

# **1240 BRITANNIA ROAD WEST PROPOSED RESIDENTIAL DEVELOPMENT URBAN TRANSPORTATION CONSIDERATIONS**

City of Mississauga

Prepared For: National Homes (1240 Britannia) Inc.

March 2020



**MOVEMENT  
IN URBAN  
ENVIRONMENTS**

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## 1.0 INTRODUCTION

BA Group has been retained by National Homes to provide transportation consultation services in relation to a proposed residential townhouse development located at 1240 Britannia Road West (referred to herein as “the site”) in the City of Mississauga.

The site is located on the south side of Britannia Road West, between Whitehorn Avenue and Brookhaven Way. The site is approximately 21,474 m<sup>2</sup> in size and is bounded by Britannia Road West to the north, Galesway Boulevard to the south, residential properties on Cabrera Crescent to the west and residential properties on Candlebrook Court to the east.

The site location and context are illustrated in **Figure 1** and **Figure 2**.

The development program contemplates a total of 108 new residential townhouse units and 1 new detached dwelling unit, serviced by internal private condominium roads and the existing Cabrera Crescent, with access provided directly from Galesway Boulevard. This report documents BA Group’s review of the transportation-related aspects of the project including parking, refuse collection and fire vehicle access, and future traffic operations as part of a City of Mississauga Zoning By-law Amendment (ZBA) and Site Plan Approval (SPA) process.

### 1.1 STUDY SCOPE

Based on the nature and scale of the proposed development, as well as consultation with City of Mississauga and Region of Peel Transportation Planning staff, the following study scope has been identified and reviewed as part of this report.

- Weekday morning and afternoon peak hour traffic capacity analyses at the following intersections:
  - Britannia Road West / Bidwell Trail / Whitehorn Avenue;
  - Britannia Road West / Brookhaven Way / Douguy Boulevard;
  - Whitehorn Avenue / Galesway Boulevard;
  - Galesway Boulevard / Brookhaven Way / Prestonwood Crescent;
  - Galesway Boulevard / Cabrera Crescent;
  - Galesway Boulevard / Candlebrook Court; and
  - Galesway Boulevard / Proposed Site Driveway.
- Consideration of traffic allowances for any relevant area background development(s) identified using the City of Mississauga’s Planning Information Hub tool.
- Consideration of general background corridor traffic growth along Britannia Road West based on historical traffic count information.
- Consideration of new site-generated vehicle trips forecast based on relevant proxy site survey data and the ITE Trip Generation Manual (10<sup>th</sup> Edition).
- A review of the vehicle and bicycle parking requirements for the development as proposed compared to the prevailing Zoning By-law requirement.
- A functional review of the proposed new internal roads with particular respect to fire route requirements and waste collection vehicle routing and manoeuvres.
- A sightline analysis of the proposed site driveway.





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FIGURE 1 - SITE LOCATION



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**FIGURE 2 - SITE CONTEXT**



## 2.0 THE SITE TODAY

The site is currently occupied by two detached dwellings, with two vehicle access points located on Britannia Road West. Pedestrian sidewalks are currently provided along all boundary roads.

It is noted that there is an existing closed driveway connection to the property on Galesway Boulevard at the southwest corner of the site. Presumably, this driveway connection was constructed in anticipation of the existing Cabrera Crescent being extended from its cul-de-sac terminus to reconnect with Galesway Boulevard. The current development plan for the site does not propose extension of Cabrera Crescent, as discussed in **Section 3.0**.

The City of Mississauga Zoning By-law 0225-2007 designates the site as a Residential Zone (R1), bordered by medium-density residential (various RM code) zones on all sides. Commercial lots exist both northeast and northwest of the site, located along Britannia Road at Creditview Road and at Douguy Boulevard.

There are a number of public parks situated within walking distance of the site, in addition to Whitehorn Public School and BraeBen Golf Course.

## 3.0 PROPOSED DEVELOPMENT

The proposed development comprises 109 residential units, including 1 freehold detached house dwelling, 48 dual-frontage townhouse dwellings and 60 standard townhomes. Additionally, 6 secondary suites are proposed within 6 of the dual-front townhouses fronting onto Britannia Road West. The existing residential uses on the site will be demolished as part of the redevelopment.

A private driveway on Galesway Boulevard, between Cabrera Crescent and Candlebrook Court, is proposed to accommodate fire access and waste collection vehicle access, as well as vehicular access to the visitor parking spaces and resident parking spaces.

Two (2) parking spaces will be provided per unit for the townhouses and 1 additional parking space will be provided for those townhouses with a secondary suite. A total of 27 visitor parking spaces to serve the townhouses, located along the private road, are also proposed. The detached house dwelling on Cabrera Crescent will include 4 parking spaces.

The proposed site plan is shown in **Figure 3**. An architectural site plan is included in **Appendix A**.

### 3.1 PROPOSED PRIVATE DRIVEWAY

A private driveway on Galesway Boulevard, between Cabrera Crescent and Candlebrook Court, is proposed to provide vehicular access to the development (excluding the one proposed detached house located on Cabrera Crescent). The driveway is located approximately 90 meters east of Cabrera Crescent.

The proposed private driveway will intersect with Galesway Boulevard at a one-way, STOP-controlled intersection, with Galesway Boulevard continuing to operate under free-flowing conditions.



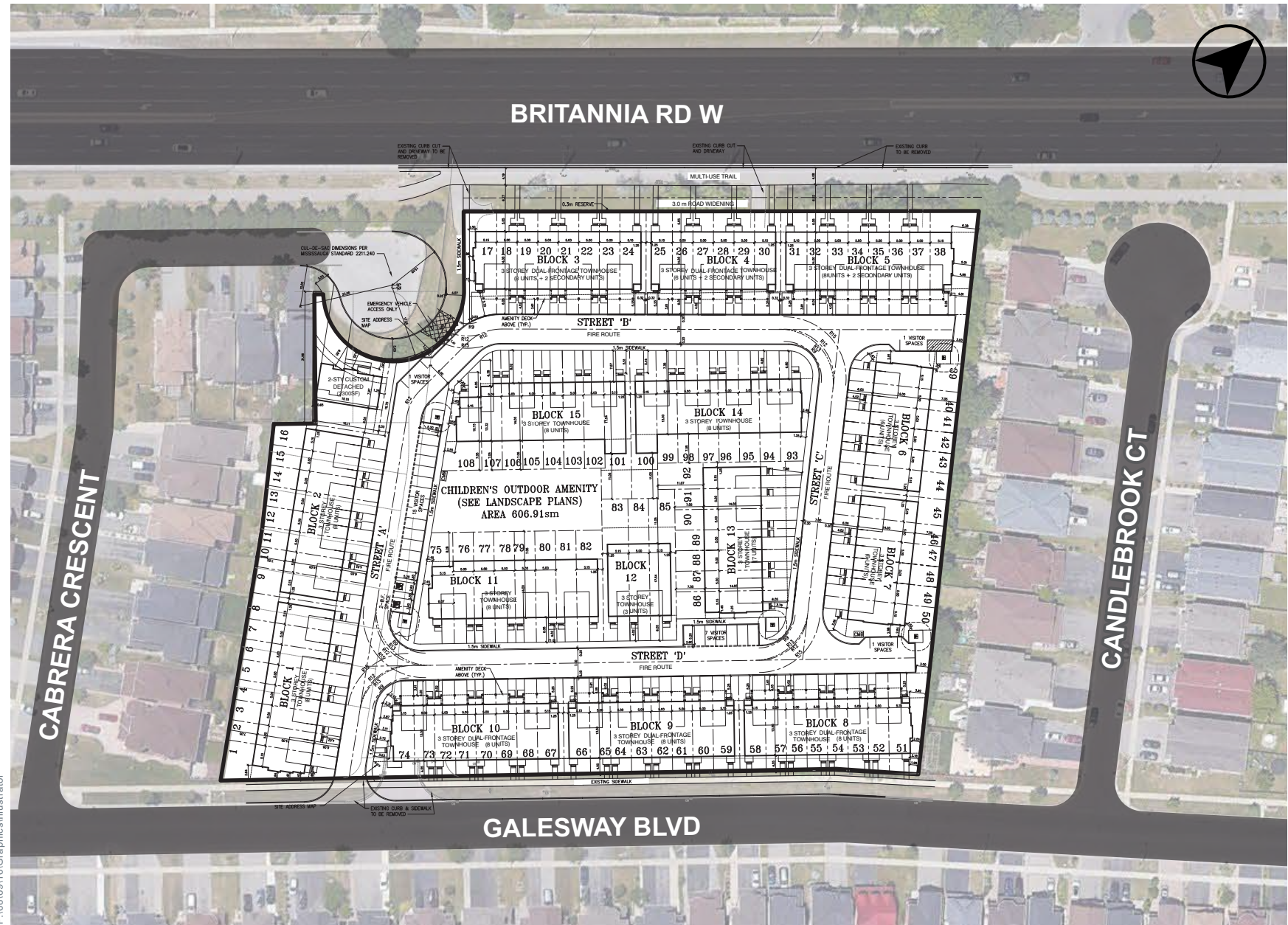


FIGURE 3 - SITE PLAN

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The proposed private driveway (internal private road) has been designed to accommodate a 7.0-meter wide pavement width and a 1.5-metre wide pedestrian sidewalk on one side. At-grade visitor parking for the development will be located close to the site's entrance, with a few additional spaces located towards the eastern corners of the site.

All private road intersections and corners have also been designed to accommodate a 9.0-metre inside radius and 15.0-metre outside radius, as per the requirements of an appropriate fire route as specified within the Ontario Building Code.

Sight distance diagrams illustrating appropriate driver sight lines are provided at the Galesway Boulevard driveway are included in **Appendix B**.

### 3.2 WASTE COLLECTION VEHICLE CIRCULATION PLAN

Vehicle Manoeuvring Diagrams (VMDs) illustrating waste collection vehicle manoeuvres are included in **Appendix C**. Note that the model for a Niagara Region waste collection vehicle was conservatively utilized in this analysis, as its dimensions are larger than both the Rear Loading Waste Collection Vehicle and Fully-Automated Side-Loading Cart Waste Collection Vehicle specified in the Region of Peel *Waste Collection Design Standards Manual*. Waste collection points for each unit, 3 m<sup>2</sup> in size, are highlighted on this plan as well.

### 3.3 CABRERA CRESCENT CUL-DE-SAC

An existing and closed driveway connection to the property on Galesway Boulevard, at the southwest corner of the site, is located approximately 180 metres east of Whitehorn Avenue. Presumably, this driveway connection was constructed in anticipation of the existing Cabrera Crescent being extended from its cul-de-sac terminus to reconnect with Galesway Boulevard.

The subject development lands include the properties that would have been utilized to complete the Cabrera Crescent connection to Galesway Boulevard. However, this public road connection is not proposed as part of the development plan. Instead, it is proposed that the existing driveway 'stub' on Galesway Boulevard be removed and replaced with the private road driveway discussed in **Section 3.1**.

Currently, Cabrera Crescent extends from Galesway Boulevard and terminates in a sub-standard cul-de-sac. Given that the development plan does not include the extension of Cabrera Crescent from this cul-de-sac to reconnect with Galesway Boulevard, it is proposed that the cul-de-sac be reconstructed to the appropriate permanent standard.

As such, the development plan includes the reconstruction of the Cabrera Crescent cul-de-sac to be compliant with City of Mississauga Transportation and Works Standard 2211.240 (Residential Road Cul-de-Sac). This reconstruction notably includes a 13.0-metre pavement radius and inclusion of a 3.5 to 5.0-metre wide boulevard around the perimeter of the cul-de-sac, as per the above noted standard. The development proposal includes a new single detached house that will be located on the south side of the cul-de-sac.



Cabrera Crescent currently provides access to 25 existing detached dwelling homes and the development proposal will add another detached dwelling on the cul-de-sac terminus of the road (for a total of 26 detached dwelling homes). From a traffic capacity perspective, there is no necessity to extend Cabrera Crescent to provide a second access point to Galesway Boulevard – the single access point is sufficient for the level of residential density the road will serve.

From a vehicular access perspective, the provision of a cul-de-sac at the terminus of Cabrera Crescent as per the City's standard is sufficient to accommodate the turnaround requirements of municipal service vehicles (i.e., street cleaning, snow removal and waste/recycling vehicles). The existing residential houses on Cabrera Crescent have been built and occupied since at least 2009 (according to Google Street View photography) and the current configuration of the road – even with the sub-standard cul-de-sac terminus that exists today – appears to allow for the appropriate servicing of these houses.

The City of Mississauga does not specify the maximum number of residential units that may be located on a cul-de-sac road. However, the City of Vaughan specifies that a maximum of 40 units may be located on a cul-de-sac in its Standard Design Drawings (Standard Drawing C-2: Residential Cul-de-Sac). Furthermore, there are several existing cul-de-sacs within the local neighbourhood that contain greater than 26 residential units. These include Candlebrook Court, Prosper Court, Remington Court and Barnswallow Court. As such, the provision of 26 residential units on Cabrera Crescent is not unprecedented with respect to municipal engineering standards or existing conditions.

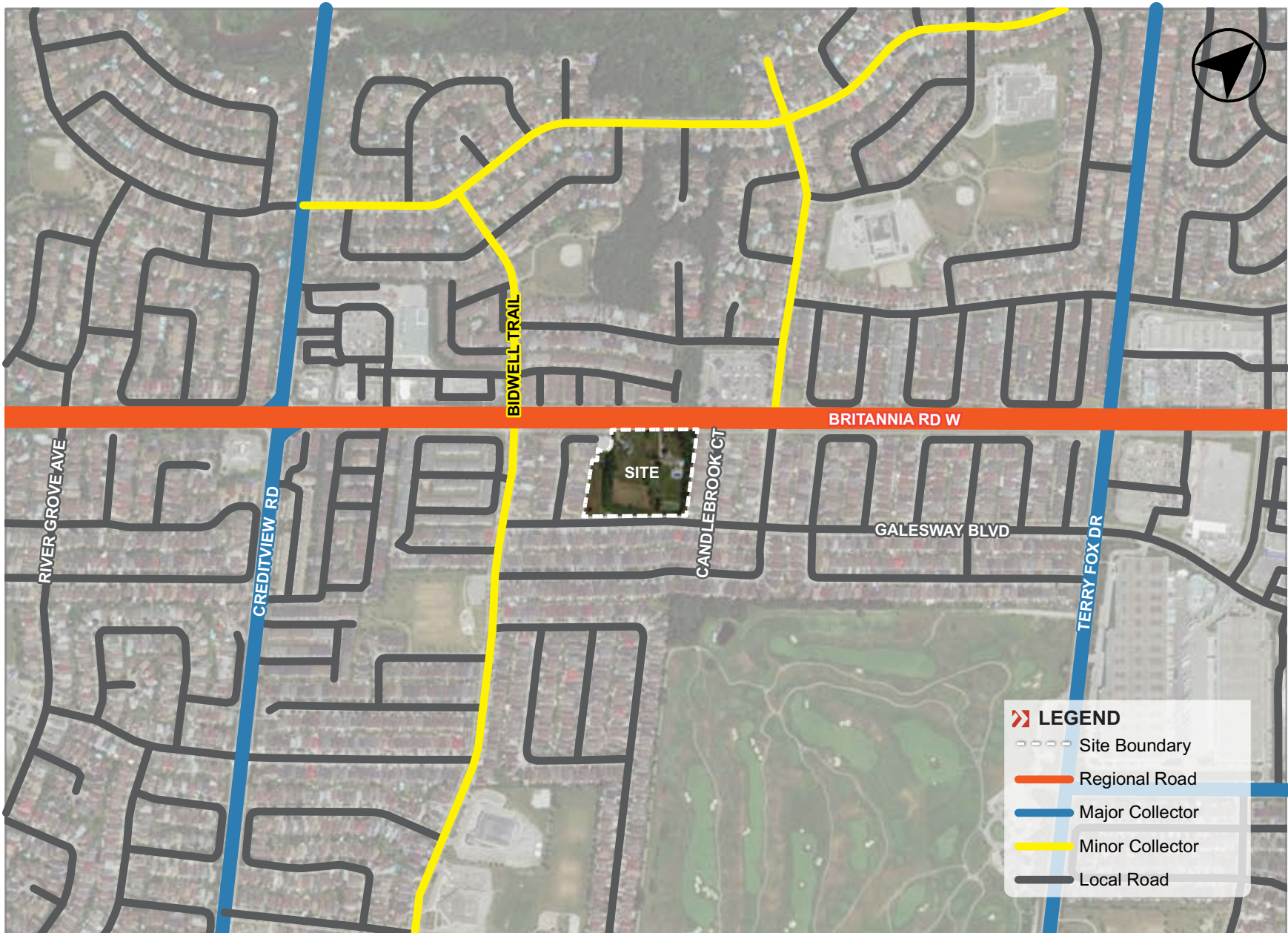
An emergency vehicle access connection between the Cabrera Crescent cul-de-sac and the private road serving the development is also proposed. This access will serve as a secondary access point for emergency vehicles to the development, in addition to the site driveway on Galesway Boulevard. This access point will be gated and not available for use by non-emergency vehicles. It is noted that this access point has been designed to accommodate the turning requirements of a fire route (9.0 metres inside radius, 15.0 outside radius). This emergency vehicle access point would also, logically, serve as a secondary access point for emergency vehicles to the existing Cabrera Crescent as well.

## 4.0 TRANSPORTATION CONTEXT

### 4.1 AREA ROAD NETWORK

The existing road network within the study is shown in **Figure 4**. A brief description of the area road network is provided as follows.

**Britannia Road West** is classified as a Regional Arterial road, oriented east-west and extending between Highway 407 in the west and Hurontario Street in the east. The road extends further than these boundaries in both directions, under the names Britannia Road and Britannia Road East. This road is under the jurisdiction of the Region of Peel and consists of a three lanes of travel in either direction nearby the site. The posted speed limit is 60 km/h in vicinity of the site.



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**FIGURE 4 - AREA ROAD CLASSIFICATION**

**Whitehorn Avenue** is classified as a Minor Collector road, oriented north-south and extending between Britannia Road West in the north and Bristol Road West in the south. This road is under the jurisdiction of the City of Mississauga and consists of a single lane of travel in either direction. The assumed speed limit is 50 km/h in vicinity of the site.

**Galesway Boulevard** is classified as a local street, oriented east-west and extending between Whitehorn Avenue in the west and Terry Fox Way in the east. This road is under the jurisdiction of the City of Mississauga and consists of a single lane of travel in either direction. The assumed speed limit is 50 km/h in vicinity of the site.

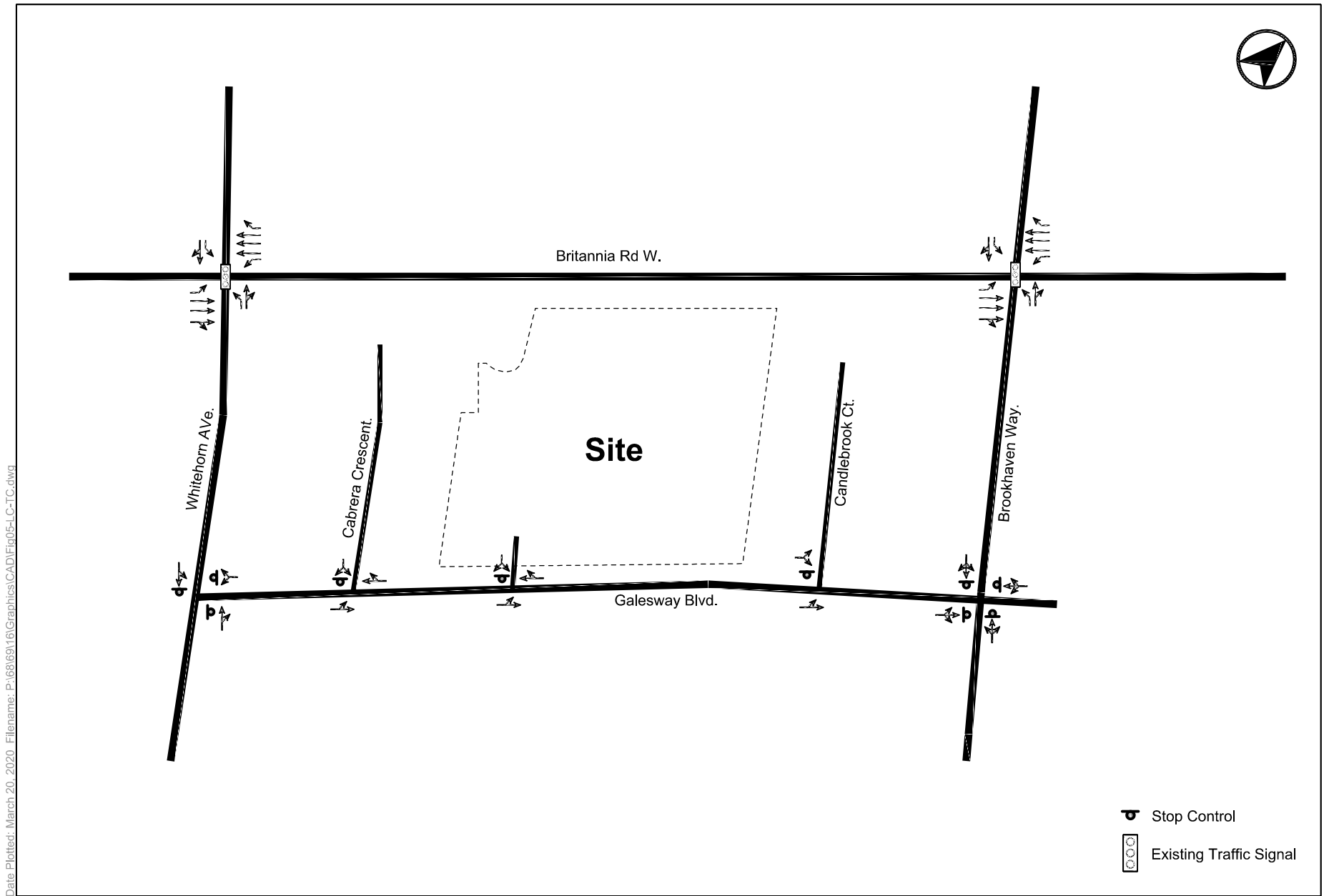
**Brookhaven Way** is classified as a local street, oriented north-south and extending between Whitehorn Avenue in the west and Terry Fox Way in the east. This road is under the jurisdiction of the City of Mississauga and consists of a single lane of travel in either direction. The assumed speed limit is 50 km/h in vicinity of the site.

**Cabrera Crescent** is classified as a local street, oriented north-south and extending from Galesway Boulevard in the south and terminating in a cul-de-sac to the north. This road is under the jurisdiction of the City of Mississauga and consists of a single lane of travel in either direction.

**Candlebrook Court** is classified as a local street, oriented north-south and extending from Galesway Boulevard in the south and terminating in a cul-de-sac to the north. This road is under the jurisdiction of the City of Mississauga and consists of a single lane of travel in either direction.

Existing area intersection lane configurations and traffic control is illustrated in **Figure 5**.





**FIGURE 05 LOCAL AREA INTERSECTIONS LANE CONFIGURATION AND TRAFFIC CONTROL**

## 4.2 AREA TRANSIT SERVICES

The site is served by Mississauga MiWay transit services running along Britannia Road West. In particular, it is serviced by the bus routes 37, 39, 43, 68 and 314. A brief description of these routes is provided below.

**37 Creditview-Erindale GO** is a regular service bus route. Its predominant travel path is in a north-south direction along Creditview Road, looping from the Erindale GO Station to Britannia Road West and back. This service has 20-30 minute headways between consecutive vehicles and services the proposed development site in both directions.

**39 Britannia** is a regular service bus route. Its predominant travel path is in an east-west direction along Britannia Road West, extending from the Renforth Transitway Station in the east, and Meadowvale Town Centre Transit Terminal in the west. This service has 20-30 minute headways between consecutive vehicles and services the proposed development site in both directions.

**43 Matheson-Argentia** is a regular service bus route. Its predominant travel path is in an east-west direction along Britannia Road West, extending from the Renforth Transitway Station in the east, and Meadowvale Town Centre Transit Terminal in the west, via an alternative route to the 39 Britannia service. This service has 20-30 minute headways between consecutive vehicles and services the proposed development site in both directions.

**314 Rick Hansen-Creditview** is a school bus route, operating before and after school times from Rick Hansen Secondary School, north to Britannia Road West and then south down Creditview Road.

Bus stops for the abovementioned routes are located east and west of the site at the intersections of Britannia Road West / Whitehorn Avenue and Britannia Road West / Brookhaven Way, approximately 200 metres away. The existing area transit context is illustrated in **Figure 6**.

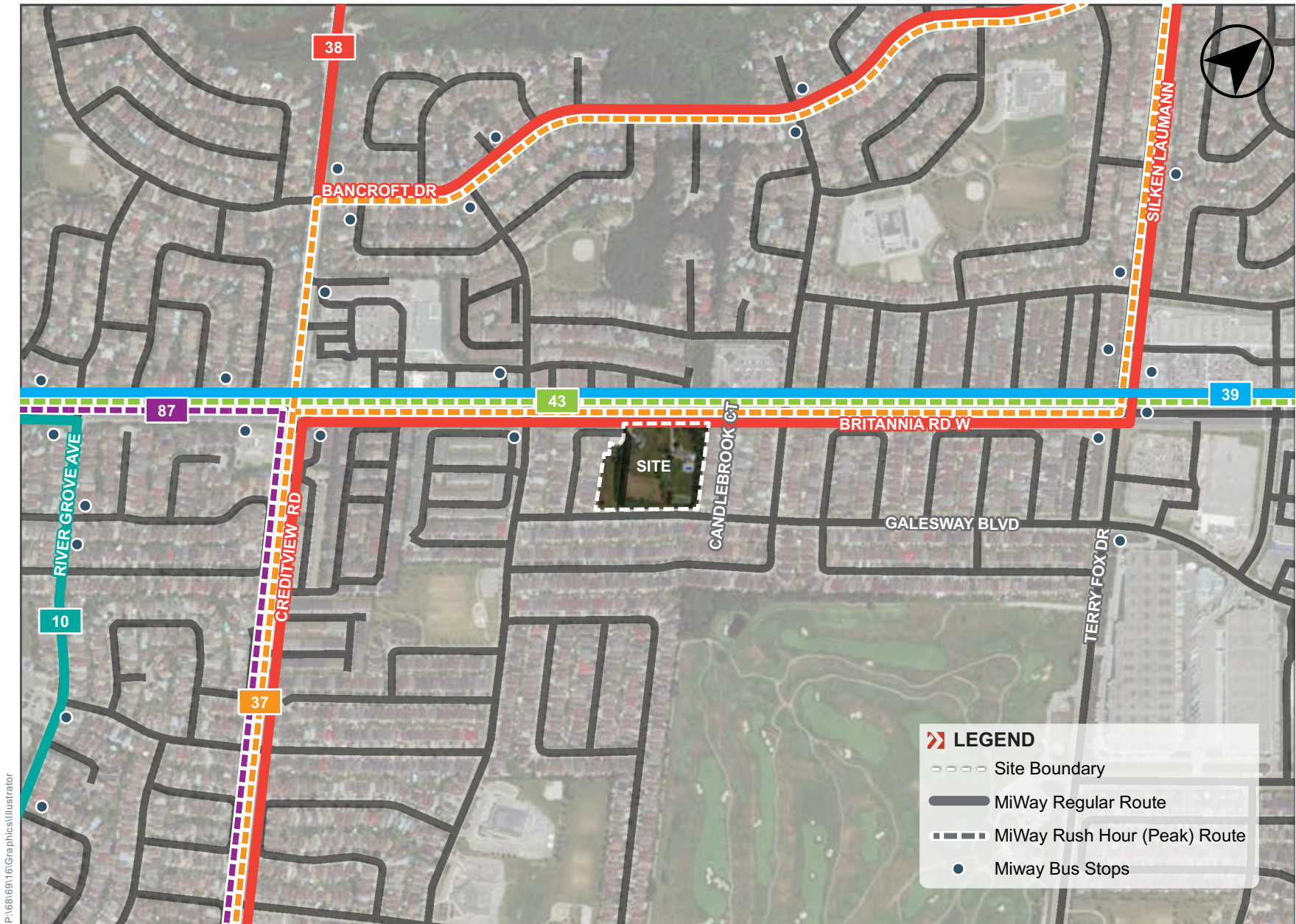
## 4.3 AREA CYCLING FACILITIES AND INFRASTRUCTURE

The site is located in an area with excellent access to a variety of cycling facilities. The site is located directly adjacent to a multi-use trail along Britannia Road West, in addition to a signed bike route along Galesway Boulevard. Whitehorn Avenue is also a signed bike route.

Further to the east, another multi-use trail exists on Terry Fox Way, and further west on Creditview Road is another multi-use trail. In conjunction with one another, these bicycle routes and facilities enable cyclists to easily travel between the site and popular destinations such as Downtown Mississauga and a variety of other popular trip destinations around Mississauga and Peel Region.

The local area cycling context is shown in **Figure 7**.





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**FIGURE 6 - AREA TRANSIT CONTEXT**

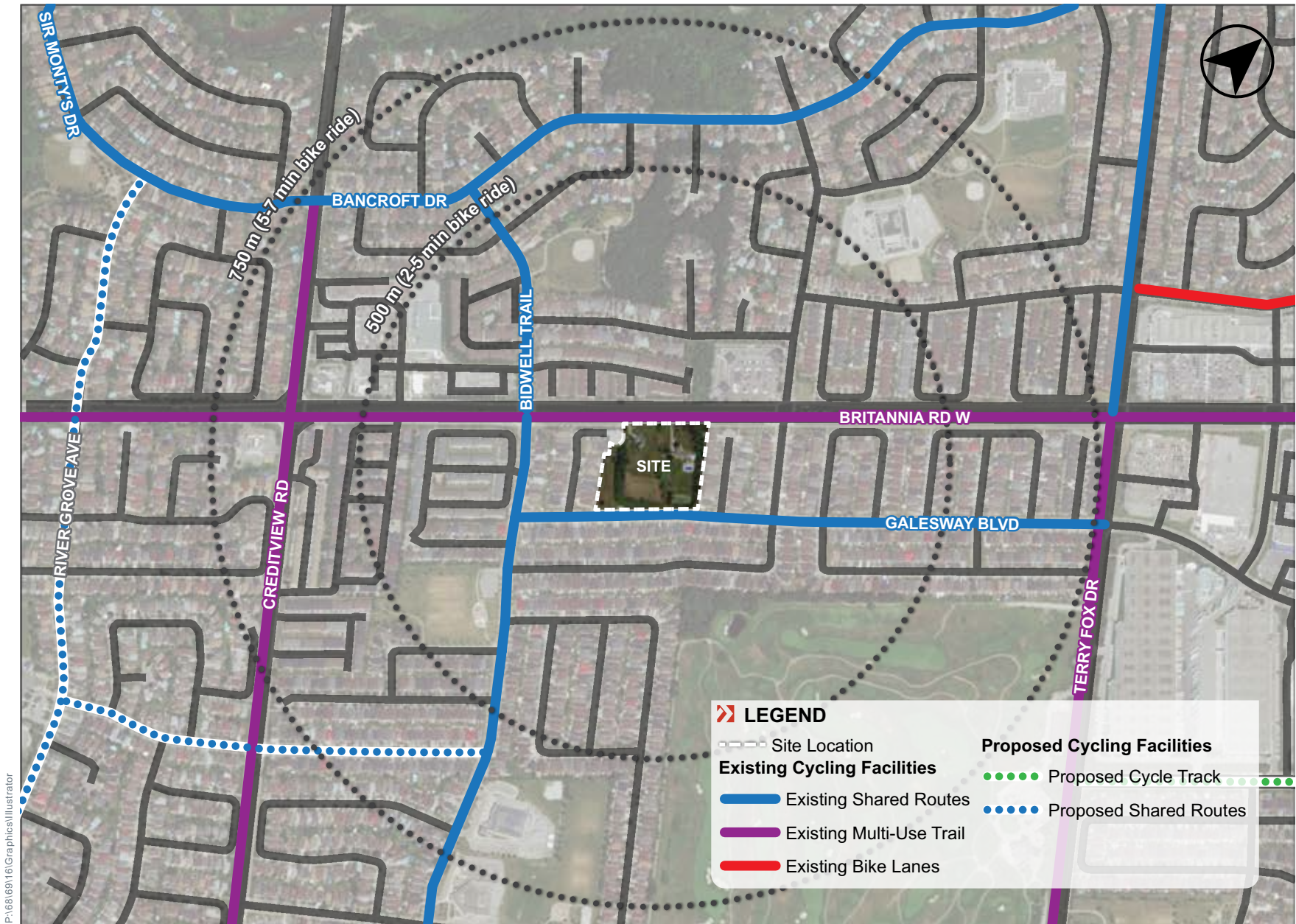


FIGURE 7 - AREA CYCLING CONTEXT

## 5.0 VEHICLE PARKING CONSIDERATIONS

### 5.1 ZONING BY-LAW REQUIREMENTS

BA Group has undertaken a review of the prevailing Zoning By-law vehicle parking requirements as applicable to the site's location and proposed development programme. The site is subject to City of Mississauga By-Law 0225-2007.

**Table 1** lists the minimum off-street vehicle parking requirements applicable to the site as set out in By-law 0225-2007.

**TABLE 1 ZONING BY-LAW 0225-2007 MINIMUM VEHICLE PARKING REQUIREMENTS**

Land Use	No. of Units <sup>1</sup>	Type of Space	Parking Requirement	No. of Spaces Required
Residential (Semi-detached Dwelling off of CEC - Road <sup>2</sup> )	108	Resident	2.0 spaces per unit	216 spaces
		Visitor	0.25 spaces per unit	27 spaces
Residential (Second Unit)	6	Resident/Visitor	1.0 space per unit	6 spaces
Residential (Detached Dwelling)	1	Resident/Visitor	2.0 spaces per unit	2 spaces
<b>Total parking spaces required</b>				<b>251 spaces</b>

Notes:

1. Site statistics are based on plans provided by National Homes dated March 20, 2020.
2. 'CEC – Road' = Common Elements Condominium Road.

Based on the foregoing, the in-effect Mississauga By-law 0225-2007 requires the provision of 251 parking spaces in total for the proposed development.

### 5.2 PROPOSED PARKING SUPPLY

Parking for all townhouses units will be provided at a rate of 2 spaces per unit. For the 6 townhouse units with secondary suites, an additional parking space will be provided. The detached house dwelling on Cabrera Crescent will include 4 parking spaces.

Furthermore, 27 visitor parking spaces will be provided along the private road to accommodate additional parking for visitors to the townhouse units.

The proposed parking spaces serving the development are illustrated on the architectural site plans included in **Appendix A**.

Based on the foregoing, the proposed parking supply meets the requirements of the prevailing and applicable City of Mississauga Zoning By-law 0225-2007 and is therefore considered to be appropriate.



## 6.0 TRAFFIC VOLUME FORECASTS

### 6.1 EXISTING TRAFFIC VOLUMES

Existing public street intersection peak hour traffic volumes have been established, based upon a review of recent traffic counts undertaken by Spectrum Traffic Data Inc. in March 2020. Turning movement counts were undertaken at the following locations:

- Britannia Rd West / Bidwell Trail / Whitehorn Avenue;
- Britannia Rd West / Brookhaven Way / Douguy Boulevard;
- Whitehorn Avenue / Galesway Boulevard;
- Galesway Boulevard / Brookhaven Way / Prestonwood Crescent;
- Galesway Boulevard / Cabrera Crescent;
- Galesway Boulevard / Candlebrook Court; and
- Galesway Boulevard / Proposed Site Driveway.

The existing turning movement counts were reviewed in detail to ensure a general consistency in the traffic volumes on links between intersections. Where necessary, minor volume adjustments were made to balance traffic volumes between intersections to provide a balanced and representative traffic volume base for the purposes of the traffic operations analyses undertaken as part of this assessment.

Existing, baseline area traffic volumes for the morning and afternoon peak hours are summarized in **Figure 8**.

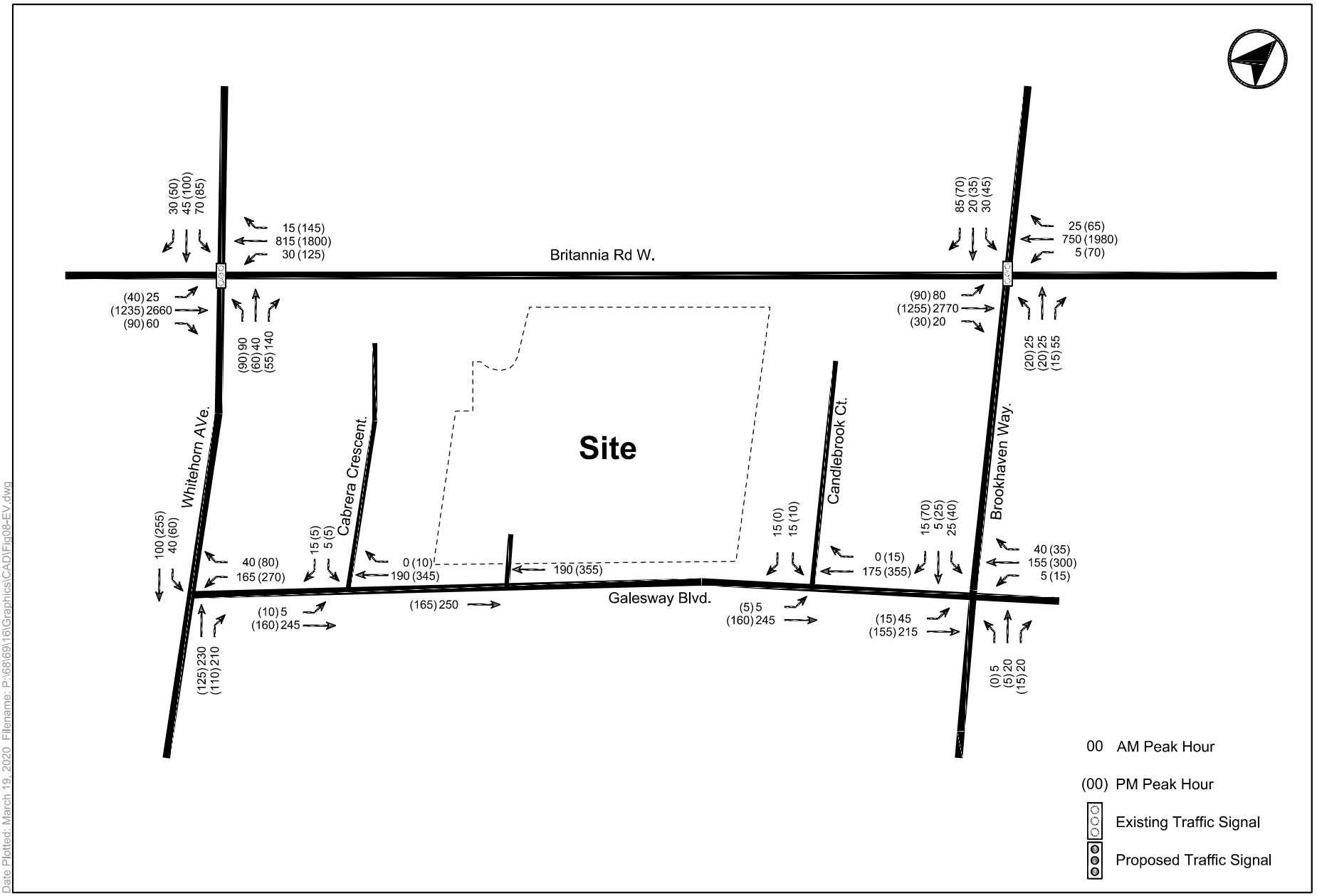
### 6.2 FUTURE BACKGROUND TRAFFIC VOLUMES

An annual corridor traffic growth rate of 0.5% (cumulating) was adopted for morning and afternoon peak hours, for east and west volumes on Britannia Road West. Based on historical data acquired from Peel Region, a negative growth rate was observed since the year 2013, however the 0.5% cumulating growth has been added as a conservative approach to analysis. The growth rate were applied over a five year study horizon for the 2025 horizon year.

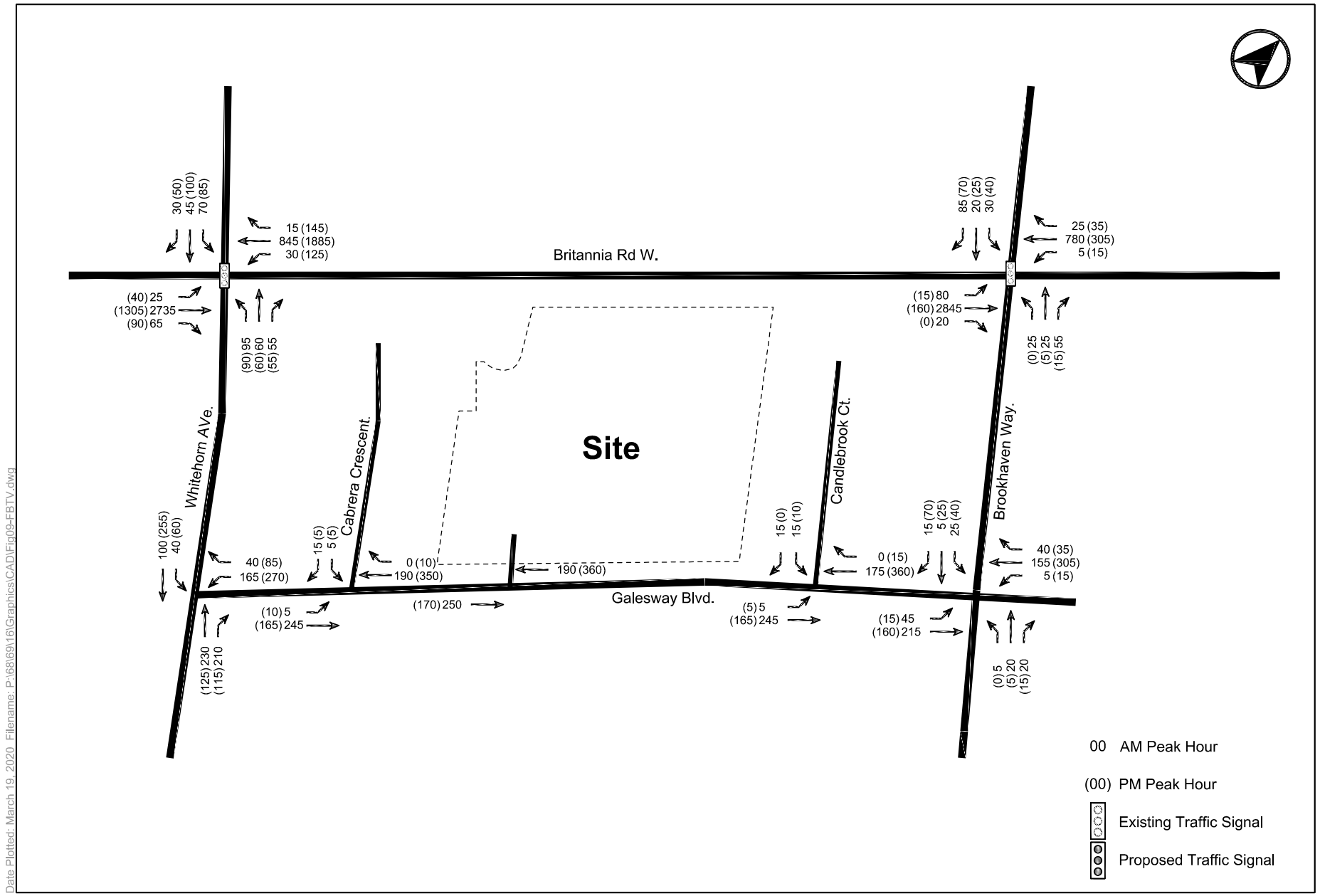
Traffic allowances were also made for other specific proposed development in the area, based on a review of the City of Mississauga's 'Planning Information Hub' tool in March 2020. The sole active development application at this time is a Rezoning application for a commercial site located at 5855 Terry Fox Boulevard, which plans to redevelop the block to include a total retail floor area of 26,819 m<sup>2</sup>. Associated site traffic has been added to the Britannia Road West and Galesway Boulevard, as reported in the site's Traffic Impact Study by Read, Voorhees & Associates Limited (March 2018, updated August 2019).

**Figure 9** summarizes the 2025 future background traffic volumes for the weekday morning and afternoon peak hours, which were developed by adding the abovementioned allowances for corridor traffic growth and background development to base existing traffic volumes.





**FIGURE 8 EXISTING TRAFFIC VOLUMES**



**FIGURE 9 FUTURE BACKGROUND 2025 TRAFFIC VOLUMES**

## 6.3 SITE TRAFFIC VOLUMES

### 6.3.1 Site Trip Generation

Vehicular trip generation rates assumed for the proposed residential townhomes were based on a review of data contained within the *ITE Trip Generation Manual (10<sup>th</sup> Edition)* for Land Use Code 220 (Residential Multi-Family Housing, Low-Rise), in conjunction with observed trip generation at two proxy sites with similar transportation contexts to the subject site.

The highest rates from the three trip generation rate sources shown (from Queen Street West / Link Lane, Brampton) were adopted as trip generation rates for the proposed development at 1240 Britannia Road West. These rates represent what would likely be a conservative estimate, with actual rates more likely to fall more closely towards ITE or average surveyed rates.

Site trip generation forecasts are summarized in **Table 2**.

**TABLE 2 SITE TRIP GENERATION**

Trip Generation Rate Source	Units	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
ITE Land Use Code 220 (Multi-Family Housing, Low-Rise)	-	0.11	0.35	0.46	0.35	0.21	0.56
Wellington Green Townhouses (Proxy Site) <sup>3</sup>	72	0.06	0.25	0.31	0.21	0.08	0.29
Queen Street West / Links Lane, Brampton (Proxy Site) <sup>4</sup>	87	0.13	0.49	0.62	0.54	0.31	0.85
<b>Average Trip Rate</b>	-	<b>0.10</b>	<b>0.36</b>	<b>0.46</b>	<b>0.37</b>	<b>0.20</b>	<b>0.57</b>
<b><i>Adopted Trip Generation Rates for 1240 Britannia Road West</i></b>	-	<b><i>0.13</i></b>	<b><i>0.49</i></b>	<b><i>0.62</i></b>	<b><i>0.54</i></b>	<b><i>0.31</i></b>	<b><i>0.85</i></b>
<b>Number of Trips Generated for 1240 Britannia Road West<sup>2</sup></b>	<b>115</b>	<b>15</b>	<b>55</b>	<b>70</b>	<b>60</b>	<b>35</b>	<b>95</b>

Notes:

1. Trip generation rates are shown in *italic text*.
2. Trips generated for proposed development are rounded to the nearest five (5).
3. *Wellington Green* proxy site surveyed on Monday August 13, 2018.
4. *Queen Street West* proxy site surveyed on Tuesday May 16, 2017.

The site is anticipated to generate approximately 70 and 95 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively.



### 6.3.2 Site Traffic Distribution/Assignment

The trip distribution pattern for site traffic was established based upon a review of 2016 Transportation Tomorrow Survey (TTS) data for home-based vehicle trips to and from the study area during the weekday peak hour periods. The distribution of inbound and outbound traffic adopted for the proposed development is outlined in **Table 3**. Site traffic volumes assigned onto the area road network are illustrated in **Figure 10**.

**TABLE 3 SITE TRAFFIC DISTRIBUTION**

To/From	Inbound	Outbound
North to/from Bidwell Trail	5%	5%
South to/from Whitehorn Avenue	15%	15%
East to/from Britannia Road West	40%	40%
East to/from Galesway Boulevard	25%	20%
West to/from Britannia Road West	15%	20%
<b>Total</b>	<b>100%</b>	<b>100%</b>

Notes:

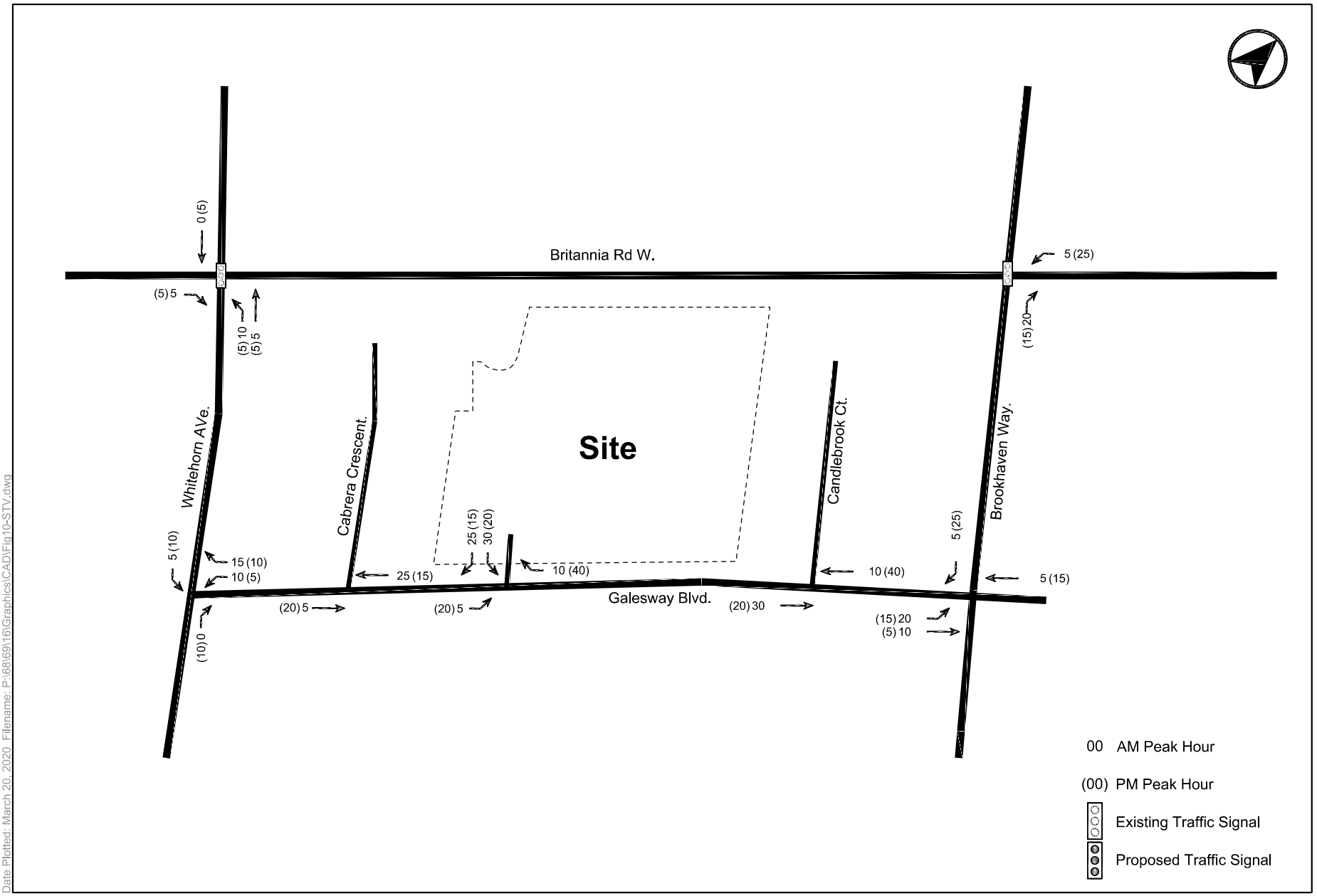
1. Based on a review of 2016 TTS data for home-based trips to and from 2006 TTS Zones 3604, 3607, 3691 and 3694 during weekday morning and afternoon peak periods.

## 6.4 FUTURE TOTAL TRAFFIC VOLUMES

Future total 2025 traffic volumes were developed by adding site-generated traffic to future background 2025 traffic volumes. **Figure 11** illustrates future total traffic volumes for the weekday morning and afternoon peak hours for horizon year of 2025.

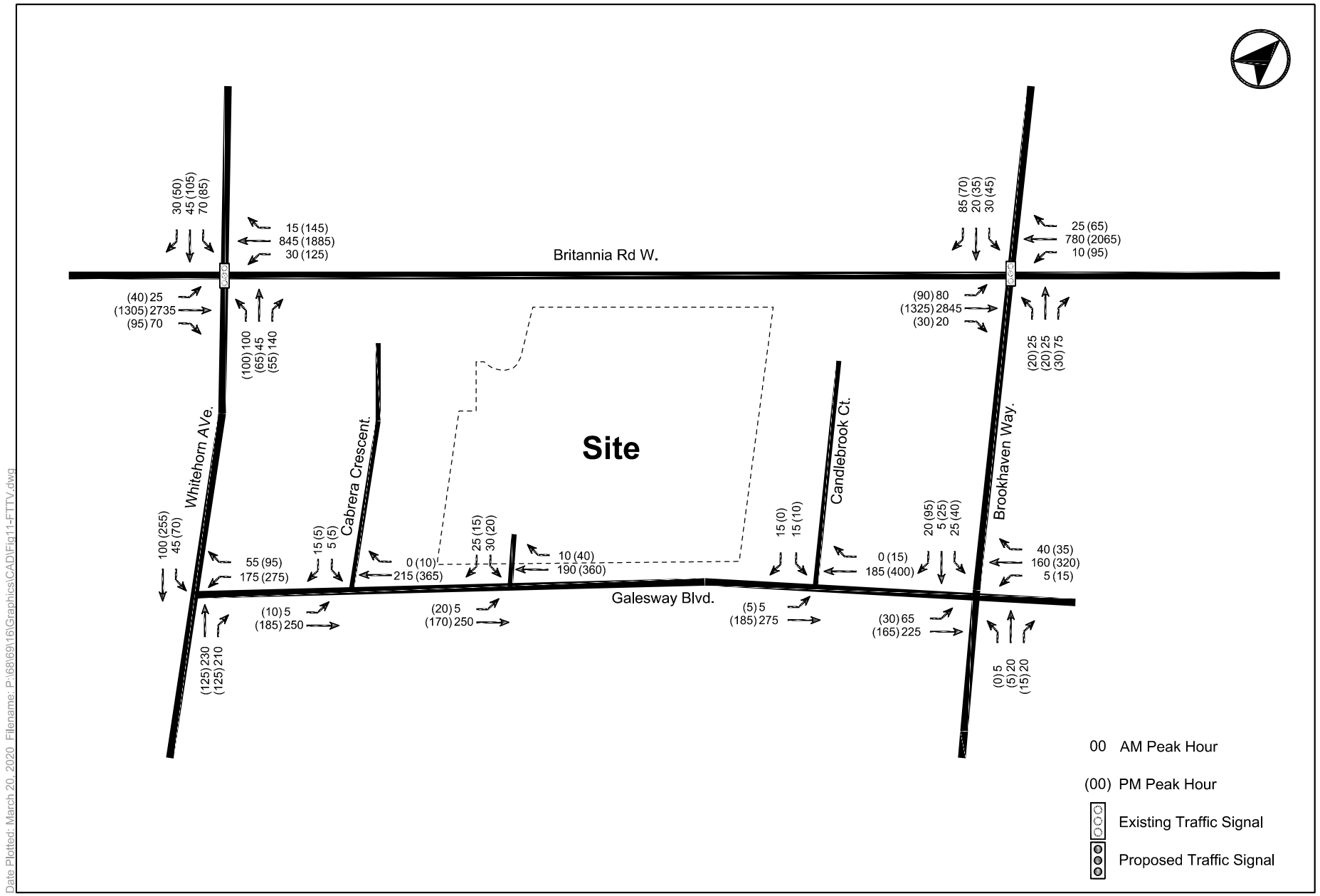






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**FIGURE 10 SITE TRAFFIC VOLUMES**



**FIGURE 11 FUTURE TOTAL 2025 TRAFFIC VOLUMES**

## 7.0 OPERATIONS ANALYSIS

### 7.1 ANALYSIS SCENARIOS

Traffic operations analyses were undertaken at the study area intersections for the weekday morning and afternoon peak travel hours under the following traffic conditions:

- Existing traffic conditions;
- Future background traffic conditions, which include allowances for general corridor traffic growth and active area background development applications; and
- Future total traffic conditions, which take into consideration future background traffic volumes plus site-generated traffic volumes.

### 7.2 ANALYSIS METHODOLOGY

Traffic operations analyses have been completed using the Synchro (Version 9) capacity analysis software in accordance with the methodologies outlined in the *Highway Capacity Manual (HCM)* and City of Mississauga's *Transportation Impact Study Guidelines*. Default Synchro parameters as outlined by the City of Peel were used for the analysis of signalized intersections.

The key performance indicator of the signalized intersection evaluation is an intersection performance index (volume to capacity ratio, or v/c), where a v/c index of 1.00 indicates 'at or near capacity' conditions.

The key performance indicator of the unsignalized intersection / driveway analyses is an average delay per vehicle (in seconds) and a level of service (LOS) designation, where the LOS A (little delay) to LOS F (extended delay) range provides an understanding of the relative time a motorist may have to wait to complete a turn at an intersection or driveway.

#### Signal Timings

Existing traffic signal timing plans for all signalized intersections within the study area were obtained Regional Municipality of Peel. Analyses were undertaken using this signal timing plan for existing, future background and future total traffic conditions.

#### Road Network Assumptions

Existing lane configurations in the area road network have been assumed in the analysis for the existing and future background traffic scenarios.

Under future total conditions, it was assumed that the new private driveway will intersect Galesway Boulevard at a STOP-controlled intersection. The site driveway is assumed to be two-way with a single-lane outbound approach.

The existing road network intersection lane configurations are shown in **Figure 4**. Synchro analysis worksheets are included in **Appendix D**.



## 7.3 ANALYSIS SUMMARY

### 7.3.1 Signalized Intersection Analysis

#### Britannia Road West / Whitehorn Avenue / Bidwell Trail

The Britannia Road West / Whitehorn Avenue / Bidwell Trail intersection operates under traffic signal control with cycle length of 160 seconds in the weekday morning and afternoon peak periods. The existing cycle length was maintained in all analysis scenarios. A summary of traffic analysis results for this intersection is shown in **Table 4**.

**TABLE 4 BRITANNIA ROAD W / WHITEHORN AVENUE / BIDWELL TRAIL ANALYSIS SUMMARY**

Traffic Movement	Existing		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.06 (0.42)	A (B)	0.06 (0.45)	A (B)	0.06 (0.45)	A (B)
EBTR	0.79 (0.42)	B (A)	0.80 (0.42)	B (A)	0.81 (0.42)	B (A)
WBL	0.30 (0.67)	B (B)	0.31 (0.69)	B (B)	0.32 (0.70)	B (C)
WBT	0.23 (0.56)	A (A)	0.24 (0.56)	A (A)	0.24 (0.56)	A (A)
WBR	0.01 (0.10)	A (A)	0.01 (0.11)	A (A)	0.01 (0.11)	A (A)
NBL	0.56 (0.43)	D (C)	0.58 (0.48)	D (D)	0.61 (0.52)	D (D)
NBTR	0.49 (0.31)	D (C)	0.51 (0.32)	D (D)	0.50 (0.34)	D (D)
SBL	0.62 (0.39)	E (C)	0.66 (0.40)	E (D)	0.63 (0.41)	E (D)
SBTR	0.26 (0.44)	D (C)	0.26 (0.46)	D (D)	0.25 (0.48)	D (D)
<b>Overall</b>	<b>0.75 (0.62)</b>	<b>B (B)</b>	<b>0.77 (0.65)</b>	<b>B (B)</b>	<b>0.77 (0.66)</b>	<b>B (B)</b>

Notes:

1. xx(xx) = weekday AM peak hour (weekday PM peak hour)

Under existing, future background and future total conditions, the intersection operates at an acceptable level of service during the weekday and morning and afternoon peak traffic hours with overall v/c ratios of 0.77 or less at all times.

Based on the foregoing, the traffic generated by the proposed development can be acceptably accommodated at the Britannia Road West / Whitehorn Avenue intersection. No mitigation measures or improvements are recommended at this intersection.



### Britannia Road West / Brookhaven Way / Douguy Boulevard

The Britannia Road West / Brookhaven Way / Douguy Boulevard intersection operates under traffic signal control with cycle length of 160 seconds in the weekday morning and afternoon peak periods. The existing cycle length was maintained in all analysis scenarios. A summary of traffic analysis results for this intersection is shown in **Table 5**.

**TABLE 5 BRITANNIA ROAD WEST / BROOKHAVEN WAY ANALYSIS SUMMARY**

Traffic Movement	Existing		Future Background		Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.19 (0.79)	A (D)	0.19 (0.89)	A (E)	0.19 (0.89)	A (E)
EBTR	0.76 (0.32)	A (A)	0.77 (0.34)	A (A)	0.78 (0.34)	A (A)
WBL	0.07 (0.26)	A (A)	0.07 (0.28)	A (A)	0.16 (0.38)	A (A)
WBT	0.21 (0.49)	A (A)	0.22 (0.51)	A (A)	0.22 (0.51)	A (A)
WBR	0.02 (0.05)	A (A)	0.02 (0.05)	A (A)	0.02 (0.05)	A (A)
NBL	0.22 (0.17)	D (D)	0.23 (0.17)	D (D)	0.20 (0.17)	D (D)
NBTR	0.43 (0.13)	D (D)	0.45 (0.13)	D (D)	0.51 (0.14)	D (D)
SBL	0.23 (0.35)	D (E)	0.24 (0.35)	D (E)	0.22 (0.35)	D (E)
SBT	0.17 (0.58)	D (E)	0.18 (0.59)	D (E)	0.16 (0.59)	D (E)
<b>Overall</b>	<b>0.71 (0.77)</b>	<b>A (A)</b>	<b>0.73 (0.85)</b>	<b>A (A)</b>	<b>0.74 (0.85)</b>	<b>B (A)</b>

Notes:

1. xx(xx) = weekday AM peak hour (weekday PM peak hour)

Under existing, future background and future total conditions, the intersection operates at an acceptable level of service during the weekday and morning and afternoon peak traffic hours with overall v/c ratios of 0.85 or less.

Based on the foregoing, the traffic generated by the proposed development can be acceptably accommodated at the Britannia Road West / Brookhaven Way / Douguy Boulevard intersection. Similar to at Whitehorn Avenue, no mitigation measures or improvements are recommended at this intersection.



### 7.3.2 Unsignalized Intersection Analysis

Traffic operations at all unsignalized intersections within the study area are acceptable under all scenarios without any need for road improvements or mitigation measures. All movements will function at **LOS C or better** in the future total scenario.

The results of the capacity analysis undertaken at the unsignalized intersections within the study area are summarized in **Table 6**.

Vehicular access to the site will be provided via a single driveway located on Galesway Boulevard. The driveway is expected to operate at a good level of service (LOS B) under the future total scenario.

**TABLE 6 UNSIGNALIZED INTERSECTION ANALYSIS SUMMARY**

Traffic Movement	Existing		Future Background		Future Total	
	Delay	LOS	Delay	LOS	Delay	LOS
<b>Whitehorn Avenue &amp; Galesway Boulevard</b>						
WBLR	11.1 (15.3)	B (C)	11.1 (15.6)	B (C)	11.4 (16.7)	B (C)
NBTR	13.5 (11.2)	B (B)	13.5 (11.4)	B (B)	13.9 (11.8)	B (B)
SBLT	9.6 (13.8)	A (B)	9.6 (14.0)	A (B)	9.8 (14.7)	A (B)
<b>Galesway Boulevard &amp; Cabrera Crescent</b>						
EBLT	0.2 (0.6)	A (A)	0.2 (0.6)	A (A)	0.2 (0.5)	A (A)
SBLR	10.1 (11.6)	B (B)	10.1 (11.6)	B (B)	10.2 (11.9)	B (B)
<b>Galesway Boulevard &amp; Site Access</b>						
EBLT	-- (--)	-- (--)	-- (--)	-- (--)	0.2 (1.0)	A (A)
SBLR	-- (--)	-- (--)	-- (--)	-- (--)	11.3 (12.7)	B (B)
<b>Galesway Boulevard &amp; Candlebrook Court</b>						
EBLT	0.2 (0.3)	A (A)	0.2 (0.3)	A (A)	0.2 (0.2)	A (A)
SBLR	10.5 (12.8)	B (B)	10.5 (12.9)	B (B)	10.8 (13.6)	B (B)
<b>Prestonwood Crescent/Brookhaven Way &amp; Galesway Boulevard</b>						
EBLTR	9.5 (9.4)	A (A)	9.5 (9.5)	A (A)	9.9 (10.0)	A (B)
WBLTR	8.8 (11.7)	A (B)	8.8 (11.8)	A (B)	9.0 (12.7)	A (B)
NBLTR	8.1 (8.2)	A (A)	8.1 (8.2)	A (A)	8.2 (8.4)	A (A)
SBLTR	8.4 (9.3)	A (A)	8.4 (9.3)	A (A)	8.5 (9.8)	A (A)

Notes:

- 0.0 (0.0) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour)



## 8.0 TRANSPORTATION DEMAND MANAGEMENT PLAN

Consistent with the objectives of the Region of Peel Official Plan, a Transportation Demand Management (TDM) plan for the proposed residential development is provided herein. The following outlines the proposed physical and operational strategies that complement the site design with the goal of encouraging a shift in the travel pattern of future residents to sustainable modes of transportation.

### 8.1 TDM PLAN OBJECTIVES

The Plan strives to reduce automobile use as a part of the design and construction of the development, as well as after construction as an on-going strategy by supporting and promoting the use of non-auto travel modes.

The key objective of the TDM Plan is to reduce peak hour single occupant automobile traffic by focusing on four specific policy areas:

1. Encourage the use of sustainable travel modes (transit, cycling, walking);
2. Increase vehicle occupancy;
3. Shift travel to off-peak periods; and
4. Reduce vehicle kilometres travelled.

### 8.2 SITE TRANSPORTATION CHARACTERISTICS

#### 8.2.1 Existing Travel Mode Characteristics

The existing travel mode split for home-based trips in the area based on 2016 Transportation Tomorrow Survey (TTS) data is summarized in **Table 7**.

**TABLE 7 EXISTING AREA TRAVEL MODE SPLIT**

Travel Mode	% of Trips
Transit	21%
Auto Driver	55%
Auto Passenger	18%
Cycle	1%
Walk	5%

Notes:

1. Based on 2016 TTS data for home-based trips originating in 2006 TTS Zones 3604, 3607, 3691 and 3694 between hours of 6:00 and 9:00 a.m. on a weekday.

Based on the most recent 2016 TTS data, in the order of 55% of residents living in the area regularly drive during the peak travel periods, which is typical for a suburban area of Peel Region.



## 8.3 TDM PLAN STRATEGIES

The future site context provides for good public transit service, cyclist facilities and pedestrian connectivity. Additional TDM strategies have been developed to further support the use of non-auto modes of travel. Based upon the site context and proposed land uses, the recommended TDM strategies have been selected.

### 8.3.1 Pedestrian Connections

The site design, including walkway connections through the site, provides for good pedestrian linkages to Britannia Road West and Galesway Boulevard, which is well-connected to the area pedestrian sidewalk network. Combined with the close proximity of neighbourhood amenities such as schools, parks and retail shops, this will encourage residents of the proposed development to rely less on automobiles. Neighbourhood amenities within walking distance, which include grocery stores, pharmacies, banks and restaurants, are illustrated in **Figure 2**.

These good pedestrian connections will also support usage of transit by residents of the proposed development by providing easy access on foot to local area transit stops.

### 8.3.2 Visitor Bicycle Parking

The in-effect Mississauga Zoning By-law 0225-2007 does not specify any bicycle parking requirements for new residential developments. Notwithstanding, the provision of garages for each of the units allows for bicycles to be stored when not in use for residents and visitors. Additionally, the provision of bicycle parking rings within the proposed central private park is being considered as part of the final design for that communal space.

The ability for future residents and visitors to the development to park and store bicycles, combined with the site's excellent location relative to existing cycling facilities/routes (see **Section 4.3**) and proximity to neighbourhood amenities within cycling distance, will encourage the use of cycling as a viable alternative to automobile use on a regular basis.

### 8.3.3 Travel Mode Information Packages

Marketing programs aimed at new residential unit purchasers should be implemented to ensure that new residents have comprehensive information on modal choices in the area now and in the future. This information should be made available at the sales centres for the new homes.

## 8.4 IMPLEMENTATION

The physical infrastructure components or 'hard' TDM measures outlined in this plan (i.e., pedestrian connections and visitor bicycle parking) will be incorporated into the development designs and are illustrated on the site plan included in **Appendix A**. The implementation of these elements and the costs associated with them will be the responsibility of the applicant/land developer.

The 'soft' measures of the TDM plan (i.e., travel mode information packages) will be implemented by the developer as part of the marketing process for the site.



## 9.0 SUMMARY AND CONCLUSIONS

BA Group has been retained by National Homes to provide transportation consultation services in relation to a proposed residential townhouse development located at 1240 Britannia Road West (referred to herein as “the site”) in the City of Mississauga.

The site is located on the south side of Britannia Road West, between Whitehorn Avenue and Brookhaven Way. The site is approximately 21,474 m<sup>2</sup> in size and is bounded by Britannia Road West to the north, Galesway Boulevard to the south, residential properties on Cabrera Crescent to the west and residential properties on Candlebrook Court to the east.

The site is currently occupied by two detached dwellings, with two vehicle access points located on Britannia Road West. Pedestrian sidewalks are currently provided along all boundary roads. It is noted that there is an existing closed driveway connection to the property on Galesway Boulevard at the southwest corner of the site. Presumably, this driveway connection was constructed in anticipation of the existing Cabrera Crescent being extended from its cul-de-sac terminus to reconnect with Galesway Boulevard.

The development program contemplates a total of 108 new residential townhouse units and 1 new detached dwelling unit, serviced by internal private condominium roads and the existing Cabrera Crescent, with access provided directly from Galesway Boulevard. The existing residential uses on the site will be removed as part of the redevelopment. The current development plan for the site does not propose extension of Cabrera Crescent. Instead, the existing driveway ‘stub’ on Galesway Boulevard will be removed and the cul-de-sac at the terminus of the existing Cabrera Crescent will be reconstructed to the appropriate City of Mississauga design standard. Architectural site plans are included in **Appendix A**.

This report documents BA Group’s review of the transportation-related aspects of the project including parking, refuse collection and fire vehicle access, and future traffic operations as part of a City of Mississauga Zoning By-law Amendment (ZBA) and Site Plan Approval (SPA) process.

### Transportation Context

1. The site is served by Mississauga MiWay transit services running on Britannia Road West. In particular, it is serviced by MiWay bus routes 37, 39, 43, 68 and 314. These bus routes generally have service headways of 20-30 minutes. The bus stops closest to the site are located at Whitehorn Avenue and Brookhaven Way, approximately 250 metres away.
2. The site is located in an area with excellent access to a variety of cycling facilities, including the adjacent multi-use trail along Britannia Road West, a signed bike route along Galesway Boulevard, and a signed bike route on Whitehorn Avenue.
3. There are a number of neighbourhood amenities within walking distance of the site, including schools, parks, restaurants, grocery stores, pharmacies and banks.



## **Vehicular and Pedestrian Connections**

4. The proposed internal private road servicing the new townhouse units has been designed with appropriate widths (7.0 metres) and turning radii (minimum 9.0 metres inside, 15.0 metres outside), suitable to accommodate the manoeuvres of a municipal waste collection vehicle and the requirements of a fire access route as per the Ontario Building Code.
5. Pedestrian walkways 1.5 metres in width are provided along the private road (on one side) and provide connections to Britannia Road West and Galesway Boulevard.
6. The site plans show the reconstruction of the existing Cabrera Crescent cul-de-sac terminus to meet City of Mississauga Transportation and Works Standard 2211.240 (Residential Road Cul-de-Sac) and is therefore considered appropriate.
7. A secondary emergency access point to the development is provided from Cabrera Crescent from the new cul-de-sac. This access will be gated and only available for use by emergency vehicles.

## **Parking**

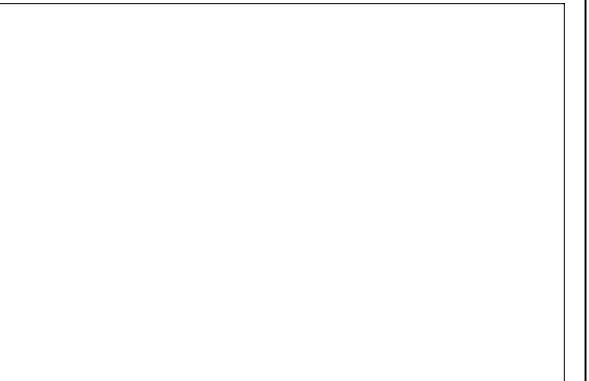
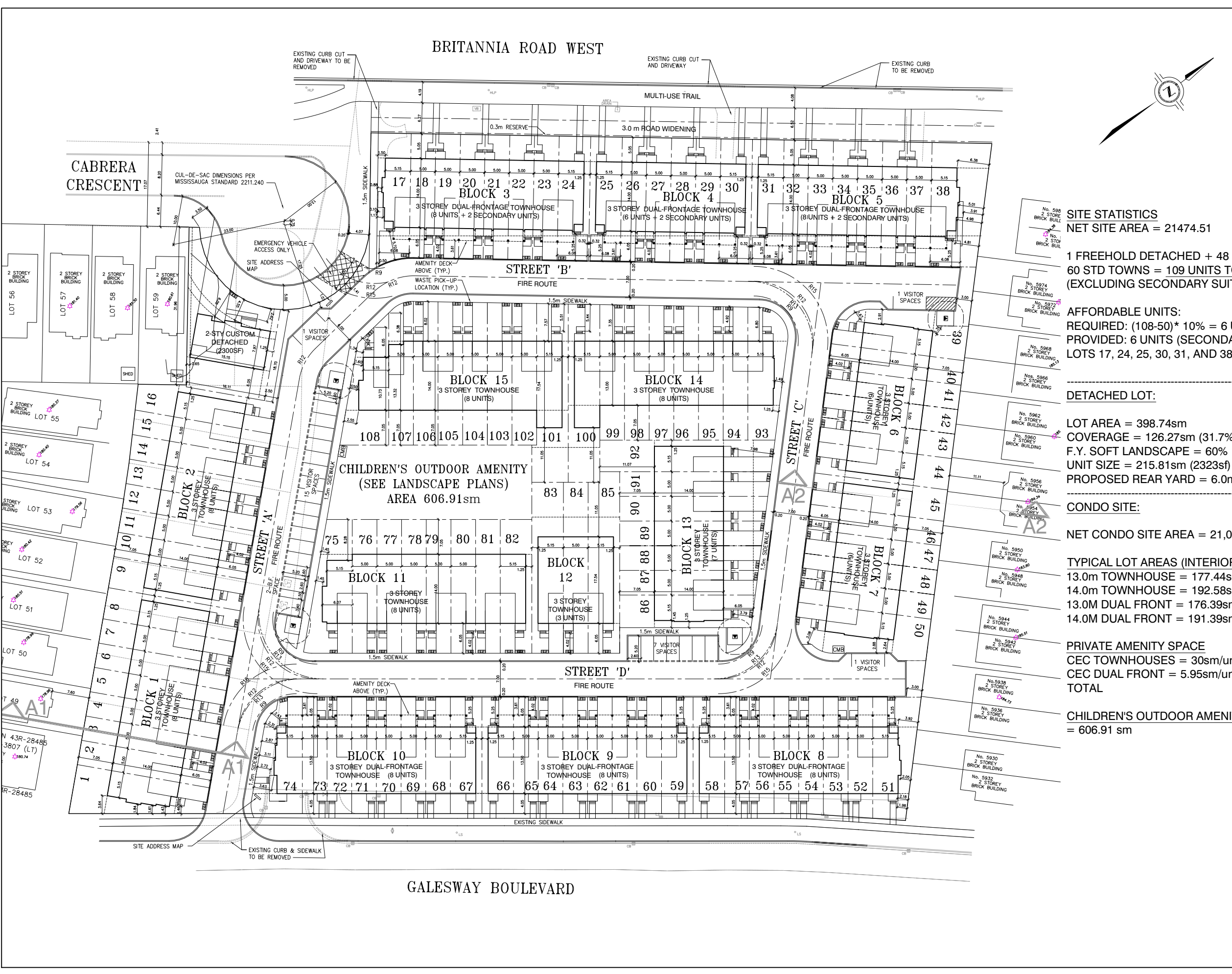
8. The applicable City of Mississauga By-law 0225-2007 requires a total of 251 parking spaces be provided for the site as proposed. This includes 2.0 spaces per unit for townhouse units and detached dwellings, 1.0 space per unit for second units, and 0.25 spaces per unit for visitors to the townhouse units.
9. The proposed site plans illustrate the provision of parking to meet these requirements, including 27 visitor parking spaces located along the private road, and is therefore considered to be appropriate.

## **Traffic Operations**

10. The site is anticipated to generate approximately 70 and 95 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively.
11. Under future total traffic conditions with the build-out of the site, all signalized and unsignalized intersections within the study area are anticipated to operate within their theoretical capacity. No road network infrastructure improvements are warranted or recommended.



**Appendix A: March 20, 2020 Architectural Site Plans**



**SITE STATISTICS**

NET SITE AREA = 21474.51

1 FREEHOLD DETACHED + 48 DUAL FRONT + 60 STD TOWNS = 109 UNITS TOTAL (EXCLUDING SECONDARY SUITES)

**AFFORDABLE UNITS:**  
 REQUIRED: (108-50) \* 10% = 6 UNITS  
 PROVIDED: 6 UNITS (SECONDARY SUITES IN LOTS 17, 24, 25, 30, 31, AND 38)

**DETACHED LOT:**

LOT AREA = 398.74sm  
 COVERAGE = 126.27sm (31.7%)  
 F.Y. SOFT LANDSCAPE = 60%  
 UNIT SIZE = 215.81sm (2323sf)  
 PROPOSED REAR YARD = 6.0m

**CONDO SITE:**

NET CONDO SITE AREA = 21,075.76sm

**TYPICAL LOT AREAS (INTERIOR UNITS):**

13.0m TOWNHOUSE = 177.44sm  
 14.0m TOWNHOUSE = 192.58sm  
 13.0M DUAL FRONT = 176.39sm  
 14.0M DUAL FRONT = 191.39sm

**PRIVATE AMENITY SPACE**

CEC TOWNHOUSES = 30sm/unit = 1800.00sm  
 CEC DUAL FRONT = 5.95sm/unit = 285.60sm  
 TOTAL = 2085.60sm

**CHILDREN'S OUTDOOR AMENITY AREA**

= 606.91 sm

**STAMP AREA**

Client	NATIONAL HOMES (1240 BRITANNIA) INC.	
Project Name	BRITANNIA ROAD RESIDENTIAL DEVELOPMENT CONDOMINIUM TOWNHOMES CITY OF MISSISSAUGA	
	REGIONAL MUNICIPALITY OF PEEL BRITANNIA ROAD, MISSISSAUGA PART LOTS 1-3 CON 3, PLAN 43R-3248	
Date	MARCH 20, 2020	Scale 1 : 750
Drawn by:	EK/AMM	Checked by: AMM
		Project No. 2019-39
DWG. NO.	A100 - SITEPLAN	

**Appendix B: Driveway Sight Distance Diagrams**



**GENERAL NOTES**

1. DESCRIPTION
2. DESCRIPTION



BA Consulting Group Ltd.  
 300 - 45 St. Clair Ave. W.  
 Toronto ON M6V 1K9  
 Tel: 416 961 7110  
 www.bagroup.com

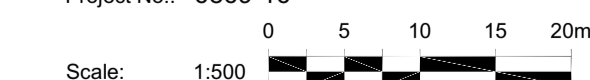
**MOVEMENT  
 IN URBAN  
 ENVIRONMENTS**  
 BAGROUP.COM

1240 BRITANNIA ROAD

**SITE CONTEXT**

Date: March 25, 2020

Project No.: 6869-16

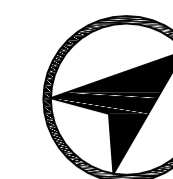


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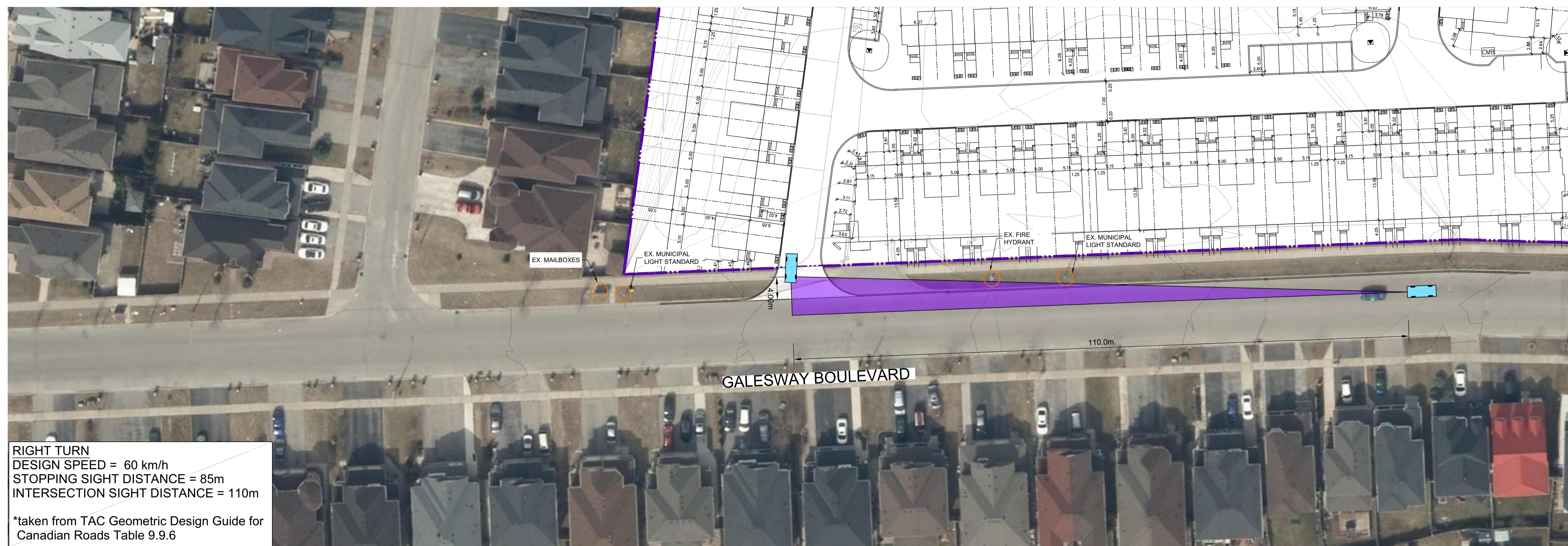
**SD-01**

GENERAL NOTES

1. DESCRIPTION
2. DESCRIPTION



**LEFT TURN**  
 DESIGN SPEED = 60 km/h  
 STOPPING SIGHT DISTANCE = 85m  
 INTERSECTION SITE DISTANCE = 130m  
 \*taken from TAC Geometric Design Guide for Canadian Roads Table 9.9.4



**RIGHT TURN**  
 DESIGN SPEED = 60 km/h  
 STOPPING SIGHT DISTANCE = 85m  
 INTERSECTION SIGHT DISTANCE = 110m  
 \*taken from TAC Geometric Design Guide for Canadian Roads Table 9.9.6



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1240 BRITANNIA ROAD

SIGHT DISTANCE AT PROPOSED DRIVEWAY

Date: March 25, 2020  
 Project No.: 6869-16  
 Scale: 1:400



SD-02

**Appendix C: Vehicle Manoeuvring Diagrams and Waste Collection Plan**



ROUTE 1

BRITANNIA ROAD WEST

CABRERA CRESCENT

CABRERA CRESCENT

CUL-DE-SAC DIMENSIONS PER MISSISSAUGA STANDARD 2211.240

EMERGENCY VEHICLE ACCESS ONLY  
SITE ADDRESS MAP

2-STY CUSTOM DETACHED (3300SF)  
15.15

15 VISITOR SPACES

1.5m SIDEWALK

AMENITY DECK ABOVE (TYP.)

1.5m SIDEWALK

1.5m SIDEWALK

1.5m SIDEWALK

1.5m SIDEWALK

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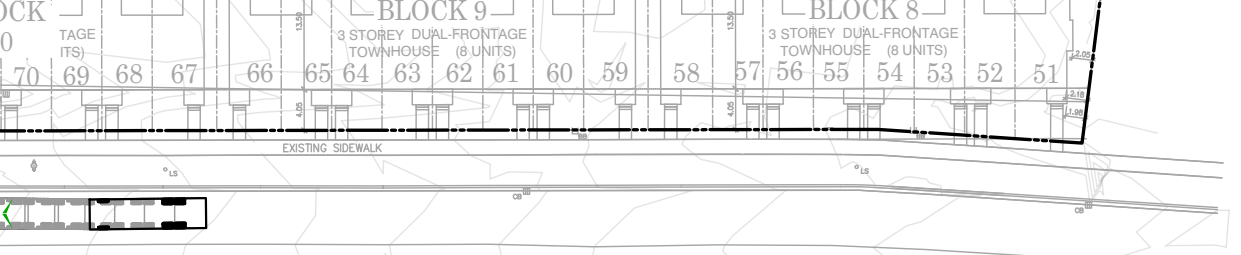
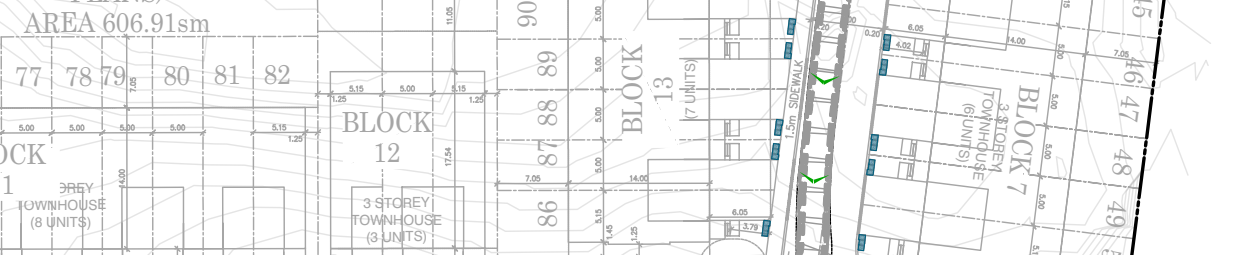
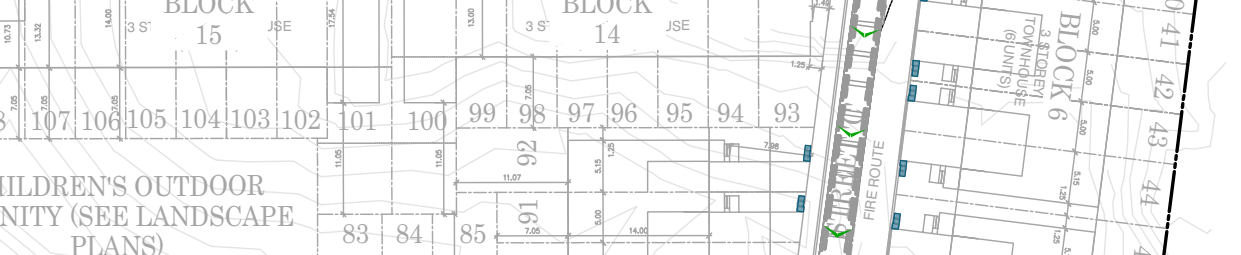
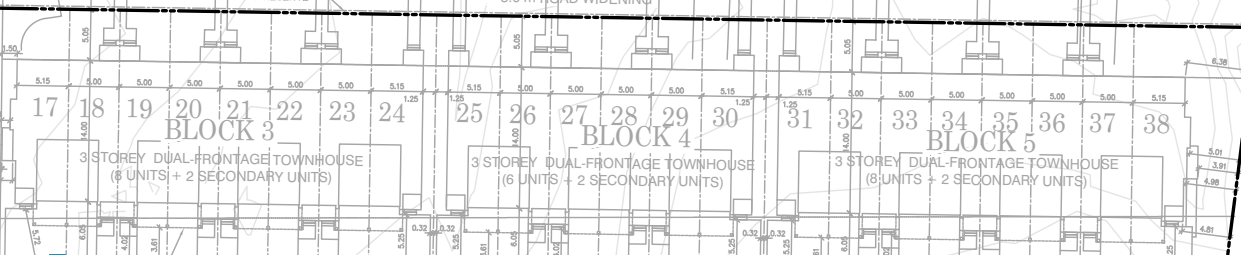
1.5m SIDEWALK

1.5m SIDEWALK

MULTI-USE TRAIL

0.3m RESERVE

3.0m ROAD WIDENING

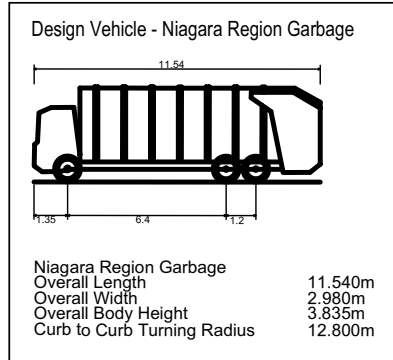


GALTSWAY BOULEVARD

GALTSWAY BOULEVARD



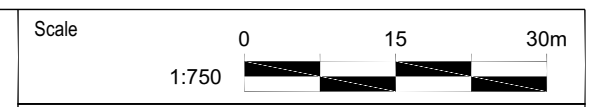
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Date Plotted: March 25, 2020



### 1240 Britannia Road VEHICULAR MANOEUVRING DIAGRAM / WASTE COLLECTION PLAN NIAGARA REGION GARBAGE COLLECTION VEHICLE\*

(A NIAGARA REGION WASTE COLLECTION VEHICLE WAS UTILIZED IN THIS ANALYSIS IN ORDER TO DEMONSTRATE A MORE CONSERVATIVE MANOEUVRING PATH COMPARED TO THE PEEL REGION 'REAR LOADING' AND 'FULLY-AUTOMATED SIDE-LOADING' COLLECTION VEHICLES AS SPECIFIED IN THE REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL)

Project: 1240 Britannia Rd.  
Project No. 6869-16  
Date: March 25, 2020  
Revised: --

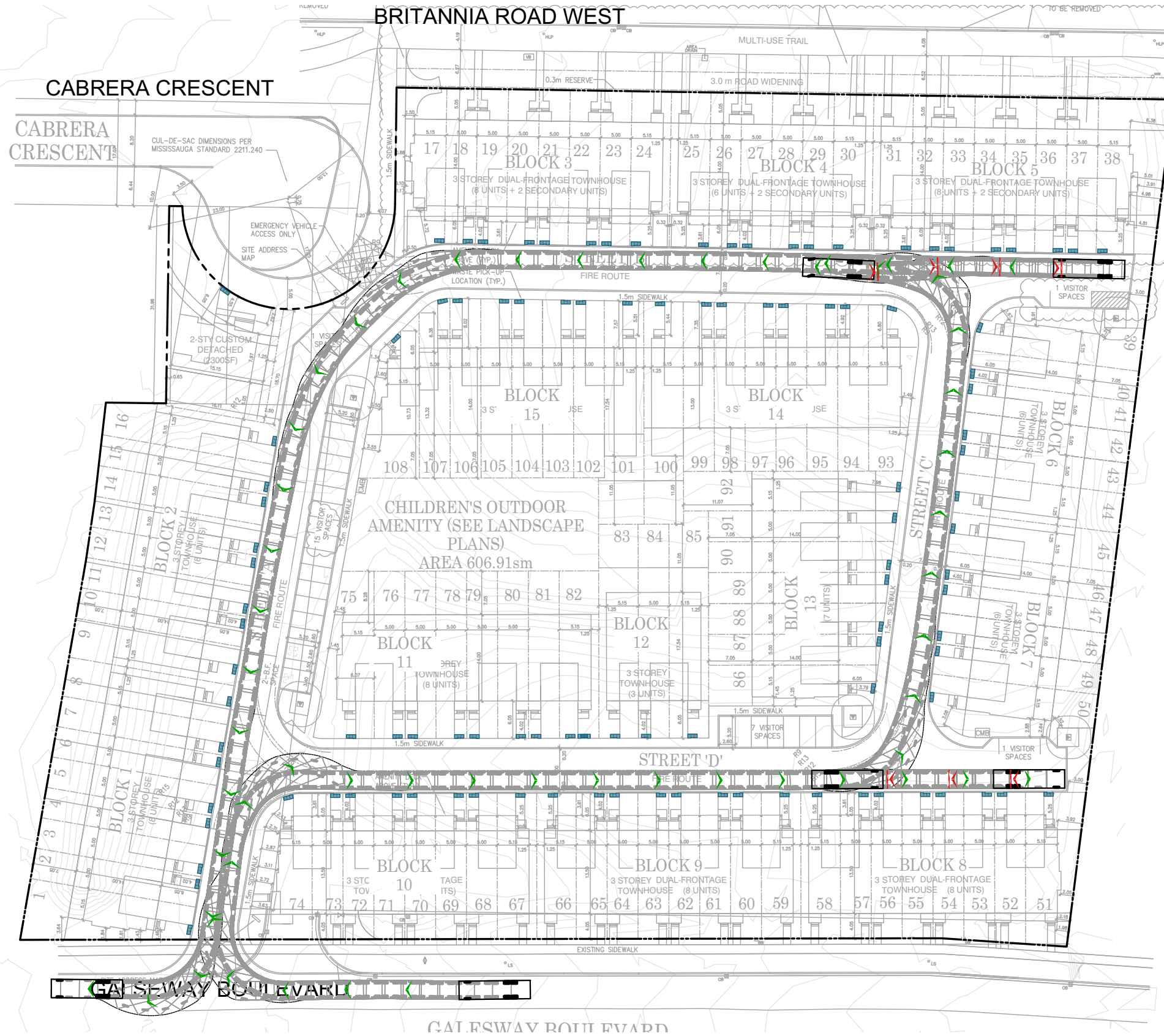


Drawing No. **VMD-1**

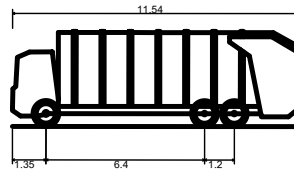


ROUTE 2

File name: J:\6869-16\BA\WMD\20202. March 20, 2020\BA-1240 Britannia Road-VMD-2-6869-16.dwg Date Plotted: March 25, 2020



Design Vehicle - Niagara Region Garbage



Niagara Region Garbage  
 Overall Length 11.540m  
 Overall Width 2.980m  
 Overall Body Height 3.835m  
 Curb to Curb Turning Radius 12.800m

LEGEND:

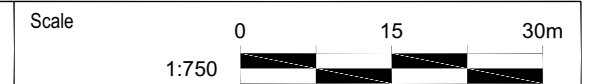
WASTE COLLECTION POINTS



1240 Britannia Road  
 VEHICULAR MANOEUVRING DIAGRAM / WASTE COLLECTION PLAN  
 NIAGARA REGION GARBAGE COLLECTION VEHICLE\*

(A NIAGARA REGION WASTE COLLECTION VEHICLE WAS UTILIZED IN THIS ANALYSIS IN ORDER TO DEMONSTRATE A MORE CONSERVATIVE MANOEUVRING PATH COMPARED TO THE PEEL REGION 'REAR LOADING' AND 'FULLY-AUTOMATED SIDE-LOADING' COLLECTION VEHICLES AS SPECIFIED IN THE REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL)

Project: 1240 Britannia Rd.  
 Project No. 6869-16  
 Date: March 25, 2020  
 Revised: --

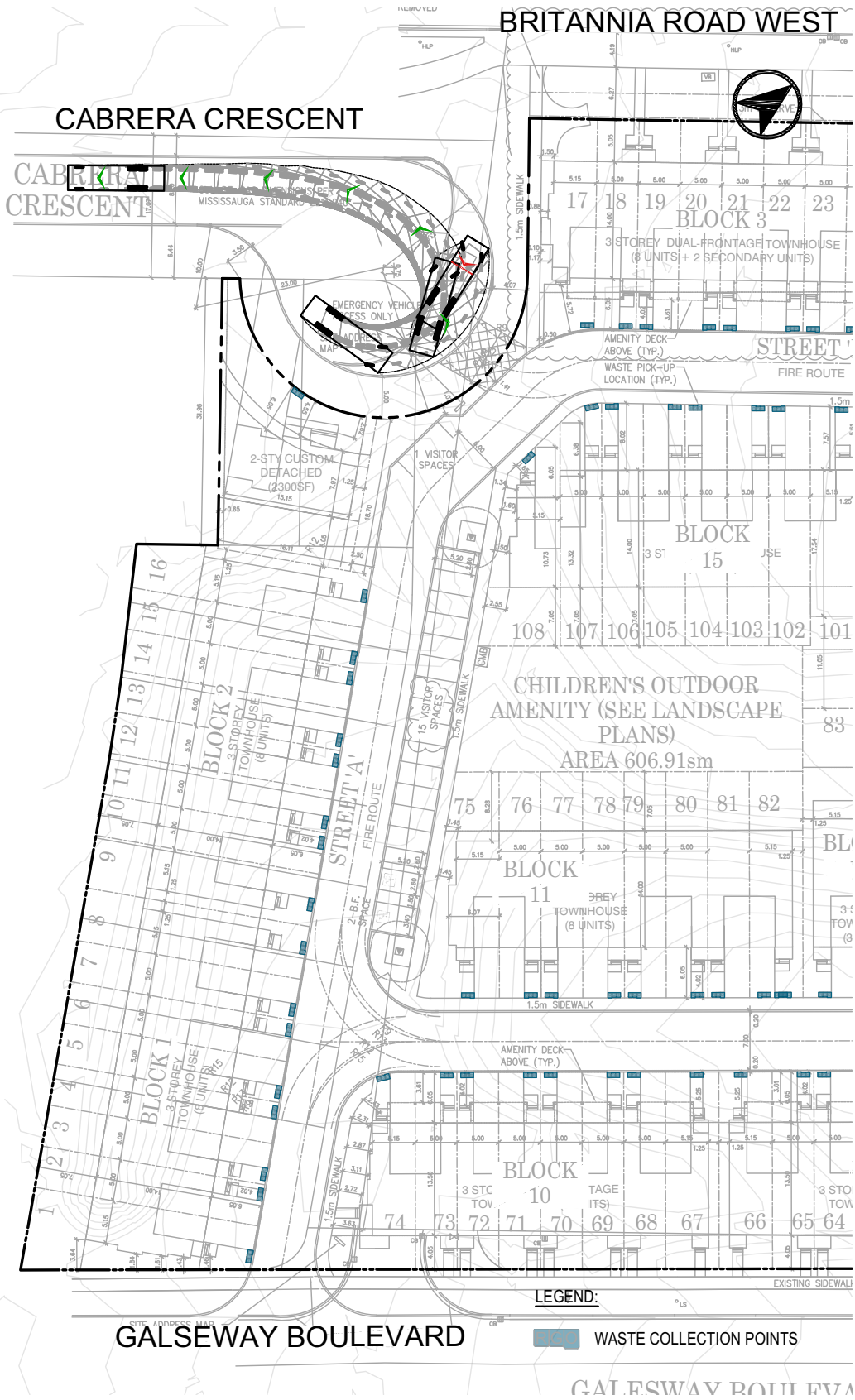
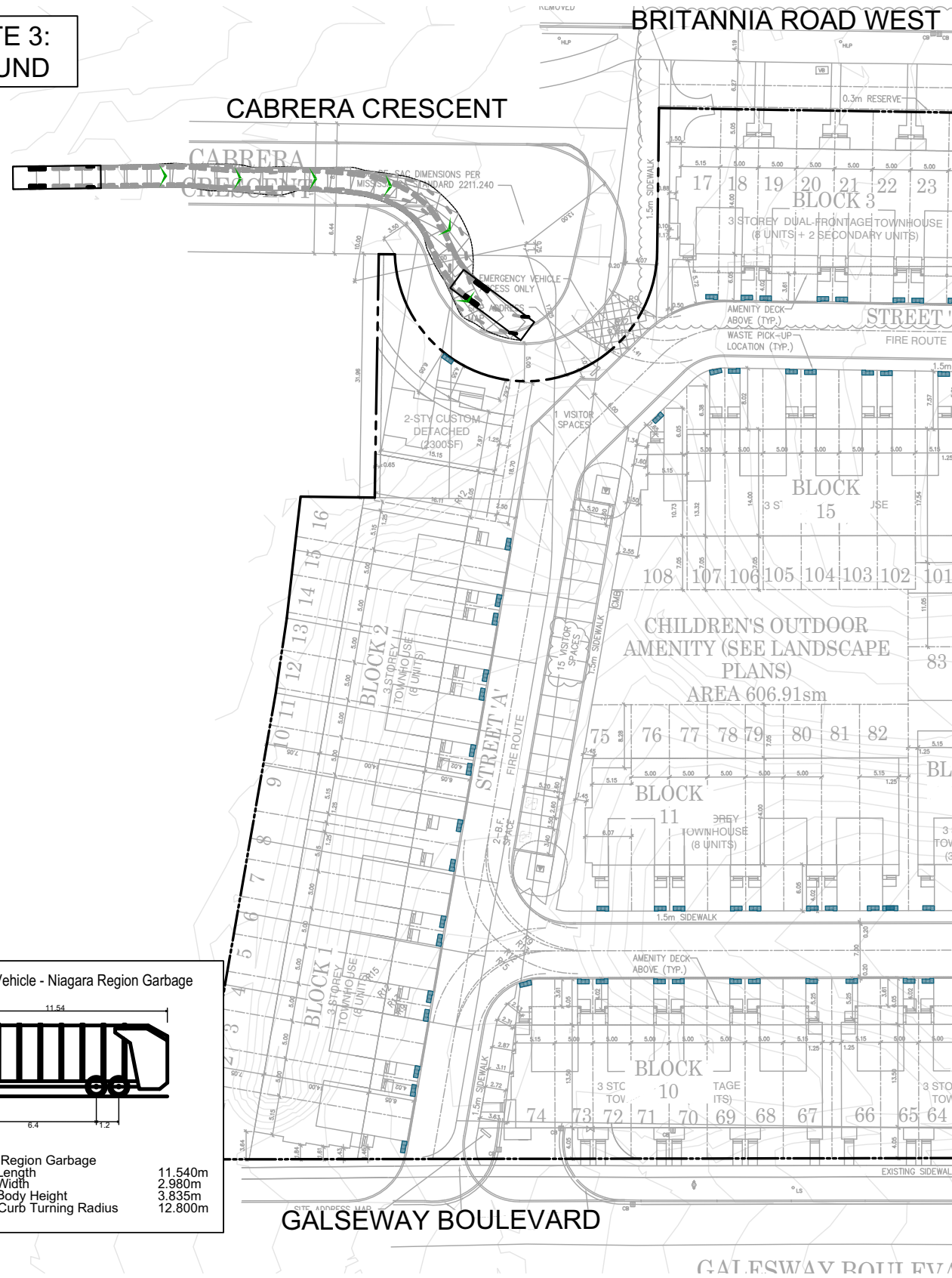


Drawing No.

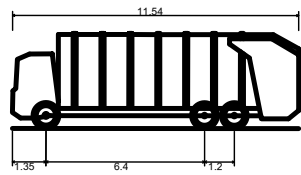
VMD-2

ROUTE 3:  
INBOUND

ROUTE 3:  
OUTBOUND



Design Vehicle - Niagara Region Garbage



Niagara Region Garbage  
Overall Length 11.540m  
Overall Width 2.980m  
Overall Body Height 3.835m  
Curb to Curb Turning Radius 12.800m

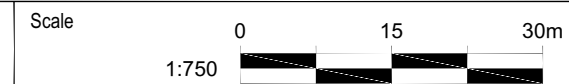
LEGEND:  
WASTE COLLECTION POINTS



1240 Britannia Road  
VEHICULAR MANOEUVRING DIAGRAM / WASTE COLLECTION PLAN  
NIAGARA REGION GARBAGE COLLECTION VEHICLE\*

(A NIAGARA REGION WASTE COLLECTION VEHICLE WAS UTILIZED IN THIS ANALYSIS IN ORDER TO DEMONSTRATE A MORE CONSERVATIVE MANOEUVRING PATH COMPARED TO THE PEEL REGION 'REAR LOADING' AND 'FULLY-AUTOMATED SIDE-LOADING' COLLECTION VEHICLES AS SPECIFIED IN THE REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL)

Project: 1240 Britannia Rd.  
Project No. 6869-16  
Date: March 25, 2020  
Revised: --



Drawing No.

VMD-3

**Appendix D: Synchro Capacity Analysis Output Sheets**



HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-19-2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	165	40	230	210	40	100
Future Volume (vph)	165	40	230	210	40	100
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	176	43	245	223	43	106
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total (vph)	219	468	149			
Volume Left (vph)	176	0	43			
Volume Right (vph)	43	223	0			
Hadj (s)	0.09	-0.27	0.12			
Departure Headway (s)	5.4	4.5	5.2			
Degree Utilization, x	0.33	0.58	0.22			
Capacity (veh/h)	608	780	646			
Control Delay (s)	11.1	13.5	9.6			
Approach Delay (s)	11.1	13.5	9.6			
Approach LOS	B	B	A			
<b>Intersection Summary</b>						
Delay		12.2				
Level of Service		B				
Intersection Capacity Utilization		54.7%		ICU Level of Service	A	
Analysis Period (min)		15				

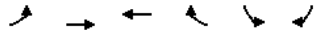
HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

03-19-2020

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		T	T		T	T
Traffic Volume (veh/h)	5	245	190	0	5	15
Future Volume (Veh/h)	5	245	190	0	5	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	266	207	0	5	16
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	209				485	209
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209				485	209
tC, single (s)	4.3				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1281				517	835
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	271	207	21			
Volume Left	5	0	5			
Volume Right	0	0	16			
cSH	1281	1700	728			
Volume to Capacity	0.00	0.12	0.03			
Queue Length 95th (m)	0.1	0.0	0.7			
Control Delay (s)	0.2	0.0	10.1			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.1			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.5				
Intersection Capacity Utilization		26.9%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
5: Galesway Boulevard & Site Access

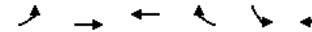
03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	250	190	0	0	0
Future Volume (Veh/h)	0	250	190	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	272	207	0	0	0
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	209				481	209
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209				481	209
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1372				547	835
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	272	207	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1372	1700	1700			
Volume to Capacity	0.00	0.12	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay		0.0				
Intersection Capacity Utilization		16.5%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
6: Galesway Boulevard & Bandlebrook Court

03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	245	175	0	15	15
Future Volume (Veh/h)	5	245	175	0	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	5	255	182	0	16	16
Pedestrians		1	1		3	
Lane Width (m)		3.7	3.7		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185				451	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185				451	186
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1398				566	858
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	260	182	32			
Volume Left	5	0	16			
Volume Right	0	0	16			
cSH	1398	1700	682			
Volume to Capacity	0.00	0.11	0.05			
Queue Length 95th (m)	0.1	0.0	1.2			
Control Delay (s)	0.2	0.0	10.5			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.5			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.8				
Intersection Capacity Utilization		27.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-19-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	45	215	0	5	155	40	5	20	20	25	5	15
Future Volume (vph)	45	215	0	5	155	40	5	20	20	25	5	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	45	217	0	5	157	40	5	20	20	25	5	15
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	262	202	45	45								
Volume Left (vph)	45	5	5	25								
Volume Right (vph)	0	40	20	15								
Hadj (s)	0.05	-0.01	-0.21	0.05								
Departure Headway (s)	4.4	4.4	4.8	5.1								
Degree Utilization, x	0.32	0.25	0.06	0.06								
Capacity (veh/h)	795	784	674	640								
Control Delay (s)	9.5	8.8	8.1	8.4								
Approach Delay (s)	9.5	8.8	8.1	8.4								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay			9.0									
Level of Service			A									
Intersection Capacity Utilization			43.9%	ICU Level of Service	A							
Analysis Period (min)			15									





HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-19-2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T			T
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	270	80	125	110	60	255
Future Volume (vph)	270	80	125	110	60	255
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	287	85	133	117	64	271
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total (vph)	372	250	335			
Volume Left (vph)	287	0	64			
Volume Right (vph)	85	117	0			
Hadj (s)	0.02	-0.28	0.04			
Departure Headway (s)	5.5	5.3	5.4			
Degree Utilization, x	0.56	0.37	0.51			
Capacity (veh/h)	625	630	631			
Control Delay (s)	15.3	11.2	13.8			
Approach Delay (s)	15.3	11.2	13.8			
Approach LOS	C	B	B			
<b>Intersection Summary</b>						
Delay		13.7				
Level of Service		B				
Intersection Capacity Utilization		60.3%		ICU Level of Service		B
Analysis Period (min)		15				

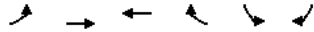
HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

03-19-2020

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		T	T		T	
Traffic Volume (veh/h)	10	160	345	10	5	5
Future Volume (Veh/h)	10	160	345	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	172	371	11	5	5
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	385				574	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385				574	380
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1182				478	670
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	183	382	10			
Volume Left	11	0	5			
Volume Right	0	11	5			
cSH	1182	1700	558			
Volume to Capacity	0.01	0.22	0.02			
Queue Length 95th (m)	0.2	0.0	0.4			
Control Delay (s)	0.6	0.0	11.6			
Lane LOS	A		B			
Approach Delay (s)	0.6	0.0	11.6			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.4				
Intersection Capacity Utilization		28.8%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
5: Galesway Boulevard & Site Access

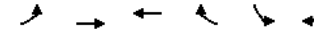
03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	165	355	0	0	0
Future Volume (Veh/h)	0	165	355	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	177	382	0	0	0
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	385				562	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385				562	385
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1182				490	666
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	177	382	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1182	1700	1700			
Volume to Capacity	0.00	0.22	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay		0.0				
Intersection Capacity Utilization		22.0%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
6: Galesway Boulevard & Bandlebrook Court

03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	160	355	15	10	0
Future Volume (Veh/h)	5	160	355	15	10	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	174	386	16	11	0
Pedestrians		2			4	
Lane Width (m)		3.7			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	406				582	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406				582	400
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1160				475	651
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	179	402	11			
Volume Left	5	0	11			
Volume Right	0	16	0			
cSH	1160	1700	475			
Volume to Capacity	0.00	0.24	0.02			
Queue Length 95th (m)	0.1	0.0	0.6			
Control Delay (s)	0.3	0.0	12.8			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	12.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.3				
Intersection Capacity Utilization		30.3%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-19-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	155	0	15	300	35	0	5	15	40	25	70
Future Volume (vph)	15	155	0	15	300	35	0	5	15	40	25	70
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	16	170	0	16	330	38	0	5	16	44	27	77
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	186	384	21	148								
Volume Left (vph)	16	16	0	44								
Volume Right (vph)	0	38	16	77								
Hadj (s)	0.02	-0.05	-0.46	-0.25								
Departure Headway (s)	4.8	4.5	5.0	5.0								
Degree Utilization, x	0.25	0.48	0.03	0.21								
Capacity (veh/h)	703	766	609	647								
Control Delay (s)	9.4	11.7	8.2	9.3								
Approach Delay (s)	9.4	11.7	8.2	9.3								
Approach LOS	A	B	A	A								
<b>Intersection Summary</b>												
Delay			10.5									
Level of Service			B									
Intersection Capacity Utilization			43.0%	ICU Level of Service	A							
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-19-2020

	↖	↗	↑	↘	↙	↓
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	T	T	T	T	T	T
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	165	40	230	210	40	100
Future Volume (vph)	165	40	230	210	40	100
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	176	43	245	223	43	106
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total (vph)	219	468	149			
Volume Left (vph)	176	0	43			
Volume Right (vph)	43	223	0			
Hadj (s)	0.09	-0.27	0.12			
Departure Headway (s)	5.4	4.5	5.2			
Degree Utilization, x	0.33	0.58	0.22			
Capacity (veh/h)	608	780	646			
Control Delay (s)	11.1	13.5	9.6			
Approach Delay (s)	11.1	13.5	9.6			
Approach LOS	B	B	A			
<b>Intersection Summary</b>						
Delay	12.2					
Level of Service	B					
Intersection Capacity Utilization	54.7%		ICU Level of Service	A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

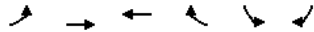
03-19-2020

	↖	→	←	↗	↘	↓
<b>Movement</b>	<b>EBL</b>	<b>EBT</b>	<b>WBT</b>	<b>WBR</b>	<b>SBL</b>	<b>SBR</b>
Lane Configurations	T	T	T	T	T	T
Traffic Volume (veh/h)	5	245	190	0	5	15
Future Volume (Veh/h)	5	245	190	0	5	15
Sign Control	Free	Free	Free	Stop		
Grade	0%	0%	0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	266	207	0	5	16
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	209			485	209	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209			485	209	
tC, single (s)	4.3			6.5	6.2	
tC, 2 stage (s)						
tF (s)	2.3			3.6	3.3	
p0 queue free %	100			99	98	
cM capacity (veh/h)	1281			517	835	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	271	207	21			
Volume Left	5	0	5			
Volume Right	0	0	16			
cSH	1281	1700	728			
Volume to Capacity	0.00	0.12	0.03			
Queue Length 95th (m)	0.1	0.0	0.7			
Control Delay (s)	0.2	0.0	10.1			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.1			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay	0.5					
Intersection Capacity Utilization	26.9%		ICU Level of Service	A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

5: Galesway Boulevard & Site Access

03-19-2020

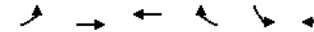


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	250	190	0	0	0
Future Volume (Veh/h)	0	250	190	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	272	207	0	0	0
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	209				481	209
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209				481	209
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1372				547	835
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	272	207	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1372	1700	1700			
Volume to Capacity	0.00	0.12	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay		0.0				
Intersection Capacity Utilization		16.5%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

6: Galesway Boulevard & Bandlebrook Court

03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	245	175	0	15	15
Future Volume (Veh/h)	5	245	175	0	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	5	255	182	0	16	16
Pedestrians		1	1		3	
Lane Width (m)		3.7	3.7		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185				451	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185				451	186
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1398				566	858
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	260	182	32			
Volume Left	5	0	16			
Volume Right	0	0	16			
cSH	1398	1700	682			
Volume to Capacity	0.00	0.11	0.05			
Queue Length 95th (m)	0.1	0.0	1.2			
Control Delay (s)	0.2	0.0	10.5			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.5			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.8				
Intersection Capacity Utilization		27.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-19-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	45	215	0	5	155	40	5	20	20	25	5	15
Future Volume (vph)	45	215	0	5	155	40	5	20	20	25	5	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	45	217	0	5	157	40	5	20	20	25	5	15
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	262	202	45	45								
Volume Left (vph)	45	5	5	25								
Volume Right (vph)	0	40	20	15								
Hadj (s)	0.05	-0.01	-0.21	0.05								
Departure Headway (s)	4.4	4.4	4.8	5.1								
Degree Utilization, x	0.32	0.25	0.06	0.06								
Capacity (veh/h)	795	784	674	640								
Control Delay (s)	9.5	8.8	8.1	8.4								
Approach Delay (s)	9.5	8.8	8.1	8.4								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay			9.0									
Level of Service			A									
Intersection Capacity Utilization			43.9%	ICU Level of Service	A							
Analysis Period (min)			15									



# HCM Signalized Intersection Capacity Analysis

## 1: Whitehorn Avenue/Bidwell Trail & Britannia Road W

03-19-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔↔	↔	↔	↔↔↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	1305	90	125	1885	145	95	60	55	85	100	50
Future Volume (vph)	40	1305	90	125	1885	145	95	60	55	85	100	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.9	6.9	6.9	6.9	6.9	6.9	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.96	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00
Frt	1.00	0.99	1.00	1.00	0.85	1.00	0.93	1.00	0.95	1.00	0.95	1.00
Fit Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1748	5135	1765	5193	1473	1761	1758	1773	1807			
Fit Permitted	0.08	1.00	0.15	1.00	1.00	0.65	1.00	0.68	1.00			
Satd. Flow (perm)	139	5135	281	5193	1473	1197	1758	1268	1807			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	1374	95	132	1984	153	100	63	58	89	105	53
RTOR Reduction (vph)	0	5	0	0	46	0	23	0	0	12	0	0
Lane Group Flow (vph)	42	1464	0	132	1984	107	100	98	0	89	146	0
Confl. Peds. (#/hr)	10	7	7	10	17	8	8	8	17			
Confl. Bikes (#/hr)				1								
Heavy Vehicles (%)	2%	1%	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	10	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2			6		6	4			8		
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	64.6	64.6		64.6	64.6	64.6	16.6	16.6		16.6	16.6	
Effective Green, g (s)	64.6	64.6		64.6	64.6	64.6	16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.68	0.68		0.68	0.68	0.68	0.17	0.17		0.17	0.17	
Clearance Time (s)	6.9	6.9		6.9	6.9	6.9	7.3	7.3		7.3	7.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	94	3477		190	3516	997	208	305		220	314	
v/s Ratio Prot	0.29			0.38		0.06		0.08				
v/s Ratio Perm	0.30			c0.47		0.07		c0.08			0.07	
v/c Ratio	0.45	0.42		0.69	0.56	0.11	0.48	0.32		0.40	0.46	
Uniform Delay, d1	7.1	7.0		9.4	8.0	5.4	35.5	34.5		35.0	35.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.1		10.5	0.2	0.0	1.7	0.6		1.2	1.1	
Delay (s)	10.5	7.0		19.9	8.3	5.4	37.3	35.1		36.2	36.5	
Level of Service	B	A		B	A	A	D	D		D	D	
Approach Delay (s)	7.1			8.7			36.1			36.4		
Approach LOS	A			A			D			D		
Intersection Summary												
HCM 2000 Control Delay	11.2			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	95.4			Sum of lost time (s)			14.2					
Intersection Capacity Utilization	92.2%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

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# HCM Signalized Intersection Capacity Analysis

## 2: Brookhaven Way/Douguy Boulevard & Britannia Road W

03-19-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔↔	↔	↔	↔↔↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	90	1325	30	70	2065	65	20	20	15	45	35	70
Future Volume (vph)	90	1325	30	70	2065	65	20	20	15	45	35	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.97	1.00	0.99	1.00	0.99	1.00	0.98	1.00
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	1.00	0.85	1.00	0.94	1.00	0.90	1.00	0.90	1.00
Fit Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1766	5172	1781	5245	1485	1767	1789	1743	1702			
Fit Permitted	0.07	1.00	0.17	1.00	1.00	0.69	1.00	0.73	1.00			
Satd. Flow (perm)	132	5172	325	5245	1485	1278	1789	1346	1702			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	1366	31	72	2129	67	21	21	15	46	36	72
RTOR Reduction (vph)	0	1	0	0	11	0	14	0	0	10	0	0
Lane Group Flow (vph)	93	1396	0	72	2129	56	21	22	0	46	98	0
Confl. Peds. (#/hr)	5	8	8	5	12	4	4	4	12			
Confl. Bikes (#/hr)				1								
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	10	0	10	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2			6		6	4			8		
Permitted Phases	2			6		6	4			8		
Actuated Green, G (s)	102.6	102.6		102.6	102.6	102.6	12.7	12.7		12.7	12.7	
Effective Green, g (s)	102.6	102.6		102.6	102.6	102.6	12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79	0.79	0.10	0.10		0.10	0.10	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.5	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	104	4104		257	4161	1178	125	175		132	167	
v/s Ratio Prot	0.27			0.41		0.01		c0.06				
v/s Ratio Perm	c0.70			0.22		0.04		0.02			0.03	
v/c Ratio	0.89	0.34		0.28	0.51	0.05	0.17	0.13		0.35	0.59	
Uniform Delay, d1	9.5	3.8		3.5	4.6	2.9	53.5	53.2		54.4	55.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	55.6	0.0		0.6	0.1	0.0	0.6	0.3		1.6	5.2	
Delay (s)	65.1	3.8		4.1	4.7	2.9	54.1	53.6		56.0	61.0	
Level of Service	E	A		A	A	A	D	D		E	E	
Approach Delay (s)	7.7			4.7			53.8			59.5		
Approach LOS	A			A			D			E		
Intersection Summary												
HCM 2000 Control Delay	8.6			HCM 2000 Level of Service			A					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	129.3			Sum of lost time (s)			14.0					
Intersection Capacity Utilization	84.1%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

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HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-19-2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	270	85	125	115	60	255
Future Volume (vph)	270	85	125	115	60	255
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	287	90	133	122	64	271
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total (vph)	377	255	335			
Volume Left (vph)	287	0	64			
Volume Right (vph)	90	122	0			
Hadj (s)	0.01	-0.29	0.04			
Departure Headway (s)	5.5	5.3	5.5			
Degree Utilization, x	0.57	0.37	0.51			
Capacity (veh/h)	624	629	628			
Control Delay (s)	15.6	11.4	14.0			
Approach Delay (s)	15.6	11.4	14.0			
Approach LOS	C	B	B			
<b>Intersection Summary</b>						
Delay		13.9				
Level of Service		B				
Intersection Capacity Utilization		60.9%		ICU Level of Service		B
Analysis Period (min)		15				

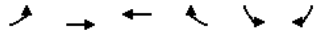
HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

03-19-2020

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		T	T		T	T
Traffic Volume (veh/h)	10	165	350	10	5	5
Future Volume (Veh/h)	10	165	350	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	177	376	11	5	5
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume					584	384
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		390			584	384
tC, single (s)		4.1			6.4	6.2
tC, 2 stage (s)						
tF (s)		2.2			3.5	3.3
p0 queue free %		99			99	99
cM capacity (veh/h)		1177			472	666
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	188	387	10			
Volume Left	11	0	5			
Volume Right	0	11	5			
cSH	1177	1700	552			
Volume to Capacity	0.01	0.23	0.02			
Queue Length 95th (m)	0.2	0.0	0.4			
Control Delay (s)	0.6	0.0	11.6			
Lane LOS	A		B			
Approach Delay (s)	0.6	0.0	11.6			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.4				
Intersection Capacity Utilization		29.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
5: Galesway Boulevard & Site Access

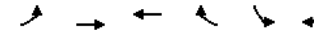
03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	170	360	0	0	0
Future Volume (Veh/h)	0	170	360	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	183	387	0	0	0
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	390				573	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390				573	390
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1177				483	661
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	183	387	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1177	1700	1700			
Volume to Capacity	0.00	0.23	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay		0.0				
Intersection Capacity Utilization		22.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
6: Galesway Boulevard & Bandlebrook Court

03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	165	360	15	10	0
Future Volume (Veh/h)	5	165	360	15	10	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	179	391	16	11	0
Pedestrians		2			4	
Lane Width (m)		3.7			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	411				592	405
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	411				592	405
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1155				469	647
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	184	407	11			
Volume Left	5	0	11			
Volume Right	0	16	0			
cSH	1155	1700	469			
Volume to Capacity	0.00	0.24	0.02			
Queue Length 95th (m)	0.1	0.0	0.6			
Control Delay (s)	0.3	0.0	12.9			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	12.9			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.3				
Intersection Capacity Utilization		30.5%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-19-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations		↕			↕			↕			↕				
Sign Control		Stop			Stop			Stop			Stop				
Traffic Volume (vph)	15	160	0	15	305	35	0	5	15	40	25	70			
Future Volume (vph)	15	160	0	15	305	35	0	5	15	40	25	70			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91			
Hourly flow rate (vph)	16	176	0	16	335	38	0	5	16	44	27	77			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>											
Volume Total (vph)	192	389	21	148											
Volume Left (vph)	16	16	0	44											
Volume Right (vph)	0	38	16	77											
Hadj (s)	0.02	-0.05	-0.46	-0.25											
Departure Headway (s)	4.8	4.5	5.0	5.0											
Degree Utilization, x	0.26	0.49	0.03	0.21											
Capacity (veh/h)	702	765	604	643											
Control Delay (s)	9.5	11.8	8.2	9.3											
Approach Delay (s)	9.5	11.8	8.2	9.3											
Approach LOS	A	B	A	A											
<b>Intersection Summary</b>															
Delay			10.6												
Level of Service			B												
Intersection Capacity Utilization			43.4%				ICU Level of Service				A				
Analysis Period (min)			15												

HCM Signalized Intersection Capacity Analysis  
1: Whitehorn Avenue/Bidwell Trail & Britannia Road W

03-20-2020

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑↑		↑	↑↑↑↑		↑	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	25	2735	70	30	845	15	100	45	140	70	45	30
Future Volume (vph)	25	2735	70	30	845	15	100	45	140	70	45	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.9		6.9	3.0	6.9		6.9	7.3	7.3		7.3	7.3
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.97	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.99	1.00	0.99	1.00
Frt	1.00	1.00	1.00	1.00	0.85	1.00	0.89	1.00	0.94	1.00	0.94	1.00
Fit Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1781	5165	1552	4948	1193	1656	1664	1747	1741	1747	1741	1741
Fit Permitted	0.31	1.00	0.05	1.00	1.00	0.71	1.00	0.45	1.00	0.45	1.00	1.00
Satd. Flow (perm)	588	5165	77	4948	1193	1232	1664	829	1741	829	1741	1741
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	26	2820	72	31	871	15	103	46	144	72	46	31
RTOR Reduction (vph)	0	1	0	0	0	4	0	75	0	0	17	0
Lane Group Flow (vph)	26	2891	0	31	871	11	103	115	0	72	60	0
Confl. Peds. (#/hr)	3	6	6	6	3	15	2	2	2	2	2	15
Heavy Vehicles (%)	0%	1%	4%	15%	6%	25%	6%	5%	0%	2%	0%	6%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		1		6		4		8		8	
Permitted Phases	2		6		6		4		8		8	
Actuated Green, G (s)	82.1	82.1	88.4	88.4	88.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
Effective Green, g (s)	82.1	82.1	88.4	88.4	88.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
Actuated g/C Ratio	0.69	0.69	0.74	0.74	0.74	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Clearance Time (s)	6.9	6.9	3.0	6.9	6.9	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	405	3563	98	3675	886	169	229	114	239	114	239	98
v/s Ratio Prot	c0.56		c0.01		0.18		0.07		0.03		0.03	
v/s Ratio Perm	0.04		0.23		0.01		0.08		c0.09		0.03	
v/c Ratio	0.06	0.81	0.32	0.24	0.01	0.61	0.50	0.63	0.25	0.63	0.25	0.32
Uniform Delay, d1	6.0	13.0	16.1	4.8	4.0	48.3	47.5	48.4	45.8	48.4	45.8	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.5	1.9	0.0	0.0	6.1	1.7	10.9	0.6	10.9	0.6	1.5
Delay (s)	6.1	14.5	18.0	4.8	4.0	54.4	49.2	59.3	46.4	59.3	46.4	14.5
Level of Service	A	B	B	A	A	D	D	E	D	E	D	B
Approach Delay (s)	14.4		5.2		51.1		52.6		43.2		43.2	
Approach LOS	B		A		D		D		D		D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.3		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.77											
Actuated Cycle Length (s)	119.0		Sum of lost time (s)				17.2					
Intersection Capacity Utilization	92.6%		ICU Level of Service				F					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis  
2: Brookhaven Way/Douguy Boulevard & Britannia Road W

03-20-2020

Movement												
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑↑		↑	↑↑↑↑		↑	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	80	2845	20	10	780	25	25	25	75	30	20	85
Future Volume (vph)	80	2845	20	10	780	25	25	25	75	30	20	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.5		6.5	6.5	6.5		6.5	7.5	7.5		7.5	7.5
Lane Util. Factor	1.00	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.97	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00
Frt	1.00	1.00	1.00	1.00	0.85	1.00	0.89	1.00	0.88	1.00	0.88	1.00
Fit Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	5185	1785	4948	1311	1449	1681	1659	1604	1659	1604	1604
Fit Permitted	0.33	1.00	0.05	1.00	1.00	0.69	1.00	0.69	1.00	0.69	1.00	1.00
Satd. Flow (perm)	584	5185	92	4948	1311	1047	1681	1203	1604	1203	1604	1604
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	2995	21	11	821	26	26	26	79	32	21	89
RTOR Reduction (vph)	0	0	0	0	0	7	0	1	0	78	0	0
Lane Group Flow (vph)	84	3016	0	11	821	19	26	104	0	32	32	0
Confl. Peds. (#/hr)	3	2	2	2	3	2	8	8	2	8	8	2
Heavy Vehicles (%)	6%	1%	5%	0%	6%	14%	23%	0%	0%	7%	0%	5%
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		6		6		4		8		8	
Permitted Phases	2		6		6		4		8		8	
Actuated Green, G (s)	81.3	81.3	81.3	81.3	81.3	13.2	13.2	13.2	13.2	13.2	13.2	13.2
Effective Green, g (s)	81.3	81.3	81.3	81.3	81.3	13.2	13.2	13.2	13.2	13.2	13.2	13.2
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	437	3885	68	3707	982	127	204	146	195	146	195	68
v/s Ratio Prot	c0.58		0.17		0.17		c0.06		0.02		0.02	
v/s Ratio Perm	0.14		0.12		0.01		0.02		0.03		0.03	
v/c Ratio	0.19	0.78	0.16	0.22	0.02	0.20	0.51	0.22	0.16	0.22	0.16	0.16
Uniform Delay, d1	4.0	8.1	3.9	4.1	3.5	42.9	44.6	43.0	42.7	43.0	42.7	3.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.0	1.1	0.0	0.0	0.8	2.1	0.8	0.4	0.8	0.4	1.0
Delay (s)	4.2	9.2	5.0	4.1	3.5	43.7	46.8	43.8	43.1	43.8	43.1	9.2
Level of Service	A	A	A	A	A	D	D	D	D	D	D	A
Approach Delay (s)	9.0		4.1		46.2		43.2		43.2		43.2	
Approach LOS	A		A		D		D		D		D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	10.3		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.74											
Actuated Cycle Length (s)	108.5		Sum of lost time (s)				14.0					
Intersection Capacity Utilization	92.1%		ICU Level of Service				F					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-20-2020

	↖	↗	↑	↘	↙	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗		↖	↗
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	175	55	230	210	45	100
Future Volume (vph)	175	55	230	210	45	100
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	186	59	245	223	48	106
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	245	468	154			
Volume Left (vph)	186	0	48			
Volume Right (vph)	59	223	0			
Hadj (s)	0.05	-0.27	0.12			
Departure Headway (s)	5.4	4.6	5.3			
Degree Utilization, x	0.37	0.59	0.23			
Capacity (veh/h)	611	754	632			
Control Delay (s)	11.6	14.0	9.9			
Approach Delay (s)	11.6	14.0	9.9			
Approach LOS	B	B	A			
Intersection Summary						
Delay	12.6					
Level of Service	B					
Intersection Capacity Utilization	56.2%		ICU Level of Service	B		
Analysis Period (min)	15					

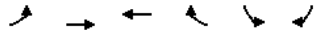
HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

03-20-2020

	↖	→	←	↗	↘	↓
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Volume (veh/h)	5	250	215	0	5	15
Future Volume (Veh/h)	5	250	215	0	5	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	272	234	0	5	16
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	236				518	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236				518	236
tC, single (s)	4.3				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1251				494	807
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	277	234	21			
Volume Left	5	0	5			
Volume Right	0	0	16			
cSH	1251	1700	701			
Volume to Capacity	0.00	0.14	0.03			
Queue Length 95th (m)	0.1	0.0	0.7			
Control Delay (s)	0.2	0.0	10.3			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	27.2%		ICU Level of Service	A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Galesway Boulevard & Site Access

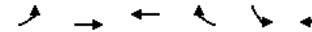
03-20-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	250	190	10	30	25
Future Volume (Veh/h)	5	250	190	10	30	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	272	207	11	33	27
Pedestrians					2	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220				496	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				496	214
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	97
cM capacity (veh/h)	1359				534	829
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	277	218	60			
Volume Left	5	0	33			
Volume Right	0	11	27			
cSH	1359	1700	636			
Volume to Capacity	0.00	0.13	0.09			
Queue Length 95th (m)	0.1	0.0	2.5			
Control Delay (s)	0.2	0.0	11.3			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	11.3			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		1.3				
Intersection Capacity Utilization		27.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
6: Galesway Boulevard & Bandlebrook Court

03-20-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	275	185	0	15	15
Future Volume (Veh/h)	5	275	185	0	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	5	286	193	0	16	16
Pedestrians		1	1		3	
Lane Width (m)		3.7	3.7		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	196				493	197
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				493	197
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	98
cM capacity (veh/h)	1386				535	847
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	291	193	32			
Volume Left	5	0	16			
Volume Right	0	0	16			
cSH	1386	1700	656			
Volume to Capacity	0.00	0.11	0.05			
Queue Length 95th (m)	0.1	0.0	1.2			
Control Delay (s)	0.2	0.0	10.8			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	10.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.8				
Intersection Capacity Utilization		28.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-20-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	65	225	0	5	160	40	5	20	20	25	5	20
Future Volume (vph)	65	225	0	5	160	40	5	20	20	25	5	20
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	66	227	0	5	162	40	5	20	20	25	5	20
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	293	207	45	50								
Volume Left (vph)	66	5	5	25								
Volume Right (vph)	0	40	20	20								
Hadj (s)	0.07	-0.01	-0.21	-0.01								
Departure Headway (s)	4.4	4.5	4.9	5.1								
Degree Utilization, x	0.36	0.26	0.06	0.07								
Capacity (veh/h)	789	774	657	632								
Control Delay (s)	9.9	9.0	8.2	8.5								
Approach Delay (s)	9.9	9.0	8.2	8.5								
Approach LOS	A	A	A	A								
<b>Intersection Summary</b>												
Delay			9.4									
Level of Service			A									
Intersection Capacity Utilization			46.0%	ICU Level of Service	A							
Analysis Period (min)			15									



HCM Signalized Intersection Capacity Analysis  
1: Whitehorn Avenue/Bidwell Trail & Britannia Road W

03-19-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔↔↔		↔	↔↔↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	40	1305	95	125	1885	145	100	65	55	85	105	50	
Future Volume (vph)	40	1305	95	125	1885	145	100	65	55	85	105	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	
Total Lost time (s)	6.9	6.9		6.9	6.9	7.3	7.3			7.3	7.3		
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	0.99		
Fipb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	0.99		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.95		
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1748	5132		1765	5193	1473	1761	1764		1773	1811		
Fit Permitted	0.08	1.00		0.15	1.00	1.00	0.62	1.00		0.68	1.00		
Satd. Flow (perm)	139	5132		279	5193	1473	1158	1764		1262	1811		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	42	1374	100	132	1984	153	105	68	58	89	111	53	
RTOR Reduction (vph)	0	5	0	0	0	46	0	21	0	0	12	0	
Lane Group Flow (vph)	42	1469	0	132	1984	107	105	105	0	89	152	0	
Confl. Peds. (#/hr)	10		7	7		10	17		8	8		17	
Confl. Bikes (#/hr)						1							
Heavy Vehicles (%)	2%	1%	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	10	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6		6	4			8			
Actuated Green, G (s)	66.0	66.0		66.0	66.0	66.0	16.9	16.9		16.9	16.9		
Effective Green, g (s)	66.0	66.0		66.0	66.0	66.0	16.9	16.9		16.9	16.9		
Actuated g/C Ratio	0.68	0.68		0.68	0.68	0.68	0.17	0.17		0.17	0.17		
Clearance Time (s)	6.9	6.9		6.9	6.9	6.9	7.3	7.3		7.3	7.3		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	94	3488		189	3529	1001	201	307		219	315		
v/s Ratio Prot		0.29			0.38			0.06			0.08		
v/s Ratio Perm	0.30			c0.47		0.07	c0.09			0.07			
v/c Ratio	0.45	0.42		0.70	0.56	0.11	0.52	0.34		0.41	0.48		
Uniform Delay, d1	7.2	7.0		9.5	8.1	5.4	36.4	35.2		35.6	36.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	3.4	0.1		10.7	0.2	0.0	2.4	0.7		1.2	1.2		
Delay (s)	10.5	7.1		20.2	8.3	5.4	38.9	35.9		36.9	37.3		
Level of Service	B	A		C	A	A	D	D		D	D		
Approach Delay (s)		7.2			8.8			37.2			37.2		
Approach LOS		A			A			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.4		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio		0.66											
Actuated Cycle Length (s)		97.1		Sum of lost time (s)				14.2					
Intersection Capacity Utilization		92.4%		ICU Level of Service				F					
Analysis Period (min)		15											
c Critical Lane Group													

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HCM Signalized Intersection Capacity Analysis  
2: Brookhaven Way/Douguy Boulevard & Britannia Road W

03-19-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔↔↔		↔	↔↔↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	90	1325	30	95	2065	65	20	20	30	45	35	70	
Future Volume (vph)	90	1325	30	95	2065	65	20	20	30	45	35	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	7.5	7.5		7.5	7.5		
Lane Util. Factor	1.00	0.91		1.00	0.91	1.00	1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	0.98		
Fipb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00		
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.91		1.00	0.90		
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1766	5172		1781	5245	1485	1767	1733		1744	1702		
Fit Permitted	0.07	1.00		0.17	1.00	1.00	0.69	1.00		0.72	1.00		
Satd. Flow (perm)	132	5172		325	5245	1485	1278	1733		1327	1702		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	93	1366	31	98	2129	67	21	21	31	46	36	72	
RTOR Reduction (vph)	0	1	0	0	0	11	0	28	0	0	10	0	
Lane Group Flow (vph)	93	1396	0	98	2129	56	21	24	0	46	98	0	
Confl. Peds. (#/hr)	5		8	8		5	12		4	4		12	
Confl. Bikes (#/hr)						1							
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	
Bus Blockages (#/hr)	0	0	10	0	0	10	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6		6	4			8			
Actuated Green, G (s)	102.6	102.6		102.6	102.6	102.6	12.7	12.7		12.7	12.7		
Effective Green, g (s)	102.6	102.6		102.6	102.6	102.6	12.7	12.7		12.7	12.7		
Actuated g/C Ratio	0.79	0.79		0.79	0.79	0.79	0.10	0.10		0.10	0.10		
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.5	7.5		7.5	7.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	104	4104		257	4161	1178	125	170		130	167		
v/s Ratio Prot		0.27			0.41			0.01			c0.06		
v/s Ratio Perm	c0.70			0.30		0.04	0.02			0.03			
v/c Ratio	0.89	0.34		0.38	0.51	0.05	0.17	0.14		0.35	0.59		
Uniform Delay, d1	9.5	3.8		4.0	4.6	2.9	53.5	53.3		54.5	55.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	55.6	0.0		0.9	0.1	0.0	0.6	0.4		1.7	5.2		
Delay (s)	65.1	3.8		4.9	4.7	2.9	54.1	53.7		56.1	61.0		
Level of Service	E	A		A	A	A	D	D		E	E		
Approach Delay (s)		7.7			4.7			53.8			59.5		
Approach LOS		A			A			D			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		8.8		HCM 2000 Level of Service				A					
HCM 2000 Volume to Capacity ratio		0.85											
Actuated Cycle Length (s)		129.3		Sum of lost time (s)				14.0					
Intersection Capacity Utilization		84.1%		ICU Level of Service				E					
Analysis Period (min)		15											
c Critical Lane Group													

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HCM Unsignalized Intersection Capacity Analysis  
3: Whitehorn Avenue & Galesway Boulevard

03-19-2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	275	95	125	125	70	255
Future Volume (vph)	275	95	125	125	70	255
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	293	101	133	133	74	271
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total (vph)	394	266	345			
Volume Left (vph)	293	0	74			
Volume Right (vph)	101	133	0			
Hadj (s)	-0.01	-0.30	0.04			
Departure Headway (s)	5.5	5.4	5.6			
Degree Utilization, x	0.61	0.40	0.53			
Capacity (veh/h)	619	620	616			
Control Delay (s)	16.7	11.8	14.7			
Approach Delay (s)	16.7	11.8	14.7			
Approach LOS	C	B	B			
<b>Intersection Summary</b>						
Delay		14.7				
Level of Service		B				
Intersection Capacity Utilization		63.0%		ICU Level of Service	B	
Analysis Period (min)		15				

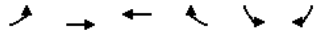
HCM Unsignalized Intersection Capacity Analysis  
4: Galesway Boulevard & Cabrera Crescent

03-19-2020

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	185	365	10	5	5
Future Volume (Veh/h)	10	185	365	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	199	392	11	5	5
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	406				622	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406				622	400
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1161				449	652
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	210	403	10			
Volume Left	11	0	5			
Volume Right	0	11	5			
cSH	1161	1700	532			
Volume to Capacity	0.01	0.24	0.02			
Queue Length 95th (m)	0.2	0.0	0.5			
Control Delay (s)	0.5	0.0	11.9			
Lane LOS	A		B			
Approach Delay (s)	0.5	0.0	11.9			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.4				
Intersection Capacity Utilization		29.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
5: Galesway Boulevard & Site Access

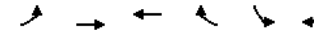
03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	20	170	360	40	20	15
Future Volume (Veh/h)	20	170	360	40	20	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	22	183	387	43	22	16
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	433				638	412
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	433				638	412
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	98
cM capacity (veh/h)	1135				434	643
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	205	430	38			
Volume Left	22	0	22			
Volume Right	0	43	16			
cSH	1135	1700	503			
Volume to Capacity	0.02	0.25	0.08			
Queue Length 95th (m)	0.5	0.0	2.0			
Control Delay (s)	1.0	0.0	12.7			
Lane LOS	A		B			
Approach Delay (s)	1.0	0.0	12.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		1.0				
Intersection Capacity Utilization		35.7%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
6: Galesway Boulevard & Bandlebrook Court

03-19-2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	5	185	400	15	10	0
Future Volume (Veh/h)	5	185	400	15	10	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	201	435	16	11	0
Pedestrians		2			4	
Lane Width (m)		3.7			3.5	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	455				658	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	455				658	449
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1113				429	611
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	206	451	11			
Volume Left	5	0	11			
Volume Right	0	16	0			
cSH	1113	1700	429			
Volume to Capacity	0.00	0.27	0.03			
Queue Length 95th (m)	0.1	0.0	0.6			
Control Delay (s)	0.2	0.0	13.6			
Lane LOS	A		B			
Approach Delay (s)	0.2	0.0	13.6			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay		0.3				
Intersection Capacity Utilization		32.6%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

7: Prestonwood Crescent/Brookhaven Way & Galesway Boulevard

03-19-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	165	0	15	320	35	0	5	15	40	25	95
Future Volume (vph)	30	165	0	15	320	35	0	5	15	40	25	95
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	33	181	0	16	352	38	0	5	16	44	27	104
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total (vph)	214	406	21	175								
Volume Left (vph)	33	16	0	44								
Volume Right (vph)	0	38	16	104								
Hadj (s)	0.03	-0.05	-0.46	-0.31								
Departure Headway (s)	5.0	4.7	5.3	5.1								
Degree Utilization, x	0.30	0.53	0.03	0.25								
Capacity (veh/h)	682	744	573	635								
Control Delay (s)	10.0	12.7	8.4	9.8								
Approach Delay (s)	10.0	12.7	8.4	9.8								
Approach LOS	B	B	A	A								
<b>Intersection Summary</b>												
Delay			11.3									
Level of Service			B									
Intersection Capacity Utilization			44.5%		ICU Level of Service		A					
Analysis Period (min)			15									