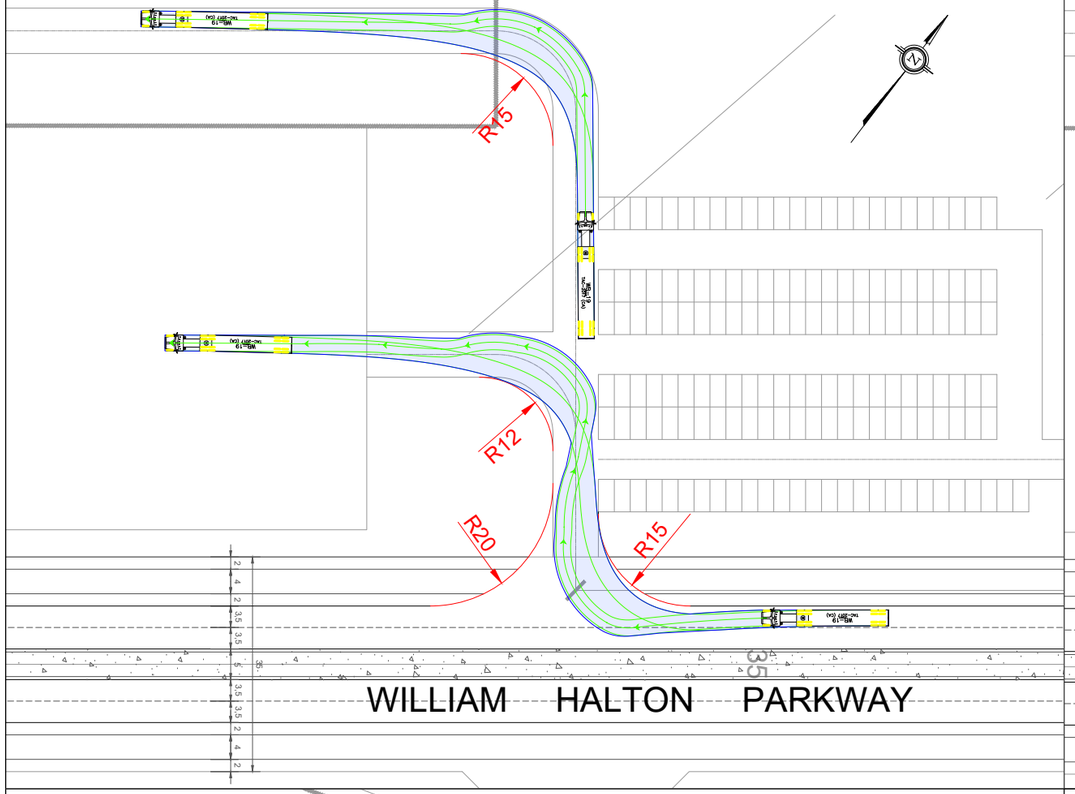
SITE: 145 Burnhamthorpe Road West

TITLE: HSU West Side of Site Turning Templates

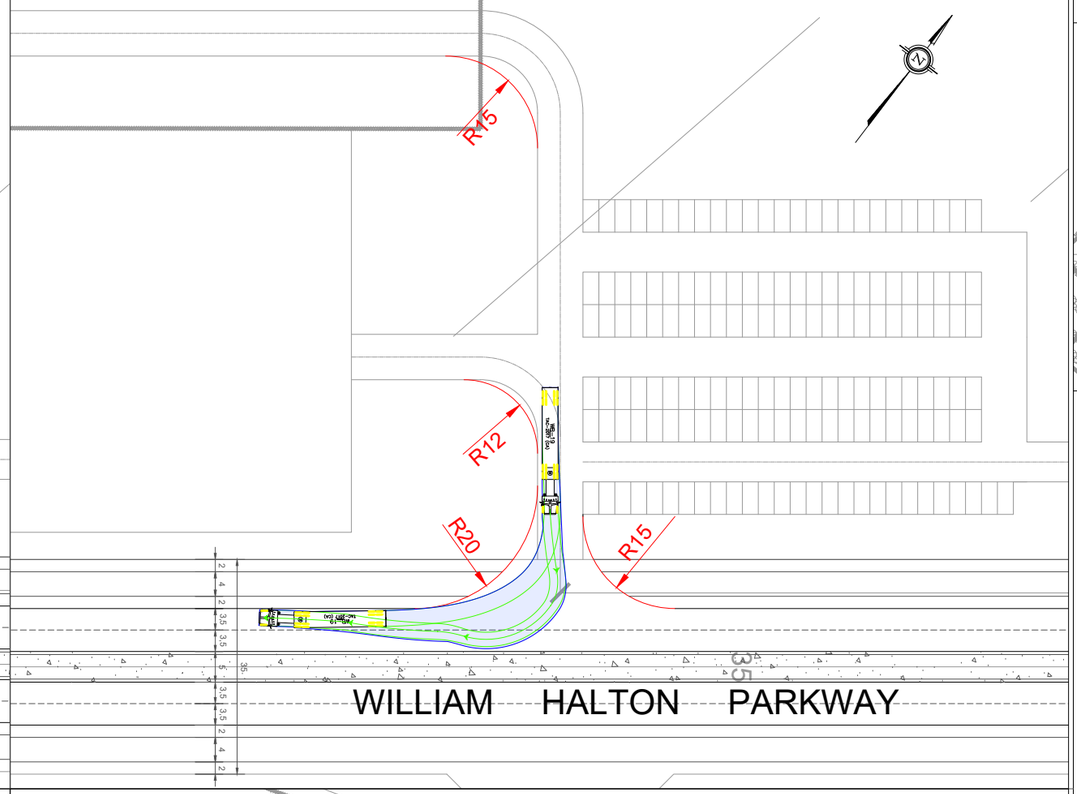
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	004	01

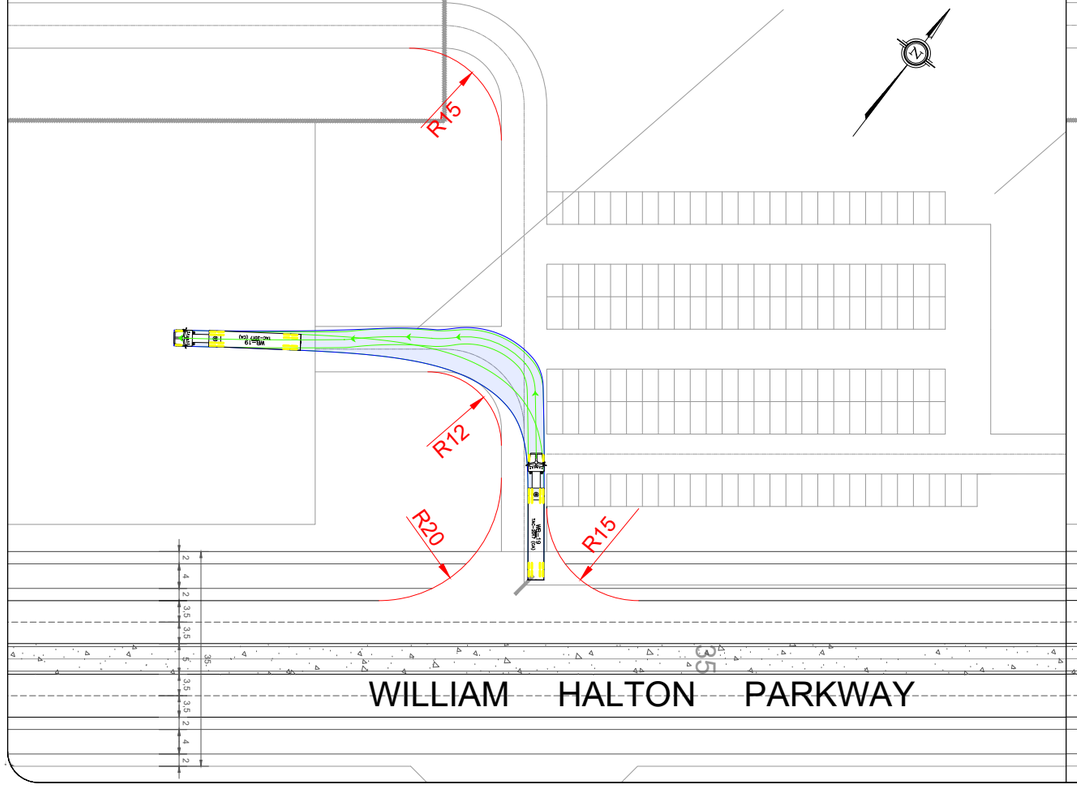
Center Access- WB19 Entry



Center Access- WB19 Exit

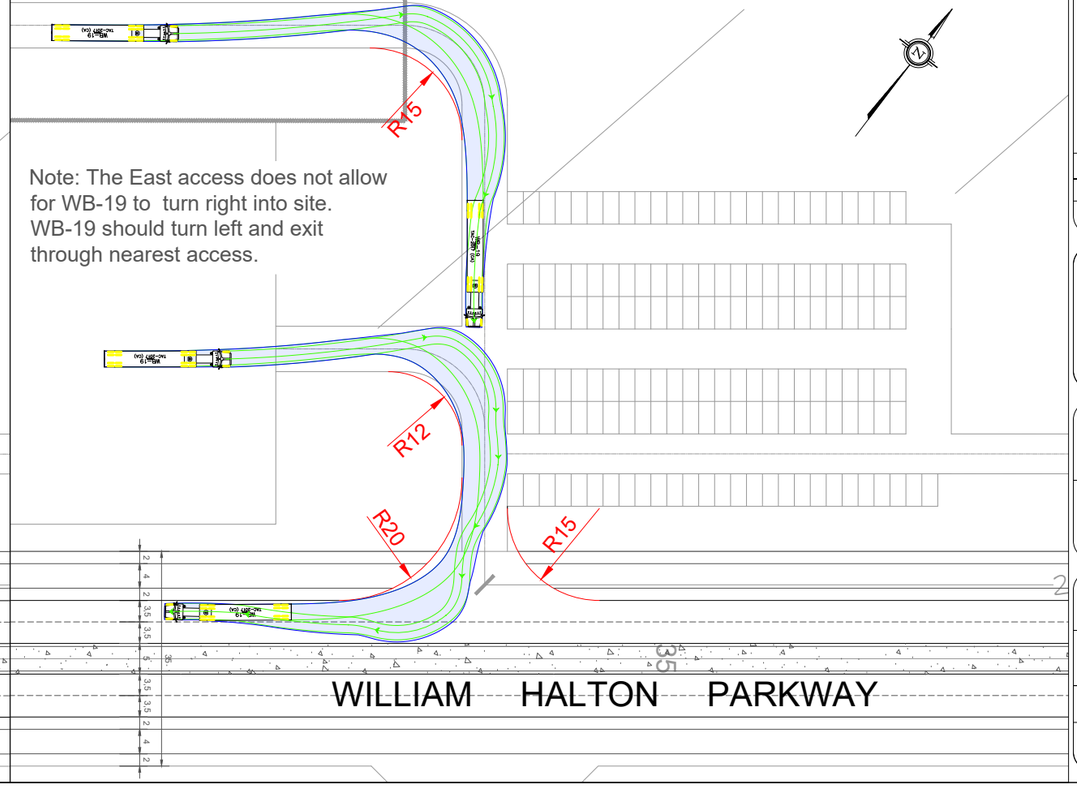


East Building Access- WB19 Entry



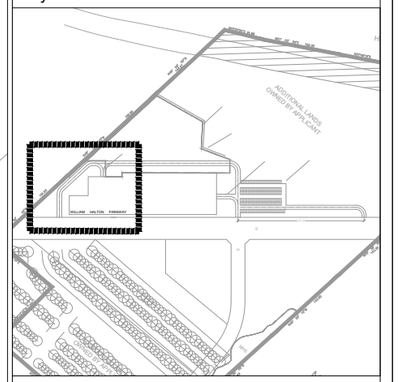
East Building Access- WB19 Exit

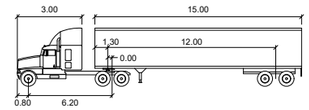
Note: The East access does not allow for WB-19 to turn right into site. WB-19 should turn left and exit through nearest access.



Notes:

Key Plan:





WB-19

meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.9
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

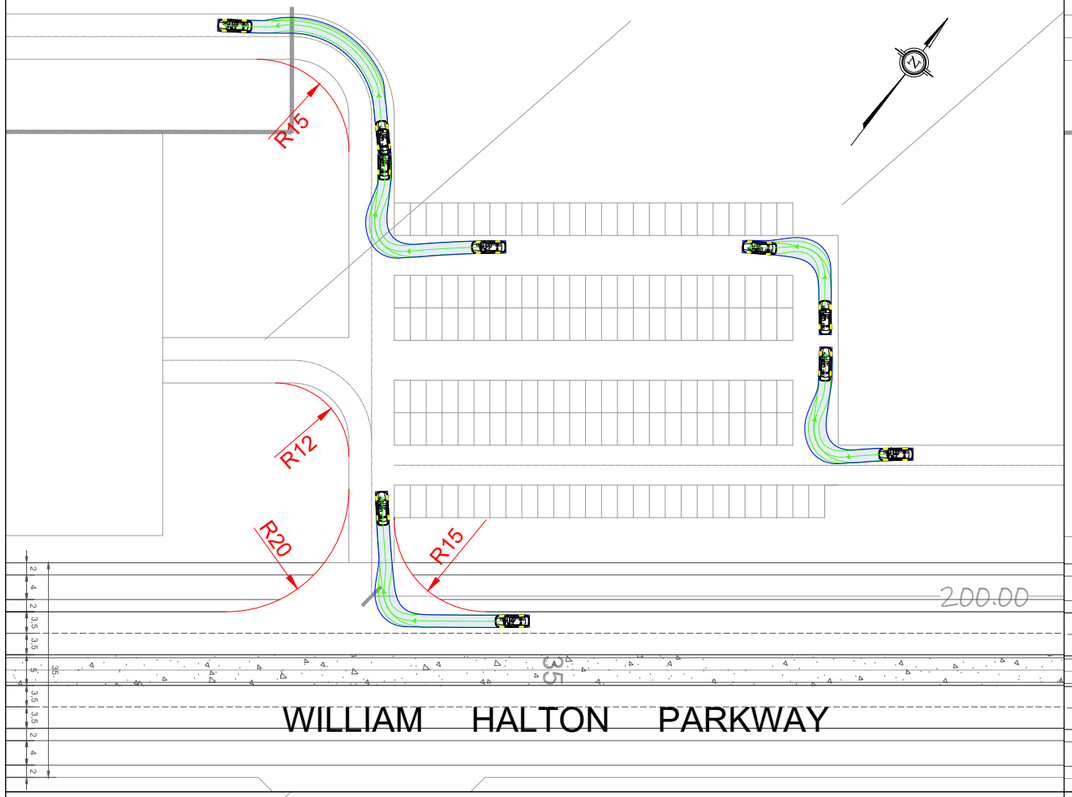
SITE: 145 Burnhamthorpe Road West

TITLE: WB19 West Side of Site Turning Templates

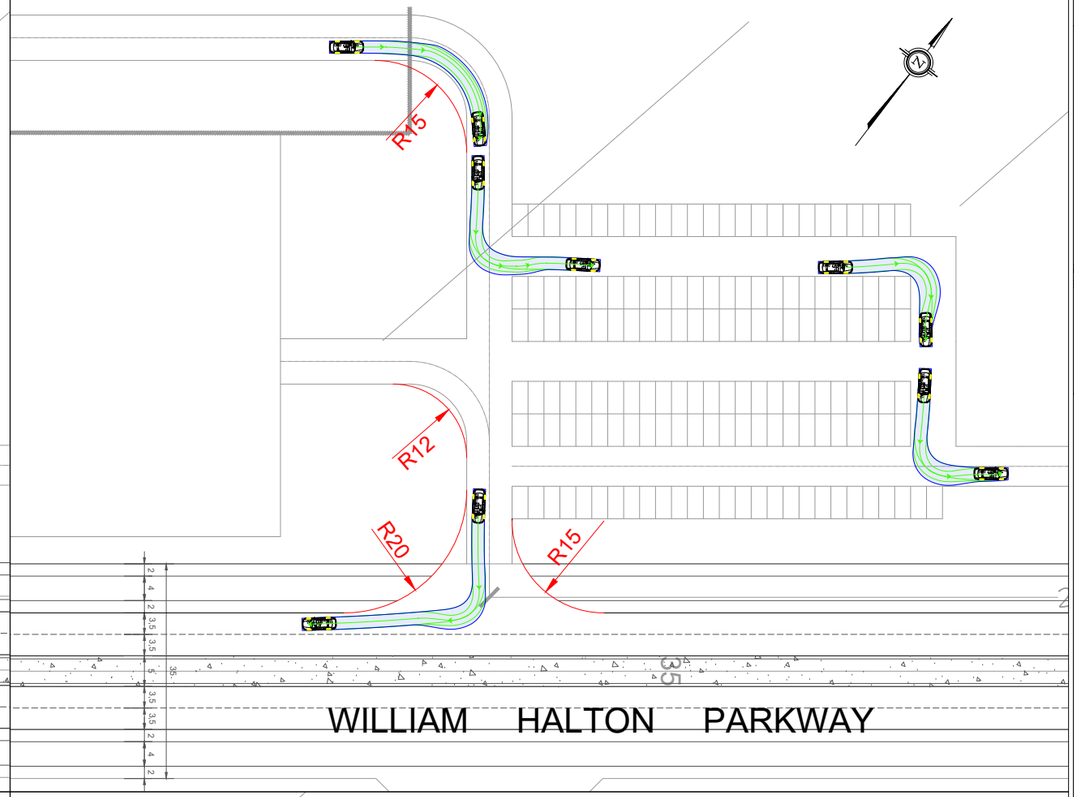
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	005	01

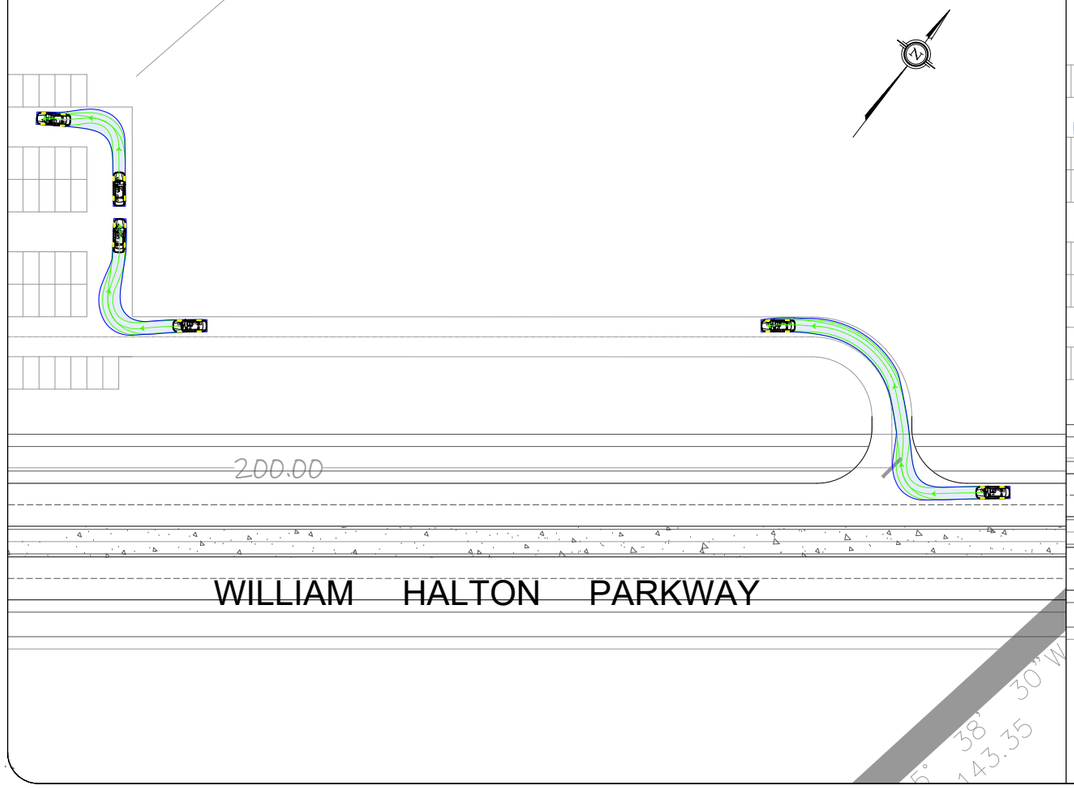
Center Access- Passenger Vehicle Entry



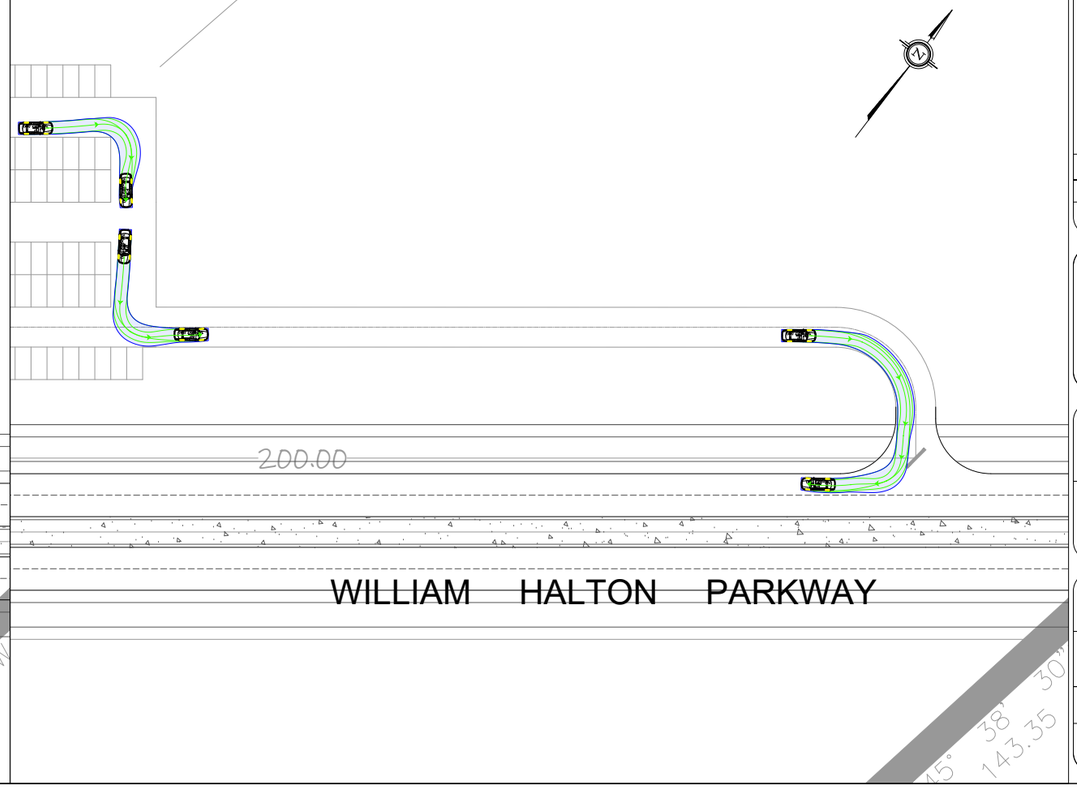
Center Access- Passenger Vehicle Exit



East Access- Passenger Vehicle Entry

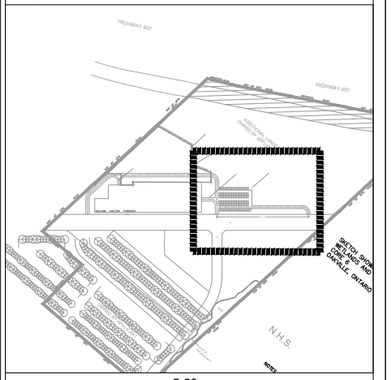


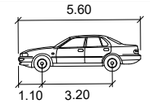
East Access- Passenger Vehicle Exit



Notes:

Key Plan:





P

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

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review:	CH	2026-03-11

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: Mattamy SGGC Plant
433 Steeles Ave. E.
Milton, On L9T 8Z4

ARCHITECT:

SITE: 145 Burnhamthorpe Road West

TITLE: Passenger Vehicle West Side of Site Turning Templates

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2026-03-11	CH	JL

PROJECT NO:	DRAWING NO:	REVISION:
2026-004	006	01

Appendix D

2026 Existing Synchro and Sidra Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	902	0	131	380	2	242
Future Volume (vph)	902	0	131	380	2	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3316	1745	1658	3221	1658	1483
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3316	1745	1658	3221	1658	1483
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			574.2	717.3	
Travel Time (s)	33.6			34.5	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	1002	0	146	422	2	269
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1002	0	146	422	2	269
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	902	0	131	380	2	242
Future Volume (Veh/h)	902	0	131	380	2	242
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1002	0	146	422	2	269
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			1002		1505	501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1002		1505	501
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			79		98	48
cM capacity (veh/h)			687		88	515

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	501	501	0	146	211	211	2	269
Volume Left	0	0	0	146	0	0	2	0
Volume Right	0	0	0	0	0	0	0	269
cSH	1700	1700	1700	687	1700	1700	88	515
Volume to Capacity	0.29	0.29	0.00	0.21	0.12	0.12	0.02	0.52
Queue Length 95th (m)	0.0	0.0	0.0	6.1	0.0	0.0	0.5	22.7
Control Delay (s)	0.0	0.0	0.0	11.7	0.0	0.0	46.8	19.4
Lane LOS				B			E	C
Approach Delay (s)	0.0			3.0			19.6	
Approach LOS							C	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing AM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	37	23.0	37	23.0	0.708	60.0	LOS F	2.7	20.4	0.92	1.09	1.58	31.7
2	T1	All MCs	168	2.0	168	2.0	0.708	46.7	LOS E	3.0	21.3	0.92	1.09	1.58	32.8
3	R2	All MCs	138	2.0	138	2.0	0.708	44.1	LOS E	3.0	21.3	0.92	1.08	1.58	33.8
Approach			342	4.3	342	4.3	0.708	47.0	LOS E	3.0	21.3	0.92	1.08	1.58	33.0
East: William Halton Parkway															
4	L2	All MCs	56	12.0	56	12.0	0.347	11.4	LOS B	1.4	10.0	0.59	0.57	0.68	47.3
5	T1	All MCs	237	3.0	237	3.0	0.347	10.3	LOS B	1.4	10.0	0.58	0.56	0.67	48.7
6	R2	All MCs	144	2.0	144	2.0	0.347	10.1	LOS B	1.4	9.7	0.57	0.55	0.66	48.9
Approach			437	3.8	437	3.8	0.347	10.4	LOS B	1.4	10.0	0.58	0.56	0.67	48.6
North: Sixth Line															
7	L2	All MCs	633	2.0	633	2.0	0.752	19.3	LOS C	10.7	76.4	0.75	0.88	1.52	41.0
8	T1	All MCs	194	2.0	194	2.0	0.612	13.8	LOS B	5.5	39.4	0.63	0.63	1.02	47.0
9	R2	All MCs	312	2.0	312	2.0	0.612	13.8	LOS B	5.5	39.4	0.63	0.63	1.02	46.7
Approach			1140	2.0	1140	2.0	0.752	16.9	LOS C	10.7	76.4	0.70	0.77	1.30	43.3
West: William Halton Parkway															
10	L2	All MCs	513	2.0	513	2.0	1.333	185.3	LOS F	57.5	409.7	1.00	3.70	10.19	15.0
11	T1	All MCs	711	2.0	711	2.0	1.333	184.5	LOS F	59.1	425.4	1.00	3.80	10.52	15.1
12	R2	All MCs	69	15.0	69	15.0	1.333	187.0	LOS F	59.1	425.4	1.00	3.83	10.59	15.1
Approach			1293	2.7	1293	2.7	1.333	185.0	LOS F	59.1	425.4	1.00	3.76	10.40	15.1
All Vehicles			3212	2.8	3212	2.8	1.333	86.9	LOS F	59.1	425.4	0.83	1.98	4.91	24.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	465	4	203	1043	1	241
Future Volume (vph)	465	4	203	1043	1	241
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3283	1483	1658	3316	1658	1483
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3283	1483	1658	3316	1658	1483
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			574.2	717.3	
Travel Time (s)	33.6			34.5	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	517	4	226	1159	1	268
Shared Lane Traffic (%)						
Lane Group Flow (vph)	517	4	226	1159	1	268
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	465	4	203	1043	1	241
Future Volume (Veh/h)	465	4	203	1043	1	241
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	517	4	226	1159	1	268
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			521		1548	258
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			521		1548	258
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		99	64
cM capacity (veh/h)			1041		82	740

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	258	258	4	226	580	580	1	268
Volume Left	0	0	0	226	0	0	1	0
Volume Right	0	0	4	0	0	0	0	268
cSH	1700	1700	1700	1041	1700	1700	82	740
Volume to Capacity	0.15	0.15	0.00	0.22	0.34	0.34	0.01	0.36
Queue Length 95th (m)	0.0	0.0	0.0	6.3	0.0	0.0	0.3	12.6
Control Delay (s)	0.0	0.0	0.0	9.4	0.0	0.0	49.4	12.6
Lane LOS				A			E	B
Approach Delay (s)	0.0			1.5			12.7	
Approach LOS							B	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing PM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	84	2.0	84	2.0	0.432	15.7	LOS C	1.8	12.7	0.71	0.79	0.99	44.2
2	T1	All MCs	214	2.0	214	2.0	0.432	15.4	LOS C	1.8	12.7	0.70	0.78	0.98	45.6
3	R2	All MCs	110	2.0	110	2.0	0.432	15.0	LOS C	1.8	12.5	0.69	0.77	0.97	46.0
Approach			409	2.0	409	2.0	0.432	15.3	LOS C	1.8	12.7	0.70	0.78	0.98	45.4
East: William Halton Parkway															
4	L2	All MCs	62	2.0	62	2.0	0.873	34.1	LOS D	13.2	93.7	0.93	1.37	2.51	37.1
5	T1	All MCs	832	2.0	832	2.0	0.873	33.8	LOS D	13.2	94.2	0.92	1.36	2.50	37.7
6	R2	All MCs	306	2.0	306	2.0	0.873	33.4	LOS D	13.2	94.2	0.92	1.36	2.50	37.6
Approach			1200	2.0	1200	2.0	0.873	33.7	LOS D	13.2	94.2	0.92	1.36	2.50	37.6
North: Sixth Line															
7	L2	All MCs	268	2.0	268	2.0	1.183	132.1	LOS F	31.9	226.9	1.00	2.66	6.85	19.0
8	T1	All MCs	221	2.0	221	2.0	1.183	132.0	LOS F	33.2	236.2	1.00	2.66	6.86	19.1
9	R2	All MCs	507	2.0	507	2.0	1.183	130.3	LOS F	33.2	236.2	1.00	2.74	7.11	18.8
Approach			996	2.0	996	2.0	1.183	131.2	LOS F	33.2	236.2	1.00	2.70	6.98	18.9
West: William Halton Parkway															
10	L2	All MCs	280	2.0	280	2.0	0.578	15.0	LOS B	4.2	29.8	0.70	0.74	1.10	43.7
11	T1	All MCs	436	2.0	436	2.0	0.578	14.8	LOS B	4.2	29.8	0.69	0.72	1.09	46.1
12	R2	All MCs	82	2.0	82	2.0	0.578	14.7	LOS B	4.1	29.4	0.68	0.72	1.08	46.4
Approach			798	2.0	798	2.0	0.578	14.8	LOS B	4.2	29.8	0.69	0.73	1.09	45.2
All Vehicles			3402	2.0	3402	2.0	1.183	55.6	LOS F	33.2	236.2	0.86	1.54	3.30	30.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix E

Signal Control Warrants

Burnhamthorpe Road @ William Halton Parkway
Existing + Site

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	929	103%	103%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	186	110%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	805	89%	1%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	1	1%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #1 @ William Halton Parkway
Existing + Site

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	937	104%	9%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	15	9%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	921	102%	12%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	9	12%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #2 @ William Halton Parkway
Existing + Site

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	927	103%	5%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	8	5%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	922	102%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #3 @ William Halton Parkway
Existing + Site

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	928	103%	1%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	2	1%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	927	103%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Burnhamthorpe Road @ William Halton Parkway
Existing + Site + Bkgd Dev

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	1073	119%	119%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	296	174%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	875	97%	95%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	72	95%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #1 @ William Halton Parkway
Existing + Site + Bkgd Dev

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	962	107%	16%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	27	16%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	935	104%	19%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	15	19%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #2 @ William Halton Parkway
Existing + Site + Bkgd Dev

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	942	105%	5%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	8	5%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	937	104%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

Site Access #3 @ William Halton Parkway
Existing + Site + Bkgd Dev

Justification #7

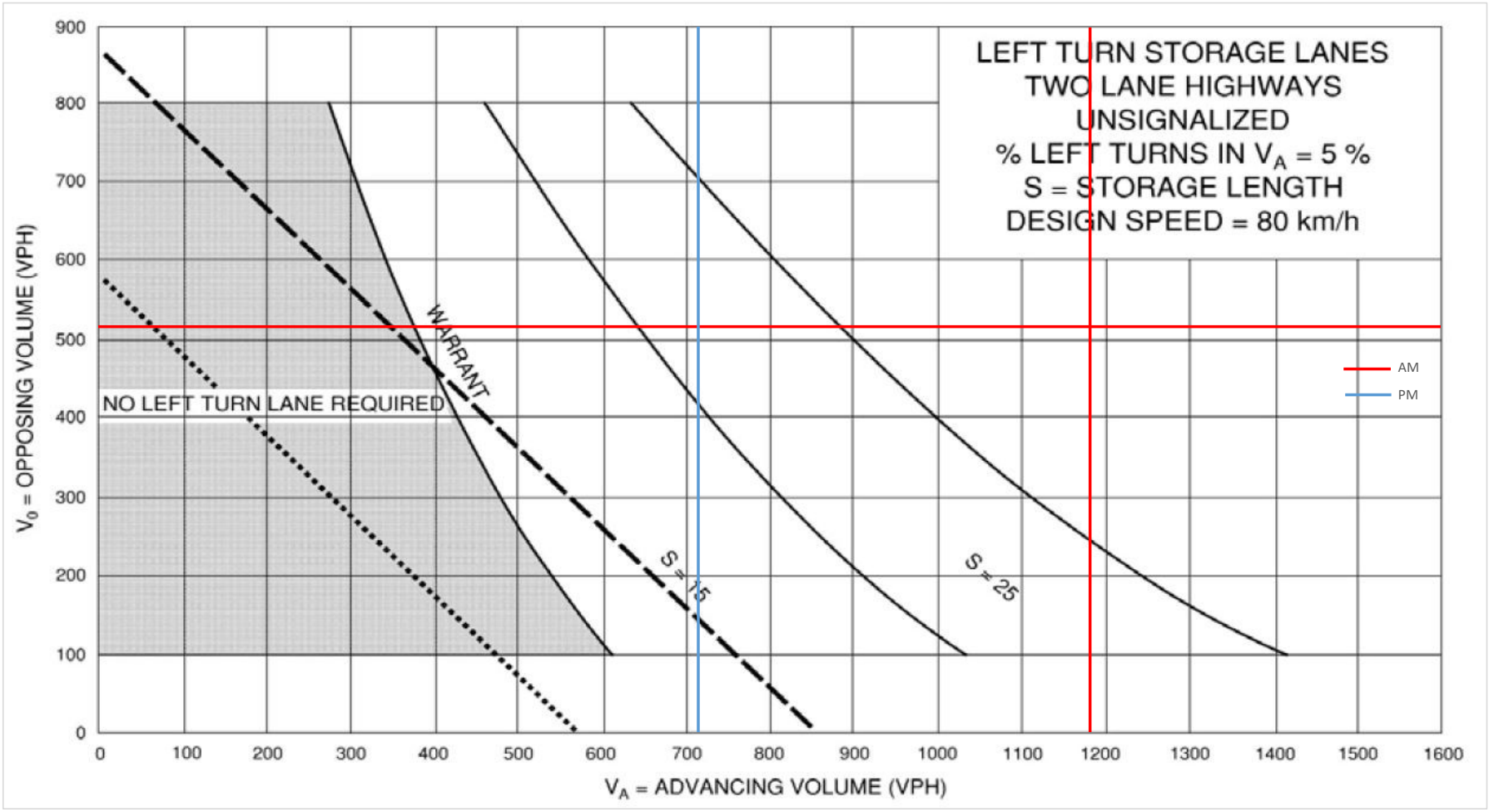
Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	943	105%	1%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	2	1%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	942	105%	0%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	0	0%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B

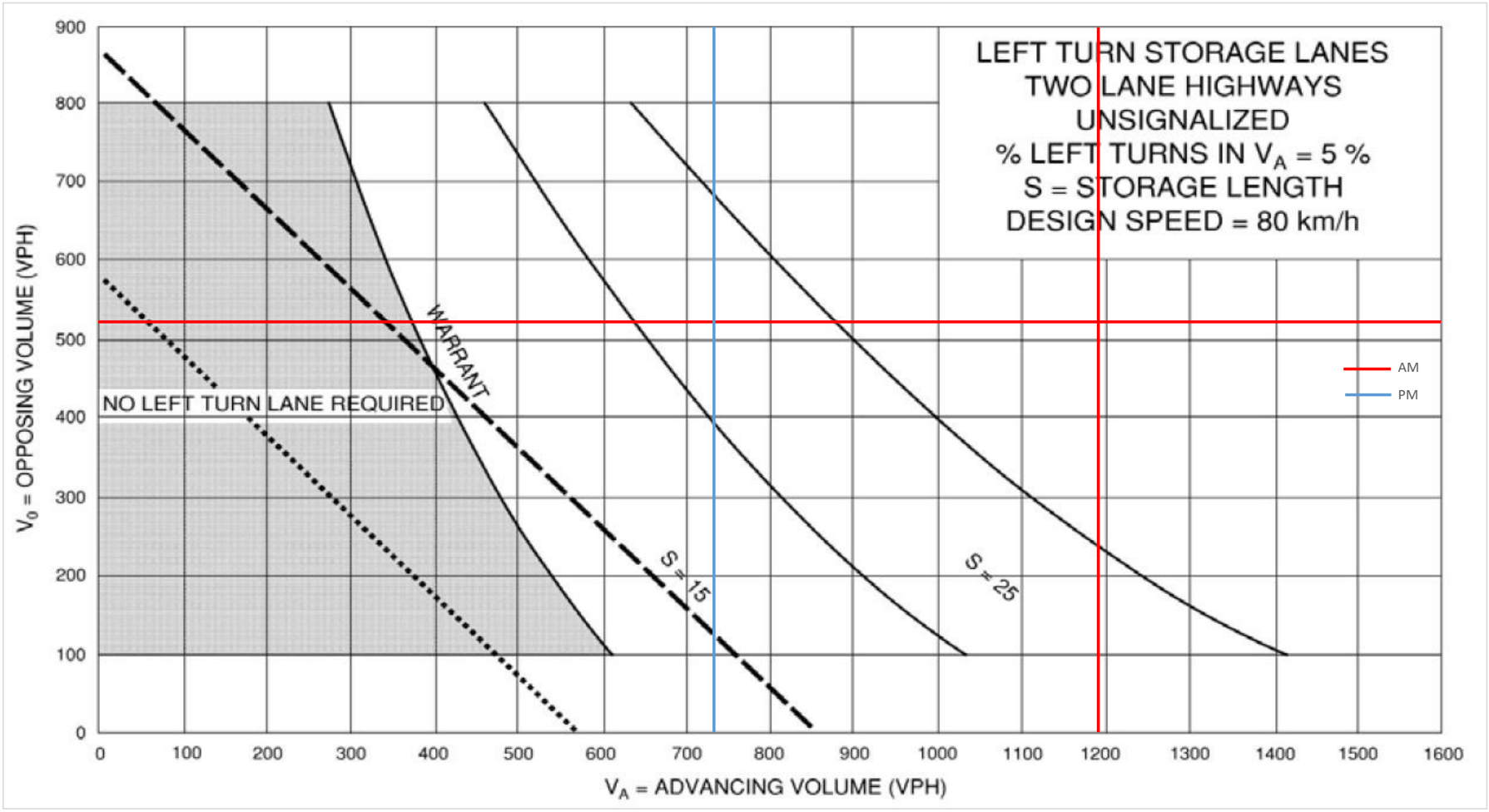
Appendix F

Left-Turn Lane Warrants

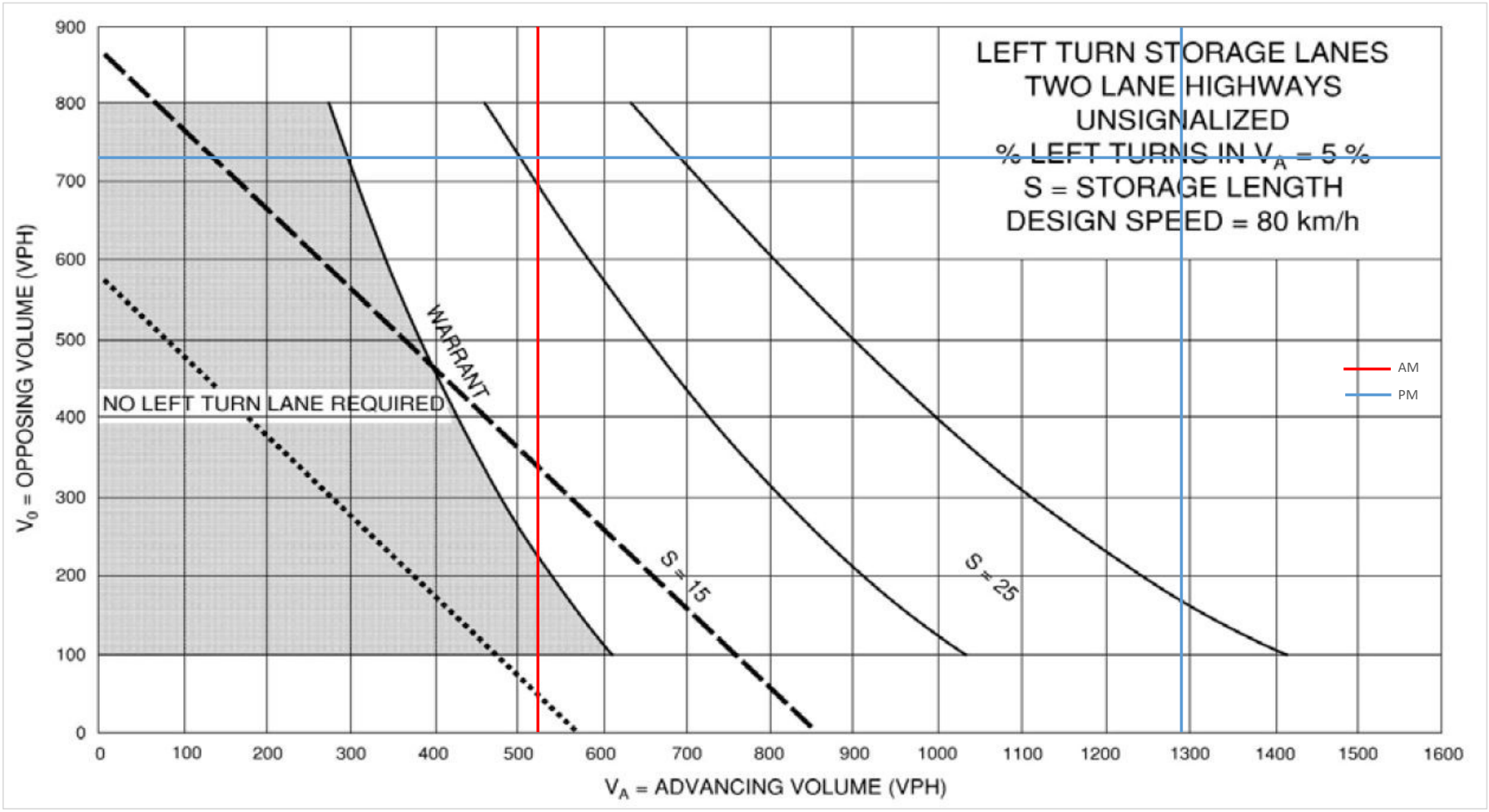
Access #1 Existing + Site - Eastbound Left



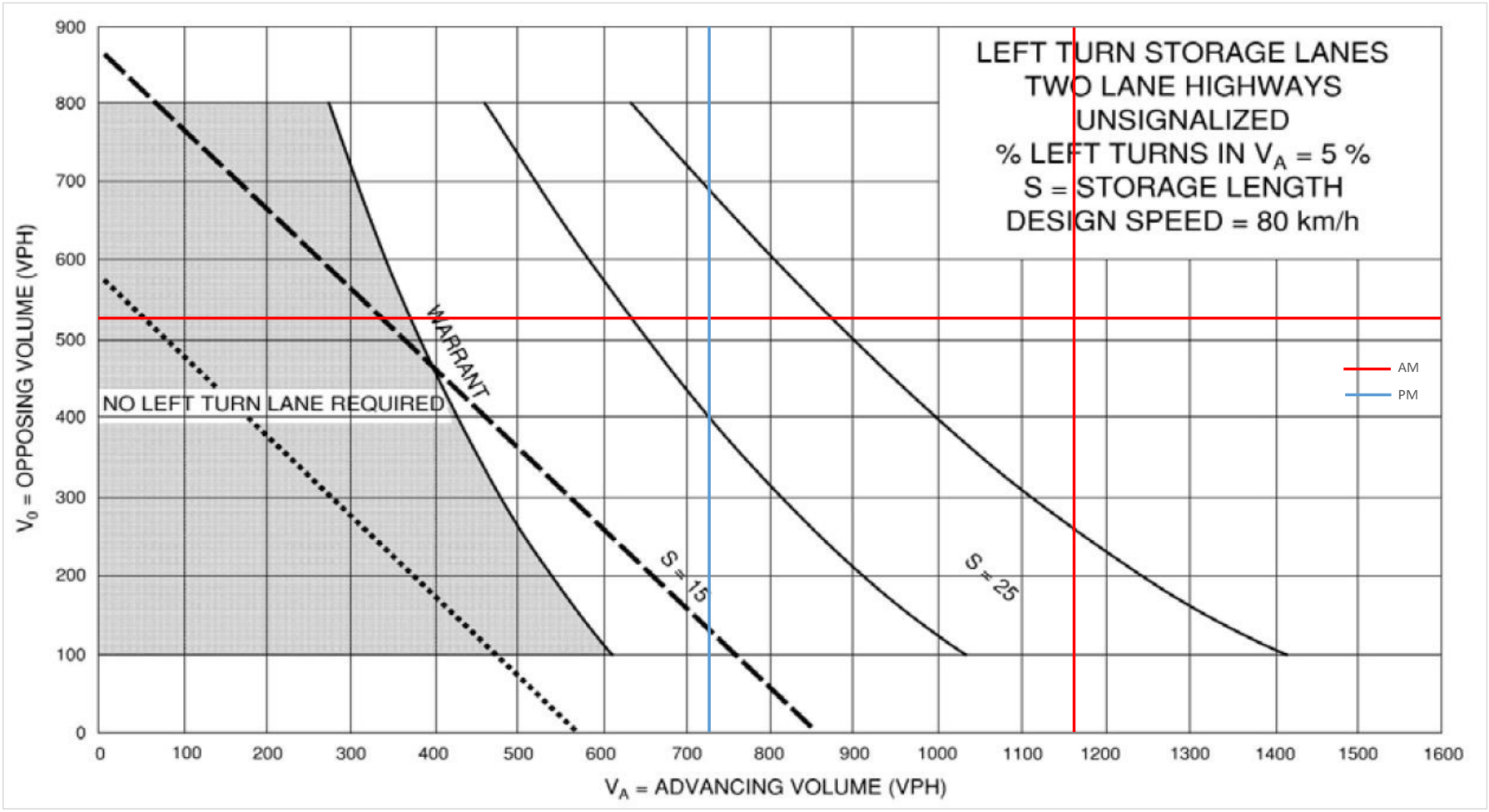
Access #1 Existing + Site + FB - Eastbound Left



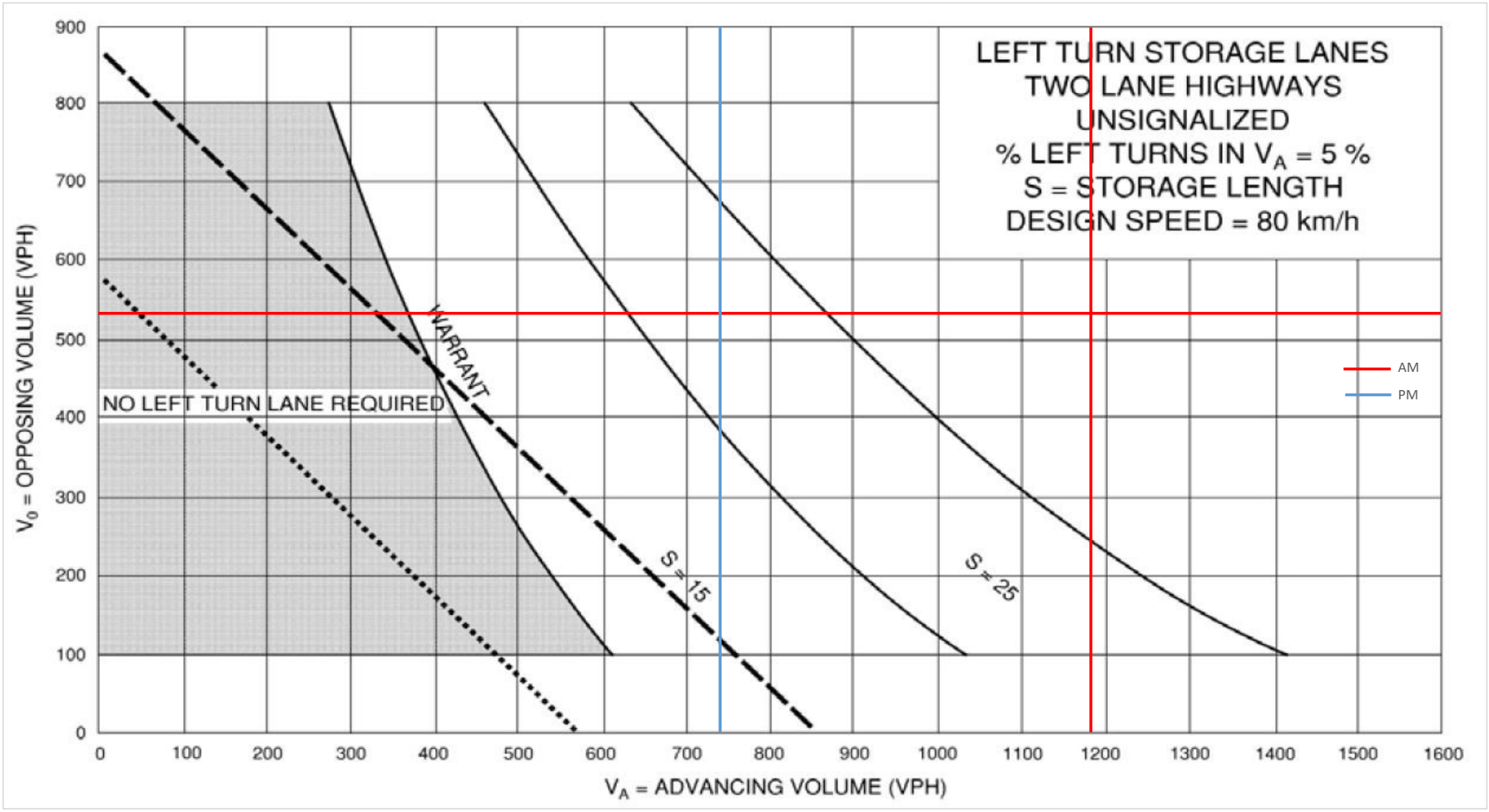
Access #1 Existing + Site + FB - Westbound Left



Access #2 Existing + Site - Eastbound Left



Access #2 Existing + Site + FB - Eastbound Left



Appendix G

Existing Plus Site Synchro and Sidra Reports

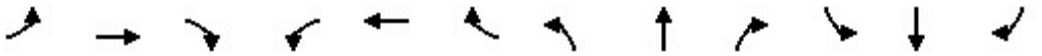
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	933	0	131	386	2	250
Future Volume (vph)	933	0	131	386	2	250
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3316	1745	1658	3221	1658	1483
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3316	1745	1658	3221	1658	1483
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			316.8	717.3	
Travel Time (s)	33.6			19.0	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	1037	0	146	429	2	278
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1037	0	146	429	2	278
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	933	0	131	386	2	250
Future Volume (Veh/h)	933	0	131	386	2	250
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1037	0	146	429	2	278
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			1037		1544	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1037		1544	518
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		98	45
cM capacity (veh/h)			666		82	502

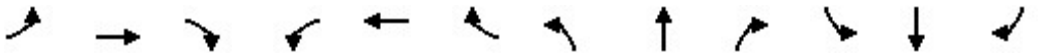
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	518	518	0	146	214	214	2	278
Volume Left	0	0	0	146	0	0	2	0
Volume Right	0	0	0	0	0	0	0	278
cSH	1700	1700	1700	666	1700	1700	82	502
Volume to Capacity	0.30	0.30	0.00	0.22	0.13	0.13	0.02	0.55
Queue Length 95th (m)	0.0	0.0	0.0	6.3	0.0	0.0	0.6	25.3
Control Delay (s)	0.0	0.0	0.0	11.9	0.0	0.0	49.8	20.7
Lane LOS				B			E	C
Approach Delay (s)	0.0			3.0			20.9	
Approach LOS							C	

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1149	0	0	515	3	0	0	0	14	0	3
Future Volume (vph)	33	1149	0	0	515	3	0	0	0	14	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	52.5			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999						0.979	
Flt Protected	0.950										0.960	
Satd. Flow (prot)	1658	3316	0	0	3312	0	0	0	0	0	1640	0
Flt Permitted	0.950										0.960	
Satd. Flow (perm)	1658	3316	0	0	3312	0	0	0	0	0	1640	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		257.4			151.6			365.4			90.9	
Travel Time (s)		15.4			9.1			26.3			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	1277	0	0	572	3	0	0	0	16	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1277	0	0	575	0	0	0	0	0	19	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

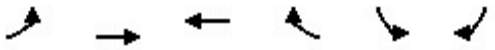
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	1149	0	0	515	3	0	0	0	14	0	3
Future Volume (Veh/h)	33	1149	0	0	515	3	0	0	0	14	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	1277	0	0	572	3	0	0	0	16	0	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	575			1277			1640	1926	638	1286	1924	288
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	575			1277			1640	1926	638	1286	1924	288
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	96			100			100	100	100	86	100	100
cM capacity (veh/h)	994			540			64	63	419	118	64	709

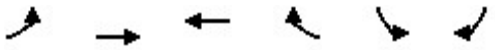
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	37	638	638	381	194	19
Volume Left	37	0	0	0	0	16
Volume Right	0	0	0	0	3	3
cSH	994	1700	1700	1700	1700	136
Volume to Capacity	0.04	0.38	0.38	0.22	0.11	0.14
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	3.6
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	35.7
Lane LOS	A					E
Approach Delay (s)	0.2			0.0		35.7
Approach LOS						E

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	43.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	1158	516	13	0	2
Future Volume (vph)	5	1158	516	13	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	55.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	75.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1658	3316	3302	0	0	1510
Flt Permitted	0.950					
Satd. Flow (perm)	1658	3316	3302	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		151.6	515.1		87.3	
Travel Time (s)		9.1	30.9		6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	1287	573	14	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	1287	587	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

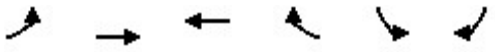
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	1158	516	13	0	2
Future Volume (Veh/h)	5	1158	516	13	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	1287	573	14	0	2
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	587				1236	294
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	587				1236	294
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	984				167	703

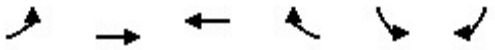
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	6	644	644	382	205	2
Volume Left	6	0	0	0	0	0
Volume Right	0	0	0	0	14	2
cSH	984	1700	1700	1700	1700	703
Volume to Capacity	0.01	0.38	0.38	0.22	0.12	0.00
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	10.1
Lane LOS	A					B
Approach Delay (s)	0.0			0.0		10.1
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1183	516	2	0	1
Future Volume (vph)	0	1183	516	2	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3316	3312	0	0	1510
Flt Permitted						
Satd. Flow (perm)	0	3316	3312	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		316.8	257.4		85.6	
Travel Time (s)		19.0	15.4		6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1314	573	2	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1314	575	0	0	1
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1183	516	2	0	1
Future Volume (Veh/h)	0	1183	516	2	0	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1314	573	2	0	1
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	575				1231	288
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	575				1231	288
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	994				170	709

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	657	657	382	193	1
Volume Left	0	0	0	0	0
Volume Right	0	0	0	2	1
cSH	1700	1700	1700	1700	709
Volume to Capacity	0.39	0.39	0.22	0.11	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	10.1
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.1
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing + Site AM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	40	23.0	40	23.0	0.714	60.5	LOS F	2.8	20.7	0.92	1.10	1.60	31.5
2	T1	All MCs	168	2.0	168	2.0	0.714	47.3	LOS E	3.0	21.7	0.92	1.09	1.60	32.6
3	R2	All MCs	138	2.0	138	2.0	0.714	44.7	LOS E	3.0	21.7	0.92	1.09	1.59	33.6
Approach			346	4.4	346	4.4	0.714	47.6	LOS E	3.0	21.7	0.92	1.09	1.60	32.8
East: William Halton Parkway															
4	L2	All MCs	56	12.0	56	12.0	0.353	11.5	LOS B	1.4	10.4	0.59	0.57	0.70	47.3
5	T1	All MCs	244	3.0	244	3.0	0.353	10.4	LOS B	1.4	10.4	0.59	0.57	0.69	48.6
6	R2	All MCs	144	2.0	144	2.0	0.353	10.2	LOS B	1.4	10.0	0.57	0.55	0.67	48.8
Approach			444	3.8	444	3.8	0.353	10.5	LOS B	1.4	10.4	0.58	0.56	0.68	48.5
North: Sixth Line															
7	L2	All MCs	633	2.0	633	2.0	0.759	19.8	LOS C	10.9	77.6	0.77	0.91	1.58	40.8
8	T1	All MCs	194	2.0	194	2.0	0.629	14.5	LOS B	5.9	42.3	0.65	0.67	1.09	46.6
9	R2	All MCs	321	2.0	321	2.0	0.629	14.5	LOS B	5.9	42.3	0.65	0.67	1.09	46.3
Approach			1149	2.0	1149	2.0	0.759	17.4	LOS C	10.9	77.6	0.71	0.80	1.36	43.0
West: William Halton Parkway															
10	L2	All MCs	519	2.0	519	2.0	1.354	194.1	LOS F	60.3	429.4	1.00	3.79	10.52	14.6
11	T1	All MCs	720	2.0	720	2.0	1.354	193.2	LOS F	61.9	446.1	1.00	3.90	10.87	14.6
12	R2	All MCs	70	15.0	70	15.0	1.354	195.8	LOS F	61.9	446.1	1.00	3.93	10.94	14.6
Approach			1309	2.7	1309	2.7	1.354	193.7	LOS F	61.9	446.1	1.00	3.86	10.73	14.6
All Vehicles			3248	2.8	3248	2.8	1.354	90.7	LOS F	61.9	446.1	0.83	2.03	5.07	23.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

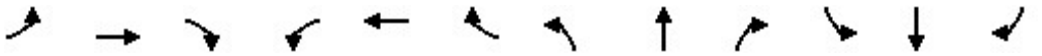
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	471	4	203	1090	1	244
Future Volume (vph)	471	4	203	1090	1	244
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3283	1483	1658	3316	1658	1483
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3283	1483	1658	3316	1658	1483
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			316.8	717.3	
Travel Time (s)	33.6			19.0	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	523	4	226	1211	1	271
Shared Lane Traffic (%)						
Lane Group Flow (vph)	523	4	226	1211	1	271
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	471	4	203	1090	1	244
Future Volume (Veh/h)	471	4	203	1090	1	244
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	523	4	226	1211	1	271
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			527		1580	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			527		1580	262
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		99	63
cM capacity (veh/h)			1036		78	737

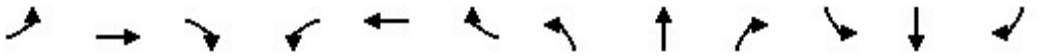
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	262	262	4	226	606	606	1	271
Volume Left	0	0	0	226	0	0	1	0
Volume Right	0	0	4	0	0	0	0	271
cSH	1700	1700	1700	1036	1700	1700	78	737
Volume to Capacity	0.15	0.15	0.00	0.22	0.36	0.36	0.01	0.37
Queue Length 95th (m)	0.0	0.0	0.0	6.3	0.0	0.0	0.3	12.9
Control Delay (s)	0.0	0.0	0.0	9.4	0.0	0.0	51.8	12.7
Lane LOS				A			F	B
Approach Delay (s)	0.0			1.5			12.8	
Approach LOS							B	

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	707	0	0	1267	3	0	0	0	21	0	23
Future Volume (vph)	8	707	0	0	1267	3	0	0	0	21	0	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	52.5			15.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt											0.928	
Flt Protected	0.950										0.977	
Satd. Flow (prot)	1658	3316	0	0	3316	0	0	0	0	0	1582	0
Flt Permitted	0.950										0.977	
Satd. Flow (perm)	1658	3316	0	0	3316	0	0	0	0	0	1582	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		257.4			151.6			365.4			90.9	
Travel Time (s)		15.4			9.1			26.3			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	786	0	0	1408	3	0	0	0	23	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	786	0	0	1411	0	0	0	0	0	49	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

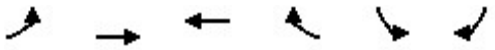
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	707	0	0	1267	3	0	0	0	21	0	23
Future Volume (Veh/h)	8	707	0	0	1267	3	0	0	0	21	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	786	0	0	1408	3	0	0	0	23	0	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1411			786			1534	2215	393	1820	2214	706
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1411			786			1534	2215	393	1820	2214	706
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	52	100	93
cM capacity (veh/h)	479			829			73	42	606	48	43	379

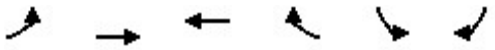
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	9	393	393	939	472	49
Volume Left	9	0	0	0	0	23
Volume Right	0	0	0	0	3	26
cSH	479	1700	1700	1700	1700	89
Volume to Capacity	0.02	0.23	0.23	0.55	0.28	0.55
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	18.7
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	86.8
Lane LOS	B					F
Approach Delay (s)	0.1			0.0		86.8
Approach LOS						F

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	47.1%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	727	1251	15	0	20
Future Volume (vph)	1	727	1251	15	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	55.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	75.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1658	3316	3309	0	0	1510
Flt Permitted	0.950					
Satd. Flow (perm)	1658	3316	3309	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		151.6	515.1		87.3	
Travel Time (s)		9.1	30.9		6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	808	1390	17	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	808	1407	0	0	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

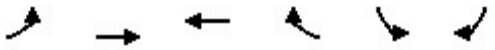
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	727	1251	15	0	20
Future Volume (Veh/h)	1	727	1251	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	808	1390	17	0	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1407				1804	704
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1407				1804	704
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	481				70	380

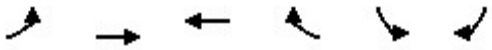
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	404	404	927	480	22
Volume Left	1	0	0	0	0	0
Volume Right	0	0	0	0	17	22
cSH	481	1700	1700	1700	1700	380
Volume to Capacity	0.00	0.24	0.24	0.55	0.28	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	1.4
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	15.1
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		15.1
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	715	1289	1	0	3
Future Volume (vph)	0	715	1289	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3316	3316	0	0	1510
Flt Permitted						
Satd. Flow (perm)	0	3316	3316	0	0	1510
Link Speed (k/h)		50	50		50	
Link Distance (m)		316.8	257.4		85.6	
Travel Time (s)		22.8	18.5		6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	794	1432	1	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	794	1433	0	0	3
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	715	1289	1	0	3
Future Volume (Veh/h)	0	715	1289	1	0	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	794	1432	1	0	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1433				1830	716
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1433				1830	716
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	470				68	372

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	397	397	955	478	3
Volume Left	0	0	0	0	0
Volume Right	0	0	0	1	3
cSH	1700	1700	1700	1700	372
Volume to Capacity	0.23	0.23	0.56	0.28	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	14.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing + Site PM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	86	2.0	86	2.0	0.440	16.1	LOS C	1.8	13.0	0.72	0.80	1.01	44.0
2	T1	All MCs	214	2.0	214	2.0	0.440	15.8	LOS C	1.8	13.0	0.71	0.79	1.00	45.3
3	R2	All MCs	110	2.0	110	2.0	0.440	15.5	LOS C	1.8	12.8	0.70	0.78	0.99	45.8
Approach			410	2.0	410	2.0	0.440	15.8	LOS C	1.8	13.0	0.71	0.79	1.00	45.2
East: William Halton Parkway															
4	L2	All MCs	62	2.0	62	2.0	0.889	36.5	LOS E	14.1	100.5	0.95	1.43	2.66	36.3
5	T1	All MCs	846	2.0	846	2.0	0.889	36.2	LOS E	14.2	101.1	0.94	1.43	2.66	36.8
6	R2	All MCs	306	2.0	306	2.0	0.889	35.8	LOS E	14.2	101.1	0.94	1.43	2.67	36.7
Approach			1213	2.0	1213	2.0	0.889	36.1	LOS E	14.2	101.1	0.94	1.43	2.66	36.7
North: Sixth Line															
7	L2	All MCs	268	2.0	268	2.0	1.219	146.3	LOS F	35.3	251.0	1.00	2.82	7.43	17.7
8	T1	All MCs	221	2.0	221	2.0	1.219	146.3	LOS F	36.8	261.8	1.00	2.82	7.43	17.8
9	R2	All MCs	514	2.0	514	2.0	1.219	144.6	LOS F	36.8	261.8	1.00	2.90	7.72	17.5
Approach			1003	2.0	1003	2.0	1.219	145.4	LOS F	36.8	261.8	1.00	2.86	7.58	17.7
West: William Halton Parkway															
10	L2	All MCs	288	2.0	288	2.0	0.589	15.2	LOS C	4.4	31.5	0.71	0.74	1.12	43.6
11	T1	All MCs	448	2.0	448	2.0	0.589	15.0	LOS B	4.4	31.5	0.69	0.73	1.11	46.0
12	R2	All MCs	86	2.0	86	2.0	0.589	14.9	LOS B	4.4	31.1	0.69	0.73	1.10	46.3
Approach			821	2.0	821	2.0	0.589	15.0	LOS C	4.4	31.5	0.70	0.73	1.11	45.1
All Vehicles			3448	2.0	3448	2.0	1.219	60.5	LOS F	36.8	261.8	0.87	1.60	3.53	29.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix H

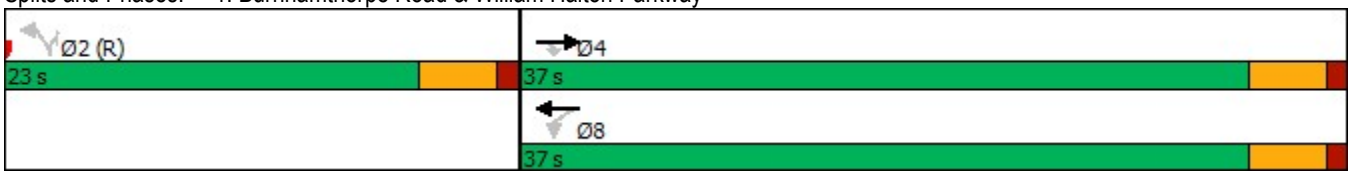
Future Total Sensitivity Synchro and Sidra Reports

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	937	52	133	400	174	256
Future Volume (vph)	937	52	133	400	174	256
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3316	1483	1658	3221	1658	1483
Flt Permitted			0.211		0.950	
Satd. Flow (perm)	3316	1483	368	3221	1658	1483
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		50				85
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			315.9	717.3	
Travel Time (s)	33.6			19.0	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	2%	2%
Adj. Flow (vph)	1041	58	148	444	193	284
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1041	58	148	444	193	284
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases		4	8		2	2
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%
Maximum Green (s)	32.5	32.5	32.5	32.5	18.5	18.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.5	32.5	32.5	32.5	18.5	18.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.31	0.31

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
v/c Ratio	0.58	0.07	0.74	0.25	0.38	0.55
Control Delay	10.8	3.0	38.5	7.8	18.9	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	3.0	38.5	7.8	18.9	16.7
LOS	B	A	D	A	B	B
Approach Delay	10.4			15.5	17.6	
Approach LOS	B			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Burnhamthorpe Road & William Halton Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1041	58	148	444	193	284
v/c Ratio	0.58	0.07	0.74	0.25	0.38	0.55
Control Delay	10.8	3.0	38.5	7.8	18.9	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	3.0	38.5	7.8	18.9	16.7
Queue Length 50th (m)	36.2	0.4	11.3	12.3	16.4	17.2
Queue Length 95th (m)	51.6	4.4	#41.0	19.1	31.2	37.6
Internal Link Dist (m)	536.6			291.9	693.3	
Turn Bay Length (m)		20.0	50.0		25.0	
Base Capacity (vph)	1796	826	199	1744	511	516
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.07	0.74	0.25	0.38	0.55

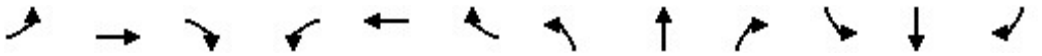
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	937	52	133	400	174	256
Future Volume (vph)	937	52	133	400	174	256
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3316	1483	1658	3221	1658	1483
Flt Permitted	1.00	1.00	0.21	1.00	0.95	1.00
Satd. Flow (perm)	3316	1483	369	3221	1658	1483
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1041	58	148	444	193	284
RTOR Reduction (vph)	0	23	0	0	0	59
Lane Group Flow (vph)	1041	35	148	444	193	225
Heavy Vehicles (%)	2%	2%	2%	5%	2%	2%
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases		4	8		2	2
Actuated Green, G (s)	32.5	32.5	32.5	32.5	18.5	18.5
Effective Green, g (s)	32.5	32.5	32.5	32.5	18.5	18.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	1796	803	199	1744	511	457
v/s Ratio Prot	0.31			0.14		
v/s Ratio Perm		0.02	c0.40		0.12	c0.15
v/c Ratio	0.58	0.04	0.74	0.25	0.38	0.49
Uniform Delay, d1	9.2	6.5	10.6	7.3	16.2	16.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	22.0	0.4	2.1	3.8
Delay (s)	10.6	6.6	32.6	7.7	18.4	20.7
Level of Service	B	A	C	A	B	C
Approach Delay (s)	10.3			13.9	19.7	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

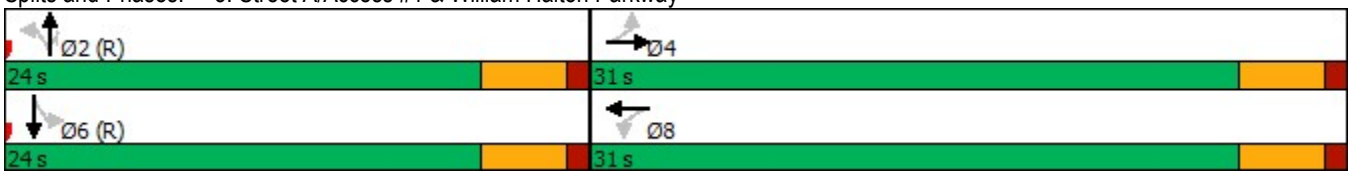


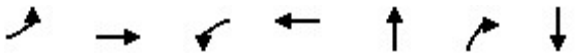
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1155	4	4	517	3	14	0	14	14	0	3
Future Volume (vph)	33	1155	4	4	517	3	14	0	14	14	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		0.0	70.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	52.5			52.5			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999				0.850		0.979	
Flt Protected	0.950			0.950				0.950			0.960	
Satd. Flow (prot)	1658	3316	0	1658	3312	0	0	1658	1483	0	1640	0
Flt Permitted	0.414			0.151				0.745			0.867	
Satd. Flow (perm)	722	3316	0	264	3312	0	0	1300	1483	0	1481	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				30		30	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		217.3			176.2			364.6			90.9	
Travel Time (s)		13.0			10.6			26.3			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	1283	4	4	574	3	16	0	16	16	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1287	0	4	577	0	0	16	16	0	19	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	31.0	31.0		31.0	31.0		24.0	24.0	24.0	24.0	24.0	
Total Split (%)	56.4%	56.4%		56.4%	56.4%		43.6%	43.6%	43.6%	43.6%	43.6%	
Maximum Green (s)	26.5	26.5		26.5	26.5		19.5	19.5	19.5	19.5	19.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	26.5	26.5		26.5	26.5			19.5	19.5		19.5	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.35	0.35		0.35	
v/c Ratio	0.11	0.81		0.03	0.36			0.03	0.03		0.03	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.8	17.3		8.5	9.8			12.0	3.4		4.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	8.8	17.3		8.5	9.8			12.0	3.4		4.2	
LOS	A	B		A	A			B	A		A	
Approach Delay		17.0			9.7			7.7			4.2	
Approach LOS		B			A			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

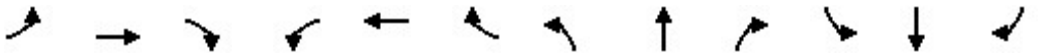
Splits and Phases: 3: Street A/Access #1 & William Halton Parkway





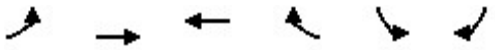
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	37	1287	4	577	16	16	19
v/c Ratio	0.11	0.81	0.03	0.36	0.03	0.03	0.03
Control Delay	8.8	17.3	8.5	9.8	12.0	3.4	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	17.3	8.5	9.8	12.0	3.4	4.2
Queue Length 50th (m)	1.9	52.6	0.2	17.4	1.0	0.0	0.0
Queue Length 95th (m)	5.9	76.2	1.5	26.6	4.1	2.0	2.5
Internal Link Dist (m)		193.3		152.2	340.6		66.9
Turn Bay Length (m)	70.0		70.0				
Base Capacity (vph)	347	1598	127	1596	460	545	544
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.81	0.03	0.36	0.03	0.03	0.03

Intersection Summary



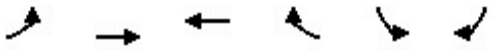
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1155	4	4	517	3	14	0	14	14	0	3
Future Volume (vph)	33	1155	4	4	517	3	14	0	14	14	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1658	3314		1658	3313			1658	1483		1639	
Flt Permitted	0.41	1.00		0.15	1.00			0.75	1.00		0.87	
Satd. Flow (perm)	722	3314		263	3313			1300	1483		1481	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	1283	4	4	574	3	16	0	16	16	0	3
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	10	0	12	0
Lane Group Flow (vph)	37	1286	0	4	576	0	0	16	6	0	7	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	26.5	26.5		26.5	26.5			19.5	19.5		19.5	
Effective Green, g (s)	26.5	26.5		26.5	26.5			19.5	19.5		19.5	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.35	0.35		0.35	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lane Grp Cap (vph)	347	1596		126	1596			460	525		525	
v/s Ratio Prot		c0.39			0.17							
v/s Ratio Perm	0.05			0.02				c0.01	0.00		0.00	
v/c Ratio	0.11	0.81		0.03	0.36			0.03	0.01		0.01	
Uniform Delay, d1	7.8	12.1		7.5	8.9			11.6	11.5		11.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	4.5		0.5	0.6			0.1	0.0		0.0	
Delay (s)	8.4	16.5		8.0	9.6			11.7	11.5		11.6	
Level of Service	A	B		A	A			B	B		B	
Approach Delay (s)		16.3			9.6			11.6			11.6	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	1178	522	13	0	2
Future Volume (vph)	5	1178	522	13	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	55.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	75.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1658	3316	3302	0	0	1510
Flt Permitted	0.950					
Satd. Flow (perm)	1658	3316	3302	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		176.2	528.3		87.3	
Travel Time (s)		10.6	31.7		6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	1309	580	14	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	1309	594	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

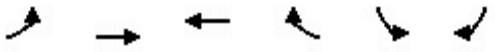
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	1178	522	13	0	2
Future Volume (Veh/h)	5	1178	522	13	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	1309	580	14	0	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		176				
pX, platoon unblocked					0.67	
vC, conflicting volume	594				1254	297
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	594				380	297
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	978				394	699

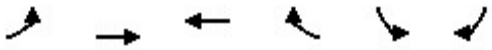
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	6	654	654	387	207	2
Volume Left	6	0	0	0	0	0
Volume Right	0	0	0	0	14	2
cSH	978	1700	1700	1700	1700	699
Volume to Capacity	0.01	0.39	0.39	0.23	0.12	0.00
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	10.2
Lane LOS	A					B
Approach Delay (s)	0.0			0.0		10.2
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1193	532	2	0	1
Future Volume (vph)	0	1193	532	2	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.999			0.865
Flt Protected						
Satd. Flow (prot)	0	3316	3312	0	0	1510
Flt Permitted						
Satd. Flow (perm)	0	3316	3312	0	0	1510
Link Speed (k/h)		50	50		50	
Link Distance (m)		315.9	217.3		80.1	
Travel Time (s)		22.7	15.6		5.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1326	591	2	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1326	593	0	0	1
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1193	532	2	0	1
Future Volume (Veh/h)	0	1193	532	2	0	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1326	591	2	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		316	217			
pX, platoon unblocked	0.95				0.85	0.95
vC, conflicting volume	593				1255	296
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	456				656	143
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1042				338	832

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	663	663	394	199	1
Volume Left	0	0	0	0	0
Volume Right	0	0	0	2	1
cSH	1700	1700	1700	1700	832
Volume to Capacity	0.39	0.39	0.23	0.12	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	9.3
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.3
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing + Site + BD AM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	40	23.0	40	23.0	0.713	60.3	LOS F	2.8	20.6	0.92	1.09	1.60	31.6
2	T1	All MCs	168	2.0	168	2.0	0.713	47.1	LOS E	3.0	21.6	0.92	1.09	1.59	32.6
3	R2	All MCs	138	2.0	138	2.0	0.713	44.5	LOS E	3.0	21.6	0.92	1.08	1.59	33.7
Approach			346	4.4	346	4.4	0.713	47.4	LOS E	3.0	21.6	0.92	1.09	1.59	32.9
East: William Halton Parkway															
4	L2	All MCs	57	12.0	57	12.0	0.358	11.6	LOS B	1.4	10.6	0.60	0.58	0.71	47.2
5	T1	All MCs	247	3.0	247	3.0	0.358	10.5	LOS B	1.4	10.6	0.59	0.57	0.70	48.5
6	R2	All MCs	148	2.0	148	2.0	0.358	10.3	LOS B	1.4	10.3	0.58	0.56	0.68	48.8
Approach			451	3.8	451	3.8	0.358	10.6	LOS B	1.4	10.6	0.59	0.57	0.69	48.4
North: Sixth Line															
7	L2	All MCs	633	2.0	633	2.0	0.762	20.0	LOS C	11.0	78.1	0.77	0.92	1.59	40.7
8	T1	All MCs	194	2.0	194	2.0	0.631	14.6	LOS B	6.0	42.6	0.65	0.68	1.10	46.6
9	R2	All MCs	321	2.0	321	2.0	0.631	14.6	LOS B	6.0	42.6	0.65	0.68	1.10	46.3
Approach			1149	2.0	1149	2.0	0.762	17.6	LOS C	11.0	78.1	0.72	0.81	1.37	43.0
West: William Halton Parkway															
10	L2	All MCs	528	2.0	528	2.0	1.380	204.8	LOS F	63.8	454.6	1.00	3.92	10.95	14.0
11	T1	All MCs	732	2.0	732	2.0	1.380	204.0	LOS F	65.6	472.4	1.00	4.03	11.31	14.0
12	R2	All MCs	71	15.0	71	15.0	1.380	206.6	LOS F	65.6	472.4	1.00	4.06	11.38	14.0
Approach			1331	2.7	1331	2.7	1.380	204.5	LOS F	65.6	472.4	1.00	3.99	11.17	14.0
All Vehicles			3277	2.8	3277	2.8	1.380	95.7	LOS F	65.6	472.4	0.84	2.10	5.28	23.1

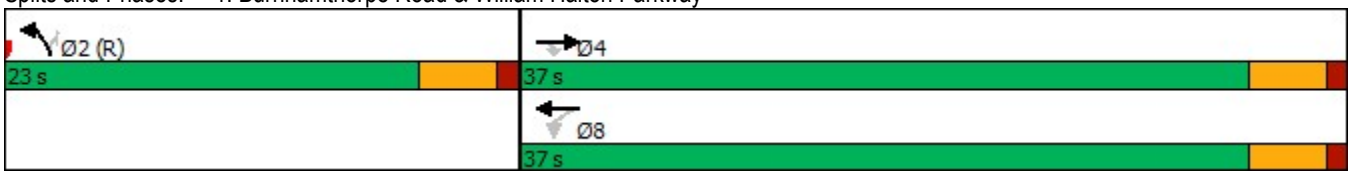
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	184	209	1099	112	248
Future Volume (vph)	486	184	209	1099	112	248
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		20.0	50.0		25.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3283	1483	1658	3316	1658	1483
Flt Permitted			0.442		0.950	
Satd. Flow (perm)	3283	1483	771	3316	1658	1483
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		204				276
Link Speed (k/h)	60			60	40	
Link Distance (m)	560.6			315.9	717.3	
Travel Time (s)	33.6			19.0	64.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	540	204	232	1221	124	276
Shared Lane Traffic (%)						
Lane Group Flow (vph)	540	204	232	1221	124	276
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)		15	25		25	15
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%
Maximum Green (s)	32.5	32.5	32.5	32.5	18.5	18.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	32.5	32.5	32.5	32.5	18.5	18.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.31	0.31

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
v/c Ratio	0.30	0.23	0.56	0.68	0.24	0.43
Control Delay	8.1	2.0	26.4	25.5	17.1	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	2.0	26.4	25.5	17.1	4.8
LOS	A	A	C	C	B	A
Approach Delay	6.4			25.6	8.6	
Approach LOS	A			C	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Burnhamthorpe Road & William Halton Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	540	204	232	1221	124	276
v/c Ratio	0.30	0.23	0.56	0.68	0.24	0.43
Control Delay	8.1	2.0	26.4	25.5	17.1	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	2.0	26.4	25.5	17.1	4.8
Queue Length 50th (m)	15.4	0.0	29.1	80.7	10.1	0.0
Queue Length 95th (m)	23.2	7.2	m36.2	99.6	20.9	13.7
Internal Link Dist (m)	536.6			291.9	693.3	
Turn Bay Length (m)		20.0	50.0		25.0	
Base Capacity (vph)	1778	896	417	1796	511	648
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.23	0.56	0.68	0.24	0.43

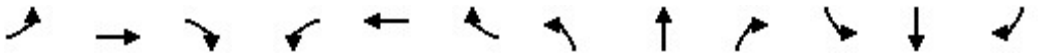
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	184	209	1099	112	248
Future Volume (vph)	486	184	209	1099	112	248
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3283	1483	1658	3316	1658	1483
Flt Permitted	1.00	1.00	0.44	1.00	0.95	1.00
Satd. Flow (perm)	3283	1483	771	3316	1658	1483
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	540	204	232	1221	124	276
RTOR Reduction (vph)	0	94	0	0	0	191
Lane Group Flow (vph)	540	111	232	1221	124	85
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	32.5	32.5	32.5	32.5	18.5	18.5
Effective Green, g (s)	32.5	32.5	32.5	32.5	18.5	18.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.31	0.31
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	1778	803	417	1796	511	457
v/s Ratio Prot	0.16			c0.37	c0.07	
v/s Ratio Perm		0.07	0.30			0.06
v/c Ratio	0.30	0.14	0.56	0.68	0.24	0.19
Uniform Delay, d1	7.5	6.8	9.0	10.0	15.5	15.2
Progression Factor	1.00	1.00	2.29	2.35	1.00	1.00
Incremental Delay, d2	0.4	0.4	3.1	1.2	1.1	0.9
Delay (s)	8.0	7.2	23.7	24.7	16.6	16.1
Level of Service	A	A	C	C	B	B
Approach Delay (s)	7.8			24.5	16.3	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

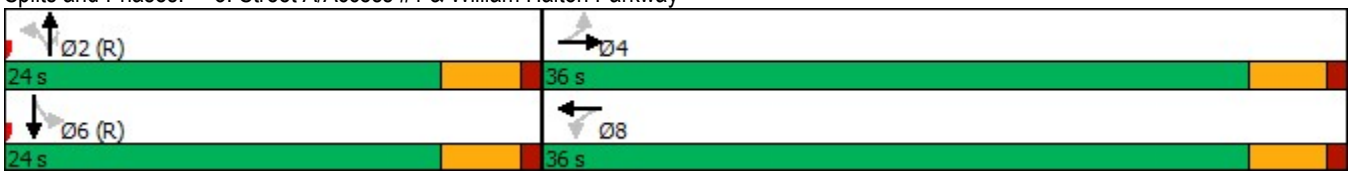


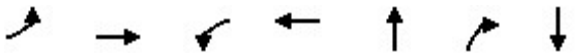
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	711	15	15	1273	3	9	0	9	21	0	23
Future Volume (vph)	8	711	15	15	1273	3	9	0	9	21	0	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		0.0	70.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (m)	52.5			52.5			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997							0.850		0.928	
Flt Protected	0.950			0.950				0.950			0.977	
Satd. Flow (prot)	1658	3306	0	1658	3316	0	0	1658	1483	0	1582	0
Flt Permitted	0.127			0.300				0.725			0.906	
Satd. Flow (perm)	222	3306	0	524	3316	0	0	1265	1483	0	1467	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			1				27		27	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		217.3			176.2			364.6			90.9	
Travel Time (s)		13.0			10.6			26.3			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	790	17	17	1414	3	10	0	10	23	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	807	0	17	1417	0	0	10	10	0	49	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	31.5	31.5		31.5	31.5		19.5	19.5	19.5	19.5	19.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	31.5	31.5		31.5	31.5			19.5	19.5		19.5	
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.32	0.32		0.32	
v/c Ratio	0.08	0.46		0.06	0.81			0.02	0.02		0.10	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.1	19.4		7.8	16.8			14.1	2.7		9.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	17.1	19.4		7.8	16.8			14.1	2.7		9.2	
LOS	B	B		A	B			B	A		A	
Approach Delay		19.3			16.7			8.4			9.3	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Street A/Access #1 & William Halton Parkway

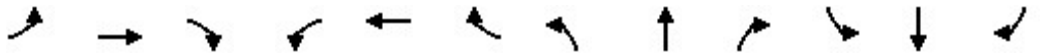




Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	9	807	17	1417	10	10	49
v/c Ratio	0.08	0.46	0.06	0.81	0.02	0.02	0.10
Control Delay	17.1	19.4	7.8	16.8	14.1	2.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	19.4	7.8	16.8	14.1	2.7	9.2
Queue Length 50th (m)	0.8	44.2	0.8	61.7	0.8	0.0	1.6
Queue Length 95th (m)	m2.4	55.0	3.4	88.0	3.4	1.3	7.6
Internal Link Dist (m)		193.3		152.2	340.6		66.9
Turn Bay Length (m)	70.0		70.0				
Base Capacity (vph)	116	1738	275	1741	411	500	495
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.46	0.06	0.81	0.02	0.02	0.10

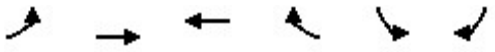
Intersection Summary

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



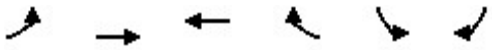
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	711	15	15	1273	3	9	0	9	21	0	23
Future Volume (vph)	8	711	15	15	1273	3	9	0	9	21	0	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1658	3305		1658	3315			1658	1483		1583	
Flt Permitted	0.13	1.00		0.30	1.00			0.73	1.00		0.91	
Satd. Flow (perm)	222	3305		523	3315			1265	1483		1468	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	9	790	17	17	1414	3	10	0	10	23	0	26
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	7	0	18	0
Lane Group Flow (vph)	9	805	0	17	1417	0	0	10	3	0	31	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	31.5	31.5		31.5	31.5			19.5	19.5		19.5	
Effective Green, g (s)	31.5	31.5		31.5	31.5			19.5	19.5		19.5	
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.32	0.32		0.32	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lane Grp Cap (vph)	116	1735		274	1740			411	481		477	
v/s Ratio Prot		0.24			c0.43							
v/s Ratio Perm	0.04			0.03				0.01	0.00		c0.02	
v/c Ratio	0.08	0.46		0.06	0.81			0.02	0.01		0.06	
Uniform Delay, d1	7.1	8.9		7.0	11.8			13.8	13.7		14.0	
Progression Factor	2.03	2.03		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.2	0.9		0.4	4.3			0.1	0.0		0.3	
Delay (s)	15.6	19.1		7.4	16.1			13.9	13.7		14.2	
Level of Service	B	B		A	B			B	B		B	
Approach Delay (s)		19.0			16.0			13.8			14.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	740	1272	15	0	20
Future Volume (vph)	1	740	1272	15	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	55.0			0.0	0.0	0.0
Storage Lanes	1			0	0	1
Taper Length (m)	75.0				15.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1658	3316	3309	0	0	1510
Flt Permitted	0.950					
Satd. Flow (perm)	1658	3316	3309	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		176.2	528.3		87.3	
Travel Time (s)		10.6	31.7		6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	822	1413	17	0	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	822	1430	0	0	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

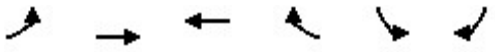
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	740	1272	15	0	20
Future Volume (Veh/h)	1	740	1272	15	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	822	1413	17	0	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		176				
pX, platoon unblocked					0.86	
vC, conflicting volume	1430				1834	715
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1430				1653	715
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	471				77	373

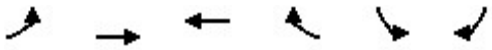
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	411	411	942	488	22
Volume Left	1	0	0	0	0	0
Volume Right	0	0	0	0	17	22
cSH	471	1700	1700	1700	1700	373
Volume to Capacity	0.00	0.24	0.24	0.55	0.29	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	1.4
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	15.3
Lane LOS	B					C
Approach Delay (s)	0.0			0.0		15.3
Approach LOS						C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	734	1304	1	0	3
Future Volume (vph)	0	734	1304	1	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3316	3316	0	0	1510
Flt Permitted						
Satd. Flow (perm)	0	3316	3316	0	0	1510
Link Speed (k/h)		60	60		50	
Link Distance (m)		315.9	217.3		80.1	
Travel Time (s)		19.0	13.0		5.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	816	1449	1	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	816	1450	0	0	3
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.5	3.5		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		3.0	3.0		3.0	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	734	1304	1	0	3
Future Volume (Veh/h)	0	734	1304	1	0	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	816	1449	1	0	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		316	217			
pX, platoon unblocked	0.63				0.64	0.63
vC, conflicting volume	1450				1858	725
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540				1130	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	645				125	683

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	408	408	966	484	3
Volume Left	0	0	0	0	0
Volume Right	0	0	0	1	3
cSH	1700	1700	1700	1700	683
Volume to Capacity	0.24	0.24	0.57	0.28	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	10.3
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.3
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 1 [William Halton Parkway at Sixth Line - Existing + Site + BD PM (Site Folder: Mattamy SGGC Plant)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sixth Line															
1	L2	All MCs	86	2.0	86	2.0	0.444	16.4	LOS C	1.9	13.2	0.72	0.81	1.02	43.9
2	T1	All MCs	214	2.0	214	2.0	0.444	16.0	LOS C	1.9	13.2	0.71	0.80	1.01	45.2
3	R2	All MCs	110	2.0	110	2.0	0.444	15.7	LOS C	1.8	13.0	0.71	0.79	1.00	45.7
Approach			410	2.0	410	2.0	0.444	16.0	LOS C	1.9	13.2	0.71	0.80	1.01	45.0
East: William Halton Parkway															
4	L2	All MCs	63	2.0	63	2.0	0.911	39.8	LOS E	15.6	111.1	0.97	1.52	2.89	35.2
5	T1	All MCs	860	2.0	860	2.0	0.911	39.6	LOS E	15.7	112.0	0.97	1.52	2.89	35.6
6	R2	All MCs	313	2.0	313	2.0	0.911	39.1	LOS E	15.7	112.0	0.96	1.52	2.90	35.5
Approach			1237	2.0	1237	2.0	0.911	39.5	LOS E	15.7	112.0	0.97	1.52	2.89	35.6
North: Sixth Line															
7	L2	All MCs	268	2.0	268	2.0	1.252	159.8	LOS F	38.0	270.8	1.00	2.94	7.89	16.7
8	T1	All MCs	221	2.0	221	2.0	1.252	159.8	LOS F	39.7	283.0	1.00	2.94	7.89	16.8
9	R2	All MCs	514	2.0	514	2.0	1.252	158.1	LOS F	39.7	283.0	1.00	3.03	8.22	16.5
Approach			1003	2.0	1003	2.0	1.252	158.9	LOS F	39.7	283.0	1.00	2.99	8.06	16.6
West: William Halton Parkway															
10	L2	All MCs	293	2.0	293	2.0	0.593	15.2	LOS C	4.5	32.3	0.71	0.74	1.12	43.6
11	T1	All MCs	456	2.0	456	2.0	0.593	15.0	LOS B	4.5	32.3	0.69	0.73	1.11	46.0
12	R2	All MCs	87	2.0	87	2.0	0.593	14.9	LOS B	4.5	31.9	0.69	0.72	1.10	46.3
Approach			836	2.0	836	2.0	0.593	15.0	LOS C	4.5	32.3	0.70	0.73	1.11	45.1
All Vehicles			3486	2.0	3486	2.0	1.252	65.2	LOS F	39.7	283.0	0.88	1.67	3.73	28.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.