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June 12, 2018

Lesley Griffiths
Panel Chair
c/o Canadian Environmental Assessment Agency
160 Elgin Street
Ottawa ON, K1A 0H3

By email
Dear Ms. Griffiths:

The Canadian National Railway Company (CN) is pleased to provide our response to complete IR 4.2 from the *Information Request Packages 4.2 and 5 – Milton Logistics Hub Project Review Panel* (Doc # 602) received on Oct 31, 2017 as supplemental information for your review and consideration in support of the Environmental Impact Statement (EIS) under the Canadian Environmental Assessment Act, 2012 (CEAA 2012).

Remaining responses to IR 4.1 are expected to be provided shortly.

We trust this additional information will sufficiently clarify the questions posed by the Review Panel in the review of our proposed Milton Logistics Hub project.

Should you have any questions regarding the above, please do not hesitate to contact me.

Sincerely,
<Original signed by>

Luanne Patterson
Senior System Manager – Environmental Assessment

cc: Dr. Isobel Heathcote, Review Panel Member
Mr. William McMurray, Review Panel Member
Joseph Ronzio, CEAA
Darren Reynolds, CN

**CN Milton Logistics Hub (“Project”)
CEAR File No. 80100**

**CN Response to the Review Panel’s Information Request 4.2
Received October 31, 2017**

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The following information is provided in partial response to Information Request 4.2 received from the Review Panel on October 31, 2017 to address IR4.59 to IR4.63. Additional information pertaining to IR4.64 to IR4.85 was provided under separate cover to the Panel dated June 1, 2018 (CEAR #652).

TRUCK TRAFFIC

IR4.59 Routing of truck traffic

Rationale: In subsection 2.2.2 of the EIS, CN noted that it had retained BA Group to assess the impact of the truck traffic generated by the Project, including assessment of traffic impacts and a comparison of current and future routes most likely to be followed to and from the Project site. In Appendix E.17, CN identified that the relative attractiveness of each of the 19 possible routes was determined using consistent application of factors such as route length, speed limits, travel time, possible congestion, number of signalized intersections, number of roundabouts, number of required right/left turns, presence of bike lanes, and the degree of potential friction caused by uncontrolled intersections and driveways.

CN noted that within the Town of Milton, most truck traffic is currently accommodated on 400-series highways and Halton Region arterial roads. CN identified the truck capable routes most likely to be used by Project-generated trucks, while acknowledging that the Ontario Ministry of Transportation, Halton Municipalities and the Town of Milton are the authorities with jurisdiction over roads in the vicinity of the Terminal.

In its comments on the sufficiency of the EIS (CEAR #549), Halton Municipalities noted that the foundation for CN's assumptions regarding travel patterns to and from the Project site was not provided, while the Government of Ontario (CEAR #556) stated that it required additional information in order to understand what impact the Project would have on local roads and highway access points.

CN asserted that consideration was given to the suitability and potential attractiveness of the roads within the Town of Milton as truck capable routes for Project-generated truck traffic. It is unclear from section 4 of Appendix E.17 how CN made its decisions about the relative attractiveness of the most likely routes. It is also unclear how CN estimated the proportion of trips Project-generated trucks would make along each route.

Information Request:

- a) Provide a rationale for the route selection factors CN used to determine relative route attractiveness.
- b) Explain how each route selection factor was weighted when determining route attractiveness.
- c) Provide a summary table showing the route selection factors, including weight, for each of the 19 routes.
- d) Provide a figure depicting the relative attractiveness of each truck capable route anticipated for the year 2020. Indicate relative attractiveness with a colour coded scale showing at minimum low (red), medium (yellow), and high (green) attractiveness.



CN Response:

a) *Provide a rationale for the route selection factors CN used to determine relative route attractiveness.*

EIS Appendix E.17 identifies 19 routes that could potentially be used by Terminal-generated heavy-trucks to travel between the Terminal entrance and the principal points of approach¹. These routes were identified in Appendix B of EIS Appendix E.17 on Figure 5 (with Tremaine interchange) and Figure 6 (sensitivity scenario without Tremaine interchange).

The principal points of approach that have more than one route option to/from the Terminal are from the:

- east on Highway 401;
- west on Highway 401;
- south on RR25;
- east on QEW; and,
- east on Highway 403.

The relative attractiveness of each potential route was assessed by BA Group to be relevant to truck operators in their selection of travel route, according to the following key characteristics:

- **Travel Time** – The shorter the travel time, the more desirable the route. This may be particularly true for truck operators, whose compensation is often based on the number of trips made. The following factors were considered to significantly impact travel time:
 - **Travel Distance** – All else being equal, a shorter travel distance would result in a shorter travel time making a route more desirable.
 - **Posted speed** – In the absence of congestion (also considered – see below), a higher posted speed limit results in higher travel speed and shorter travel time making a route more desirable.
 - **Number of signalized intersections or roundabouts** – All else being equal, fewer signalized intersections or roundabouts can result in less intersection-related delay which would result in a shorter travel time making a route more desirable. (Note that STOP-controlled unsignalized intersections would also result in intersection delay. However, all the routes under consideration are on arterial roads along which there are no STOP-controlled intersections; thus, the impact of unsignalized intersections was not considered as part of this assessment.)

¹ Principal points of approach refer to principal directions that Terminal-generated heavy-trucks are expected to arrive from and travel to (e.g. to / from the east on Highway 401).



- **Number of right turns and left turns** – All else being equal, the need to make fewer turns at intersections reduces the potential for delay which would result in a shorter travel time making a route more desirable.
- **Weekday peak period congestion** – Less congestion results in less potential for delay which would result in a shorter travel time and more certain travel time thereby making a route more desirable.
- **Perceived ease of use and travel comfort of the route** – In general, the easier and more comfortable a route is to a driver, the more desirable it is. The factors considered in a route's ease of use and comfort are:
 - **Number of left turns** – The delay experienced for left turn movements can be unpredictable at arterial road intersections, particularly during busy hours of the day when delay may be longer for left turn movements than through or right turn movements. Thus, fewer left turns can result in greater predictability in travel time which is associated with increased perceived ease of use.
 - **The degree of potential 'friction'** – In this case, 'friction' refers to the presence of factors along the route that may result in slower operating speeds or unpredictable delay (or more stop-starts) such as driveways (i.e., delay caused by other vehicles entering or exiting driveways), on-street parking (i.e., delay caused by vehicles manoeuvring into or out of parking spaces) and narrower travel lanes (which may require more cautious driving to stay within the lane and thus reduced travel speeds). On the other hand, a lower 'friction' route is one that better facilitates the movement of cars and trucks and that would be perceived by a truck operator to be 'comfortable' to drive along. Characteristics of these roads could include arterial roads with higher posted speed limits (i.e., higher than 50 km/h), no on-street parking, wider travel lanes, larger spacing between traffic signals (typically 300 metres or greater), little to no uncontrolled access or access limited to right-in/right-out only, etc. Lower 'friction' routes are those perceived as being more comfortable and more predictable to drive on, and thus would be more desirable as a route.
 - **Presence of bicycle lanes** – The presence of bicycle lanes suggests a higher number of bicyclists on the road (than those without bicycle lanes) creating a higher potential for conflict. This requires a higher level of attention and mental work for drivers who may perceive a decrease in ease of use and comfort making a route less desirable.
- **Tolls** – The cost of tolls directly (and in the case of Highway 407 substantially) increases the cost of a trip to the driver (or organization) making a route less attractive. In selecting a route with tolls, the operator would weigh the cost of the toll against any possible monetary saving (due to reduced travel time) of using the tolled road.

All potential routes use only roads designated for truck traffic, based on the Halton Region Transportation Master Plan (2011); see response to IR4.9 for additional details.

For each principal point of approach with more than one possible route option to/from the Terminal, detailed route characteristics are provided in **Attachment IR4.59-1: Truck Routing Analysis – Route Characteristics**. For the principal points of approach with only one likely/feasible route option to/from the Terminal (e.g., trips approaching from the north on RR25, from the north



on Trafalgar Road, from the east on Britannia Road, and from the east on Derry Road), the assessment of relative attractiveness was not necessary and was not undertaken.

b) Explain how each route selection factor was weighted when determining route attractiveness.

For each principal point of approach with more than one possible route option, the relative attractiveness of each route for that point of approach was assessed based on:

- The calculated travel time from the principal point of approach to/from the Terminal along that route (as detailed in the truck routing analysis summary tables in **Attachment IR4.59-1**); and,
- The additional application of weighted 'penalties' for factors that reduce the perceived ease of use/comfort of the route in question, including the number of left turns, the degree of 'friction' caused by uncontrolled intersections and driveways along the route, the presence of bicycle lanes, and tolls.

Table IR4.59-1 summarizes the weighting (i.e., 'penalty') applied to each factor. As discussed in EIS Appendix E.17, the weight of each factor was determined based on the experience of BA Group. The approach was necessarily employed because there is no purely numeric method available for the determination of such weighting. The application of the weighted 'penalties' does not result in any real measurement of travel characteristics such as travel time; however, when applied consistently to all routes, it permits an assessment of the *relative* attractiveness of each route that is appropriate for the purpose of this analysis.

Table IR4.59-1 Route Characteristics Weighting

Factor	Weight	Applied To
Percentage of Bicycle Lanes	0.25	Percentage of the route that is travelled on roads with on-street bicycle lanes
Gross Length of Tolled Roads (km)	3	Total kilometres travelled on a toll road (i.e., Highway 407)
Number of Signalized Arterial Left Turns	5	Total number of left turns on the route
Length of Medium Friction Route (km)	10	Total kilometres travelled on roads considered by the study authors to be 'medium friction'
Length of High Friction Route* (km)	20	Total kilometres travelled on roads considered by the study authors to be 'high friction'

*Note: A high-friction route refers to a route in which a section of roadway balances access and mobility (i.e., downtown Milton, Bronte Street between Derry Road and John Street), as compared to a low-friction route where the roadway design generally prioritizes the movement of motor vehicles (i.e., major arterial roads, most regional roads).

In determining the weighting of each factor listed in **Table IR4.59-1**, each weighting was iteratively calibrated until the effect of that factor on the overall route attractiveness was assessed to be appropriate. The impact of the weighting factors included, in decreasing order of impact:



- **Gross length of tolled roads (km)** – This factor was assessed to have the highest impact on route attractiveness, as the cost of tolls directly increases the cost of a trip to the driver (or organization). In selecting a route with tolls, the driver must weigh the cost of the toll against the monetary savings due to any reduced travel time as a result of using the tolled road. Thus, in the case of Highway 407, the cost is quite high, and the weighting applied to this factor results in a small percentage of non CNTL trucks assigned to routes involving use of Highway 407.
- **Number of signalized arterial left turns** – This factor was assessed to have a significant impact on route attractiveness, as – all else being equal – the unpredictability of delays experienced at signalized arterial left turns was judged to significantly reduce the attractiveness of a route relative to routes with fewer left turns. Thus, the weighting applied to this factor results in a higher percentage of outbound truck traffic utilizing Tremaine Road to access Highway 401 than the other available routes, as this route contains fewer signalized arterial left turns.
- **Length of high and medium friction routes (km)** – This factor was assessed to have some impact on route attractiveness, as – all else being equal – the perceived 'comfort of use' of a route (considering friction from the presence of building driveways, on-street parking and narrower travel lanes, which increase the potential for unpredictable delay and stop-starts) can impact route choice. It was assessed that drivers would favour routes with lower 'friction' such as Tremaine Road over higher 'friction' routes such as Ontario Street.
- **Percentage of bicycle lanes** – This factor was assessed to have a small impact on route attractiveness.

Note that a number of other route characteristics were identified, and summarized in **Attachment IR4.59-1**, that were ultimately assessed not to have a meaningful impact on route attractiveness. Thus, these characteristics were not included in the assessment of route attractiveness. These include:

- Number of travel lanes – This was assessed to not impact route attractiveness.
- Number of grade separations impacting speed – Although grade separations may result in grade changes (i.e., uphill and downhill) that could impact speed due to deceleration while travelling uphill, this was judged to not meaningfully impact route attractiveness.
- Number of level rail crossings – Although level rail crossings may result in unpredictable delay during train crossings, train crossings are infrequent at the only level rail crossing within the study area (a north-south rail track crossing Britannia Road just to the west of Highway 407). Note that it is assumed that the existing level rail crossing on Britannia Road just east of Tremaine Road will be replaced with a grade separation prior to the Terminal opening.

In addition to the above, further assessment allowed to determine if there were any routes that should be removed from consideration altogether (e.g., in the 2020 sensitivity scenario without the Tremaine interchange in place, routes utilizing the Tremaine interchange were removed from consideration). For routes that were removed from consideration, any traffic that was calculated for those routes were reallocated to the other remaining routes using the methodology discussed above.

Based on the foregoing, for each principal point of approach with more than one possible route option, the assessment of the relative attractiveness of each route is provided in **Attachment IR4.59-2: Assessment of the Relative Attractiveness of Potential Routes**.

The methodology above produces a truck distribution that is intended for use as a planning and evaluation tool for the peak hours of the day. We note that although weighting factors were applied based on the experience of BA Group, changes to these weighting factors (and thus the relative attractiveness of each route) would likely only result in modest changes to the total hourly truck volumes assigned to each route, given the total forecast peak hour truck volumes (*i.e.*, 38 inbound / 40 outbound in the morning peak hour, and 43 inbound / 46 outbound in the afternoon peak hour, as noted in EIS Appendix E.17).

c) Provide a summary table showing the route section factors, including weight, for each of the 19 routes.

Route selection factors, including weight, are discussed in part b) above. **Attachment IR4.59-2** provides summary tables for the assessment of relative attractiveness of potential routes to and from the Terminal, during am and pm periods, with and without the Tremaine Road interchange at the 401.

The principal points of approach with only one likely route option did not require assessment for relative attractiveness. In these cases, all of the trucks using these points of approach were assumed to use the most likely route option; thus, there was no identification, or weighting, of route characteristics for these routes.

d) Provide a figure depicting the relative attractiveness of each truck capable route anticipated for the year 2020. Indicate relative attractiveness with a colour coded scale showing at minimum low (red), medium (yellow), and high (green) attractiveness.

Many of the identified truck capable routes utilize some of the same road segments on the study area network. Thus, the proportion of total truck traffic on each road segment is different from one segment to the next, even on the same route. Rather than depicting the relative attractiveness of each individual route, some of which overlap each other, it is more illustrative to depict the relative attractiveness of each road segment on the study area network, *i.e.*, the combined total percentage of truck traffic utilizing each road segment.

Figures 1 to 5 in **Attachment IR4.59-3: Truck Routing Analysis** illustrate the relative attractiveness of each road segment on the study area road network for Terminal-generated truck traffic for the year 2020. As requested, a colour coded scale has been adopted as follows:

- Low (green) – <10% of peak hour traffic
- Medium (yellow) – 11%-30% of peak hour traffic
- High (red) – >31% of peak hour traffic



IR4.60 Anticipated truck routes and route selection assumptions

Rationale: In subsection 6.5.5.7 of the EIS, CN stated that it would have care and control over CN Transportation Ltd. (CNTL) Trucks, expected to account for approximately 20% of the Project-generated truck traffic. CN indicated that it would direct CNTL trucks to use routes leading to Highway 407 when such use would be practical and feasible.

In Section 4 of Appendix E.17 of the EIS (BA Group Review of Terminal-generated Truck Traffic), CN identified that the travel time differences amongst the candidate routes alone were not decisive for selecting routes, and that other factors such as the potential delays arising from the number of required left-turn movements at signalized intersections and the travel time uncertainty associated with routes with numerous driveways and unsignalized intersections were additional considerations.

CN also included figures in Appendix E.17 that illustrate the anticipated percentage of Project-generated trucks along the available truck routes for scenarios both with and without the anticipated future interchange between Tremaine Road and Highway 401. As an example, CN noted in Figure 8 that the relative truck allocations of in/out heavy trucks assigned to route 1 was 16%/23% while route 3 was assigned 16%/15% and other routes were assigned lower allocations.

It is unclear whether these routing assignments were derived using a normal operating conditions scenario or a worst-case scenario, in which variable factors such as weather, congestion, accidents, or road work, which could make it impracticable or unfeasible for CNTL trucks to utilize the 407. Additionally, it is unclear whether congestion, travel time, or safety factors such as school bus routes were assumed to remain constant or to vary throughout the day.

The Government of Ontario (CEAR #556) noted that in evaluating the impacts of Project-generated traffic, it would be important to understand the expected routing plans for non-CNTL trucks, which represent 80% of all truck traffic forecast to access the Project site. CN noted in its response to the Review Panel's information request 2.34 that there would be no contractual relationship between CN and non-CNTL truck drivers or owner-operators.

Additionally, it is unclear whether the truck route allocations account for any changes in origin or destination that might result from customers located closer to the Project opting to have goods shipped to Milton rather than the Brampton Intermodal Terminal.

Information Request:

- a) Substantiate the selected geographic distribution of route allocations for Project-generated trucks travelling to/from the available truck routes. Include detailed origin and destination locations for containers anticipated to be processed through the Project.
- b) Clarify whether the route allocations identified were derived based on a worst-case approach or normal operating conditions.
- c) Describe the conditions under which it would be practical and feasible for CNTLs truck trips to/from various origins/destinations to use Highway 407.
- d) Explain whether CN would provide specific routing direction to its CNTL drivers, and if so, whether such direction would include routes that could take additional time to complete.



Discuss whether CN would monitor and enforce compliance with such direction, and if so, how.

- e) Explain why the percentage allocation of inbound trucks using route 1 is less than 20% when the percentage of CNTL trucks would be 20% and CN has stated it would direct these trucks to use route 1 when practical and feasible.*
- f) Describe what effect, if any, the Project would have on truck origins and destinations assumed in the EIS, which could occur as a result of customers choosing to ship their goods to the Milton Logistics Hub rather than the Brampton Intermodal Terminal, based on proximity. Describe whether and how this has been taken into account in the EIS.*

CN Response:

- a) Substantiate the selected geographic distribution of route allocations for Project-generated trucks travelling to/from the available truck routes. Include detailed origin and destination locations for containers anticipated to be processed through the Project.*

The geographic distribution of route allocations is shown in Figure 4 of Appendix E.17 of the EIS. The basis for the selected geographic distribution of route allocations for Project-related trucks was based on the Ontario Ministry of Transportation Comprehensive Commercial Vehicle Survey² undertaken by the Ontario Ministry of Transportation at the Brampton Intermodal Terminal. CN expects the Milton Logistic Hub will serve a similar customer base as the Brampton Intermodal Terminal for the foreseeable future as, initially, container traffic will be shifted from the Brampton Intermodal Terminal to the Milton Logistics Hub. CN therefore used available information about the origin and destination of trucks to/from the Brampton Intermodal Terminal as a proxy for the Project. The information that CN has regarding the origin and destination locations for containers is discussed in the response to IR2.31 (CEAR #592). Detailed origin and destination locations for the trucks surveyed as part of this Commercial Vehicle Survey are also provided in Attachment IR2.31 (CEAR #592).

Information from the Ontario Ministry of Transportation Comprehensive Commercial Vehicle Survey was used to identify potential routes between each origin-destination pair. These potential routes were evaluated on the key characteristics of overall travel time, perceived ease of use and travel comfort, and toll charges. Detailed information regarding the route evaluation is provided in the response to IR4.59. Possible changes to origins and destinations over time are described in part f) of this response.

- b) Clarify whether the route allocations identified were derived based on a worst-case approach or normal operating conditions.*

Route allocations were based on the characteristics of an anticipated future road network under normal operating conditions for the specified periods of assessment and assumed that 800 trucks would enter/exit the Project on a peak day for of a total of 1,600 truck trips. This is the highest anticipated truck volume generated by the Project as outlined in section 3.4.2.1 of the EIS and subsequently addressed in the response to IR2.30 (CEAR #592). The potential effects of severe

² 2012 and 2013

weather, incidents causing prolonged closure of major roadways, power outages disrupting traffic control, or other such occurrences were not reflected in the route allocations.

- c) *Describe the conditions under which it would be practical and feasible for CNTLs truck trips to/from various origins/destinations to use Highway 407.*

In the EIS, it was assumed that in most cases it would be practical and feasible for CNTL's truck trips to/from the Project to use the Highway 407. Highway 407 east of the Project would serve destinations and origins in Peel Region north of Highway 401 and elsewhere in the GTHA east of Peel Region. These truck trips would access Highway 407 through the Britannia Road interchange as this would be the most direct route. Highway 407 west of the Project would serve origins and destinations in Burlington, Hamilton and Niagara Region and would be accessed from the Regional Road 25 interchange. Truck trips to/from the Project to the northwest (including Guelph, Cambridge and Kitchener) are not considered to be practical and feasible due to the additional travel distance required to use Highway 407.

- d) *Explain whether CN would provide specific routing direction to its CNTL drivers, and if so, whether such direction would include routes that could take additional time to complete. Discuss whether CN would monitor and enforce compliance with such direction, and if so, how.*

CN would provide routing directions to its CNTL drivers to route via Highway 407 and to access Highway 407 by way of the most direct point of access as described in part c). Whether these routes would take additional time to complete when compared to other routes would depend on the time of day the trip was being completed, traffic conditions and weather. In any event, the direction provided to CNTL drivers would be consistent.

To ensure CNTL drivers comply with direction, the specific routing requirements will be included in the protocols for any pick-up or delivery. On-board GPS units would allow CN driver managers to monitor compliance with these routing protocols through "spot checks" as required. Appropriate disciplinary action would be taken if routing protocols are not being respected.

- e) *Explain why the percentage allocation of inbound trucks using route 1 is less than 20% when the percentage of CNTL trucks would be 20% and CN has stated it would direct these trucks to use route 1 when practical and feasible.*

While it is estimated that 20% of the truck trips generated by the Project would be CNTL trucks, not all origins/destinations serviced by CNTL trucks could be practically and feasibly serviced by a route along Highway 407 (e.g., destinations such as the cities of Guelph, Cambridge or Kitchener along the Highway 401 corridor west of Milton). Therefore, CNTL trucks servicing such origins and destinations were not assigned to use Highway 407.

- f) *Describe what effect, if any, the Project would have on truck origins and destinations assumed in the EIS, which could occur as a result of customers choosing to ship their goods to the Milton Logistics Hub rather than the Brampton Intermodal Terminal, based on proximity. Describe whether and how this has been taken into account in the EIS.*

Changes to Project-generated truck origins and destinations, which may occur in the future, have not been taken into account in the EIS. If distribution centers to be served by Project-generated trucks in the future were located closer to the Project site than has been reflected in the EIS, this



would result in lower overall vehicular kilometres travelled on the road network by Project-generated heavy trucks.

As described in the response to IR4.7, the market driven desire to locate warehousing, storage, and logistics facilities close to demand centres is reflected in the rapid growth of such facilities in Milton and Halton Region. The western portion of the GTHA, which includes Milton, has the highest inventory of warehouse and distribution square footage (24,658,954 square feet) in the GTHA. Milton itself has experienced the fastest growth in industrial inventory among all GTA submarkets in the five-year period from 2012-2017.

On-going future growth is expected to continue with the introduction of the Derry Green Business Park as part of the Halton Urban Structure Plan. It is expected that the Derry Green employment area will accommodate the majority of the Town's employment growth to the year 2021.

As these logistics and warehousing sites continue to develop in the Region, CN's customer base is expected to shift similarly. Until the Project is in operation, this customer shift will be served via the Brampton Intermodal Terminal as much as possible. Once the Project is completed and in operation, some shippers may opt to shift traffic through the Milton Logistics Hub to potential new distribution centers that may locate in Halton Region.

Having the customer base shift from locations northeast of the Project along the 401 and 407 to areas in North Milton is not expected to significantly change the general pattern of truck movement from the Terminal within Milton, as described in the EIS Appendix E.17. This is because the predominant movements will remain oriented toward the Highway 401 interchanges at Trafalgar Road, James Snow Parkway and Tremaine Road (once constructed), as assessed in both the EIS Appendix E.17 and the Transportation Considerations Report (see Attachment IR2.33-3 (CEAR #592)).

IR4.61 Traffic volumes and congestion in Halton Region

Rationale: In subsection 6.5.5.7 of the EIS, CN stated that traffic congestion is a growing concern within Halton Region, although when compared to other regions in the Greater Golden Horseshoe, Halton Region currently has some of the lowest traffic-related road delays. CN further noted, in subsection 8.2.1 of the EIS, that intermodal trains reduce the need for long-haul trucks, in particular those that transport goods greater than 200 km. CN asserted that the modal shift from truck to rail would ease traffic congestion within the Greater Toronto Hamilton Area and across the country. CN suggested that the Project would help reduce congestion on regional highways and support the Province's plan for improving transportation infrastructure and reducing congestion.

CN noted in section 6.3.9 of the EIS that by 2031, the population of the Town of Milton is expected to nearly double to over 228,000, and that the population of Halton Region is expected to grow by over one-third to 815,000.

In its submission on the sufficiency of the EIS (CEAR #549), Halton Municipalities suggested that CN had not assessed the socio-economic effects of additional truck traffic generated by the Project and also noted that a Transportation Impact Study typically includes information about turning movement counts, among other considerations. Members of the public stated that transport trucks on Milton roads, and their related effects, were inadequately recognized in the EIS.



CN, in its response to the Canadian Environmental Assessment Agency's Additional Information Requirement #13 (CEAR #375), forecasted Project-generated truck traffic at future time horizons of 2021 and 2031. These projections included roads and intersections adjacent to the Project, and across the region, and were based on growth rates provided by the Halton Municipalities. CN's suggestion that the Project would reduce overall traffic congestion in the Greater Toronto and Hamilton Area appears to be inconsistent with the potential for the anticipated increase in local traffic volumes throughout Halton Region, which would include Project-generated truck traffic.

As CN noted in Section 4 of Appendix E.17, possible traffic congestion and travel times between origin and destination were factors in assessing a route's relative attractiveness for Project-generated trucks. However, it remains unclear if and how Project-generated truck traffic could contribute to increased congestion-related vehicle travel times for residents in the Town of Milton and Halton Region.

Information Request:

- a) Provide a traffic model to illustrate how traffic on local and regional roads between the Project site and 400-series highways would be affected by Project-generated truck movement. The model should:
 - indicate existing traffic volumes;
 - consider Project-generated truck traffic, and future traffic scenarios for the years 2021 and 2031;
 - consider Project-generated truck traffic by direction of travel and by turning movement counts; and
 - test scenarios with and without any relevant transportation system improvements that would be constructed after the Project is in operation.
- b) Identify regional intersections along the 19 routes outlined in Appendix E.17 that are currently at or near capacity. Describe their saturation flows, gap availabilities, projected queue lengths, and possible blocking queues.
- c) Explain whether and how the Project would ease traffic within the Greater Toronto and Hamilton Area generally, and specifically at these intersections.
- d) Provide a figure depicting the future traffic projections for 2021 and 2031 along truck capable routes. Indicate predicted traffic congestion using a colour coded scale reflecting low (green), medium (yellow), and high (red) congestion.
- e) Provide anticipated travel times between the Town of Milton and Halton Region and commuter destination areas such as downtown Toronto. Consider several residential areas as origins and destinations such as downtown Toronto, Pearson International Airport and Hamilton. Describe how times may vary based on morning and afternoon rush hours, as well as scenarios both with and without Project-generated truck traffic.

CN Response:

- a) *Provide a traffic model to illustrate how traffic on local and regional roads between the Project site and 400-series highways would be affected by Project-generated truck movement. The model should:*
- *indicate existing traffic volumes;*
 - *consider Project-generated truck traffic, and future traffic scenarios for the years 2021 and 2031;*
 - *consider Project-generated truck traffic by direction of travel and by turning movement counts; and*
 - *test scenarios with and without any relevant transportation system improvements that would be constructed after the Project is in operation.*

Project-generated truck traffic forecasts have been created for the design maximum number of trucks generated by the Project. Therefore, these forecasts would be applicable to the 2020, 2021 and 2031 horizon years. These forecasts have previously been provided in the *Review of Terminal-Generated Truck Traffic Memorandum (November 30, 2015)* submitted as EIS Appendix E.17. That memorandum also described how Project-generated truck traffic would affect the arterial road network between the Project and 400-series highways. In addition, further assessment of the effects of Project-generated truck traffic on the arterial road network between the Project and 400-series highways was provided in the Transportation Considerations Report (Attachment IR2.33-3a to the response to IR2.33, CEAR #[592](#)), which also took available information about the planned road network improvements into account.

Given the magnitude of development planned in Milton and Halton Region by 2031, substantial changes to traffic volumes are expected regardless of whether the Project proceeds. As described in the Transportation Considerations Report (Attachment IR2.33-3a to the response to IR2.33, CEAR #[592](#)) the Project would generate half or less the number of daily trips (passenger car equivalents) compared to alternative developments, including commercial retail, industrial park, or office park uses on the same land area. Figure 12 of the Transportation Considerations Report is included in **Attachment IR4.61-1: Intersection Volume-Capacity Ratio and Travel Time** to show the relative magnitude of existing traffic, future traffic growth without the Project, and the Project-generated traffic.

Without employing a regional travel-demand forecasting model, it is not possible to derive a reasonably accurate estimate for the increase in traffic volumes across the regional arterial road network at an intersection-turning-movement level of detail. These models would include the future population and employment numbers for each of the approximately 100 traffic zones within the Town of Milton, the number of trips made to and from these zones to the other approximately 1,500 traffic zones that make up the Greater Toronto Area and beyond, as well as assigning a route for each of these trips in the morning and afternoon peak hours. The creation of this type of regional travel demand forecasting model represents a multi-year, multi-million dollar level of effort using information that is not readily available to the public. Furthermore, such an undertaking would represent an enormous duplication of effort as Halton Region has advised they are in the midst of a process to update the regional transportation planning model. Project-



specific site traffic impact assessments generally draw from regional models for input and are not required to develop an independent regional transportation planning model.

The assumed road network for the traffic assessment was based on the most recent information available at the time from the Region's Capital Works Plans and discussions with Halton Region and MTO staff. As noted in Attachment IR2.33-3, further to BA Group's request that current model output be provided for use as the basis for estimation of background traffic volumes for purposes of traffic planning associated with the Project, Halton Region indicated that until such time as the updating of the transportation planning model has been completed, output from the model would not be available for use in the development of forecasts of future road traffic volumes. It is beyond CN's ability to identify which transportation system improvements the Region and MTO may or may not proceed with in the absence of any additional information.

b) Identify regional intersections along the 19 routes outlined in Appendix E.17 that are currently at or near capacity. Describe their saturation flows, gap availabilities, projected queue lengths, and possible blocking queues.

A traffic assessment has been undertaken for key Halton Region arterial road intersections along the routes identified in the CN Milton Logistics Hub Transportation Considerations Report (August 17, 2017). This was submitted as part of the response to IR2.33. This assessment includes queue lengths as well as documenting various analytical parameters such as saturation flows.

The report concluded that apart from the specific measures identified as required at the [terminal gate] access road intersection on Britannia Road and Tremaine Road, none of the analyses indicate that the relevant key intersections in the Halton Region arterial road network will experience a change in traffic volumes or patterns that will cause a need for any new infrastructure or new traffic operating conditions requiring special or particular attention.

The assessment indicated that the introduction of the Project-generated traffic has a relatively modest impact on the anticipated peak hour traffic operating conditions at the key intersections. At intersections operating at or near capacity, the Project-generated traffic would result in a change in the volume/capacity ratio of 0 to 1 percent. At the key signalized intersections along Britannia Road and Tremaine Road, the change in the volume/capacity ratio would be in the range of 1 to 2 percent and the intersections would operate well within their capacity. With the addition of the Project-generated traffic at the Tremaine Road roundabouts at Britannia Road and Steeles Avenue, both are anticipated to operate well below their design capacity with an increase in the volume/capacity ratio in the range of 3 to 6 percent.

No need was identified for new turn lanes, extended turn lane length, extra through lanes or other geometric design modifications. The response to the growth in traffic volumes arising from the current planned development in Milton will also be sufficient to address the added volumes generated by the Project. Any adjustments to signal controlled intersection timing plans would be well within the range of that which would be required to address changing traffic patterns within a growing community in any event.

- c) *Explain whether and how the Project would ease traffic within the Greater Toronto and Hamilton Area generally, and specifically at these intersections.*

As described in the response to IR4.13, in the absence of additional intermodal rail capacity within the GTHA, the growth in goods movement will be accommodated by increased truck movements, whether that be to/from another inland intermodal terminal or the coastal facility itself (e.g., CN's Montreal Intermodal Terminal or the Port of Montreal). To understand the overall potential impact of this modal shift on the GTHA road network, CN evaluated two modal scenarios: the movement of containerized goods both with and without the Project (these scenarios are described in more detail in the "Report on Greenhouse Gases" submitted to the CEEA as part of their review of the EIS (IR10, CEAR #81).

- 1) In scenario 1, containerized goods would be moved in or out of the GTHA by train, leaving only the "last mile" or "first mile" movement to be handled by truck.
- 2) In scenario 2, containerized goods would be moved in or out of the GTHA by truck to the next nearest CN terminal with capacity (Montreal Intermodal Terminal) or the Port of Montreal itself.

The destination of Mississauga was selected for comparison purposes for both scenarios because it is the most frequent destination for existing traffic.

In scenario 1, there would be approximately 25 km (Project site to Mississauga) of truck route kilometres³ to get the container to its destination/ultimate origin.

In scenario 2, there would be approximately 565 km (Montreal to Mississauga) truck route kilometres¹ travelled per container, with approximately 484 km within Ontario (Bainville – Mississauga) along 400-series highways.

Comparing the two scenarios, a modal shift of goods movement to intermodal rail, such as provided by the Project, would provide a reduction of 459 (484 km in Ontario in scenario 2 less 25 km in Ontario in scenario 1) truck route kilometres per trip per container. When applied to the 450,000 containers anticipated at the terminal, this is a reduction of just over 200 million route-kilometres annually on 400-series highways.

At the key Regional arterial road intersections near the Project, traffic volumes would increase marginally due to the Project-generated traffic. The Project would generate an increase in capacity to transport goods into and out from the GTHA over long distances in intermodal containers. This would imply that, with the Project in place, the total vehicle-kilometres travelled by trucks on 400-series highways entering the GTHA, would be lower than would be the case were the same goods transported by truck (and without the Project).

As concluded in the Transportation Considerations Report (August 17, 2017) (submitted as part of the response to IR2.33), apart from the specific measures identified as required at the [terminal gate] access road intersection on Britannia Road and Tremaine Road, none of the analyses indicate that the relevant key intersection in the Halton Region arterial road network will

³ Truck distances were provided by using the truck module of PC*Miler™ routing



experience a change in traffic volumes or patterns that will cause a need for any new infrastructure or new traffic operating conditions requiring special or particular attention.

- d) *Provide a figure depicting the future traffic projections for 2021 and 2031 along truck-capable routes. Indicate predicted traffic congestion using a colour coded scale reflecting low (green), medium (yellow), and high (red) congestion.*

An arterial road is considered an interrupted flow facility, defined by the Highway Capacity Manual⁴ (HCM) as a type of traffic facility characterized by having fixed causes of periodic delay or interruption to the traffic stream, such as traffic signals and stop signs. The HCM goes on to state that for an interrupted-flow facility, flow is usually dominated by points of fixed operation such as traffic signals and stop signs and that traffic signals represent the most significant source of fixed interruptions. This is reflected in Halton Region's Transportation Impact Study (TIS) Guidelines⁵ where the evaluation of the impacts of newly generated traffic on road capacity is to be assessed by capacity analysis at intersections. The traffic analysis undertaken in the Transportation Considerations Report (August 17, 2017) submitted as part of the response to IR2.33 (CEAR #592) uses the methodologies of the HCM.

Figures illustrating the overall intersection volume-to-capacity ratios are provided in **Attachment IR4.61-2: Intersection Volume-Capacity Ratio**. The figures offer a graphical representation of the results of the traffic assessment undertaken for key Halton Region arterial road intersections along the routes identified in the CN Milton Logistics Hub Transportation Considerations Report (August 17, 2017) submitted as part of the response to IR2.33 (CEAR #592).

The 2021 Future Background Traffic figure represents the future intersection operations without Project-generated traffic while the 2021 Future Total Traffic figure represents the future intersection operations with Project-generated traffic. It is notable that the changes to overall intersection volume/capacity ratio are small with the addition of the Project-generated traffic, as described earlier in this response, and the volume/capacity ratio does not exceed the identified thresholds of 0.85 or 0.95, at any intersection.

- e) *Provide anticipated travel times between the Town of Milton and Halton Region and commuter destination areas such as downtown Toronto. Consider several residential areas as origins and destinations such as downtown Toronto, Pearson International Airport and Hamilton. Describe how times may vary based on morning and afternoon rush hours, as well as scenarios both with and without Project-generated truck traffic.*

Travel times are calculated between two locations in Milton and six locations in the Greater Toronto and Hamilton area (GTHA):

- Milton Town Hall (150 Mary Street);
- Boyne Survey represented by a point on Britannia Road between Tremaine Road and First Line (5596 Britannia Road);
- Mississauga City Hall (300 City Centre Drive);

⁴ HCM 2000: Highway Capacity Manual. Washington, D.C.: Transportation Research Board, 2000.

⁵ Transportation Impact Study Guidelines, January 2015, Halton Region.

- Vaughan Mills Shopping Centre (1 Bass Pro Mills Drive);
- Toronto City Hall (100 Queen Street West);
- Hamilton City Hall (71 Main Street West);
- Pearson Airport (6301 Silver Dart Drive); and
- Oakville Town Hall (1225 Trafalgar Road).

Existing travel times are estimated using the Google Maps Distance Matrix Application Programming Interface (API) leaving the Milton origins at 7:00 a.m. and departing the GTHA origins for Milton at 5:00 p.m. These are the critical directions of travel for the morning and afternoon peak hours, respectively. The API returns three types of travel time duration values defined as the following in the distance matrix service documentation.

- Best guess – The best estimate of travel time given what is known about historical traffic conditions and live traffic. Because these times were collected for a future day and not for current conditions, there were no impacts to the travel times associated with events such as construction or vehicle collisions.
- Pessimistic – An estimated duration that should be longer than the actual travel time on most days, though occasional days with particularly bad traffic conditions may exceed this value.
- Optimistic – An estimated duration that should be shorter than the actual travel time on most days, though occasional days with particularly good traffic conditions may be faster than this value.

In order to estimate the impact of Project-related trucks on travel time for these selected routes, intersections along each route were identified, which had been analyzed in the CN Milton Logistics Hub Transportation Considerations Report, Attachment IR2.33-3 (CEAR #592) and to which Project-related trucks had been assigned. For the movements at these intersections associated with each route, the difference in vehicular average delay between the 2021 background traffic (scenario without Project-related trucks) and 2021 total traffic (scenario with Project-related trucks) scenarios is calculated. These delays had previously been assessed through the traffic analysis in the above noted report. Each of the differences in vehicular average delay at the signalized intersections along each route are then totaled and added to the existing travel time.

Along the routes, some minor signalized intersections are not assessed; at these intersections vehicle delays are estimated from other signalized intersections along the route that are assessed. For example, the same delay assessed for vehicles making the northbound through movement at the Martin Street at Steeles Avenue intersection was assigned to the northbound through movement at the Martin Street at Market Drive and Chisholm Drive intersections. It has also been assumed that the impact of Project-related trucks on average link travel speeds is minimal because the majority of the delays in the urban transportation environment are due to intersection controls (traffic lights). For intersections where Project-related trucks are not assigned and not assessed, the difference between scenarios is assumed to be zero.



For the 400-series highways, the small proportion of total traffic volume and truck volume that the net change in Project-related trucks would represent would result in delays that are so small that they would not be discernible. The three sections of Highway 401 in Milton between Guelph Line and Highway 407 are the sections of the 400-series highway that would carry the greatest number of Project-generated trucks. On these sections of Highway 401, trucks currently make up between 9% and 17% (420 to 730 trucks) of the total traffic during the peak hours depending on the peak hour and direction. An assessment of the addition of 6 to 25 Project-generated trucks to the total projected traffic – depending on section, direction and peak hour – anticipated to use Highway 401 would increase the percentage of trucks by 0% to 1% such that the resulting truck volumes on these same sections of Highway 401 would now range from 9% to 18% (430 to 752 trucks). This information is summarized in a memo in **Attachment IR4.61-3: Highway 401 Truck Traffic Volumes**. For other sections of 400-series highways beyond Halton Region, the proportion of total future traffic represented by Project-related trucks would be even smaller, as trucks increasingly disperse to their destinations.

The Project-related truck impacts on travel time between the origins and destinations listed above are summarized in **Attachment IR4.61-4: Travel Time Information**. The API outputs and the travel time calculations are provided for reference in **Attachment IR4.61-4**.

The impact of Project-related trucks on the travel times for the vast majority of the routes is extremely small: six seconds or less additional delay, on average, per trip. For a few routes where the travelers' origin or destination are adjacent to the Project - where there is the highest concentration of trucks on a particular route - the delay is twelve to sixteen seconds, on average, per trip. For trips between the locations identified above, the impact on their travel time is not significant in the context of the overall duration and variability of existing travel times.

IR4.62 Collision risks of intermodal trucks

Rationale: In subsection 2.2.2 of the EIS, CN noted that conventional traffic engineering and operational control measures developed in consultation with Halton Municipalities could mitigate the impact of truck traffic on Britannia Road and Tremaine Road. Examples of such measures include signalling, signage, adjustment to queuing lanes, turn lanes and provisions to ensure the safety of pedestrians and cyclists. In Table 4.3 in Section 4.4 of the EIS, CN noted that public and interest groups identified several safety related issues including:

- risks to the public by trucks passing through school zones or residential areas;
- pedestrians and cyclists/velodrome users will be put at risk by increased truck traffic.

In Appendix D8.4 of the EIS, open house attendees also stated concerns related to specific risks of trucks using routes near schools, community centers or other facilities. It is unclear how CN has addressed the specific concerns noted in public and stakeholder comments in Appendix D8.4 of the EIS.

CN noted in Table 6.1 of the EIS that Project-related vehicle movements would follow posted speed limits, signals and other indications, as well as the Ontario Highway Traffic Act, when entering/exiting the site. CN also stated, in subsection 6.6.2.6 of the EIS, that while the potential for traffic accidents between vehicles entering and exiting the Terminal site exists, it anticipates that potential accidents would be reduced through local authorities' enforcement of the new Making Ontario's Roads Safer Act.



In subsection 6.6.2.6.3 of the EIS, CN indicated that Project construction and operation activities may affect safety for road users (i.e., motor vehicle operators, cyclists and pedestrians) at one or two entries to the Project by generating increased vehicle volumes entering and exiting the Project site. However, it is unclear from CN's submissions whether it:

- assessed traffic safety risk by identifying a potential accident scenario in terms of location;
- specified the particular form of interaction (vehicular, cyclist or pedestrian);
- identified mitigation measures; and
- described the magnitude, frequency, duration, reversibility of the effects of truck traffic on safety.

In its submission on the sufficiency of the EIS (CEAR #549) Halton Municipalities noted that, for Tremaine Road and Britannia Road, the EIS did not contain an analysis of cyclist and pedestrian safety that focussed on the entrance intersections or accounted for the proposed Regional cycling and trail facilities.

CN did not discuss several safety issues including the:

- overall collision potential of the additional Project-generated truck traffic beyond the area where vehicles and equipment will be entering and exiting the Project site;
- potential for pedestrian and cyclist collisions with Project generated truck traffic and subsequent effects;
- anticipated accident severity of the potential collisions; and
- specific risks to pedestrians and cyclists of Project-generated truck traffic operating near schools, community facilities or other similar locations.

Information Request:

- a) Provide an analysis of the risks of a vehicular collision that could result from Project-generated truck traffic between the Project site and the 400-series highways for both the 2021 and 2031 scenarios. Identify what CN could propose to mitigate the risk of collision. Describe the residual effects after mitigation and estimate the likelihood of vehicular collision occurrences related to Project-generated truck traffic. This analysis should rank each route to identify relative vehicular collision risk.
- b) Provide an analysis of the risks of cyclist and pedestrian accident that could result from Project-generated truck traffic between the Project site and the 400-series highways for both the 2021 and 2031 scenarios. Specifically consider these risks for school zones, residential areas, intersections, existing and proposed regional cycling routes, pathways, cross-walks, and trail facilities. Identify what measures CN could propose to mitigate the risk of accidents. Describe the residual effects after mitigation and estimate the likelihood of vehicular accidents with pedestrians and cyclists occurrences related to Project-generated truck traffic. This analysis should rank each route to identify relative safety risk.



- c) *Provide a figure depicting the 19 potential truck capable routes for the 2020 scenario showing the potential for impact to vehicular, cyclist and pedestrian safety of each using a colour coded scale between low potential impact to safety (green) and high potential impact to safety (red).*
- d) *Indicate which if any of the 19 potential routes, if any, the Halton Municipalities identified as being preferred from a safety perspective. Provide a rationale for that preference.*

CN Response:

- a) *Provide an analysis of the risks of a vehicular collision that could result from Project-generated truck traffic between the Project site and the 400-series highways for both the 2021 and 2031 scenarios. Identify what CN could propose to mitigate the risk of collision. Describe the residual effects after mitigation and estimate the likelihood of vehicular collision occurrences related to Project-generated truck traffic. This analysis should rank each route to identify relative vehicular collision risk.*

In response to IR2.33, Attachment IR2.33-4: Safety Assessment of the Proposed CN Logistics Hub⁶ (CEAR #592) (hereafter referred to as the 'Safety Report') provided a determination of the overall collision risk of additional heavy vehicles on regional roads. Note that the assessment considered the road network improvements proposed by the Region will have been implemented. Section 4.0 of the Safety Report provides a comprehensive quantitative analysis, which evaluated the safety effects of an increase of heavy vehicle volumes at key intersections along likely routes between the Project site and the 400-series highways for the 2021 scenario, as well as an evaluation of the safety impacts of an increase of heavy vehicle volumes on the overall road network. While the analysis does not rank each potential route, a quantitative analysis that measured the safety effects (net change in collision risk) of an increase of heavy vehicle volumes on key road corridors was conducted.

Vehicular Collisions that Could Result from Project-Generated Truck Traffic – 2021 Scenario

It was estimated that for the 2021 scenario, the increase of heavy vehicles from the Project at the intersections with higher collision frequencies was expected to result in an increase of the number of collisions less than 1 percent (ranging from 0.2% to 0.9%). Britannia Road has the highest expected change of collisions (0.9% increase), which is due to the introduction of the site access, where all inbound and outbound trucks will travel to access the site. The change in collision on other potential truck routes will consist of a combination of road corridors with an expected change in collisions of 0.9 percent or lower, as project-related truck traffic is dispersed elsewhere with distance from the Terminal. Therefore, to understand the effect of a truck increase on the overall network including the potential truck routes, the net change percentages in collision risk (0.2% to 0.9%) were extrapolated to the overall road network (refer to Table 39 of the Safety Report, Attachment 2.33-4, CEAR #592).

The increase of heavy vehicle volumes from the Project is expected to result in an increase of 9.4 collisions over a five-year period, which is the equivalent of an annual average of 1.87 collisions. Of the 1.87 annual average increase of collisions, it is expected that approximately 0.01 collisions per year would involve pedestrians and 0.017 collisions per year would involve cyclists. To place this overall collision frequency in perspective, an increase of 1.87 collisions on the overall road

⁶ Safety Assessment of the Proposed CN Logistics Hub, 30 Forensics Engineering, July 25, 2017

network represents an increase of collisions that is significantly less than the yearly collision frequency fluctuation observed at most major intersections located within the study area. For example, the number of historic collisions at Steeles Avenue East/Martin Street intersection increased from 12 in 2012 to 21 in 2013.

Overall, it was concluded that the additional truck traffic from the CN terminal added to the area road network will have a low increase in risk and the incremental collision risk will be well below yearly fluctuations expected at a single major intersection in the Town or Region. While the effect of a truck increase on the overall network is expected to be low (annual average of 1.87 collisions), the effect on a truck route level (19 truck routes identified in EIS Appendix E.17 and in response to **IR4.59, Attachment 4.59-1**) is expected to be lower, as each route is a subset of the overall network. As collisions are relatively rare events that can highly vary on a yearly basis, evaluating the safety effects of a truck increase on an overall network rather than truck route level provides a more reliable and better measure of safety.

The intersection for the truck entrance to Britannia Road will be designed and constructed in accordance with municipal road safety and traffic flow requirements (as noted in response to IR2.16, CEAR #592), in consultation with the Region of Halton. As discussed in response to IR2.33 (see Attachment 2.33-1, CEAR #592), BA Group has provided recommendations regarding intersection design to safely accommodate truck, automobile, public transit, bicycle, and pedestrian traffic.

A colour coded map of expected collision increases on the area road network is provided in Figure 56 of the Safety Report (also provided as **Attachment IR4.62-1: Map of the Assigned Net Change Percentage in Collisions**). The colours are intended to differentiate three different levels of change in collision risk (low collision increase in green, and high collision increase in red). With the expected low increase in collision risk on the area road network, three shades of green were used to depict the expected increase in collision risk.

Vehicular Collisions that Could Result from Project-Generated Truck Traffic – 2031 Scenario

In response to this IR, TNS has updated the safety analysis for the 2031 scenario, which compared the safety performance of the intersections with relatively high collision frequencies for two 2031 scenarios including “future background without terminal traffic volumes” (background scenario) and “future total with terminal traffic volumes” (total scenario). The traffic volumes used for the analysis were defined in the Transportation Considerations Report (Attachment IR2.33-3 provided in response to IR2.33 (CEAR #592)) conducted for the study area road network. The predicted number of collisions for the 2031 scenario using the Safety Performance Functions⁷ of the Highway Safety Manual (American Association of State Highway and Transportation Officials (AASHTO), 2010) and those developed by the Region of Peel are shown in **Table IR4.62-1**.

⁷ A mathematical equation used to estimate or predict the expected average collision frequency per year at a location as a function of traffic volume and in some cases roadway or intersection characteristics (e.g., number of lanes, traffic control, or type of median).

Table IR4.62-1 2031 Predicted Number of Collisions (Background and Total)

Intersection	Highway Safety Manual Safety Performance Functions			Peel Region		
	2031 Background	2031 Total	Net change percentage in collisions	2031 Background	2031 Total	Net change percentage in collisions
Steeles Avenue East at Martin Street	18.32	18.34	0.2%	14.19	14.23	0.3%
Ontario Street at Derry Road	20.10	20.11	0.1%	17.89	17.93	0.2%
Britannia Road at Trafalgar Road	28.46	28.53	0.2%	25.36	25.53	0.7%

The analysis indicates that for the 2031 scenario, the increase in heavy vehicles at the intersections with higher collision frequencies is expected to result in an increase in collision frequency below one percent, in the range from 0.2% to 0.7%. The percentage increase in collision risk as a result of the increase in heavy truck traffic from the Project is slightly lower in the 2031 scenario when compared to the 2021 scenario (see Table 38 in Attachment 2.33-4, CEAR #592). The highest anticipated increase in the number of collisions is at the Britannia Road and Trafalgar Road intersection, with an increase of 0.18 collisions annually. This frequency increase is the equivalent of approximately one collision every five years.

The future (2031) safety impacts on the overall network of a truck increase were measured using historical annual average number of collisions⁸ and the expected 2031 change percentage in collisions (0.2% to 0.7%). The use of historical collisions for a 2031 scenario is a conservative approach as the trend in Ontario has been for fatal and injury collisions to decline over the past 20 years⁹. **Table IR4.62-2** shows the 2031 future change in collisions of a truck increase on the overall road network.

Table IR4.62-2 2031 Safety Impacts on the Overall Road Network

Corridor	Net change Percentage in Collisions	Historical Annual Average Number of Collisions	Total Number of Collisions	Difference in Number of Collisions (2031 Background vs Total)
Britannia Road	0.7%	80.8	81.4	0.6
Derry Road	0.2%	100.2	100.4	0.2
James Snow Parkway	0.2%	23	23.1	0.1

⁸ Annual average calculated using the most recent five-year period with available collision data that were recorded on our road network.

⁹ Ontario Road Safety Annual Report 2014, 2014, Ministry of Transportation

Corridor	Net change Percentage in Collisions	Historical Annual Average Number of Collisions	Total Number of Collisions	Difference in Number of Collisions (2031 Background vs Total)
Martin Street	0.3%	18	18.1	0.1
Ontario Street	0.2%	24.6	24.7	0.1
RR25	0.2%	62.8	63.0	0.2
Steeles Avenue	0.3%	40	40.1	0.1
Trafalgar Road	0.7%	22.8	23.0	0.2
Tremaine Road	0.7%	20.4	20.5	0.1
Total	-	392.6	1972.4	1.6

This analysis indicates that for the 2031 scenario, the increase in heavy vehicles on the overall road network is expected to result in an increase in collision frequency of 1.6, which is slightly lower than the 1.87 increase of collisions estimated for the 2021 scenario. The lower increases for the 2031 scenario is a result of more vehicles (general traffic growth) on the road in 2031 than in 2021, and therefore Project-generated truck traffic will comprise a lower percentage of those vehicles (and corresponding collision risk).

Mitigation

CN is committed to mitigating the risk of collisions through the design of the entrance to the Terminal onto Britannia Road. Although CN is not responsible for the care and control of the study area roadways, the Safety Report describes additional improvements that could be implemented by the Region and/or the municipalities to further improve safety (see Attachment IR2.33-4, CEAR #592). Note that the road improvements currently proposed by the Region will help to improve overall traffic safety. CN is assuming that the Town of Milton and Region of Halton will continue to monitor collisions on area roadways and to implement measures as appropriate to ensure the safety of all road users.

- b) *Provide an analysis of the risks of cyclist and pedestrian accident that could result from Project-generated truck traffic between the Project site and the 400-series highways for both the 2021 and 2031 scenarios. Specifically consider these risks for school zones, residential areas, intersections, existing and proposed regional cycling routes, pathways, cross-walks, and trail facilities. Identify what measures CN could propose to mitigate the risk of accidents. Describe the residual effects after mitigation and estimate the likelihood of vehicular accidents with pedestrians and cyclists occurrences related to Project-generated truck traffic. This analysis should rank each route to identify relative safety risk.*

The Safety Report reviewed risks of cyclist and pedestrian accident potential that could result from Project-generated truck traffic between the Terminal and 400-series highways, and the operations/safety at the school locations and emergency service facilities along the potential routes between the Terminal and the 400-series highways, including associated cycling routes, pathways, crosswalks and trails associated with these facilities. The potential routes assessed are



those identified and outlined in the Review of Terminal-Generated Truck Traffic (TDR EIS Appendix E.17) and restated in CN's response to IR2.33.

Of the 1,319 intersection collisions that occurred in the area road network over a five-year period, 10 involved pedestrians and 17 involved bicycles. Among the 10 pedestrian collisions, no heavy vehicles were involved. Among the 17 bicycle collisions, 2 heavy vehicles were involved (0.4 truck-bicycle collisions annually).

To evaluate the increase in risk of truck-bicycle and truck-pedestrian collisions that may result from the additional truck traffic, a conservative approach is to apply the highest expected percentage collision frequency calculated for all road users to the historical collisions involving trucks and active road users. Applying the highest expected percentage collision frequency increase in 2021 and 2031 predicted to result from the increase of heavy trucks (0.9%) from the Project (as described in part a above) results in an increase of 0.036 truck-bicycle collisions annually, which is equivalent to one collision every 28 years. Given that the risk of truck-pedestrian collision is lower than the risk of truck-bicycle collision, it is reasonable to assume that the increase of heavy trucks (0.9%) from the Project results in an increase of 0.036 or less truck-pedestrian collisions annually. This approach does not take into consideration the recommended remedial actions included in the Transportation Considerations Report (Attachment IR2.33-3 provided in response to IR2.33 (CEAR #592)) to improve the level of safety of vulnerable road users on the area roadways. Therefore, the identified increase of truck-bicycle and truck-pedestrian collision represents an unmitigated or pre-mitigation change, and could, if the suggested improvements were implemented by the municipalities/Region, be lower. Of note, the pedestrian, bicycle, bus, and parent pick-up/drop-off activities and facilities at each school site were reviewed to identify any interactions with the existing and expected truck traffic increase along the study area routes. Based on their operations, no potential safety effects of the additional truck traffic that would be generated as a result of the proposed CN facility were identified.

As applicable, the Safety Report outlined the safety assessment conducted and remedial actions recommended that could be considered by the Region and municipalities to address potential safety concerns associated with:

- Schools – Section 3.2.1;
- Emergency Services – Section 3.2.2;
- Milton Education Village – Section 3.2.3;
- Intersections – Section 3.3;
- Midblock segments – Section 3.4;
- Pedestrians – Section 3.1.3; and,
- Bicycles – Section 3.1.4.

A number of recommended measures with the potential to improve the level of safety of vulnerable road users at the site access are provided in the Safety Report (see Attachment IR2.33-4 (CEAR #592)).



- c) Provide a figure depicting the 19 potential truck capable routes for the 2020 scenario showing the potential for impact to vehicular, cyclist and pedestrian safety of each using a colour coded scale between low potential impact to safety (green) and high potential impact to safety (red).

As stated in Section 3 of the Halton Region Transportation Master Plan, "Halton Region does not have a specifically designated truck route network as the purpose of a major arterial is to carry truck traffic." Therefore, as noted in Attachment IR2.33-4 provided in response to IR2.33 (CEAR #592), the regional road network between the Project and the 400 series highways was assessed as a complete system. By reviewing the arterial road network as a complete system, the analysis captures and assesses the total amount of truck traffic on a particular segment or at a particular intersection regardless of the route taken. The 19 potential truck capable routes comprise different route combinations using this arterial road network. **Attachment IR4.62-1** shows the net change in collisions (by percentage) using a colour scale that differentiates three different levels of change in collision risk (low collision increase in green, and high collision increase in red). With the expected low increase in collision risk on the area road network, three shades of green were used to depict the expected increase in collision risk.

- d) Indicate which if any of the 19 potential routes, if any, the Halton Municipalities identified as being preferred from a safety perspective. Provide a rationale for that preference.

Neither the Halton Region nor the Town of Milton have identified a preferred truck route to CN. According to the Transportation Master Plan, "the purpose of a major arterial is to carry truck traffic." Therefore, the truck routes are assessed as part of this major arterial road network.

IR4.63 Truck safety at roundabouts

Rationale: In subsection 2.2.2 of the EIS, CN noted that the relative attractiveness of each truck capable route was based on nine factors, including the number of roundabouts trucks would be required to travel through between the Project's entrance/exit and the 400-series highways. In Appendix E.17 of the EIS, CN stated that Halton Municipalities had indicated that the new roundabouts developed at major intersections along the Tremaine Road corridor (Britannia Road, Louis St. Laurent Boulevard, Derry Road, Main Street and Steeles Avenue) are designed to accommodate the movement of full-size tractor trailer units safely and expeditiously.

In Appendix E.17, CN stated that virtually all Project-generated trucks originating from and destined for the west and a significant portion of the trucks to/from the east would use the Tremaine Road interchange, if constructed, and therefore travel along the Tremaine Road corridor.

In Section 3.5 of Attachment 2.33-4 of its response to the Review Panel's information request 2.33 (CEAR #592), CN noted that roundabouts have resulted in safety improvements for vehicular traffic versus typical intersections, but did not provide information about how Project-generated trucks using roundabouts may affect pedestrian and cyclist safety.

CN has not described the predicted magnitude, frequency, or likelihood of pedestrian and cyclist accidents at roundabouts along the Tremaine Road corridor or elsewhere. CN has not provided information to indicate whether trucks travelling to and from its other intermodal facilities are required to negotiate roundabouts and whether that information can demonstrate the safety of roundabouts as compared to conventional intersections for intermodal trucks.



Additionally, in Figures 18 and 19 of Attachment 2.33-4 of its response to the Review Panel's information request 2.33 (CEAR # 592) CN showed that the proposed Milton Education Village would be located along the west side of Tremaine Road between Britannia Road and Derry Road. Figure 19 shows that the plan includes an elementary school. The presence of this school could require crossing guards and/or other measures to control pedestrians crossing at roundabouts on Tremaine Road. It is unclear how these measures would impact truck use of Tremaine Road at times when school is in session.

Information Request:

- a) Describe the current magnitude, frequency and likelihood of pedestrian and cyclist accidents with trucks at roundabouts in southern Ontario or similar jurisdictions. Extrapolate those results to estimate the likely magnitude, frequency and likelihood of pedestrian and cyclist accidents associated with Project-generated truck traffic.
- b) Discuss what measures, if any, CN could take to minimize potential pedestrian and cyclist safety risks from Project-generated traffic use of roundabouts.

CN Response:

- a) Describe the current magnitude, frequency and likelihood of pedestrian and cyclist accidents with trucks at roundabouts in southern Ontario or similar jurisdictions. Extrapolate those results to estimate the likely magnitude, frequency and likelihood of pedestrian and cyclist accidents associated with Project-generated truck traffic.

Attachment IR2.33-4: Safety Assessment of the Proposed CN Logistics Hub (hereafter referred to as the 'Safety Report') provided in response to IR2.33 (CEAR # [592](#)) provides a detailed discussion of effects on safety and operations of Project-associated truck traffic at roundabouts. Section 3.5 of that report includes a review of the Tremaine Road corridor and the roundabout operations along that corridor. Section 3.2.3 of the Safety Report includes a discussion regarding safe bicycle and pedestrian access to the Milton Education Village along Tremaine Road using the roundabouts.

Compared against conventional signalized intersections, roundabouts typically involve lower speeds and lower severity collision types. Studies have shown a reduction of fatal and injury collisions of more than 60% when traditional signalized intersections are converted into multi-lane roundabouts (Quin et al. 2013). International research has shown that roundabouts have a positive effect on pedestrian safety; however, the same research shows higher bicycle collision rates at roundabouts than at signalized intersections. The greater risk for cyclists at roundabout is known to be at the junction of the circulatory lane and the exit lane, where exiting motorists may cut across the path of cyclists in the circulatory lanes. A proven solution to minimize this type of conflict at roundabouts is to avoid designing roundabouts with bicycle lanes on the outer edge of the circulatory roadway.

In Ontario, the Regional Municipality of Waterloo is at the forefront of roundabout implementation and evaluation. The Region of Waterloo is a comparable jurisdiction to the Region of Halton (e.g. similar size, road environment, and traffic composition), and it has a number of single and multi-lane roundabouts that have been in operation for many years in rural and suburban areas. These multi-lane roundabouts are comparable to the Tremaine Road corridor. A query of Waterloo's data between 2004 and 2014 inclusive, indicated that approximately 1,700 collisions occurred at the roundabouts in Waterloo. Of the approximately 1,700 collisions, one collision involved a truck-



bicycle collision (0.06% of the total collisions), and no truck-pedestrian collisions were reported. This sustained historical experience from a comparable jurisdiction suggests that the collision risk between trucks and vulnerable road users is minimal.

Historical collision data for the Tremaine Road corridor was only available for the period between 2011 and 2015. It was during this same time period that the roundabout at Main Street, 2011, and those at both Louis Saint-Laurent and Britannia Road, 2015, were constructed. This resulted in there not being a large enough sample size of data to conduct a representative before and after analysis to evaluate the safety effects associated with the conversion to roundabouts along that corridor. Assuming similar collision risks to those observed at the Region of Waterloo roundabouts, collisions involving trucks and vulnerable road users are expected to be less than 0.1% of the total number of collisions.

Based on CN's review, it appears that the Tremaine Road roundabouts were designed to adequately accommodate large (heavy) vehicles. This was further confirmed by Halton Region representatives in a meeting held on October 16, 2015. No specific safety and operational issues related to heavy vehicles and bicycles/pedestrians were identified during the study field investigation (as described in Attachment IR2.33-4 provided in response to IR2.33, see CEAR #592). Recent upgrades to the Tremaine Road corridor (completed in 2015/2016) were undertaken to provide separated bicycle lane facilities in order to lower collision risk with motorists within the roundabout-controlled intersections. The separated bicycle facilities can be accessed from bicycle ramps located in advance of the circulatory lanes. In the case where cyclists decide not to use the in-boulevard bypass facility, they are expected to share the roadway with motorists.

At the time when the Tremaine Road roundabouts were constructed, as specified above, the Ontario *Highway Traffic Act* did not permit controlled pedestrian crossings at yield-controlled locations, including roundabout entries. As of January 2016, Ontario drivers are required to stop and yield the whole roadway at pedestrian crossovers, school crossings and other locations where there is a crossing guard. The new legislation also permitted four new types of pedestrian crossovers in Ontario, including an application for roundabout entries. The Town of Milton has installed these new crossing types at a number of mid-block locations within their community and have undertaken a public education campaign with Halton Regional Police regarding the new facilities and regulations. Should future operating conditions require, the roundabout approaches at the Tremaine Road locations could be converted by the Region to pedestrian crossovers with ground mounted signs and rapid flashing beacons. Such treatments would clearly indicate to motorists that pedestrians have the right-of-way and provide pedestrians with a controlled crossing location.

b) Discuss what measures, if any, CN could take to minimize potential pedestrian and cyclist safety risks from Project-generated traffic use of roundabouts.

CN is committed to reducing potential impacts on other roads users, as much as possible. As discussed in response to IR2.34 (CEAR #592), CN is committed to routing CNTL trucks (i.e., those in CN's care and control) along specific routes to and from the Terminal, when feasible. As discussed in response to IR2.24 (CEAR #592), the preferred route for CNTL trucks would be along Britannia Road, east to Highway 407, which will avoid the use of roundabouts along Tremaine Road.



CN is committed to mitigating the risk of collisions through the safe and efficient design of the entrance to the Terminal onto Britannia Road consistent with industry best practice and for which a preliminary design is included in the Transportation Considerations Report (see Attachment IR2.33-3, CEAR #592). It is anticipated that the truck traffic generated by the Terminal will be handled in the same fashion and will be subject to the same laws as the truck traffic currently circulating on these routes.

REFERENCES

Qin et al. 2013. "Evaluation of Roundabout Safety" Presented at the Transportation Research Board 92nd Annual Meeting, Paper No. 13-2060, January 13-17, 2013, Washington, DC.

**ATTACHMENT IR4.59-1:
TRUCK ROUTING ANALYSIS –
ROUTE CHARACTERISTICS**



6071-11 CN Milton
Truck Routing Analysis
Route A1 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.37
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	0.54	0.00
		70 km/hr	12.38	13.00
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	6.45	6.20
2. Intersections	# of Minor Signals		5	5
	# of Major Signals		6	6
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	0
	# Left Turns		0	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	15.02	15.59
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.25	1.25
	Major Signal	30 sec/intersection	3.00	3.00
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.00	0.00
	Right Turns	10 sec/intersection	0.17	0.00
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	8.55	8.73
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	8.55	8.73
Total Travel Time	AM Peak Hour		27.99	28.57
	Midday		19.44	19.84
	PM Peak Hour		27.99	28.57
Total Distance			19.37	19.56
Route Characteristics	Friction (Length, km)	Low	19.37	19.56
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	1.70	1.91
		2 lanes	9.28	9.52
		3 lanes	8.39	8.14
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	0
	Highway 407 Toll (Length, km)		5.58	5.58
	Bike Lanes (Length, km)		11.22	11.46
	Number of Grade Separations Impacting Sp		1	1
Number of Level Rail Crossings		1	1	



6071-11 CN Milton
Truck Routing Analysis
Route A2 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

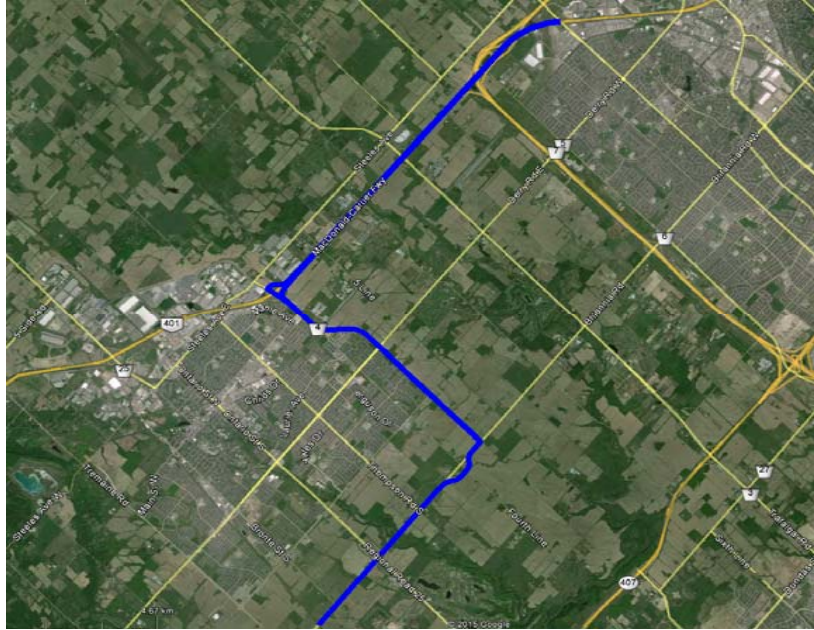
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.51
		50 km/hr	0.55	0.00
		60 km/hr	0.77	0.33
		70 km/hr	11.23	11.26
		80 km/hr	2.76	2.76
		90 km/hr	0.00	0.00
		100 km/hr	4.29	4.66
2. Intersections	# of Minor Signals		4	4
	# of Major Signals		8	7
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	0
	# Left Turns		1	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	15.70	15.61
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.00	1.00
	Major Signal	30 sec/intersection	4.00	3.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.50
	Right Turns	10 sec/intersection	0.17	0.00
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	9.40	9.07
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	9.40	9.07
Total Travel Time	AM Peak Hour		30.76	29.68
	Midday		21.36	20.61
	PM Peak Hour		30.76	29.68
Total Distance			19.60	19.52
Route Characteristics	Friction (Length, km)	Low	19.60	19.52
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.51
		2 lanes	13.37	12.41
		3 lanes	6.23	6.60
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	1
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		9.00	9.03
	Number of Grade Separations Impacting Sp		2	2
Number of Level Rail Crossings		0	0	



**6071-11 CN Milton
Truck Routing Analysis
Route A3 Summary**

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	0.00	0.65
		70 km/hr	12.68	11.59
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	8.49	8.46
2. Intersections	# of Minor Signals		6	6
	# of Major Signals		9	7
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	0
	# Left Turns		1	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	15.97	15.66
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.50	1.50
	Major Signal	30 sec/intersection	4.50	3.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.50
	Right Turns	10 sec/intersection	0.17	0.00
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	9.96	9.31
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	9.96	9.31
Total Travel Time	AM Peak Hour		32.59	30.47
	Midday		22.63	21.16
	PM Peak Hour		32.59	30.47
Total Distance			21.17	20.70
Route Characteristics	Friction (Length, km)	Low	20.30	20.29
		Med	0.88	0.41
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.65
		2 lanes	10.74	9.65
		3 lanes	10.43	10.40
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	1
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		8.49	8.50
	Number of Grade Separations Impacting Sp		2	2
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route A4 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	5.97	5.36
		60 km/hr	0.00	0.00
		70 km/hr	4.78	4.79
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	12.34	12.40
2. Intersections	# of Minor Signals		9	9
	# of Major Signals		9	7
	# of Roundabouts		0	0
3. Turns	# Right Turns		2	1
	# Left Turns		2	2
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	18.66	17.97
2. Intersection Travel Time	Minor Signal	15 sec/intersection	2.25	2.25
	Major Signal	30 sec/intersection	4.50	3.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	1.00	1.00
	Right Turns	10 sec/intersection	0.33	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	11.77	10.95
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	11.77	10.95
Total Travel Time	AM Peak Hour		38.52	35.84
	Midday		26.75	24.89
	PM Peak Hour		38.52	35.84
Total Distance			23.09	22.55
Route Characteristics	Friction (Length, km)	Low	17.71	17.66
		Med	4.68	4.21
		High	0.70	0.68
	Number of Available Lanes (Length, km)	1 lane	0.59	0.47
		2 lanes	8.22	7.71
		3 lanes	14.28	14.37
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	2
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		1.94	1.97
	Number of Grade Separations Impacting Sp		2	2
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route A5 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

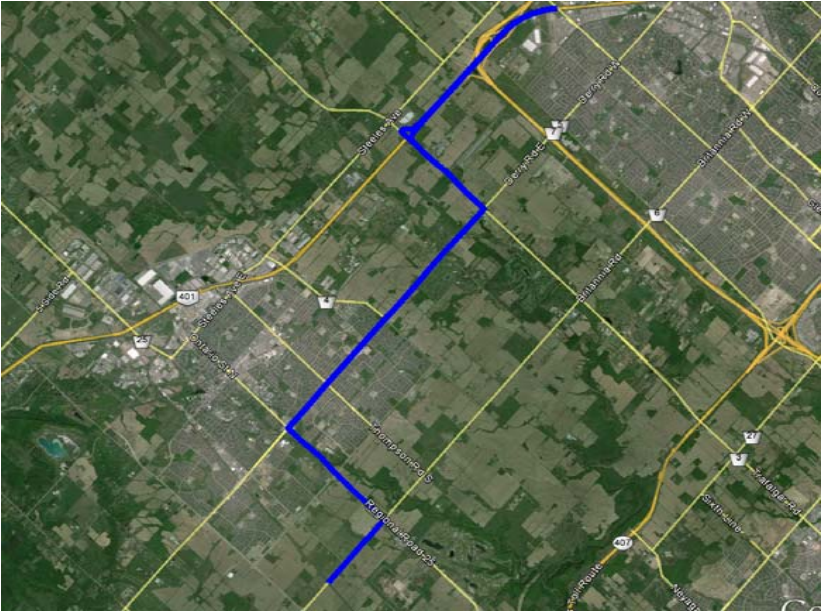
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	0.51	0.53
		60 km/hr	0.00	0.00
		70 km/hr	9.94	8.32
		80 km/hr	0.00	0.88
		90 km/hr	0.00	0.00
		100 km/hr	14.44	14.34
2. Intersections	# of Minor Signals		7	7
	# of Major Signals		3	1
	# of Roundabouts		4	4
3. Turns	# Right Turns		0	1
	# Left Turns		2	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	17.79	17.04
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.75	1.75
	Major Signal	30 sec/intersection	1.50	0.50
	Roundabout	10 sec/intersection	0.67	0.67
3. Turning Travel Time	Left Turns	30 sec/intersection	1.00	0.00
	Right Turns	10 sec/intersection	0.00	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	9.99	8.85
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	9.99	8.85
Total Travel Time	AM Peak Hour		32.70	28.97
	Midday		22.71	20.12
	PM Peak Hour		32.70	28.97
Total Distance			24.89	24.07
Route Characteristics	Friction (Length, km)	Low	24.89	24.07
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.51	0.53
		2 lanes	9.14	8.32
		3 lanes	15.24	15.22
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		9.94	9.20
	Number of Grade Separations Impacting Sp		2	2
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route A6 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.51
		50 km/hr	0.78	0.26
		60 km/hr	4.35	3.87
		70 km/hr	6.88	6.86
		80 km/hr	3.16	3.20
		90 km/hr	0.00	0.00
		100 km/hr	4.29	4.66
2. Intersections	# of Minor Signals		6	6
	# of Major Signals		9	8
	# of Roundabouts		0	0
3. Turns	# Right Turns		2	1
	# Left Turns		2	2
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	16.13	16.02
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.50	1.50
	Major Signal	30 sec/intersection	4.50	4.00
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	1.00	1.00
	Right Turns	10 sec/intersection	0.33	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	10.32	9.98
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	10.32	9.98
Total Travel Time	AM Peak Hour		33.78	32.67
	Midday		23.46	22.69
	PM Peak Hour		33.78	32.67
Total Distance			19.46	19.36
Route Characteristics	Friction (Length, km)	Low	15.45	15.38
		Med	4.01	3.98
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.51
		2 lanes	13.23	12.23
		3 lanes	6.23	6.63
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	2
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		1.94	1.97
	Number of Grade Separations Impacting Sp		2	2
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route A7 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	0.23	0.26
		60 km/hr	3.44	4.09
		70 km/hr	8.27	7.16
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	8.49	8.46
2. Intersections	# of Minor Signals		6	6
	# of Major Signals		9	7
	# of Roundabouts		0	0
3. Turns	# Right Turns		2	1
	# Left Turns		2	2
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	15.90	15.62
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.50	1.50
	Major Signal	30 sec/intersection	4.50	3.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	1.00	1.00
	Right Turns	10 sec/intersection	0.33	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	10.22	9.59
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	10.22	9.59
Total Travel Time	AM Peak Hour		33.45	31.37
	Midday		23.23	21.78
	PM Peak Hour		33.45	31.37
Total Distance			20.43	19.97
Route Characteristics	Friction (Length, km)	Low	15.89	15.86
		Med	4.55	4.11
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.65
		2 lanes	10.00	8.89
		3 lanes	10.43	10.43
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	2
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		1.94	1.97
	Number of Grade Separations Impacting Sp		2	2
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route A8 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

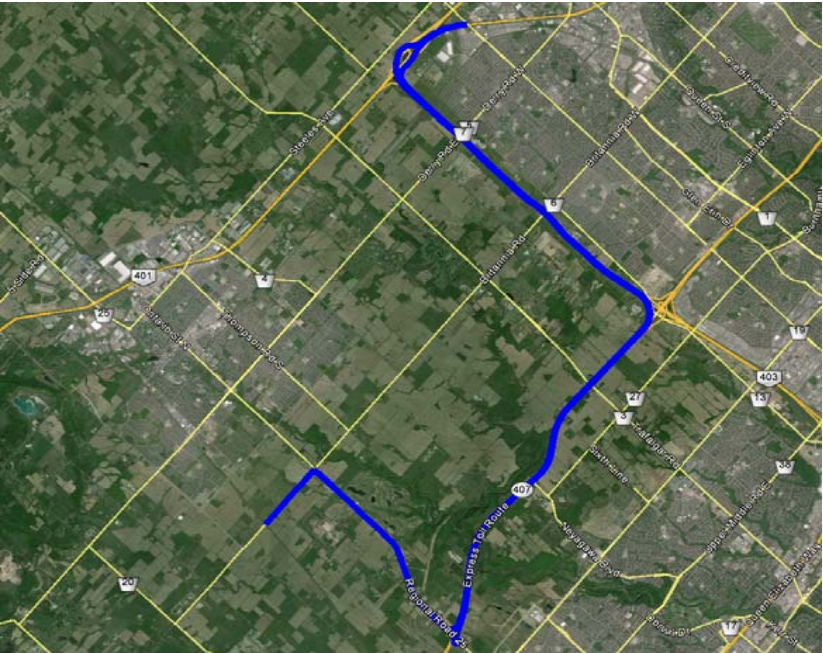
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	1.93	1.28
		60 km/hr	0.00	0.00
		70 km/hr	9.39	8.34
		80 km/hr	0.00	0.88
		90 km/hr	0.00	0.00
		100 km/hr	12.34	12.40
2. Intersections	# of Minor Signals		7	7
	# of Major Signals		5	3
	# of Roundabouts		4	4
3. Turns	# Right Turns		1	2
	# Left Turns		3	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	17.78	16.79
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.75	1.75
	Major Signal	30 sec/intersection	2.50	1.50
	Roundabout	10 sec/intersection	0.67	0.67
3. Turning Travel Time	Left Turns	30 sec/intersection	1.50	0.50
	Right Turns	10 sec/intersection	0.17	0.33
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	10.72	9.48
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	10.72	9.48
Total Travel Time	AM Peak Hour		35.08	31.02
	Midday		24.36	21.54
	PM Peak Hour		35.08	31.02
Total Distance			23.67	22.91
Route Characteristics	Friction (Length, km)	Low	21.67	21.41
		Med	1.99	1.50
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.59	0.47
		2 lanes	9.93	9.16
		3 lanes	13.14	13.28
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	1
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		7.84	7.77
	Number of Grade Separations Impacting Sp		2	2
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route A9 Summary

Route Category A: To/From Highway 401 & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.47
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	6.26	6.00
		70 km/hr	3.10	3.50
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	21.02	20.84
2. Intersections	# of Minor Signals		3	3
	# of Major Signals		3	3
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	21.53	22.45
2. Intersection Travel Time	Minor Signal	15 sec/intersection	0.75	0.75
	Major Signal	30 sec/intersection	1.50	1.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	10.76	10.94
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	10.76	10.94
Total Travel Time	AM Peak Hour		35.20	35.80
	Midday		24.44	24.86
	PM Peak Hour		35.20	35.80
Total Distance			30.38	30.81
Route Characteristics	Friction (Length, km)	Low	30.38	30.81
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	1.16	2.01
		2 lanes	6.26	6.00
		3 lanes	22.96	22.80
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		20.95	20.95
	Bike Lanes (Length, km)		1.94	1.96
	Number of Grade Separations Impacting Sp		1	1
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route B1 Summary

Route Category B: To/From Highway 401 & Appleby Line

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.46
		40 km/hr	0.61	0.00
		50 km/hr	0.00	0.00
		60 km/hr	0.00	0.00
		70 km/hr	9.94	8.73
		80 km/hr	0.00	0.88
		90 km/hr	0.00	0.00
		100 km/hr	2.62	3.13
2. Intersections	# of Minor Signals		7	7
	# of Major Signals		2	2
	# of Roundabouts		4	4
3. Turns	# Right Turns		1	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	11.01	10.94
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.75	1.75
	Major Signal	30 sec/intersection	1.00	1.00
	Roundabout	10 sec/intersection	0.67	0.67
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	6.64	6.39
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	6.64	6.39
Total Travel Time	AM Peak Hour		21.73	20.92
	Midday		15.09	14.53
	PM Peak Hour		21.73	20.92
Total Distance			13.17	13.20
Route Characteristics	Friction (Length, km)	Low	13.17	13.20
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.61	0.46
		2 lanes	9.14	8.73
		3 lanes	3.42	4.01
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		9.94	9.61
	Number of Grade Separations Impacting Sp		2	2
Number of Level Rail Crossings		0	0	



**6071-11 CN Milton
Truck Routing Analysis
Route B2 Summary**

Route Category B: To/From Highway 401 & Appleby Line

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.36
		40 km/hr	0.52	0.00
		50 km/hr	0.99	1.23
		60 km/hr	0.00	0.00
		70 km/hr	9.39	8.34
		80 km/hr	0.00	0.88
		90 km/hr	0.00	0.00
		100 km/hr	4.76	5.23
2. Intersections	# of Minor Signals		7	7
	# of Major Signals		4	4
	# of Roundabouts		4	4
3. Turns	# Right Turns		2	2
	# Left Turns		2	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	12.87	13.15
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.75	1.75
	Major Signal	30 sec/intersection	2.00	2.00
	Roundabout	10 sec/intersection	0.67	0.67
3. Turning Travel Time	Left Turns	30 sec/intersection	1.00	0.50
	Right Turns	10 sec/intersection	0.33	0.33
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	8.19	8.10
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	8.19	8.10
Total Travel Time	AM Peak Hour		26.81	26.50
	Midday		18.62	18.40
	PM Peak Hour		26.81	26.50
Total Distance			15.66	16.05
Route Characteristics	Friction (Length, km)	Low	14.02	14.14
		Med	1.64	1.91
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.52	0.36
		2 lanes	9.58	9.57
		3 lanes	5.56	6.11
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		0	1
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		7.84	7.77
Number of Grade Separations Impacting Sp		2	2	
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route B3 Summary

Route Category B: To/From Highway 401 & Appleby Line

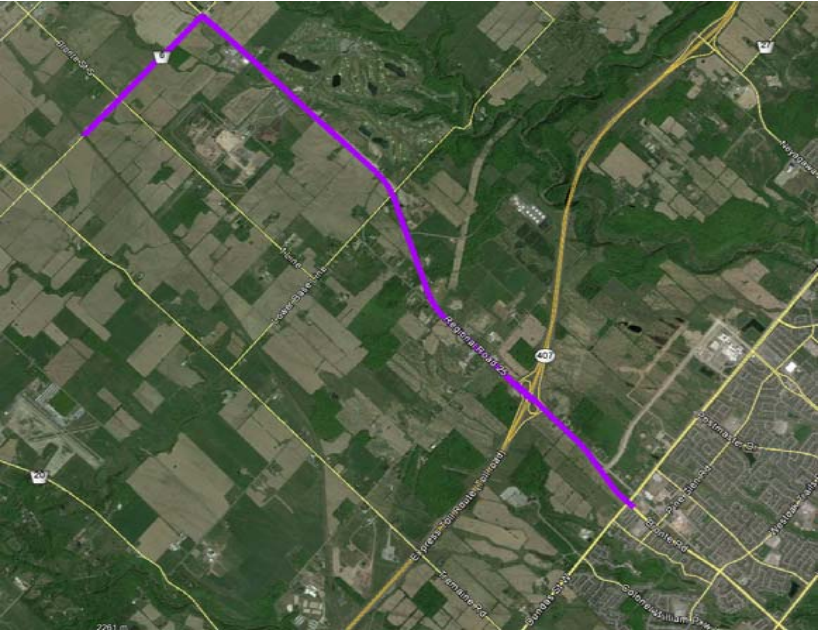
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.36
		40 km/hr	0.52	0.00
		50 km/hr	5.02	5.30
		60 km/hr	0.00	0.00
		70 km/hr	4.78	4.79
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	4.76	5.23
2. Intersections	# of Minor Signals		9	9
	# of Major Signals		8	8
	# of Roundabouts		0	0
3. Turns	# Right Turns		3	1
	# Left Turns		1	2
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	13.75	14.33
2. Intersection Travel Time	Minor Signal	15 sec/intersection	2.25	2.25
	Major Signal	30 sec/intersection	4.00	4.00
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	1.00
	Right Turns	10 sec/intersection	0.50	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	9.24	9.57
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	9.24	9.57
Total Travel Time	AM Peak Hour		30.24	31.32
	Midday		21.00	21.75
	PM Peak Hour		30.24	31.32
Total Distance			15.08	15.69
Route Characteristics	Friction (Length, km)	Low	10.06	10.38
		Med	4.33	4.62
		High	0.70	0.68
	Number of Available Lanes (Length, km)	1 lane	0.52	0.36
		2 lanes	7.86	8.12
		3 lanes	6.70	7.20
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	2
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		1.94	1.97
	Number of Grade Separations Impacting Sp		2	2
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route C1 & C2 Summary

Route Category C: To/From Bronte Road (RR25) South of Dundas Street

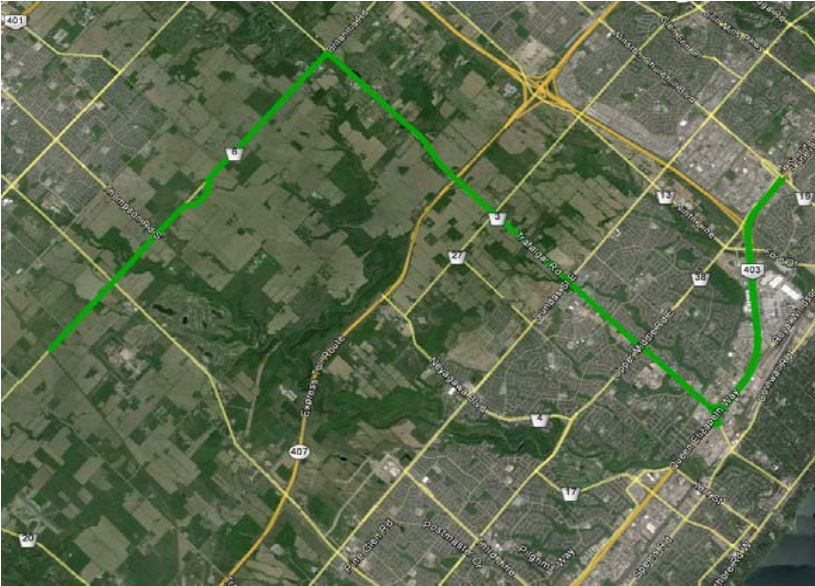
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	5.76	6.00
		70 km/hr	3.07	3.09
		80 km/hr	0.73	0.46
		90 km/hr	0.00	0.00
		100 km/hr	0.00	0.00
2. Intersections	# of Minor Signals		3	3
	# of Major Signals		5	5
	# of Roundabouts		0	0
3. Turns	# Right Turns		0	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	8.94	8.99
2. Intersection Travel Time	Minor Signal	15 sec/intersection	0.75	0.75
	Major Signal	30 sec/intersection	2.50	2.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.00	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	5.58	5.46
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	5.58	5.46
Total Travel Time	AM Peak Hour		18.27	17.87
	Midday		12.69	12.41
	PM Peak Hour		18.27	17.87
Total Distance			9.56	9.55
Route Characteristics	Friction (Length, km)	Low	9.56	9.55
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.00
		2 lanes	6.49	6.46
		3 lanes	3.07	3.09
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		3.07	3.09
	Number of Grade Separations Impacting Sp		1	1
	Number of Level Rail Crossings		0	0



6071-11 CN Milton
Truck Routing Analysis
Route D1 Summary

Route Category D: To/From QEW & Winston Churchill Blvd.

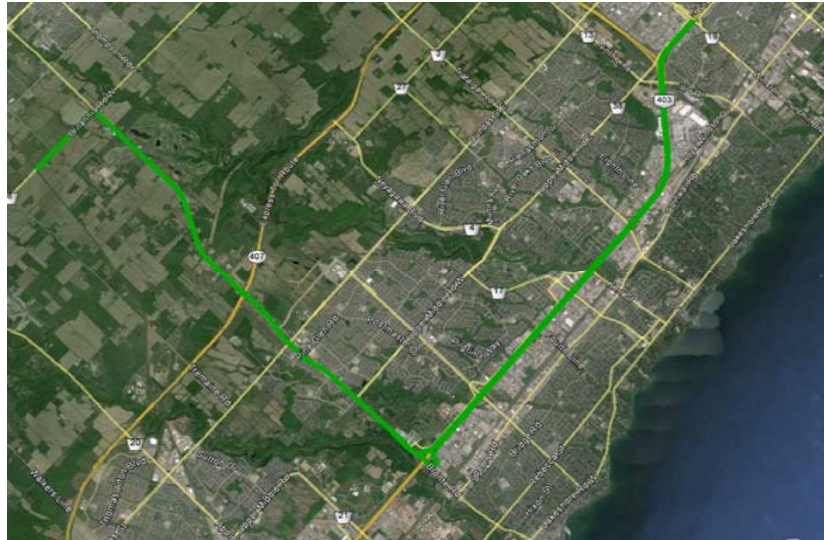
			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.40
		40 km/hr	0.44	0.00
		50 km/hr	0.00	0.00
		60 km/hr	1.48	1.68
		70 km/hr	15.18	15.20
		80 km/hr	3.57	3.57
		90 km/hr	0.00	0.00
		100 km/hr	5.45	5.94
2. Intersections	# of Minor Signals		14	14
	# of Major Signals		11	12
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	21.10	21.75
2. Intersection Travel Time	Minor Signal	15 sec/intersection	3.50	3.50
	Major Signal	30 sec/intersection	5.50	6.00
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	13.54	13.82
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	13.54	13.82
Total Travel Time	AM Peak Hour		44.31	45.23
	Midday		30.77	31.41
	PM Peak Hour		44.31	45.23
Total Distance			26.12	26.79
Route Characteristics	Friction (Length, km)	Low	22.04	22.46
		Med	4.08	4.33
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.40
		2 lanes	11.35	10.88
		3 lanes	11.72	12.99
		4 lanes	3.05	2.52
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		15.18	15.20
	Number of Grade Separations Impacting Sp		1	1
Number of Level Rail Crossings		0	0	



**6071-11 CN Milton
Truck Routing Analysis
Route D2 Summary**

Route Category D: To/From QEW & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.50
		50 km/hr	0.00	0.00
		60 km/hr	10.06	10.23
		70 km/hr	3.07	3.09
		80 km/hr	0.73	0.46
		90 km/hr	0.00	0.00
		100 km/hr	12.74	12.89
2. Intersections	# of Minor Signals		7	7
	# of Major Signals		7	8
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	20.88	21.70
2. Intersection Travel Time	Minor Signal	15 sec/intersection	1.75	1.75
	Major Signal	30 sec/intersection	3.50	4.00
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.50
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	11.79	12.37
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	11.79	12.37
Total Travel Time	AM Peak Hour		38.59	40.49
	Midday		26.80	28.12
	PM Peak Hour		38.59	40.49
Total Distance			26.60	27.16
Route Characteristics	Friction (Length, km)	Low	26.60	27.16
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.50
		2 lanes	10.79	10.68
		3 lanes	5.47	6.51
		4 lanes	10.34	9.47
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		3.07	3.09
Number of Grade Separations Impacting Sp		1	1	
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route D3 Summary

Route Category D: To/From QEW & Winston Churchill Blvd.

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.00
		40 km/hr	0.00	0.00
		50 km/hr	1.07	0.82
		60 km/hr	3.27	3.27
		70 km/hr	17.61	18.04
		80 km/hr	0.52	0.56
		90 km/hr	0.00	0.00
		100 km/hr	0.96	1.09
2. Intersections	# of Minor Signals		9	9
	# of Major Signals		10	11
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	1
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	20.61	20.79
2. Intersection Travel Time	Minor Signal	15 sec/intersection	2.25	2.25
	Major Signal	30 sec/intersection	5.00	5.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.50
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	12.55	12.85
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	12.55	12.85
Total Travel Time	AM Peak Hour		41.08	42.05
	Midday		28.53	29.20
	PM Peak Hour		41.08	42.05
Total Distance			23.42	23.78
Route Characteristics	Friction (Length, km)	Low	19.30	19.73
		Med	4.12	4.05
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	7.39	8.14
		2 lanes	13.14	12.61
		3 lanes	2.90	3.03
		4 lanes	0.00	0.00
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		11.22	11.22
Number of Grade Separations Impacting Sp		1	1	
Number of Level Rail Crossings		1	1	



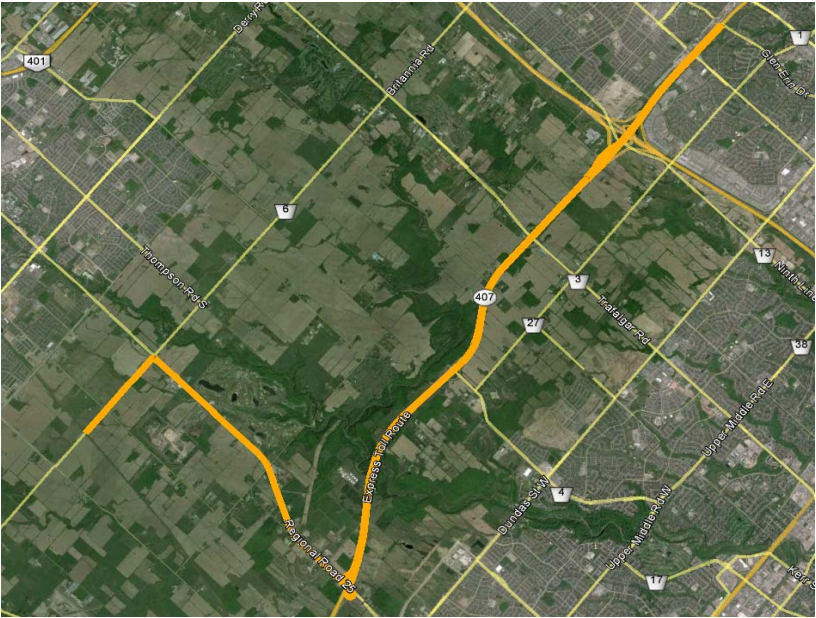
6071-11 CN Milton

Truck Routing Analysis

Route E1 Summary

Route Category E: To/From Highway 403 & Glen Erin Drive

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.47
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	6.26	6.00
		70 km/hr	4.95	1.96
		80 km/hr	0.00	0.00
		90 km/hr	0.00	0.00
		100 km/hr	10.34	13.82
2. Intersections	# of Minor Signals		3	3
	# of Major Signals		3	3
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	16.71	16.92
2. Intersection Travel Time	Minor Signal	15 sec/intersection	0.75	0.75
	Major Signal	30 sec/intersection	1.50	1.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	8.63	8.51
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	8.63	8.51
Total Travel Time	AM Peak Hour		28.25	27.84
	Midday		19.62	19.33
	PM Peak Hour		28.25	27.84
Total Distance			21.55	22.25
Route Characteristics	Friction (Length, km)	Low	21.55	22.25
		Med	0.00	0.00
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.47
		2 lanes	9.27	7.79
		3 lanes	11.11	11.59
		4 lanes	1.17	2.40
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		11.07	11.07
	Bike Lanes (Length, km)		1.94	1.96
	Number of Grade Separations Impacting Sp		1	1
Number of Level Rail Crossings		0	0	



6071-11 CN Milton
Truck Routing Analysis
Route E2 Summary

Route Category E: To/From Highway 403 & Glen Erin Drive

			2020	
			Inbound	Outbound
1. Length / Speed	Length Based on Posted Speed	30 km/hr	0.00	0.41
		40 km/hr	0.00	0.00
		50 km/hr	0.00	0.00
		60 km/hr	1.32	0.97
		70 km/hr	16.28	16.78
		80 km/hr	0.52	0.00
		90 km/hr	0.00	0.00
		100 km/hr	0.29	0.89
2. Intersections	# of Minor Signals		15	15
	# of Major Signals		11	11
	# of Roundabouts		0	0
3. Turns	# Right Turns		1	1
	# Left Turns		1	0
4. Congestion	AM Peak Hour		0.00	0.00
	Midday		0.00	0.00
	PM Peak Hour		0.00	0.00
1. Free Flow Travel Time		minutes	15.84	16.72
2. Intersection Travel Time	Minor Signal	15 sec/intersection	3.75	3.75
	Major Signal	30 sec/intersection	5.50	5.50
	Roundabout	10 sec/intersection	0.00	0.00
3. Turning Travel Time	Left Turns	30 sec/intersection	0.50	0.00
	Right Turns	10 sec/intersection	0.17	0.17
4. Congestion Delay	AM Peak Hour	# min delay (44% travel time increase)	11.33	11.50
	Midday	# min delay (free flow)	0.00	0.00
	PM Peak Hour	# min delay (44% travel time increase)	11.33	11.50
Total Travel Time	AM Peak Hour		37.08	37.64
	Midday		25.75	26.14
	PM Peak Hour		37.08	37.64
Total Distance			18.41	19.06
Route Characteristics	Friction (Length, km)	Low	12.63	12.52
		Med	5.79	6.54
		High	0.00	0.00
	Number of Available Lanes (Length, km)	1 lane	0.00	0.41
		2 lanes	14.86	14.47
		3 lanes	3.26	3.29
		4 lanes	0.29	0.89
	Number of Signalized Arterial Left Turns		1	0
	Highway 407 Toll (Length, km)		0.00	0.00
	Bike Lanes (Length, km)		11.22	11.22
	Number of Grade Separations Impacting Sp		1	1
Number of Level Rail Crossings		1	1	



**ATTACHMENT IR4.59-2:
ASSESSMENT OF THE RELATIVE
ATTRACTIVENESS OF POTENTIAL
ROUTES**



WITH Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 INBOUND AM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Starting Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Starting Point A	26	19.37	Route A1	27.99	Route A1
Starting Point B	5	13.17	Route B1	21.73	Route B1
Starting Point C	2	9.56	Route C1	18.27	Route C1
Starting Point D	2	23.42	Route D3	38.59	Route D2
Starting Point E	0	18.41	Route E2	28.25	Route E1

Calculation Details

Year 2020	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.22	9.00	8.49	1.94	9.94	1.94	1.94	7.84	1.94	9.94	7.84	1.94	3.07	N/A	15.18	3.07	11.22	1.94	11.22	
Arterial Left Turns	0	0	0	1	0	1	1	0	1	0	0	1	1	N/A	1	1	1	1	1	
High Friction	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.88	4.68	0.00	4.01	4.55	1.99	0.00	0.00	1.64	4.33	0.00	N/A	4.08	0.00	4.12	0.00	5.79	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.37	19.60	21.17	23.09	24.89	19.46	20.43	23.67	30.38	13.17	15.66	15.08	9.56	N/A	26.12	26.60	23.42	21.55	18.41	
TOTAL TRAVEL TIME	27.99	30.76	32.59	38.52	32.70	33.78	33.45	35.08	35.20	21.73	26.81	30.24	18.27	N/A	44.31	38.59	41.08	28.25	37.08	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.14	0.11	0.10	0.02	0.10	0.02	0.02	0.08	0.02	0.19	0.13	0.03	0.08	N/A	0.15	0.03	0.12	0.02	0.15	
Left Turns	0.00	0.00	0.00	5.00	0.00	5.00	5.00	0.00	5.00	0.00	0.00	5.00	5.00	N/A	5.00	5.00	5.00	5.00	5.00	
High Friction	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	2.03	0.00	2.06	2.22	0.84	0.00	0.00	1.05	2.87	0.00	N/A	1.56	0.00	1.76	0.00	3.14	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.88	1.11	1.51	8.65	1.10	8.08	8.25	1.92	68.87	1.19	2.17	9.82	6.08	N/A	7.71	6.03	7.88	39.23	9.30	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	500.51	34.70	53.96	397.20	46.21	274.41	291.08	82.51	3802.92	25.83	69.25	340.12	111.06	N/A	380.77	264.15	323.63	1297.34	344.71	
FINAL WEIGHT	0.07	1.00	0.64	0.09	0.75	0.13	0.12	0.42	0.01	1.00	0.37	0.08	1.00	N/A	0.69	1.00	0.82	0.27	1.00	
PERCENTAGE	2.15%	31.00%	19.93%	2.71%	23.28%	3.92%	3.70%	13.04%	0.28%	69.01%	25.74%	5.24%	100.00%	0.00%	27.64%	39.84%	32.52%	20.99%	79.01%	500.00%

NOTES
 Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	11
Effective Percentage	2.33%	33.55%	21.58%	2.93%	25.20%	0.00%	0.00%	14.11%	0.31%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

WITH Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 OUTBOUND AM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Destination Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Destination Point A	30	19.36	Route A6	28.57	Route A1
Destination Point B	4	13.20	Route B1	20.92	Route B1
Destination Point C	2	9.55	Route C1	17.87	Route C1
Destination Point D	0	23.78	Route D3	40.49	Route D2
Destination Point E	0	19.06	Route E2	27.84	Route E1

Calculation Details

Year 2020	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.46	9.03	8.50	1.97	9.20	1.97	1.97	7.77	1.96	9.61	7.77	1.97	3.09	N/A	15.20	3.09	11.22	1.96	11.22	
Arterial Left Turns	0	1	1	2	0	2	2	1	0	0	1	2	0	N/A	0	0	0	0	0	
High Friction	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	4.21	0.00	3.98	4.11	1.50	0.00	0.00	1.91	4.62	0.00	N/A	4.33	0.00	4.05	0.00	6.54	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.56	19.52	20.70	22.55	24.07	19.36	19.97	22.91	30.81	13.20	16.05	15.69	9.55	N/A	26.79	27.16	23.78	22.25	19.06	
TOTAL TRAVEL TIME	28.57	29.68	30.47	35.84	28.97	32.67	31.37	31.02	35.80	20.92	26.50	31.32	17.87	N/A	45.23	40.49	42.05	27.84	37.64	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.15	0.12	0.10	0.02	0.10	0.03	0.02	0.08	0.02	0.18	0.12	0.03	0.08	N/A	0.14	0.03	0.12	0.02	0.15	
Left Turns	0.00	5.00	5.00	10.00	0.00	10.00	10.00	5.00	0.00	0.00	5.00	10.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
High Friction	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.20	1.87	0.00	2.06	2.06	0.65	0.00	0.00	1.19	2.95	0.00	N/A	1.62	0.00	1.70	0.00	3.43	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.89	6.12	6.30	13.49	1.10	13.08	13.08	6.74	63.87	1.18	7.31	14.85	1.08	N/A	2.76	1.03	2.82	34.23	4.58	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	516.38	182.98	205.24	563.02	39.46	427.38	423.37	247.31	3638.85	24.72	235.59	552.49	19.31	N/A	140.51	47.57	118.65	1112.74	172.22	
FINAL WEIGHT	0.08	0.22	0.19	0.07	1.00	0.09	0.09	0.16	0.01	1.00	0.10	0.04	1.00	N/A	0.34	1.00	0.40	0.15	1.00	
PERCENTAGE	4.00%	11.29%	10.06%	3.67%	52.35%	4.83%	4.88%	8.35%	0.57%	86.98%	9.13%	3.89%	100.00%	0.00%	19.46%	57.49%	23.05%	13.40%	86.60%	

NOTES
 Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	11
Effective Percentage	4.43%	12.50%	11.15%	4.06%	57.98%	0.00%	0.00%	9.25%	0.63%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

WITH Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 INBOUND PM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Starting Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Starting Point A	30	19.37	Route A1	27.99	Route A1
Starting Point B	6	13.17	Route B1	21.73	Route B1
Starting Point C	2	9.56	Route C1	18.27	Route C1
Starting Point D	2	23.42	Route D3	38.59	Route D2
Starting Point E	0	18.41	Route E2	28.25	Route E1

Calculation Details

Year 2020	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.22	9.00	8.49	1.94	9.94	1.94	1.94	7.84	1.94	9.94	7.84	1.94	3.07	N/A	15.18	3.07	11.22	1.94	11.22	
Arterial Left Turns	0	0	0	1	0	1	1	0	1	0	0	1	1	N/A	1	1	1	1	1	
High Friction	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.88	4.68	0.00	4.01	4.55	1.99	0.00	0.00	1.64	4.33	0.00	N/A	4.08	0.00	4.12	0.00	5.79	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.37	19.60	21.17	23.09	24.89	19.46	20.43	23.67	30.38	13.17	15.66	15.08	9.56	N/A	26.12	26.60	23.42	21.55	18.41	
TOTAL TRAVEL TIME	27.99	30.76	32.59	38.52	32.70	33.78	33.45	35.08	35.20	21.73	26.81	30.24	18.27	N/A	44.31	38.59	41.08	28.25	37.08	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.14	0.11	0.10	0.02	0.10	0.02	0.02	0.08	0.02	0.19	0.13	0.03	0.08	N/A	0.15	0.03	0.12	0.02	0.15	
Left Turns	0.00	0.00	0.00	5.00	0.00	5.00	5.00	0.00	5.00	0.00	0.00	5.00	5.00	N/A	5.00	5.00	5.00	5.00	5.00	
High Friction	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	2.03	0.00	2.06	2.22	0.84	0.00	0.00	1.05	2.87	0.00	N/A	1.56	0.00	1.76	0.00	3.14	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.88	1.11	1.51	8.65	1.10	8.08	8.25	1.92	68.87	1.19	2.17	9.82	6.08	N/A	7.71	6.03	7.88	39.23	9.30	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	500.51	34.70	53.96	397.20	46.21	274.41	291.08	82.51	3802.92	25.83	69.25	340.12	111.06	N/A	380.77	264.15	323.63	1297.34	344.71	
FINAL WEIGHT	0.07	1.00	0.64	0.09	0.75	0.13	0.12	0.42	0.01	1.00	0.37	0.08	1.00	N/A	0.69	1.00	0.82	0.27	1.00	
PERCENTAGE	2.15%	31.00%	19.93%	2.71%	23.28%	3.92%	3.70%	13.04%	0.28%	69.01%	25.74%	5.24%	100.00%	0.00%	27.64%	39.84%	32.52%	20.99%	79.01%	500.00%

Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	11
Effective Percentage	2.33%	33.55%	21.58%	2.93%	25.20%	0.00%	0.00%	14.11%	0.31%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

WITH Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 OUTBOUND PM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Destination Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Destination Point A	34	19.36	Route A6	28.57	Route A1
Destination Point B	4	13.20	Route B1	20.92	Route B1
Destination Point C	2	9.55	Route C1	17.87	Route C1
Destination Point D	1	23.78	Route D3	40.49	Route D2
Destination Point E	0	19.06	Route E2	27.84	Route E1

Calculation Details

Year 2020	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.46	9.03	8.50	1.97	9.20	1.97	1.97	7.77	1.96	9.61	7.77	1.97	3.09	N/A	15.20	3.09	11.22	1.96	11.22	
Arterial Left Turns	0	1	1	2	0	2	2	1	0	0	1	2	0	N/A	0	0	0	0	0	
High Friction	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	4.21	0.00	3.98	4.11	1.50	0.00	0.00	1.91	4.62	0.00	N/A	4.33	0.00	4.05	0.00	6.54	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.56	19.52	20.70	22.55	24.07	19.36	19.97	22.91	30.81	13.20	16.05	15.69	9.55	N/A	26.79	27.16	23.78	22.25	19.06	
TOTAL TRAVEL TIME	28.57	29.68	30.47	35.84	28.97	32.67	31.37	31.02	35.80	20.92	26.50	31.32	17.87	N/A	45.23	40.49	42.05	27.84	37.64	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.15	0.12	0.10	0.02	0.10	0.03	0.02	0.08	0.02	0.18	0.12	0.03	0.08	N/A	0.14	0.03	0.12	0.02	0.15	
Left Turns	0.00	5.00	5.00	10.00	0.00	10.00	10.00	5.00	0.00	0.00	5.00	10.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
High Friction	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.20	1.87	0.00	2.06	2.06	0.65	0.00	0.00	1.19	2.95	0.00	N/A	1.62	0.00	1.70	0.00	3.43	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.89	6.12	6.30	13.49	1.10	13.08	13.08	6.74	63.87	1.18	7.31	14.85	1.08	N/A	2.76	1.03	2.82	34.23	4.58	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	516.38	182.98	205.24	563.02	39.46	427.38	423.37	247.31	3638.85	24.72	235.59	552.49	19.31	N/A	140.51	47.57	118.65	1112.74	172.22	
FINAL WEIGHT	0.08	0.22	0.19	0.07	1.00	0.09	0.09	0.16	0.01	1.00	0.10	0.04	1.00	N/A	0.34	1.00	0.40	0.15	1.00	
PERCENTAGE	4.00%	11.29%	10.06%	3.67%	52.35%	4.83%	4.88%	8.35%	0.57%	86.98%	9.13%	3.89%	100.00%	0.00%	19.46%	57.49%	23.05%	13.40%	86.60%	500.00%

Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	11
Effective Percentage	4.43%	12.50%	11.15%	4.06%	57.98%	0.00%	0.00%	9.25%	0.63%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

SENSITIVITY SCENARIO - Without Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 INBOUND AM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Starting Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Starting Point A	26	19.37	Route A1	27.99	Route A1
Starting Point B	5	13.17	Route B1	21.73	Route B1
Starting Point C	2	9.56	Route C1	18.27	Route C1
Starting Point D	2	23.42	Route D3	38.59	Route D2
Starting Point E	0	18.41	Route E2	28.25	Route E1

Calculation Details

Year 2020	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.22	9.00	8.49	1.94	9.94	1.94	1.94	7.84	1.94	9.94	7.84	1.94	3.07	N/A	15.18	3.07	11.22	1.94	11.22	
Arterial Left Turns	0	0	0	1	0	1	1	0	1	0	0	1	1	N/A	1	1	1	1	1	
High Friction	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.88	4.68	0.00	4.01	4.55	1.99	0.00	0.00	1.64	4.33	0.00	N/A	4.08	0.00	4.12	0.00	5.79	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.37	19.60	21.17	23.09	24.89	19.46	20.43	23.67	30.38	13.17	15.66	15.08	9.56	N/A	26.12	26.60	23.42	21.55	18.41	
TOTAL TRAVEL TIME	27.99	30.76	32.59	38.52	32.70	33.78	33.45	35.08	35.20	21.73	26.81	30.24	18.27	N/A	44.31	38.59	41.08	28.25	37.08	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.14	0.11	0.10	0.02	0.10	0.02	0.02	0.08	0.02	0.19	0.13	0.03	0.08	N/A	0.15	0.03	0.12	0.02	0.15	
Left Turns	0.00	0.00	0.00	5.00	0.00	5.00	5.00	0.00	5.00	0.00	0.00	5.00	5.00	N/A	5.00	5.00	5.00	5.00	5.00	
High Friction	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	2.03	0.00	2.06	2.22	0.84	0.00	0.00	1.05	2.87	0.00	N/A	1.56	0.00	1.76	0.00	3.14	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.88	1.11	1.51	8.65	1.10	8.08	8.25	1.92	68.87	1.19	2.17	9.82	6.08	N/A	7.71	6.03	7.88	39.23	9.30	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	500.51	34.70	53.96	397.20	46.21	274.41	291.08	82.51	3802.92	25.83	69.25	340.12	111.06	N/A	380.77	264.15	323.63	1297.34	344.71	
FINAL WEIGHT	0.07	1.00	0.64	0.09	0.75	0.13	0.12	0.42	0.01	1.00	0.37	0.08	1.00	N/A	0.69	1.00	0.82	0.27	1.00	
PERCENTAGE	2.15%	31.00%	19.93%	2.71%	23.28%	3.92%	3.70%	13.04%	0.28%	69.01%	25.74%	5.24%	100.00%	0.00%	27.64%	39.84%	32.52%	20.99%	79.01%	500.00%

NOTES

Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0	1	0	0	1	11
Effective Percentage	3.11%	44.86%	28.84%	3.92%	0.00%	0.00%	0.00%	18.86%	0.41%	0.00%	83.08%	16.92%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

SENSITIVITY SCENARIO - Without Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 OUTBOUND AM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Destination Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Destination Point A	30	19.36	Route A6	28.57	Route A1
Destination Point B	4	13.20	Route B1	20.92	Route B1
Destination Point C	2	9.55	Route C1	17.87	Route C1
Destination Point D	0	23.78	Route D3	40.49	Route D2
Destination Point E	0	19.06	Route E2	27.84	Route E1

Calculation Details

Year 2020	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.46	9.03	8.50	1.97	9.20	1.97	1.97	7.77	1.96	9.61	7.77	1.97	3.09	N/A	15.20	3.09	11.22	1.96	11.22	
Arterial Left Turns	0	1	1	2	0	2	2	1	0	0	1	2	0	N/A	0	0	0	0	0	
High Friction	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	4.21	0.00	3.98	4.11	1.50	0.00	0.00	1.91	4.62	0.00	N/A	4.33	0.00	4.05	0.00	6.54	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.56	19.52	20.70	22.55	24.07	19.36	19.97	22.91	30.81	13.20	16.05	15.69	9.55	N/A	26.79	27.16	23.78	22.25	19.06	
TOTAL TRAVEL TIME	28.57	29.68	30.47	35.84	28.97	32.67	31.37	31.02	35.80	20.92	26.50	31.32	17.87	N/A	45.23	40.49	42.05	27.84	37.64	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.15	0.12	0.10	0.02	0.10	0.03	0.02	0.08	0.02	0.18	0.12	0.03	0.08	N/A	0.14	0.03	0.12	0.02	0.15	
Left Turns	0.00	5.00	5.00	10.00	0.00	10.00	10.00	5.00	0.00	0.00	5.00	10.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
High Friction	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.20	1.87	0.00	2.06	2.06	0.65	0.00	0.00	1.19	2.95	0.00	N/A	1.62	0.00	1.70	0.00	3.43	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.89	6.12	6.30	13.49	1.10	13.08	13.08	6.74	63.87	1.18	7.31	14.85	1.08	N/A	2.76	1.03	2.82	34.23	4.58	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	516.38	182.98	205.24	563.02	39.46	427.38	423.37	247.31	3638.85	24.72	235.59	552.49	19.31	N/A	140.51	47.57	118.65	1112.74	172.22	
FINAL WEIGHT	0.08	0.22	0.19	0.07	1.00	0.09	0.09	0.16	0.01	1.00	0.10	0.04	1.00	N/A	0.34	1.00	0.40	0.15	1.00	
PERCENTAGE	4.00%	11.29%	10.06%	3.67%	52.35%	4.83%	4.88%	8.35%	0.57%	86.98%	9.13%	3.89%	100.00%	0.00%	19.46%	57.49%	23.05%	13.40%	86.60%	500.00%

NOTES
 Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0	1	0	0	1	11
Effective Percentage	10.54%	29.75%	26.53%	9.67%	0.00%	0.00%	0.00%	22.01%	1.50%	0.00%	70.11%	29.89%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

SENSITIVITY SCENARIO - Without Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 INBOUND PM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Starting Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Starting Point A	30	19.37	Route A1	27.99	Route A1
Starting Point B	6	13.17	Route B1	21.73	Route B1
Starting Point C	2	9.56	Route C1	18.27	Route C1
Starting Point D	2	23.42	Route D3	38.59	Route D2
Starting Point E	0	18.41	Route E2	28.25	Route E1

Calculation Details

Year 2020	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.22	9.00	8.49	1.94	9.94	1.94	1.94	7.84	1.94	9.94	7.84	1.94	3.07	N/A	15.18	3.07	11.22	1.94	11.22	
Arterial Left Turns	0	0	0	1	0	1	1	0	1	0	0	1	1	N/A	1	1	1	1	1	
High Friction	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.88	4.68	0.00	4.01	4.55	1.99	0.00	0.00	1.64	4.33	0.00	N/A	4.08	0.00	4.12	0.00	5.79	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.37	19.60	21.17	23.09	24.89	19.46	20.43	23.67	30.38	13.17	15.66	15.08	9.56	N/A	26.12	26.60	23.42	21.55	18.41	
TOTAL TRAVEL TIME	27.99	30.76	32.59	38.52	32.70	33.78	33.45	35.08	35.20	21.73	26.81	30.24	18.27	N/A	44.31	38.59	41.08	28.25	37.08	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.14	0.11	0.10	0.02	0.10	0.02	0.02	0.08	0.02	0.19	0.13	0.03	0.08	N/A	0.15	0.03	0.12	0.02	0.15	
Left Turns	0.00	0.00	0.00	5.00	0.00	5.00	5.00	0.00	5.00	0.00	0.00	5.00	5.00	N/A	5.00	5.00	5.00	5.00	5.00	
High Friction	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	2.03	0.00	2.06	2.22	0.84	0.00	0.00	1.05	2.87	0.00	N/A	1.56	0.00	1.76	0.00	3.14	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.88	1.11	1.51	8.65	1.10	8.08	8.25	1.92	68.87	1.19	2.17	9.82	6.08	N/A	7.71	6.03	7.88	39.23	9.30	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	500.51	34.70	53.96	397.20	46.21	274.41	291.08	82.51	3802.92	25.83	69.25	340.12	111.06	N/A	380.77	264.15	323.63	1297.34	344.71	
FINAL WEIGHT	0.07	1.00	0.64	0.09	0.75	0.13	0.12	0.42	0.01	1.00	0.37	0.08	1.00	N/A	0.69	1.00	0.82	0.27	1.00	
PERCENTAGE	2.15%	31.00%	19.93%	2.71%	23.28%	3.92%	3.70%	13.04%	0.28%	69.01%	25.74%	5.24%	100.00%	0.00%	27.64%	39.84%	32.52%	20.99%	79.01%	500.00%

NOTES

Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

Route Percentages

Valid Route Flags	Starting Point A									Starting Point B			Starting Point C		Starting Point D			Starting Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0	1	0	0	1	11
Effective Percentage	3.11%	44.86%	28.84%	3.92%	0.00%	0.00%	0.00%	18.86%	0.41%	0.00%	83.08%	16.92%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

'1' = route is considered in the assessment; '0' = route is not considered in the assessment

SENSITIVITY SCENARIO - Without Tremaine Interchange

TRUCK ROUTING CALCULATION - 2020 OUTBOUND PM

DYNAMIC ROUTE CALCULATIONS:

Trip Characteristic Weightings

% of Bike Lanes	0.25
Number of Signalized Arterial Left Turns	5.00
% of High Friction Route	20.00
% of Medium Friction Route	10.00
Length of Tolled Roads	3.00

Destination Point Statistics

	Total # of Trucks	Statistics			
		Shortest Length		Shortest Time	
		km	Route	Minutes	Route
Destination Point A	34	19.36	Route A6	28.57	Route A1
Destination Point B	4	13.20	Route B1	20.92	Route B1
Destination Point C	2	9.55	Route C1	17.87	Route C1
Destination Point D	1	23.78	Route D3	40.49	Route D2
Destination Point E	0	19.06	Route E2	27.84	Route E1

Calculation Details

Year 2020	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Route Characteristic:																				
Bike Lanes	11.46	9.03	8.50	1.97	9.20	1.97	1.97	7.77	1.96	9.61	7.77	1.97	3.09	N/A	15.20	3.09	11.22	1.96	11.22	
Arterial Left Turns	0	1	1	2	0	2	2	1	0	0	1	2	0	N/A	0	0	0	0	0	
High Friction	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.41	4.21	0.00	3.98	4.11	1.50	0.00	0.00	1.91	4.62	0.00	N/A	4.33	0.00	4.05	0.00	6.54	
Tolls	5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.95	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	11.07	0.00	
TOTAL ROUTE LENGTH	19.56	19.52	20.70	22.55	24.07	19.36	19.97	22.91	30.81	13.20	16.05	15.69	9.55	N/A	26.79	27.16	23.78	22.25	19.06	
TOTAL TRAVEL TIME	28.57	29.68	30.47	35.84	28.97	32.67	31.37	31.02	35.80	20.92	26.50	31.32	17.87	N/A	45.23	40.49	42.05	27.84	37.64	
Travel Time 'Penalty' Calculation:																				
Bike Lanes	0.15	0.12	0.10	0.02	0.10	0.03	0.02	0.08	0.02	0.18	0.12	0.03	0.08	N/A	0.14	0.03	0.12	0.02	0.15	
Left Turns	0.00	5.00	5.00	10.00	0.00	10.00	10.00	5.00	0.00	0.00	5.00	10.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
High Friction	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	N/A	0.00	0.00	0.00	0.00	0.00	
Med Friction	0.00	0.00	0.20	1.87	0.00	2.06	2.06	0.65	0.00	0.00	1.19	2.95	0.00	N/A	1.62	0.00	1.70	0.00	3.43	
Tolls	16.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.85	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	33.21	0.00	
WEIGHTING FACTOR	17.89	6.12	6.30	13.49	1.10	13.08	13.08	6.74	63.87	1.18	7.31	14.85	1.08	N/A	2.76	1.03	2.82	34.23	4.58	
Final Weighting Calculation:																				
EFF. TRAVEL TIME	516.38	182.98	205.24	563.02	39.46	427.38	423.37	247.31	3638.85	24.72	235.59	552.49	19.31	N/A	140.51	47.57	118.65	1112.74	172.22	
FINAL WEIGHT	0.08	0.22	0.19	0.07	1.00	0.09	0.09	0.16	0.01	1.00	0.10	0.04	1.00	N/A	0.34	1.00	0.40	0.15	1.00	
PERCENTAGE	4.00%	11.29%	10.06%	3.67%	52.35%	4.83%	4.88%	8.35%	0.57%	86.98%	9.13%	3.89%	100.00%	0.00%	19.46%	57.49%	23.05%	13.40%	86.60%	

Total km of bicycle lanes
 Total # left turns
 Total km "high friction" road
 Total km "medium friction" road
 Total km of toll road
 TOTAL LENGTH OF THE ROUTE
 CALCULATED TRAVEL TIME FOR THE ROUTE (Based on route length, posted speed limit, number of signalized intersections and roundabouts, number of left and right turns, and expected peak period congestion)
 = (km bike lane / km total route) x weight
 = # left turns x weight
 = (km 'high friction' road / km total route) x weight
 = (km 'medium friction' road / km total route) x weight
 = km toll road
 = 1 + SUM OF ABOVE WEIGHTED FACTORS
 = (total route length / length of shortest route in the route category) x total travel time x weighting factor

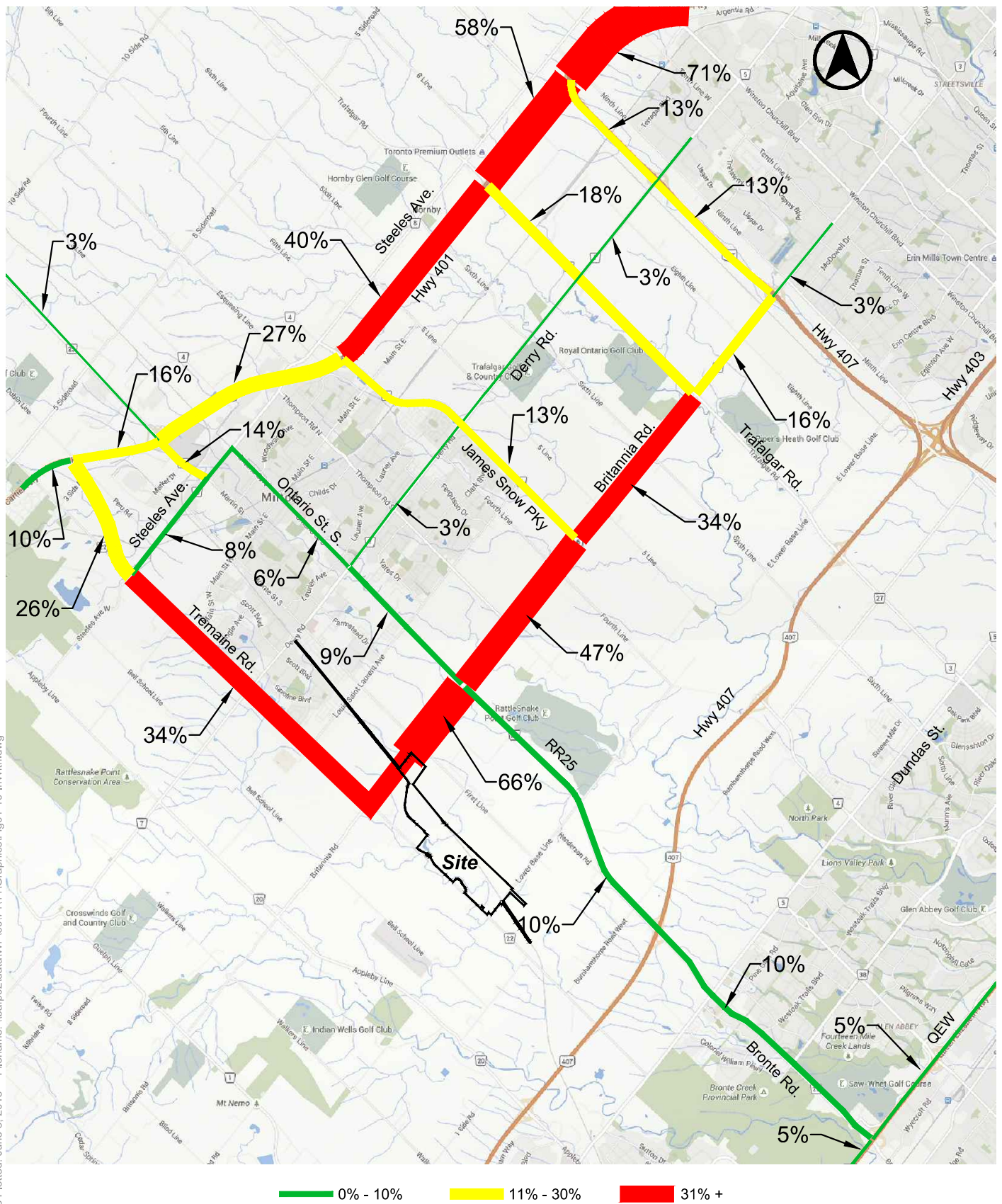
Route Percentages

Valid Route Flags	Destination Point A									Destination Point B			Destination Point C		Destination Point D			Destination Point E		TOTAL
	Route A1	Route A2	Route A3	Route A4	Route A5	Route A6	Route A7	Route A8	Route A9	Route B1	Route B2	Route B3	Route C1	Route C2	Route D1	Route D2	Route D3	Route E1	Route E2	
Valid Route Flags	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0	1	0	0	1	11
Effective Percentage	10.54%	29.75%	26.53%	9.67%	0.00%	0.00%	0.00%	22.01%	1.50%	0.00%	70.11%	29.89%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	500.00%

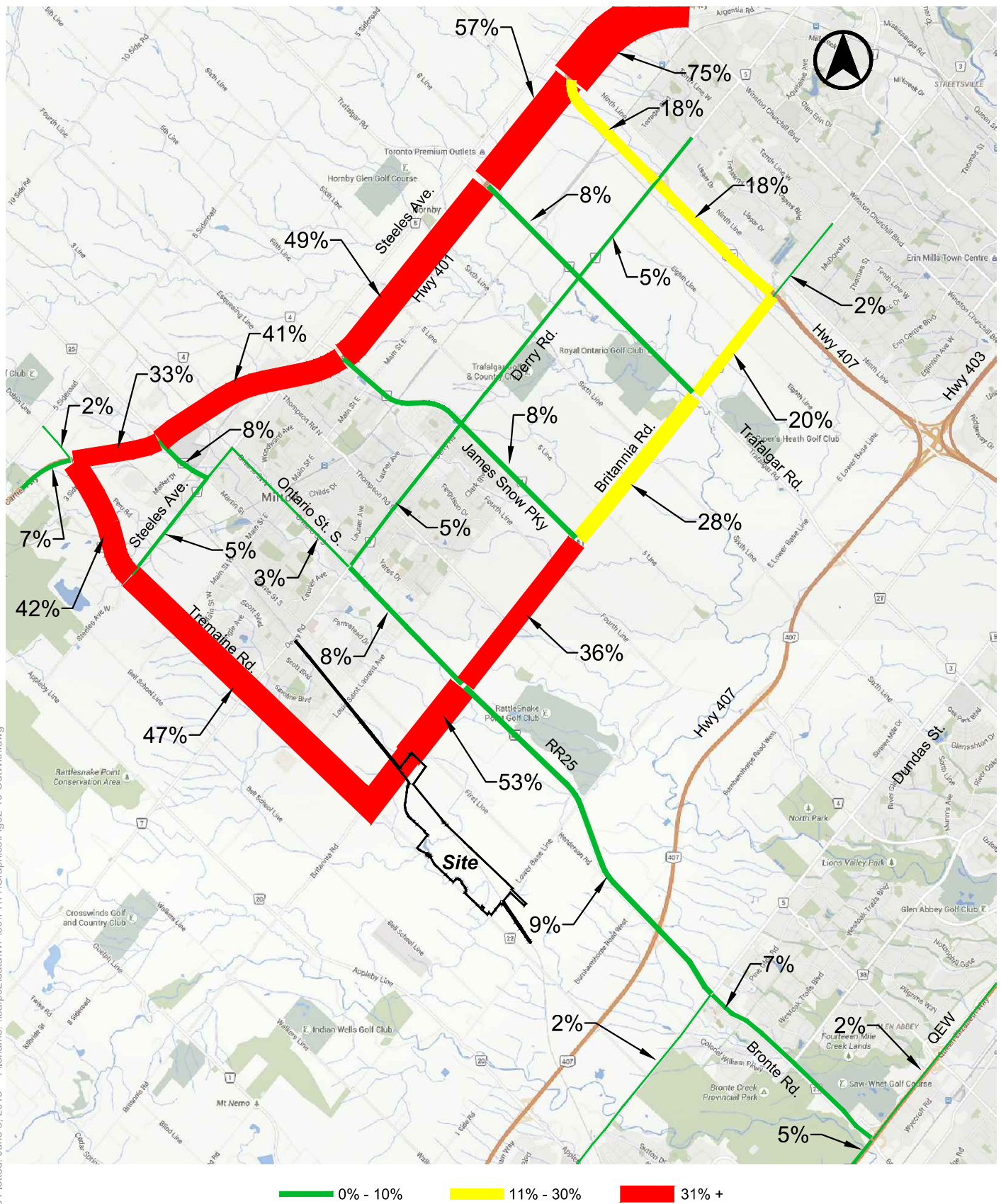
'1' = route is considered in the assessment; '0' = route is not considered in the assessment

ATTACHMENT IR4.59-3: TRUCK ROUTING ANALYSIS

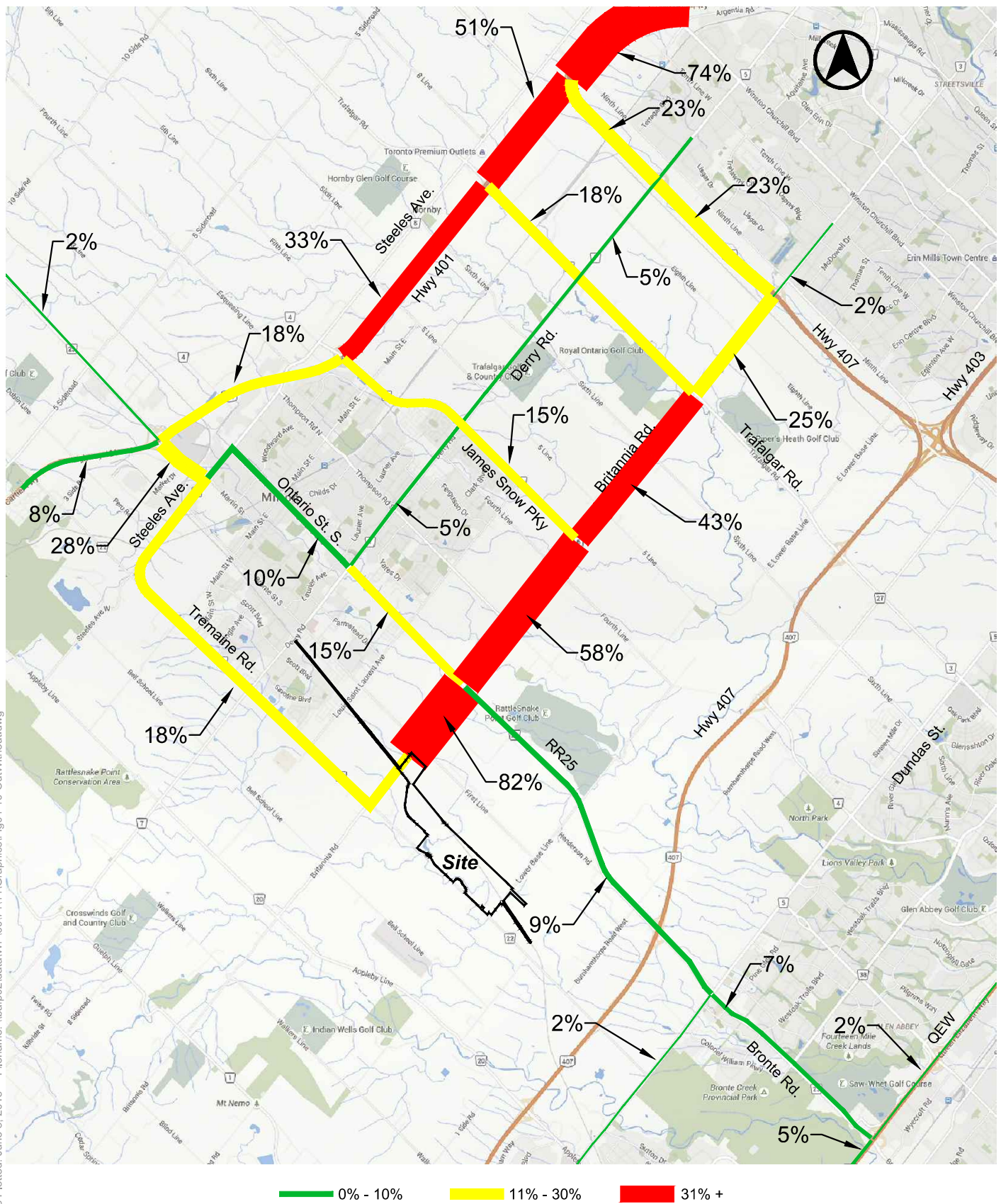




RELATIVE ATTRACTIVENESS OF ROAD SEGMENTS FOR
TERMINAL-GENERATED TRUCK TRAFFIC,
2020 INBOUND - WITH TREMAINE INTERCHANGE
AM AND PM PEAK HOURS



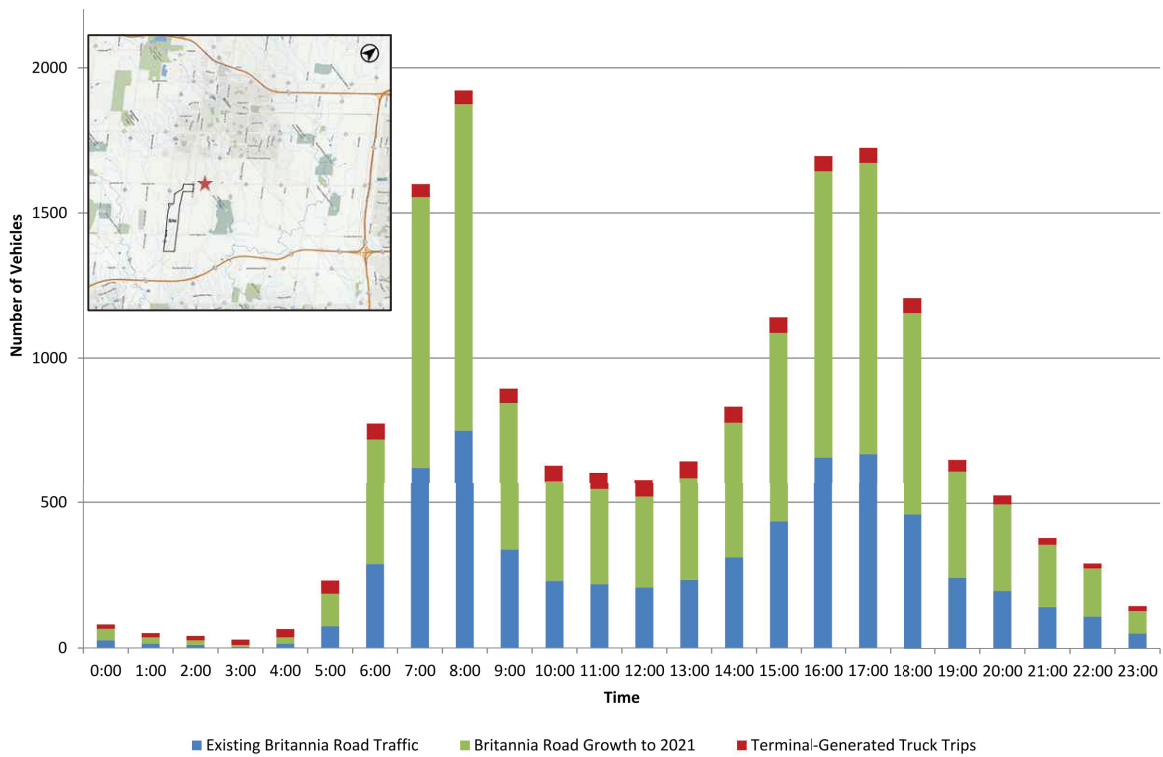
**RELATIVE ATTRACTIVENESS OF ROAD SEGMENTS FOR
TERMINAL-GENERATED TRUCK TRAFFIC,
2020 OUTBOUND - WITH TREMAINE INTERCHANGE
AM AND PM PEAK HOURS**



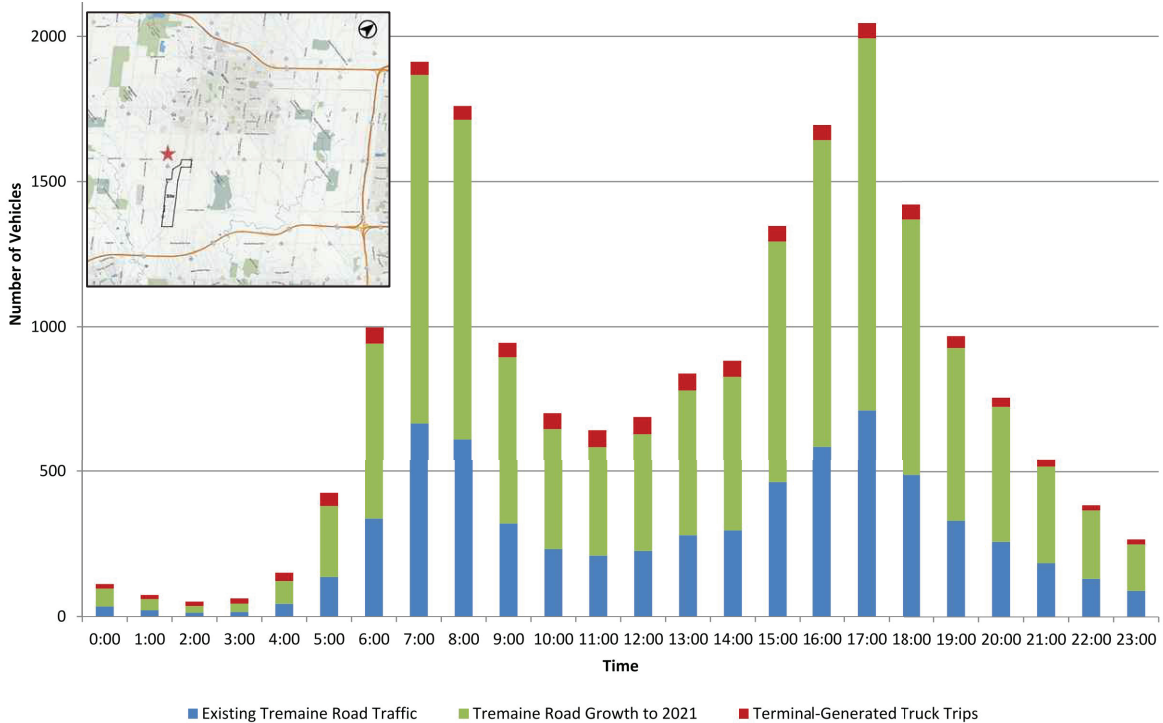
**RELATIVE ATTRACTIVENESS OF ROAD SEGMENTS FOR
TERMINAL-GENERATED TRUCK TRAFFIC,
2020 OUTBOUND - WITHOUT TREMAINE INTERCHANGE
AM AND PM PEAK HOURS**

ATTACHMENT IR4.61-1: INTERSECTION VOLUME-CAPACITY RATIO AND TRAVEL TIME





Britannia Road East Of First Line



Tremain Road North Of Britannia Road

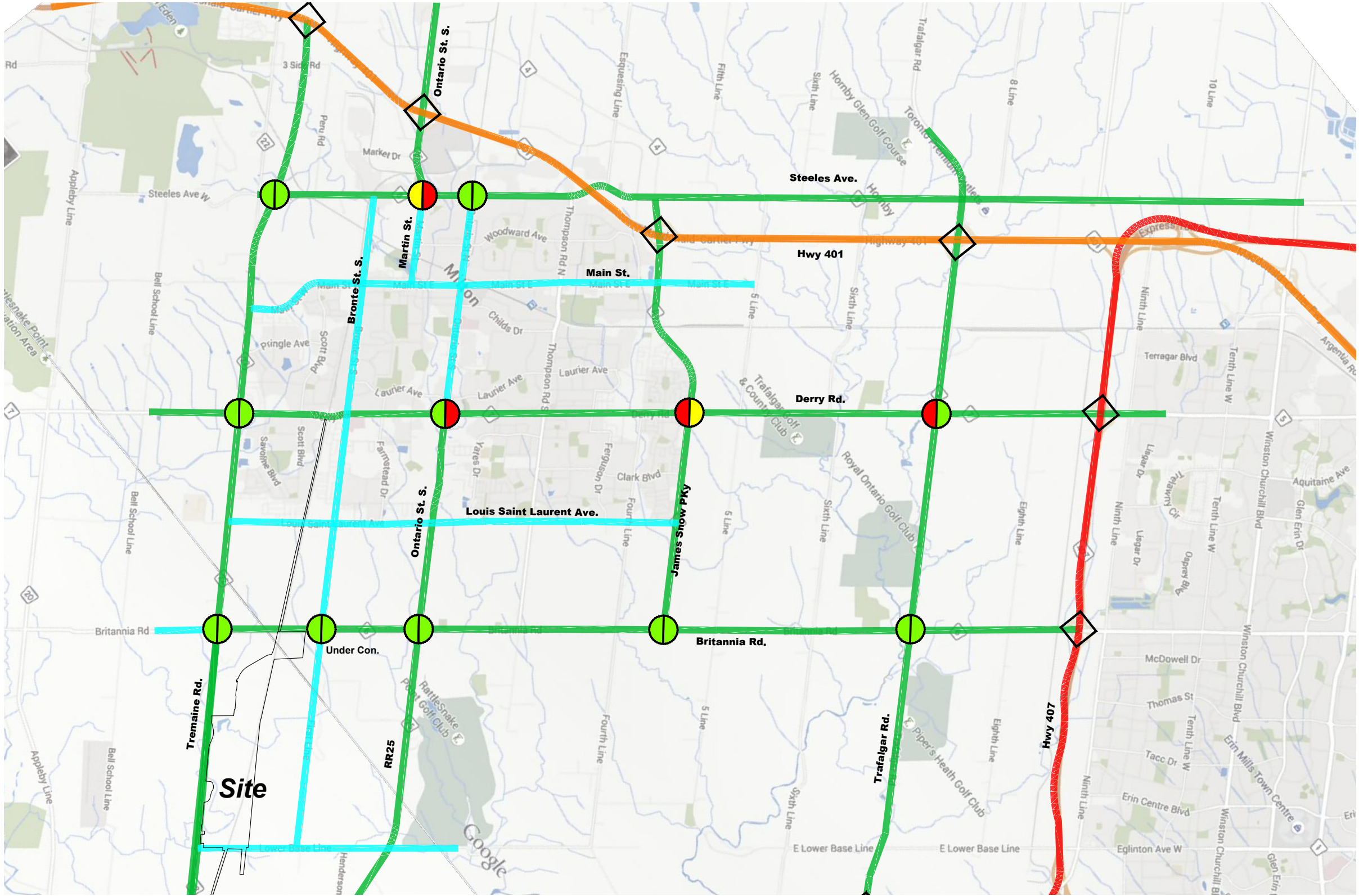
2021 FUTURE TOTAL TRAFFIC COMPOSITION



ATTACHMENT IR4.61-2: INTERSECTION VOLUME- CAPACITY RATIO



Date Plotted: December 11, 2017 File name: P:\6071\11\Graphics\Rev09 December 8-17\2021 Future Background Traffic.dwg



Town Of Milton Regional Municipality Of Halton MTO 407 ETR Highway Interchange

2021 Future Background Traffic
Overall Intersection Volume to Capacity Ratio

LEGEND



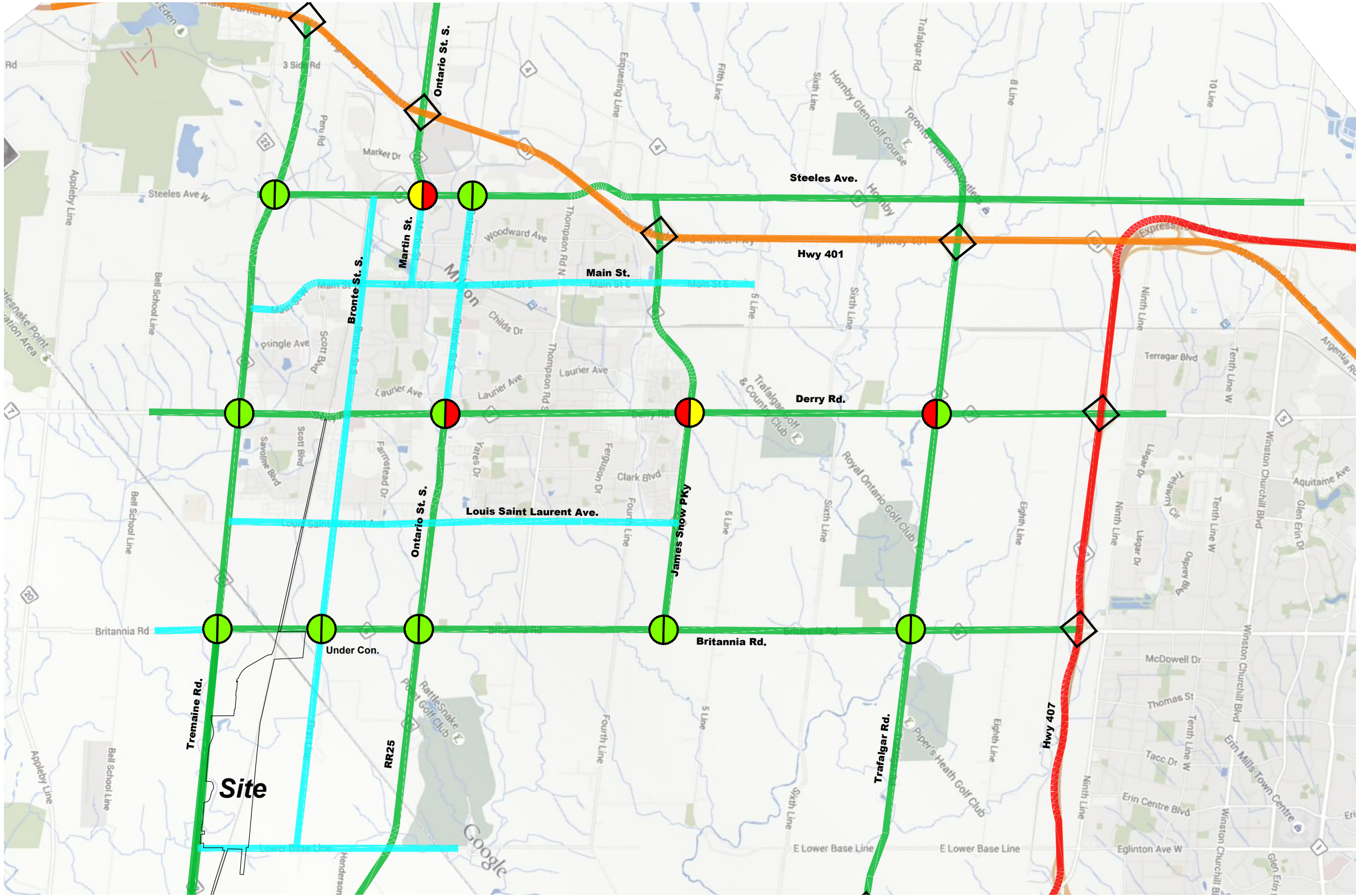
v/c less than 0.85



v/c between 0.85 and 0.95



v/c greater than 0.95



2021 Future Total Traffic

Overall Intersection Volume to Capacity Ratio

LEGEND



v/c less than 0.85



v/c between 0.85 and 0.95



v/c greater than 0.95

**ATTACHMENT IR4.61-3:
HIGHWAY 401 TRUCK
TRAFFIC VOLUMES**



Memorandum

TO:
File

FROM:
BA Group

PROJECT:
6071-11
Milton Intermodal

DATE:
December 7, 2017

SUBJECT: HIGHWAY 401 TRUCK TRAFFIC VOLUMES

1.0 EXISTING HIGHWAY 401 TRAFFIC

The most recent Highway 401 mainline traffic data with vehicle classification, collected in the fall of 2012 and spring of 2016 was provided by the Ministry of Transportation Ontario. This information is summarized in **Table 1** and **Table 2** with the base data provided in **Appendix I**.

TABLE 1 HIGHWAY 401 BETWEEN RR25 AND GUELPH LINE

Source	Direction	Classification	AM Peak Hour	PM Peak Hour
Fall 2012 Count Data	EB	Cars	3,810	2,710
		Short Trucks	105	135
		Long Trucks	325	370
		Total	4,240	3,215
		Truck %	10%	16%
	WB	Cars	2,650	4,100
		Short Trucks	135	115
		Long Trucks	335	310
		Total	3,120	4,525
		Truck %	15%	9%

Notes:

1. Short trucks defined by MTO as heavy 2 and 3 axle single unit trucks.
2. Long trucks defined by MTO as transports-combination units trucks.

TABLE 2 HIGHWAY 401 BETWEEN JAMES SNOW PARKWAY AND RR25

Source	Direction	Classification	AM Peak Hour	PM Peak Hour
Spring 2016 Count Data	EB	Cars	3,495	3,725
		Short Trucks	120	130
		Long Trucks	305	310
		Total	3,920	4,165
		Truck %	11%	11%
	WB	Cars	2,850	3,855
		Short Trucks	150	75
		Long Trucks	440	295
		Total	3,440	4,225
		Truck %	17%	9%

Notes:

1. Short trucks defined by MTO as heavy 2 and 3 axle single unit trucks.
2. Long trucks defined by MTO as transports-combination units trucks.
3. The base traffic data has been interpreted to present the most reasonable result. There is uncertainty as to the quality of the collection and/or processing of the data as a number of peak hour values which are substantially lower than other days (1,000 vph or more), as well as peak hours occurring at unlikely times such as 5:00 AM.

2.0 HISTORICAL HIGHWAY 401 TRAFFIC GROWTH

The sections of Highway 401 through the Town of Milton which will carry the highest volume of Project-generated trucks have historically experienced robust growth of 2% per annum in the annual average daily traffic (AADT) as summarized in **Table 3**. The growth rate calculations are attached for reference in **Appendix II**.

TABLE 3 HIGHWAY 401 AADT HISTORICAL GROWTH

Section	Per Annum Growth Rate
Between Highway 407 and Trafalgar Road (1997-2016)	1.9%
Between Trafalgar Road and James Snow Parkway (1988-2016)	2.5%
Between James Snow Parkway and RR25 (1988-2016)	2.6%
Between RR25 and Guelph Line (1988-2016)	2.0%

Notes:

1. Provincial Highways Traffic Volumes 1988-2016, Ontario Ministry of Transportation

More recent peak hour traffic volumes for Highway 401 between Guelph Line and RR25 were also provided by MTO although they did not include vehicle classification. These 2014 peak hour traffic volumes were compared to the 2012 peak hour volumes and are summarized in **Table 4**.

TABLE 4 HIGHWAY 401 PEAK HOUR HISTORICAL GROWTH (2012-2014)

Section	Direction	Data	AM Peak Hour	PM Peak Hour
Between RR25 and Guelph Line	EB	Fall 2012	4,240	3,215
		Fall 2014	4,420	3,895
		Difference	180	680
		Growth (% p.a.)	2.1%	10.1%
	WB	Fall 2012	3,120	4,525
		Fall 2014	3,550	4,795
		Difference	430	270
		Growth (% p.a.)	6.7%	2.9%
	Total	Fall 2012	7,360	7,740
		Fall 2014	7,970	8,690
		Difference	610	950
		Growth (% p.a.)	4.1%	6.0%

This data indicates that for this section of Highway 401, the peak hour traffic volume growth between 2012 to 2014 has been in excess of the longer-term 2.0% per annum growth calculated through the AADT volumes.

3.0 PROJECT-GENERATED TRUCKS ON HIGHWAY 401

As identified in previous submissions, the assignment of Project-generated trucks results in the following additional trucks being carried on Highway 401 as summarized in **Table 5**.

TABLE 5 HIGHWAY 401 PROJECT-GENERATED TRUCKS

Highway 401 Section	AM Peak Hour			PM Peak Hour		
	EB	WB	Total	EB	WB	Total
Between Tremaine Road and RR25	13	6	19	15	6	21
Between RR25 and James Snow Parkway	16	10	26	19	10	29
Between James Snow Parkway and Trafalgar Road	19	15	34	22	15	37
Between Trafalgar Road and Highway 407	22	22	44	25	23	48

4.0 HIGHWAY 401 FUTURE TRAFFIC FORECASTS

Based on the application of the growth rates derived in Section 2.0, traffic forecasts for Highway 401 were generated for the 2017 and 2021 horizon years. Traffic data for Highway 401 between Trafalgar Road and Highway 407 was estimated by increasing the Highway 401 mainline traffic data between RR25 and James Snow Parkway by 12%. This 12% value represents the relation between the 2016 AADT value of 149,400 vehicles per day on Highway 401 between Trafalgar Road and Highway 407 and the 2016 AADT value of 133,500 vehicles per day on Highway 401 between RR25 and James Snow Parkway. These forecasts and the addition of the Project-generated trucks are summarized in **Table 6**.

TABLE 6 HIGHWAY 401 TRAFFIC FORECASTS









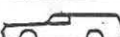





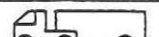


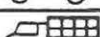


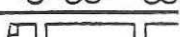
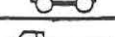
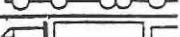
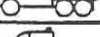
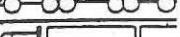

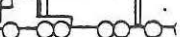

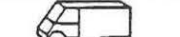
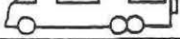




Scenario	Dir.	Class	Between Guelph Line and RR25		Between RR25 and James Snow Parkway		Between Trafalgar Road and Hwy 407	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
2017 Traffic Forecast	EB	Cars Short Trucks Long Trucks Total	4,205 115 360 4,680	2,990 150 410 3,550	3,585 125 315 4,025	3,820 135 320 4,275	3,990 140 345 4,475	4,255 150 350 4,755
	WB	Cars Short Trucks Long Trucks Total	2,925 150 370 3,445	4,525 125 340 4,990	2,925 155 450 3,530	3,955 75 305 4,335	3,255 175 500 3,930	4,400 85 335 4,820
2021 Background Traffic Forecast	EB	Cars Short Trucks Long Trucks Total	4,555 125 390 5,070	3,240 160 440 3,840	3,975 135 345 4,455	4,235 150 350 4,735	4,315 150 375 4,840	4,605 160 380 5,145
	WB	Cars Short Trucks Long Trucks Total	3,165 160 400 3,725	4,900 135 370 5,405	3,240 170 500 3,910	4,385 85 335 4,805	3,520 190 540 4,250	4,765 95 365 5,225
2017 to 2021 Additional Traffic	EB	Cars Short Trucks Long Trucks Total	350 10 30 390	250 10 30 290	390 10 30 430	415 15 30 460	325 10 30 365	350 10 30 390
	WB	Cars Short Trucks Long Trucks Total	240 10 30 280	375 10 30 415	315 15 50 380	430 10 30 470	265 15 40 320	365 10 30 405
Project-Generated Trucks	EB	Cars Short Trucks Long Trucks Total	- - 13 13	- - 15 15	- - 16 16	- - 19 19	- - 22 22	- - 25 25
	WB	Cars Short Trucks Long Trucks Total	- - 6 6	- - 6 6	- - 10 10	- - 10 10	- - 22 22	- - 23 23
2021 Total Traffic	EB	Cars Short Trucks Long Trucks Total Truck %	4,555 125 403 5,083 10%	3,240 160 455 3,855 16%	3,975 135 361 4,471 11%	4,235 150 369 4,754 11%	4,315 150 397 4,862 11%	4,605 160 405 5,170 11%
	WB	Cars Short Trucks Long Trucks Total Truck %	3,165 160 406 3,731 15%	4,900 135 376 5,411 9%	3,240 170 510 3,920 17%	4,385 85 345 4,815 9%	3,520 190 562 4,272 18%	4,765 95 388 5,248 9%

Notes:

1. Short trucks defined by MTO as heavy 2 and 3 axle single unit trucks.
2. Long trucks defined by MTO as transports-combination units trucks.
2. Traffic forecasts based on a 2% per annum growth rate applied to all classes for Highway 401 between Guelph Line and RR25 and between Trafalgar Road and Highway 407. A 2.6% per annum growth rate was applied to all classes for Highway 401 between RR25 and James Snow Parkway.



APPENDIX I: Traffic Data

GROUP		VEHICLE TYPE		GROUP		VEHICLE TYPE	
BIN # 1 (0-649 Cm.)	CARS	PASSENGER CAR		BIN # 4 (Others)	CARS WITH TRAILER	CAR WITH TRAILER — ANY CAR ON THE LEFT TOWING A HOUSE, CAMPER, BOAT, OR TRAILER OF ANY TYPE. EXAMPLES ARE :	
		STATION WAGON					
		JEEP PASSENGER					
		HEARSE					
		AMBULANCE					
		TAXI					
		PICKUP					
		PANEL					
		SEDAN DELIVERY					
		PICKUP WITH LIVING QUARTERS					
		VAN (SINGLE REAR TIRE) INCLUDING SCHOOL BUS VAN					
		JEEP TOW TRUCK					
		LIGHT TRUCK (SINGLE REAR TIRE)					
CARS AND CARS WITH TRAILER WITH LICENCES FROM ANY PROVINCE OR STATE OUTSIDE ONTARIO ARE RECORDED UNDER THE HEADING 'OTHER'							
BIN # 2 (650-1199 Cm.)	SHORT TRUCKS (HEAVY 2 & 3 AXLE - SINGLE UNITS)	HEAVY TRUCK (DUAL REAR TIRES)		BIN # 3 (1200-2099 Cm.)	LONG TRUCKS (TRANSPORTS - COMBINATION UNITS)	COMBINATION UNIT (3 AXLES)	
		DUMP TRUCK				COMBINATION UNIT (4 AXLES)	
		STAKE TRUCK				COMBINATION UNIT (5 AXLES)	
		TRACTOR WITHOUT TRAILER (2 AXLES)				COMBINATION UNIT (6 AXLES)	
		SINGLE UNIT TRUCKS WITH 3 AXLES				COMBINATION UNIT (7 AXLES)	
		TRACTOR WITHOUT TRAILER (3 AXLES)				COMBINATION UNIT (8 AXLES)	
		TANK TRUCK (SINGLE UNIT)				COMBINATION UNIT (9 AXLES)	
		VAN (DUAL REAR TIRES)					
		MOTOR HOME					
		BIN # 3 (Special + others)	BUSES			SCHOOL BUS	
REGULAR BUS				MOTORCYCLE			
(BROAD DESCRIPTION OF BINS IN CLASS DATA.)				SNOWMOBILE			
						FARM TRACTOR	

02/06/13
12:14:50

TRAFFIC MGMT.OFFICE
CENTRAL REGION
DATA COLLECTION

40401632.TXT
40401633.CLS
Page:

*** Length Bin Classification (#202) ***

Site ID : 000040401635 Data Starts : 12:00 on 10/30/1
Info 1 : HWY 401 WB 3.4 Data Ends : 13:00 on 11/06/1
Info 2 : W OF RR 25 Adj. Factor : 1.000%

Group Number #1 (of 1)

Lane #1 Info : 401 WB PASSING
Modes : SPEED, LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

Lane #2 Info : 401 WB CENTRE
Modes : SPEED, LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

Lane #3 Info : 401 WB DRIVING
Modes : SPEED, LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

Date	Time	#1 0-649	#2 650-1249	#3 1250-2109	#4 2110-2300	#5 Other	Total
10/30/12	12:00	1568	132	438	65	8	2211
Tue	13:00	1950	173	498	76	8	2705
	14:00	2309	130	462	94	10	3005
	15:00	3112	126	428	86	13	3765
	16:00	3823	125	334	81	12	4375
	17:00	3596	82	254	77	13	4022
	18:00	2509	59	277	67	10	2922
	19:00	1843	55	237	59	6	2200
	20:00	1392	33	225	79	5	1734
	21:00	1100	44	209	72	12	1437
	22:00	939	23	193	65	14	1234
	23:00	682	29	165	44	12	932
=====							
Daily Totals		24823	1011	3720	865	123	30542
Percent		81%	3%	12%	3%	0%	
Average Hour		2068	84	310	72	10	2545

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

	#1 0-649	#2 650-1249	#3 1250-2109	#4 2110-2300	#5 Other	Total
10/31/12 00:00	385	29	159	36	4	613
Wed 01:00	214	21	159	28	4	426

02:00	147	22	149	32	2	352
03:00	108	17	166	19	4	314
04:00	187	23	209	48	7	474
05:00	485	51	314	52	12	914
06:00	1275	103	371	39	12	1800
07:00	2465	133	336	43	8	2985
08:00	2504	155	337	55	8	3059
09:00	1922	163	430	72	9	2596
10:00	1692	153	451	90	11	2397
11:00	1806	166	488	119	8	2587
12:00	1941	145	511	86	5	2688
13:00	2146	183	456	82	14	2881
14:00	2690	166	438	88	14	3396
15:00	3377	139	394	68	17	3995
16:00	4101	112	285	49	15	4562
17:00	3858	85	220	50	10	4223
18:00	2828	87	333	83	12	3343
19:00	1675	55	278	88	12	2108
20:00	1335	44	270	56	7	1712
21:00	1136	36	221	67	19	1479
22:00	892	25	213	52	14	1196
23:00	638	21	148	37	12	856
=====						
Daily Totals	39807	2134	7336	1439	240	50956
Percent	78%	4%	14%	3%	0%	
Average Hour	1658	88	305	59	10	2123

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

	#1	#2	#3	#4	#5	
		650-	1250-	2110-		
	0-649	1249	2109	2300	Other	Total
11/01/12 00:00	361	24	149	30	8	572
Thu 01:00	221	17	122	31	11	402
02:00	145	15	136	35	4	335
03:00	146	12	147	23	5	333
04:00	221	40	222	42	5	530
05:00	521	52	312	40	11	936
06:00	1354	91	361	36	8	1850
07:00	2739	135	331	39	6	3250
08:00	2678	140	366	38	10	3232
09:00	2115	162	437	67	9	2790
10:00	2034	164	525	97	13	2833
11:00	2053	149	541	73	9	2825
12:00	2001	165	517	104	12	2799
13:00	2241	175	491	97	19	3023
14:00	2823	173	493	90	11	3590
15:00	3467	171	418	95	16	4167
16:00	4145	115	310	66	14	4650
17:00	4016	113	246	63	11	4449
18:00	3375	88	301	53	9	3826
19:00	2279	48	285	55	9	2676
20:00	1861	48	234	54	10	2207
21:00	1509	41	191	52	9	1802
22:00	1187	36	219	36	6	1484
23:00	959	37	145	36	7	1184

	=====	=====	=====	=====	=====	=====
Daily Totals	44451	2211	7499	1352	232	55745
Percent	80%	4%	13%	2%	0%	
Average Hour	1852	92	312	56	9	2322

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total

11/02/12	00:00	567	26	163	26	7	789
Fri	01:00	263	18	131	30	7	449
	02:00	193	19	156	28	7	403
	03:00	171	15	152	29	5	372
	04:00	193	26	182	32	9	442
	05:00	484	45	354	45	5	933
	06:00	1238	92	342	42	10	1724
	07:00	2454	126	318	38	3	2939
	08:00	2638	139	334	45	3	3159
	09:00	2187	152	410	54	10	2813
	10:00	2020	157	477	63	7	2724
	11:00	2171	175	496	83	5	2930
	12:00	2409	144	464	83	10	3110
	13:00	2771	193	423	76	10	3473
	14:00	3217	154	388	69	17	3845
	15:00	2548	120	227	45	11	2951
	16:00	4603	132	305	57	12	5109
	17:00	4055	99	219	52	5	4430
	18:00	4150	111	293	52	5	4611
	19:00	3438	72	265	68	8	3851
	20:00	2346	50	187	42	11	2636
	21:00	1778	39	138	41	7	2003
	22:00	1177	32	126	27	4	1366
	23:00	1124	39	123	36	2	1324

Daily Totals		48195	2175	6673	1163	180	58386
Percent		83%	4%	11%	2%	0%	
Average Hour		2008	90	278	48	7	2432

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total

11/03/12	00:00	772	27	112	28	2	941
Sat	01:00	452	18	120	25	3	618
	02:00	238	6	109	15	1	369
	03:00	216	9	93	21	0	339
	04:00	194	20	69	13	3	299
	05:00	334	14	126	25	3	502
	06:00	720	30	105	25	4	884
	07:00	1164	44	114	17	6	1345
	08:00	1807	66	122	35	2	2032
	09:00	2804	59	142	32	3	3040
	10:00	2896	49	126	35	3	3109

11:00	3022	57	159	36	6	3280
12:00	3071	63	146	44	4	3328
13:00	2938	68	144	37	3	3190
14:00	3028	60	157	42	6	3293
15:00	3226	56	116	37	8	3443
16:00	3337	60	107	26	5	3535
17:00	3094	47	97	29	2	3269
18:00	2610	46	95	29	5	2785
19:00	2396	35	70	34	1	2536
20:00	2149	30	79	31	3	2292
21:00	1998	36	87	27	0	2148
22:00	1621	31	68	20	3	1743
23:00	1466	27	52	18	1	1564
=====						
Daily Totals	45553	958	2615	681	77	49884
Percent	91%	2%	5%	1%	0%	
Average Hour	1898	39	108	28	3	2078

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total
11/04/12	00:00	1130	29	37	18	0	1214
Sun	01:00	672	12	31	10	0	725
	02:00	395	11	15	9	1	431
	03:00	217	5	23	10	1	256
	04:00	148	8	27	6	0	189
	05:00	159	1	24	11	3	198
	06:00	207	5	32	13	3	260
	07:00	413	17	57	18	2	507
	08:00	755	17	72	28	3	875
	09:00	1096	22	104	25	3	1250
	10:00	2093	39	107	38	1	2278
	11:00	2338	31	115	41	2	2527
	12:00	2696	47	144	43	4	2934
	13:00	3029	50	132	43	2	3256
	14:00	3021	59	155	58	4	3297
	15:00	3180	62	170	55	1	3468
	16:00	3604	52	122	51	10	3839
	17:00	3878	65	151	51	3	4148
	18:00	3837	58	106	36	8	4045
	19:00	3690	65	115	46	6	3922
	20:00	3310	49	110	42	2	3513
	21:00	2959	59	109	47	6	3180
	22:00	2453	39	119	39	12	2662
	23:00	1543	32	102	31	5	1713
=====							
Daily Totals		46823	834	2179	769	82	50687
Percent		92%	2%	4%	2%	0%	
Average Hour		1950	34	90	32	3	2111

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

#1	#2	#3	#4	#5
650-	1250-	2110-		

		0-649	1249	2109	2300	Other	Total
11/05/12	00:00	924	16	82	26	7	1055
Mon	01:00	440	14	66	22	7	549
	02:00	215	14	70	14	3	316
	03:00	130	11	118	15	5	279
	04:00	126	14	93	21	3	257
	05:00	255	31	194	29	3	512
	06:00	652	60	313	33	8	1066
	07:00	1490	95	335	45	9	1974
	08:00	2876	160	388	40	5	3469
	09:00	2728	167	334	54	4	3287
	10:00	2037	171	498	61	5	2772
	11:00	1803	166	519	55	7	2550
	12:00	1857	182	569	79	11	2698
	13:00	2095	183	538	73	10	2899
	14:00	2116	180	482	76	17	2871
	15:00	2519	158	475	91	8	3251
	16:00	3394	160	390	97	11	4052
	17:00	3936	119	308	51	16	4430
	18:00	4084	113	257	57	7	4518
	19:00	2964	68	290	56	11	3389
	20:00	1951	69	286	70	7	2383
	21:00	1392	50	234	77	6	1759
	22:00	1180	38	205	57	21	1501
	23:00	888	29	206	46	11	1180
=====							
Daily Totals		42052	2268	7250	1245	202	53017
Percent		79%	4%	14%	2%	0%	
Average Hour		1752	94	302	51	8	2209

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total
11/06/12	00:00	610	30	167	44	9	860
Tue	01:00	322	21	148	26	8	525
	02:00	212	16	136	36	5	405
	03:00	150	13	136	25	4	328
	04:00	114	21	165	17	5	322
	05:00	182	33	239	35	3	492
	06:00	480	55	319	38	16	908
	07:00	1323	100	413	30	11	1877
	08:00	2801	144	382	50	5	3382
	09:00	2506	182	395	46	5	3134
	10:00	2018	162	509	72	10	2771
	11:00	1717	169	526	80	6	2498
	12:00	1700	170	509	88	8	2475
	13:00	1786	163	546	95	8	2598
=====							
Daily Totals		15921	1279	4590	682	103	22575
Percent		71%	6%	20%	3%	0%	
Average Hour		1137	91	327	48	7	1612

=====

GRAND TOTALS

=====

***** GROUP 1 (ALL LANES) FINAL *****

	#1	#2	#3	#4	#5	
		650-	1250-	2110-		
	0-649	1249	2109	2300	Other	Total
Grand Totals	307e3	12870	41862	8196	1239	371792
Percent	83%	3%	11%	2%	0%	
Average Hour	1809	75	246	48	7	2187

Group 1 Total: 371792

Of Days : 7.08

ADT : 52488

02/06/13
11:03:50

TRAFFIC MGMT.OFFICE
CENTRAL REGION
DATA COLLECTION

Page:

30401660.TXT (output)
30401635.CLS (input)

*** Length Bin Classification (#202) ***

Site ID : 000030401635 Data Starts : 12:00 on 10/30/1
Info 1 : HWY 401 EB 3.4 Data Ends : 14:00 on 11/06/1
Info 2 : W OF RR25 Adj. Factor : 1.000%

Group Number #1 (of 1)

Lane #1 Info : 401 EB PASSING
Modes : SPEED,LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

Lane #2 Info : 401 EB CENTRE
Modes : SPEED,LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

Lane #3 Info : 401 EB DRIVING
Modes : SPEED,LENGTH
Sensors : Pres-Pres Sensor Spacing: 360cm (Loop Length= 201cm)

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

Date	Time	#1 0-649	#2 650-1249	#3 1250-2109	#4 2110-2300	#5 Other	Total
10/30/12	12:00	1644	140	473	70	10	2337
Tue	13:00	1756	139	428	57	2	2382
	14:00	1871	142	440	51	10	2514
	15:00	1976	147	421	37	8	2589
	16:00	2389	108	375	33	5	2910
	17:00	2766	112	343	39	7	3267
	18:00	1885	69	313	48	2	2317
	19:00	1333	52	344	85	13	1827
	20:00	1033	50	300	52	11	1446
	21:00	833	30	275	50	9	1197
	22:00	722	25	222	50	3	1022
	23:00	487	20	221	44	7	779
		=====	=====	=====	=====	=====	=====
	Daily Totals	18695	1034	4155	616	87	24587
	Percent	76%	4%	17%	3%	0%	
	Average Hour	1557	86	346	51	7	2048

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

Date	Time	#1 0-649	#2 650-1249	#3 1250-2109	#4 2110-2300	#5 Other	Total
10/31/12	00:00	259	23	176	45	9	512
Wed	01:00	158	21	155	31	0	365

02:00	128	14	137	25	2	306
03:00	185	28	158	19	0	390
04:00	427	32	189	31	4	683
05:00	1663	61	302	47	6	2079
06:00	3566	113	327	38	4	4048
07:00	3543	96	292	42	7	3980
08:00	2580	110	341	60	6	3097
09:00	2292	152	436	54	13	2947
10:00	1898	152	528	59	9	2646
11:00	1805	149	517	69	12	2552
12:00	1777	145	464	57	4	2447
13:00	1925	150	570	65	8	2718
14:00	2129	143	457	69	9	2807
15:00	2282	156	398	44	4	2884
16:00	2637	132	355	37	5	3166
17:00	3070	86	377	42	10	3585
18:00	1906	66	357	46	7	2382
19:00	1098	75	339	46	15	1573
20:00	943	44	269	63	6	1325
21:00	915	32	272	54	12	1285
22:00	719	17	235	51	4	1026
23:00	473	21	236	42	5	777
=====						
Daily Totals	38378	2018	7887	1136	161	49580
Percent	77%	4%	16%	2%	0%	
Average Hour	1599	84	328	47	6	2065

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total
11/01/12	00:00	284	18	205	50	3	560
Thu	01:00	174	19	156	35	3	387
	02:00	150	23	170	29	3	375
	03:00	226	24	164	30	2	446
	04:00	478	31	224	27	1	761
	05:00	1719	85	338	33	9	2184
	06:00	3670	94	333	40	8	4145
	07:00	3715	105	300	43	14	4177
	08:00	2644	128	312	55	22	3161
	09:00	2695	165	466	65	25	3416
	10:00	2161	160	511	74	8	2914
	11:00	2182	139	541	72	11	2945
	12:00	2193	154	538	74	14	2973
	13:00	2236	156	521	76	9	2998
	14:00	2389	149	497	58	4	3097
	15:00	2630	166	436	53	7	3292
	16:00	2965	162	384	53	5	3569
	17:00	3348	122	308	54	6	3838
	18:00	2632	105	343	69	6	3155
	19:00	1840	73	351	63	9	2336
	20:00	1407	63	301	70	15	1856
	21:00	1242	34	270	71	4	1621
	22:00	940	29	233	47	6	1255
	23:00	575	17	226	54	6	878

	=====	=====	=====	=====	=====	=====
Daily Totals	44495	2221	8128	1295	200	56339
Percent	79%	4%	14%	2%	0%	
Average Hour	1853	92	338	53	8	2347

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total

11/02/12	00:00	365	11	186	36	6	604
Fri	01:00	217	22	167	42	2	450
	02:00	148	26	146	28	5	353
	03:00	211	27	167	17	4	426
	04:00	409	44	190	53	2	698
	05:00	1661	61	310	55	10	2097
	06:00	3483	121	340	39	7	3990
	07:00	3500	102	308	47	12	3969
	08:00	1756	112	240	41	33	2182
	09:00	2119	163	383	65	24	2754
	10:00	2293	168	548	72	4	3085
	11:00	2410	157	532	68	18	3185
	12:00	2401	168	512	58	4	3143
	13:00	2847	162	544	52	2	3607
	14:00	3234	182	507	74	10	4007
	15:00	3313	143	432	49	4	3941
	16:00	3511	147	359	42	2	4061
	17:00	3792	138	324	45	2	4301
	18:00	3426	101	327	55	10	3919
	19:00	2665	74	293	57	6	3095
	20:00	1876	68	271	46	13	2274
	21:00	1464	41	223	53	7	1788
	22:00	1118	37	185	42	6	1388
	23:00	837	22	170	37	2	1068

Daily Totals		49056	2297	7664	1173	195	60385
Percent		81%	4%	13%	2%	0%	
Average Hour		2044	95	319	48	8	2516

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total

11/03/12	00:00	541	20	164	26	4	755
Sat	01:00	346	19	126	21	0	512
	02:00	282	21	99	20	2	424
	03:00	224	21	113	22	2	382
	04:00	255	23	107	17	3	405
	05:00	594	29	125	22	1	771
	06:00	951	59	122	22	4	1158
	07:00	1401	78	137	25	4	1645
	08:00	1877	78	165	33	4	2157
	09:00	2357	82	166	29	2	2636
	10:00	2862	89	207	39	1	3198

11:00	3303	82	198	19	2	3604
12:00	3162	79	199	31	3	3474
13:00	3331	65	192	25	1	3614
14:00	3340	68	155	36	1	3600
15:00	3492	64	175	35	2	3768
16:00	3808	61	167	20	2	4058
17:00	3684	66	130	28	1	3909
18:00	2674	52	94	25	0	2845
19:00	1963	41	102	27	2	2135
20:00	1645	19	74	26	4	1768
21:00	1558	19	88	25	2	1692
22:00	1300	27	75	21	1	1424
23:00	942	15	86	18	0	1061
=====						
Daily Totals	45892	1177	3266	612	48	50995
Percent	90%	2%	6%	1%	0%	
Average Hour	1912	49	136	25	2	2124

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total
11/04/12	00:00	734	11	61	21	0	827
Sun	01:00	466	5	39	17	2	529
	02:00	316	4	35	19	1	375
	03:00	223	8	22	9	2	264
	04:00	174	7	37	7	0	225
	05:00	180	14	35	3	0	232
	06:00	364	14	47	13	4	442
	07:00	439	15	44	9	1	508
	08:00	819	28	66	18	1	932
	09:00	1108	34	71	12	0	1225
	10:00	1655	50	88	24	2	1819
	11:00	2680	69	68	28	2	2847
	12:00	2834	36	102	18	3	2993
	13:00	2649	42	97	32	1	2821
	14:00	3511	37	91	24	2	3665
	15:00	3572	33	86	26	3	3720
	16:00	3905	37	103	21	1	4067
	17:00	4060	50	99	30	2	4241
	18:00	3690	45	102	41	5	3883
	19:00	3207	42	88	26	5	3368
	20:00	2997	29	99	31	6	3162
	21:00	2169	33	92	24	4	2322
	22:00	2045	18	91	23	1	2178
	23:00	1360	20	98	17	0	1495
=====							
Daily Totals		45157	681	1761	493	48	48140
Percent		94%	1%	4%	1%	0%	
Average Hour		1881	28	73	20	2	2005

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

#1	#2	#3	#4	#5
650-	1250-	2110-		

		0-649	1249	2109	2300	Other	Total
11/05/12	00:00	782	12	80	38	6	918
Mon	01:00	445	15	71	25	5	561
	02:00	230	12	76	16	1	335
	03:00	102	10	81	12	2	207
	04:00	180	21	110	16	4	331
	05:00	500	36	183	26	1	746
	06:00	2046	66	281	33	4	2430
	07:00	4096	125	373	46	10	4650
	08:00	3261	104	241	39	18	3663
	09:00	2773	139	363	64	30	3369
	10:00	2349	162	428	68	14	3021
	11:00	1979	175	473	57	11	2695
	12:00	2031	154	482	57	9	2733
	13:00	2010	159	457	60	6	2692
	14:00	1970	153	475	60	4	2662
	15:00	2078	192	492	56	5	2823
	16:00	2035	155	375	44	8	2617
	17:00	2517	141	348	53	6	3065
	18:00	2935	102	293	65	10	3405
	19:00	1612	54	175	31	3	1875
	20:00	1890	83	458	79	11	2521
	21:00	1100	47	274	60	10	1491
	22:00	913	35	266	43	8	1265
	23:00	697	22	208	54	4	985
=====							
Daily Totals		40531	2174	7063	1102	190	51060
Percent		79%	4%	14%	2%	0%	
Average Hour		1688	90	294	45	7	2127

***** Group #1 of 1 (Lanes 1,2 & 3) Length Bin Classification *****

		#1	#2	#3	#4	#5	
			650-	1250-	2110-		
		0-649	1249	2109	2300	Other	Total
11/06/12	00:00	423	25	207	42	6	703
Tue	01:00	250	7	177	42	2	478
	02:00	155	16	143	40	0	354
	03:00	156	16	141	26	5	344
	04:00	199	31	135	23	4	392
	05:00	437	40	192	38	6	713
	06:00	1821	66	323	51	9	2270
	07:00	4004	113	379	52	3	4551
	08:00	3895	110	351	39	11	4406
	09:00	2628	142	355	44	11	3180
	10:00	2468	157	463	59	9	3156
	11:00	1990	117	487	60	6	2660
	12:00	1923	178	582	63	7	2753
	13:00	1858	146	515	70	9	2598
	14:00	2015	156	525	53	7	2756
=====							
Daily Totals		24222	1320	4975	702	95	31314
Percent		77%	4%	16%	2%	0%	
Average Hour		1614	88	331	46	6	2087

=====

GRAND TOTALS

=====

***** GROUP 1 (ALL LANES) FINAL *****

	#1	#2	#3	#4	#5	
		650-	1250-	2110-		
	0-649	1249	2109	2300	Other	Total
Grand Totals	306e3	12922	44899	7129	1024	372400
Percent	82%	3%	12%	2%	0%	
Average Hour	1791	75	262	41	5	2177

Group 1 Total: 372400

Of Days : 7.12

ADT : 52267

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Tuesday, April 19, 2016

Time/Class	1	2	3	4	5	Total
0:00	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2:00	0	0	0	0	0	0
3:00	0	0	0	0	0	0
4:00	0	0	0	0	0	0
5:00	0	0	0	0	0	0
6:00	0	0	0	0	0	0
7:00	0	0	0	0	0	0
8:00	0	0	0	0	0	0
9:00	0	0	0	0	0	0
10:00	0	0	0	0	0	0
11:00	0	0	0	0	0	0
12:00	0	0	0	0	0	0
13:00	0	0	0	0	0	0
14:00	0	0	0	0	0	0
15:00	0	0	0	0	0	0
16:00	3,556	132	324	126	7	4,145
17:00	2,774	72	219	120	20	3,205
18:00	2,136	84	230	172	26	2,648
19:00	1,482	73	215	134	21	1,925
20:00	1,336	51	170	122	11	1,690
21:00	1,123	36	164	108	12	1,443
22:00	772	38	159	113	11	1,093
23:00	423	17	121	94	16	671
Daily Total	13,602	503	1,602	989	124	16,820

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Wednesday, April 20, 2016

Time/Class	1	2	3	4	5	Total
0:00	227	13	106	63	7	416
1:00	218	27	111	61	8	425
2:00	234	24	116	82	8	464
3:00	488	39	170	76	21	794
4:00	1,644	83	275	105	14	2,121
5:00	3,448	151	331	82	11	4,023
6:00	3,560	125	314	75	14	4,088
7:00	1,994	120	247	67	15	2,443
8:00	2,134	139	289	90	16	2,668
9:00	2,328	207	463	142	27	3,167
10:00	1,954	192	430	132	19	2,727
11:00	1,947	131	382	115	18	2,593
12:00	2,005	185	325	131	16	2,662
13:00	2,833	224	466	160	28	3,711
14:00	2,248	166	372	102	17	2,905
15:00	2,689	152	314	111	6	3,272
16:00	3,465	126	290	130	15	4,026
17:00	2,846	108	253	140	17	3,364
18:00	1,885	79	214	122	21	2,321
19:00	1,531	69	206	122	16	1,944
20:00	1,405	41	181	100	14	1,741
21:00	1,055	24	165	98	14	1,356
22:00	828	28	178	80	13	1,127
23:00	448	23	139	64	6	680
Daily Total	43,414	2,476	6,337	2,450	361	55,038

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Thursday, April 21, 2016

Time/Class	1	2	3	4	5	Total
0:00	265	20	132	86	10	513
1:00	226	17	86	43	3	375
2:00	235	28	93	70	6	432
3:00	453	42	139	67	18	719
4:00	1,702	97	229	83	8	2,119
5:00	3,259	116	298	70	14	3,757
6:00	2,943	98	273	85	9	3,408
7:00	2,264	104	213	74	9	2,664
8:00	2,646	209	407	117	23	3,402
9:00	2,327	159	422	129	23	3,060
10:00	2,444	202	452	151	18	3,267
11:00	2,152	207	418	119	28	2,924
12:00	2,059	174	349	129	12	2,723
13:00	2,562	212	385	135	25	3,319
14:00	3,075	194	353	167	18	3,807
15:00	3,007	160	298	110	12	3,587
16:00	3,734	133	311	132	12	4,322
17:00	2,964	115	283	163	36	3,561
18:00	2,107	68	235	153	21	2,584
19:00	1,517	69	209	151	22	1,968
20:00	1,561	44	206	149	17	1,977
21:00	1,250	35	186	137	13	1,621
22:00	986	29	207	104	16	1,342
23:00	494	21	113	107	14	749
Daily Total	46,232	2,553	6,297	2,731	387	58,200

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Friday, April 22, 2016

Time/Class	1	2	3	4	5	Total
0:00	236	18	99	88	8	449
1:00	275	23	83	72	7	460
2:00	288	29	141	56	10	524
3:00	437	34	161	83	13	728
4:00	1,827	91	293	111	20	2,342
5:00	2,866	128	274	86	15	3,369
6:00	2,973	109	229	72	18	3,401
7:00	2,531	148	297	96	15	3,087
8:00	2,518	171	345	115	23	3,172
9:00	2,439	164	324	97	11	3,035
10:00	2,722	247	525	178	22	3,694
11:00	2,959	194	449	129	16	3,747
12:00	2,831	185	384	97	22	3,519
13:00	2,759	180	313	109	29	3,390
14:00	2,701	156	283	103	22	3,265
15:00	3,016	139	331	108	14	3,608
16:00	3,353	106	253	108	17	3,837
17:00	3,237	118	246	151	13	3,765
18:00	3,406	112	259	198	22	3,997
19:00	2,253	76	173	109	14	2,625
20:00	1,711	59	162	123	10	2,065
21:00	1,679	43	125	113	11	1,971
22:00	1,280	40	127	90	5	1,542
23:00	605	24	101	54	4	788
Daily Total	50,902	2,594	5,977	2,546	361	62,380

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Saturday, April 23, 2016

Time/Class	1	2	3	4	5	Total
0:00	419	24	70	74	6	593
1:00	335	35	57	54	4	485
2:00	290	30	85	56	6	467
3:00	298	32	105	62	4	501
4:00	665	47	106	57	4	879
5:00	972	73	67	48	6	1,166
6:00	1,554	54	98	51	13	1,770
7:00	2,274	74	110	68	11	2,537
8:00	3,060	88	127	63	6	3,344
9:00	3,747	96	146	59	6	4,054
10:00	3,093	71	120	67	3	3,354
11:00	3,029	65	133	66	6	3,299
12:00	3,325	97	141	98	13	3,674
13:00	2,483	80	96	66	9	2,734
14:00	2,678	94	90	72	8	2,942
15:00	2,694	90	242	78	11	3,115
16:00	2,880	71	69	42	6	3,068
17:00	3,482	86	91	100	3	3,762
18:00	2,753	55	60	68	5	2,941
19:00	2,218	35	61	47	5	2,366
20:00	1,807	32	57	58	4	1,958
21:00	1,725	32	62	49	1	1,869
22:00	1,374	22	51	30	3	1,480
23:00	822	10	20	36	3	891
Daily Total	47,977	1,393	2,264	1,469	146	53,249

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Sunday, April 24, 2016

Time/Class	1	2	3	4	5	Total
0:00	543	10	23	23	2	601
1:00	330	9	18	30	0	387
2:00	272	10	24	19	0	325
3:00	250	10	21	30	4	315
4:00	445	11	46	22	1	525
5:00	659	12	35	23	1	730
6:00	919	26	47	18	2	1,012
7:00	1,363	40	53	33	2	1,491
8:00	2,499	52	60	27	3	2,641
9:00	3,125	60	67	32	8	3,292
10:00	3,571	59	72	57	1	3,760
11:00	3,847	61	83	69	6	4,066
12:00	3,547	74	62	41	2	3,726
13:00	3,362	52	56	38	2	3,510
14:00	3,634	57	62	55	5	3,813
15:00	2,818	80	68	51	7	3,024
16:00	3,809	73	65	58	10	4,015
17:00	2,519	46	53	59	9	2,686
18:00	2,066	42	40	45	12	2,205
19:00	2,312	42	73	56	12	2,495
20:00	2,053	31	65	58	12	2,219
21:00	1,392	25	59	54	5	1,535
22:00	777	11	67	42	9	906
23:00	398	10	44	38	4	494
Daily Total	46,510	903	1,263	978	119	49,773

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Monday, April 25, 2016

Time/Class	1	2	3	4	5	Total
0:00	228	13	53	33	3	330
1:00	151	13	61	30	5	260
2:00	217	21	81	36	10	365
3:00	561	31	170	78	8	848
4:00	2,080	80	244	59	8	2,471
5:00	3,333	117	286	83	7	3,826
6:00	3,474	94	249	54	7	3,878
7:00	2,187	121	239	98	16	2,661
8:00	2,466	147	299	124	15	3,051
9:00	2,259	179	415	107	22	2,982
10:00	2,090	112	357	78	17	2,654
11:00	2,242	173	379	104	24	2,922
12:00	1,900	151	398	72	10	2,531
13:00	1,871	155	318	89	5	2,438
14:00	2,789	202	364	102	14	3,471
15:00	2,682	48	45	27	6	2,808
16:00	3,314	138	285	101	17	3,855
17:00	2,269	73	237	114	24	2,717
18:00	1,456	52	174	76	16	1,774
19:00	1,161	47	214	98	16	1,536
20:00	1,172	43	203	109	15	1,542
21:00	919	37	158	108	13	1,235
22:00	747	26	192	78	9	1,052
23:00	271	12	89	70	10	452
Daily Total	41,839	2,085	5,510	1,928	297	51,659

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Eastbound

Date: Tuesday, April 26, 2016

Time/Class	1	2	3	4	5	Total
0:00	189	16	108	53	7	373
1:00	204	19	99	30	13	365
2:00	207	28	118	38	3	394
3:00	430	21	112	45	7	615
4:00	1,893	94	262	97	20	2,366
5:00	2,425	106	292	66	13	2,902
6:00	2,342	82	178	78	13	2,693
7:00	1,622	90	167	76	31	1,986
8:00	1,645	123	291	61	26	2,146
9:00	2,348	188	433	118	13	3,100
10:00	2,067	126	312	75	9	2,589
11:00	2,113	131	398	119	20	2,781
12:00	1,966	138	369	99	19	2,591
13:00	2,361	168	404	118	9	3,060
14:00	2,416	138	322	109	14	2,999
15:00	2,921	155	279	99	20	3,474
16:00	0	0	0	0	0	0
17:00	0	0	0	0	0	0
18:00	0	0	0	0	0	0
19:00	0	0	0	0	0	0
20:00	0	0	0	0	0	0
21:00	0	0	0	0	0	0
22:00	0	0	0	0	0	0
23:00	0	0	0	0	0	0
Daily Total	27,149	1,623	4,144	1,281	237	34,434

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Tuesday, April 19, 2016

Time/Class	1	2	3	4	5	Total
0:00	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2:00	0	0	0	0	0	0
3:00	0	0	0	0	0	0
4:00	0	0	0	0	0	0
5:00	0	0	0	0	0	0
6:00	0	0	0	0	0	0
7:00	0	0	0	0	0	0
8:00	0	0	0	0	0	0
9:00	0	0	0	0	0	0
10:00	0	0	0	0	0	0
11:00	0	0	0	0	0	0
12:00	0	0	0	0	0	0
13:00	0	0	0	0	0	0
14:00	0	0	0	0	0	0
15:00	0	0	0	0	0	0
16:00	3,229	60	271	1	0	3,561
17:00	2,701	37	321	1	0	3,060
18:00	1,837	40	291	1	2	2,171
19:00	1,974	34	326	0	0	2,334
20:00	1,760	34	310	0	1	2,105
21:00	1,376	31	254	0	0	1,661
22:00	768	21	206	0	1	996
23:00	501	20	156	0	0	677
Daily Total	14,146	277	2,135	3	4	16,565

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Wednesday, April 20, 2016

Time/Class	1	2	3	4	5	Total
0:00	344	26	229	0	3	602
1:00	169	18	189	0	4	380
2:00	158	15	181	0	1	355
3:00	247	39	254	0	0	540
4:00	627	92	359	0	0	1,078
5:00	1,885	132	480	0	1	2,498
6:00	2,873	128	409	0	2	3,412
7:00	2,163	131	336	0	1	2,631
8:00	2,356	138	462	0	0	2,956
9:00	2,121	140	599	0	2	2,862
10:00	2,188	138	534	0	0	2,860
11:00	2,318	174	619	0	1	3,112
12:00	2,556	142	562	1	2	3,263
13:00	2,828	129	439	0	0	3,396
14:00	2,146	99	301	0	0	2,546
15:00	3,322	91	318	0	0	3,731
16:00	3,772	67	294	0	0	4,133
17:00	3,161	63	321	0	0	3,545
18:00	2,673	53	336	0	0	3,062
19:00	1,935	49	294	0	1	2,279
20:00	1,718	27	230	0	1	1,976
21:00	1,134	29	239	0	0	1,402
22:00	857	15	189	0	1	1,062
23:00	620	22	158	0	1	801
Daily Total	44,171	1,957	8,332	1	21	54,482

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Thursday, April 21, 2016

Time/Class	1	2	3	4	5	Total
0:00	301	17	157	0	1	476
1:00	196	27	167	0	5	395
2:00	185	20	190	0	1	396
3:00	252	42	259	0	3	556
4:00	720	102	323	0	0	1,145
5:00	1,773	109	421	0	1	2,304
6:00	2,411	98	256	0	1	2,766
7:00	2,297	162	428	0	1	2,888
8:00	2,031	185	491	0	1	2,708
9:00	2,213	170	533	1	0	2,917
10:00	2,396	155	578	0	0	3,129
11:00	2,501	149	660	0	3	3,313
12:00	2,162	132	502	0	1	2,797
13:00	2,958	153	410	0	0	3,521
14:00	3,311	111	412	0	0	3,834
15:00	3,939	83	294	0	0	4,316
16:00	3,279	62	256	0	0	3,597
17:00	3,292	69	291	0	0	3,652
18:00	2,957	64	360	0	0	3,381
19:00	2,079	39	252	1	0	2,371
20:00	2,031	30	284	0	2	2,347
21:00	1,615	38	238	0	0	1,891
22:00	1,108	20	173	0	0	1,301
23:00	583	27	126	0	1	737
Daily Total	46,590	2,064	8,061	2	21	56,738

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Friday, April 22, 2016

Time/Class	1	2	3	4	5	Total
0:00	328	21	127	0	3	479
1:00	217	20	172	0	1	410
2:00	199	20	187	0	1	407
3:00	309	55	250	0	1	615
4:00	631	89	289	1	1	1,011
5:00	1,740	124	400	0	0	2,264
6:00	2,877	136	374	0	1	3,388
7:00	2,721	129	322	0	0	3,172
8:00	2,460	157	492	0	0	3,109
9:00	2,249	140	461	0	0	2,850
10:00	2,744	155	477	0	0	3,376
11:00	2,511	127	393	0	0	3,031
12:00	3,136	153	400	0	0	3,689
13:00	2,408	118	311	0	0	2,837
14:00	3,116	91	280	0	0	3,487
15:00	3,413	88	254	0	0	3,755
16:00	3,012	63	203	0	0	3,278
17:00	3,545	53	258	0	0	3,856
18:00	3,052	66	308	0	0	3,426
19:00	2,863	35	226	0	0	3,124
20:00	2,165	33	207	0	1	2,406
21:00	1,705	29	149	0	0	1,883
22:00	1,423	19	130	0	0	1,572
23:00	915	14	97	1	0	1,027
Daily Total	49,739	1,935	6,767	2	9	58,452

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Saturday, April 23, 2016

Time/Class	1	2	3	4	5	Total
0:00	619	21	141	0	0	781
1:00	354	17	110	0	4	485
2:00	320	15	117	0	0	452
3:00	249	13	126	0	0	388
4:00	447	21	112	0	0	580
5:00	946	31	131	0	2	1,110
6:00	1,558	37	135	1	1	1,732
7:00	2,268	58	144	0	0	2,470
8:00	2,831	64	171	0	0	3,066
9:00	3,045	40	138	1	0	3,224
10:00	3,606	69	159	0	0	3,834
11:00	2,542	51	103	0	0	2,696
12:00	3,274	35	128	0	1	3,438
13:00	3,574	51	161	0	0	3,786
14:00	3,215	47	143	0	0	3,405
15:00	2,615	48	180	0	0	2,843
16:00	3,691	63	118	0	0	3,872
17:00	3,417	35	109	0	0	3,561
18:00	2,785	34	124	0	0	2,943
19:00	2,596	26	100	0	0	2,722
20:00	2,243	15	84	0	0	2,342
21:00	1,704	18	66	0	0	1,788
22:00	1,561	9	45	0	0	1,615
23:00	967	16	39	0	0	1,022
Daily Total	50,427	834	2,884	2	8	54,155

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Sunday, April 24, 2016

Time/Class	1	2	3	4	5	Total
0:00	712	15	41	0	0	768
1:00	412	12	25	0	0	449
2:00	295	5	41	0	0	341
3:00	213	2	45	0	0	260
4:00	274	4	51	0	0	329
5:00	703	9	87	0	0	799
6:00	1,001	15	105	0	0	1,121
7:00	1,442	26	139	0	0	1,607
8:00	2,243	40	170	0	0	2,453
9:00	2,591	35	157	0	0	2,783
10:00	3,341	53	195	0	0	3,589
11:00	3,723	59	212	0	0	3,994
12:00	3,338	39	188	0	0	3,565
13:00	3,620	43	207	0	0	3,870
14:00	3,194	26	186	0	0	3,406
15:00	3,374	35	119	0	1	3,529
16:00	4,053	43	146	0	0	4,242
17:00	3,058	38	131	0	0	3,227
18:00	3,213	64	180	0	0	3,457
19:00	2,814	34	134	0	0	2,982
20:00	2,060	28	132	1	0	2,221
21:00	1,501	28	140	0	0	1,669
22:00	969	15	102	0	0	1,086
23:00	553	18	93	0	0	664
Daily Total	48,697	686	3,026	1	1	52,411

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Monday, April 25, 2016

Time/Class	1	2	3	4	5	Total
0:00	314	14	112	0	1	441
1:00	185	11	121	0	0	317
2:00	210	14	148	0	0	372
3:00	328	28	237	0	0	593
4:00	776	81	318	0	0	1,175
5:00	2,035	102	412	1	0	2,550
6:00	2,724	152	436	0	1	3,313
7:00	2,585	144	396	0	0	3,125
8:00	2,381	186	508	0	0	3,075
9:00	1,769	113	391	0	0	2,273
10:00	2,266	160	551	0	1	2,978
11:00	1,604	134	521	1	0	2,260
12:00	2,346	165	571	0	3	3,085
13:00	2,860	117	480	0	0	3,457
14:00	3,103	109	411	0	0	3,623
15:00	3,949	49	153	0	0	4,151
16:00	3,988	65	337	0	0	4,390
17:00	2,478	56	354	0	0	2,888
18:00	2,080	38	349	0	0	2,467
19:00	1,639	25	340	0	1	2,005
20:00	1,538	27	301	0	2	1,868
21:00	1,276	33	261	0	0	1,570
22:00	933	24	191	0	1	1,149
23:00	498	18	153	0	2	671
Daily Total	43,865	1,865	8,052	2	12	53,796

VEHICLE CLASSIFICATION

HWY 401 BTWN JAMES SNOW PKWY IC-324-MILTON & MILTON-HALTON HILLS LTS(TO THE NORTH)

Central

Geo ID: 476950000

Direction: Westbound

Date: Tuesday, April 26, 2016

Time/Class	1	2	3	4	5	Total
0:00	262	15	164	0	2	443
1:00	192	18	160	0	2	372
2:00	189	22	193	0	1	405
3:00	256	41	241	0	0	538
4:00	736	99	369	0	0	1,204
5:00	1,707	128	407	0	1	2,243
6:00	2,825	169	474	0	0	3,468
7:00	2,448	113	267	0	0	2,828
8:00	1,997	150	450	0	0	2,597
9:00	1,968	173	507	0	1	2,649
10:00	2,184	157	635	0	2	2,978
11:00	1,618	131	519	0	1	2,269
12:00	2,231	156	559	0	1	2,947
13:00	3,221	137	565	0	0	3,923
14:00	3,137	114	499	0	2	3,752
15:00	3,134	72	299	1	0	3,506
16:00	0	0	0	0	0	0
17:00	0	0	0	0	0	0
18:00	0	0	0	0	0	0
19:00	0	0	0	0	0	0
20:00	0	0	0	0	0	0
21:00	0	0	0	0	0	0
22:00	0	0	0	0	0	0
23:00	0	0	0	0	0	0
Daily Total	28,105	1,695	6,308	1	13	36,122

Weekly Volume Summary

Wed, Aug 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB

Report Dates: May 13, 2014 to May 19, 2014

Hour Interval	Tue 14/05/13	Wed 14	Thu 15	Fri 16	Sat 17	Sun 18	Mon 19	Tue 20
0:00- 1:00	547	548	541	606	678	756	674	
1:00- 2:00	353	329	384	417	468	431	375	
2:00- 3:00	353	334	340	378	408	303	257	
3:00- 4:00	332	371	384	450	383	232	229	
4:00- 5:00	866	784	844	864	453	296	311	
5:00- 6:00	2,604	2,623	2,538	2,320	882	413	491	
6:00- 7:00	3,988	4,364	4,378	3,799	1,308	599	604	
7:00- 8:00	4,408	4,260	4,080	3,607	1,553	738	688	
8:00- 9:00	2,875	3,111	3,374	3,125	2,172	1,173	931	
9:00-10:00	3,243	3,241	3,242	3,333	2,893	1,917	1,514	
10:00-11:00	2,887	3,002	3,021	3,393	3,412	2,654	2,083	
11:00-12:00	2,769	2,883	3,084	3,412	3,648	3,105	2,547	
AM Total	25,225	25,850	26,210	25,704	18,258	12,617	10,704	0
12:00-13:00	2,607	2,851	3,013	3,412	3,458	3,089	2,681	
13:00-14:00	2,668	2,850	3,097	3,586	3,339	3,207	2,637	
14:00-15:00	2,920	2,936	3,290	3,589	3,468	3,210	2,900	
15:00-16:00	3,125	3,490	3,308	3,744	3,276	3,077	3,015	
16:00-17:00	3,346	3,511	3,636	3,871	3,204	3,019	3,111	
17:00-18:00	3,472	3,180	3,866	4,054	2,939	2,869	2,970	
18:00-19:00	2,927	3,349	3,326	3,444	2,422	2,589	2,737	
19:00-20:00	1,957	2,031	2,500	3,229	2,103	2,434	2,653	
20:00-21:00	1,603	1,579	1,934	2,590	1,827	2,088	2,367	
21:00-22:00	1,422	1,450	1,719	1,984	1,604	1,849	1,960	
22:00-23:00	1,137	1,212	1,313	1,417	1,336	1,501	1,256	
23:00-24:00	765	795	945	995	1,020	1,132	1,056	
PM Total	27,949	29,234	31,947	35,915	29,996	30,064	29,343	0
24 Hr. Total	53,174	55,084	58,157	61,619	48,254	42,681	40,047	0
Noon - Noon	53,799	55,444	57,651	54,173	42,613	40,768	29,343	

Weekly Volume Summary

Wed, Aug 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: WB

Report Dates: May 13, 2014 to May 19, 2014

Hour Interval	Tue 14/05/13	Wed 14	Thu 15	Fri 16	Sat 17	Sun 18	Mon 19	Tue 20
0:00- 1:00	551	658	618	749	875	781	853	
1:00- 2:00	409	440	435	477	530	581	507	
2:00- 3:00	328	389	378	405	426	399	298	
3:00- 4:00	324	355	308	370	354	272	298	
4:00- 5:00	477	492	534	523	357	231	219	
5:00- 6:00	949	970	1,009	918	565	277	347	
6:00- 7:00	2,000	2,046	2,088	1,965	989	529	581	
7:00- 8:00	3,386	3,422	3,277	3,050	1,627	919	933	
8:00- 9:00	3,213	3,263	3,134	2,966	2,257	1,186	1,004	
9:00-10:00	2,878	2,910	2,890	2,578	2,941	1,945	1,506	
10:00-11:00	2,647	2,737	2,982	2,801	3,528	2,607	2,333	
11:00-12:00	2,672	2,855	2,757	3,233	3,870	3,039	2,985	
AM Total	19,834	20,537	20,410	20,035	18,319	12,766	11,864	0
12:00-13:00	2,706	2,733	2,930	3,499	3,603	3,459	3,051	
13:00-14:00	2,853	3,195	3,240	3,889	3,303	3,576	3,401	
14:00-15:00	3,345	3,473	3,663	4,240	3,178	3,424	3,599	
15:00-16:00	4,273	4,054	4,041	4,535	2,996	3,336	3,550	
16:00-17:00	4,640	4,858	4,353	4,846	2,994	3,214	3,300	
17:00-18:00	4,574	4,261	4,479	4,499	2,875	2,975	3,052	
18:00-19:00	3,472	3,606	3,976	3,564	2,570	2,863	2,890	
19:00-20:00	2,430	2,683	3,323	3,639	2,366	2,495	2,939	
20:00-21:00	1,898	2,044	2,311	2,717	2,018	2,282	2,726	
21:00-22:00	1,593	1,705	1,994	2,157	1,729	1,949	2,339	
22:00-23:00	1,340	1,412	1,619	1,661	1,536	1,577	1,698	
23:00-24:00	1,073	1,121	1,318	1,258	1,188	1,216	1,156	
PM Total	34,197	35,145	37,247	40,504	30,356	32,366	33,701	0
24 Hr. Total	54,031	55,682	57,657	60,539	48,675	45,132	45,565	0
Noon - Noon	54,734	55,555	57,282	58,823	43,122	44,230	33,701	

Weekly Volume Summary

Wed, Aug 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB/WB

Report Dates: May 13, 2014 to May 19, 2014

Hour Interval	Tue 14/05/13	Wed 14	Thu 15	Fri 16	Sat 17	Sun 18	Mon 19	Tue 20
0:00- 1:00	1,098	1,206	1,159	1,355	1,553	1,537	1,527	
1:00- 2:00	762	769	819	894	998	1,012	882	
2:00- 3:00	681	723	718	783	834	702	555	
3:00- 4:00	656	726	692	820	737	504	527	
4:00- 5:00	1,343	1,276	1,378	1,387	810	527	530	
5:00- 6:00	3,553	3,593	3,547	3,238	1,447	690	838	
6:00- 7:00	5,988	6,410	6,466	5,764	2,297	1,128	1,185	
7:00- 8:00	7,794	7,682	7,357	6,657	3,180	1,657	1,621	
8:00- 9:00	6,088	6,374	6,508	6,091	4,429	2,359	1,935	
9:00-10:00	6,121	6,151	6,132	5,911	5,834	3,862	3,020	
10:00-11:00	5,534	5,739	6,003	6,194	6,940	5,261	4,416	
11:00-12:00	5,441	5,738	5,841	6,645	7,518	6,144	5,532	
AM Total	45,059	46,387	46,620	45,739	36,577	25,383	22,568	0
12:00-13:00	5,313	5,584	5,943	6,911	7,061	6,548	5,732	
13:00-14:00	5,521	6,045	6,337	7,475	6,642	6,783	6,038	
14:00-15:00	6,265	6,409	6,953	7,829	6,646	6,634	6,499	
15:00-16:00	7,398	7,544	7,349	8,279	6,272	6,413	6,565	
16:00-17:00	7,986	8,369	7,989	8,717	6,198	6,233	6,411	
17:00-18:00	8,046	7,441	8,345	8,553	5,814	5,844	6,022	
18:00-19:00	6,399	6,955	7,302	7,008	4,992	5,452	5,627	
19:00-20:00	4,387	4,714	5,823	6,868	4,469	4,929	5,592	
20:00-21:00	3,501	3,623	4,245	5,307	3,845	4,370	5,093	
21:00-22:00	3,015	3,155	3,713	4,141	3,333	3,798	4,299	
22:00-23:00	2,477	2,624	2,932	3,078	2,872	3,078	2,954	
23:00-24:00	1,838	1,916	2,263	2,253	2,208	2,348	2,212	
PM Total	62,146	64,379	69,194	76,419	60,352	62,430	63,044	0
24 Hr. Total	107,205	110,766	115,814	122,158	96,929	87,813	85,612	0
Noon - Noon	108,533	110,999	114,933	112,996	85,735	84,998	63,044	
ADT	103,757	AWD	AADT	AAWD	SADT	SAWDT	WADT	DHV
		104,849	98,401	100,848	109,225	112,950	87,577	9,840

Weekly Volume Summary

Thu, Aug 14, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB

Report Dates: Jul 18, 2014 to Jul 24, 2014

Hour Interval	Fri 14/07/18	Sat 19	Sun 20	Mon 21	Tue 22	Wed 23	Thu 24	Fri 25
0:00- 1:00	643	753	940	620	589	561	552	
1:00- 2:00	439	522	535	395	369	357	428	
2:00- 3:00	424	383	341	302	328	329	376	
3:00- 4:00	510	391	276	342	398	384	411	
4:00- 5:00	795	472	311	847	861	807	942	
5:00- 6:00	2,408	865	475	2,802	2,630	2,469	2,604	
6:00- 7:00	3,601	1,359	667	4,068	4,062	3,909	4,038	
7:00- 8:00	3,682	1,837	901	4,042	4,063	4,022	3,997	
8:00- 9:00	3,016	2,579	1,313	3,269	3,337	3,253	3,380	
9:00-10:00	3,445	3,556	2,373	3,252	3,236	3,234	3,516	
10:00-11:00	3,506	4,234	3,289	3,314	3,118	3,182	3,595	
11:00-12:00	3,559	4,246	3,828	3,267	2,949	3,132	3,537	
AM Total	26,028	21,197	15,249	26,520	25,940	25,639	27,376	0
12:00-13:00	3,760	3,759	3,769	3,054	3,083	3,045	3,288	
13:00-14:00	3,830	3,793	3,680	3,168	3,011	3,098	3,320	
14:00-15:00	4,016	3,772	3,901	3,138	3,137	3,395	3,506	
15:00-16:00	4,205	3,547	3,809	3,135	3,308	3,503	3,726	
16:00-17:00	1,209	3,592	4,023	3,290	3,600	3,656	3,880	
17:00-18:00	1,865	3,637	3,228	3,631	3,722	3,872	3,980	
18:00-19:00	3,393	3,344	3,882	2,651	2,899	3,231	3,453	
19:00-20:00	3,453	2,642	3,727	2,193	2,219	2,400	2,681	
20:00-21:00	3,054	2,161	3,099	1,717	1,871	1,875	2,398	
21:00-22:00	1,872	1,797	2,522	1,532	1,631	1,638	1,933	
22:00-23:00	1,444	1,572	1,697	1,242	1,270	1,271	1,450	
23:00-24:00	1,296	1,349	1,048	932	915	957	1,105	
PM Total	33,397	34,965	38,385	29,683	30,666	31,941	34,720	0
24 Hr. Total	59,425	56,162	53,634	56,203	56,606	57,580	62,096	0
Noon - Noon	54,594	50,214	64,905	55,623	56,305	59,317	34,720	

Weekly Volume Summary

Thu, Aug 14, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: WB

Report Dates: Jul 18, 2014 to Jul 24, 2014

Hour Interval	Fri 14/07/18	Sat 19	Sun 20	Mon 21	Tue 22	Wed 23	Thu 24	Fri 25
0:00- 1:00	956	1,022	1,209	837	865	795	917	
1:00- 2:00	536	827	586	448	849	434	490	
2:00- 3:00	450	596	357	299	391	347	366	
3:00- 4:00	388	343	260	361	357	320	379	
4:00- 5:00	457	361	216	586	485	532	562	
5:00- 6:00	925	568	311	1,115	1,008	984	1,010	
6:00- 7:00	1,954	933	588	2,209	2,072	2,032	2,120	
7:00- 8:00	3,147	1,679	893	3,408	3,373	3,305	3,318	
8:00- 9:00	3,041	2,406	1,441	3,102	3,269	3,208	3,237	
9:00-10:00	2,816	3,089	2,058	3,016	2,964	2,902	3,000	
10:00-11:00	3,037	3,827	2,759	2,844	2,968	2,971	3,162	
11:00-12:00	3,280	3,947	3,611	2,957	3,063	2,986	3,253	
AM Total	20,987	19,598	14,289	21,182	21,664	20,816	21,814	0
12:00-13:00	3,525	4,154	3,723	3,118	3,082	3,125	3,184	
13:00-14:00	3,786	3,909	3,658	3,249	3,193	3,222	3,363	
14:00-15:00	4,201	3,468	3,719	3,504	3,470	3,382	3,730	
15:00-16:00	4,456	3,681	3,805	4,118	4,125	4,239	4,392	
16:00-17:00	3,419	3,598	3,958	4,532	4,392	4,546	4,530	
17:00-18:00	4,012	3,306	4,047	4,439	4,418	4,588	4,670	
18:00-19:00	4,233	3,433	3,871	3,504	3,877	3,903	4,250	
19:00-20:00	3,641	3,174	3,927	3,079	2,623	2,615	3,500	
20:00-21:00	2,882	2,559	3,476	2,157	2,198	2,158	2,576	
21:00-22:00	2,376	2,203	2,748	1,880	1,855	1,922	2,221	
22:00-23:00	1,864	1,772	2,145	1,591	1,559	1,727	1,648	
23:00-24:00	1,176	1,333	1,380	978	1,135	1,154	1,195	
PM Total	39,571	36,590	40,457	36,149	35,927	36,581	39,259	0
24 Hr. Total	60,558	56,188	54,746	57,331	57,591	57,397	61,073	0
Noon - Noon	59,169	50,879	61,639	57,813	56,743	58,395	39,259	

Weekly Volume Summary

Thu, Aug 14, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB/WB

Report Dates: Jul 18, 2014 to Jul 24, 2014

Hour Interval	Fri 14/07/18	Sat 19	Sun 20	Mon 21	Tue 22	Wed 23	Thu 24	Fri 25
0:00- 1:00	1,599	1,775	2,149	1,457	1,454	1,356	1,469	
1:00- 2:00	975	1,349	1,121	843	1,218	791	918	
2:00- 3:00	874	979	698	601	719	676	742	
3:00- 4:00	898	734	536	703	755	704	790	
4:00- 5:00	1,252	833	527	1,433	1,346	1,339	1,504	
5:00- 6:00	3,333	1,433	786	3,917	3,638	3,453	3,614	
6:00- 7:00	5,555	2,292	1,255	6,277	6,134	5,941	6,158	
7:00- 8:00	6,829	3,516	1,794	7,450	7,436	7,327	7,315	
8:00- 9:00	6,057	4,985	2,754	6,371	6,606	6,461	6,617	
9:00-10:00	6,261	6,645	4,431	6,268	6,200	6,136	6,516	
10:00-11:00	6,543	8,061	6,048	6,158	6,086	6,153	6,757	
11:00-12:00	6,839	8,193	7,439	6,224	6,012	6,118	6,790	
AM Total	47,015	40,795	29,538	47,702	47,604	46,455	49,190	0
12:00-13:00	7,285	7,913	7,492	6,172	6,165	6,170	6,472	
13:00-14:00	7,616	7,702	7,338	6,417	6,204	6,320	6,683	
14:00-15:00	8,217	7,240	7,620	6,642	6,607	6,777	7,236	
15:00-16:00	8,661	7,228	7,614	7,253	7,433	7,742	8,118	
16:00-17:00	4,628	7,190	7,981	7,822	7,992	8,202	8,410	
17:00-18:00	5,877	6,943	7,275	8,070	8,140	8,460	8,650	
18:00-19:00	7,626	6,777	7,753	6,155	6,776	7,134	7,703	
19:00-20:00	7,094	5,816	7,654	5,272	4,842	5,015	6,181	
20:00-21:00	5,936	4,720	6,575	3,874	4,069	4,033	4,974	
21:00-22:00	4,248	4,000	5,270	3,412	3,486	3,560	4,154	
22:00-23:00	3,308	3,344	3,842	2,833	2,829	2,998	3,098	
23:00-24:00	2,472	2,682	2,428	1,910	2,050	2,111	2,300	
PM Total	72,968	71,555	78,842	65,832	66,593	68,522	73,979	0
24 Hr. Total	119,983	112,350	108,380	113,534	114,197	114,977	123,169	0
Noon - Noon	113,763	101,093	126,544	113,436	113,048	117,712	73,979	
	ADT	AWD	AADT	AAWD	SADT	SAWDT	WADT	DHV
	115,227	116,469	102,552	103,658	113,833	116,096	91,272	10,255

Weekly Volume Summary

Mon, Oct 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB

Report Dates: Oct 9, 2014 to Oct 15, 2014

Hour Interval	Thu 14/10/09	Fri 10	Sat 11	Sun 12	Mon 13	Tue 14	Wed 15	Thu 16
0:00- 1:00	575	783	943	866	748	644	552	
1:00- 2:00	420	448	579	498	424	389	363	
2:00- 3:00	363	425	482	322	239	325	343	
3:00- 4:00	431	492	403	235	212	404	378	
4:00- 5:00	897	868	453	240	280	1,016	859	
5:00- 6:00	2,630	2,494	894	369	536	3,058	2,692	
6:00- 7:00	4,402	3,824	1,261	616	695	4,578	4,279	
7:00- 8:00	4,110	3,775	1,598	690	654	3,903	3,743	
8:00- 9:00	3,034	3,040	2,272	1,130	916	2,971	3,410	
9:00-10:00	2,932	3,344	3,230	1,855	1,529	3,439	3,140	
10:00-11:00	3,368	3,610	3,864	2,902	2,722	3,439	3,048	
11:00-12:00	2,948	3,764	4,332	3,670	3,799	3,173	2,990	
AM Total	26,110	26,867	20,311	13,393	12,754	27,339	25,797	0
12:00-13:00	3,174	4,043	4,056	3,851	4,362	3,163	2,891	
13:00-14:00	3,359	4,354	4,285	4,102	4,641	3,250	2,979	
14:00-15:00	3,593	3,953	4,075	4,517	4,934	3,326	3,077	
15:00-16:00	3,767	3,652	3,936	3,893	3,948	3,367	3,256	
16:00-17:00	3,991	3,827	3,844	3,610	4,308	3,697	3,515	
17:00-18:00	4,253	3,784	3,578	3,235	4,470	3,692	3,739	
18:00-19:00	3,722	4,463	3,142	3,098	4,520	2,891	2,913	
19:00-20:00	3,031	3,821	2,579	3,343	4,351	2,206	2,198	
20:00-21:00	2,467	3,940	2,465	3,927	4,421	2,138	1,726	
21:00-22:00	1,969	2,996	2,224	3,519	3,133	1,793	1,589	
22:00-23:00	1,556	1,938	1,790	2,370	2,313	1,280	1,176	
23:00-24:00	1,141	1,395	1,380	1,368	1,280	861	813	
PM Total	36,023	42,166	37,354	40,833	46,681	31,664	29,872	0
24 Hr. Total	62,133	69,033	57,665	54,226	59,435	59,003	55,669	0
Noon - Noon	62,890	62,477	50,747	53,587	74,020	57,461	29,872	

Weekly Volume Summary

Mon, Oct 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: WB

Report Dates: Oct 9, 2014 to Oct 15, 2014

Hour Interval	Thu 14/10/09	Fri 10	Sat 11	Sun 12	Mon 13	Tue 14	Wed 15	Thu 16
0:00- 1:00	626	946	1,068	960	899	588	619	
1:00- 2:00	440	581	682	595	500	333	402	
2:00- 3:00	413	388	428	324	309	304	361	
3:00- 4:00	412	401	317	246	253	359	362	
4:00- 5:00	599	535	382	188	218	577	566	
5:00- 6:00	1,058	1,092	613	264	359	1,199	1,042	
6:00- 7:00	2,160	2,069	978	500	560	2,298	2,103	
7:00- 8:00	3,529	3,292	1,525	772	845	3,455	3,539	
8:00- 9:00	3,359	3,082	2,444	1,198	1,094	3,583	3,401	
9:00-10:00	2,949	2,880	3,391	2,005	1,748	3,223	3,065	
10:00-11:00	2,894	3,143	4,188	3,267	2,848	3,260	2,871	
11:00-12:00	3,043	3,760	4,300	4,224	4,138	3,478	2,964	
AM Total	21,482	22,169	20,316	14,543	13,771	22,657	21,295	0
12:00-13:00	3,151	3,832	4,371	4,400	4,579	3,432	3,063	
13:00-14:00	3,392	4,347	4,448	4,434	4,513	3,548	3,176	
14:00-15:00	3,815	4,397	4,324	4,306	4,671	3,591	3,675	
15:00-16:00	4,488	4,684	4,275	4,163	4,263	4,260	4,492	
16:00-17:00	4,846	4,952	3,755	4,005	4,672	4,764	4,771	
17:00-18:00	4,622	4,700	3,275	3,094	4,656	4,861	4,534	
18:00-19:00	4,311	4,354	2,865	2,839	3,952	4,116	3,700	
19:00-20:00	3,507	4,300	2,736	3,104	4,174	3,494	2,528	
20:00-21:00	2,304	3,872	2,477	3,553	3,332	2,492	2,107	
21:00-22:00	2,363	2,803	2,299	3,212	3,738	1,923	1,745	
22:00-23:00	1,155	2,071	1,964	2,484	1,968	1,483	1,348	
23:00-24:00	1,346	1,604	1,528	1,487	1,186	1,200	1,090	
PM Total	39,300	45,916	38,317	41,081	45,704	39,164	36,229	0
24 Hr. Total	60,782	68,085	58,633	55,624	59,475	61,821	57,524	0
Noon - Noon	61,469	66,232	52,860	54,852	68,361	60,459	36,229	

Weekly Volume Summary

Mon, Oct 20, 2014

Location: Hwy 401 - 3.4 km W of Hwy 25 IC 320

LHRS/Offset: 47700 / 3.4

Region: Central

Pattern Type: Intermediate Commuter

PCS#: 30

Hwy. TVIS#: 401635

Count Direction: EB/WB

Report Dates: Oct 9, 2014 to Oct 15, 2014

Hour Interval	Thu 14/10/09	Fri 10	Sat 11	Sun 12	Mon 13	Tue 14	Wed 15	Thu 16
0:00- 1:00	1,201	1,729	2,011	1,826	1,647	1,232	1,171	
1:00- 2:00	860	1,029	1,261	1,093	924	722	765	
2:00- 3:00	776	813	910	646	548	629	704	
3:00- 4:00	843	893	720	481	465	763	740	
4:00- 5:00	1,496	1,403	835	428	498	1,593	1,425	
5:00- 6:00	3,688	3,586	1,507	633	895	4,257	3,734	
6:00- 7:00	6,562	5,893	2,239	1,116	1,255	6,876	6,382	
7:00- 8:00	7,639	7,067	3,123	1,462	1,499	7,358	7,282	
8:00- 9:00	6,393	6,122	4,716	2,328	2,010	6,554	6,811	
9:00-10:00	5,881	6,224	6,621	3,860	3,277	6,662	6,205	
10:00-11:00	6,262	6,753	8,052	6,169	5,570	6,699	5,919	
11:00-12:00	5,991	7,524	8,632	7,894	7,937	6,651	5,954	
AM Total	47,592	49,036	40,627	27,936	26,525	49,996	47,092	0
12:00-13:00	6,325	7,875	8,427	8,251	8,941	6,595	5,954	
13:00-14:00	6,751	8,701	8,733	8,536	9,154	6,798	6,155	
14:00-15:00	7,408	8,350	8,399	8,823	9,605	6,917	6,752	
15:00-16:00	8,255	8,336	8,211	8,056	8,211	7,627	7,748	
16:00-17:00	8,837	8,779	7,599	7,615	8,980	8,461	8,286	
17:00-18:00	8,875	8,484	6,853	6,329	9,126	8,553	8,273	
18:00-19:00	8,033	8,817	6,007	5,937	8,472	7,007	6,613	
19:00-20:00	6,538	8,121	5,315	6,447	8,525	5,700	4,726	
20:00-21:00	4,771	7,812	4,942	7,480	7,753	4,630	3,833	
21:00-22:00	4,332	5,799	4,523	6,731	6,871	3,716	3,334	
22:00-23:00	2,711	4,009	3,754	4,854	4,281	2,763	2,524	
23:00-24:00	2,487	2,999	2,908	2,855	2,466	2,061	1,903	
PM Total	75,323	88,082	75,671	81,914	92,385	70,828	66,101	0
24 Hr. Total	122,915	137,118	116,298	109,850	118,910	120,824	113,193	0
Noon - Noon	124,359	128,709	103,607	108,439	142,381	117,920	66,101	
	ADT 119,873	AWD 118,961	AADT 113,879	AAWD 115,392	SADT 126,406	SAWDT 129,239	WADT 101,352	DHV 11,388

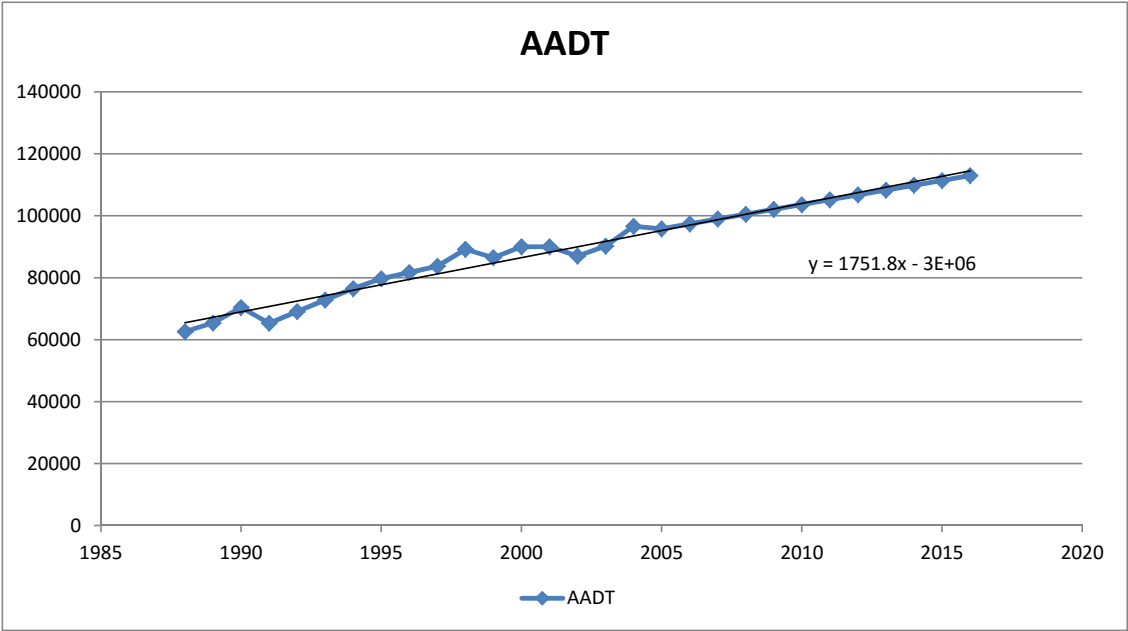
APPENDIX II: Growth Rate Calculations

Project: CN Milton Logistics Hub
Project No.: 6071-11
Date: 2017-12-01

Provincial Highways Traffic Volumes 1988-2016
Highway 401 Road 25 IC-320-Milton, Between RR25 and Guelph Line
Pattern Type Urban Commuter

Year	AADT
1988	62600
1989	65400
1990	70400
1991	65300
1992	69100
1993	72800
1994	76500
1995	79700
1996	81700
1997	83700
1998	89200
1999	86500
2000	90000
2001	90000
2002	87000
2003	90200
2004	96600
2005	95800
2006	97400
2007	99000
2008	100500
2009	102100
2010	103600
2011	105200
2012	106800
2013	108300
2014	109900
2015	111400
2016	113000

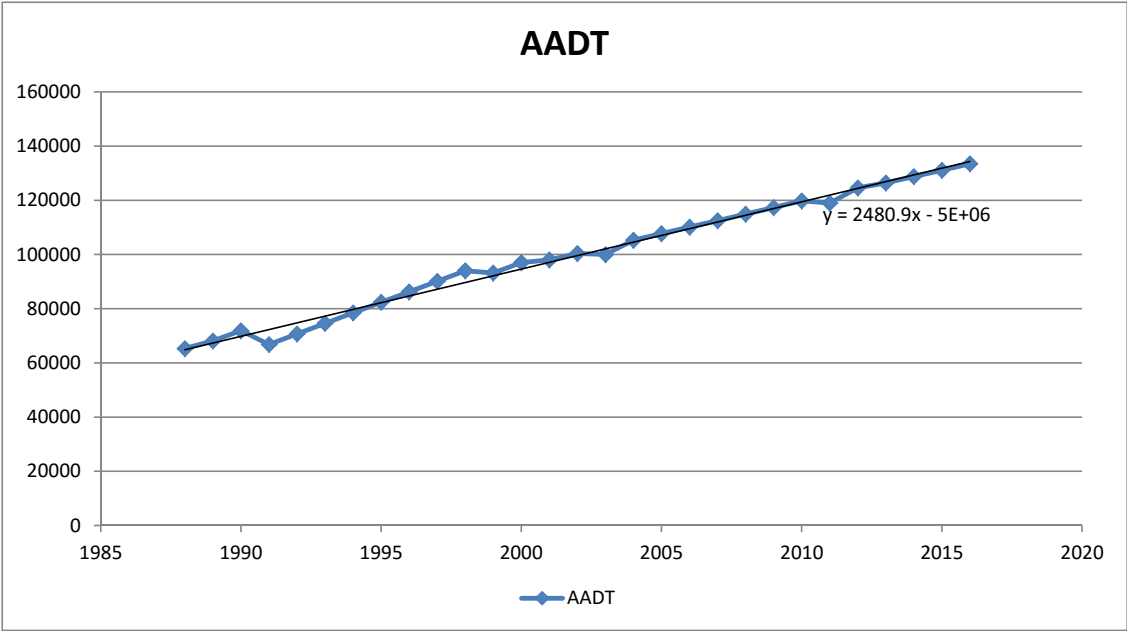
Calculated	AADT
Slope	1752
Intercept	-3417159
1988-2016 Growth (/yr)	2.0%



Project: CN Milton Logistics Hub
Project No.: 6071-11
Date: 2017-12-01

Provincial Highways Traffic Volumes 1988-2016
Highway 401 James Snow Parkway IC-324-Milton, Between James Snow Parkway and RR25
Pattern Type Urban Commuter

Year	AADT
1988	65300
1989	68100
1990	71900
1991	66800
1992	70700
1993	74600
1994	78500
1995	82400
1996	86200
1997	90100
1998	94000
1999	93200
2000	97000
2001	98000
2002	100400
2003	100000
2004	105300
2005	107700
2006	110100
2007	112500
2008	114900
2009	117300
2010	119800
2011	119000
2012	124600
2013	126400
2014	128800
2015	131100
2016	133500

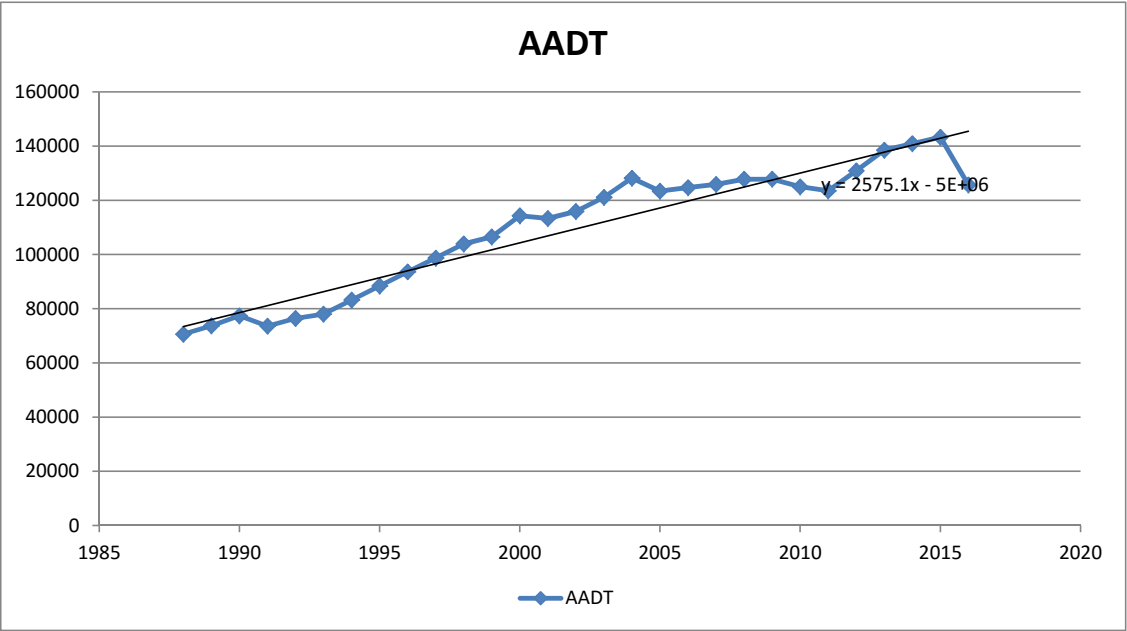


Calculated	AADT
Slope	2481
Intercept	-4867142
1988-2016 Growth (/yr)	2.6%

Project: CN Milton Logistics Hub
Project No.: 6071-11
Date: 2017-12-01

Provincial Highways Traffic Volumes 1988-2016
Highway 401 Trafalgar Road IC-328-Milton, Between Trafalgar Road and James Snow Parkway
Pattern Type Urban Commuter

Year	AADT
1988	70600
1989	73700
1990	77400
1991	73600
1992	76400
1993	78000
1994	83200
1995	88400
1996	93600
1997	98700
1998	103900
1999	106500
2000	114300
2001	113300
2002	115900
2003	121100
2004	128200
2005	123400
2006	124700
2007	125900
2008	127800
2009	127800
2010	125000
2011	123500
2012	130900
2013	138500
2014	140900
2015	143300
2016	125700

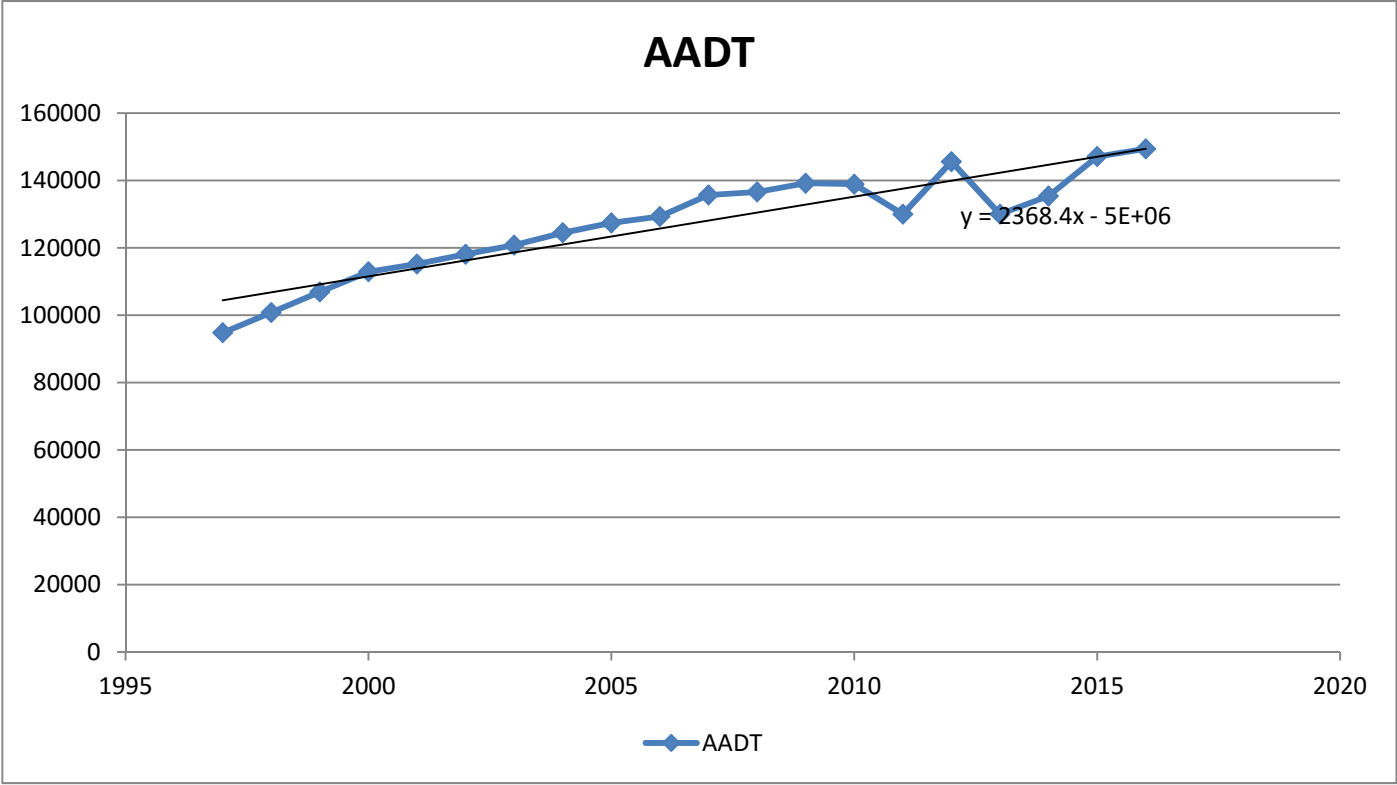


Calculated	AADT
Slope	2575
Intercept	-5045941
1988-2016 Growth (/yr)	2.5%

Project: CN Milton Logistics Hub
Project No.: 6071-11
Date: 2017-12-01

Provincial Highways Traffic Volumes 1988-2016
Highway 401 Highway 407 IC, Between Highway 407 and Trafalgar Road
Pattern Type Urban Commuter

Year	AADT
1997	94800
1998	100800
1999	106900
2000	112900
2001	115200
2002	118100
2003	120800
2004	124500
2005	127400
2006	129300
2007	135700
2008	136600
2009	139200
2010	138900
2011	130000
2012	145600
2013	130000
2014	135400
2015	147100
2016	149400



Calculated	AADT
Slope	2368
Intercept	-4625307
1988-2016 Growth (/yr)	1.9%

ATTACHMENT IR4.61-4: TRAVEL TIME INFORMATION



Peak Hour	Trip	Origin		Destination		Existing Travel Time (Minutes)					Total Additional Average Delay Per Vehicle (Seconds)	Future Travel Time
						Range	Optimistic	Pessimistic	Difference	Best Guess		
AM	1	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Mississauga City Hall	300 City Centre Drive, Mississauga, ON, Canada	27-43	27	43	16	31	3.0	27 min, 3 sec - 43 min, 3 sec
	2	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Vaughan Mills	1 Bass Pro Mills Drive, Concord, ON, Canada	32-49	32	49	17	38	3.0	32 min, 3 sec - 49 min, 3 sec
	3	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Toronto City Hall	100 Queen Street W, Toronto, ON, Canada	64-125	64	125	61	81	3.0	64 min, 3 sec - 125 min, 3 sec
	4	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Hamilton City Hall	71 Main Street W, Hamilton, ON, Canada	27-34	27	34	7	30	3.0	27 min, 3 sec - 34 min, 3 sec
	5	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Pearson Airport	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	34-62	34	62	28	42	3.0	34 min, 3 sec - 62 min, 3 sec
	6	Milton Town Hall	150 Mary Street, Milton, ON, Canada	Oakville Town Hall	1225 Trafalgar Road, Oakville, ON, Canada	23-37	23	37	14	28	3.0	23 min, 3 sec - 37 min, 3 sec
	13	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Mississauga City Hall	300 City Centre Drive, Mississauga, ON, Canada	21-31	21	31	10	24	12.0	21 min, 12 sec - 31 min, 12 sec
	14	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Vaughan Mills	1 Bass Pro Mills Drive, Concord, ON, Canada	35-45	35	45	10	39	16.0	35 min, 16 sec - 45 min, 16 sec
	15	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Toronto City Hall	100 Queen Street W, Toronto, ON, Canada	63-116	63	116	53	78	12.0	63 min, 12 sec - 116 min, 12 sec
	16	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Hamilton City Hall	71 Main Street W, Hamilton, ON, Canada	21-27	21	27	6	23	2.0	21 min, 2 sec - 27 min, 2 sec
	17	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Pearson Airport	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	30-45	30	45	15	34	12.0	30 min, 12 sec - 45 min, 12 sec
	18	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	Oakville Town Hall	1225 Trafalgar Road, Oakville, ON, Canada	18-28	18	28	10	21	12.0	18 min, 12 sec - 28 min, 12 sec
PM	31	Mississauga City Hall	300 City Centre Drive, Mississauga, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	28-48	28	48	20	33	3.0	28 min, 3 sec - 48 min, 3 sec
	32	Vaughan Mills	1 Bass Pro Mills Drive, Concord, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	36-53	36	53	17	41	3.0	36 min, 3 sec - 53 min, 3 sec
	33	Toronto City Hall	100 Queen Street W, Toronto, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	65-99	65	99	34	76	3.0	65 min, 3 sec - 99 min, 3 sec
	34	Hamilton City Hall	71 Main Street W, Hamilton, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	32-52	32	52	20	38	4.0	32 min, 4 sec - 52 min, 4 sec
	35	Pearson Airport	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	41-69	41	69	28	50	3.0	41 min, 3 sec - 69 min, 3 sec
	36	Oakville Town Hall	1225 Trafalgar Road, Oakville, ON, Canada	Milton Town Hall	150 Mary Street, Milton, ON, Canada	25-44	25	44	19	31	3.0	25 min, 3 sec - 44 min, 3 sec
	43	Mississauga City Hall	300 City Centre Drive, Mississauga, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	22-39	22	39	17	27	2.0	22 min, 2 sec - 39 min, 2 sec
	44	Vaughan Mills	1 Bass Pro Mills Drive, Concord, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	36-53	36	53	17	41	6.0	36 min, 6 sec - 53 min, 6 sec
	45	Toronto City Hall	100 Queen Street W, Toronto, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	59-96	59	96	37	71	2.0	59 min, 2 sec - 96 min, 2 sec
	46	Hamilton City Hall	71 Main Street W, Hamilton, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	26-40	26	40	14	30	2.0	26 min, 2 sec - 40 min, 2 sec
	47	Pearson Airport	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	36-60	36	60	24	44	2.0	36 min, 2 sec - 60 min, 2 sec
	48	Oakville Town Hall	1225 Trafalgar Road, Oakville, ON, Canada	Boyne Survey	5596 Britannia Road, Milton, ON, Canada	19-35	19	35	16	24	2.0	19 min, 2 sec - 35 min, 2 sec

Notes:

Travel time based on Google Maps Distance Matrix API for Wednesday May 16, 2018, departure time of 7:00 AM and 5:00 PM requested on April 9, 2018

Additional average delay per vehicle calculated based on differences in the 2021 Background and Total Traffic scenario traffic analyses from Synchro and Rodel completed in previous IR submissions.

Link speed changes due to additional Project-related traffic assumed to be negligible.

For signalized intersections not analyzed, additional delay estimated.

No changes to travel time have been assumed based on increases in future background traffic.

Route 1		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	300 City Centre Drive, Mississauga, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT	1
Martin Street @ Market Drive	NBT	1
Martin Street @ Chisholm Drive	NBT	1
Total	3	

Route 2		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	1 Bass Pro Mills Drive, Concord, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT	1
Martin Street @ Market Drive	NBT	1
Martin Street @ Chisholm Drive	NBT	1
Total	3	

Route 3		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	100 Queen Street W, Toronto, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT	1
Martin Street @ Market Drive	NBT	1
Martin Street @ Chisholm Drive	NBT	1
Total	3	

Route 4		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	71 Main Street W, Hamilton, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Bronte Street @ Main Street	WBT	0
Tremaine Road @ Main Street	WBL	1
Tremaine Road @ Pringle Avenue	SBT	1
Tremaine Road @ Landsborough	SBT	1
Tremaine Road @ Derry Road	SBR	0
Total	3	

Route 5		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT	1
Martin Street @ Market Drive	NBT	1
Martin Street @ Chisholm Drive	NBT	1
Total	3	

Route 6		
Origin	150 Mary Street, Milton, ON, Canada	
Destination	1225 Trafalgar Road, Oakville, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT	1
Martin Street @ Market Drive	NBT	1
Martin Street @ Chisholm Drive	NBT	1
Total	3	

Route 13		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	300 City Centre Drive, Mississauga, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
First Line @ Britannia Road	EBT	11
RR25 @ Britannia Road	EBR	1
Total	12	

Route 14		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	1 Bass Pro Mills Drive, Concord, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
First Line @ Britannia Road	EBT	11
RR25 @ Britannia Road	EBT	1
Third Line @ Britannia Road	EBT	1
Fourth Line @ Britannia Road	EBT	1
James Snow Parkway @ Britar	EBT	0
Fifth Line @ Britannia Road	EBT	1
Sixth Line @ Britannia Road	EBT	1
Trafalgar Road @ Britannia Road	EBT	0
Total	16	

Route 15		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	100 Queen Street W, Toronto, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
First Line @ Britannia Road	EBT	11
RR25 @ Britannia Road	EBR	1
Total	12	

Route 16		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	71 Main Street W, Hamilton, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
Tremaine Road @ Britannia Road	WBT	1
Appleby Line @ Britannia Road	WBL	1
Total	2	

Route 17		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
First Line @ Britannia Road	EBT	11
RR25 @ Britannia Road	EBR	1
Total	12	

Route 18		
Origin	5596 Britannia Road, Milton, ON, Canada	
Destination	1225 Trafalgar Road, Oakville, ON, Canada	
Intersection	Movement	Add'l Avg Delay (Sec)
First Line @ Britannia Road	EBT	11
RR25 @ Britannia Road	EBR	1
Total	12	

Additional average delay per vehicle calculated based on differences in the 2021 Background and Total Traffic scenario traffic analyses from Synchro and Rodel completed in previous IR submissions.

Link speed changes due to additional Project-related traffic assumed to be negligible.

For signalized intersections not analyzed, additional delay estimated and are shown in red.

For intersections where no Project-related traffic was assigned, additional average delay per vehicle is assumed to be 0.

AM Peak Hour

Route 31			
Origin	300 City Centre Drive, Mississauga, ON, Canada		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT		1
Martin Street @ Market Drive	NBT		1
Martin Street @ Chisholm Drive	NBT		1
Total		3	

Route 32			
Origin	1 Bass Pro Mills Drive, Concord, ON,		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT		1
Martin Street @ Market Drive	NBT		1
Martin Street @ Chisholm Drive	NBT		1
Total			3

Route 33			
Origin	100 Queen Street W, Toronto, ON, Canada		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT		1
Martin Street @ Market Drive	NBT		1
Martin Street @ Chisholm Drive	NBT		1
Total			3

Route 34			
Origin	71 Main Street W, Hamilton, ON, Canada		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Bronte Street @ Main Street	WBT		0
Tremaine Road @ Main Street	WBL	1	
Tremaine Road @ Pringle Ave	SBT	1	
Tremaine Road @ Landsborou	SBT	1	
Tremaine Road @ Derry Road	SBR	1	
Total		4	

Route 35			
Origin	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT		1
Martin Street @ Market Drive	NBT		1
Martin Street @ Chisholm Drive	NBT		1
Total		3	

Route 36			
Origin	1225 Trafalgar Road, Oakville, ON, Canada		
Destination	150 Mary Street, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Martin Street @ Steeles Avenue	NBT		1
Martin Street @ Market Drive	NBT		1
Martin Street @ Chisholm Drive	NBT		1
Total		3	

Route 43			
Origin	300 City Centre Drive, Mississauga, ON, Canada		
Destination	5596 Britannia Road, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
First Line @ Britannia Road	EBT	2	
RR25 @ Britannia Road	EBR	0	
Total		2	

Route 44			
Origin	1 Bass Pro Mills Drive, Concord, ON, Canada		
Destination	5596 Britannia Road, Milton, ON, Canada		
Intersection	Movement	Add'l Avg Delay (Sec)	
First Line @ Britannia Road	EBT	2	
RR25 @ Britannia Road	EBT	0	
Third Line @ Britannia Road	EBT	1	
Fourth Line @ Britannia Road	EBT	1	
James Snow Parkway @ Britar	EBT	0	
Fifth Line @ Britannia Road	EBT	1	
Sixth Line @ Britannia Road	EBT	1	
Trafalgar Road @ Britannia Road	EBT	0	
Total		6	

Route 45			
Origin	100 Queen Street W, Toronto, ON, Canada		
Destination	5596 Britannia Road, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
First Line @ Britannia Road	EBT		2
RR25 @ Britannia Road	EBR		0
Total		2	

Route 46			
Origin	71 Main Street W, Hamilton, ON, Canada		
Destination	5596 Britannia Road, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
Tremaine Road @ Britannia Road	WBT	1	
Appleby Line @ Britannia Road	WBL	1	

Route 47			
Origin	Terminal 1, 6301 Silver Dart Drive, Mississauga, ON, Canada		
Destination	5596 Britannia Road, Milton, ON, Canada		
Intersection	Movement	Add'l	Avg Delay (Sec)
First Line @ Britannia Road	EBT		2
RR25 @ Britannia Road	EBR		0
Total			2

Route 48			
Origin	1225 Trafalgar Road, Oakville, ON, Ca		
Destination	5596 Britannia Road, Milton, ON, Ca		
Intersection	Movement	Add'l	Avg Delay (Sec)
First Line @ Britannia Road	EBT	2	
RR25 @ Britannia Road	EBR	0	
Total		2	

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Link speed changes due to additional Project-related traffic assumed to be negligible.

For signalized intersections not analyzed, additional delay estimated and are shown in red.

For intersections where no Project-related traffic was assigned, additional average delay per vehicle is assumed to be 0.

PM Peak Hour

**ATTACHMENT IR4.62-1:
MAP OF THE ASSIGNED NET CHANGE
PERCENTAGE IN COLLISIONS**



Map of the assigned net change percentage in collisions.

