

# 1755 Pickering Parkway Mixed-Use Development

Traffic Impact Study Report

Final

January 20, 2025

Prepared for:



Pickering Ridge Lands Inc.  
c/o Bayfield Realty Advisors Inc.

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Bayfield Realty Advisors Inc.



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**RVA 237104**

**January 20, 2025**



## 1755 PICKERING PARKWAY MIXED-USE DEVELOPMENT

### FINAL TRAFFIC IMPACT STUDY

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## EXECUTIVE SUMMARY

R.V. Anderson Associates Limited (RVA) was retained by the Pickering Ridge Lands Inc. c/o Bayfield Realty Advisors Inc. to complete a Traffic Impact Study (TIS) to support Zoning By-Law Amendment (ZBA) for Phase 1 of a proposed mixed-use development to be located on the existing The Shops at Pickering Ridge lands at 1755 Pickering Parkway in the City of Pickering, Ontario.

The completion of the TIS is subsequent to a previously completed TIS in July 2022 in which reviewing agencies requested a more detailed and in-depth traffic study. In particular, review agencies requested that analysis be completed looking into the impacts of all proposed phase of the development and conducting a sensitivity analysis looking into the impacts of eliminating the existing right-in-right-out access off of Brock Road.

At full build-out of the proposed 1755 Pickering Parkway Development, the site will consist of a total of 5,250 residential units and 287,318 ft<sup>2</sup> of commercial space split between 7 proposed “blocks” of proposed towers of various storeys. For the purpose of this study, build-out of the development is being considered in three phases. Phase 1 will consist of full build-out of Block 1 by the year 2026. Phase 2 will consist of full-build-out of Blocks 2 to 4 by the 2031 horizon year. Lastly, Phase 3 of the development will consist of full build-out of Blocks 5 to 7 by the year 2036. These three horizon years plus additional horizon years of 2041 and 2046 representing five and ten years beyond full build-out of the development formed the analysis horizon years completed as part of the TIS.

The ultimate plan for the 1755 Pickering Parkway development is proposed to contain several active transportation facilities including a multi-use path along the south side of the main east-west street which stretches from Brock Road to the east end of the property. Pedestrian sidewalks are also proposed along both sides of all internal streets with the exception of the main east-west street which contains the multi-use path.

The study area for the TIS was bounded by Brock Road in the west, Notion Road in the East Kingston Road in the north and Highway 401 to the south. The study area included key intersections along Brock Road stretching from Kingston Road in the north to the Highway 401 interchange in the south. Intersections along Pickering Parkway from Brock Road in the west to Notion Road in the east were also included along with the intersection of Kingston Road and Notion Road. Overall, a total of six signalized intersections and four unsignalized intersections were analyzed as part of the study.

The completion of the study followed guidelines and parameters outlined in Chapter 9 – Signal Timing, Operation and Capacity Analysis of the Durham Region Design Specifications for Traffic Control Devices, Pavement Markings, Signage and Roadside Protection document dated April 2023, and the Ministry of Transportation’s General Guidelines for the Preparation of Traffic Impact Studies dated March 2023. Additional study parameters were also agreed upon through the submission and approval of a study Terms of Reference via email on March 13, 2023.

In general, the completion of the TIS included establishing existing traffic conditions and identifying current intersection operational or capacity deficiencies. Next, future background and future total traffic conditions were established for each of the study horizon years. This involved establishing future forecast traffic volumes through the application of a growth rate to existing traffic volumes then layering in site traffic from other proposed developments in the area then adding forecast site generated traffic from the proposed 1755 Pickering Parkway development. As mentioned previously, a Sensitivity analysis was also conducted for all future total study horizon years looking into the impacts of eliminating the existing right-in-right-out access at Brock Road.

The proposed 1755 Pickering Parkway development when fully built-out will be in and of itself a small “community” in which residents can both live, work and shop within the community reducing their need to travel outside of the area and their reliance on owning or using a vehicle. The presence of the MUP and sidewalks along all of the internal streets will also help and facilitate the use of alternative transportation modes when traveling within the community and provides linkages to the greater active transportation facilities outside the community as well as to existing and proposed future transit facilities. With this in mind there are additional Transportation Demand Management (TDM) strategies that could be facilitated to help reduce the reliance of single occupancy motor vehicles and further promote the use of alternative transportation modes including walking, cycling and transit. Some strategies in addition to the proposed MUP and sidewalk facilities incorporated into the site plan include promoting and encouraging the use of alternative transportation modes through information package offerings. These could include preloaded PRESTO passes, maps highlighting transit route services, nearby transit stops and pedestrian and cyclist facilities, and information on local carpooling and ride share programs. Within the lobbies of the residential buildings, Transportation Interactive displays could be implemented to provide residents and visitors real-time transit information, route maps and alternative transportation methods available in the area. Weather forecasts could also be displayed helping people choose the most desirable alternative travel method. Lastly, the option of unbundling parking which allows residents who are dependant on an auto-vehicle to rent a spot at a reduced cost in addition to the unit rental rate, which encourages renters to consider the use of alternative transportation modes is another TDM strategy.

The results of the intersection operational analysis completed under existing traffic conditions indicated that the signalized intersections of Brock Road with Kingston Road and Brock Road with the Highway 401 West to North/South Off-Ramp and North/South to East On-Ramp are operating poorly multiple movements at each intersection operating over capacity and experiencing significant delays. All of the unsignalized intersections within the study area are currently all operating well with no critical intersection movements to note.

Intersection operational performance under future background 2026 traffic conditions was found to be similar to existing traffic conditions with the signalized intersections of Brock Road with Kingston Road and Brock Road with the Highway 401 West to North/South Off-Ramp and North/South to East On-Ramp forecast to operate poorly and all unsignalized intersections forecast to operate well.

Phase 1 of the proposed 1755 Pickering Parkway development will consist of 630 residential units and 17,965 ft<sup>2</sup> of commercial GFA. Located at the west most end of the site, the construction of Phase 1 will require approximately 53,518 ft<sup>2</sup> of existing retail space within Building 'A' to be demolished with existing tenants being relocated to within Building 'B'. Vehicle access to Phase 1 will be provided via the existing right-in-right-out access along Brock Road and the existing The Shops at Pickering Ridge Accesses off of Pickering Parkway. As part of Phase 1, the beginning of a new southeast free flow roadway will be constructed ending at the existing The Shops at Pickering Ridge internal parking lot. As part of this roadway a north-south connection at the proposed internal access roadway to Phase 1 and the existing Brock Road access will be introduced.

Phase 1 of the proposed development is forecast to generate a total of 259 total two-way trips (123 inbound, 136 outbound) during the a.m. peak hour, 186 primary trips (96 inbound, 90 outbound), 33 pass-by trips (16 inbound, 17 outbound) and 32 diverted trips (15 inbound, 17 outbound) during the p.m. peak hour and 224 primary trips (109 inbound, 115 outbound), 36 pass-by trips (19 inbound, 17 outbound) and 35 diverted trips (18 inbound, 17 outbound) during the Saturday Midday peak hour.

The results of the intersection operational analysis conducted under future total 2026 traffic conditions indicates that the introduction of the forecast Phase 1 development trips has had only a minor impact to overall intersection operations within the study area. Overall intersection and individual movement capacity ratios increase slightly at Brock Road with Kingston Road and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp, with both intersections forecast to continuing operating over capacity. Overall intersection capacity ratios at Brock Road with Pickering Parkway have also gone up slightly with the addition of Phase 1 site trips with some overall reserve capacity available. The right-in-right-out access at Brock Road and Street 'A' (existing The Shops at Pickering Ridge) access is forecast to operate well with no queuing issue forecast for northbound traffic not extending southerly impacting the Highway 401 E-N/S Off-Ramp operations. In addition,

no queuing issues are forecasted for the new internal site intersections implemented as part of Phase 1 (Street 'A' with Street 'B' or Street 'C'). All other unsignalized intersection including the development accesses along Pickering Parkway are forecast to continue operating well under future total 2026 traffic conditions.

At the 2031 horizon year there are several transportation network improvements proposed within the study area. The first is the implementation of a new roadway crossing over Highway 401 connecting Notion Road with Squires Beach Road. This new Notion Road fly-over will offer an alternative north-south route allowing drivers to avoid existing congestion along Brock Road. Second, Durham Region Transit has planned the implementation of a high frequency bus route along Brock Road and Metrolinx has proposed the future Scarborough Bus Rapid Transit Line along Kingston Road.

Under future background 2031 traffic conditions, intersection operations at the Brock Road with Kingston Road intersection and Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp are forecast to continue operating poorly. The northbound and southbound movements at the existing The Shops at Pickering Ridge Accesses with Pickering Parkway are forecast to have increased delays and capacity issues.

Phases 2 to 4 of the proposed development will consist of 2,558 residential units (1,090, 446 and 1,022 respectively) and 28,223 ft<sup>2</sup> (10,828 ft<sup>2</sup>, 9,903 ft<sup>2</sup>, and 7,492 ft<sup>2</sup> respectively) of commercial GFA. Phases 2 to 4 will be constructed along the southern most edge of the property and require the demolition of 39,567 ft<sup>2</sup> of existing retail within Building 'A' and the relocation of 73,692 ft<sup>2</sup> of existing commercial demolished from Buildings 'B' and 'C' to the newly constructed Phase 1 to 4 buildings.

Phases 2 to 4 are forecast to generate 579 total two-way trips (221 inbound, 358 outbound) during the weekday a.m. peak hour, 603 primary trips (325 inbound, 278 outbound), 44 pass-by trips (21 inbound, 23 outbound) and 42 diverted trips (20 inbound, 22 outbound) during the p.m. peak hour and 707 primary trips (352 inbound, 355 outbound), 50 pass-by trips (26 inbound, 24 outbound) and 48 diverted trips (25 inbound, 23 outbound) during the Saturday Midday peak hour.

The addition of forecasted site generated traffic from Phases 2 to 4 under future total 2031 traffic conditions has impacted a number of intersections along Pickering Parkway including Street 'D' and 'E' (former The Shops at Pickering Ridge accesses). The northbound and southbound traffic exiting onto Pickering Parkway are forecast to experience significant delays. In order to safely accommodate these movements in the future, both intersections would need to be signalized, however, signal warrant analysis conducted indicates that traffic signals are only warranted for the Street 'D' intersection. Due to spacing between Street 'D' and Street 'E' (approximately less than 100 metres), consideration for the signalization of only Street 'D' with Pickering Parkway is

recommended due to its consideration as a gateway to the community. Under signalized operation, Street 'D' and Pickering Parkway is forecast to operate with significant reserve capacity to accommodate future traffic growth. As a result, it is anticipated that traffic from the Street 'E' access would reroute to the new signal at Street 'D' in order to avoid existing delays. This would in turn improve operations at Street 'E' at this horizon and in the future. Under this horizon year the Street 'E' intersection with Pickering Parkway is carrying a significant number of existing commercial volumes during the afternoon and Saturday Midday peak hours in addition to site generated traffic from Phases 2 to 4. However, in future horizon years with the removal of more existing commercial traffic volumes, intersection operations for Street 'D' are anticipated to improve. In addition, traffic volumes between both the intersections of Street 'E' and Street 'D' are anticipated to be balanced during both the afternoon peak hour and Saturday Midday peak hour. The spacing between the existing traffic signal to the east (Canadian Tire Access) and the proposed signal with Street 'D' is approximately 180 metres which would not meet TAC's minimum typical intersection spacing of 200 metres. Although this spacing is not met, the implementation of dedicated eastbound turn lanes at the Street 'D' intersection could help mitigate spacing and potential queuing issues between the intersections.

In addition, the Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with no queuing issues extending southerly to impact operations of the Highway 401 E-N/S Off-Ramp. All of the proposed internal roadway intersections as part of Phases 1 through 4 are forecast to operate good with no critical movements, delays, or v/c ratios.

At the 2036 horizon year, the remaining Phases 5 to 7 will be constructed resulting in full build-out of the entire 1755 Pickering Parkway Development. Under future background 2036 traffic conditions the addition of background traffic growth is forecast to impact overall intersection operations and individual movements at many of the study area intersections along Brock Road and Kingston Road. Many of the same study area intersections highlighted under previous horizon years are forecast to continue operating with overall intersection v/c ratios and individual movements greater than 1.00 and significant delays.

Phases 5 to 7 of the proposed development will consist of 2,062 residential units (641, 762 and 659 respectively) and 241,130 ft<sup>2</sup> (7,158 and 233,972 respectively, no commercial proposed as part of Phase 7) of commercial GFA. Phases 5 and 6 will be constructed at the northern edge of the property bordering Pickering Parkway while Phase 7 will be located at the very east of the property. As part of the construction of these phases, the remaining 94,724 ft<sup>2</sup> of existing commercial space within Buildings 'A', 'B' and 'D' will be removed.

Phases 5 to 7 are forecast to generate 589 total two-way trips (264 inbound, 325 outbound) during the weekday a.m. peak hour, 563 primary trips (279 inbound, 284 outbound), 154 pass-by trips

(74 inbound, 80 outbound) and 149 diverted trips (72 inbound, 77 outbound) during the p.m. peak hour, and 674 primary trips (323 inbound, 351 outbound), 189 pass-by trips (98 inbound, 91 outbound) and 182 diverted trips (95 inbound, 87 outbound) during the Saturday Midday peak hour.

Intersection operational analysis results under future total 2036 traffic conditions are forecast to be improve with the addition of site generated traffic from Phases 5 to 7 of the proposed development plus the removal of all existing commercial volumes at key intersections. The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with no queuing issues extending southerly to impact the Highway 401 E-N/S Off-Ramp. All of the proposed internal roadway intersections as part of Phases 1 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios.

Under the future total 2041 and 2046 horizon years (5 and 10 years beyond full site build-out), the signalized intersections of Brock Road with Kingston Road, Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp are forecast to continue operating with many critical movements experiencing significant delays and overall intersection v/c's greater than 1.00 under almost all peak hours. The intersection of Pickering Parkway and Street 'D' is forecast to continue operating well as a traffic signal with ample reserve capacity to accommodate future traffic growth or additional traffic rerouted from the Street 'E' intersection as this location is forecast to experience significant queueing delay and capacity issues. The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well under both future planning horizon years with queuing from the northbound movements not forecast to extend southerly impacting operations at the Highway 401 E-N/S Off-Ramp. All of the proposed internal roadway intersections as part of Phases 1 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios under the proposed lane configurations and traffic control.

The sensitivity analysis completed looking into the removal of access to the site via the right-in-right-out access off of Brock Road has shown significant impacts to operations at Pickering Parkway with Brock Road and Street 'D' and Street 'E'. At the 2031 horizon year, the increase in traffic to the westbound left turn and northbound right turn movements at the signalized intersection of Brock Road and Pickering Road has had a negative impact to capacity, delay and 95<sup>th</sup> percentile queues of these movements. At the 2031 horizon year the Pickering Parkway and Street 'D' intersections would require signalization to alleviate issues however under signalized traffic control the overall intersection capacity is still forecast to be over 1.00 with several critical movements. Significant queueing, delay and capacity issues are also forecast for the Pickering Parkway and Street 'E' intersection with the increase in traffic volumes to this intersection.

A review of driver sightlines at the anticipated location of the right-in-right-out site access intersection with Brock Road found that the required sight distance to perform a right turn maneuver from the access meets TAC requirements. In addition, the required stopping sight distance for vehicles travelling northbound along Brock Road on approach to the access also meets TAC requirements.

The 1755 Pickering Parkway development is proposing to provide 5,383 vehicle parking spaces and 2,679 bicycle parking spaces which satisfies the requirements based on the City of Pickering's City Centre By-Law 7553/17.

Based on the findings from the completion of the Traffic Impact Study for the proposed 1755 Pickering Parkway development, the following improvements are recommended to accommodate the proposed development trips for each study horizon year:

#### **Future (2026) Total Conditions**

- The existing northbound right turn lane at the Brock Road and Right-In/Right-Out intersection be improved by extending it southerly to facilitate safe operation of vehicles accessing the proposed site.

#### **Future (2031) Total Conditions**

- Intersection of Street 'D' with Pickering Parkway to be signalized.
- Proposed internal unsignalized intersections of Street 'A' with Street 'D' and 'E' plus be provided with exclusive left turning lanes.

#### **Future (2036) Total Conditions**

- Proposed internal unsignalized intersections of Street 'A' with Street 'D' and 'E' be provided with exclusive left turning lanes.

# 1.0 Introduction

R.V. Anderson Associates Limited (RVA) was retained by the Pickering Ridge Lands Inc. c/o Bayfield Realty Advisors Inc. to complete a Traffic Impact Study (TIS) to support Zoning By-Law Amendment (ZBA) for Phase 1 of a proposed mixed-use development to be located on the existing The Shops at Pickering Ridge lands at 1755 Pickering Parkway in the City of Pickering, Ontario.

## 1.1 Background

In July 2022, RVA completed a TIS for the subject development to support ZBA approval. Upon completion of this study, the Region of Durham requested a more detailed and in-depth traffic study to be completed looking at all future phases of the proposed development and performing sensitivity analyses to the impacts of removing access to the site via the existing right-in-right-out access at Brock Road.

## 1.2 Proposed Development

### 1.2.1.1 PROPOSED LAND USES, UNITS AND PHASES OF DEVELOPMENT

The overall subject development is proposed to consist of a total of 5,250 residential units and 287,318 ft<sup>2</sup> of retail space split between 7 proposed “blocks” of proposed towers of various storeys. For the purpose of this study, the development is proposed to be built in three phases with Block 1 constituting Phase 1, Blocks 2 to 4 constituting Phase 2 and Blocks 5 to 7 constituting Phase 3.

**Table 1.1** presents the site statistics including number of residential units and gross floor area (GFA) for each of the proposed development blocks. The anticipated build-out years for each phase of development is also presented in the table. The proposed development site plan dated January 26, 2024 along with the proposed implementation plan for each phase of development is provided in **Appendix 1**.

Table 1.1 – Development Site Statistics

Block No.	Phase	No. of Floors	No. of Residential Units	Retail GFA (ft <sup>2</sup> )	Build-Out Year
Block 1	1	31	630	17,965	2026
Block 2	2	43	1,090	10,828	2031
Block 3	2	22	446	9,903	2031
Block 4	2	43	1,022	7,492	2031

Block No.	Phase	No. of Floors	No. of Residential Units	Retail GFA (ft <sup>2</sup> )	Build-Out Year
Block 5	3	26	641	7,158	2036
Block 6	3	26	762	233,972	2036
Block 7	3	20	659	0	2036
<b>Total</b>			<b>5,250</b>	<b>287,318</b>	-

### 1.2.1.2 PROPOSED ACTIVE TRANSPORTATION FACILITIES

As part of the proposed development, a multi-use path (MUP) is proposed along the south side of the main internal east-west street stretching from Brock Road in the west to the driveway access to Blocks 5 and 7 at the very east of the property.

Pedestrian sidewalks are also proposed along both sides of all of the internal streets except where the presence of the MUP is located.

## 2.0 Study Area

The study area for the TIS as approved in the project Terms of Reference is presented in **Figure 2.1**. As part of the approved study area, the following intersections were included as part of the operational analysis undertaken for this study and are presented in the figure:

- 1) Kingston Road and Brock Road (signalized);
- 2) Kingston Road and Notion Road (signalized);
- 3) Brock Road and Pickering Parkway (signalized);
- 4) Brock Road and The Shops at Pickering Ridge Right-In-Right-Out Access (unsignalized);
- 5) Brock Road and Highway 401 East to North/South Off-Ramp (signalized);
- 6) Brock Road and Highway 401 West to North/South Off-Ramp / North/South to East On-Ramp (signalized);
- 7) Pickering Parkway and Canadian Tire/Walmart Access (signalized);
- 8) Pickering Parkway and The Shops at Pickering Ridge/Walmart Access 1 (unsignalized);
- 9) Pickering Parkway and The Shops at Pickering Ridge/Walmart Access 2 (unsignalized);  
and
- 10) Pickering Parkway and Notion Road (unsignalized).



Figure 2.1 – Study Area & Development Location

## 2.1 Study Area Roadways

The study area road network consists primarily of arterial and collector roads under the jurisdiction of the City (Pickering Parkway, Notion Road) and Region (Brock Road, Kingston Road), with the Highway 401 ramp terminal intersections and their associated ramps under the jurisdiction of the Ministry of Transportation of Ontario (MTO).

**Pickering Parkway** is an east-west arterial under the jurisdiction of the City of Pickering, with a wide two-lane cross-section and posted speed of 50km/hr. There are exclusive turning lanes at various accesses along the corridor. On-street parking is available in some spots along the westerly side of the corridor, but it is prohibited as you travel east towards Notion Road. The vertical alignment is flat throughout, whereas there are multiple horizontal curvatures along the corridor.

**Notion Road** is a north-south arterial under the jurisdiction of the City of Pickering, with a two-lane cross-section and speed limit of 50km/hr. The roadway is approximately 10m wide at the south end, narrowing down to approximately 9m wide as you travel north. The wide road

configuration provides ample space for turning movements and passing opportunities, and as a result, there are currently no auxiliary turning lanes along this corridor. An overpass bridge from Squires Beach Road to Notion Road is expected to be built beyond 2031, which will improve north-south circulation within the study area.

**Brock Road** is a north-south arterial under the jurisdiction of the Durham Region. It is a four-lane cross-section on the northerly and southerly ends, but transitions to a six-lane cross-section between Bayly Street and Finch Avenue, with additional exclusive turning lanes at every intersecting road within the study area. The roadway is posted at 60km/hr and presents no concerns pertaining to vertical and horizontal alignment.

**Kingston Road** is an east-west arterial under the jurisdiction of the Durham Region. The roadway alters between a four-lane cross-section and six-lane cross-section throughout the corridor, with additional exclusive turning lanes at every intersecting road within the study area. For the six-lane cross-section, one lane in each direction acts as a dedicated bus lane. The roadway is posted at 60km/hr, with minor variances in the vertical and horizontal alignment throughout the corridor.

## 2.2 Existing Intersection Lane Configurations & Traffic Control

The existing lane configurations and traffic control for each of the unsignalized and signalized study area intersections analyzed as part of the TIS are presented in **Figure 2.2**.

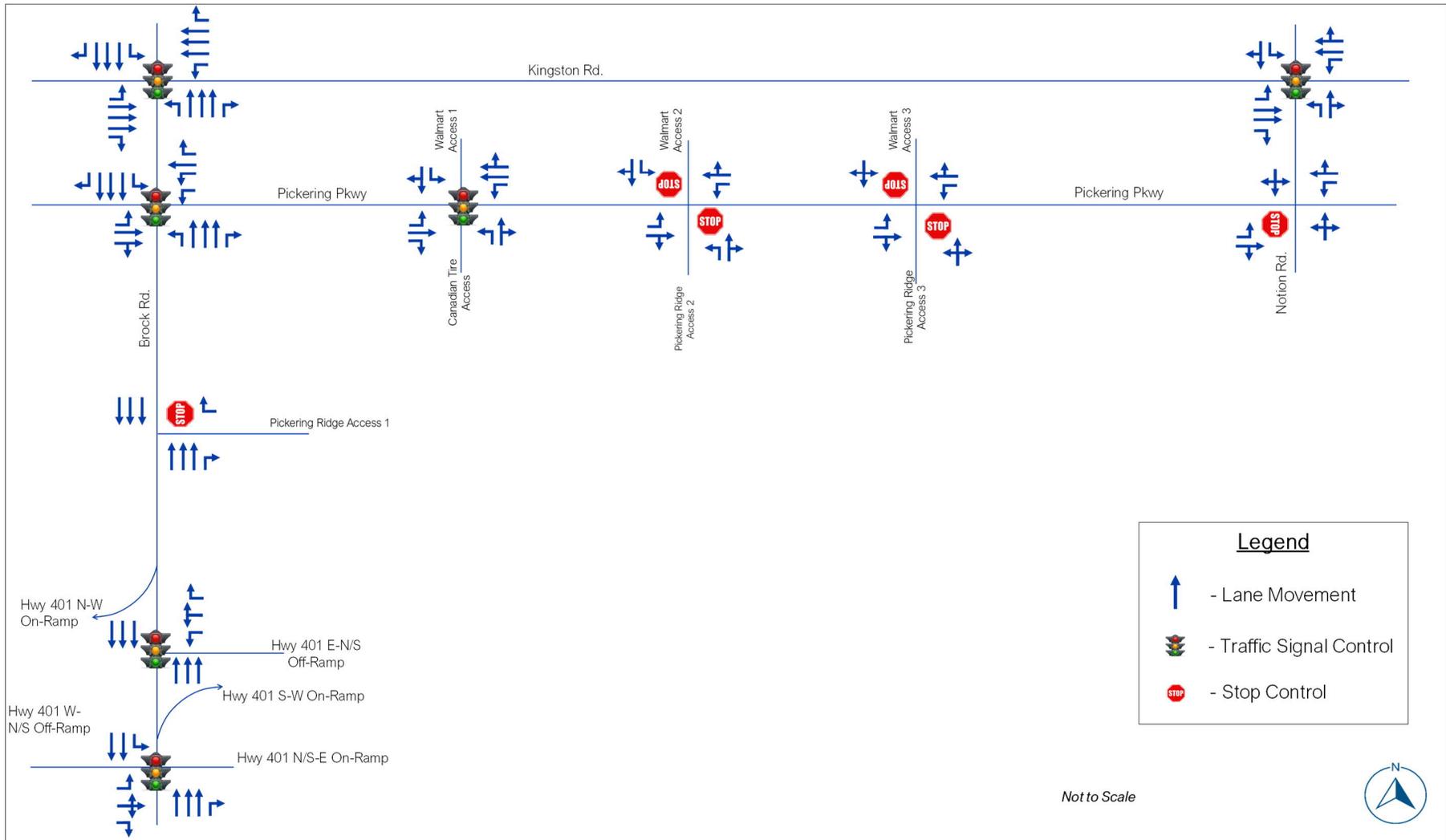


Figure 2.2 – Existing Intersection Lane Configurations and Traffic Control

## 2.3 Active Transportation Facilities

### 2.3.1 Existing Pedestrian Facilities

The majority of the existing pedestrian facilities within the study area consists of sidewalks. Fronting the development site, sidewalks are located along the south and north sides of Pickering Parkway which connect to sidewalks along the east side of Brock Road which extend further south and north of the development site. It should be noted that sidewalks are also located along the west side of Brock Road with the exception of a Multi-use path between Kingston Road and Pickering Parkway. Throughout the study area, sidewalks are located along both the north and south sides of Kingston Road while along Notion Road sidewalks are located on both the east and west sides of the roadway extending from Pickering Parkway to just beyond the Apostolic Pentecostal Church parking lot. The existing pedestrian facilities within the study area are presented in **Figure 2.3**.



Figure 2.3 – Existing Study Area Pedestrian Facilities

### 2.3.2 Existing Cycling Facilities

Existing cycling facilities consist of a multi-use path on the west side of Brock Road between Pickering Parkway and Kingston Road, as well as bike lanes on the portion of Kingston Road as illustrated in **Figure 2.4**. However, there is a general lack of connectivity for active transportation users in the network; the multi-use path only spans a short segment of Brock Road, and the bike lanes on Kingston Road end at Southview Drive, providing no connection to other facilities.

The City of Pickering recently developed an Integrated Transportation Master Plan (ITMP) that outlined a public desire for a more connected active transportation network. This plan indicates that Brock Road, Kingston Road, and a few other arterial roads throughout the city, will become Primary Bikeways in the future. Additionally, there are Primary/Secondary Recreational Trails that will provide enhanced connectivity and efficiency for active transportation users.



Figure 2.4 – Existing Study Area Cycling Facilities

## 2.4 Transit Facilities

### 2.4.1 Durham Region and Go Transit

Durham Region Transit is the main provider of public transportation services for the City of Pickering. Based on the current system map dated January 2, 2024 there are currently no transit routes which operate along Pickering Parkway or Brock Road while several routes operate along Kingston Road as follows:

- Route 900 (PULSE) – Operates 7 days a week, travelling from Centennial College Morningside Campus to Downtown Oshawa;
- Route 920 – Operates 7 days a week, travelling from McCowan Station to Ontario Tech/Durham College North Campus.
- Route 916 – Operates 7 days a week, travelling from the Pickering Parkway Terminal to the Harmony Terminal; and

All of these routes connect with the Pickering Parkway Terminal, which resides approximately 2 kilometres west of the study location. A snippet of the Durham Region Transit System Map illustrating the above routes is presented in **Figure 2.5**.

In addition, Go Transit also provides bus transit services along Kingston Road through the following route:

- Route 92 (Oshawa GO) – Operates 7 days a week, travelling from the Yorkdale Bus Terminal to the Oshawa GO station.

According to the Durham Region Transit site, Route 291 which had previously operated along Pickering Parkway has been suspended to allocate service to busier routes.



Figure 2.5 – Study Area Transit Routes – Durham Region Transit

#### 2.4.1.1 TRANSIT STOPS

**Figure 2.6** presents the transit stop locations within the TIS study area. Stops are generally found along Kingston Road with three located near the intersection of Brock Road and Kingston Road. Two stops are located at the intersection of Kingston Road and Bainbridge Drive while an additional two stops are located immediately east of the Kingston Road and Notion Road intersection.



Figure 2.6 – Study Area Transit Stop Locations

### 3.0 Study Scope of Work

In completing the Traffic Impact Study for the proposed 1755 Pickering Parkway Development, the following tasks were undertaken based on the approved Terms of Reference found in **Appendix 2**.

- Review and establish Existing Traffic Conditions for the study area intersections including:
  - › Establish existing traffic volumes for the study area intersections.
  - › Evaluate existing intersection operational performance.
  - › Identify intersection or roadway geometric improvements required to accommodate future projected traffic demands.
- Review Future Background Traffic Conditions for the study area intersections as follows:
  - › Establish future 2026 (Phase 1 build-out), 2031 (Phases 2 to 4 build-out), 2036 (Phases 5 to 7 build-out), 2041 (5 years beyond full build-out of the site) and 2046 (10 years beyond full build-out of the site) background traffic volumes through application of a 0.5% per annum growth rate to through volumes along Kingston Road, Brock Road and all movements at the Highway 401 Intersections, plus site generated traffic from other background developments.
  - › Establish future 2026, 2031, 2036, 2041 and 2046 intersection operational performance.
  - › Identify intersection or roadway geometric improvements required to accommodate future projected traffic demands.
- Review Future Total Traffic Conditions for the study area intersections including:
  - › Incorporate recommended improvements for the study area roadway and intersections if any.
  - › Forecast site generated traffic for the proposed phases of development utilizing methodology found in the Institute of Transportation Engineers (ITE) Trip Generation Manual 11<sup>th</sup> Edition.
  - › Establish future total 2026, 2031, 2036, 2041 and 2046 traffic volumes.
  - › Establish future total 2026, 2031, 2036, 2041 and 2046 intersection operational performance.
  - › Identify any further intersection or roadway geometric improvements required to accommodate future projected traffic demands.

- Conduct a Sensitivity Analysis under Future Total Traffic Conditions for the study area intersections with the removal of the Brock Road Right-in-Right-out access at The Shops at Pickering Ridge:
  - › Redistribute future total 2026, 2031, 2036, 2041 and 2046 traffic volumes into the site through site accesses along Pickering Parkway.
  - › Establish future total 2026, 2031, 2036, 2041 and 2046 intersection operational performance with the redistributed traffic.
  - › Identify any impacts to study area intersections with the removal of the Right-in-Right-out access.

## 4.0 Study Methodology

### 4.1 Traffic Impact Study Terms of Reference

For the completion of the revised TIS, a Terms of Reference outlining the assumptions and parameters for the study was submitted to the Region of Durham on February 22, 2023 with subsequent responses provided March 13, 2023. The approved terms of reference for the study can be found in **Appendix 2**.

### 4.2 Intersection Analysis Methodology

The industry standard Synchro macroscopic traffic analysis software was utilized to analyse the study area intersections. Key performance measures such as Level of Service (LOS), volume-to-capacity ratio (v/c ratio), and 95<sup>th</sup> percentile queuing was reported, and are defined below:

- **Average vehicle control delay** is used to characterize LOS for the entire intersection, an approach, or movement. Delay quantifies the variations in travel time and is also a surrogate measure of driver discomfort and fuel consumption.
- **V/c ratio** quantifies the degree to which the capacity of each signal phase is utilized by a defined lane group.
- **95th percentile queue** is the queue length which is expected to be exceeded only 5% of the time; it is common practice to identify preferred storage length requirements for auxiliary turn lanes at signalized intersections based on estimated peak hour 95th percentile queuing.

**Table 4.1** identifies the control delay thresholds (seconds of delay per vehicle) for each LOS based on Highway Capacity Manual 2000 (HCM) methodology.

Table 4.1 – Characteristics of Level of Service

Level of Service (LOS)	Control Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

### 4.3 Durham Region & MTO Guidelines

All analysis conducted as part of this study followed guidelines found within Chapter 9 – Signal Timing, Operation and Capacity Analysis of the Durham Region Design Specifications for Traffic Control Devices, Pavement Markings, Signage and Roadside Protection document dated April 2023. The Ministry of Transportation’s General Guidelines for the Preparation of Traffic Impact Studies dated March 2023 was also utilized in the completion of the study.

### 4.4 Study Horizon Years

As determined in consultation with the Region of Durham and outlined in the study TOR provided in **Appendix 2**, the following analysis horizon years were chosen along with the proposed phases of development included in the analysis:

- 2026 – Full Build-Out of Phase 1;
- 2031 – Full Build-Out of Phases 2 to 4 (Phase 1 included as background development);
- 2036 – Full Build-Out of Phases 5 to 7 (Phases 1 to 4 included as background development);
- 2041 – 5 Years beyond full build-out of Phases 1 to 7 (full site build-out); and
- 2046 – 10 Years beyond full build-out of all phases.

### 4.5 Transportation Demand Management

The proposed 1755 Pickering Parkway development when fully built-out will be in and of itself a small “community” in which residents can both live, work and shop within the community reducing their need to travel outside of the area. The presence of the MUP and sidewalks along all of the internal streets will also help and facilitate the use of alternative transportation modes when traveling within the community and provides linkages to the

greater active transportation facilities outside the community as well as to existing and proposed future transit facilities.

This interconnectedness between the proposed land uses, internal and external active transportation facilities and transit lends itself well reducing the need for single occupancy vehicles. However, there are still Transportation Demand Management (TDM) strategies which could be implemented to reduce congestion, minimize the dependency of single-occupant vehicles, and encourage alternative modes of travel to create a more sustainable transportation system. Alternative modes of transportation include but are not limited to walking, cycling, transit and rideshare programs. The objective of a TDM strategy is to educate and promote the use of alternative modes of transportation within the study area, to create a more active and livable community for all residents, visitors, and businesses within the surrounding communities.

Site-specific Transportation Demand Management (TDM) measures for the proposed site are developed with a primary objective to reduce single occupancy vehicle use. The plan will review opportunities to set realistic targets for increased use of carpooling, transit, cycling, and walking trips. In order to ensure effectiveness of the implementation of the TDM strategies knowledgeable sales staff should communicate/provide welcome packages to all new residents.

#### **4.5.1 Proposed TDM Measures**

The TDM approach proposes a mix of hard and soft measures to meet the objectives and targets to reduce vehicular travel demand and encourage passenger, transit, cycling, and walking. Details are proposed and reviewed with each of the following TDM opportunities. Since the proposed development will include a mix of residential and commercial land uses, these TDM measures are largely targeted for the residential land uses meaning there will be less trips during weekday afternoon and Saturday midday peak periods from the proposed residential developments since all blocks will contain commercial components. The recommended TDM measures are summarized below.

##### Design for Sustainable Modes

**Pedestrian Facilities:** The pedestrian network within the vicinity of the subject development is well developed as presented in **Figure 2.3** with sidewalks provided along all boundary streets. A multi-use path is proposed along the south side of the main east-west street and provides connections to pedestrian sidewalks along all of the internal streets. These facilities then provide connections to the greater pedestrian network fully integrating the proposed development with the surrounding study area.

**Cycling Facilities:** The cycling network within the vicinity of the subject development site is limited as presented in **Figure 2.4**. On-road cycle lanes are provided along Kingston Road and a multi-use pathway is provided on Brock Road north of Kingston Road only. As previously mentioned, there is a general lack of connectivity for these dedicated facilities. However, the City of Pickering recently developed an (ITMP) that outlined the need for a more connected active transportation network which included Kingston Road and Brock Road. It is proposed that throughout the development site, a multi-use pathway will be provided to encourage cycling. This MUP will provide a connection to the south end of the existing MUP along Brock Road and eventually be connected to the City's greater cycling network. Incorporating on-site bicycle parking in well-lit areas that are close to the main entrances of the buildings and offering bicycle repair stations within a designated secured location that is equipped with maintenance tools and supplies will also help promote cycling as a viable travel mode.

**Transit Facilities:** As previously mentioned, the closest transit stops are located along Kingston Road with the closest stops being at the intersection of Kingston Road/Brock Road, which is approximately 800 meters to/from the site. With sufficient on-site/off-site pedestrian facilities, transit users will have a safe and efficient connection to/from existing transit. As mentioned under Section 2.4.1, Durham Transit Route 291 previously operated along Pickering Parkway providing a connection to the Pickering Go Station and Pickering Town Centre shopping mall. This route was suspended to allocate service to busier routes however with the introduction of the proposed development, it would be beneficial to reintroduce this service as there would be a desire for more easily accessible transit facilities which in turn would encourage its use.

By the year 2031, Durham Region Transit has identified Brock Road as a future high-frequency bus route with headways expected to be between 5-10 minutes and Kingston Road as a future rapid transit route with an estimated headway of 5 minutes. These enhanced transit services will greatly reduce the discrepancy in travel time between automobile and transit and significantly decrease the amount of single-occupancy vehicle trips within the study area.

**Unbundling Parking:** The option of unbundling parking is a standard TDM strategy that has been implemented and proven to be very successful amongst many different high-rise developments. This measure allows residents who are dependant on an auto-vehicle to rent a spot at a reduced cost in addition to the unit rental rate, which encourages renters to consider alternative transportation modes.

**Promote Public Transportation:** Offering transportation information packages to new residents will help promote/encourage non-auto trips as residents will be aware of the alternative travel methods available in the area. Options for the developer to include in the information packages are:

- Preloaded PRESTO bus passes;
- Existing Transit route services, their associated maps and nearby stop locations;
- City Maps of the dedicated pedestrian and cycling facilities; and
- Local carpooling/ride-share programs available.

**Transportation Interactive Displays:** Transportation interactive displays are recommended to be installed in the lobby of the residential buildings to provide residents and visitors with real-time transit information, route maps, alternative travel methods available in the area, and the weather forecast which will help residents choose the best alternative method of travel.

All above TDM strategies are the responsibility of the developer to coordinate and implement.

**Work From Home:** Since the COVID-19 pandemic, the nature of where and when people work has changed. Many businesses now provide flexible work options allowing people to either fully work at home or split their time between working from home and coming into a physical office. These options contribute to reducing the number of single-occupancy vehicles on the roadway network, particularly during peak travel times when roadway capacity is limited.

#### **4.5.2 Multi-Modal Trip Reductions**

Based on the recommended TDM measures and the approved TOR from the Region and City, the following multi-modal trip reductions were introduced for each future phase of development when estimating forecast site generated traffic from the proposed development:

1. Phase 1 Horizon Year (2026):
  - a. AM Peak Hour: 7.2% inbound, 24.5% outbound.
  - b. PM and Saturday Midday Peak Hour: 26.2% Inbound, 5.4% Outbound.
2. Phase 2 to 4 Horizon Year (2031):
  - a. AM Peak Hour: 7.6% inbound, 25.7% outbound.
  - b. PM and Saturday Midday Peak Hour: 27.5% Inbound, 5.7% Outbound.
3. Phase 5 to 7 Horizon Year (2036):

- a. AM Peak Hour: 8% inbound, 27% outbound.
- b. PM and Saturday Midday Peak Hour: 29% Inbound, 6% Outbound.

## 5.0 Existing (2023) Traffic Conditions

### 5.1 Existing (2023) Traffic Data

Existing Turning Movement Count (TMC) data for the study area intersections was collected by RVA on Thursday September 28<sup>th</sup>, 2023 capturing a typical weekday a.m. and p.m. peak hour and Saturday September 30<sup>th</sup>, 2023 capturing a typical Saturday Midday Peak hour.

**Figure 5.1** presents a summary of the weekday a.m., p.m., and Saturday Midday peak hour traffic volumes for the study area intersections under existing (2023) traffic conditions. The raw collected traffic count data is provided in **Appendix 3**.

### 5.2 Existing (2023) Intersection Operational Analysis

Using the existing weekday a.m., p.m., and Saturday Midday peak hours intersection traffic volumes illustrated in **Figure 5.1** operational analysis for the signalized and unsignalized study area intersections was completed utilizing existing signal timing plans for the signalized study area intersections as provided by the Region. The signal timing plans are provided in **Appendix 4**.

**Table 5.1** presents the results of the existing (2023) intersection operational analysis completed for the study area intersections during the weekday a.m., p.m., and Saturday Midday peak hours. All HCM analysis output sheets can be found in **Appendix 5**.

As presented in **Table 5.1** the signalized intersection of Brock Road and Kingston Road currently operates with an overall v/c ratio of greater than 1.00 during both the weekday a.m. and p.m. peak hours with several movements operating at LOS 'F' with significant delays. During the Saturday Midday peak hour, the overall intersection is approaching and also contains several movements at LOS 'F' with significant delays.

Similarly, the signalized intersection of Brock Road with the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp overall is approaching capacity during all three peak hours. During the p.m. peak hour there are several movements operating over capacity with a LOS 'F' and significant delays.

The unsignalized intersections along Pickering Parkway are all operating well with no critical intersection movements to note during any of the peak hours analyzed.

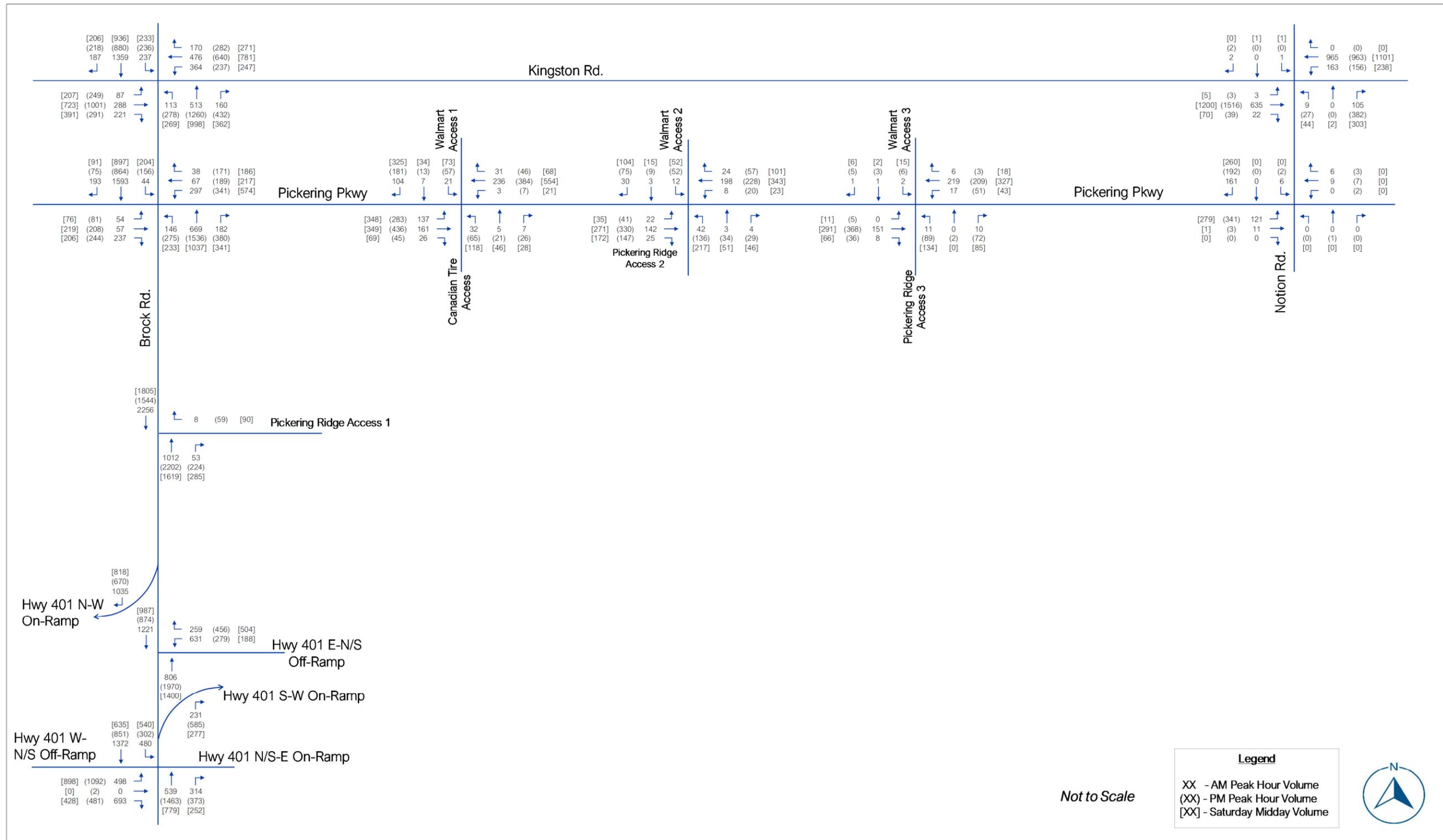


Figure 5.1 – Existing (2023) Intersection Traffic Volumes

Table 5.1 – Existing (2023) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.86	111	F	#56	1.83	430	F	#156	2.01	512	F	#128
EBT	2 T		0.29	31	C	43	0.92	52	D	#177	0.64	33	C	99
EBR	1 R	105	0.40	14	B	38	0.48	11	B	39	0.66	23	C	84
WBL	1 L	180	3.05	960	F	#233	2.05	522	F	#177	2.39	674	F	m#155
WBT	2 T		0.45	33	C	69	0.59	36	D	96	0.69	48	E	127
WBR	1 R	115	0.30	5	A	16	0.39	7	A	23	0.45	27	C	70
NBL	1 L	110	0.72	45	D	#43	0.94	60	E	#100	1.13	119	F	#101.1
NBT	3 T		0.37	33	C	51	0.86	45	D	136	0.63	33	C	91
NBR	1 R	70	0.29	6	A	16	0.76	30	C	106	0.62	21	C	73
SBL	1 L	145	0.58	24	C	56	1.02	94	F	#104	1.05	97	F	#88
SBT	3 T		0.79	37	D	138	0.64	39	D	91	0.59	32	C	84
SBR	1 R	135	0.30	5	A	16	0.38	6	A	20	0.35	9	A	26
<b>Overall</b>			<b>1.11</b>	<b>112</b>	<b>F</b>	<b>-</b>	<b>1.02</b>	<b>80</b>	<b>E</b>	<b>-</b>	<b>0.88</b>	<b>85</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	6	A	1	0.01	14	B	2	0.02	22	C	m1.1
EBT	2 T		0.29	7	A	41	0.89	31	C	#221	0.66	32	C	m161
EBR	1 R	20	0.03	0	A	0	0.06	2	A	3	0.09	13	B	m9.1
WBL	1 L	55	0.29	3	A	11	0.77	41	D	#53	0.73	28	C	#60
WB	1 T & 1 T/R		0.38	4	A	41	0.47	11	B	77	0.48	9	A	92
NB	1 L/T/R		0.53	19	B	19	0.92	48	D	#111	0.87	44	E	81
SB	1 L/T/R		0.02	0	A	0	0.00	0	A	0	0.01	31	C	2
<b>Overall</b>			<b>0.39</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.89</b>	<b>27</b>	<b>C</b>	<b>-</b>	<b>0.71</b>	<b>24</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	47	D	23	0.51	49	D	31	0.56	55	E	32
EB	1 T & 1 T/R		0.85	31	C	33	0.75	31	C	46	0.77	32	C	44
WBL	2 L	60	0.70	50	D	45	0.71	47	D	53	0.87	50	D	m#87
WBT	1 T		0.12	20	B	15	0.30	23	C	44	0.31	20	B	m52
WBR	1 R	45	0.08	2	A	2	0.27	7	A	19	0.28	8	A	m25
NBL	1 L	135	0.68	41	D	#53	0.75	32	C	#82.6	0.74	29	C	#49
NBT	3 T		0.31	21	C	47	0.85	30	C	#149	0.63	25	C	81
NBR	1 R	60	0.25	7	A	14	0.53	8	A	22	0.47	5	A	9
SBL	1 L	110	0.11	12	B	11	0.69	35	D	#61	0.82	47	D	#78
SBT	3 T		0.82	30	C	#145	0.57	30	C	76	0.60	32	C	81
SBR	1 R	160	0.28	4	A	15	0.13	1	A	0	0.16	1	A	0
<b>Overall</b>			<b>0.78</b>	<b>28</b>	<b>C</b>	<b>-</b>	<b>0.84</b>	<b>29</b>	<b>C</b>	<b>-</b>	<b>0.74</b>	<b>29</b>	<b>C</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.17	3	A	13	0.40	4	A	23	0.68	13	B	m#46
EBT	1 T		0.13	4	A	16	0.34	4	A	44	0.32	6	A	m46
EBR	1 R		0.02	2	A	m0.8	0.04	1	A	m1.2	0.07	1	A	m0.4
WBL	1 L	35	0.00	6	A	m1.0	0.01	10	B	3	0.05	19	B	8
WB	1 T & 1 T/R		0.14	6	A	16	0.22	9	A	35	0.41	20	B	70
NBL	1 L	25	0.33	51	D	17	0.89	117	F	#34	1.36	248	F	#64.0
NB	1 T/R		0.08	28	C	7	0.21	23	C	14	0.18	18	B	17
SBL	1 L	25	0.19	45	D	12	0.37	45	D	23	0.25	29	C	23
SB	1 T/R		0.50	17	B	18	0.57	13	B	22	0.59	8	A	28
<b>Overall</b>			<b>0.23</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>13</b>	<b>B</b>	<b>-</b>	<b>0.60</b>	<b>27</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Pickering Ridge West Access/Walmart East Access 2/Pickering Pkwy - Unsignalized</b>														
EBL	1 L/T/R		0.02	1	A	0	0.04	1	A	1	0.03	1	A	1
WBL	1 L	40	0.01	8	A	0	0.02	1	A	1	0.02	9	A	1
WBT	1 T/R		0.14	0	A	0	0.18	9	A	1	0.28	0	A	0
NBL	1 L		0.08	11	B	2	0.37	0	A	0	0.71	39	E	42
NBT	1 T/R		0.01	10	B	0	0.14	19	C	13	0.21	14	B	6
SBL	1 L		0.02	11	B	1	0.15	13	B	4	0.16	17	C	5
SBT	1 T/R		0.05	10	A	1	0.13	16	C	4	0.22	13	B	7
<b>Overall</b>			<b>0.41</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.69</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.80</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>East Site Access/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.60	15	B	0	0.59	16	C	0
WB	1 L/T/R		0.01	1	A	0	0.40	12	B	0	0.63	17	C	0
NB	1 L/T/R		0.04	11	B	1	0.27	11	B	0	0.39	13	B	0
SB	1 L/T/R		0.01	12	B	0	0.02	9	A	0	0.05	10	A	0
<b>Overall</b>			<b>0.35</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.59</b>	<b>13</b>	<b>B</b>	<b>-</b>	<b>0.60</b>	<b>16</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.18	10	B	5	0.45	13	B	19	0.37	12	B	14
WB	1 L/T/R		0.03	11	B	1	0.02	11	B	1	0.00	0	A	0
NB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.31</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.45</b>	<b>6</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./RIRO Site Access - Unsignalized</b>														
WBR	1 R	10	0.01	9	A	0	0.08	10	A	2	0.10	9	A	3
NBT	3 T		0.22	0	A	0	0.47	0	A	0	0.35	0	A	0
NBR	1 R		0.22	0	A	0	0.47	0	A	0	0.35	0	A	0
SBT	3 T		0.48	0	A	0	0.33	0	A	0	0.38	0	A	0
<b>Overall</b>			<b>0.47</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>0</b>	<b>A</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.78	40	D	82	0.79	44	D	69	0.62	35	D	53
<b>WBR</b>	1 R	95	0.55	19	B	46	0.78	51	D	82	0.77	47	D	76
<b>NBT</b>	3 T		0.31	10	B	31	0.64	11	B	m59	0.45	13	B	m74
<b>SBT</b>	3 T		0.43	8	A	45	0.29	10	A	49	0.32	15	B	86
<b>Overall</b>			<b>0.48</b>	<b>17</b>	<b>B</b>	<b>-</b>	<b>0.56</b>	<b>18</b>	<b>B</b>	<b>-</b>	<b>0.46</b>	<b>20</b>	<b>B</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		0.88	51	D	#143	1.11	104	F	#227	0.94	59	E	#172
<b>EBT</b>	1 L/T/R		0.88	48	D	#135	1.15	118	F	#237	0.89	48	D	#161
<b>EBR</b>	1 R	245	0.85	44	D	#122	0.90	47	D	#142	0.68	20	B	75
<b>NBT</b>	2 T & 1 T/R		0.79	35	D	#80	1.18	120	F	#226	0.74	33	C	87
<b>SBL</b>	1 L		0.94	48	D	#149	0.85	49	D	84	1.20	143	F	#205
<b>SBT</b>	2 T		0.75	20	B	145	0.52	11	B	46	0.35	4	A	14
<b>Overall</b>			<b>0.85</b>	<b>35</b>	<b>D</b>	<b>-</b>	<b>0.96</b>	<b>86</b>	<b>F</b>	<b>-</b>	<b>0.91</b>	<b>49</b>	<b>D</b>	<b>-</b>

## 6.0 Future (2026) Traffic Conditions

The following sections present the analysis of the study area intersections under future 2026 background and total traffic conditions which includes full build-out of Phase 1 of the proposed development. This includes the forecasting of future background 2026 traffic volumes plus trip generation for Phase 1 of the proposed development.

### 6.1 Future Background (2026) Traffic Conditions

#### 6.1.1 Future Background (2026) Traffic Growth

The future background traffic growth through the study area was established by applying a 0.5% per annum growth rate only to through movements along Brock Road and Kingston Road but including turning movements at the MTO off-ramps. The resulting future 2026 background traffic growth traffic volumes for the weekday a.m., p.m., and Saturday Midday are presented in **Figure 6.1**.

#### 6.1.2 Future Background (2026) Developments

At the 2026 horizon year there are several background developments expected to be built out. Site traffic generated from these developments was extracted from their respective reports/documents and applied to the study area intersections where applicable. The proposed developments considered for the 2026 horizon year are as follows:

- 1) 2165 Brock Road Residential Development;
- 2) 1640 Kingston Road Residential Development;
- 3) Durham Live Casino Development;
- 4) 1899 Brock Road Mixed-use Development (Phase 1);
- 5) 2055 Brock Road Residential Development
- 6) 2065 and 2071 Brock Road Mixed-use Development;
- 7) Universal City Development; and
- 8) 1856 Notion Road Residential Development.

The site generated traffic volumes extracted from their respective documents can be found in **Appendix 6**. The total development site traffic volumes for the 2026 horizon year are presented in **Figure 6.2**.

### 6.1.3 Future Background (2026) Traffic Volumes

The future background 2026 traffic volumes were established by combining the background traffic growth volumes presented in **Figure 6.1** with the background development site trips presented in **Figure 6.2**. The resulting future background 2026 traffic volumes for the weekday a.m., p.m., and Saturday Midday peak hours are presented in **Figure 6.3**.

### 6.1.4 Future Background (2026) Intersection Operational Analysis

Using the future background 2026 traffic volumes presented in **Figure 6.3**, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours.

The results of the operational analysis completed are presented in **Table 6.1**. All HCM output reports are provided in **Appendix 7**.

Similar to existing traffic conditions, as presented in **Table 6.1**, the signalized intersection of Brock Road with Kingston Road is forecast to continue operating with overall intersection v/c ratios greater than or approaching 1.00 with several individual movements approaching or exceeding this threshold.

The signalized intersection of Brock Road with the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp is also forecast to continue operating with overall intersection v/c ratios greater than 1.00 along with several movements also operating over capacity particularly during the p.m. peak hour.

The unsignalized intersections along Pickering Parkway are all forecast to operate well with no critical intersection movements to note during any of the peak hours analyzed.

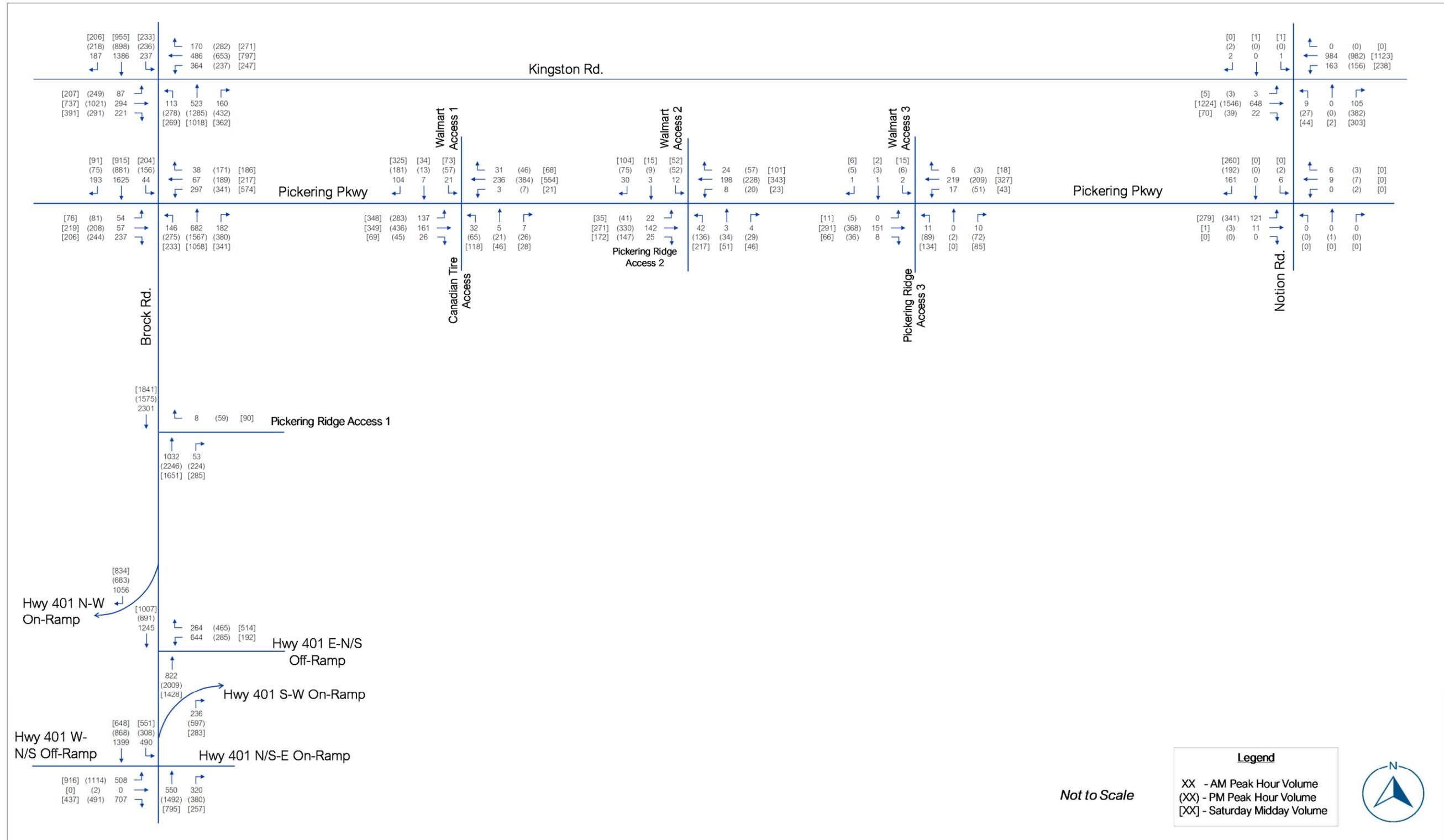


Figure 6.1 – Future (2026) Background Traffic Growth

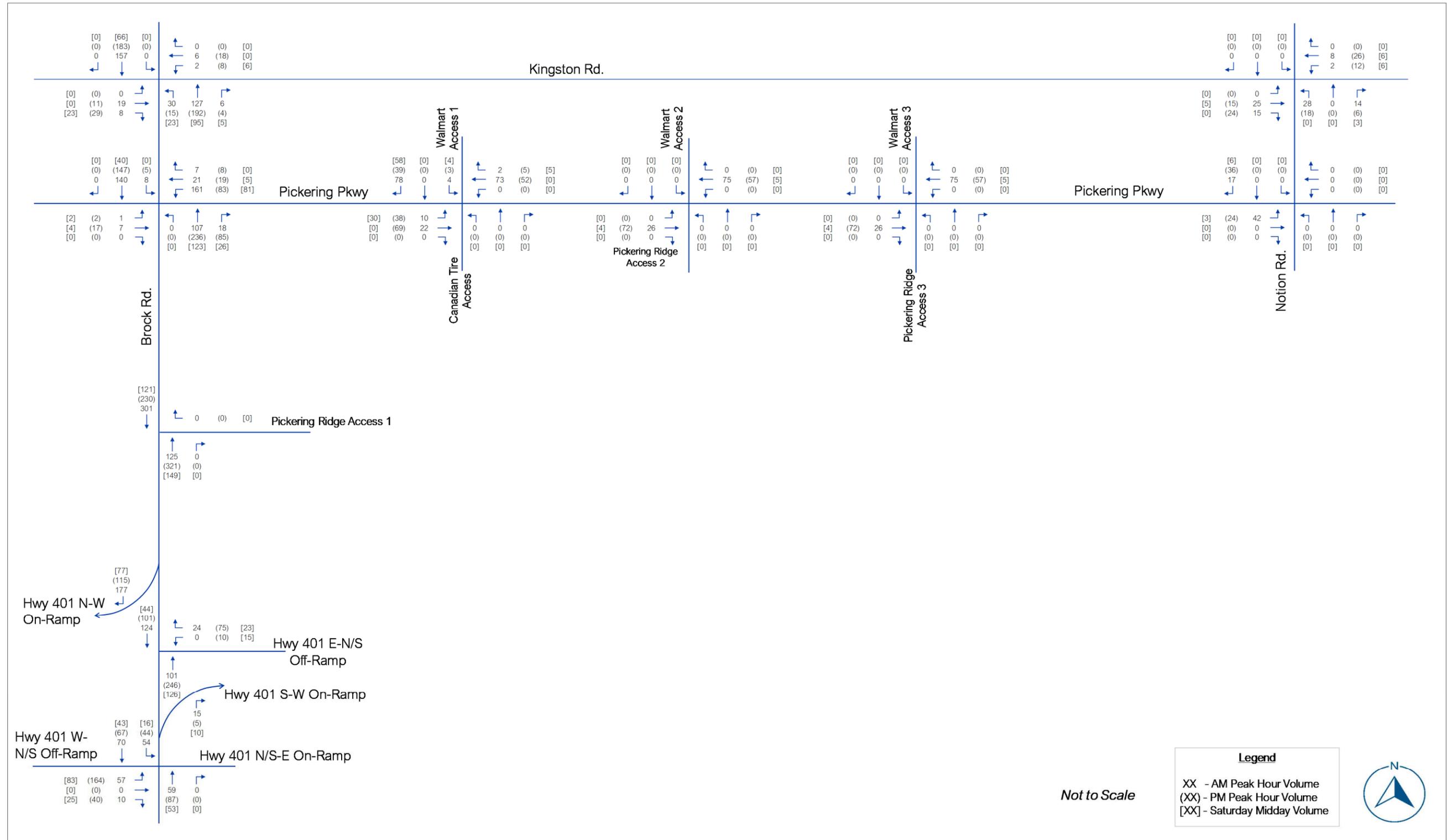


Figure 6.2 – Future (2026) Background Development Traffic Volumes

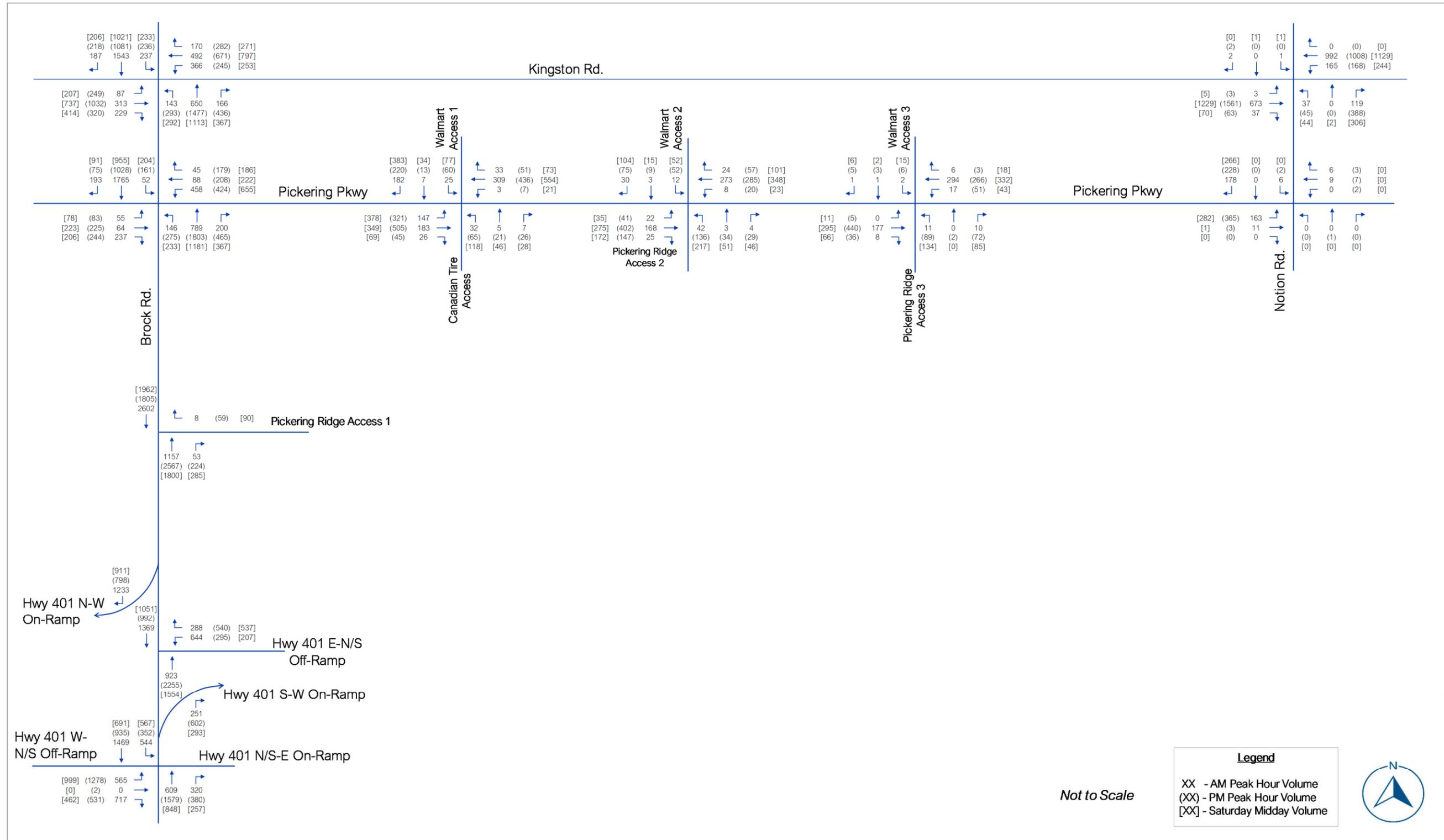


Figure 6.3 – Future (2026) Background Traffic Volume

Table 6.1 – Future Background (2026) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.86	111	F	#56	1.16	156	F	#134	2.01	512	F	#128
EBT	2 T		0.32	32	C	46	1.02	73	E	#198	0.65	33	C	101
EBR	1 R	105	0.42	15	B	41	0.58	19	B	62	0.70	25	C	94
WBL	1 L	180	3.06	967	F	#234	1.23	176	F	#151	2.46	701	F	m#159
WBT	2 T		0.46	33	C	72	0.65	39	D	103	0.70	48	D	129
WBR	1 R	115	0.30	5	A	16	0.43	11	B	35	0.45	27	C	71
NBL	1 L	110	0.91	74	E	#63	1.35	211	F	#144	1.34	201	F	#126
NBT	3 T		0.47	34	C	65	1.04	76	E	#188	0.70	34	C	103
NBR	1 R	70	0.29	6	A	17	0.72	21	C	83	0.63	22	C	76
SBL	1 L	145	0.66	27	C	56	1.20	154	F	#114	1.19	145	F	#101
SBT	3 T		0.90	43	D	164	0.81	45	D	117	0.64	33	C	93
SBR	1 R	135	0.30	5	A	16	0.39	6	A	19	0.35	9	A	27
<b>Overall</b>			<b>1.16</b>	<b>110</b>	<b>F</b>	<b>-</b>	<b>0.99</b>	<b>72</b>	<b>E</b>	<b>-</b>	<b>0.93</b>	<b>91</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	8	A	2	0.01	14	B	2	0.03	22	C	m1.1
EBT	2 T		0.32	8	A	51	0.95	38	D	#232	0.70	34	C	m163
EBR	1 R	20	0.04	1	A	2	0.10	4	A	7	0.09	13	B	m8.7
WBL	1 L	55	0.31	4	A	15	0.81	47	D	#59	0.74	32	C	#67
WB	1 T & 1 T/R		0.40	5	A	52	0.51	12	B	82	0.49	10	A	95
NB	1 L/T/R		0.65	25	C	28	0.94	52	D	#125	0.88	45	D	82
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.01	31	C	2
<b>Overall</b>			<b>0.43</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.94</b>	<b>32</b>	<b>C</b>	<b>-</b>	<b>0.74</b>	<b>25</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
<b>EBL</b>	1 L	40	0.38	46	D	23.2	0.50	48	D	32	0.57	56	E	32
<b>EB</b>	1 T & 1 T/R		0.85 dr	34	C	35.4	0.77	33	C	50	0.77	33	C	45
<b>WBL</b>	2 L	60	0.96	75	E	#86	0.81	49	D	#68	0.96	59	E	M#108
<b>WBT</b>	1 T		0.15	22	C	23.2	0.31	21	C	49	0.31	19	B	m50.4
<b>WBR</b>	1 R	45	0.09	4	A	5.1	0.27	6	A	20	0.27	7	A	m23.3
<b>NBL</b>	1 L	135	0.69	42	D	#53	0.83	46	D	M91	0.78	34	C	#63
<b>NBT</b>	3 T		0.41	23	C	52.4	1.04	58	E	#195	0.72	26	C	94
<b>NBR</b>	1 R	60	0.29	6	A	12.3	0.66	11	B	31	0.49	5	A	5
<b>SBL</b>	1 L	110	0.16	13	B	12.2	0.72	38	D	#60	0.94	71	E	#87
<b>SBT</b>	3 T		0.95	42	D	#181	0.75	36	D	93.6	0.66	34	C	88
<b>SBR</b>	1 R	160	0.29	4	A	14.5	0.14	1	A	0	0.17	1	A	1
<b>Overall</b>			<b>0.86</b>	<b>37</b>	<b>D</b>	<b>-</b>	<b>0.92</b>	<b>41</b>	<b>F</b>	<b>-</b>	<b>0.89</b>	<b>33</b>	<b>C</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
<b>EBL</b>	1 L	40	0.20	3	A	16	0.48	4	A	28	0.80	21	C	m#61
<b>EBT</b>	1 T		0.15	4	A	20	0.40	4	A	50	0.34	8	A	m42
<b>EBR</b>	1 R		0.02	2	A	m1.5	0.04	1	A	m1.2	0.08	1	A	m0.3
<b>WBL</b>	1 L	35	0.00	7	A	m1.1	0.02	10	B	m2.4	0.05	20	B	8
<b>WB</b>	1 T & 1 T/R		0.18	7	A	21	0.25	9	A	m34	0.45	22	C	70
<b>NBL</b>	1 L	25	0.48	63	E	17	0.96	138	<b>F</b>	#35	<b>1.24</b>	199	<b>F</b>	#66
<b>NB</b>	1 T/R		0.07	27	C	7	0.20	22	C	14	0.15	16	B	17
<b>SBL</b>	1 L	25	0.21	44	D	13	0.37	44	D	24	0.22	26	C	24
<b>SB</b>	1 T/R		0.62	16	B	22	0.61	13	B	24	0.63	10	B	42
<b>Overall</b>			<b>0.31</b>	<b>10</b>	<b>B</b>	<b>-</b>	<b>0.43</b>	<b>13</b>	<b>B</b>	<b>-</b>	<b>0.65</b>	<b>26</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
EBL	1 L/T/R		0.02	1	A	1	0.04	1	A	1	0.04	1	A	1
WBL	1 L	40	0.01	8	A	0	0.02	9	A	1	0.02	9	A	1
WBT	1 T/R		0.19	0	A	0	0.22	0	A	0	0.29	0	A	0
NBL	1 L		0.08	12	B	2	0.42	22	C	16	0.72	40	E	42
NBT	1 T/R		0.01	11	B	0	0.15	14	B	4	0.21	14	B	6
SBL	1 L		0.02	11	B	1	0.17	18	C	5	0.16	17	C	5
SBT	1 T/R		0.05	10	B	1	0.14	12	B	4	0.22	13	B	7
<b>Overall</b>			<b>0.45</b>	<b>2</b>	<b>A</b>	<b>-</b>	<b>0.75</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.80</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Signalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
WB	1 L/T/R		0.01	1	A	0	0.05	2	A	1	0.04	1	A	1
NB	1 L/T/R		0.04	12	B	1	0.55	29	D	25	0.69	35	E	39
SB	1 L/T/R		0.01	13	B	0	0.06	19	C	1	0.10	20	C	3
<b>Overall</b>			<b>0.40</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.66</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.60</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.24	11	B	7	0.49	14	B	22	0.38	12	B	14
WB	1 L/T/R		0.03	11	B	1	0.02	11	B	0	0.00	0	A	0
NB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
SB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.34</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.50</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>6</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
WBR	1 R	10	0.01	9	A	0	0.09	10	B	2	0.11	10	A	3
NBT	3 T		0.25	0	A	0	0.55	0	A	0	0.38	0	A	0
NBR	1 R		0.25	0	A	0	0.55	0	A	0	0.38	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.54</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.60</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>0</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.77	39	D	83	0.84	47	D	80	0.63	35	D	57
<b>WBR</b>	1 R	95	0.64	29	C	65	0.84	57	E	#105	0.78	47	D	82
<b>NBT</b>	3 T		0.36	13	B	m36	0.75	13	B	m61	0.52	14	B	m79
<b>SBT</b>	3 T		0.49	11	B	m58	0.33	13	B	61	0.35	17	B	m92
<b>Overall</b>			<b>0.51</b>	<b>19</b>	<b>B</b>	<b>-</b>	<b>0.64</b>	<b>21</b>	<b>C</b>	<b>-</b>	<b>0.51</b>	<b>21</b>	<b>C</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		0.98	71	E	#170	1.27	167	F	#271	1.02	76	E	#201
<b>EBT</b>	1 L/T/R		0.99	70	E	#165	1.36	202	F	#296	0.96	60	E	#189
<b>EBR</b>	1 R	245	0.97	66	E	#153	1.03	76	E	#174	0.74	26	C	95
<b>NBT</b>	2 T & 1 T/R		0.88	41	D	#89	1.35	189	F	#248	0.79	35	C	95
<b>SBL</b>	1 L		1.01	67	E	#179	0.91	57	E	m#105	1.30	183	F	#219
<b>SBT</b>	2 T		0.79	18	B	140	0.57	9	A	43	0.38	4	A	14
<b>Overall</b>			<b>0.93</b>	<b>45</b>	<b>D</b>	<b>-</b>	<b>1.08</b>	<b>135</b>	<b>F</b>	<b>0.93</b>	<b>0.98</b>	<b>59</b>	<b>E</b>	<b>-</b>

## 6.2 Phase 1 Development Site Traffic

### 6.2.1 Phase 1 Description and Access

As mentioned under Section 1.2, Phase 1 of the proposed development will consist of 630 residential units and 17,965 ft<sup>2</sup> of commercial GFA. Located at the west most end of the site, the construction of Phase 1 will require approximately 53,518 ft<sup>2</sup> of existing retail space within Building 'A' (see proposed site plan and phasing plan provided in **Appendix 1**) to be demolished with existing tenants to be relocated to within Building 'B'.

Vehicle access to Phase 1 will be provided via the existing right-in-right-out access along Brock Road and the existing The Shops at Pickering Ridge Accesses off of Pickering Parkway. As part of Phase 1, the beginning of a new southeast free flow roadway will be constructed ending at the existing The Shops at Pickering Ridge internal parking lot. As part of this roadway a north-south connection at the proposed internal access roadway to Phase 1 and the existing Brock Road access will be introduced. The proposed roadways and new intersections established as part of Phase 1 are shown in the Proposed Site Plan and Phasing Implementation Plans provided in **Appendix 1**. For the purpose of this study the proposed new southeast roadway is referred to as 'Street B' and the north-south connection is referred to as 'Street C'. The existing right-in-right-out access roadway off of Brock Road will be referred to as 'Street A'. The proposed internal roadways introduced as part of Phase 1 including the proposed lane configurations and traffic control are presented in **Figure 6.4**.

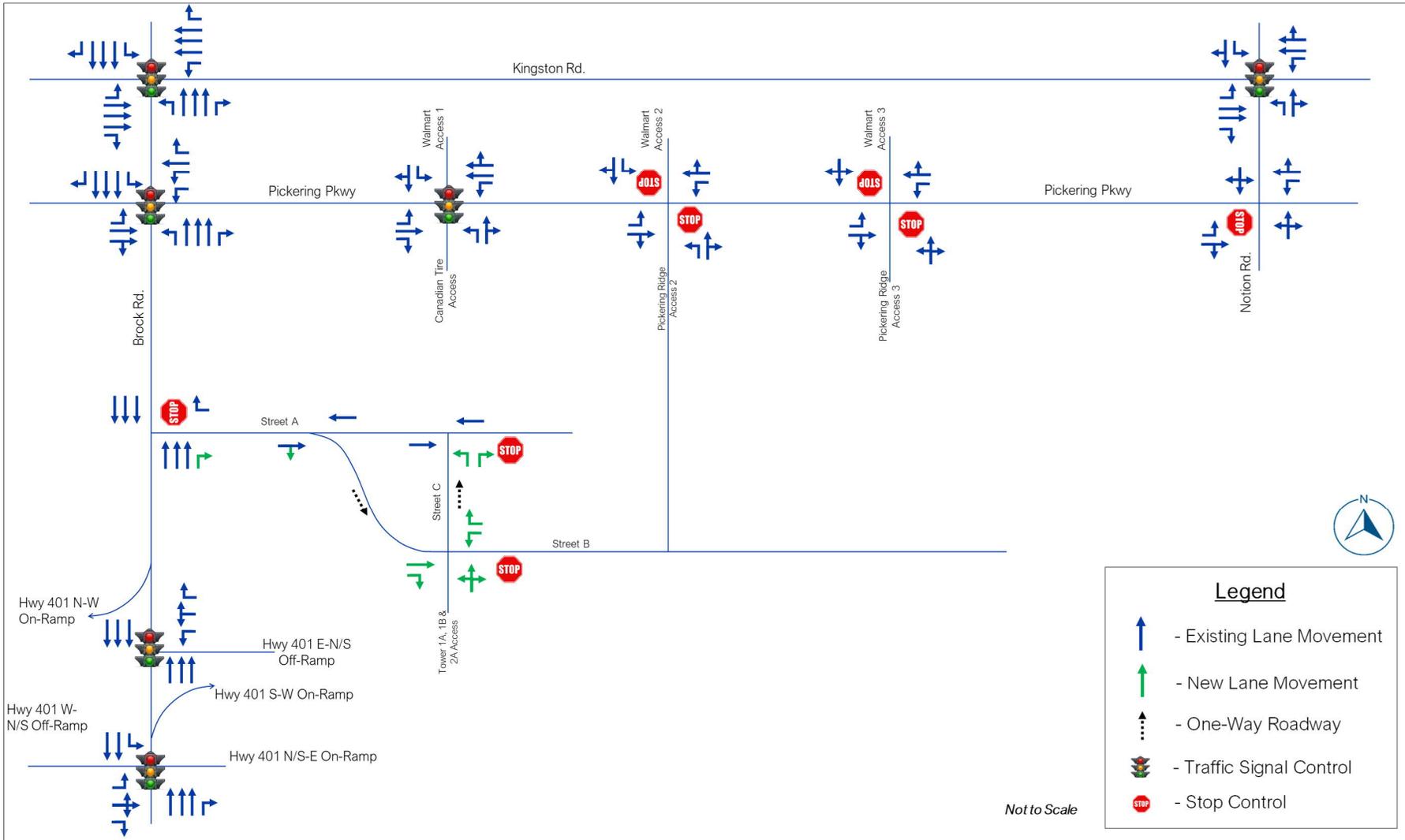


Figure 6.4 – Phase 1 Lane Configurations & Traffic Control

## 6.2.2 Phase 1 Site Trip Generation

Trip generation for Phase 1 of the proposed development was completed using methodology found in both the ITE Trip Generation Manual (11<sup>th</sup> edition) and Trip Generation Handbook 3<sup>rd</sup> Edition. The Trip Generation Manual was utilized to first determine the number of baseline vehicle trips forecast for each land use proposed under Phase 1 of the development. Specifically, land use code (LUC) 222 Multi-Family Housing was used to establish baseline vehicle trips for the residential portion of the development while LUC 820 Shopping Centre (>150K) was used for the commercial portion. The baseline vehicle trip generation for each land use is illustrated in detail trip generation table found in **Appendix 8**.

Once the baseline vehicle trips were established, methodology found in Chapter 6 (Trip Generation for Mixed-Use Development) and 7 (Trip Generation for Urban Infill/Redevelopment) of the Trip Generation Handbook was used to determine the proportion of site trips which are made internally within the site and those which would be external. The external trips were further broken down by mode choice including vehicle, walking, cycling and transit. For determining the breakdown of internal trips and external trips made by various travel modes, the Internal Trip Capture Estimation Tool, which is detailed in National Cooperative Highway Research Program (NCHRP) Report 684 and described in Chapter 6 and 7 of the ITE Trip Generation Handbook, was used. When utilizing this tool, vehicle occupancy values from Appendix B.1 and B.2 of the of the Trip Generation Handbook were utilized to convert the entering and exiting baseline vehicle trips into 'person trips' in order to further breakdown the entering and exiting trips by various modes. Modal split values utilized within the tool for entering and exiting trips were established through the approved TOR and were previously presented within Section 4.4.2 of this report. The resulting internal captured trips and remaining external trips for each proposed land use to be made by vehicles, transit and non-motorized modes of transportation established from utilizing the estimation tool can be found in **Appendix 9**.

The resulting external vehicle trips for the residential land use established through the estimation tool would be new 'primary' trips to be added to the study area intersections. The external commercial trips were further broken down into not only primary trips, but also pass-by and diverted trips. The portion of external commercial trips which would be pass-by and diverted in nature were established utilizing average rates taken from the ITE 2021 Pass-By Tables spreadsheet. It should be noted that no pass-by or diverted percentages were available for the weekday a.m. or Saturday Midday peak hours. Given the nature of the commercial land uses it is accepted that no pass-by or diverted trip making would take place therefore no reduction breakdown was applied to trips generated for this peak hour. However,

it is expected that these trip types would occur therefore the average rate used established for the p.m. peak hour was used for the Saturday Midday peak hour as well. The detailed calculations of primary, pass-by and diverted trips for the commercial portion of the development can be seen in **Appendix 8**.

A summary of the resulting primary residential trips for Phase 1 of the development during the weekday a.m., p.m., and Saturday Midday Peak hours plus the primary, pass-by and diverted site trips for the commercial portion of Phase 1 during the same peak hours are presented in **Table 6.2**.

As presented in the table, during the weekday a.m. peak hour, the proposed development is forecast to generate a total of 259 total two-way trips (123 inbound, 136 outbound). During the p.m. peak hour, the proposed development is forecast to generate 186 primary trips (96 inbound, 90 outbound), 33 pass-by trips (16 inbound, 17 outbound) and 32 diverted trips (15 inbound, 17 outbound). During the Saturday Midday peak hour, the site is forecast to generate 224 primary trips (109 inbound, 115 outbound), 36 pass-by trips (19 inbound, 17 outbound) and 35 diverted trips (18 inbound, 17 outbound).

Table 6.2 – Phase 1 Site Generated Traffic Volumes

ITE Land Use (Code)	No. of Units / 1000ft <sup>2</sup> GFA	Peak Hour	Pass-By Trips			Diverted Trips			Primary Trips			Total Two-Way Trips
			IN	OUT	Total	IN	OUT	Total	IN	OUT	Total	
Multifamily Housing (High-Rise) (LUC 222)	630	AM	-	-	-	-	-	-	41	95	136	<b>136</b>
		PM	-	-	-	-	-	-	74	64	138	<b>138</b>
		SAT	-	-	-	-	-	-	82	88	170	<b>170</b>
Shopping Center (LUC 820)	18	AM	-	-	-	-	-	-	82	41	123	<b>123</b>
		PM	16	17	33	15	17	32	22	26	48	<b>113</b>
		SAT	19	17	36	18	17	35	27	27	54	<b>125</b>
<b>Phase 1 Totals</b>		<b>AM</b>	-	-	-	-	-	-	<b>123</b>	<b>136</b>	<b>259</b>	<b>259</b>
		<b>PM</b>	<b>16</b>	<b>17</b>	<b>33</b>	<b>15</b>	<b>17</b>	<b>32</b>	<b>96</b>	<b>90</b>	<b>186</b>	<b>251</b>
		<b>SAT</b>	<b>19</b>	<b>17</b>	<b>36</b>	<b>18</b>	<b>17</b>	<b>35</b>	<b>109</b>	<b>115</b>	<b>224</b>	<b>295</b>

### 6.2.3 Trip Distribution and Assignment

The site generated traffic for Phase 1 of the development was assigned to the road network based on 2016 Transportation Tomorrow Survey (TTS) data which was utilized for the 1899 Brock Road Development TIS and further utilized in the previously completed 1755 Pickering Parkway TIS completed by RVA. Trip distributions for the residential, commercial inbound and commercial outbound are shown in Table 6.3, Table 6.4, and Table 6.5 respectively.

Table 6.3 – Residential Trip Distribution Percentages

Origin		Peak Hour		
Direction	Corridor	AM	PM	SAT
North	Brock Road	17%	17%	17%
East	Highway 401 West	4%	5%	5%
	Kingston Road	5%	6%	6%
South	Brock Road	10%	10%	10%
West	Highway 401 East	45%	43%	43%
	Pickering Parkway	16%	16%	16%
	Kingston Road	3%	3%	3%
<b>Total</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 6.4 – Commercial Inbound Trip Distribution Percentages

Origin		Peak Hour		
Direction	Corridor	AM	PM	SAT
North	Brock Road	19%	21%	19%
East	Highway 401 West	14%	20%	14%
	Pickering Parkway	7%	7%	7%
	Kingston Road	12%	17%	12%
South	Brock Road	12%	9%	12%
West	Highway 401 West	12%	6%	12%
	Pickering Parkway	16%	7%	8%
	Kingston Road	8%	13%	16%
<b>Total</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 6.5 – Commercial Outbound Trip Distribution Percentages**

Origin		Peak Hour		
Direction	Corridor	AM	PM	SAT
North	Brock Road	20%	24%	20%
East	Highway 401 West	12%	16%	12%
	Pickering Parkway	9%	7%	9%
	Kingston Road	15%	18%	15%
South	Brock Road	9%	9%	9%
West	Highway 401 West	12%	8%	12%
	Pickering Parkway	8%	6%	8%
	Kingston Road	15%	12%	15%
<b>Total</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>

Utilizing the trip distribution percentages presented in the previous tables, the pass-by-, diverted and primary site generated traffic from Phase 1 of the development was assigned to the study area intersections. The resulting primary, pass-by and diverted site traffic volumes for Phase 1 of the development during the weekday a.m., p.m. and Saturday midday peak hours are presented in **Figure 6.5**, **Figure 6.6**, **Figure 6.7**, and **Figure 6.8** respectively.

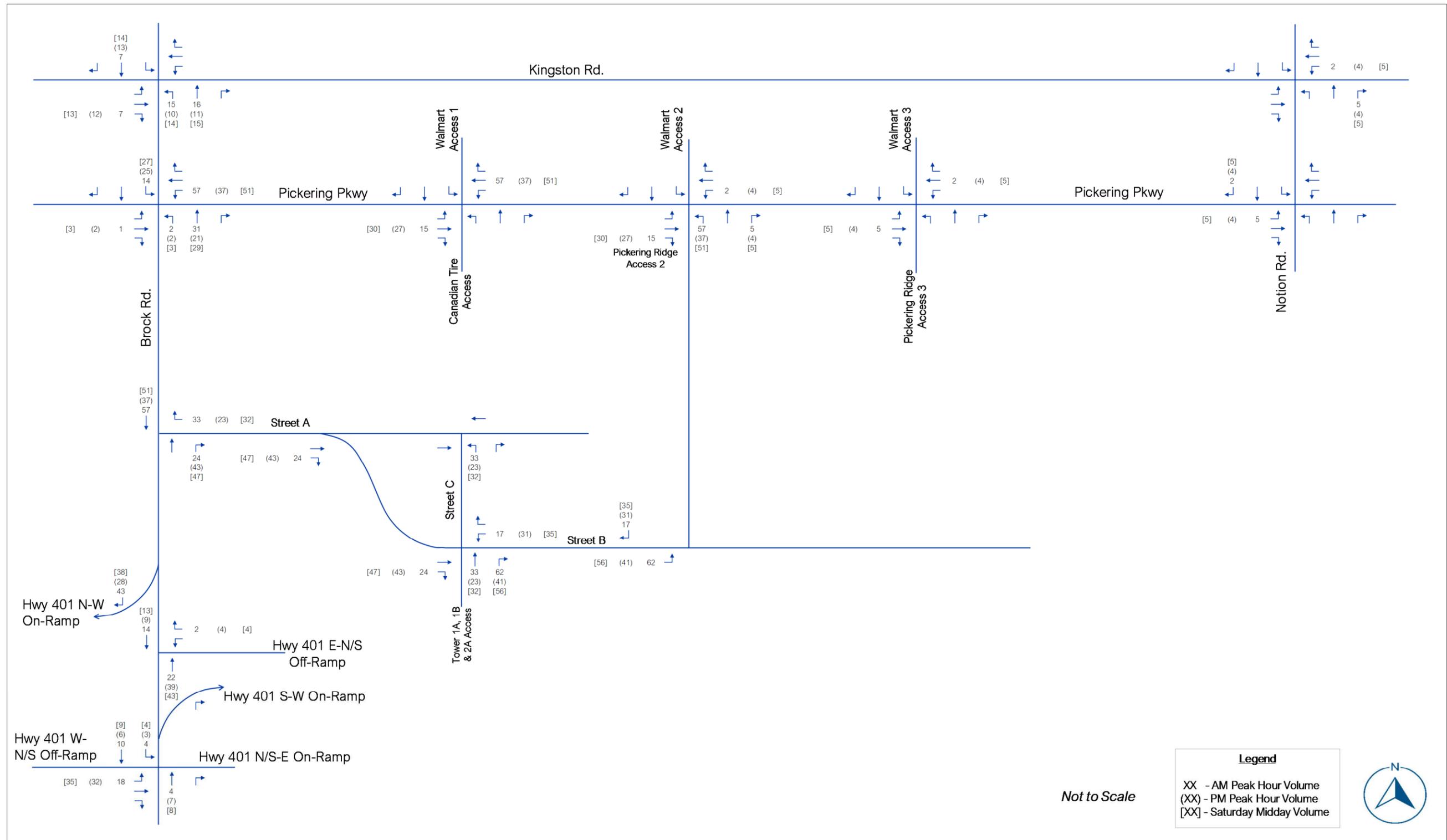


Figure 6.5 – Phase 1 Primary Residential Site Trips

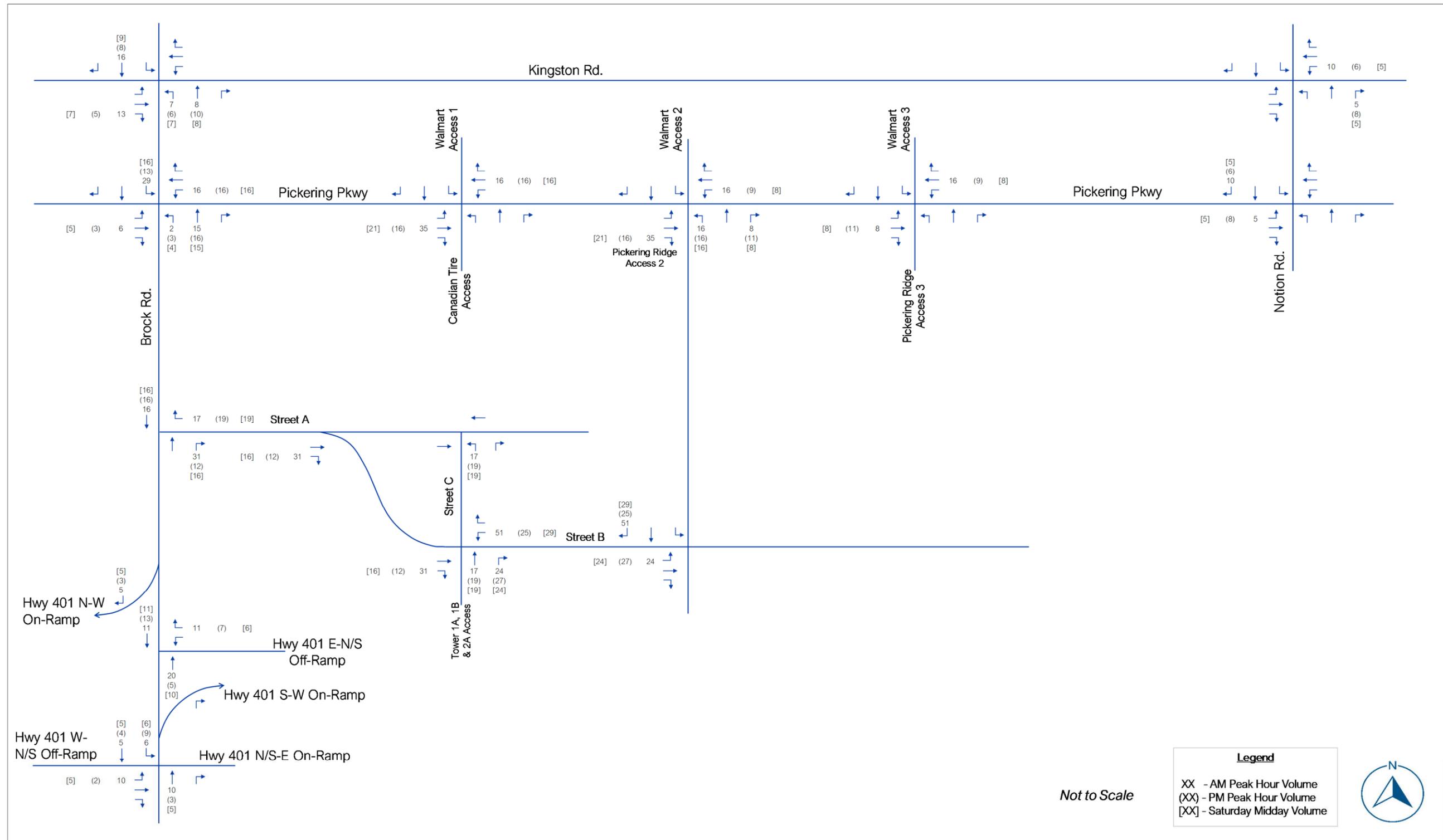


Figure 6.6 – Phase 1 Primary Commercial Trips

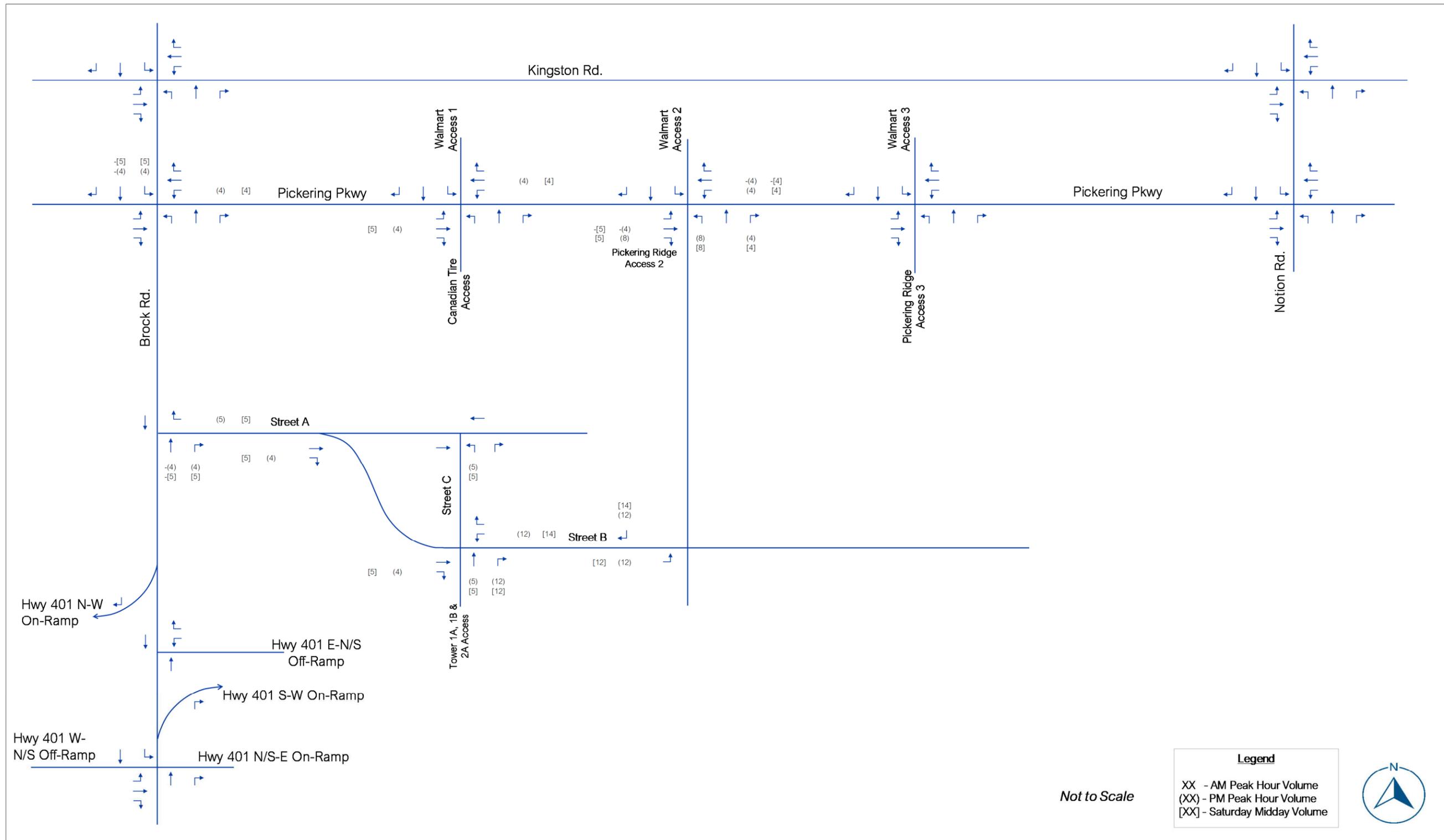


Figure 6.7 – Phase 1 Pass-By Commercial Trips

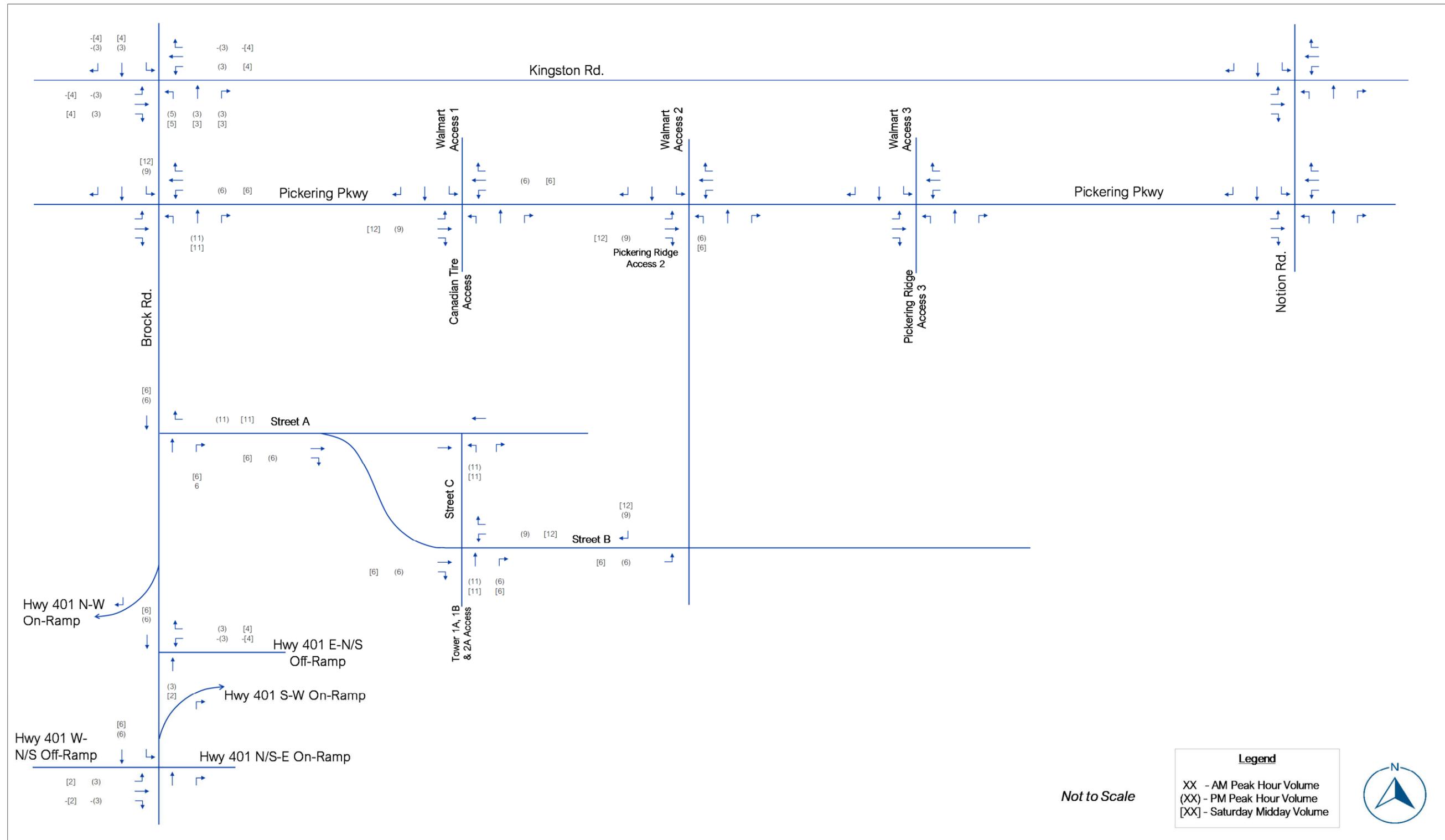


Figure 6.8 – Phase 1 Diverted Commercial Trips

## 6.3 Future Total (2026) Traffic Conditions

### 6.4 Future Total (2026) Traffic Volumes

The future total 2026 traffic volumes for Phase 1 of the proposed development were established by combining the background 2026 traffic volumes presented in **Figure 6.3**, with the Phase 1 site generated traffic presented in **Figures 6.5 to 6.8**. The resulting future total 2026 traffic volumes for the weekday a.m., p.m. and Saturday midday peak hours are presented in **Figure 6.9**.

### 6.5 Future Total (2026) Intersection Operational Analysis

Using the future total 2026 traffic volumes, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday midday peak hours. The results of the analysis are presented in **Table 6.6**. All HCM output reports are provided in **Appendix 10**.

As presented in **Table 6.6**, the addition of site generated traffic from Phase 1 of the proposed development has had only a minor impact to overall intersection operations within the study area. Overall intersection and individual movement v/c ratios increase slightly at the Brock Road with Kingston Road and Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp intersections, which is a continuation of what was determined under existing traffic conditions.

Overall intersection v/c ratios at Brock Road with Pickering Parkway have also gone up slightly during all three peak hours with the addition of Phase 1 site trips. However, reserve capacity is available at the intersection.

The right-in-right-out access at Brock Road and Street 'A' (existing The Shops at Pickering Ridge) access is forecast to operate well with the addition of Phase 1 site generated traffic. No queuing issues are forecast for northbound traffic therefore no impacts are anticipated at the Highway 401 E-N/S Off-Ramp operations.

All other unsignalized intersection including the development accesses along Pickering Parkway are forecast to continue operating well under future total 2026 traffic conditions.

In addition, no queuing issues are forecasted for the new internal site intersections implemented as part of Phase 1 (Street 'A' with Street 'B' or Street 'C').

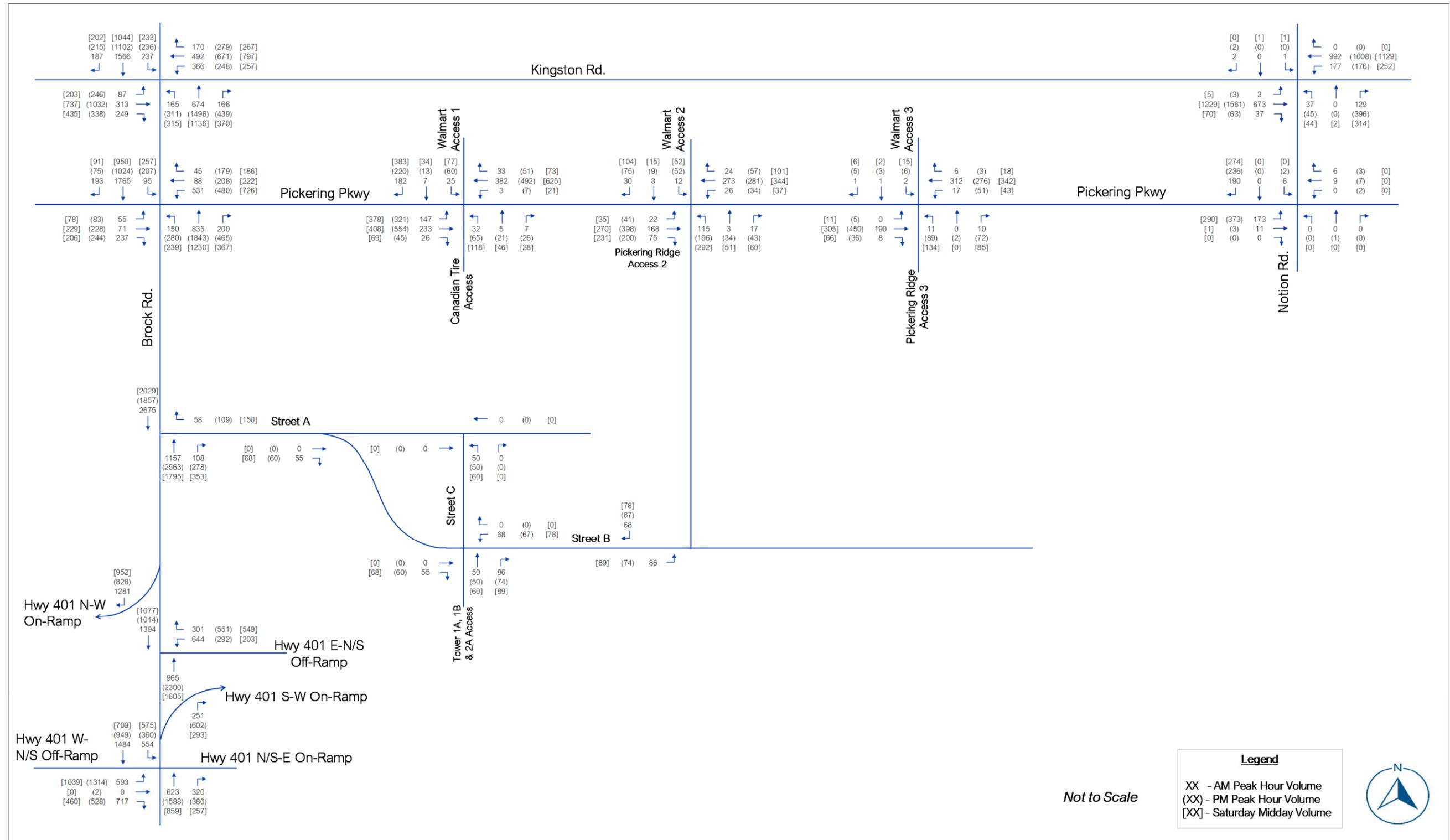


Figure 6.9 – Future Total (2026) Traffic Volumes

Table 6.6 – Future Total (2026) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.86	111	F	#56	1.81	422	F	#154	1.99	504	F	#128
EBT	2 T		0.34	32	C	50	0.97	60	E	#194	0.67	34	C	105
EBR	1 R	105	0.49	19	B	54	0.66	21	C	82	0.83	35	C	#140
WBL	1 L	180	3.10	984	F	#237	2.05	522	F	#177	2.60	762	F	m#167
WBT	2 T		0.51	34	C	79	0.69	38	D	114	0.72	50	D	m132
WBR	1 R	115	0.30	5	A	16	0.43	9	A	31	0.45	29	C	m70
NBL	1 L	110	2.04	507	F	#180	1.85	421	F	#245	1.88	435	F	#181
NBT	3 T		0.58	37	D	79	1.07	84	F	#203	0.78	37	D	118
NBR	1 R	70	0.32	6	A	17	0.79	33	C	#117	0.65	23	C	81
SBL	1 L	145	0.99	69	E	#113	1.27	176	F	#140	1.23	164	F	#105
SBT	3 T		1.00	59	E	#208	0.92	52	D	#151	0.72	35	C	106
SBR	1 R	135	0.30	5	A	16	0.40	9	A	27	0.35	10	A	28
<b>Overall</b>			<b>1.32</b>	<b>138</b>	<b>F</b>	<b>-</b>	<b>1.18</b>	<b>113</b>	<b>F</b>	<b>-</b>	<b>1.07</b>	<b>109</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	11	B	2	0.02	14	B	2	0.03	22	C	m1.2
EBT	2 T		0.39	11	B	74	1.05	63	E	#256	0.73	35	C	m168
EBR	1 R	20	0.13	6	A	14	0.13	7	A	13	0.18	17	B	m25
WBL	1 L	55	0.45	7	A	24	1.00	86	F	#76	1.05	94	F	#117
WB	1 T & 1 T/R		0.43	6	A	69	0.57	14	B	92	0.54	12	B	100
NB	1 L/T/R		0.76	31	C	40	1.07	84	F	#178	0.92	52	D	#124
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.01	30	C	2
<b>Overall</b>			<b>0.47</b>	<b>10</b>	<b>B</b>	<b>-</b>	<b>1.05</b>	<b>51</b>	<b>D</b>	<b>-</b>	<b>0.81</b>	<b>33</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	46	D	24	0.53	49	D	34	0.59	56	E	34
EB	1 T & 1 T/R		0.87	35	D	37	0.78	34	C	52	0.80	36	D	49
WBL	2 L	60	1.46	250	F	#147	0.88	53	D	#82.7	1.13	109	F	m#135
WBT	1 T		0.17	25	C	29	0.32	18	B	52	0.32	18	B	m47
WBR	1 R	45	0.09	7	A	m5.6	0.28	6	A	25	0.28	6	A	m16
NBL	1 L	135	0.70	41	D	m#52	0.85	45	D	m#74	0.77	31	C	#62
NBT	3 T		0.54	27	C	66	1.27	153	F	#246	0.21	28	C	115
NBR	1 R	60	0.35	6	A	13	0.74	14	B	m39	0.55	6	A	6
SBL	1 L	110	0.50	19	B	27	0.95	72	E	#97	1.44	247	F	#140
SBT	3 T		0.99	48	D	#190	0.80	38	D	99	0.63	33	C	80
SBR	1 R	160	0.29	4	A	15	0.14	1	A	0	0.17	1	A	1
<b>Overall</b>			<b>0.94</b>	<b>67</b>	<b>E</b>	<b>-</b>	<b>1.03</b>	<b>79</b>	<b>E</b>	<b>-</b>	<b>1.01</b>	<b>53</b>	<b>D</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.25	4	A	19	0.62	6	A	m25	1.06	65	E	m#61
EBT	1 T		0.23	5	A	30	0.43	3	A	m45	0.43	8	A	m32
EBR	1 R		0.03	2	A	m2.8	0.04	1	A	m0.5	0.07	1	A	m0.2
WBL	1 L	35	0.00	9	A	m1.3	0.03	12	B	m3.8	0.09	20	C	11
WB	1 T & 1 T/R		0.19	8	A	25	0.31	11	B	m43	0.52	24	C	72
NBL	1 L	25	0.40	54	D	14	0.66	79	E	22	1.47	301	F	#66
NB	1 T/R		0.08	21	C	7	0.28	19	B	16	0.17	13	B	19
SBL	1 L	25	0.31	44	D	19	0.58	53	D	34	0.29	27	C	35
SB	1 T/R		0.75	14	B	29	0.63	13	B	25	0.79	20	C	99
<b>Overall</b>			<b>0.42</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.48</b>	<b>12</b>	<b>B</b>	<b>-</b>	<b>0.80</b>	<b>39</b>	<b>D</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street C/Walmart East Access 2/Pickering Pkwy - Unsignalized</b>														
EBL	1 L/T/R		0.02	1	A	1	0.03	1	A	1	0.02	1	A	1
WBL	1 L	40	0.04	8	A	1	0.10	10	A	3	0.10	9	A	3
WBT	1 T/R		0.20	0	A	0	0.31	0	A	0	0.36	0	A	0
NBL	1 L		0.12	14	B	3	0.61	39	F	29	0.92	79	E	66
NBT	1 T/R		0.15	11	B	4	0.39	20	C	15	0.45	19	B	18
SBL	1 L		0.07	15	B	2	0.71	85	F	32	0.62	59	E	27
SBT	1 T/R		0.04	11	B	1	0.15	14	B	4	0.21	15	B	6
<b>Overall</b>			<b>0.55</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.90</b>	<b>10</b>	<b>C</b>	<b>-</b>	<b>0.79</b>	<b>16</b>	<b>B</b>	<b>-</b>
<b>Street D/Walmart East Access 2/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
WB	1 L/T/R		0.02	1	A	1	0.09	2	A	2	0.07	2	A	2
NB	1 L/T/R		0.08	14	B	2	1.21	197	F	85	1.33	230	F	115
SB	1 L/T/R		0.03	18	C	1	0.22	72	F	6	0.34	65	E	10
<b>Overall</b>			<b>0.52</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.88</b>	<b>25</b>	<b>E</b>	<b>-</b>	<b>0.85</b>	<b>39</b>	<b>D</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.60	19	C	32	1.32	183	F	213	1.35	200	F	211
WB	1 L/T/R		0.04	13	B	1	0.04	18	C	1	0.00	0	A	0
NB	1 L/T/R		0.04	4	A	1	0.11	5	A	3	0.17	7.3	A	5
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.59</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.78</b>	<b>95</b>	<b>F</b>	<b>-</b>	<b>0.81</b>	<b>95</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
WBR	1 R	10	0.07	9	A	2	0.19	12	B	6	0.19	10	A	5
NBT	3 T		0.29	0	A	0	0.61	0	A	0	0.40	0	A	0
NBR	1 R		0.29	0	A	0	0.61	0	A	0	0.40	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.60</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.69</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.52</b>	<b>0</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.78	39	D	86	0.87	49	D	#95	0.64	34	C	61
<b>WBR</b>	1 R	95	0.79	40	D	89	0.93	69	E	#130	0.81	49	D	92
<b>NBT</b>	3 T		0.43	12	B	m35	0.85	17	B	m65	0.56	17	B	m83
<b>SBT</b>	3 T		0.50	12	B	m52	0.32	14	B	m59	0.33	16	B	m73
<b>Overall</b>			<b>0.51</b>	<b>20</b>	<b>B</b>	<b>-</b>	<b>0.74</b>	<b>27</b>	<b>C</b>	<b>-</b>	<b>0.54</b>	<b>22</b>	<b>C</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		0.99	70	E	#190	1.56	288	F	#349	1.19	134	F	#249
<b>EBT</b>	1 L/T/R		1.01	71	E	#188	1.65	325	F	#374	1.17	122	F	#250
<b>EBR</b>	1 R	245	0.97	63	E	#167	1.10	97	F	#194	0.74	21	C	89
<b>NBT</b>	2 T & 1 T/R		1.05	75	E	#112	1.48	248	F	#255	0.76	33	C	90
<b>SBL</b>	1 L		1.20	131	F	#215	1.15	124	F	m#174	1.39	221	F	#239
<b>SBT</b>	2 T		0.84	22	C	163	0.52	8	A	m38	0.31	4	A	12
<b>Overall</b>			<b>1.11</b>	<b>63</b>	<b>E</b>	<b>-</b>	<b>1.19</b>	<b>203</b>	<b>F</b>	<b>-</b>	<b>1.07</b>	<b>87</b>	<b>F</b>	<b>-</b>
<b>Street B/Tower 1 &amp; Tower 2 Access - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.04	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>WBL</b>	1 L		0.05	7	A	1	0.05	7.5	A	1	0.06	8	A	2
<b>WBR</b>	1 R		0.00	0	A	a	0.00	0	A	0	0.20	10	B	6
<b>NB</b>	1 T/R		0.16	5	A	5	0.16	10	B	5	0.20	10	B	6
<b>Overall</b>			<b>0.18</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.25</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.27</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Street A/Street B - Unsignalized</b>														
<b>EB</b>	1 T/R		0.04	0	A	0	0.18	0	A	0	0.23	0	A	0
<b>WBT</b>	1 T		0.03	0	A	0	0.03	0	A	0	0.04	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.07</b>	<b>0</b>	<b>A</b>	<b>0</b>	<b>0.34</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>0</b>	<b>A</b>	<b>-</b>

## 7.0 Future (2031) Traffic Conditions

The following sections present the analysis of the study area intersections under future 2031 background and total traffic conditions which includes full build-out of Phases 1 through 4 of the proposed development. The sections include the forecasting of future background 2031 traffic volumes, trip generation for Phases 2 to 4 of the proposed development and the establishing of future total 2031 traffic volumes.

### 7.1 Future Background (2031) Traffic Conditions

#### 7.1.1 Study Area Transportation Network Improvements

##### 7.1.1.1 NOTION ROAD FLY-OVER

In October 2019, the City of Pickering and Pickering Development Inc. completed a Schedule 'C' Municipal Environmental Assessment (EA) for a new roadway crossing over Highway 401 connecting Notion Road with Squires Beach Road.

This crossing was then incorporated into the Region of Durham Transportation Master Plan (TMP) with a timeline for implementation anytime from 2031 onward. For the purpose of this study, the Notion Road extension was considered as part of the 2031 horizon year roadway network. This connection would result in a redistribution of traffic in the area, as north-south trips that were previously restricted to Brock Road only would now have an alternative route.

In determining the redistribution of traffic for this study, the assumptions outlined in Figure 8 of the Transportation Considerations Memo found in Appendix B of the EA Report were utilized. A snippet of the figure can be found in **Appendix 11**.

##### 7.1.1.2 TRANSIT IMPROVEMENTS

By the year 2031, Durham Region Transit has identified Brock Road as a future high-frequency bus route with headways expected to be between 5-10 minutes and Kingston Road as a future rapid transit route with an estimated headway of 5 minutes. These enhanced transit services will greatly reduce the discrepancy in travel time between automobile and transit and significantly decrease the amount of single-occupancy vehicle trips within the study area.

### **7.1.2 Redistribution of Existing (2023) Traffic Volumes**

Based on the implementation of the Notion Road extension, the existing 2023 traffic volumes were redistributed throughout the study area intersections utilizing the assumptions found in Figure 8 of the Transportation Considerations Memo found in Appendix B of the EA Report and also found in **Appendix 11** of this document. The resulting redistributed existing 2023 traffic volumes are presented in **Figure 7.1**.

### **7.1.3 Future Background (2031) Traffic Growth**

Utilizing the redistributed existing 2023 traffic volumes, 0.5% per annum future background traffic growth was again applied to all through movements along Brock Road and Kingston Road, as well as all turning movements from the MTO off-ramps. The resulting future 2031 background traffic growth volumes for the weekday a.m., p.m., and Saturday Midday are presented in **Figure 7.2**.

### **7.1.4 Future Background (2031) Developments**

At the 2031 horizon year there are several background developments expected to be built out. Site traffic generated from these developments was extracted from their respective reports/documents and applied to the study area intersections where applicable. The proposed developments considered for the 2031 horizon year are as follows:

- 1) Universal City Development;
- 2) Film Studio Development;
- 3) 1695 Bayly Street Commercial Development;
- 4) 1899 Brock Road Mixed-use Development (Phase 2);
- 5) 1970 Brock Road Mixed-use Development;

The site generated traffic volumes extracted from their respective documents can be found in **Appendix 6**. The total development site traffic volumes for the 2031 horizon year are presented in **Figure 7.3**.

It should be noted that for the 2031 horizon year that the site traffic volumes from Phase 1 of the proposed development were considered a background development.

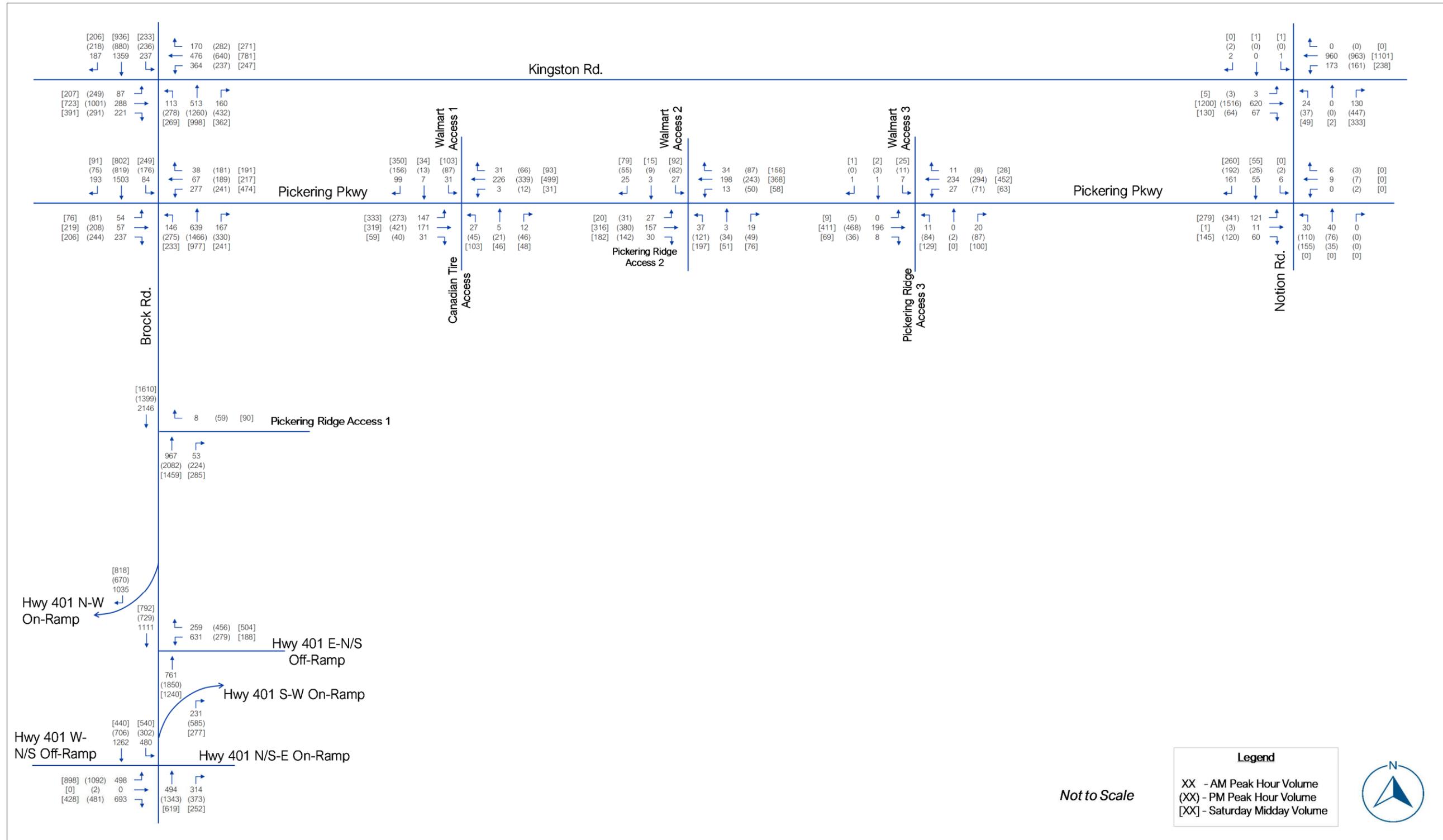


Figure 7.1 – Existing (2023) Redistributed Traffic Volumes

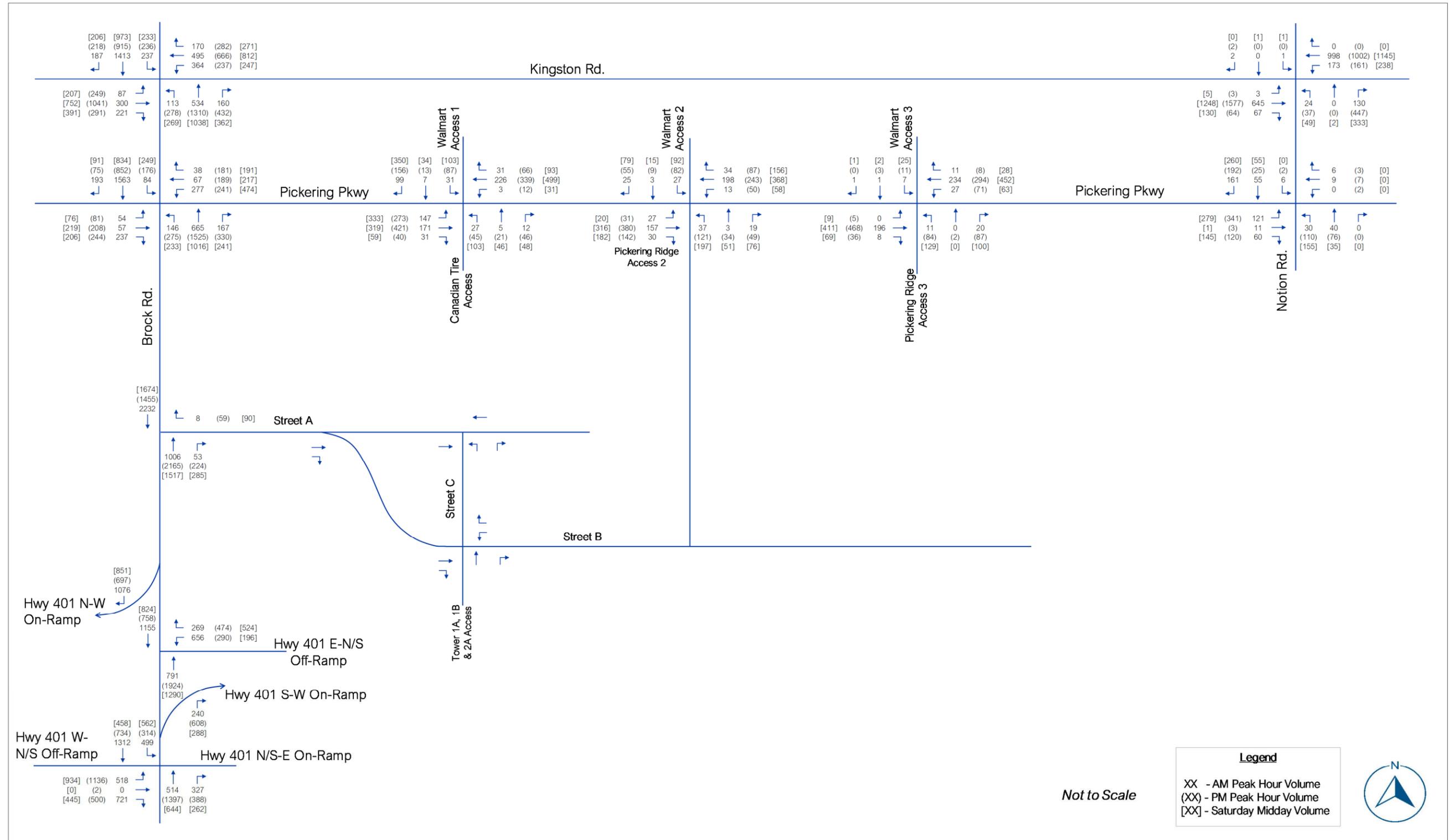


Figure 7.2 – Future (2031) Background Traffic Growth

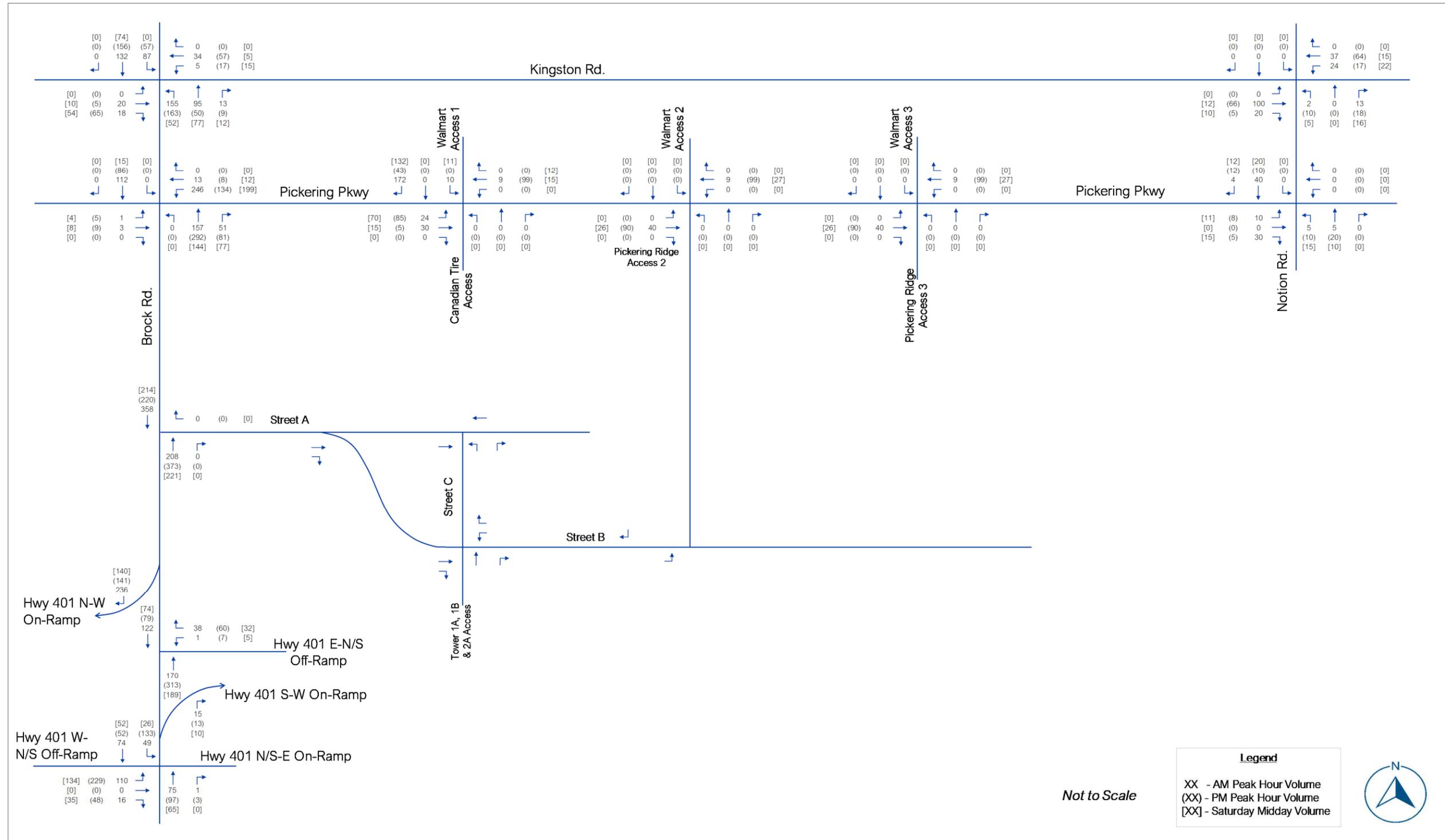


Figure 7.3 – Future (2031) Background Development Traffic Volumes

### **7.1.5 Removal of Existing Commercial Traffic Volumes**

The implementation of Phases 2 to 4 of the proposed development will result in the removal of approximately 39,567 ft<sup>2</sup> of existing commercial GFA. This equates to approximately 13% of the overall existing commercial GFA present on the site. With the removal of this commercial GFA, approximately 13% of the traffic volumes present at the existing site accesses were removed including being traced back and removed through the greater study area intersections. These existing commercial trips were traced back through the intersections based on the existing travel proportions present at the intersection.

### **7.1.6 Future Background (2031) Traffic Volumes**

The future background 2031 traffic volumes were established by first removing 13% of the existing commercial traffic from the background traffic growth volumes presented in **Figure 7.2**. The resulting traffic volumes were then combined with the background development site trips presented in both **Figure 6.2** and **Figure 7.3** plus the total site generated traffic volumes from Phase 1 of the proposed development found in **Figures 6.5** through **6.8**. The resulting future background 2031 traffic volumes for the weekday a.m., p.m., and Saturday Midday peak hours are presented in **Figure 7.4**.

### **7.1.7 Future Background (2031) Intersection Operational Analysis**

Using the future background 2031 traffic volumes presented in **Figure 7.4**, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours. The results of the operational analysis completed are presented in **Table 7.1**. All HCM output reports are provided in **Appendix 12**.

As presented in **Table 7.1**, with the addition background traffic growth and development site trips to the study area intersections, overall v/c ratios, movement v/c ratios, levels of service and delay are forecast to increase at all intersections including Brock Road with Kingston Road, Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp which were already operating over capacity with several critical movements at each intersection.

At the existing The Shops at Pickering Ridge Accesses with Pickering Parkway the northbound movements existing the site are forecast to have increased delays and v/c's.

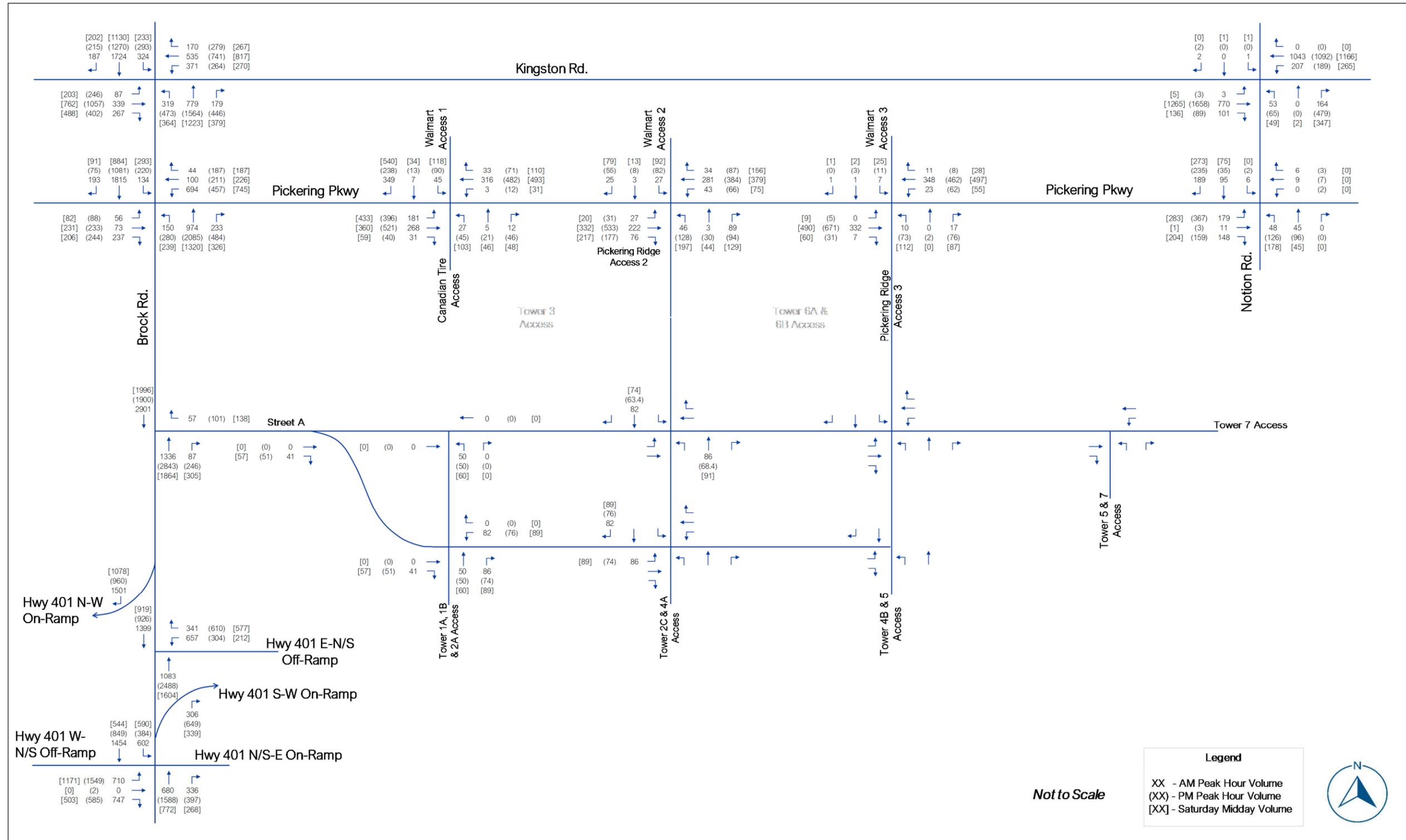


Figure 7.4 – Future (2031) Background Traffic Volumes

Table 7.1 – Future Background (2031) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.86	111	F	#56	1.67	361	F	#151	1.15	157	F	#115
EBT	2 T		0.34	32	C	50	1.04	80	E	#205	0.75	43	D	121
EBR	1 R	105	0.49	19	B	54	0.67	20	B	77	0.82	31	C	#128
WBL	1 L	180	3.10	982	F	#242	1.59	315	F	m#163	1.41	246	F	m#158
WBT	2 T		0.51	36	D	88	0.70	44	D	m129	0.79	51	D	136
WBR	1 R	115	0.30	14	B	34	0.43	19	B	m58	0.43	17	B	m50
NBL	1 L	110	2.03	509	F	#184	1.74	363	F	m#143	1.41	221	F	m#122
NBT	3 T		0.58	15	B	26	1.10	70	E	m144	0.89	43	D	m126
NBR	1 R	70	0.32	2	A	0	0.80	12	B	m69	0.65	21	C	m75
SBL	1 L	145	0.99	69	E	#113	1.17	138	F	#135	0.91	65	E	#94
SBT	3 T		1.00	59	E	#208	0.95	56	E	#154	0.82	45	D	123
SBR	1 R	135	0.30	5	A	16	0.40	8	A	23	0.36	6	A	19
<b>Overall</b>			<b>1.32</b>	<b>135</b>	<b>F</b>	<b>-</b>	<b>1.08</b>	<b>97</b>	<b>F</b>	<b>-</b>	<b>0.95</b>	<b>63</b>	<b>E</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	13	B	m0.8	0.01	19	B	m0.3	0.03	33	C	m1.5
EBT	2 T		0.37	13	B	m73	1.01	36	D	m144	0.68	42	D	m211
EBR	1 R	20	0.12	8	A	m13	0.12	10	A	m5.5	0.17	23	C	m31
WBL	1 L	55	0.45	7	A	26	0.98	88	F	#85	0.73	30	C	71
WB	1 T & 1 T/R		0.42	6	A	77	0.55	15	B	104	0.48	8	A	98
NB	1 L/T/R		0.80	42	D	52	1.06	85	F	#202	0.90	40	D	78
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.01	36	D	3
<b>Overall</b>			<b>0.46</b>	<b>12</b>	<b>A</b>	<b>-</b>	<b>1.02</b>	<b>39</b>	<b>F</b>	<b>-</b>	<b>0.73</b>	<b>28</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.40	55	D	27	0.56	59	E	39	0.57	61	E	37
EB	1 T & 1 T/R		0.91	43	D	44	0.78	37	D	56	0.77	39	D	53
WBL	2 L	60	1.33	202	F	#163	1.21	161	F	#115	1.19	134	F	m#158
WBT	1 T		0.17	28	C	32	0.38	39	D	67	0.33	22	C	m58
WBR	1 R	45	0.09	8	A	8	0.33	17	B	36	0.28	5	A	m23
NBL	1 L	135	0.56	36	D	51	0.69	31	C	m74	0.64	29	C	73
NBT	3 T		0.53	30	C	79	1.18	122	F	#275	1.05	82	F	#169
NBR	1 R	60	0.35	8	A	17	0.72	26	C	m90	0.68	23	C	60
SBL	1 L	110	0.45	27	C	m30	0.64	18	B	m45	0.70	25	C	m#79
SBT	3 T		1.03	72	E	m#186	0.68	35	C	m107	0.59	26	C	m91
SBR	1 R	160	0.30	21	C	m20	0.13	8	A	m4.0	0.17	5	A	m7
<b>Overall</b>			<b>1.06</b>	<b>71</b>	<b>F</b>	<b>-</b>	<b>1.09</b>	<b>76</b>	<b>F</b>	<b>-</b>	<b>1.01</b>	<b>58</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.24	2	A	13	0.60	6	A	22	0.89	41	D	#141
EBT	1 T		0.22	3	A	22	0.40	4	A	29	0.41	13	B	63
EBR	1 R		0.03	1	A	m2.0	0.04	1	A	m0.5	0.08	3	A	m2.0
WBL	1 L	35	0.00	6	A	m1.1	0.02	11	B	m3.7	0.13	37	D	m15
WB	1 T & 1 T/R		0.17	5	A	20	0.27	10	B	m50	0.72	44	D	#112
NBL	1 L	25	0.48	74	E	16	0.80	118	F	#28	1.29	222	F	#71
NB	1 T/R		0.10	26	C	8	0.30	22	C	18	0.15	12	B	19
SBL	1 L	25	0.38	57	E	23	0.62	66	E	40	0.26	26	C	35
SB	1 T/R		0.78	17	B	32	0.65	14	B	28	0.64	6	A	33
<b>Overall</b>			<b>0.43</b>	<b>11</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>14</b>	<b>A</b>	<b>-</b>	<b>0.77</b>	<b>34</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Unsignalized</b>														
EBL	1 L/T/R		0.02	1	A	1	0.03	1	A	1	0.02	1	A	1
WBL	1 L	40	0.04	8	A	1	0.09	10	A	2	0.09	9	A	2
WBT	1 T/R		0.20	0	A	0	0.30	0	A	0	0.34	0	A	0
NBL	1 L		0.11	14	B	3	0.52	33	D	22	0.76	49	E	45
NBT	1 T/R		0.14	11	B	4	0.34	19	C	12	0.38	16	C	14
SBL	1 L		0.07	15	B	2	0.58	57	F	24	0.50	40	E	20
SBT	1 T/R		0.04	11	B	1	0.14	13	B	4	0.20	14	B	6
<b>Overall</b>			<b>0.54</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.88</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.76</b>	<b>11</b>	<b>B</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
WB	1 L/T/R		0.02	1	A	1	0.08	2	A	2	0.06	2	A	2
NB	1 L/T/R		0.06	14	B	2	0.96	115	F	60	1.07	131	F	79
SB	1 L/T/R		0.03	18	C	1	0.19	60	F	5	0.29	53	F	9
<b>Overall</b>			<b>0.49</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.84</b>	<b>14</b>	<b>B</b>	<b>-</b>	<b>0.78</b>	<b>21</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.59	19	C	31	1.22	145	F	181	1.23	150	F	173
WB	1 L/T/R		0.04	13	B	1	0.04	17	C	1				
NB	1 L/T/R		0.04	4	A	1	0.11	5	A	3				
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0				
<b>Overall</b>			<b>0.58</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.75</b>	<b>76</b>	<b>F</b>	<b>-</b>	<b>0.78</b>	<b>71</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
WBR	1 R	10	0.06	9	A	2	0.17	12	B	5	0.17	10	A	5
NBT	3 T		0.28	0	A	0	0.61	0	A	0	0.40	0	A	0
NBR	1 R		0.28	0	A	0	0.61	0	A	0	0.40	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.59</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.68</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.51</b>	<b>0</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.76	43	D	95	0.82	51	D	99	0.64	41	D	69
<b>WBR</b>	1 R	95	0.78	46	D	100	0.87	64	E	#132	0.80	55	D	102
<b>NBT</b>	3 T		0.41	16	B	m47	0.83	17	B	m69	0.53	14	B	m61
<b>SBT</b>	3 T		0.49	11	B	m48	0.31	8	A	m25	0.30	15	B	m43
<b>Overall</b>			<b>0.49</b>	<b>22</b>	<b>A</b>	<b>-</b>	<b>0.72</b>	<b>32</b>	<b>C</b>	<b>-</b>	<b>0.51</b>	<b>22</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		1.06	96	F	#230	1.39	219	F	#388	1.03	81	F	#262
<b>EBT</b>	1 L/T/R		1.09	101	F	#229	1.47	252	F	#416	1.03	79	E	#267
<b>EBR</b>	1 R	245	1.05	91	F	#205	1.02	74	E	#214	0.69	21	C	98
<b>NBT</b>	2 T & 1 T/R		0.99	65	E	#126	1.30	172	F	#279	1.06	88	F	#138
<b>SBL</b>	1 L		1.11	104	F	#248	1.47	256	F	#232	1.09	104	F	#239
<b>SBT</b>	2 T		0.77	26	C	184	0.54	22	C	103	0.32	18	B	52
<b>Overall</b>			<b>1.03</b>	<b>68</b>	<b>F</b>	<b>-</b>	<b>1.33</b>	<b>165</b>	<b>F</b>	<b>-</b>	<b>1.05</b>	<b>70</b>	<b>F</b>	<b>-</b>
<b>Street A/Street C - Unsignalized</b>														
<b>NBL</b>	1 L		0.05	9	A	1	0.05	9	A	1	0.06	9	A	2
<b>Overall</b>			<b>0.20</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Street B/Tower 1 &amp; Tower 2 Access - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.03	0	A	0	0.09	0	A	0	0.04	0	A	0
<b>WBL</b>	1 L		0.06	0	A	2	0.05	8	A	1	0.06	8	A	2
<b>WBR</b>	1 R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>NB</b>	1 T/R		0.17	10	A	5	0.15	10	A	4	0.19	11	B	6
<b>Overall</b>			<b>0.19</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.18</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>7</b>	<b>A</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street A/Street B - Unsignalized</b>														
<b>EB</b>	1 T/R		0.03	0	A	0	0.03	0	A	0	0.04	0	A	0
<b>WBT</b>	1 T		0.03	0	A	0	0.03	0	A	0	0.04	0	A	0
<b>Overall</b>			<b>0.20</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>0</b>	<b>A</b>	<b>-</b>

## 7.2 Phase 2 to 4 Development Site Traffic

### 7.2.1 Phases 2 to 4 Description and Access

As mentioned under Section 1.2, Phases 2 to 4 of the proposed development will consist of 2,558 residential units (1,090, 446 and 1,022 respectively) and 28,223 ft<sup>2</sup> (10,828 ft<sup>2</sup>, 9,903 ft<sup>2</sup>, and 7,492 ft<sup>2</sup> respectively) of commercial GFA. Phases 2 to 4 will be constructed along the southern most edge of the property and require the demolition of 39,567 ft<sup>2</sup> (36,535 ft<sup>2</sup> currently occupied) of total existing retail within Building 'A' and the relocation of 73,692 ft<sup>2</sup> of existing commercial demolished from Buildings 'B' and 'C' to the newly constructed Phase 1 to 4 buildings.

As part of the construction of Phases 2 to 4, Street 'B' will be continued further east beyond the location of Phase 1 providing accesses to Phases 2 and 3 and creating a new 'T' intersection at the front of the Phase 4 building. This new 'T' intersection will also connect with the existing eastmost The Shops at Pickering Ridge Access with Pickering Parkway. Street 'A' will now extend from Brock Road to the east end of the property forming connections with the existing north-south The Shops at Pickering Ridge Accesses (west and east) with Pickering Parkway. An additional north-south connection between Street 'A' and Street 'B' at the proposed access between Phase 2 and 3 will also be established.

The new north south connections between Street 'A' and Street 'B' with the existing The Shops at Pickering Ridge access will be referred to as Street 'D' (west access) and Street 'E' (east access). The proposed internal streets and connections can be seen in the proposed site plan and phasing implementation plans provided in **Appendix 1**.

The proposed internal roadway network intersections, lane configurations and proposed traffic control established for Phase 2 to 4 of the development is presented in **Figure 7.5**.



## 7.2.2 Phase 2 to 4 Site Trip Generation

Site generated traffic volumes for Phases 2 to 4 of the proposed development were forecasted utilizing the same methodology for determining primary, pass-by and diverted trips for both the residential and commercial land uses as for Phase 1 presented under Section 6.3.1.

The detailed trip generation tables are presented in **Appendix 8** and internal and external trip calculations utilizing the estimation tool are presented in **Appendix 9**.

**Table 7.2** presents a summary of the resulting total primary residential, primary, pass-by and diverted commercial site trips generated for Phases 2 to 4 of the proposed development for the weekday a.m., p.m., and Saturday midday peak hours.

As presented in the table, Phases 2 to 4 of the proposed development is forecast to generate 579 total two-way trips (221 inbound, 358 outbound) during the weekday a.m. peak hour. During the p.m. peak hour, the proposed development is forecast to generate 603 primary trips (325 inbound, 278 outbound), 44 pass-by trips (21 inbound, 23 outbound) and 42 diverted trips (20 inbound, 22 outbound). During the Saturday Midday peak hour, the site is forecast to generate 707 primary trips (352 inbound, 355 outbound), 50 pass-by trips (26 inbound, 24 outbound) and 48 diverted trips (25 inbound, 23 outbound).

## 7.2.3 Trip Distribution and Assignment

The site generated traffic for Phases 2 to 4 of the proposed development was assigned to the study area intersections based on the same TTS percentages presented under Section 6.2.3. The resulting primary residential, primary, pass-by and diverted commercial site trips for Phases 2 to 4 of the proposed development are presented in **Figure 7.6**, **Figure 7.7**, **Figure 7.8**, and **Figure 7.9** respectively. Each figure presents the forecasted site traffic volumes during the weekday a.m., p.m., and Saturday Midday peak hours respectively.

Table 7.2 – Phase 2 to 4 Site Generated Traffic Volumes

Land Use Code	No. of Units / 1000ft <sup>2</sup> GFA	Peak Hour	Pass-By Trips			Diverted Trips			Primary Trips			Total Two-Way Trips
			IN	OUT	Total	IN	OUT	Total	IN	OUT	Total	
Multifamily Housing (High-Rise) (LUC 222)	2,558	AM	-	-	-	-	-	-	138	317	455	<b>455</b>
		PM	-	-	-	-	-	-	297	241	538	<b>538</b>
		SAT	-	-	-	-	-	-	317	317	634	<b>634</b>
Shopping Center (LUC 820)	28	AM	-	-	-	-	-	-	83	41	124	<b>124</b>
		PM	23	23	44	20	22	42	28	37	65	<b>151</b>
		SAT	26	24	50	25	23	48	35	38	73	<b>171</b>
<b>Phase 2 to 4 Totals</b>		<b>AM</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>221</b>	<b>358</b>	<b>579</b>	<b>579</b>
		<b>PM</b>	<b>23</b>	<b>23</b>	<b>44</b>	<b>20</b>	<b>22</b>	<b>42</b>	<b>325</b>	<b>278</b>	<b>603</b>	<b>689</b>
		<b>SAT</b>	<b>26</b>	<b>24</b>	<b>50</b>	<b>25</b>	<b>23</b>	<b>48</b>	<b>352</b>	<b>355</b>	<b>707</b>	<b>805</b>

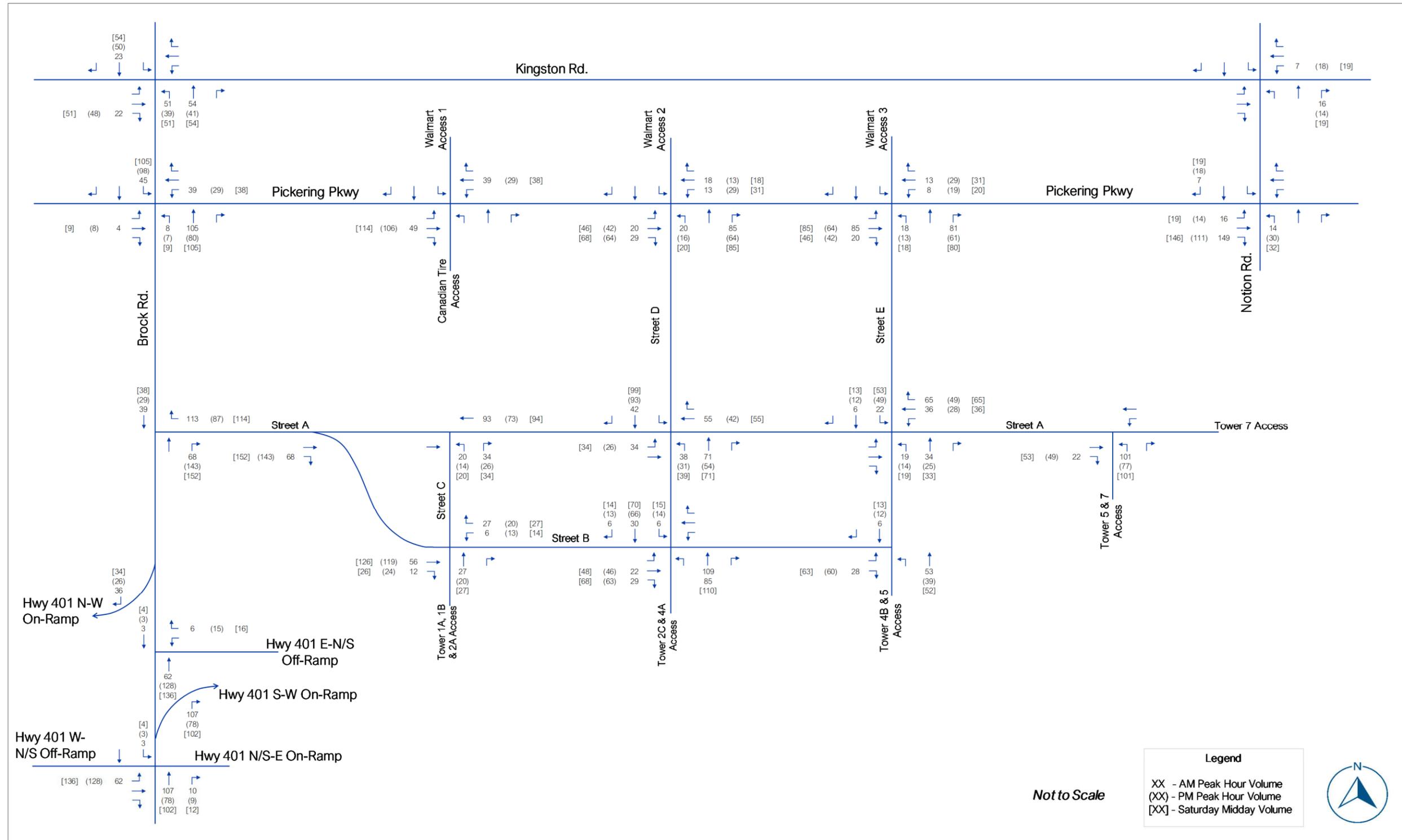


Figure 7.6 – Phases 2 to 4 Primary Residential Site Trips

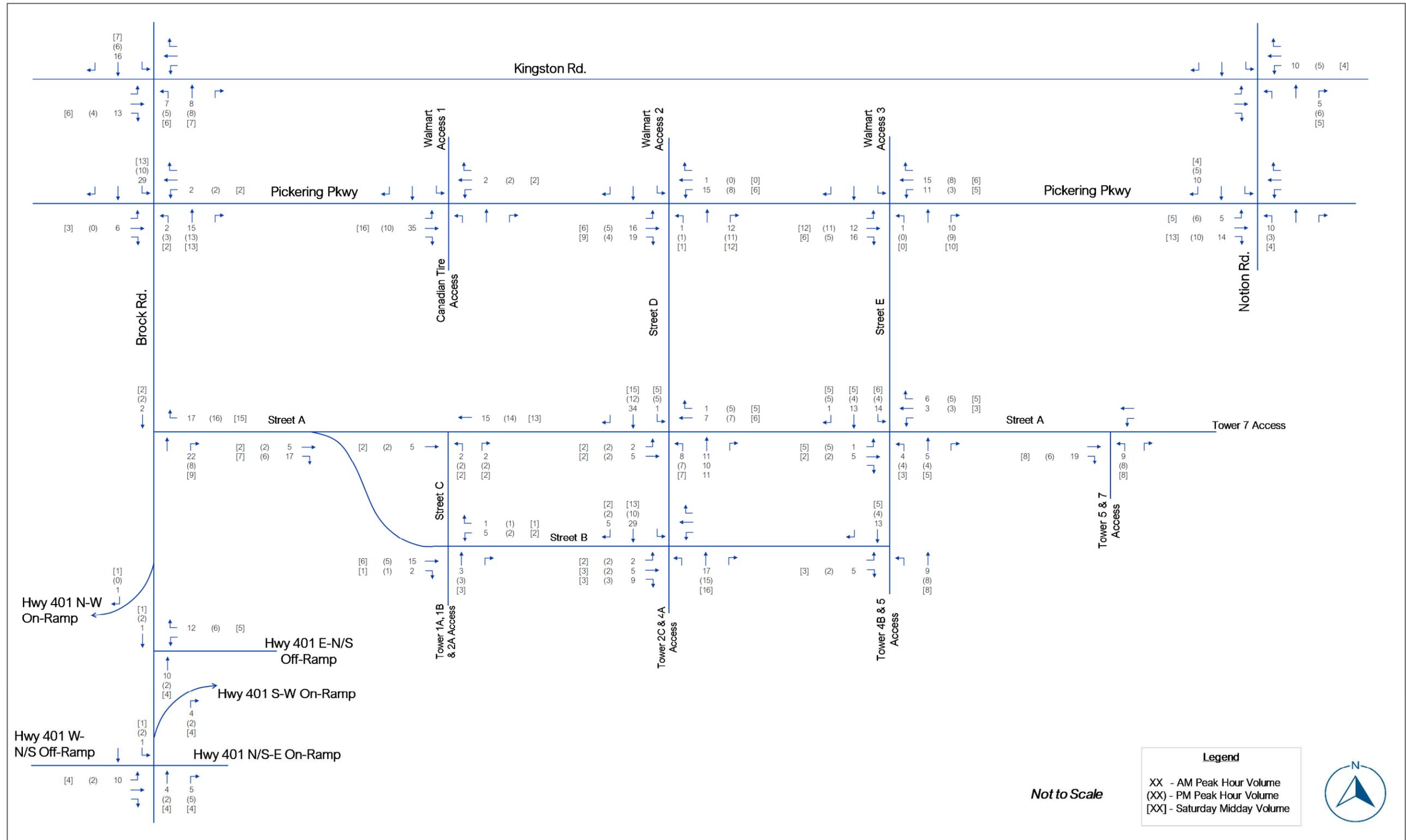


Figure 7.7 – Phases 2 to 4 Primary Commercial Trips

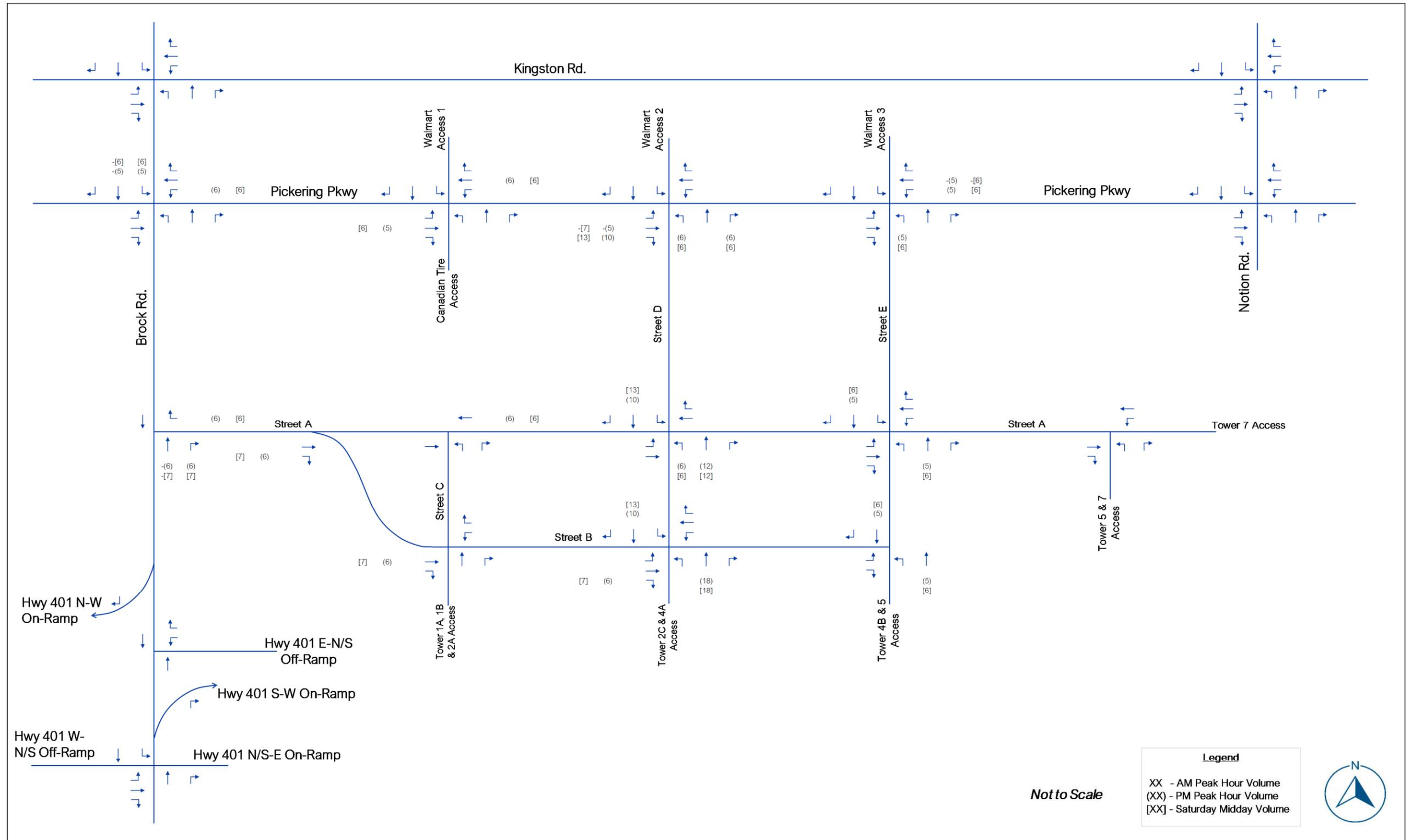


Figure 7.8 – Phases 2 to 4 Pass-By Commercial Trips

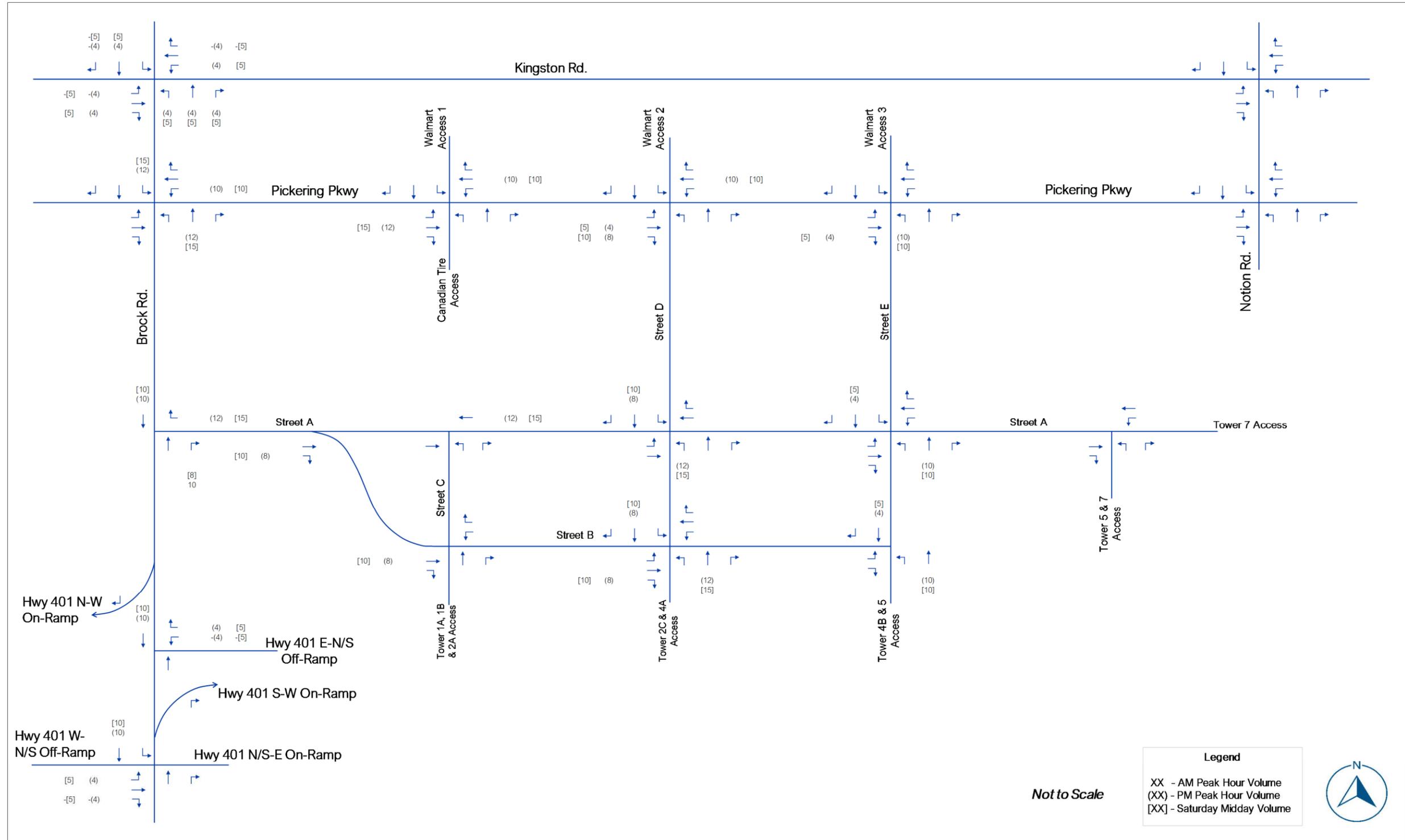


Figure 7.9 – Phases 2 to 4 Diverted Commercial Trips

## 7.3 Future Total (2031) Traffic Conditions

### 7.4 Future Total (2031) Traffic Volumes

The future total 2031 traffic volumes for Phases 2 to 4 of the proposed development were established by combining the background 2031 traffic volumes presented in **Figure 7.4**, with the Phase 2 to 4 residential and commercial site generated traffic presented in **Figure 7.6**, **Figure 7.7**, **Figure 7.8**, and **Figure 7.9**. The resulting future total 2031 traffic volumes for the weekday a.m., p.m. and Saturday Midday peak hours are presented in **Figure 7.10**.

### 7.5 Future Total (2031) Intersection Operational Analysis

Using the future total 2031 traffic volumes presented in **Figure 7.10**, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours. The results of the analysis are presented in **Table 7.3**. All HCM output reports are provided in **Appendix 13**.

As illustrated in **Table 7.3**, the addition of site generated traffic from Phases 2 to 4 of the proposed development has impacted a number of intersections along Pickering Parkway including Street 'D' and 'E' (former The Shops at Pickering Ridge accesses) where delays for northbound and southbound traffic exiting onto Pickering Parkway are forecast to experience significant delays. In order to safely accommodate these movements in the future, if these intersections would need to be signalized. However, due to spacing between Street 'D' and Street 'E' (approximately less than 100 metres), both intersections are not recommended to be signalized. Since the intersection of Street 'D' with Pickering Parkway is considered to be a gateway, it is recommended that this intersection be signalized by 2031. A signal warrant analysis was conducted for these intersections based on methodology found in the Ontario Traffic Manual (OTM) Book 12 – Traffic Signals. Specifically, the methodology outlined under Section 4.10 of the manual, Justification 7 – Projected Volumes, was utilized. The results of this analysis determined that traffic signals are warranted for Street 'E' only. The detailed warrant analysis worksheets can be found in **Appendix 14**. Intersection operational analysis of the Street 'D' and Pickering Parkway signalized intersection are presented in **Table 7.4** which shows significant capacity available which would eventually reroute traffic volumes from the Street 'E' intersection to help improve operation of this intersection.

Under this horizon year the Street 'E' intersection with Pickering Parkway is carrying a significant number of existing commercial volumes during the afternoon and Saturday Midday peak hours in addition to site generated traffic from Phases 2 to 4. However, in future horizon years with the removal of more existing commercial traffic volumes intersection operations for

Street 'D' are anticipated to improve. In addition, traffic volumes between both the intersections of Street 'E' and Street 'D' are anticipated to be balanced during both the afternoon peak hour and Saturday Midday peak hour.

The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with the addition of site traffic from Phases 2 to 4. Once again, northbound queues are not forecast to extend southerly and to impact the Highway 401 E-N/S Off-Ramp operations.

All of the proposed internal roadway intersections as part of Phases 2 through 4 are forecast to operate good with no critical movements, delays, or v/c ratios.

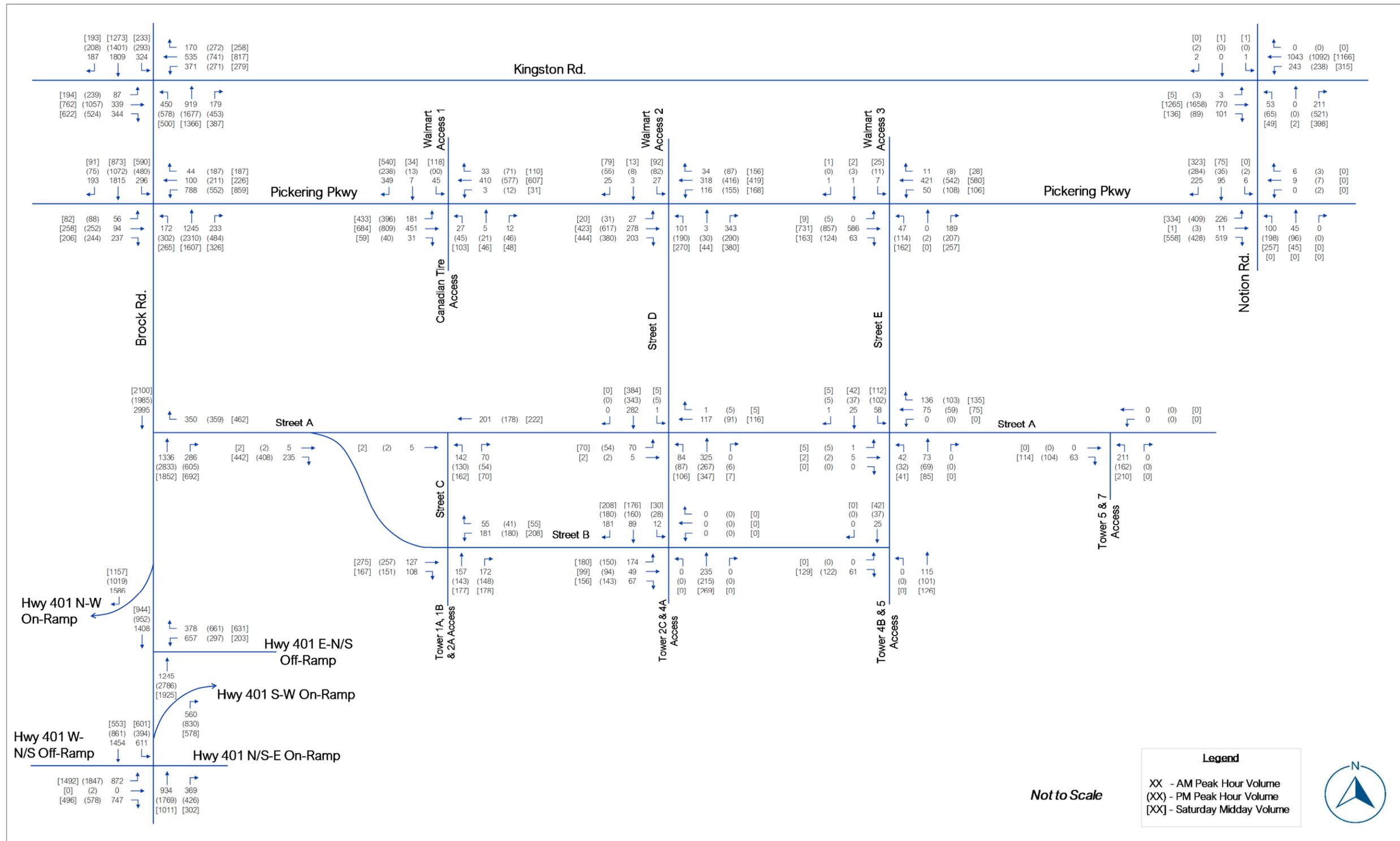


Figure 7.10 – Future Total (2031) Traffic Volumes

Table 7.3 – Future Total (2031) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.70	81	F	#48	1.62	343	F	#146	1.19	173	F	#112
EBT	2 T		0.35	33	C	51	1.04	80	E	#205	0.75	43	D	121
EBR	1 R	105	0.58	17	B	61	0.88	38	D	#151	1.08	87	F	#220
WBL	1 L	180	2.14	556	F	#226	1.83	420	F	m#165	1.57	313	F	m#168
WBT	2 T		0.49	34	C	87	0.74	48	D	m129	0.79	52	D	130
WBR	1 R	115	0.29	13	B	35	0.47	24	C	m69.0	0.43	19	B	m48
NBL	1 L	110	2.13	542	F	m#188	1.93	446	F	m#138	1.84	401	F	m#156
NBT	3 T		0.73	24	C	m34	1.06	51	D	m112	0.91	36	D	m122
NBR	1 R	70	0.33	3	A	m2	0.75	10	B	m30	0.64	18	B	m68
SBL	1 L	145	1.21	149	F	#143	1.31	194	F	#143	1.02	93	F	#102
SBT	3 T		1.27	161	F	#255	1.05	79	E	#181	0.92	53	D	#150
SBR	1 R	135	0.34	6	A	17	0.38	8	A	22	0.35	6	A	18
<b>Overall</b>			<b>1.40</b>	<b>150</b>	<b>F</b>	<b>-</b>	<b>1.26</b>	<b>111</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>87</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	15	B	m0.8	0.02	23	C	m0.4	0.03	31	C	m1.3
EBT	2 T		0.38	14	B	m68	1.06	60	E	m#160	0.73	45	D	m209
EBR	1 R	20	0.13	9	A	m14	0.15	12	B	m6.2	0.18	25	C	m30
WBL	1 L	55	0.52	8	A	34	1.15	137	F	#113	0.83	44	D	#104
WB	1 T & 1 T/R		0.43	7	A	84	0.57	16	B	110	0.49	9	A	95
NB	1 L/T/R		0.83	40	D	58	1.14	109	F	#225	0.92	42	D	#101
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.01	36	D	3
<b>Overall</b>			<b>0.50</b>	<b>13</b>	<b>A</b>	<b>-</b>	<b>1.09</b>	<b>59</b>	<b>F</b>	<b>-</b>	<b>0.79</b>	<b>31</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.37	53	D	27	0.53	56	E	38	0.60	63	E	37
EB	1 T & 1 T/R		0.88	44	D	47	0.79	39	D	60	0.77	40	D	59
WBL	2 L	60	1.45	246	F	#192	1.57	302	F	#147	1.84	407	F	m#214
WBT	1 T		0.16	28	C	31	0.38	32	C	66	0.37	22	C	m56
WBR	1 R	45	0.08	5	A	m5.0	0.32	11	B	31	0.29	6	A	m20
NBL	1 L	135	0.54	32	C	55	0.72	30	C	m69	0.66	26	C	72
NBT	3 T		1.04	78	E	#159	1.47	248	F	#343	1.27	164	F	#230
NBR	1 R	60	0.49	17	B	36	0.81	34	C	m84	0.64	26	C	72
SBL	1 L	110	0.69	31	C	m63	1.19	112	F	m#161	1.24	137	F	m#197
SBT	3 T		1.17	127	F	m150	0.69	33	C	m99	0.51	23	C	m76
SBR	1 R	160	0.33	23	C	m16	0.13	7	A	m2.2	0.15	3	A	m4
<b>Overall</b>			<b>1.18</b>	<b>107</b>	<b>F</b>	<b>-</b>	<b>1.36</b>	<b>142</b>	<b>F</b>	<b>-</b>	<b>1.34</b>	<b>137</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.26	2	A	m4.3	0.66	8	A	m16	0.99	58	E	m#109
EBT	1 T		0.37	2	A	11	0.63	3	A	m51	0.80	17	B	m71
EBR	1 R		0.03	0	A	m0.0	0.04	0	A	m0.5	0.08	4	A	m2.2
WBL	1 L	35	0.00	6	A	m1.1	0.03	12	B	m5.3	0.24	39	D	m16
WB	1 T & 1 T/R		0.22	6	A	34	0.32	11	B	m73	0.90	55	E	#133
NBL	1 L	25	0.48	73	E	17	0.80	117	F	#27	1.06	142	F	#67
NB	1 T/R		0.10	26	C	8	0.28	21	C	18	0.14	12	B	19
SBL	1 L	25	0.37	56	E	23	0.58	62	E	39	0.25	25	C	36
SB	1 T/R		0.78	17	B	33	0.64	14	B	27	0.65	8	A	53
<b>Overall</b>			<b>0.43</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.50</b>	<b>13</b>	<b>A</b>	<b>-</b>	<b>0.85</b>	<b>39</b>	<b>D</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Unsignalized</b>														
EBL	1 L/T/R		0.02	1	A	1	0.03	1	A	1	0.02	1	A	1
WBL	1 L	40	0.12	9	A	3	0.32	15	B	11	0.31	14	B	10
WBT	1 T/R		0.23	0	A	0	0.32	0	A	0	0.37	0	A	0
NBL	1 L		0.33	21	C	11	1.34	247	F	101	2.03	538	F	185
NBT	1 T/R		0.62	20	C	34	1.14	133	F	116	1.09	101	F	126
SBL	1 L		0.85	278	F	24	144	Err	F	Err	73	Err	F	Err
SBT	1 T/R		0.05	11	B	1	0.11	14	B	3	0.32	22	C	11
<b>Overall</b>			<b>0.80</b>	<b>12</b>	<b>B</b>	<b>-</b>	<b>1.22</b>	<b>365</b>	<b>F</b>	<b>-</b>	<b>1.27</b>	<b>443</b>	<b>F</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.01	0	A	0	0.01	0	A	0
WB	1 L/T/R		0.06	2	A	2	0.19	5	A	6	0.16	4	A	5
NB	1 L/T/R		0.82	53	F	55	3.89	Err	F	Err	4.09	Err	F	Err
SB	1 L/T/R		0.15	67	F	4	2.06	1457	F	23	4.01	Err	F	Err
<b>Overall</b>			<b>0.84</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>1.17</b>	<b>1641</b>	<b>F</b>	<b>-</b>	<b>1.20</b>	<b>2170</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		1.33	179	F	274	2.18	558	F	534	2.43	672	F	610
WB	1 L/T/R		0.05	15	C	1	0.08	30	D	2	0.00	0	A	0
NB	1 L/T/R		0.09	6	A	2	0.18	6	A	5	0.25	8	A	8
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.89</b>	<b>110</b>	<b>F</b>	<b>-</b>	<b>1.01</b>	<b>321</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>379</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
WBR	1 R	10	0.41	12	B	16	0.76	31	D	53	0.60	16	C	33
NBT	3 T		0.28	0	A	0	0.60	0	A	0	0.39	0	A	0
NBR	1 R		0.28	0	A	0	0.60	0	A	0	0.39	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.61</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.84</b>	<b>2</b>	<b>A</b>	<b>-</b>	<b>0.71</b>	<b>1</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.74	41	D	95	0.86	54	D	#107	0.62	40	D	72
<b>WBR</b>	1 R	95	0.80	49	D	107	0.95	79	E	#161	0.83	57	E	115
<b>NBT</b>	3 T		0.49	19	B	m53	0.93	18	B	m66	0.65	17	B	m70
<b>SBT</b>	3 T		0.51	13	B	m45	0.33	5	A	m16	0.32	17	B	m38
<b>Overall</b>			<b>0.54</b>	<b>23</b>	<b>A</b>	<b>-</b>	<b>0.80</b>	<b>51</b>	<b>C</b>	<b>-</b>	<b>0.59</b>	<b>24</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		1.20	147	F	#268	1.59	302	F	#474	1.29	172	F	#362
<b>EBT</b>	1 L/T/R		1.21	145	F	#266	1.66	331	F	#500	1.27	163	F	#364
<b>EBR</b>	1 R	245	1.20	142	F	#242	0.98	65	E	#209	0.69	21	C	98
<b>NBT</b>	2 T & 1 T/R		1.11	98	F	#173	1.44	231	F	#322	1.09	94	F	#173
<b>SBL</b>	1 L		1.26	161	F	#269	1.63	325	F	m#244	1.35	207	F	#275
<b>SBT</b>	2 T		0.76	25	C	165	0.56	25	C	118	0.33	17	B	57
<b>Overall</b>			<b>1.16</b>	<b>100</b>	<b>F</b>	<b>-</b>	<b>1.47</b>	<b>222</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>118</b>	<b>F</b>	<b>-</b>
<b>Street C/Street A - Unsignalized</b>														
<b>EBT</b>	1 T		0.00	0	A	0	0.00	0	A	0	0.14	0	A	0
<b>WBT</b>	1 T		0.13	0	A	0	0.13	0	A	0	0.00	0	A	0
<b>NBL</b>	1 L		0.20	11	B	6	0.18	11	B	5	0.09	10	B	2
<b>NBR</b>	1 R		0.07	9	A	2	0.05	9	A	1	0.00	0	A	0
<b>Overall</b>			<b>0.43</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>2</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
<b>EBT</b>	1 T		0.08	0	A	0	0.16	0	A	0	0.18	0	A	0
<b>EBR</b>	1R		0.07	0	A	0	0.10	0	A	0	0.11	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
WBL	1 L		0.15	8	A	4	0.18	9	A	5	0.21	9	A	6
WBR	1 R		0.04	0	A	0	0.03	0	A	0	0.04	0	A	0
NBT	1 T/R		0.69	26	D	42	0.74	34	D	48	1.03	90	F	103
<b>Overall</b>			<b>0.46</b>	<b>12</b>	<b>B</b>	<b>-</b>	<b>0.50</b>	<b>13</b>	<b>B</b>	<b>-</b>	<b>0.56</b>	<b>32</b>	<b>D</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
EBL	1 L		0.05	8	A	1	0.04	8	A	1	0.05	8	A	1
EBT	1 T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBL	1 L		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBT	1 T/R		0.08	0	A	0	0.06	0	A	0	0.08	0	A	0
NBT	1 L/T/R		0.90	48	E	81	0.77	32	D	54	1.21	144	F	161
SBT	1 L/T/R		0.52	18	C	24	0.59	18	C	30	0.72	26	D	48
<b>Overall</b>			<b>0.57</b>	<b>29</b>	<b>D</b>	<b>-</b>	<b>0.57</b>	<b>21</b>	<b>C</b>	<b>-</b>	<b>0.69</b>	<b>74</b>	<b>F</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
EBT	1 L/T/R		0.12	5	A	3	0.10	3	A	3	0.12	4	A	3
WBT	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
NBT	1 L/T/R		0.59	24	C	29	0.55	24	C	26	0.79	42	E	53
SBT	1 L/T/R		0.48	16	C	21	0.78	33	D	57	1.08	101	F	123
<b>Overall</b>			<b>0.50</b>	<b>14</b>	<b>B</b>	<b>-</b>	<b>0.64</b>	<b>19</b>	<b>C</b>	<b>-</b>	<b>0.73</b>	<b>49</b>	<b>E</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
EBL	1 L		0.00	16	C	0	0.02	16	C	0	0.02	20	C	1
EBT	1T/R		0.01	12	B	0	0.00	13	B	0	0.00	13	B	0
WBL	1 L		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBT	1 T/R		0.30	12	B	10	0.25	12	B	8	0.34	13	B	12
NBL	1 L		0.03	7	A	1	0.02	7	A	1	0.03	7	A	1
NBT	1 T/R		0.05	0	A	0	0.04	0	A	0	0.06	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L		0.04	8	A	1	0.07	8	A	2	0.08	8	A	2
<b>SBT</b>	1 T/R		0.02	0	A	0	0.03	0	A	0	0.03	0	A	0
<b>Overall</b>			<b>0.29</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.28</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.32</b>	<b>8</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
<b>EBL</b>	1 L/R		0.06	9	A	2	0.13	9	A	4	0.14	9	A	4
<b>NBT</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>SBT</b>	1 T/R		0.02	0	A	0	0.02	0	A	0	0.03	0	A	0
<b>Overall</b>			<b>0.16</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.21</b>	<b>4</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.04	0	A	0	0.07	0	A	0	0.07	0	A	0
<b>WBT</b>	1 L/T		0.00	0	A	0	0.00	0	S	0	0.00	0	A	0
<b>NBL</b>	1 L/R		0.23	10	A	7	0.19	10	A	5	0.24	10	B	8
<b>Overall</b>			<b>0.22</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.25</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Street B/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.15	0	A	0	0.26	0	A	0	0.28	0	A	0
<b>WBT</b>	1 T		0.22	0	A	0	0.20	0	A	0	0.18	0	A	0
<b>Overall</b>			<b>0.43</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>0</b>	<b>A</b>	<b>-</b>

Table 7.4 – Future Total (2031) Intersection Operational Analysis Results – Signalized Street ‘D’ & Pickering Pkwy

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
<b>EBT</b>	1 L/T/R		0.48	6.7	A	55	0.93	29.2	C	#368	0.84	21.5	C	#297
<b>EBL*</b>	1 L		0.05	6.6	A	7	0.08	7.8	A	8	0.07	9.9	A	7
<b>EBT*</b>	1 T		0.29	8.4	A	49	0.62	13.9	B	126	0.45	13.5	B	86
<b>EBR*</b>	1 R		0.15	7.2	A	15	0.37	10.4	B	44	0.41	13.2	B	51
<b>WBL</b>	1 L		0.21	10.3	B	30	0.50	21.1	C	m46	0.54	26.8	C	m59
<b>WBT</b>	1 T/R		0.33	10.5	B	84	0.42	13.3	B	m98	0.52	18.6	B	151
<b>NBL</b>	1 L		0.43	44.4	D	35	0.81	69.3	E	67	0.87	66.2	E	#99
<b>NBT</b>	1 T/R		0.76	15.5	B	32	0.79	23.0	C	46	0.90	36.3	D	#90
<b>SBL</b>	1 L		0.18	37.9	D	13	0.49	49.2	D	30	0.61	51.3	D	33
<b>SBT</b>	1 T/R		0.16	18.8	B	9	0.25	15.6	B	12	0.38	16.8	B	19
<b>Overall</b>			<b>0.48</b>	<b>13.4</b>	<b>A</b>	<b>-</b>	<b>0.71</b>	<b>33.4</b>	<b>C</b>	<b>-</b>	<b>0.69</b>	<b>46.6</b>	<b>B</b>	<b>-</b>

\*With improved lane configuration (dedicated eastbound left and right turn lanes).

## **8.0 Future (2036) Traffic Conditions**

The following sections present the analysis of the study area intersections under future 2036 background and total traffic conditions which includes full build-out of all the proposed phases of the development (Phases 1 to 7). Completing the analysis required the forecasting of future background 2036 traffic volumes, trip generation for Phases 5 to 7 of the proposed development and the establishing of future total 2036 traffic volumes.

### **8.1 Future Background (2036) Traffic Conditions**

#### **8.1.1 Future Background (2036) Traffic Growth**

Future background traffic growth through the study area intersections was established by applying a 0.5% per annum growth rate to all through movements along Brock Road and Kingston Road, as well as all turning movements from the MTO ramps. The resulting future 2036 background traffic growth volumes for the weekday a.m., p.m., and Saturday midday are presented in **Figure 8.1**.

#### **8.1.2 Future Background (2036) Developments**

For the 2036 horizon year there were no background developments considered in the development of future background traffic conditions outside of Phases 1 to 4 of the proposed subject development.

#### **8.1.3 Removal of Existing Commercial Traffic Volumes**

The implementation of Phases 5 to 7 of the proposed development will result in the removal of all remaining existing commercial GFA. With the removal of all existing commercial GFA, all remaining traffic volumes present at the existing site accesses were removed including being traced back and removed through the greater study area intersections. These existing commercial trips were traced back through the intersections based on the existing travel proportions present at the intersection.

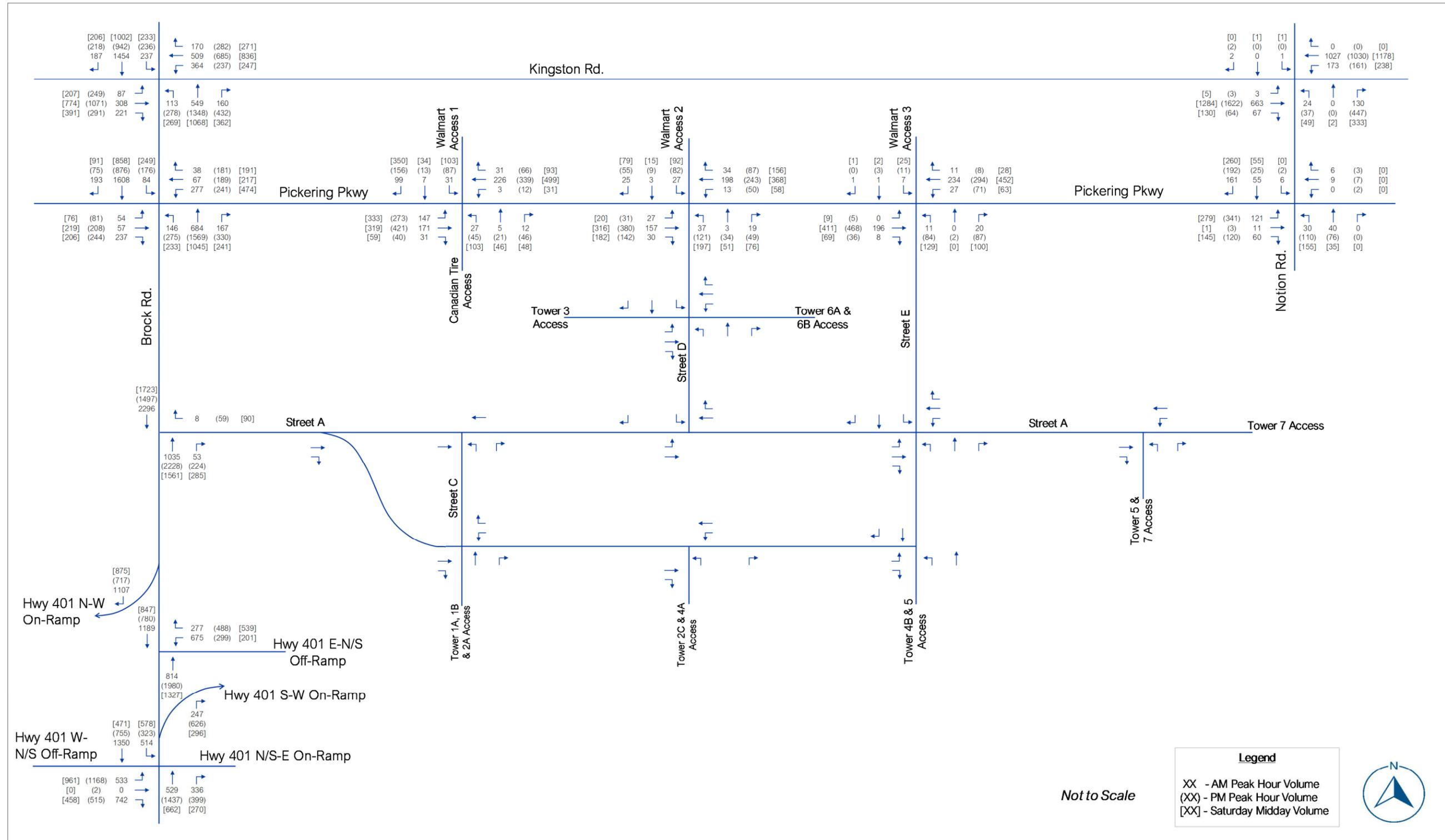


Figure 8.1 – Future (2036) Background Traffic Growth

#### **8.1.4 Future Background (2036) Traffic Volumes**

The future background 2036 traffic volumes were established by first removing all remaining existing commercial traffic volumes from the background traffic growth volumes presented in **Figure 8.1**. The resulting volumes were then combined with the background development site trips presented in **Figure 6.2** and **Figure 7.3** plus the total site generated traffic volumes from Phase 1 to 4 of the proposed development found in **Figures 6.5** through **6.8** and **Figures 7.6** to **7.9**. The resulting future background 2036 traffic volumes for the weekday a.m., p.m., and Saturday midday peak hours are presented in **Figure 8.2**.

#### **8.1.5 Future Background (2036) Intersection Operational Analysis**

Using the future background 2036 traffic volumes presented in **Figure 8.2**, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours.

The results of the operational analysis completed are presented in **Table 8.1**. All HCM output reports are provided in **Appendix 15**.

The addition of background traffic growth is forecast to impact overall intersection operations and individual movements at many of the study area intersections along Brock Road and Kingston Road. Many of the same study area intersections highlighted in previous sections are forecast to continue operating with overall intersection v/c ratios and individual movements greater than 1.00 with significant delays. However, the removal of the existing commercial associated traffic volumes for the afternoon and Saturday midday peak hours had shown some improvement to the intersection operations.

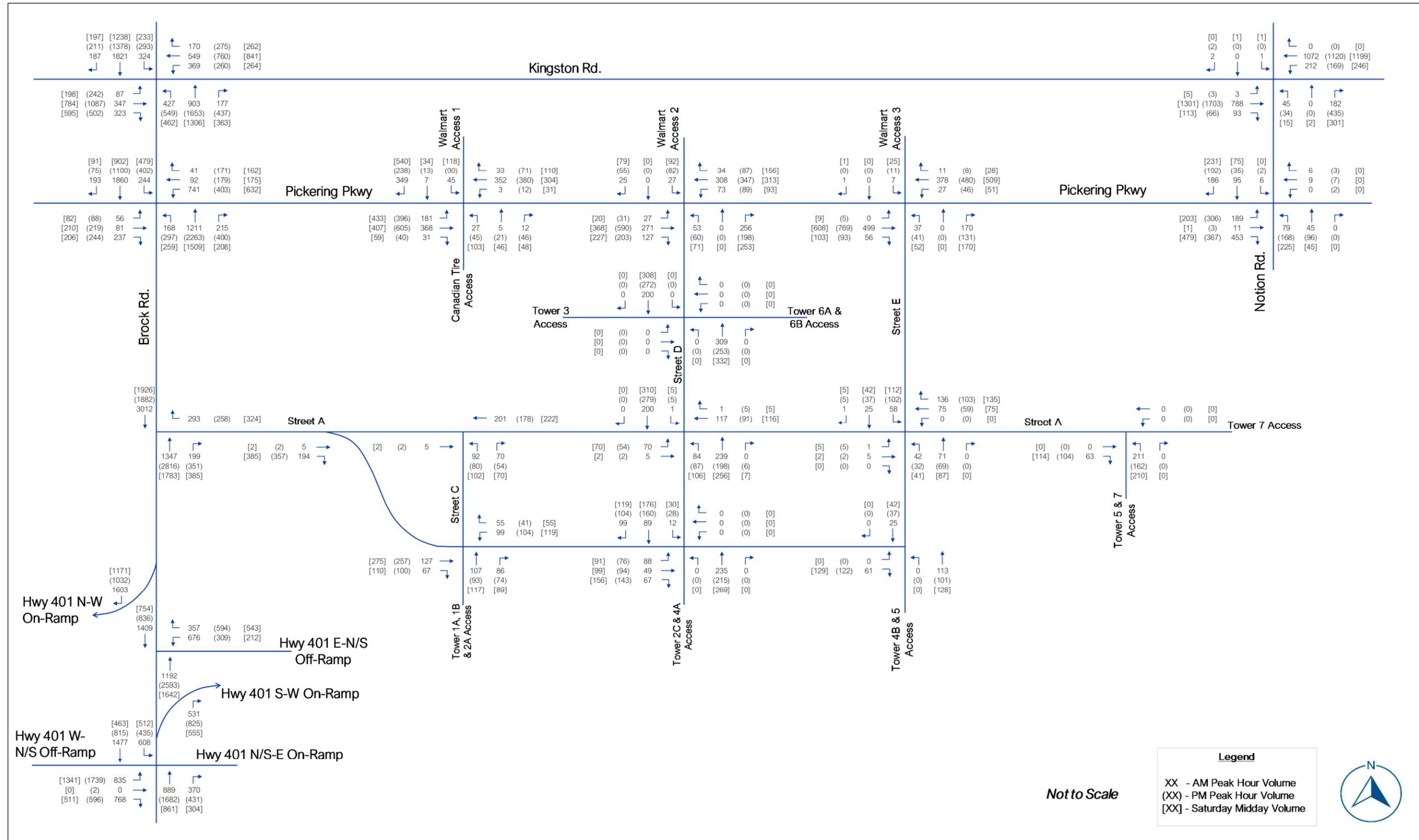


Figure 8.2 – Future (2036) Background Traffic Volume

Table 8.1 – Future Background (2036) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	115	0.63	71	E	41	1.64	351	F	#148	1.11	148	F	#111.0
EBT	2 T		0.36	33	C	52	1.07	89	F	#215	0.77	43	D	126
EBR	1 R	105	0.57	19	B	63	0.87	38	D	#147	1.00	62	E	#194
WBL	1 L	180	1.99	487	F	#220	1.57	306	F	m#163	1.38	235	F	#154
WBT	2 T		0.50	35	C	89	0.72	45	D	m134	0.81	46	D	128
WBR	1 R	115	0.29	13	B	33	0.43	21	C	m66	0.42	12	B	42
NBL	1 L	110	2.30	619	F	m#207	2.02	487	F	m#152	1.79	383	F	m#157
NBT	3 T		0.72	24	C	m43	1.11	68	E	m125	0.95	43	D	m126
NBR	1 R	70	0.33	4	A	m7.5	0.76	9	A	m32	0.63	19	B	m66
SBL	1 L	145	1.26	166	F	#145	1.31	193	F	#143	0.91	65	E	#94.1
SBT	3 T		1.24	150	F	#254	1.03	74	E	#176	0.90	50	D	#138
SBR	1 R	135	0.34	6	A	17	0.39	7	A	21	0.36	6	A	18
<b>Overall</b>			<b>1.38</b>	<b>148</b>	<b>F</b>	<b>-</b>	<b>1.19</b>	<b>114</b>	<b>F</b>	<b>-</b>	<b>1.06</b>	<b>77</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	12	B	m0.8	0.02	22	C	m0.4	0.02	26	C	m1.4
EBT	2 T		0.37	12	B	m65	1.03	48	D	m#153	0.64	34	C	m210
EBR	1 R	20	0.11	7	A	m10	0.10	10	A	m2.7	0.13	18	B	m23
WBL	1 L	55	0.45	6	A	25	0.87	64	E	#72	0.65	20	B	54
WB	1 T & 1 T/R		0.43	6	A	75	0.56	16	B	114	0.46	5	A	84
NB	1 L/T/R		0.79	35	D	46	0.96	59	E	#157	0.81	26	C	45
SB	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.01	43	D	3
<b>Overall</b>			<b>0.46</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>1.00</b>	<b>39</b>	<b>F</b>	<b>-</b>	<b>0.67</b>	<b>21</b>	<b>B</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	54	D	27	0.56	60	E	39	0.65	70	E	37
EB	1 T & 1 T/R		0.90	44	D	45	0.78	37	D	54	0.73	34	C	46
WBL	2 L	60	1.42	239	F	#1	1.15	140	F	#101	1.35	204	F	m#144
WBT	1 T		0.16	30	C	30	0.34	36	D	56	0.30	27	C	m45.0
WBR	1 R	45	0.08	4	A	3	0.30	11	B	24	0.27	5	A	m16
NBL	1 L	135	0.54	32	C	54	0.68	31	C	m78	0.64	25	C	66
NBT	3 T		0.92	54	D	#143	1.34	190	F	#32	1.15	117	F	#203
NBR	1 R	60	0.43	15	B	31	0.66	26	C	m70.7	0.43	19	B	40
SBL	1 L	110	0.61	31	C	m53	1.02	43	D	m#121	0.97	39	D	m#150
SBT	3 T		1.14	117	F	m157	0.71	35	C	m103	0.50	22	C	m84
SBR	1 R	160	0.32	23	C	m17	0.13	7	A	m2.5	0.15	4	A	m5
<b>Overall</b>			<b>1.15</b>	<b>97</b>	<b>F</b>	<b>-</b>	<b>1.21</b>	<b>102</b>	<b>F</b>	<b>-</b>	<b>1.11</b>	<b>77</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.25	2	A	10	0.55	5	A	m11	0.73	18	B	m63
EBT	1 T		0.30	2	A	23	0.47	3	A	m22	0.42	10	A	m51
EBR	1 R		0.03	1	A	m0.9	0.04	1	A	m0.2	0.07	3	A	m1.6
WBL	1 L	35	0.00	7	A	m1.2	0.03	11	B	m3.8	0.11	37	D	m16
WB	1 T & 1 T/R		0.19	6	A	26	0.22	9	A	m36	0.38	32	C	70
NBL	1 L	25	0.48	74	E	16	0.80	117	F	#27	1.78	433	F	#74
NB	1 T/R		0.10	26	C	8	0.29	21	C	18	0.17	12	B	18
SBL	1 L	25	0.38	57	E	23	0.60	64	E	39	0.29	28	C	33
SB	1 T/R		0.78	17	B	32	0.64	14	B	28	0.67	6	A	30
<b>Overall</b>			<b>0.41</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.45</b>	<b>13</b>	<b>A</b>	<b>-</b>	<b>0.68</b>	<b>36</b>	<b>B</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
<b>EBT</b>	1 L/T/R		0.37	4.0	A	40	0.70	13.1	B	179	0.54	7.5	A	86
<b>WBL</b>	1 L		0.11	5.6	A	14	0.21	8.7	A	m18	0.19	9.1	A	m23
<b>WBT</b>	1 T/R		0.29	6.2	A	56	0.35	8.8	A	m72	0.40	9.8	A	95
<b>NBL</b>	1 L		0.32	48.4	D	25	0.31	47.2	D	28	0.35	45.4	D	30
<b>NBT</b>	1 T/R		0.43	2.1	A	0	0.55	5.5	A	0	0.51	3.4	A	0
<b>SBL</b>	1 L		0.16	44.6	D	15	0.51	54.9	D	36	0.46	48.0	D	38
<b>SBT</b>	1 T/R		0.04	0.2	A	0	0.10	0.3	A	0	0.13	0.4	A	0
<b>Overall</b>			<b>0.33</b>	<b>7.2</b>	<b>A</b>	<b>-</b>	<b>0.53</b>	<b>14.2</b>	<b>A</b>	<b>-</b>	<b>0.42</b>	<b>11.4</b>	<b>A</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
<b>WB</b>	1 L/T/R		0.03	1	A	1	0.07	2	A	2	0.06	2	A	2
<b>NB</b>	1 L/T/R		0.56	25	C	27	0.95	100	F	62	0.96	90	F	72
<b>SB</b>	1 L/T/R		0.08	42	E	2	0.31	135	F	8	0.60	161	F	18
<b>Overall</b>			<b>0.62</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.75</b>	<b>13</b>	<b>B</b>	<b>-</b>	<b>0.79</b>	<b>16</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		1.06	76	F	152	1.42	223	F	281	1.43	225	F	285
<b>WB</b>	1 L/T/R		0.04	14	B	1	0.06	22	C	1	0.00	0	A	0
<b>NB</b>	1 L/T/R		0.07	5	A	2	0.14	6	A	4	0.20	8	A	6
<b>SB</b>	1 L/T/R		0.01	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.79</b>	<b>47</b>	<b>E</b>	<b>-</b>	<b>0.85</b>	<b>129</b>	<b>F</b>	<b>-</b>	<b>0.88</b>	<b>124</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
<b>WBR</b>	1 R	10	0.34	11	B	12	0.46	16	C	20	0.39	12	B	15
<b>NBT</b>	3 T		0.29	0	A	0	0.60	0	A	0	0.38	0	A	0
<b>NBR</b>	1 R		0.29	0	A	0	0.60	0	A	0	0.38	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.62</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.77</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>1</b>	<b>A</b>	<b>12</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.76	42	D	97	0.84	53	D	100	0.64	43	D	69
<b>WBR</b>	1 R	95	0.80	48	D	106	0.87	66	E	#132	0.80	56	E	99
<b>NBT</b>	3 T		0.47	16	B	m43	0.86	17	B	m69	0.53	14	B	m65
<b>SBT</b>	3 T		0.51	12	B	m45	0.28	7	A	m21	0.24	14	B	m35
<b>Overall</b>			<b>0.53</b>	<b>22</b>	<b>A</b>	<b>-</b>	<b>0.74</b>	<b>42</b>	<b>C</b>	<b>-</b>	<b>0.51</b>	<b>22</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		<b>1.16</b>	129	<b>F</b>	#260	<b>1.53</b>	276	<b>F</b>	#444	<b>1.13</b>	112	<b>F</b>	#309
<b>EBT</b>	1 L/T/R		<b>1.17</b>	131	<b>F</b>	#259	<b>1.60</b>	308	<b>F</b>	#472	<b>1.13</b>	108	<b>F</b>	#314
<b>EBR</b>	1 R	245	<b>1.17</b>	130	<b>F</b>	#238	<b>1.01</b>	72	E	#216	0.66	16	B	82
<b>NBT</b>	2 T & 1 T/R		<b>1.16</b>	120	<b>F</b>	#173	<b>1.35</b>	193	<b>F</b>	#301	<b>1.07</b>	88	<b>F</b>	#153
<b>SBL</b>	1 L		<b>1.19</b>	132	<b>F</b>	#260	<b>1.44</b>	244	<b>F</b>	#21	<b>1.08</b>	105	<b>F</b>	#212
<b>SBT</b>	2 T		0.79	26	C	182	0.52	23	C	100	0.28	17	B	46
<b>Overall</b>			<b>1.17</b>	<b>97</b>	<b>F</b>	<b>-</b>	<b>1.37</b>	<b>193</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>81</b>	<b>F</b>	<b>-</b>
<b>Street C/Street A - Unsignalized</b>														
<b>EBT</b>	1 T		0.00	0	A	0	0.00	0	A	0	0.14	0	A	0
<b>WBT</b>	1 T		0.13	0	A	0	0.13	0	A	0	0.00	0	A	0
<b>NBL</b>	1 L		0.13	10	B	4	0.11	10	B	3	0.15	11	B	4
<b>NBR</b>	1 R		0.07	9	A	2	0.05	9	A	1	0.10	10	A	3
<b>Overall</b>			<b>0.38</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.27</b>	<b>0</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
<b>EBT</b>	1 T		0.08	0	A	0	0.16	0	A	0	0.18	0	A	0
<b>EBR</b>	1R		0.04	0	A	0	0.06	0	A	0	0.07	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
WBL	1 L		0.08	8	A	2	0.10	8	A	3	0.11	9	A	3
WBR	1 R		0.04	0	A	0	0.03	0	A	0	0.04	0	A	0
NBT	1 T/R		0.34	14	B	12	0.36	16	C	13	0.48	20	C	21
<b>Overall</b>			<b>0.33</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
EBL	1 L		0.05	8	A	1	0.04	8	A	1	0.05	8	A	1
EBT	1 T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBL	1 L		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBT	1 T/R		0.08	0	A	0	0.06	0	A	0	0.08	0	A	0
NBT	1 L/T/R		0.67	25	C	40	0.59	22	C	31	0.89	51	F	77
SBT	1 L/T/R		0.37	15	B	14	0.48	16	C	21	0.58	19	C	30
<b>Overall</b>			<b>0.48</b>	<b>16</b>	<b>C</b>	<b>-</b>	<b>0.50</b>	<b>15</b>	<b>C</b>	<b>-</b>	<b>0.60</b>	<b>29</b>	<b>D</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
EBT	1 L/T/R		0.06	3	A	2	0.05	2	A	1	0.06	2	A	2
WBT	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
NBT	1 L/T/R		0.43	16	C	17	0.43	16	C	17	0.57	21	C	28
SBT	1 L/T/R		0.31	12	B	11	0.55	18	C	26	0.67	25	C	40
<b>Overall</b>			<b>0.40</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.56</b>	<b>12</b>	<b>B</b>	<b>-</b>	<b>0.62</b>	<b>16</b>	<b>C</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
EBL	1 L		0.00	16	C	0	0.02	16	C	0	0.02	20	C	1
EBT	1T/R		0.01	12	B	0	0.00	13	B	0	0.00	13	B	0
WBL	1 L		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
WBT	1 T/R		0.30	12	B	10	0.25	12	B	8	0.34	13	B	12
NBL	1 L		0.03	7	A	1	0.02	7	A	1	0.03	7	A	1
NBT	1 T/R		0.05	0	A	0	0.04	0	A	0	0.06	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L		0.04	8	A	1	0.07	8	A	2	0.08	8	A	2
<b>SBT</b>	1 T/R		0.02	0	A	0	0.03	0	A	0	0.03	0	A	0
<b>Overall</b>			<b>0.29</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.28</b>	<b>7.3</b>	<b>A</b>	<b>-</b>	<b>0.32</b>	<b>8</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
<b>EBL</b>	1 L/R		0.06	9	A	2	0.13	9	A	4	0.14	9	A	4
<b>NBT</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>SBT</b>	1 T/R		0.02	0	A	0	0.02	0	A	0	0.03	0	A	0
<b>Overall</b>			<b>0.16</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.21</b>	<b>4</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.04	0	A	0	0.07	0	A	0	0.07	0	A	0
<b>WBT</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>NBL</b>	1 L/R		0.23	10	A	7	0.19	10	A	5	0.24	10	B	8
<b>Overall</b>			<b>0.22</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.25</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Street B/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.13	0	A	0	0.23	0	A	0	0.25	0	A	0
<b>WBT</b>	1 T		0.19	0	A	0	0.16	0	A	0	0.14	0	A	0
<b>Overall</b>			<b>0.38</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>0.27</b>	<b>0</b>	<b>A</b>	<b>-</b>

## 8.2 Phase 5 to 7 Development Site Traffic

### 8.2.1 Phases 5 to 7 Description and Access

Phases 5 to 7 of the proposed development will consist of 2,062 residential units (641, 762 and 659 respectively) and 241,130 ft<sup>2</sup> (7,158 and 233,972 respectively, no commercial proposed as part of Phase 7) of commercial GFA. Phases 5 and 6 will be constructed at the northern edge of the property bordering Pickering Parkway while Phase 7 will be located at the very east of the property. As part of the construction of these phases, the remaining 94,724 ft<sup>2</sup> of existing commercial space within Buildings 'A', 'B' and 'D' will be removed.

Access to Phases 5 and 6 will be directly off of Street 'D' just south of Pickering Parkway creating a new four-leg intersection. Access to Phase 7 will be at the very east end of Street 'A'. The proposed access locations to these phases of development are further seen in the proposed site plan and phasing implementation plan found in **Appendix 1**.

The proposed internal roadway network intersections, lane configurations and proposed traffic control established for Phase 5 to 7 (full build-out) of the development is presented in **Figure 8.3**.

### 8.2.2 Phase 5 to 7 Site Trip Generation

Site generated traffic volumes for Phases 5 to 7 of the proposed development were forecasted based on the same methodology utilized for Phases 1 through 4 of the development which is presented under Section 6.3.1. with the exception of internal capture trips. Given the ultimate build-out of the proposed development consisting of both residential and commercial land uses it is anticipated that there will be significant interaction between the land uses and blocks proposed as the development would function more like a small community eliminating the need for residents to travel elsewhere in the city as there place of employment along with other amenities would be contained within the community in close proximity allowing for walking or cycling.

Based on this assumption, it was noted that ITE internal trip capture methodology using the developed estimation tool resulted in only estimate interaction trips within the same development being only 33% within a single block and does not account for interaction among other blocks. Therefore, a conservative estimate of a 50% as opposed to 66% reduction in overall trips to account for overall internal capture among all development blocks was assumed for the weekday p.m. and Saturday midday peak hours. No internal capture was used for the morning peak hour.

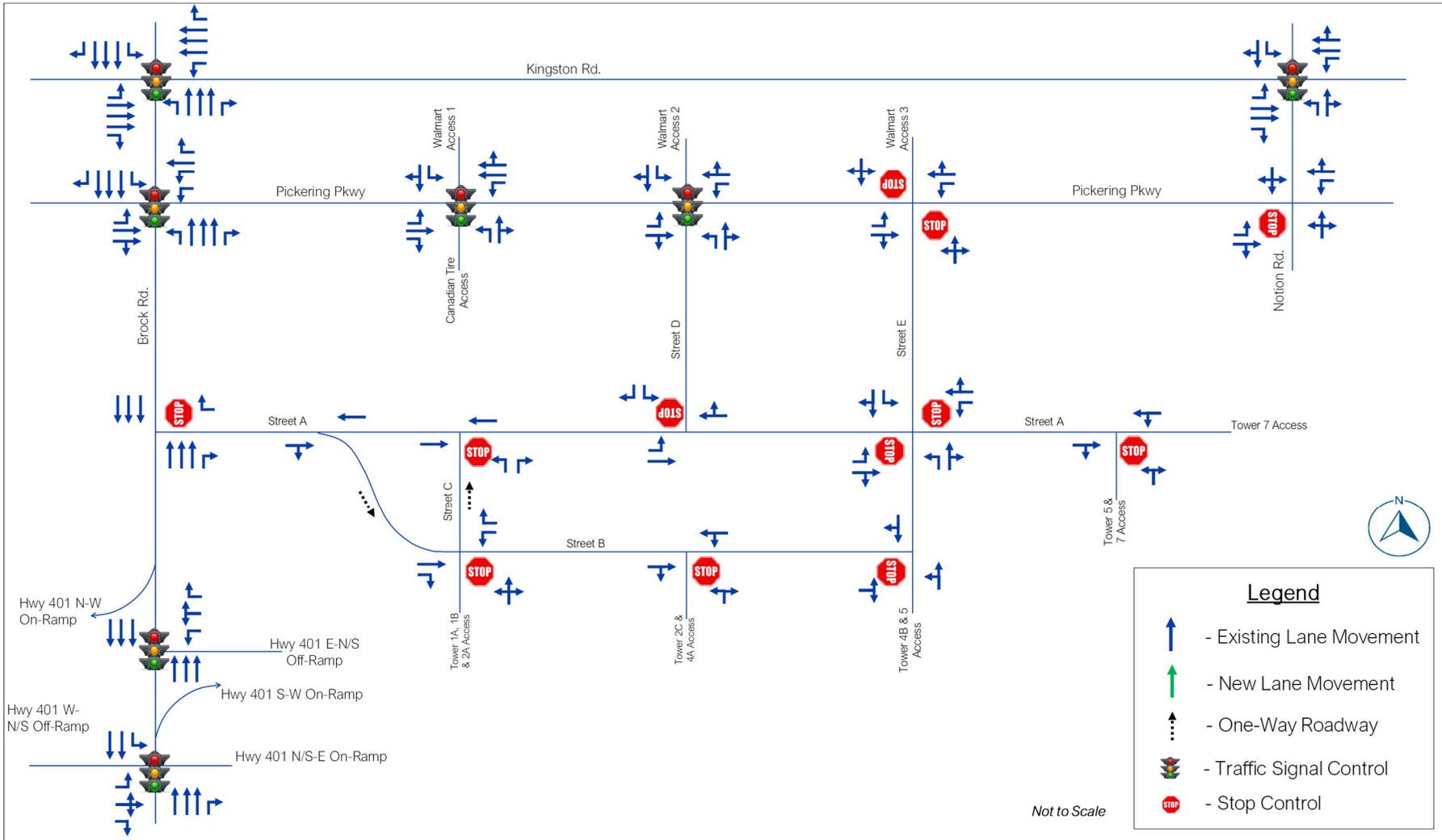


Figure 8.3 – Phases 5 to 7 Lane Configurations & Traffic Control (Full Development Build-Out)

**Table 8.2** presents a summary of the resulting total primary residential, primary commercial, pass-by and diverted trips forecast to be generated by Phases 5 to 7 of the proposed development for the weekday a.m., p.m., and Saturday Midday peak hours. Detailed trip generation tables can be found in **Appendix 8**.

As illustrated in the table, Phases 5 to 7 of the proposed 1755 Pickering Parkway development is forecast to generate 589 total two-way trips (264 inbound, 325 outbound) during the weekday a.m. peak hour. During the p.m. peak hour, the site is forecast to generate 563 primary trips (279 inbound, 284 outbound), 154 pass-by trips (74 inbound, 80 outbound) and 149 diverted trips (72 inbound, 77 outbound). During the Saturday Midday peak hour, the site is forecast to generate 674 primary trips (323 inbound, 351 outbound), 189 pass-by trips (98 inbound, 91 outbound) and 182 diverted trips (95 inbound, 87 outbound).

### **8.2.3 Trip Distribution and Assignment**

The site generated traffic for Phases 5 to 7 of the proposed development was assigned to the study area intersections based on the same TTS percentages presented under Section 6.2.3. The resulting primary residential trips for Phases 5 to 7 are presented in **Figure 8.4** while the primary, pass-by and diverted commercial site traffic volumes are presented in **Figure 8.5**, **Figure 8.6**, and **Figure 8.7** respectively. Each figure presents the forecasted site traffic volumes during the weekday a.m., p.m., and Saturday Midday peak hours respectively.

Table 8.2 – Phase 5 to 7 Site Generated Traffic Volumes

ITE Land Use (Code)	No. of Units / 1000ft² GFA	Peak Hour	Pass-By Trips			Diverted Trips			Primary Trips			Total Two-Way Trips
			IN	OUT	Total	IN	OUT	Total	IN	OUT	Total	
Multifamily Housing (High-Rise) (LUC 222)	2,038	AM	-	-	-	-	-	-	110	250	360	<b>360</b>
		PM	-	-	-	-	-	-	170	164	334	<b>334</b>
		SAT	-	-	-	-	-	-	178	217	395	<b>395</b>
Shopping Center (LUC 820)	241	AM	-	-	-	-	-	-	154	75	229	<b>229</b>
		PM	74	80	154	72	77	149	109	120	229	<b>532</b>
		SAT	98	91	189	95	87	182	145	134	279	<b>650</b>
<b>Phase 5 to 7 Totals</b>		<b>AM</b>	-	-	-	-	-	-	<b>264</b>	<b>325</b>	<b>589</b>	<b>589</b>
		<b>PM</b>	<b>74</b>	<b>80</b>	<b>154</b>	<b>72</b>	<b>77</b>	<b>149</b>	<b>279</b>	<b>284</b>	<b>563</b>	<b>866</b>
		<b>SAT</b>	<b>98</b>	<b>91</b>	<b>189</b>	<b>95</b>	<b>87</b>	<b>182</b>	<b>323</b>	<b>351</b>	<b>674</b>	<b>1045</b>

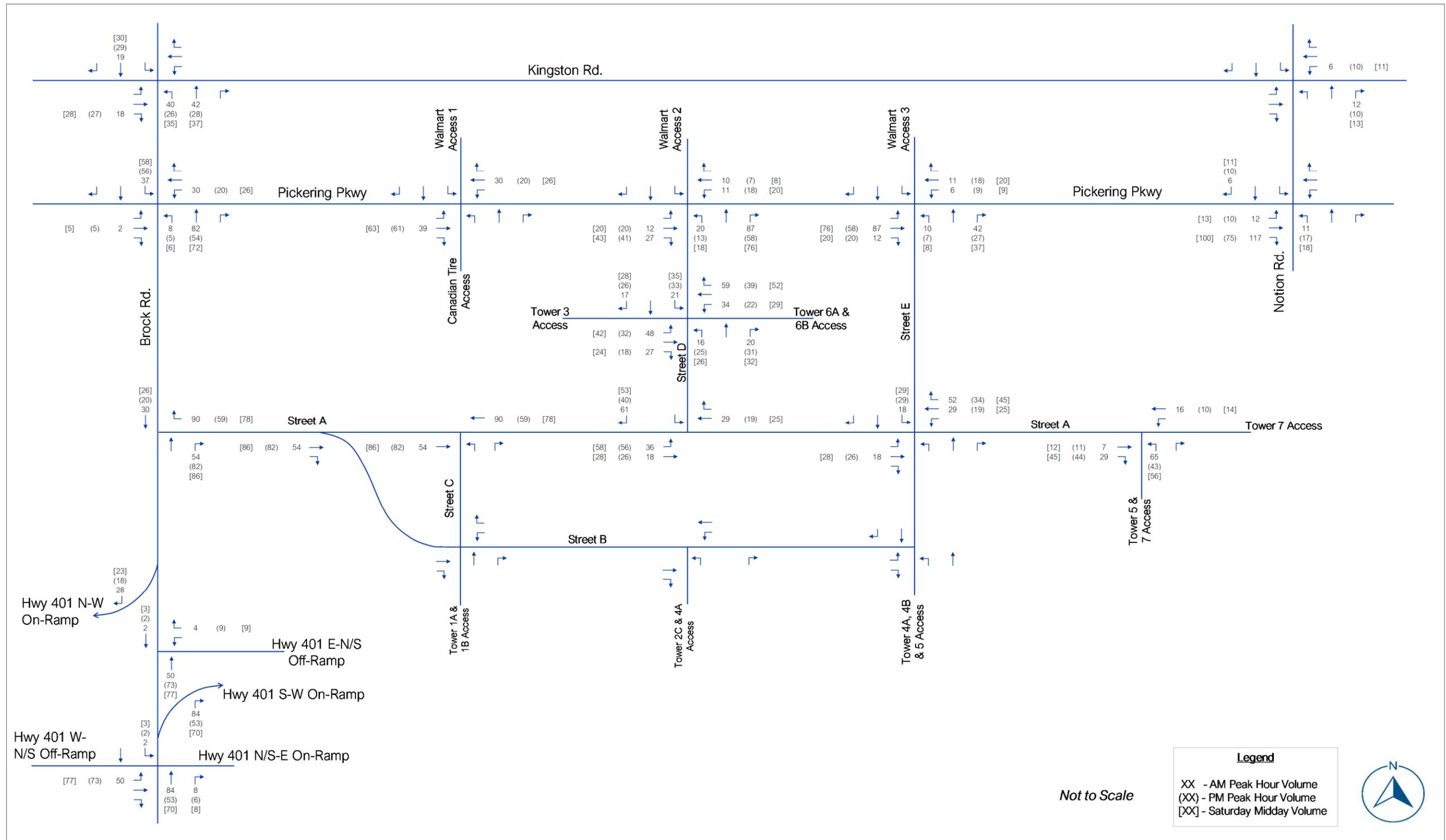


Figure 8.4 – Phases 5 to 7 Primary Residential Site Trips

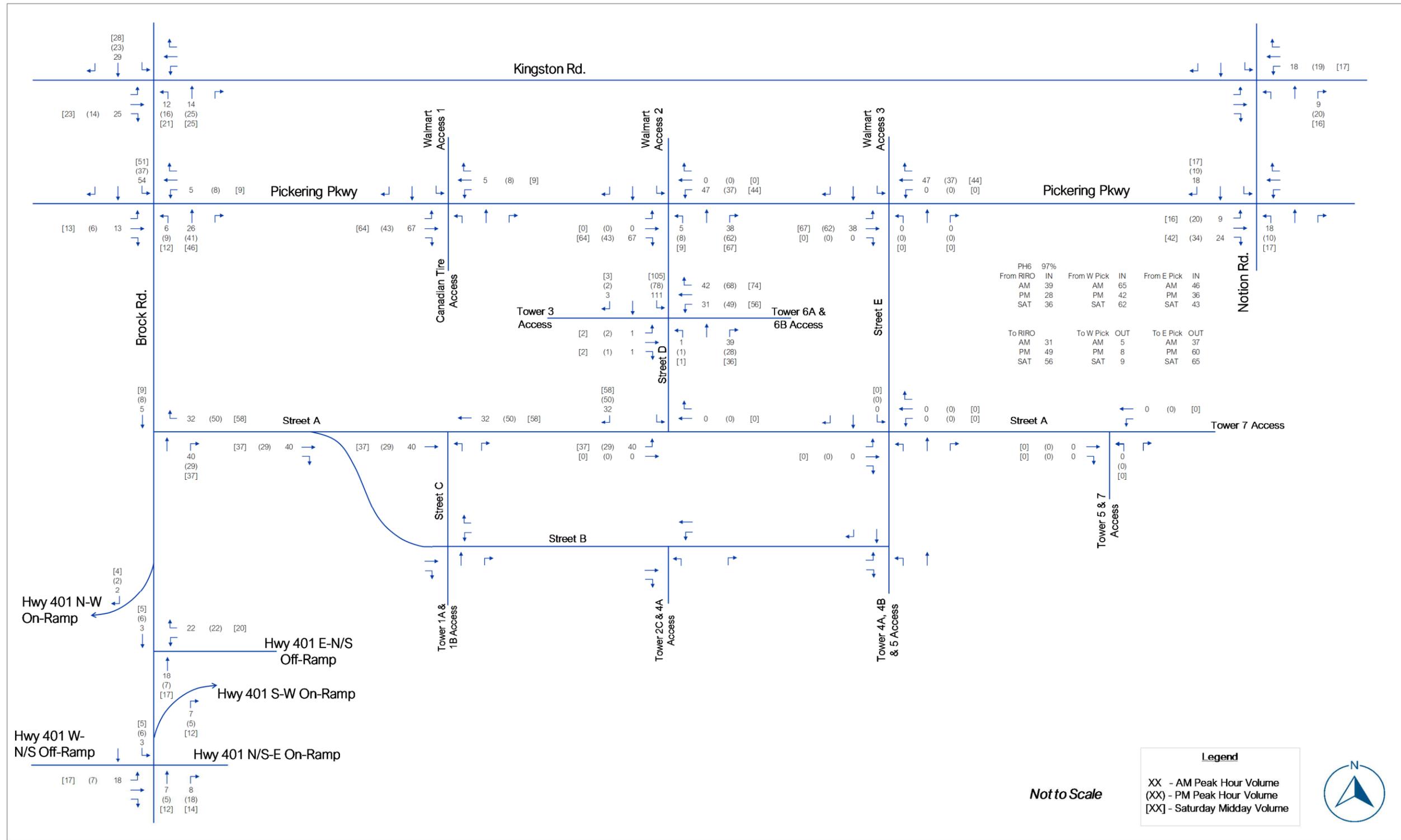


Figure 8.5 – Phases 5 to 7 Primary Commercial Trips

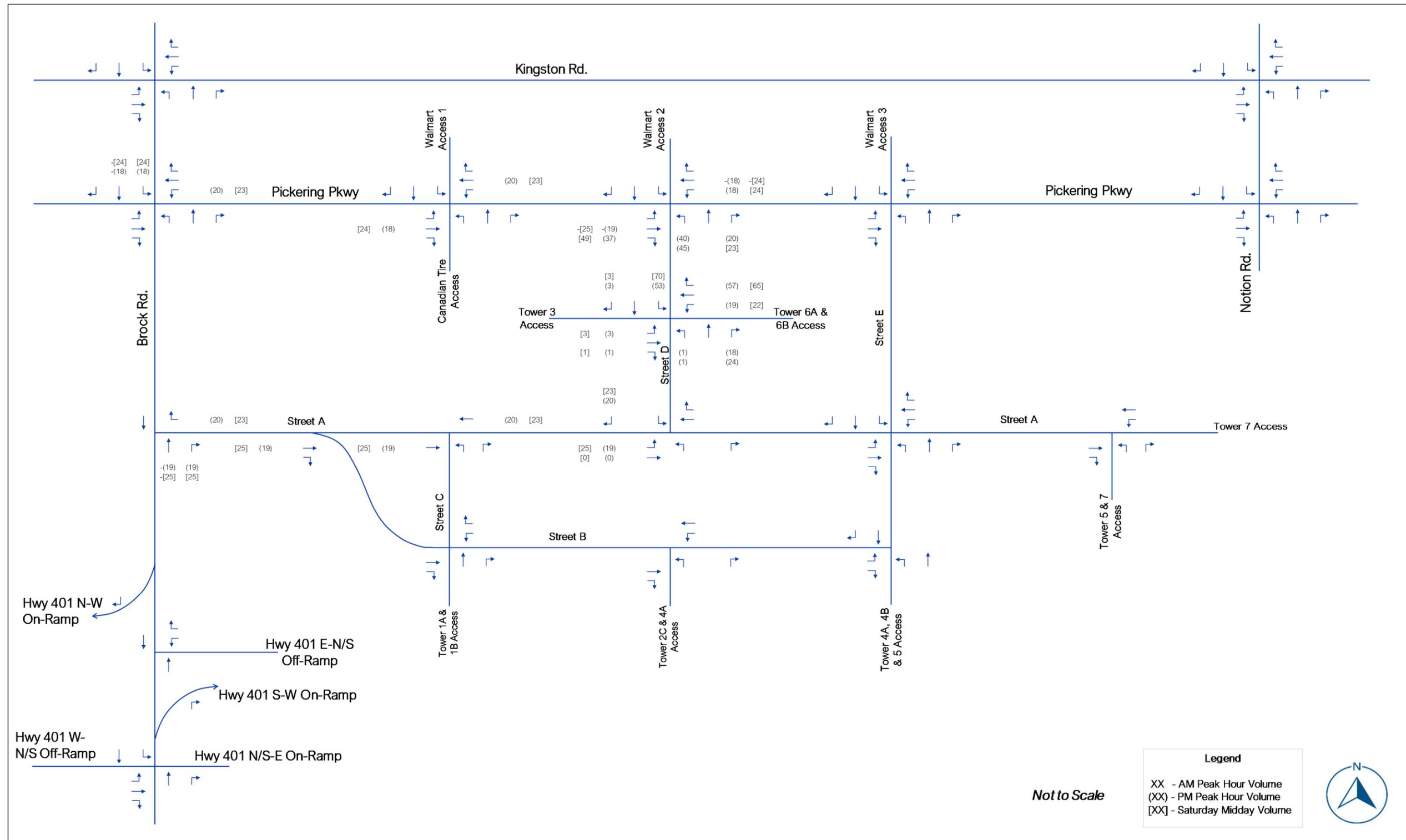


Figure 8.6 – Phases 5 to 7 Pass-By Commercial Trips

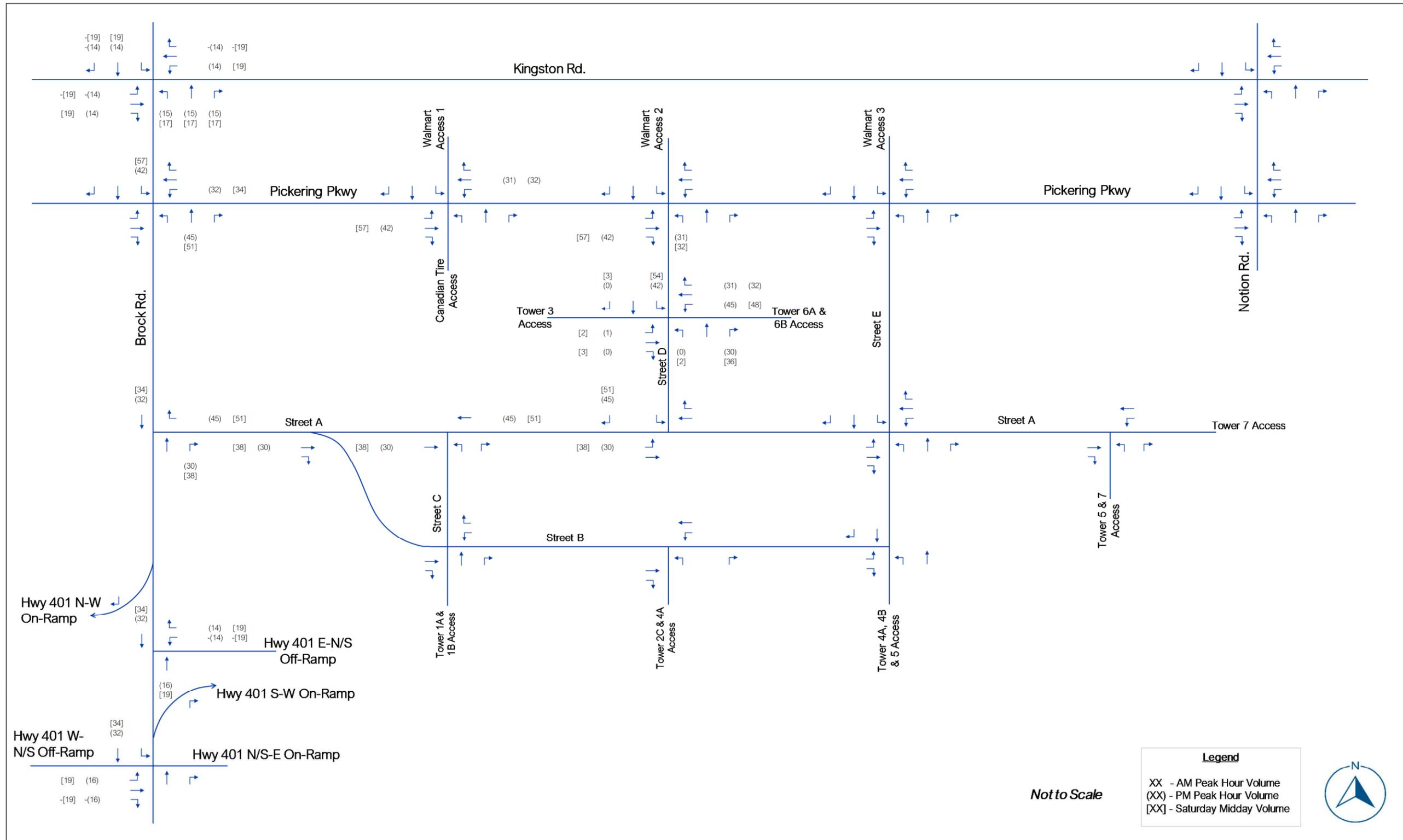


Figure 8.7 – Phases 5 to 7 Diverted Commercial Trips

## 8.3 Future Total (2036) Traffic Conditions

### 8.4 Future Total (2036) Traffic Volumes

The future total 2036 traffic volumes for Phases 5 to 7 of the proposed development were established by combining the background 2036 traffic volumes presented in **Figure 8.2**, with the Phase 5 to 7 site generated traffic presented in **Figures 8.4 to 8.7**. The resulting future total 2036 traffic volumes for the weekday a.m., p.m. and Saturday Midday peak hours are presented in **Figure 8.8**.

### 8.5 Future Total (2036) Intersection Operational Analysis

Using the future total 2036 traffic volumes, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours. The results of the analysis are presented in **Table 8.3**. All HCM output reports are provided in **Appendix 16**.

With the addition of site generated traffic from Phases 5 to 7 of the proposed development plus the removal of all remaining existing commercial traffic volumes as explained in Section 8.1.3, the Pickering Parkway intersections with Brock Road and Street 'E' are forecast to improve operationally contrary to the future total 2031 traffic conditions.

The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with no queuing issues extending southerly to impact the Highway 401 E-N/S Off-Ramp.

All of the proposed internal roadway intersections as part of Phases 5 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios.

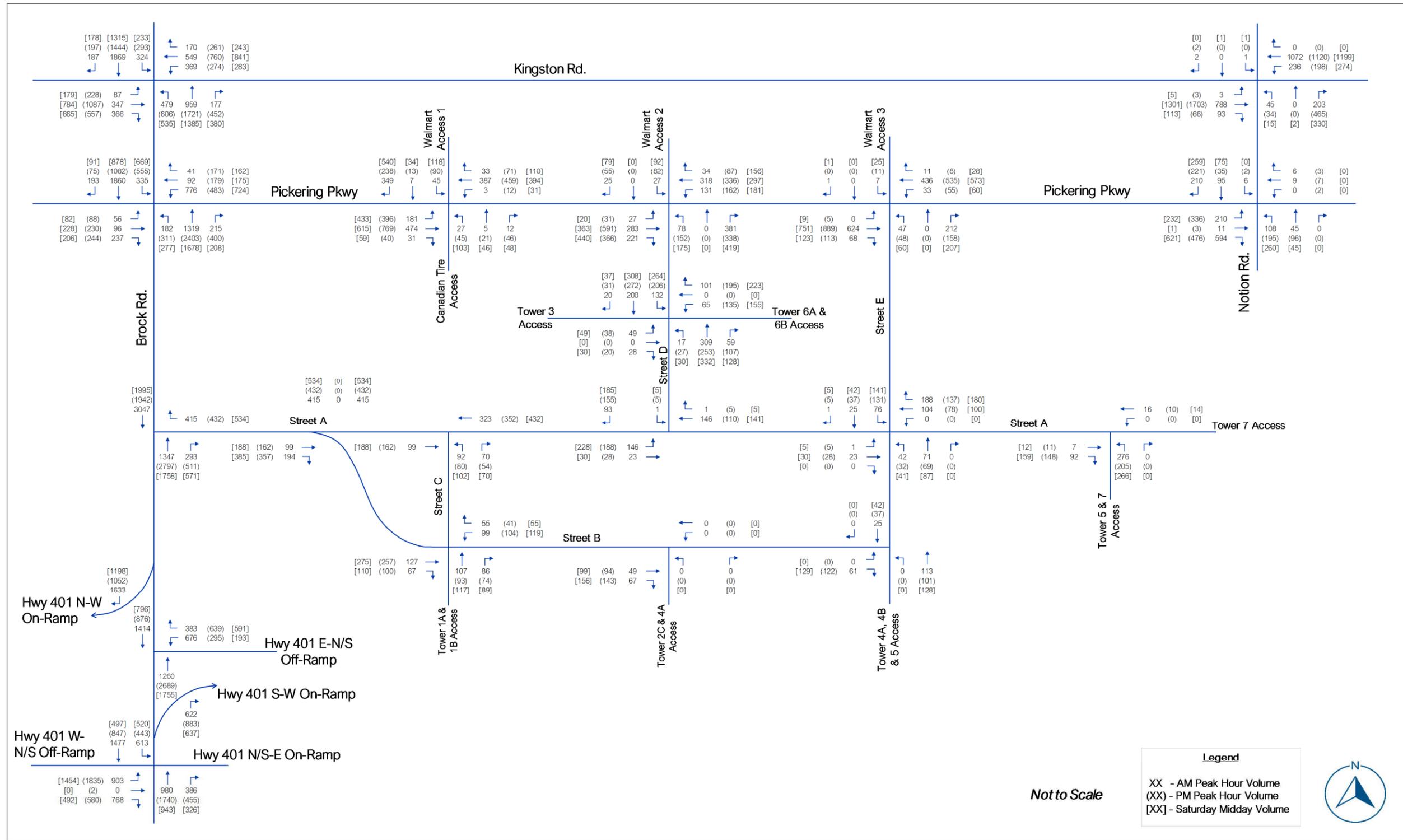


Figure 8.8 – Future Total (2036) Traffic Volumes

Table 8.3 – Future Total (2036) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L		0.66	75.0	E	#44	1.70	375	F	#143	1.10	145.3	F	#103
EBT	2 T		0.36	32.8	C	52	1.07	89	F	#215	0.77	43.4	D	126
EBR	1 R		0.60	19.2	B	67	0.86	36	D	#144	1.07	82.3	F	#216
WBL	1 L		2.13	551.6	F	#224	1.60	324	F	m#157	1.60	324	F	#171
WBT	2 T		0.51	35.6	D	90	0.72	42	D	m133	0.81	45.6	D	126
WBR	1 R		0.29	13.4	B	34	0.47	22	C	m70.0	0.40	11.4	B	39
NBL	1 L		2.15	553.6	F	m#176	1.99	471	F	m#136	1.78	376	F	m#156
NBT	3 T		0.70	19.2	B	m29	1.07	50	D	m93	0.89	36.0	D	m122
NBR	1 R		0.32	2.1	A	m0.1	0.76	9	A	m21	0.63	18.6	B	m69
SBL	1 L		1.24	156.4	F	#143	1.39	229	F	#146	1.02	93.0	F	#102
SBT	3 T		1.26	157.5	F	#259	1.04	76	E	#179	0.92	51.6	D	#148
SBR	1 R		0.34	5.7	A	17	0.37	7	A	21	0.33	6.1	A	17
<b>Overall</b>			<b>1.39</b>	<b>147.7</b>	<b>F</b>	<b>-</b>	<b>1.19</b>	<b>111.0</b>	<b>F</b>	<b>-</b>	<b>1.09</b>	<b>83.5</b>	<b>F</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	12.7	B	m0.8	0.01	16.7	B	m0.3	0.02	26.2	C	m1.3
EBT	2 T		0.37	11.4	B	m68.5	0.99	28.4	C	m129	0.64	35.2	D	m211
EBR	1 R	20	0.11	7.0	A	m11.4	0.10	6.3	A	m1.0	0.13	18.4	B	m24
WBL	1 L	55	0.49	6.8	A	27	1.00	94.0	F	#82	0.66	21.5	C	57
WB	1 T & 1 T/R		0.43	5.6	A	76	0.55	14.0	B	103	0.46	5.4	A	84
NB	1 L/T/R		0.80	38.2	D	47	1.06	87.8	F	#186	0.81	25.3	C	45
SB	1 L/T/R		0.01	0.0	A	0	0.00	0.0	A	0	0.01	42.5	D	3
<b>Overall</b>			<b>0.47</b>	<b>10.8</b>	<b>A</b>	<b>-</b>	<b>1.00</b>	<b>34.8</b>	<b>F</b>	<b>-</b>	<b>0.67</b>	<b>21.3</b>	<b>B</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.37	53.1	D	27	0.58	61.0	E	39	0.57	62.0	E	37
EB	1 T & 1 T/R		0.88	43.9	D	47	0.78	35.7	D	52	0.76	37.1	D	50
WBL	2 L	60	1.36	209.9	F	#177	1.39	230.9	F	#121	1.57	296.2	F	m#164
WBT	1 T		0.15	27.3	C	27	0.35	36.1	D	56	0.31	27.5	C	m46
WBR	1 R	45	0.08	3.7	A	m1.7	0.31	11.6	B	25	0.29	5.6	A	m18
NBL	1 L	135	0.54	31.4	C	55	0.68	28.1	C	m75	0.64	23.6	C	65
NBT	3 T		1.06	82.9	F	#160	1.48	251.2	F	#346	1.21	141.2	F	#218
NBR	1 R	60	0.48	16.6	B	34	0.70	30.0	C	m73	0.43	19.4	B	43
SBL	1 L	110	0.65	29.0	C	m62	1.01	40.5	D	m#135	1.10	74.7	E	m#174
SBT	3 T		1.21	141.8	F	m#155	0.67	32.2	C	m101	0.49	20.8	C	m77
SBR	1 R	160	0.33	21.8	C	m16	0.13	9.4	A	m4.3	0.15	2.9	A	m4
<b>Overall</b>			<b>1.17</b>	<b>107.8</b>	<b>F</b>	<b>-</b>	<b>1.32</b>	<b>132.2</b>	<b>F</b>	<b>-</b>	<b>1.21</b>	<b>102.3</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.25	1.4	A	4	0.58	5.3	A	m11	0.79	19.1	B	m51.0
EBT	1 T		0.35	1.6	A	10	0.51	2.9	A	m24	0.54	9.8	A	m50.0
EBR	1 R		0.03	0.0	A	m0.0	0.04	0.3	A	m0.2	0.08	2.5	A	m1.6
WBL	1 L	35	0.00	8.0	A	2	0.03	11.0	B	m3	0.13	38.6	D	m16.7
WB	1 T & 1 T/R		0.19	7.1	A	31	0.25	9.6	A	m42	0.47	35.4	D	79
NBL	1 L	25	0.48	73.7	E	16	0.79	116.6	F	#27	1.78	437.7	F	#58.2
NB	1 T/R		0.10	25.8	C	8	0.30	21.5	C	18	0.16	11.9	B	18
SBL	1 L	25	0.37	56.4	E	23	0.61	65.0	E	39	0.28	26.7	C	34
SB	1 T/R		0.78	16.9	B	33	0.65	14.3	B	28	0.66	6.2	A	32
<b>Overall</b>			<b>0.42</b>	<b>10.0</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>12.4</b>	<b>A</b>	<b>-</b>	<b>0.71</b>	<b>35.5</b>	<b>C</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
<b>EBT</b>	1 L/T/R		0.43	4.8	A	47	0.80	19.1	B	271	0.64	5.6	A	22
<b>EBL*</b>	1 L		0.04	4.4	A	5	0.06	6.5	A	7	0.04	5.3	A	4
<b>EBT*</b>	1 T		0.34	6.3	A	47	0.65	13.2	B	134	0.43	8.2	A	61
<b>EBR*</b>	1 R		0.07	4.5	A	7	0.16	7.1	A	17	0.18	6.1	A	15
<b>WBL</b>	1 L		0.09	4.7	A	9	0.21	8.9	A	m16	0.22	10.5	B	m21
<b>WBT</b>	1 T/R		0.31	5.5	A	45	0.37	8.9	A	m77	0.41	11.2	B	100
<b>NBL</b>	1 L		0.18	42.3	D	m17	0.40	42.7	D	40	0.43	42.6	D	44
<b>NBT</b>	1 T/R		0.31	1.3	A	0	0.47	3.9	A	0	0.44	2.7	A	0
<b>SBL</b>	1 L		0.17	43.3	D	15	0.37	43.0	D	32	0.41	43.3	D	35
<b>SBT</b>	1 T/R		0.04	0.1	A	0	0.11	0.4	A	0	0.15	0.5	A	0
<b>Overall</b>			<b>0.34</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>0.58</b>	<b>17.2</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>11.6</b>	<b>A</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0.0	A	0			A		0.01	0.3	A	0
<b>WB</b>	1 L/T/R		0.09	2.6	A	3	0.16	4.2	A	5	0.15	3.7	A	4
<b>NB</b>	1 L/T/R		0.37	39.0	E	12	1.11	258.1	F	45	1.08	218	F	48
<b>SB</b>	1 L/T/R		0.50	17.9	C	22	0.62	32.5	D	32	0.62	25	D	32
<b>Overall</b>			<b>0.81</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>1.03</b>	<b>17.1</b>	<b>C</b>	<b>-</b>	<b>1.07</b>	<b>24.4</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.14	3.3	A	4	1.47	243.0	F	99	1.48	249	F	303
<b>WB</b>	1 L/T/R		0.00	0.0	A	0			A		0.00	0	A	0
<b>NB</b>	1 L/T/R		1.08	160.4	F	66	0.14	5.6	A	4	0.20	7	A	6
<b>SB</b>	1 L/T/R		0.69	27.7	D	42	0.00	0.1	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.81</b>	<b>29.6</b>	<b>D</b>	<b>-</b>	<b>0.86</b>	<b>140.9</b>	<b>F</b>	<b>-</b>	<b>0.89</b>	<b>136</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
WBR	1 R	10	0.36	11.0	B	13	0.61	19.7	C	33	0.51	13.0	B	23
NBT	3 T		0.29	0.0	A	0	0.60	0.0	A	0	0.37	0.0	A	0
NBR	1 R		0.29	0.0	A	0	0.60	0.0	A	0	0.37	0.0	A	0
<b>Overall</b>			<b>0.62</b>	<b>0.7</b>	<b>A</b>	<b>-</b>	<b>0.82</b>	<b>1.3</b>	<b>A</b>	<b>-</b>	<b>0.67</b>	<b>1.2</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
WB	1 L & 1 T/L		0.76	42.3	D	97	0.83	50.9	D	99	0.62	40.7	D	67
WBR	1 R	95	0.79	47.8	D	104	0.89	68.2	E	#141	0.81	55.6	E	103
NBT	3 T		0.47	18.4	B	m54	0.85	17.7	B	m71	0.53	14.8	B	m66
SBT	3 T		0.50	12.2	B	m43	0.29	6.5	A	m19	0.26	15.1	B	m35
<b>Overall</b>			<b>0.52</b>	<b>23.2</b>	<b>A</b>	<b>-</b>	<b>0.74</b>	<b>40.0</b>	<b>C</b>	<b>-</b>	<b>0.51</b>	<b>22.5</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
EBL	1 L		1.20	143.6	F	#266	1.47	250.3	F	#430	1.09	96.1	F	#298
EBT	1 L/T/R		1.21	144.3	F	#263	1.54	280.2	F	#457	1.09	92.7	F	#301
EBR	1 R	245	1.19	140.7	F	#241	0.98	64.2	E	#209	0.64	16.5	B	84
NBT	2 T & 1 T/R		1.06	80.7	F	#160	1.35	192.2	F	#300	1.06	84.2	F	#150
SBL	1 L		1.26	160.6	F	#269	1.53	280.8	F	#218	1.12	120.0	F	#218
SBT	2 T		0.77	25.1	C	166	0.55	22.6	C	109	0.30	17.0	B	51
<b>Overall</b>			<b>1.13</b>	<b>94.2</b>	<b>F</b>	<b>-</b>	<b>1.38</b>	<b>184.8</b>	<b>F</b>	<b>-</b>	<b>1.08</b>	<b>76.4</b>	<b>F</b>	<b>-</b>
<b>Street C/Street A - Unsignalized</b>														
EBT	1 T		0.06	0.0	A	0	0.10	0.0	A	0	0.22	0.0	A	0
WBT	1 T		0.15	0.0	A	0	0.15	0.0	A	0	0.12	0.0	A	0
NBL	1 L		0.10	10.4	B	3	0.10	10.5	B	3	0.14	11.5	B	4
NBR	1 R		0.06	9.1	A	2	0.07	9.5	A	2	0.10	10.9	B	3
<b>Overall</b>			<b>0.39</b>	<b>2.7</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>2.4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>2.4</b>	<b>A</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
EBT	1 T		0.05	0.0	A	0	0.09	0.0	A	0	0.10	0.0	A	0
EBR	1R		0.04	0.0	A	0	0.05	0.0	A	0	0.05	0.0	A	0
WBL	1 L		0.07	7.7	A	2	0.07	7.9	A	2	0.09	8.0	A	2
WBR	1 R		0.02	0.0	A	0	0.01	0.0	A	0	0.02	0.0	A	0
NBT	1 T/R		0.27	12.2	B	9	0.27	13.2	B	9	0.34	14.6	B	12
<b>Overall</b>			<b>0.28</b>	<b>6.7</b>	<b>A</b>	<b>-</b>	<b>0.30</b>	<b>5.6</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
EBL	-		0.13	11.6	B	4	0.17	15.3	C	5	0.34	26.6	D	12
WBL	-		0.24	11.2	B	7	0.57	17.8	C	29	0.78	32.4	D	58
NBL	1 L		0.01	7.3	A	0	0.02	7.3	A	1	0.02	7.3	A	1
NBT	1 T/R		0.07	0.0	A	0	0.07	0.0	A	0	0.12	0.0	A	0
SBL	1 L		0.10	7.7	A	3	0.15	7.9	A	4	0.21	8.3	A	6
SBT	1 T/R		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
<b>Overall</b>			<b>0.31</b>	<b>7.4</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>11.3</b>	<b>B</b>	<b>-</b>	<b>0.60</b>	<b>17.1</b>	<b>C</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
EBL	1 L		0.10	7.8	A	3	0.14	7.9	A	4	0.17	8.1	A	5
EBT	1 T		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
WBT	1 T/R		0.09	0.0	A	0	0.08	0.0	A	0	0.10	0.0	A	0
SBL	1 L		0.00	10.7	B	0	0.01	11.8	B	0	0.01	12.6	B	0
SBR	1 R		0.11	9.5	A	3	0.18	9.8	A	5	0.23	10.3	B	7
<b>Overall</b>			<b>0.28</b>	<b>5.0</b>	<b>A</b>	<b>-</b>	<b>0.31</b>	<b>6.1</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
EBT	1 T/R		0.08	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0
WBL	-		0.04	3.2	A	1	0.07	4.3	A	2	0.08	4.3	A	2

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
NBR	-		0.15	9.6	A	4	0.16	9.7	A	4	0.20	10.2	B	6
<b>Overall</b>			<b>0.33</b>	<b>4.1</b>	<b>A</b>	<b>-</b>	<b>0.38</b>	<b>4.2</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4.4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
EBL	1 L		0.00	17.0	C	0	0.00	13.9	B	0	0.01	20.6	C	0
EBT	1 T/R		0.05	12.8	B	1	0.07	13.8	B	2	0.08	15.1	C	2
WBT	1 T/R		0.00	0.0	A	0	0.00	13.7	B	0	0.00	0.0	A	0
WBR	-		0.31	12.8	B	11	0.10	11.4	B	3	0.34	14.4	B	12
NBL	1 L		0.05	7.8	A	1	0.06	7.9	A	2	0.08	8.0	A	2
NBT	1 T/R		0.12	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0
SBL	1 L		0.04	7.7	A	1	0.06	7.8	A	2	0.07	7.9	A	2
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.34</b>	<b>5.3</b>	<b>A</b>	<b>-</b>	<b>0.29</b>	<b>3.6</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5.3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
EBL	1 L/R		0.29	11.1	B	10	0.29	11.3	B	10	0.36	12.4	B	13
NBT	1 L/T		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.30</b>	<b>5.4</b>	<b>A</b>	<b>-</b>	<b>0.32</b>	<b>4.8</b>	<b>A</b>	<b>-</b>	<b>0.37</b>	<b>5.4</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
EBT	1 T/R		0.05	0.0	A	0	0.04	0.0	A	0	0.08	0.0	A	0
WBT	1 L/T		0.00	0.0	A	0	0.00	1.0	A	0	0.00	0.0	A	0
NBL	1 L/R		0.20	9.8	A	6	0.05	9.0	A	1	0.20	9.9	A	6
<b>Overall</b>			<b>0.21</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>0.14</b>	<b>3.6</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>5.5</b>	<b>A</b>	<b>-</b>
<b>Street B/Street A - Unsignalized</b>														
EBT	1 T/R		0.14	0.0	A	0	0.24	0.0	A	0	0.27	0.0	A	0
WBT	1 T		0.19	0.0	A	0	0.22	0.0	A	0	0.27	0.0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.39</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>0.0</b>	<b>A</b>	<b>-</b>

*\*With improved lane configuration (dedicated eastbound left and right turn lanes).*

## 9.0 Future (2041 & 2046) Traffic Conditions

The following sections present the operational analysis results of the study area intersections under future 2041 and 2046 total traffic conditions which includes full build-out of all the proposed phases of the development (Phases 1 to 7). These horizon years represent both the 5-year and 10-year planning horizons beyond full build-out of all 7 phases of the proposed development.

### 9.1 Future Background (2041 & 2046) Traffic Growth

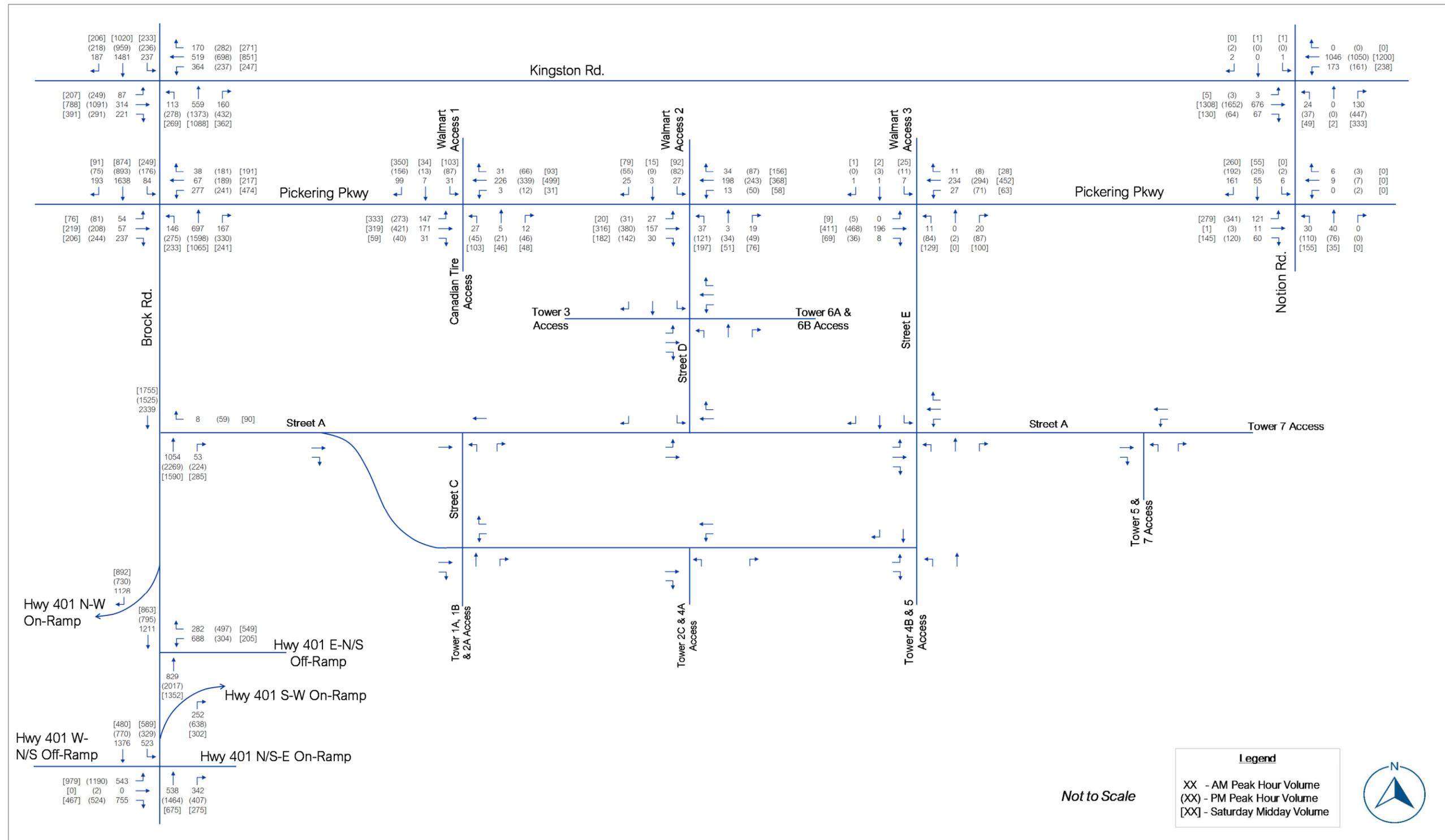
Future background traffic growth through the study area intersections was established by applying a 0.5% per annum growth rate to all through movements along Brock Road and Kingston Road, as well as all turning movements from the MTO ramps presented in **Figure 7.1**. The resulting future 2041 and 2046 background traffic growth volumes for the weekday a.m., p.m., and Saturday Midday are presented in **Figure 9.1** and **Figure 9.2** respectively.

### 9.2 Future Total (2041 & 2046) Traffic Volumes

The future total 2041 and 2046 traffic volumes were established by combining the background 2041 and 2046 traffic growth volumes presented in **Figure 9.1** and **Figure 9.2**, with the site generated traffic volumes for Phases 1 to 7 presented in the previous sections. The resulting future total 2041 and 2046 traffic volumes for the weekday a.m., p.m. and Saturday Midday peak hours are presented in **Figure 9.3** and **Figure 9.4**.

### 9.3 Future Total (2041 & 2046) Intersection Operational Analysis

Using the future total 2041 and 2046 traffic volumes presented in **Figure 9.3** and **Figure 9.4**, operational analysis for the signalized and unsignalized study area intersections was completed for the weekday a.m., p.m., and Saturday Midday peak hours. The results of the analysis are presented in **Table 9.1** and **Table 9.2**. All HCM output reports are provided in **Appendix 17**.



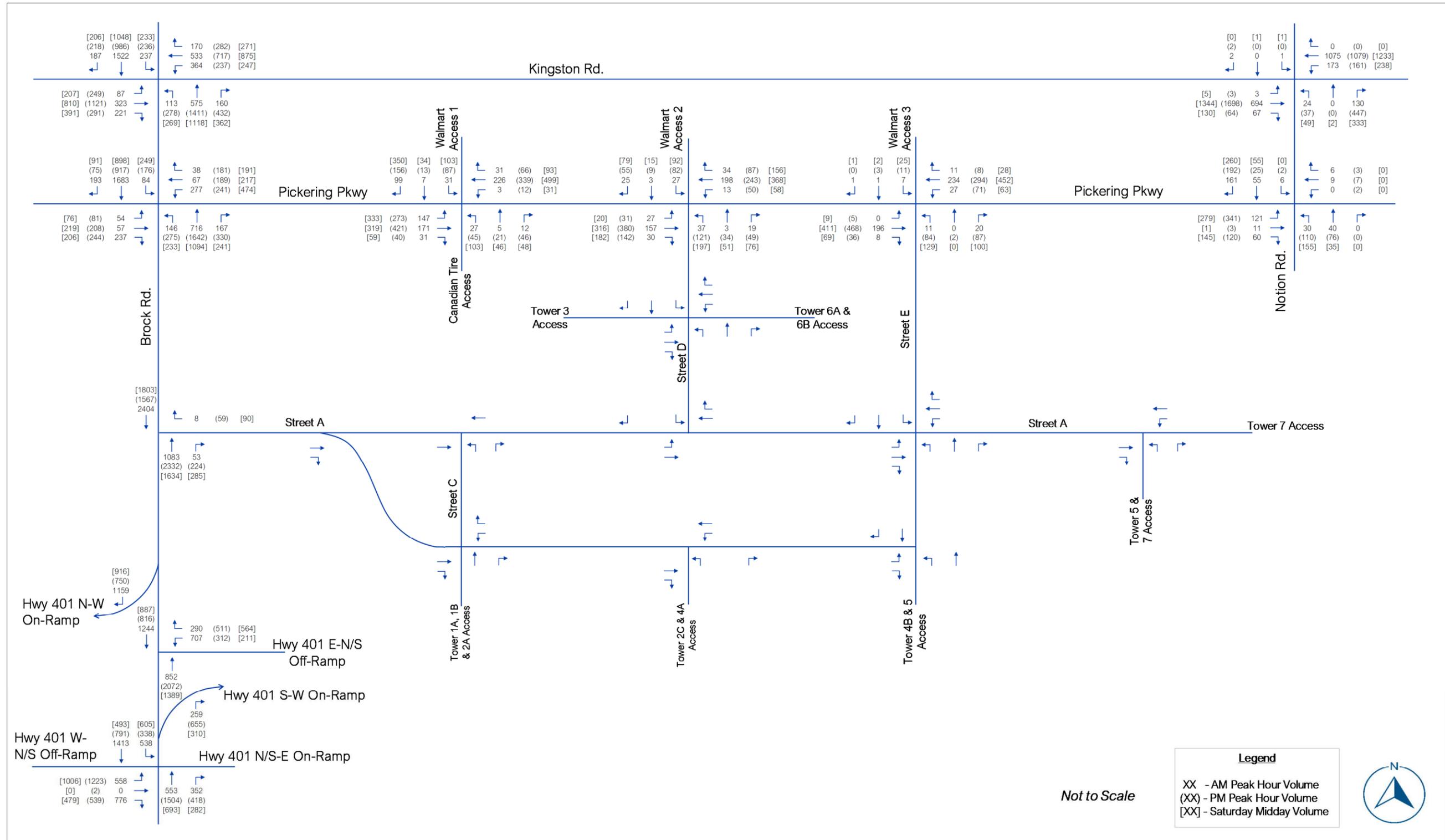


Figure 9.2 – Future (2046) Background Traffic Growth

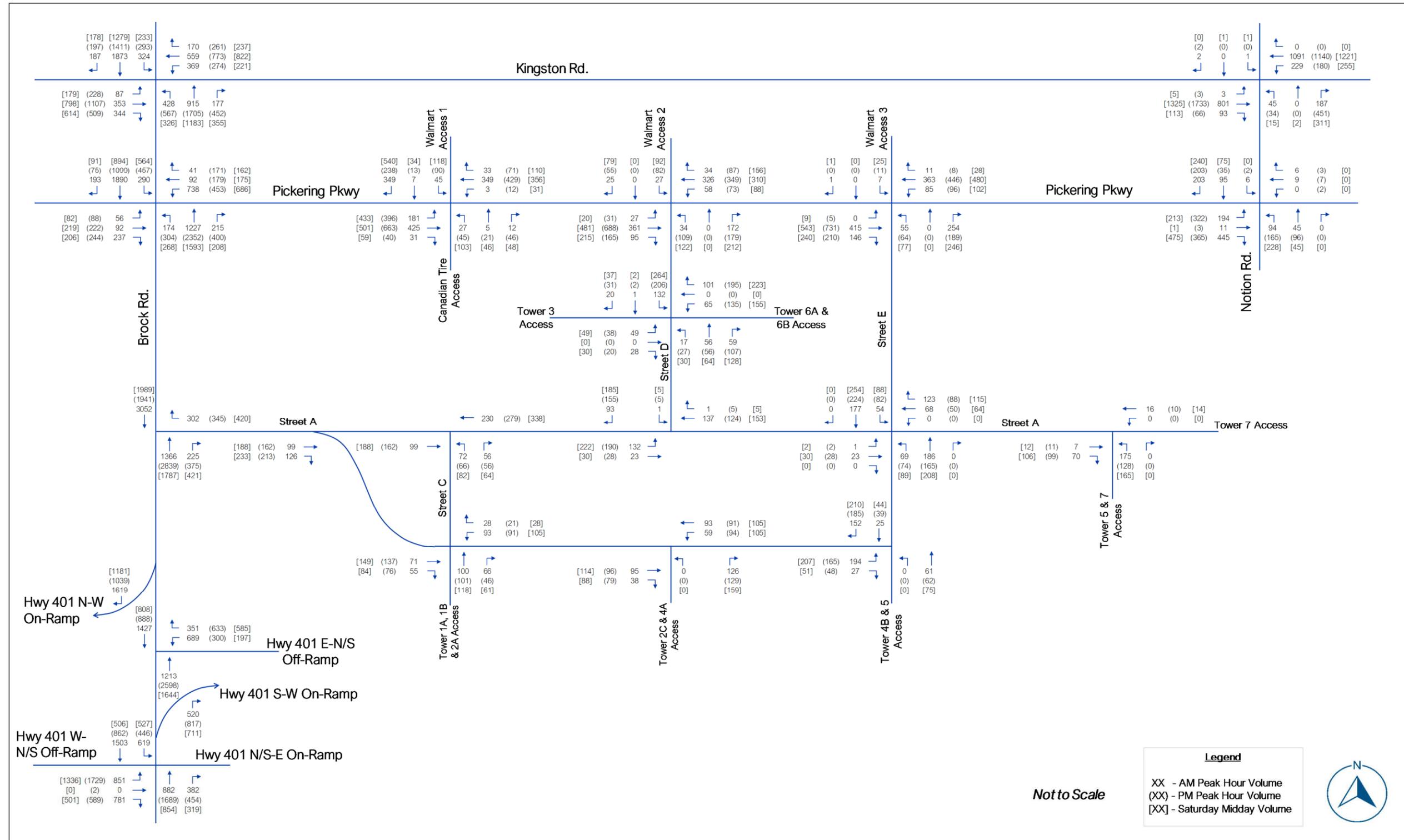


Figure 9.3 – Future Total (2041) Traffic Volumes

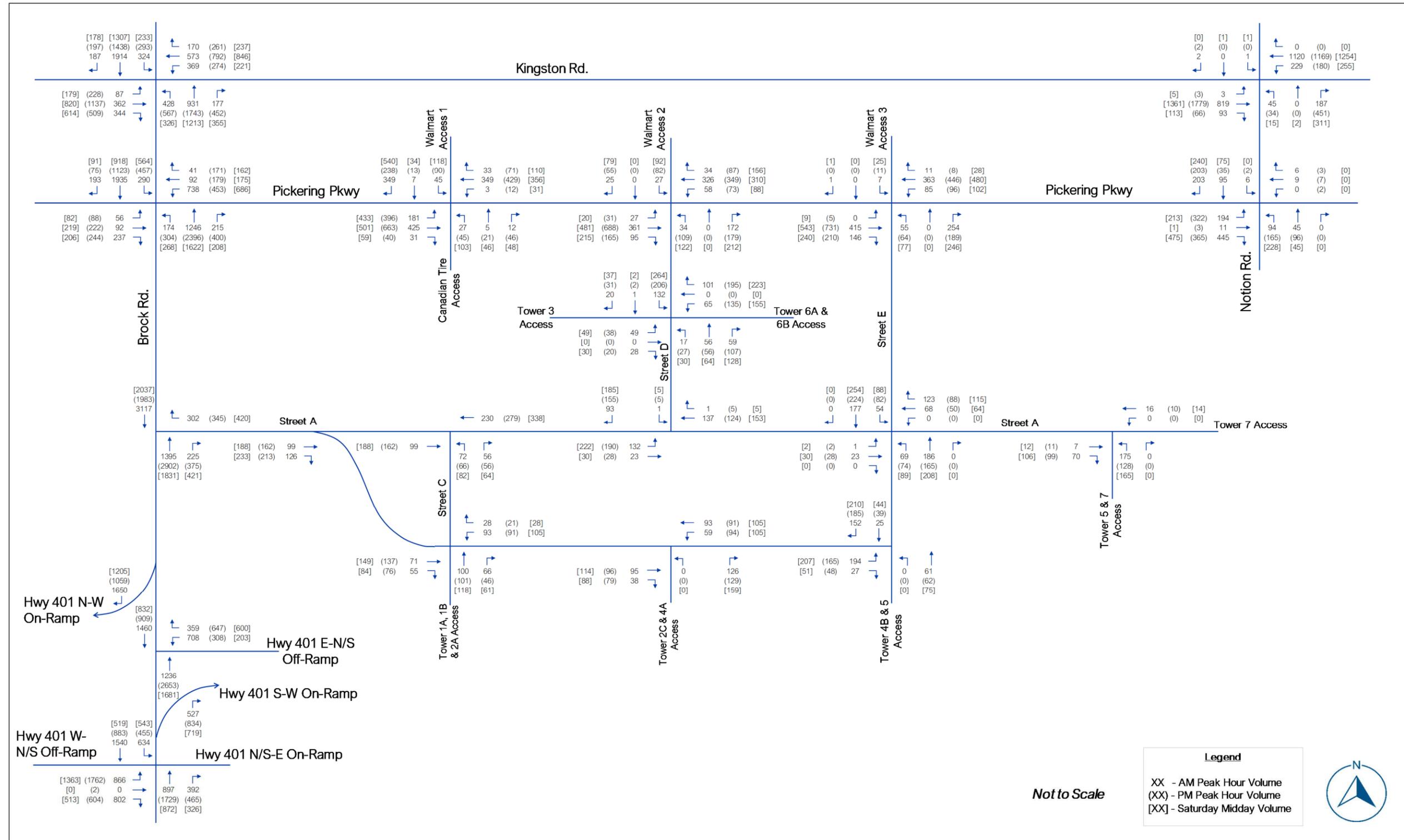


Figure 9.4 – Future Total (2046) Traffic Volumes

Table 9.1 – Future Total (2041) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L		0.66	75.0	E	#44	1.70	375.5	F	#143	0.94	101.0	F	#95
EBT	2 T		0.36	32.9	C	53	1.06	85.1	F	#216	0.81	45.8	D	130
EBR	1 R		0.60	19.2	B	67	0.85	34.7	C	#143	1.05	74.9	E	#207
WBL	1 L		2.13	551.6	F	#224	1.75	388.6	F	m#161	1.15	153.4	F	#126
WBT	2 T		0.51	35.7	D	91	0.73	43.2	D	m135	0.83	49.1	D	126
WBR	1 R		0.29	13.3	B	34	0.49	25.0	C	m77	0.40	11.0	B	38
NBL	1 L		2.15	554.5	F	m#188	1.99	470.3	F	m#136	1.20	110.2	F	m#62
NBT	3 T		0.71	23.6	C	m36	1.03	34.9	C	m92	0.83	30.8	C	m104
NBR	1 R		0.32	3.6	A	m4.2	0.74	8.3	A	m20	0.59	18.8	B	m62
SBL	1 L		1.25	162.1	F	#144	1.60	315.6	F	#154	0.91	65.0	E	#94
SBT	3 T		1.28	165.1	F	#264	1.06	80.8	F	#183	0.93	53.0	D	#151
SBR	1 R		0.34	5.7	A	17	0.37	7.8	A	22	0.33	6.1	A	17
<b>Overall</b>			<b>1.40</b>	<b>150.8</b>	<b>F</b>	<b>-</b>	<b>1.27</b>	<b>112.8</b>	<b>F</b>	<b>-</b>	<b>0.95</b>	<b>53.0</b>	<b>E</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														
EBL	1 L	20	0.01	12.0	B	m0.7	0.02	15.7	B	m0.4	0.02	27.2	C	m1.3
EBT	2 T		0.38	11.2	B	m67	1.00	32.1	C	m132	0.66	35.8	D	m219
EBR	1 R	20	0.11	6.9	A	m10	0.10	6.6	A	m1.5	0.13	18.3	B	m24
WBL	1 L	55	0.50	6.9	A	27	1.08	118.7	F	#86	0.67	23.2	C	59
WB	1 T & 1 T/R		0.43	5.7	A	78	0.57	14.8	B	108	0.47	5.5	A	87
NB	1 L/T/R		0.80	38.1	D	47	1.06	88.5	F	#189	0.81	25.4	C	46
SB	1 L/T/R		0.01	0.0	A	0	0.00	0.0	A	0	0.01	42.5	D	3

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.48</b>	<b>10.7</b>	<b>A</b>	<b>-</b>	<b>1.02</b>	<b>38.1</b>	<b>F</b>	<b>-</b>	<b>0.69</b>	<b>21.7</b>	<b>B</b>	<b>-</b>
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
<b>EBL</b>	1 L	40	0.37	53.1	D	27	0.58	61.0	E	39	0.57	62.0	E	37
<b>EB</b>	1 T & 1 T/R		0.88	43.9	D	47	0.78	35.7	D	52	0.76	37.1	D	50
<b>WBL</b>	2 L	60	1.42	236.6	F	#182	1.39	230	F	#120	1.57	296.2	F	m#164
<b>WBT</b>	1 T		0.15	28.7	C	28	0.35	36.1	D	56	0.31	27.7	C	m47
<b>WBR</b>	1 R	45	0.08	3.9	A	m1.7	0.31	11.5	B	25	0.29	5.8	A	m18
<b>NBL</b>	1 L	135	0.54	31.7	C	55	0.69	28.9	C	m74	0.64	24.0	C	67
<b>NBT</b>	3 T		0.99	66.1	E	#151	1.46	243.1	F	#348	1.23	148.2	F	#223
<b>NBR</b>	1 R	60	0.45	15.2	B	32	0.69	29.2	C	m71	0.43	20.3	C	44
<b>SBL</b>	1 L	110	0.68	31.2	C	m61	1.04	49.7	D	m#138	1.10	76.8	E	m#183
<b>SBT</b>	3 T		1.20	139.2	F	m155	0.68	31.7	C	m101	0.50	22.3	C	m84.9
<b>SBR</b>	1 R	160	0.33	22.6	C	m16	0.13	7.1	A	m2.3	0.15	3.7	A	m6.0
<b>Overall</b>			<b>1.18</b>	<b>107.0</b>	<b>F</b>	<b>-</b>	<b>1.32</b>	<b>129.9</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>104.9</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
<b>EBL</b>	1 L	40	0.25	1.4	A	4	0.58	5.4	A	m12	0.79	20.1	C	m53
<b>EBT</b>	1 T		0.35	1.7	A	12	0.51	2.9	A	m23	0.54	9.8	A	m51
<b>EBR</b>	1 R		0.03	0.1	A	m0.1	0.04	0.3	A	m0.2	0.08	2.6	A	m1
<b>WBL</b>	1 L	35	0.00	8.0	A	2	0.03	10.8	B	m3	0.13	38.3	D	m16
<b>WB</b>	1 T & 1 T/R		0.19	7.1	A	31	0.25	9.6	A	m40	0.47	35.3	D	79
<b>NBL</b>	1 L	25	0.48	73.7	E	16	0.79	116.6	F	#27	1.78	437.7	F	#58
<b>NB</b>	1 T/R		0.10	25.8	C	8	0.30	21.5	C	18	0.16	11.9	B	18
<b>SBL</b>	1 L	25	0.37	56.4	E	23	0.61	65.0	E	39	0.28	26.7	C	34
<b>SB</b>	1 T/R		0.78	16.9	B	33	0.65	14.3	B	28	0.66	6.2	A	32

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.42</b>	<b>10.0</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>12.4</b>	<b>A</b>	<b>-</b>	<b>0.71</b>	<b>35.6</b>	<b>C</b>	<b>-</b>
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
<b>EBT</b>	1 L/T/R		0.42	3.6	A	36	0.75	14.7	B	214	0.61	10.8	B	182
<b>EBL*</b>	1 L		0.04	4.2	A	4	0.06	5.1	A	6	0.04	5.3	A	4
<b>EBT*</b>	1 T		0.34	6.0	A	43	0.61	10.2	B	113	0.43	8.2	A	61
<b>EBR*</b>	1 R		0.07	4.3	A	7	0.15	5.5	A	14	0.18	6.1	A	15
<b>WBL</b>	1 L		0.09	4.4	A	8	0.19	7.8	A	m13	0.20	8.7	A	m20.7
<b>WBT</b>	1 T/R		0.31	5.1	A	41	0.35	8.2	A	m65	0.39	8.8	A	87
<b>NBL</b>	1 L		0.19	44.6	D	m17	0.59	57.2	E	m#44	0.55	52.2	D	48
<b>NBT</b>	1 T/R		0.33	1.5	A	0	0.55	7.1	A	m2.7	0.49	3.6	A	0
<b>SBL</b>	1 L		0.17	44.5	D	15	0.50	55.0	D	36	0.47	49.5	D	38
<b>SBT</b>	1 T/R		0.04	0.1	A	0	0.10	0.4	A	0	0.14	0.5	A	0
<b>Overall</b>			<b>0.34</b>	<b>6.0</b>	<b>A</b>	<b>-</b>	<b>0.56</b>	<b>16.6</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>14.6</b>	<b>A</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0.0	A	0			A		0.01	0.3	A	0
<b>WB</b>	1 L/T/R		0.09	2.6	A	3	0.16	4.2	A	5	0.15	3.7	A	4
<b>NB</b>	1 L/T/R		0.37	39.0	E	12	<b>1.11</b>	258.1	<b>F</b>	45	<b>1.08</b>	218.4	<b>F</b>	48
<b>SB</b>	1 L/T/R		0.50	17.9	C	22	0.62	32.5	D	32	0.62	25.7	D	32
<b>Overall</b>			<b>0.81</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>1.03</b>	<b>17.1</b>	<b>C</b>	<b>-</b>	<b>1.07</b>	<b>24.4</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.14	3.3	A	4	<b>1.47</b>	243.0	<b>F</b>	299	<b>1.48</b>	249	<b>F</b>	303
<b>WB</b>	1 L/T/R		0.00	0.0	A	0			A		0.00	0	A	0
<b>NB</b>	1 L/T/R		<b>1.08</b>	160.4	<b>F</b>	66	0.14	5.6	A	4	0.20	7	A	6
<b>SB</b>	1 L/T/R		0.69	27.7	D	42	0.00	0.1	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.81</b>	<b>29.6</b>	<b>D</b>	<b>-</b>	<b>0.86</b>	<b>140.9</b>	<b>F</b>	<b>-</b>	<b>0.89</b>	<b>136</b>	<b>F</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
WBR	1 R	10	0.36	11.1	B	13	0.63	20.8	C	35	0.51	13.2	B	24
NBT	3 T		0.29	0.0	A	0	0.61	0.0	A	0	0.38	0.0	A	0
NBR	1 R		0.29	0.0	A	0	0.61	0.0	A	0	0.38	0.0	A	0
<b>Overall</b>			<b>0.62</b>	<b>0.7</b>	<b>A</b>	<b>-</b>	<b>0.83</b>	<b>1.3</b>	<b>A</b>	<b>-</b>	<b>0.67</b>	<b>1.2</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
WB	1 L & 1 T/L		0.76	41.9	D	98	0.83	51.4	D	101	0.62	40.3	D	68
WBR	1 R	95	0.79	47.4	D	106	0.90	69.3	E	#143.9	0.81	55.3	E	104
NBT	3 T		0.48	17.9	B	m51.4	0.87	18.1	B	m71.3	0.55	14.8	B	m64.2
SBT	3 T		0.52	11.9	B	m43.9	0.30	6.5	A	m19.8	0.27	16.0	B	m38.0
<b>Overall</b>			<b>0.54</b>	<b>22.8</b>	<b>A</b>	<b>-</b>	<b>0.75</b>	<b>44.7</b>	<b>C</b>	<b>-</b>	<b>0.53</b>	<b>22.7</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
EBL	1 L		1.18	136.6	F	#266	1.49	258.1	F	#436	1.10	101.0	F	#304
EBT	1 L/T/R		1.19	138.7	F	#265	1.56	289.2	F	#464	1.10	97.8	F	#308
EBR	1 R	245	1.19	137.6	F	#244	1.00	69.8	E	#215	0.66	17.7	B	90
NBT	2 T & 1 T/R		1.10	95.6	F	#167	1.37	201.5	F	#307	1.11	103.0	F	#158
SBL	1 L		1.27	167.8	F	#274	1.55	290.3	F	#222	1.11	117.0	F	#222
SBT	2 T		0.80	27.7	C	179	0.56	22.7	C	111	0.31	17.3	B	50
<b>Overall</b>			<b>1.16</b>	<b>97.9</b>	<b>F</b>	<b>-</b>	<b>1.40</b>	<b>192.1</b>	<b>F</b>	<b>-</b>	<b>0.99</b>	<b>83.4</b>	<b>E</b>	<b>-</b>
<b>Street C/Street A - Unsignalized</b>														
EBT	1 T		0.06	0.0	A	0	0.10	0.0	A	0	0.22	0.0	A	0
WBT	1 T		0.15	0.0	A	0	0.15	0.0	A	0	0.12	0.0	A	0
NBL	1 L		0.10	10.4	B	3	0.10	10.5	B	3	0.14	11.5	B	4
NBR	1 R		0.06	9.1	A	2	0.07	9.5	A	2	0.10	10.9	B	3

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.39</b>	<b>2.7</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>2.4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>2.4</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
<b>EBT</b>	1 T		0.05	0.0	A	0	0.09	0.0	A	0	0.10	0.0	A	0
<b>EBR</b>	1R		0.04	0.0	A	0	0.05	0.0	A	0	0.05	0.0	A	0
<b>WBL</b>	1 L		0.07	7.7	A	2	0.07	7.9	A	2	0.09	8.0	A	2
<b>WBR</b>	1 R		0.02	0.0	A	0	0.01	0.0	A	0	0.02	0.0	A	0
<b>NBT</b>	1 T/R		0.27	12.2	B	9	0.27	13.2	B	9	0.34	14.6	B	12
<b>Overall</b>			<b>0.28</b>	<b>6.7</b>	<b>A</b>	<b>-</b>	<b>0.30</b>	<b>5.6</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
<b>EBL</b>	-		0.13	11.6	B	4	0.17	16.5	C	5	0.34	26.6	D	12
<b>WBL</b>	-		0.24	11.2	B	7	0.57	18.1	C	29	0.78	32.4	D	58
<b>NBL</b>	1 L		0.01	7.3	A	0	0.02	7.3	A	1	0.02	7.3	A	1
<b>NBT</b>	1 T/R		0.07	0.0	A	0	0.10	0.0	A	0	0.12	0.0	A	0
<b>SBL</b>	1 L		0.10	7.7	A	3	0.16	8.1	A	5	0.21	8.3	A	6
<b>SBT</b>	1 T/R		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
<b>Overall</b>			<b>0.31</b>	<b>7.4</b>	<b>A</b>	<b>-</b>	<b>0.51</b>	<b>10.8</b>	<b>B</b>	<b>-</b>	<b>0.60</b>	<b>17.1</b>	<b>C</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
<b>EBL</b>	1 L		0.10	7.8	A	3	0.14	7.9	A	4	0.17	8.1	A	5
<b>EBT</b>	1 T		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
<b>WBT</b>	1 T/R		0.09	0.0	A	0	0.08	0.0	A	0	0.10	0.0	A	0
<b>SBL</b>	1 L		0.00	10.7	B	0	0.01	11.8	B	0	0.01	12.6	B	0
<b>SBR</b>	1 R		0.11	9.5	A	3	0.18	9.8	A	5	0.23	10.3	B	7
<b>Overall</b>			<b>0.28</b>	<b>5.0</b>	<b>A</b>	<b>-</b>	<b>0.31</b>	<b>6.1</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.08	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
WBL	-		0.04	3.2	A	1	0.07	4.3	A	2	0.08	4.3	A	2
NBR	-		0.15	9.6	A	4	0.16	9.7	A	4	0.20	10.2	B	6
<b>Overall</b>			<b>0.33</b>	<b>4.1</b>	<b>A</b>	<b>-</b>	<b>0.38</b>	<b>4.2</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4.4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
EBL	1 L		0.00	17.0	C	0	0.01	16.1	C	0	0.01	20.6	C	0
EBT	1 T/R		0.05	12.8	B	1	0.07	13.8	B	2	0.08	15.1	C	2
WBT	1 T/R		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
WBR	-		0.31	12.8	B	11	0.24	12.4	B	7	0.34	14.4	B	12
NBL	1 L		0.05	7.8	A	1	0.06	7.9	A	2	0.08	8.0	A	2
NBT	1 T/R		0.12	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0
SBL	1 L		0.04	7.7	A	1	0.06	7.8	A	2	0.07	7.9	A	2
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.34</b>	<b>5.3</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>4.7</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5.3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
EBL	1 L/R		0.29	11.1	B	10	0.29	11.3	B	10	0.36	12.4	B	13
NBT	1 L/T		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.30</b>	<b>5.4</b>	<b>A</b>	<b>-</b>	<b>0.32</b>	<b>4.8</b>	<b>A</b>	<b>-</b>	<b>0.37</b>	<b>5.4</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
EBT	1 T/R		0.05	0.0	A	0	0.07	0.0	A	0	0.08	0.0	A	0
WBT	1 L/T		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
NBL	1 L/R		0.20	9.8	A	6	0.15	9.6	A	4	0.20	9.9	A	6
<b>Overall</b>			<b>0.21</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>0.21</b>	<b>4.9</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>5.5</b>	<b>A</b>	<b>-</b>
<b>Street B/Street A - Unsignalized</b>														
EBT	1 T/R		0.14	0.0	A	0	0.24	0.0	A	0	0.27	0.0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
WBT	1 T		0.19	0.0	A	0	0.22	0.0	A	0	0.27	0.0	A	0
<b>Overall</b>			<b>0.39</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>0.0</b>	<b>A</b>	<b>-</b>

\*With improved lane configuration (dedicated eastbound left and right turn lanes).

Table 9.2 – Future Total (2046) Intersection Operational Analysis Results

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Kingston Rd. - Signalized</b>														
EBL	1 L		0.70	81.0	F	#48	1.70	375.5	F	#143	0.94	101.0	F	#95
EBT	2 T		0.37	33.0	C	54	1.09	94.8	F	#225	0.83	47.1	D	135
EBR	1 R		0.61	20.6	C	70	0.85	34.7	C	#143	1.05	74.9	E	#207
WBL	1 L		2.13	551.5	F	#224	1.75	388.2	F	m#160	1.15	152.1	F	#125
WBT	2 T		0.52	33.8	C	91	0.75	43.7	D	m139	0.86	52.1	D	#136
WBR	1 R		0.29	12.5	B	33	0.49	25.0	C	m78	0.40	12.5	B	41
NBL	1 L		2.30	619.4	F	m#189	1.99	470.3	F	m#133	1.20	110.6	F	m#59
NBT	3 T		0.72	24.0	C	m36	1.05	44.7	D	m94	0.86	31.7	C	m105
NBR	1 R		0.32	3.6	A	m4.2	0.74	8.4	A	m20	0.59	19.4	B	m61
SBL	1 L		1.27	169.8	F	#146	1.60	315.6	F	#154	0.91	65.0	E	#94
SBT	3 T		1.27	162.2	F	#268	1.07	87.3	F	#188	0.95	55.7	E	#157
SBR	1 R		0.33	5.5	A	17	0.37	8.0	A	22	0.33	6.1	A	17
<b>Overall</b>			<b>1.41</b>	<b>154.4</b>	<b>F</b>	<b>-</b>	<b>1.28</b>	<b>116.8</b>	<b>F</b>	<b>-</b>	<b>0.96</b>	<b>54.2</b>	<b>E</b>	<b>-</b>
<b>Notion Rd./Kingston Rd. - Signalized</b>														

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
EBL	1 L	20	0.01	13.0	B	m0.7	0.02	16.3	B	m0.3	0.03	26.6	C	m1.3
EBT	2 T		0.39	12.0	B	m67	1.03	41.6	D	m133	0.68	36.1	D	m220
EBR	1 R	20	0.11	7.4	A	m11	0.10	6.6	A	m1.4	0.13	18.3	B	m24
WBL	1 L	55	0.50	7.1	A	27	1.08	118.7	F	#86	0.70	27.5	C	64
WB	1 T & 1 T/R		0.45	5.8	A	81	0.58	15.1	B	113	0.49	5.9	A	94
NB	1 L/T/R		0.80	38.3	D	47	1.06	88.5	F	#189	0.83	28.0	C	49
SB	1 L/T/R		0.01	0.0	A	0	0.00	0.0	A	0	0.01	41.5	D	3
<b>Overall</b>			<b>0.48</b>	<b>11.0</b>	<b>A</b>	<b>-</b>	<b>1.04</b>	<b>42.5</b>	<b>F</b>	<b>-</b>	<b>0.71</b>	<b>22.6</b>	<b>C</b>	<b>-</b>
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.37	53.1	D	27	0.58	61.0	E	39	0.57	62.0	E	37
EB	1 T & 1 T/R		0.88	43.9	D	47	0.78	35.7	D	52	0.76	37.1	D	50
WBL	2 L	60	1.42	236.6	F	#182	1.39	230.8	F	#120	1.57	296.2	F	m#164
WBT	1 T		0.15	28.7	C	28	0.35	36.1	D	56	0.31	27.5	C	m46
WBR	1 R	45	0.08	3.9	A	m1.7	0.31	11.5	B	25	0.29	5.6	A	m18
NBL	1 L	135	0.54	32.0	C	55	0.70	29.4	C	m73.0	0.64	24.3	C	69
NBT	3 T		1.01	68.8	E	#155	1.49	254.6	F	#356	1.25	156.8	F	#229
NBR	1 R	60	0.46	15.3	B	33	0.69	29.5	C	m69	0.44	20.8	C	47
SBL	1 L	110	0.68	31.6	C	m61	1.04	49.4	D	m#135	1.10	77.5	E	m#179
SBT	3 T		1.23	151.1	F	m#161	0.69	32.0	C	m102	0.52	22.7	C	m87
SBR	1 R	160	0.33	22.5	C	m15	0.13	7.2	A	m2.4	0.15	3.6	A	m5.9
<b>Overall</b>			<b>1.20</b>	<b>112.1</b>	<b>F</b>	<b>-</b>	<b>1.34</b>	<b>134.9</b>	<b>F</b>	<b>-</b>	<b>1.23</b>	<b>107.6</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access 1/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.25	1.4	A	4	0.58	5.4	A	m12	0.79	19.1	B	m50
EBT	1 T		0.35	1.7	A	12	0.51	2.9	A	m23	0.54	9.8	A	m50

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
EBR	1 R		0.03	0.1	A	m0.1	0.04	0.3	A	m0.2	0.08	2.5	A	m1
WBL	1 L	35	0.00	8.0	A	2	0.03	10.9	B	m3	0.13	38.3	D	m16
WB	1 T & 1 T/R		0.19	7.1	A	31	0.25	9.7	A	m40	0.47	35.2	D	79
NBL	1 L	25	0.48	73.7	E	16	0.79	116.6	F	#27	1.78	437.7	F	#58.2
NB	1 T/R		0.10	25.8	C	8	0.30	21.5	C	18	0.16	11.9	B	18
SBL	1 L	25	0.37	56.4	E	23	0.61	65.0	E	39	0.28	26.7	C	34
SB	1 T/R		0.78	16.9	B	33	0.65	14.3	B	28	0.66	6.2	A	32
<b>Overall</b>			<b>0.42</b>	<b>10.0</b>	<b>A</b>	<b>-</b>	<b>0.46</b>	<b>12.4</b>	<b>A</b>	<b>-</b>	<b>0.71</b>	<b>35.5</b>	<b>C</b>	<b>-</b>
<b>Street D/Walmart East Access 2/Pickering Pkwy - Signalized</b>														
EBT	1 L/T/R		0.42	3.7	A	36	0.75	14.6	B	213	0.61	10.6	B	179
EBL*	1 L		0.04	4.2	A	4	0.06	5.1	A	6	0.04	5.3	A	4
EBT*	1 T		0.34	6.0	A	43	0.61	10.2	B	113	0.43	8.2	A	61
EBR*	1 R		0.07	4.3	A	7	0.15	5.5	A	14	0.18	6.1	A	15
WBL	1 L		0.09	4.4	A	8	0.19	7.8	A	m13	0.20	9.3	A	m21
WBT	1 T/R		0.31	5.1	A	41	0.35	8.2	A	m65	0.39	9.4	A	94
NBL	1 L		0.19	44.5	D	m17	0.59	57.2	E	m#44	0.55	52.2	D	48
NBT	1 T/R		0.33	1.5	A	0	0.55	7.1	A	m2.7	0.49	3.7	A	0
SBL	1 L		0.17	44.5	D	15	0.50	55.0	D	36	0.46	49.5	D	38
SBT	1 T/R		0.04	0.1	A	0	0.10	0.4	A	0	0.14	0.5	A	0
<b>Overall</b>			<b>0.34</b>	<b>6.0</b>	<b>A</b>	<b>-</b>	<b>0.56</b>	<b>16.6</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>14.6</b>	<b>A</b>	<b>-</b>
<b>Street E/Walmart East Access 3/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0.0	A	0			A		0.01	0.3	A	0
WB	1 L/T/R		0.09	2.6	A	3	0.16	4.2	A	5	0.15	3.7	A	4
NB	1 L/T/R		0.37	39.0	E	12	1.11	258	F	45	1.08	218.4	F	48
SB	1 L/T/R		0.50	17.9	C	22	0.62	32.5	D	32	0.62	25.7	D	32

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.81</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>1.03</b>	<b>17.1</b>	<b>C</b>	<b>-</b>	<b>1.07</b>	<b>24.4</b>	<b>C</b>	<b>-</b>
<b>Notion Rd./Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.14	3.3	A	4	1.47	243.0	F	299	1.48	249	F	303
<b>WB</b>	1 L/T/R		0.00	0.0	A	0			A		0.00	0	A	0
<b>NB</b>	1 L/T/R		1.08	160.4	F	66	0.14	5.6	A	4	0.20	7	A	6
<b>SB</b>	1 L/T/R		0.69	27.7	D	42	0.00	0.1	A	0	0.00	0	A	0
<b>Overall</b>			<b>0.81</b>	<b>29.6</b>	<b>D</b>	<b>-</b>	<b>0.86</b>	<b>140.9</b>	<b>F</b>	<b>-</b>	<b>0.89</b>	<b>136</b>	<b>F</b>	<b>-</b>
<b>Brock Rd./Street A (RIRO) - Unsignalized</b>														
<b>WBR</b>	1 R	10	0.36	11.2	B	13	0.66	23.1	C	39	0.52	13.4	B	24
<b>NBT</b>	3 T		0.30	0.0	A	0	0.62	0.0	A	0	0.39	0.0	A	0
<b>NBR</b>	1 R		0.30	0.0	A	0	0.62	0.0	A	0	0.39	0.0	A	0
<b>Overall</b>			<b>0.64</b>	<b>0.7</b>	<b>A</b>	<b>-</b>	<b>0.84</b>	<b>1.4</b>	<b>A</b>	<b>-</b>	<b>0.68</b>	<b>1.2</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 E-N/S Off-Ramp - Signalized</b>														
<b>WB</b>	1 L & 1 T/L		0.76	41.3	D	100	0.85	52.1	D	104	0.62	40.0	D	69
<b>WBR</b>	1 R	95	0.79	47.0	D	107	0.91	70.5	E	#148	0.81	55.2	E	106
<b>NBT</b>	3 T		0.49	19.3	B	m53	0.89	19.2	B	m74	0.56	15.6	B	m67
<b>SBT</b>	3 T		0.53	11.8	B	m43	0.31	6.5	A	m20	0.28	15.3	B	m37
<b>Overall</b>			<b>0.54</b>	<b>23.1</b>	<b>A</b>	<b>-</b>	<b>0.77</b>	<b>51.9</b>	<b>C</b>	<b>-</b>	<b>0.53</b>	<b>22.9</b>	<b>A</b>	<b>-</b>
<b>Brock Rd./Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp - Signalized</b>														
<b>EBL</b>	1 L		1.25	164.2	F	#281	1.52	270.5	F	#447	1.13	109.3	F	#313
<b>EBT</b>	1 L/T/R		1.25	161.3	F	#276	1.59	301.3	F	#475	1.12	105.5	F	#317
<b>EBR</b>	1 R	245	1.23	154.6	F	#251	1.04	78.4	E	#226	0.68	19.3	B	98
<b>NBT</b>	2 T & 1 T/R		1.09	92.4	F	#169	1.37	201.2	F	#314.2	1.10	97.2	F	#159
<b>SBL</b>	1 L		1.30	180.1	F	#282	1.66	338.3	F	m#231	1.18	140.7	F	#234

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
SBT	2 T		0.81	27.6	C	181	0.58	22.6	C	113	0.32	17.8	B	54
<b>Overall</b>			<b>1.19</b>	<b>105.8</b>	<b>F</b>	<b>-</b>	<b>1.42</b>	<b>200.1</b>	<b>F</b>	<b>-</b>	<b>1.13</b>	<b>87.7</b>	<b>F</b>	<b>-</b>
<b>Street C/Street A - Unsignalized</b>														
EBT	1 T		0.06	0.0	A	0	0.10	0.0	A	0	0.22	0.0	A	0
WBT	1 T		0.15	0.0	A	0	0.15	0.0	A	0	0.12	0.0	A	0
NBL	1 L		0.10	10.4	B	3	0.10	10.5	B	3	0.14	11.5	B	4
NBR	1 R		0.06	9.1	A	2	0.07	9.5	A	2	0.10	10.9	B	3
<b>Overall</b>			<b>0.39</b>	<b>2.7</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>2.4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>2.4</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
EBT	1 T		0.05	0.0	A	0	0.09	0.0	A	0	0.10	0.0	A	0
EBR	1R		0.04	0.0	A	0	0.05	0.0	A	0	0.05	0.0	A	0
WBL	1 L		0.07	7.7	A	2	0.07	7.9	A	2	0.09	8.0	A	2
WBR	1 R		0.02	0.0	A	0	0.01	0.0	A	0	0.02	0.0	A	0
NBT	1 T/R		0.27	12.2	B	9	0.27	13.2	B	9	0.34	14.6	B	12
<b>Overall</b>			<b>0.28</b>	<b>6.7</b>	<b>A</b>	<b>-</b>	<b>0.30</b>	<b>5.6</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
EBL	-		0.13	11.6	B	4	0.17	16.5	C	5	0.34	26.6	D	12
WBL	-		0.24	11.2	B	7	0.57	18.1	C	29	0.78	32.4	D	58
NBL	1 L		0.01	7.3	A	0	0.02	7.3	A	1	0.02	7.3	A	1
NBT	1 T/R		0.07	0.0	A	0	0.10	0.0	A	0	0.12	0.0	A	0
SBL	1 L		0.10	7.7	A	3	0.16	8.1	A	5	0.21	8.3	A	6
SBT	1 T/R		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
<b>Overall</b>			<b>0.31</b>	<b>7.4</b>	<b>A</b>	<b>-</b>	<b>0.51</b>	<b>10.8</b>	<b>B</b>	<b>-</b>	<b>0.60</b>	<b>17.1</b>	<b>C</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
EBL	1 L		0.10	7.8	A	3	0.14	7.9	A	4	0.17	8.1	A	5

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
EBT	1 T		0.01	0.0	A	0	0.02	0.0	A	0	0.02	0.0	A	0
WBT	1 T/R		0.09	0.0	A	0	0.08	0.0	A	0	0.10	0.0	A	0
SBL	1 L		0.00	10.7	B	0	0.01	11.8	B	0	0.01	12.6	B	0
SBR	1 R		0.11	9.5	A	3	0.18	9.8	A	5	0.23	10.3	B	7
<b>Overall</b>			<b>0.28</b>	<b>5.0</b>	<b>A</b>	<b>-</b>	<b>0.31</b>	<b>6.1</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>6.3</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
EBT	1 T/R		0.08	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0
WBL	-		0.04	3.2	A	1	0.07	4.3	A	2	0.08	4.3	A	2
NBR	-		0.15	9.6	A	4	0.16	9.7	A	4	0.20	10.2	B	6
<b>Overall</b>			<b>0.33</b>	<b>4.1</b>	<b>A</b>	<b>-</b>	<b>0.38</b>	<b>4.2</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4.4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
EBL	1 L		0.00	17.0	C	0	0.01	16.1	C	0	0.01	20.6	C	0
EBT	1 T/R		0.05	12.8	B	1	0.07	13.8	B	2	0.08	15.1	C	2
WBT	1 T/R		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
WBR	-		0.31	12.8	B	11	0.24	12.4	B	7	0.34	14.4	B	12
NBL	1 L		0.05	7.8	A	1	0.06	7.9	A	2	0.08	8.0	A	2
NBT	1 T/R		0.12	0.0	A	0	0.11	0.0	A	0	0.13	0.0	A	0
SBL	1 L		0.04	7.7	A	1	0.06	7.8	A	2	0.07	7.9	A	2
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.34</b>	<b>5.3</b>	<b>A</b>	<b>-</b>	<b>0.34</b>	<b>4.7</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5.3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
EBL	1 L/R		0.29	11.1	B	10	0.29	11.3	B	10	0.36	12.4	B	13
NBT	1 L/T		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
SBT	1 T/R		0.11	0.0	A	0	0.14	0.0	A	0	0.16	0.0	A	0
<b>Overall</b>			<b>0.30</b>	<b>5.4</b>	<b>A</b>	<b>-</b>	<b>0.32</b>	<b>4.8</b>	<b>A</b>	<b>-</b>	<b>0.37</b>	<b>5.4</b>	<b>A</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.05	0.0	A	0	0.07	0.0	A	0	0.08	0.0	A	0
<b>WBT</b>	1 L/T		0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.0	A	0
<b>NBL</b>	1 L/R		0.20	9.8	A	6	0.15	9.6	A	4	0.20	9.9	A	6
<b>Overall</b>			<b>0.21</b>	<b>6.4</b>	<b>A</b>	<b>-</b>	<b>0.21</b>	<b>4.9</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>5.5</b>	<b>A</b>	<b>-</b>
<b>Street B/Street A - Unsignalized</b>														
<b>EBT</b>	1 T/R		0.14	0.0	A	0	0.24	0.0	A	0	0.27	0.0	A	0
<b>WBT</b>	1 T		0.19	0.0	A	0	0.22	0.0	A	0	0.27	0.0	A	0
<b>Overall</b>			<b>0.39</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.47</b>	<b>0.0</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>0.0</b>	<b>A</b>	<b>-</b>

*\*With improved lane configuration (dedicated eastbound left and right turn lanes).*

As illustrated in both **Table 9.1** and **Table 9.2** (future total 2041 and 2046 respectively), the signalized intersections of Brock Road with Kingston Road, Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp are forecast to continue operating with many critical movements experiencing significant delays and overall intersection v/c's greater than 1.00 under almost all peak hours.

The intersection of Pickering Parkway and Street 'D' is forecast to continue operating well as a traffic signal with ample reserve capacity.

Critical movements and delay are still forecast for the unsignalized intersection of Pickering Parkway with Street 'E' however it is anticipated that volumes from this intersection would reroute to the traffic signal at Street 'D' to avoid existing delays.

The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well under both future planning horizon years with queuing from the northbound movements not forecast to extend southerly impacting operations at the Highway 401 E-N/S Off-Ramp.

All of the proposed internal roadway intersections as part of Phases 1 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios under the proposed lane configurations and traffic control.

## 10.0 Future Total Traffic Conditions - Sensitivity Analysis

As part of the scope of work for the 1755 Pickering Parkway Traffic Impact Study, a sensitivity analysis was also completed looking into the impacts to intersection operations along Pickering Parkway if the right-in-right-out site access at Brock Road (Street 'A' and Brock Road) was removed requiring all traffic to enter the site via the Street 'D' and Street 'E' accesses off of Pickering Parkway. The analysis was completed for each study horizon year (2026, 2031, 2036, 2041 and 2046) to highlight the impacts to key study area intersections along Pickering Parkway at each phase of development and the 5- and 10-year planning horizons.

### 10.1 Future Total Traffic Volumes – No Right-In-Right-Out

The removal of the right-in-right-out access off of Brock Road required the redistribution of inbound and outbound traffic at this access to the Street 'D' and Street 'E' accesses. This was completed for each of the future total study horizon years for use in the intersection operational analysis to be conducted for the sensitivity analysis. Figures 10.1 through 10.5 present the redistributed traffic volumes for the weekday a.m., p.m., and Saturday Midday peak hours at each future total horizon year (2026, 2031, 2036, 2041 and 2046 respectively).

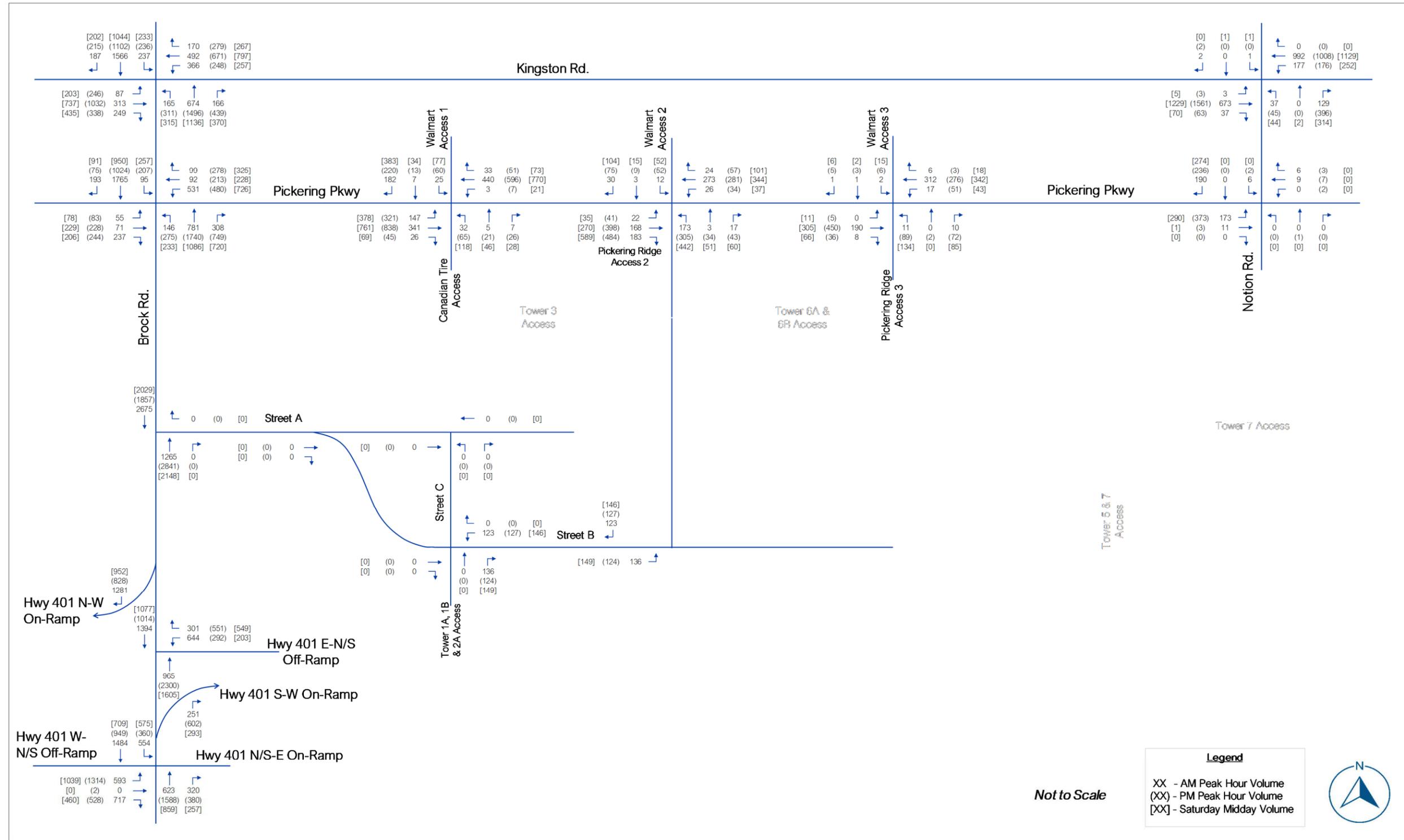


Figure 10.1 – Future Total (2026) Traffic Volumes – No Right-In-Right-Out

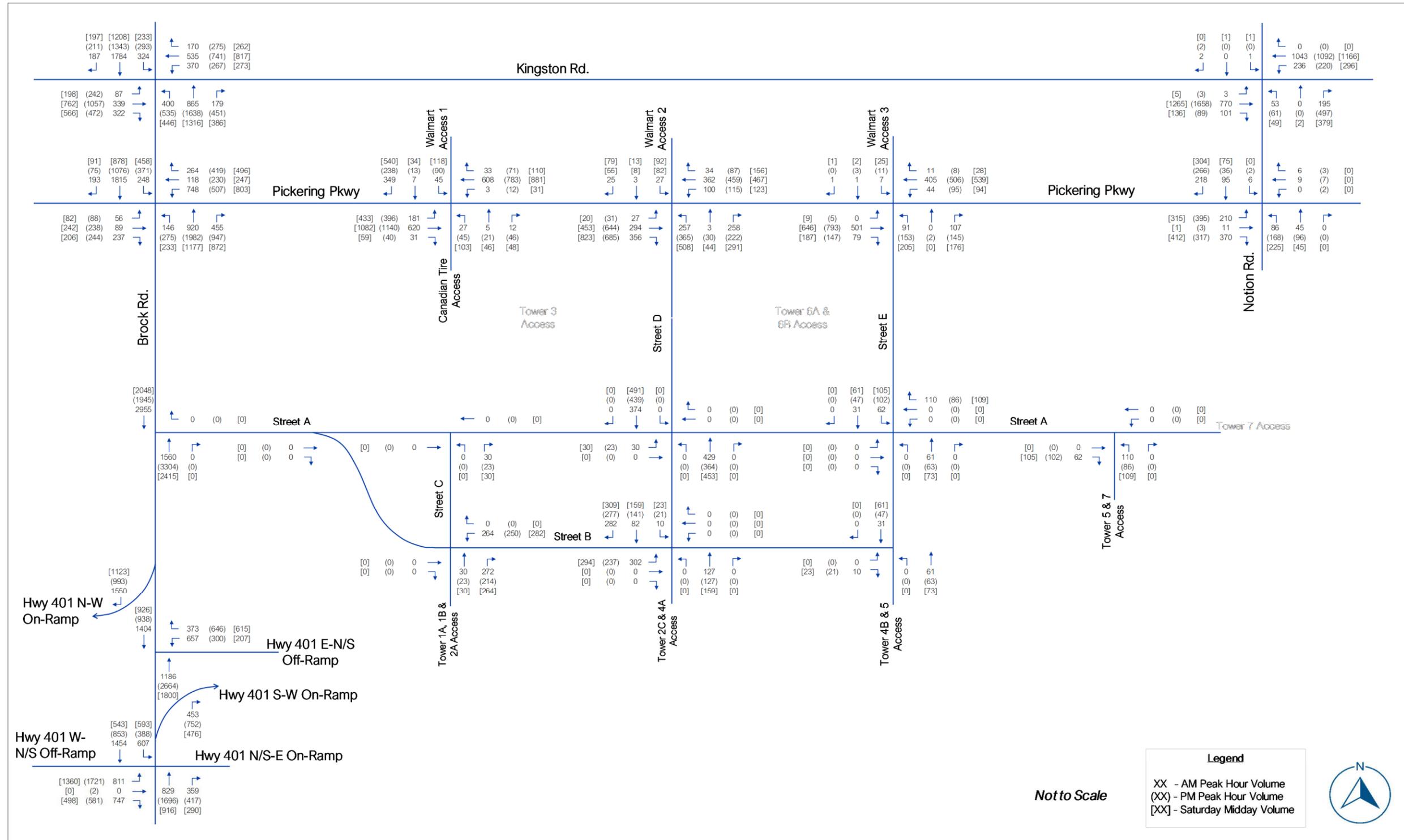


Figure 10.2 – Future Total (2031) Traffic Volumes – No Right-In-Right-Out

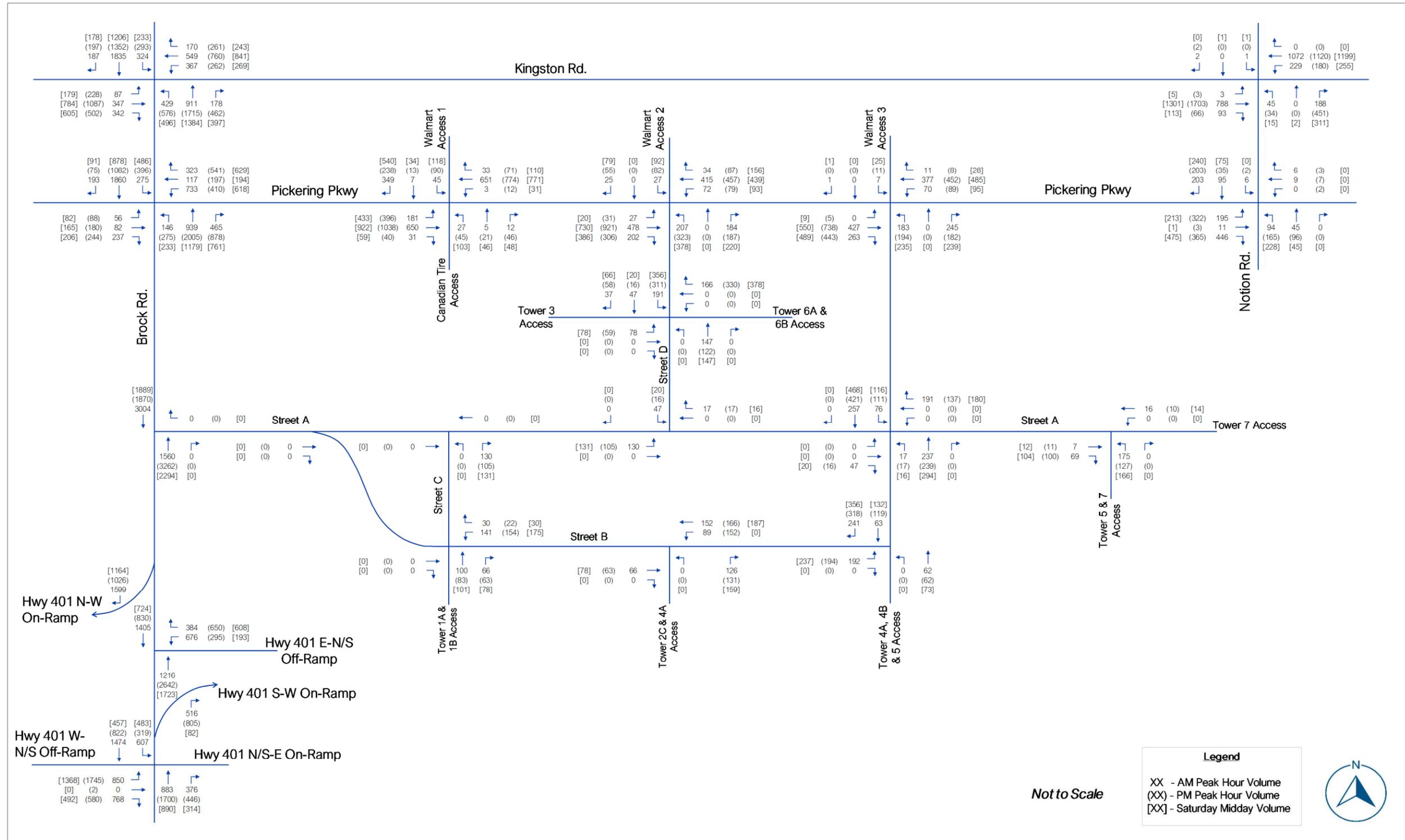


Figure 10.3 – Future Total (2036) Traffic Volumes – No Right-In-Right-Out

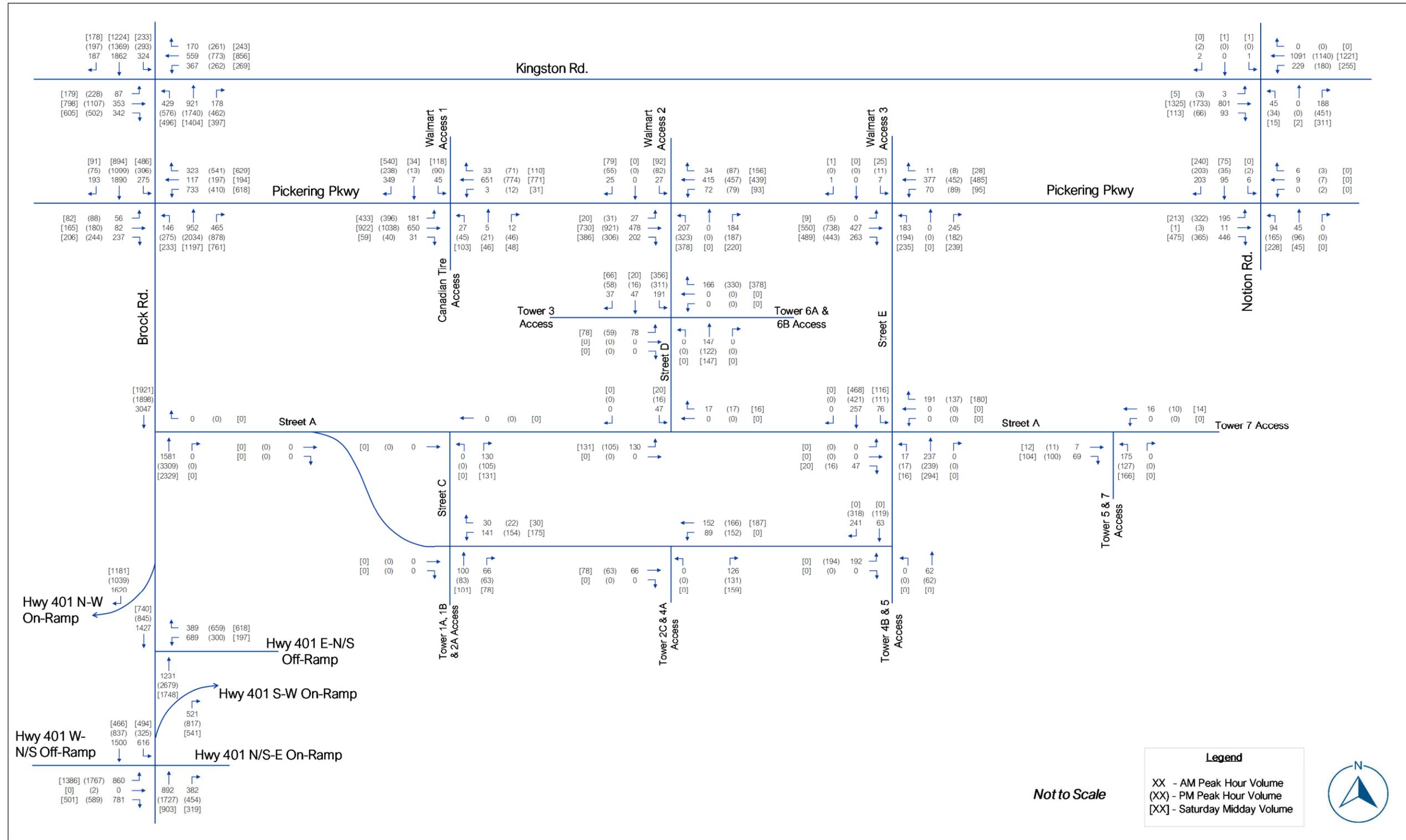


Figure 10.4 – Future Total (2041) Traffic Volumes – No Right-In-Right-Out

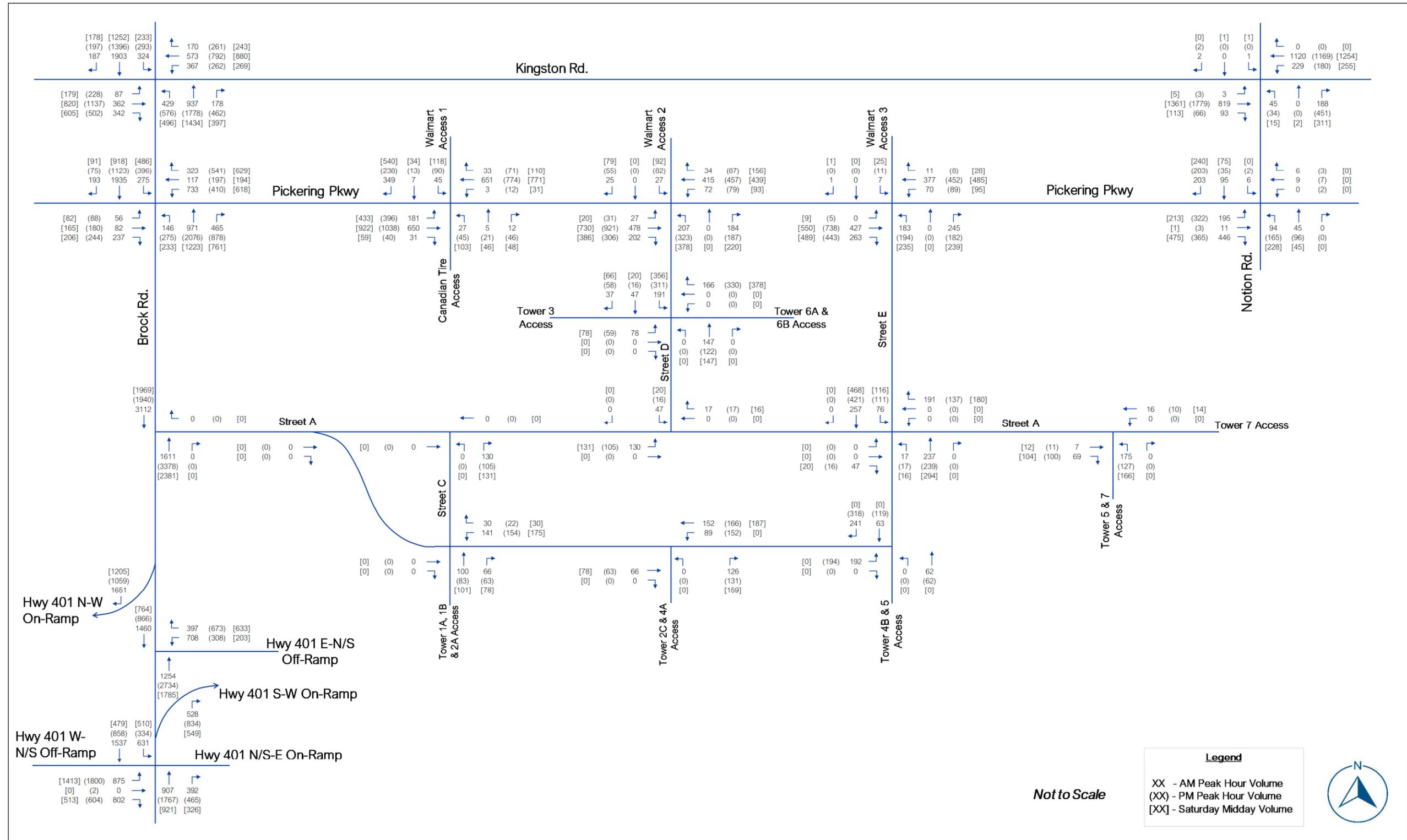


Figure 10.5 – Future Total (2046) Traffic Volumes – No Right-In-Right-Out

## 10.2 Future Total Intersection Operational Analysis – No RIRO

Utilizing the future total traffic volumes presented in the previous section, intersection operational analysis was completed for the signalized and unsignalized study area intersection along Pickering Parkway only to highlight the impacts to these intersections with the removal of access to the site via the right-in-right-out access on Brock Road.

**Tables 10.1** through **10.6** present the results of the intersection operational analysis completed for the no right-in-right-out scenarios under each horizon year for the weekday a.m., p.m., and Saturday Midday peak hours. All corresponding HCM output sheets can be found in **Appendix 18**.

As presented in the tables, the removal of access to the site via the right-in-right-out access off of Brock Road has significantly impacted operations at Pickering Parkway with Brock Road and Street 'D' and Street 'E' particularly at the 2031 horizon year. The increase in traffic to the westbound left turn and northbound right turn movements at the signalized intersection of Brock Road and Pickering Road has had a negative impact to capacity, delay and 95<sup>th</sup> percentile queues of these movements.

At the 2031 horizon year the Pickering Parkway and Street 'D' intersections would require signalization to alleviate issues however under signalized traffic control presented in **Table 10.3** the overall intersection capacity is still forecast to be over 1.00 with several critical movements.

Significant queuing, delay and capacity issues are also forecast for the Pickering Parkway and Street 'E' intersection with the increase in traffic volumes to this intersection.

Table 10.1 – Future Total (2026) Intersection Operational Analysis Results – No RIRO

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	46	D	23	0.50	48	D	32	0.57	56	E	32
EB	1 T & 1 T/R		0.87	35	C	37	0.77	33	C	51	0.78	34	C	46
WBL	2 L	60	1.11	116	F	#106	0.89	54	D	#83	1.06	80	E	m#127
WBT	1 T		0.16	24	C	27	0.32	20	B	53	0.32	17	B	m54
WBR	1 R	45	0.18	7	A	14	0.42	10	A	44	0.48	11	B	m56
NBL	1 L	135	0.69	42	D	m#53	0.84	46	D	m#87	0.78	34	C	#63
NBT	3 T		0.41	25	C	55	1.06	64	E	#184	0.66	24	C	86
NBR	1 R	60	0.42	7	A	20	0.93	21	C	#157	0.93	26	C	#141
SBL	1 L	110	0.28	14	B	20	0.86	53	D	#86.4	1.13	123	F	#111
SBT	3 T		0.96	42	D	#181	0.75	36	D	93	0.67	34	C	87
SBR	1 R	160	0.29	4	A	15	0.14	1	A	0	0.17	1	A	0
<b>Overall</b>			<b>0.96</b>	<b>42</b>	<b>E</b>	<b>-</b>	<b>0.97</b>	<b>43</b>	<b>E</b>	<b>-</b>	<b>0.85</b>	<b>40</b>	<b>D</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.22	4	A	15	0.56	4	A	m19	0.90	37	D	m#84
EBT	1 T		0.28	5	A	34	0.67	6	A	m106	0.75	14	B	m125
EBR	1 R		0.02	2	A	m1.4	0.04	1	A	m0	0.08	4	A	m1.7
WBL	1 L	35	0.00	7	A	m1.1	0.02	11	B	m2	0.11	22	C	9
WB	1 T & 1 T/R		0.24	7	A	30	0.33	11	B	m50	0.67	28	C	101
NBL	1 L	25	0.48	63	E	17	0.96	138	F	#35	1.24	199	F	#66
NB	1 T/R		0.07	27	C	7	0.20	22	C	14	0.15	16	B	17
SBL	1 L	25	0.21	44	D	13	0.37	44	D	24	0.22	26	C	24

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SB</b>	1 T/R		0.62	16	B	22	0.61	13	B	24	0.67	14	B	56
<b>Overall</b>			<b>0.32</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.67</b>	<b>14</b>	<b>B</b>	<b>-</b>	<b>0.76</b>	<b>30</b>	<b>C</b>	<b>-</b>
<b>Street D/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
<b>EBL</b>	1 L/T/R		0.02	1	A	1	0.04	1	A	1	0.04	1	A	1
<b>WBL</b>	1 L	40	0.02	8	A	1	0.06	11	B	2	0.06	11	B	2
<b>WBT</b>	1 T/R		0.19	0	A	0	0.22	0	A	0	0.28	0	A	0
<b>NBL</b>	1 L		0.38	17	C	14	1.14	135	F	112	1.73	375	F	249
<b>NBT</b>	1 T/R		0.03	10	B	1	0.22	17	C	7	0.28	17	C	9
<b>SBL</b>	1 L		0.03	12	B	1	0.26	27	D	8	0.24	25	C	7
<b>SBT</b>	1 T/R		0.05	10	B	1	0.17	13	B	5	0.26	15	B	8
<b>Overall</b>			<b>0.62</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>1.05</b>	<b>26</b>	<b>D</b>	<b>-</b>	<b>1.18</b>	<b>82</b>	<b>F</b>	<b>-</b>
<b>Street E/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
<b>WB</b>	1 L/T/R		0.01	1	A	0	0.05	2	A	1	0.04	1	A	1
<b>NB</b>	1 L/T/R		0.04	12	B	1	0.57	31	D	26	0.71	38	E	41
<b>SB</b>	1 L/T/R		0.01	14	B	0	0.06	20	C	2	0.10	21	C	3
<b>Overall</b>			<b>0.41</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.67</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Street B/Tower 1 &amp; Tower 2 Access - Unsignalized</b>														
<b>WBL</b>	1 L	30	0.08	7	A	2	0.09	7.4	A	2	0.10	7.5	A	3
<b>NB</b>	1 R		0.14	9	A	4	0.12	9	A	3	0.15	9	A	4
<b>Overall</b>			<b>0.22</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.21</b>	<b>8.1</b>	<b>A</b>	<b>-</b>	<b>0.24</b>	<b>8.2</b>	<b>A</b>	<b>-</b>

Table 10.2 – Future Total (2031) Intersection Operational Analysis Results – No RIRO

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.39	54	D	27	0.57	60	E	39	0.64	67	E	37
EB	1 T & 1 T/R		0.88	44	D	47	0.78	37	D	56	0.76	39	D	55
WBL	2 L	60	1.38	217	F	#181	1.44	247	F	#132	1.71	349	F	m#155
WBT	1 T		0.19	30	C	39	0.43	28	C	73	0.41	22	C	m55
WBR	1 R	45	0.42	16	B	47	0.66	19	B	101	0.67	12	B	m72
NBL	1 L	135	0.55	35	C	49	0.70	26	C	m62.0	0.62	25	C	64
NBT	3 T		0.69	40	D	83	1.26	159	F	#276	0.93	55	D	#138
NBR	1 R	60	0.66	11	B	45	1.32	175	F	m#343	1.31	169	F	#345
SBL	1 L	110	0.61	29	C	m54	0.88	25	C	m#105	0.94	35	C	m#141
SBT	3 T		1.06	80	E	m151	0.63	29	C	m102	0.48	21	C	m81
SBR	1 R	160	0.31	22	C	m17	0.12	7	A	m2.9	0.15	3	A	m5.6
<b>Overall</b>			<b>1.09</b>	<b>74</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>107</b>	<b>F</b>	<b>-</b>	<b>1.35</b>	<b>102</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.32	3	A	9	0.75	12	B	m23	0.99	47	D	m81
EBT	1 T		0.51	4	A	45	0.88	7	A	m78	1.27	146	F	m#314
EBR	1 R		0.03	0	A	m0.0	0.04	0	A	m0	0.08	8	A	m2.6
WBL	1 L	35	0.01	11	B	m0.7	0.09	17	B	m3	0.54	61	E	m10.1
WB	1 T & 1 T/R		0.32	11	B	63	0.45	14	B	109	1.23	148	F	#218
NBL	1 L	25	0.48	73	E	16	0.80	117	F	#27	1.06	142	F	#67
NB	1 T/R		0.10	25	C	8	0.28	21	C	18	0.14	14	B	21
SBL	1 L	25	0.36	55	D	22	0.58	62	E	39	0.25	25	C	36

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
SB	1 T/R		0.80	20	B	38	0.64	14	B	27	0.66	9	A	57
<b>Overall</b>			<b>0.61</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.83</b>	<b>34</b>	<b>D</b>	<b>-</b>	<b>1.05</b>	<b>103</b>	<b>F</b>	<b>-</b>
<b>Street D/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.03	0.7	A	1	0.03	2.2	A	1	0.02	1.3	A	1
WBL	1 L	40	0.13	9.8	A	4	1.05	166.4	F	58	0.52	33.2	D	22
WB	1 T/R		0.25	0.0	A	0	0.35	0.0	A	0	0.40	0.0	A	0
NBL	1 L		0.91	69.3	F	70	Err	Err	F	Err	5.91	Err	F	Err
NB	1 T/R		0.51	18.3	C	23	Err	Err	F	Err	1.35	214.7	F	151
SBL	1 L		0.51	120.4	F	16	Err	Err	F	Err	1011	Err	F	Err
SB	1 T/R		0.05	11.9	B	1	Err	Err	F	Err	6.06	Err	F	Err
<b>Overall</b>					<b>0.90</b>	<b>15.8</b>	<b>C</b>	<b>-</b>	<b>1.37</b>	<b>Err</b>	<b>F</b>	<b>-</b>	<b>1.37</b>	<b>2278</b>
<b>Street E/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.00	0.1	A	0	0.01	0	A	0
WB	1 L/T/R		0.05	1	A	1	0.20	6	A	6	0.16	4	A	5
NB	1 L/T/R		0.83	61	F	53	10.9	Err	F	Err	7.36	Err	F	Err
SB	1 L/T/R		0.08	36	E	2	2.43	1773	F	24	2.51	1323	F	37
<b>Overall</b>			<b>0.77</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>1.11</b>	<b>1621</b>	<b>F</b>	<b>-</b>	<b>1.12</b>	<b>2014</b>	<b>F</b>	<b>-</b>
<b>Street A/Street C - Unsignalized</b>														
NBR	1 R		0.03	8	A	1	0.02	8	A	1	0.03	8	A	1
<b>Overall</b>			<b>0.13</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.13</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.13</b>	<b>8</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
WBL	1 L		0.18	8	A	5	0.17	8	A	5	0.19	8	A	6
NB	1 T/R		0.37	11	B	14	0.28	11	B	9	0.36	11	B	13
<b>Overall</b>			<b>0.40</b>	<b>10</b>	<b>A</b>	<b>-</b>	<b>0.35</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.40</b>	<b>10</b>	<b>A</b>	<b>-</b>

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Street A - Unsignalized</b>														
EBL	1 L	25	0.02	7	A	1	0.02	7	A	0	0.02	7	A	1
NB	1 L/T/R		0.58	15	C	30	0.48	13	B	21	0.61	16	C	34
SB	1 L/T/R		0.50	14	B	23	0.58	15	C	30	0.66	18	C	41
<b>Overall</b>			<b>0.33</b>	<b>15</b>	<b>B</b>	<b>-</b>	<b>0.33</b>	<b>14</b>	<b>B</b>	<b>-</b>	<b>0.36</b>	<b>17</b>	<b>C</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
EB	1 L/T/R		0.20	2	A	6	0.16	1	A	5	0.20	2	A	6
NB	1 L/T/R		0.45	26	D	18	0.35	19	C	13	0.55	30	D	25
SB	1 L/T/R		0.63	20	C	36	0.76	26	D	55	1.01	69	F	115
<b>Overall</b>			<b>0.54</b>	<b>16</b>	<b>C</b>	<b>-</b>	<b>0.56</b>	<b>20</b>	<b>C</b>	<b>-</b>	<b>0.63</b>	<b>43.3</b>	<b>E</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
WB	1 T/R		0.12	9	A	3	0.09	9	A	3	0.12	9	A	3
NB	1 T/R		0.04	0	A	0	0.04	0	A	0	0.05	0	A	0
SBL	1 L	25	0.04	8	A	1	0.07	8	A	2	0.08	8	A	1
SB	1 T/R		0.02	0	A	0	0.03	0	A	0	0.04	0	A	0
<b>Overall</b>			<b>0.24</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.24</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>5</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
EB	1 L/R		0.01	9	A	0	0.02	9	A	1	0.03	9	A	1
NB	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
SB	1 T/R		0.02	0	A	0	0.03	0	A	0	0.04	0	A	0
<b>Overall</b>			<b>0.13</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.13</b>	<b>1</b>	<b>A</b>	<b>-</b>	<b>0.14</b>	<b>1</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
EB	1 T/R		0.04	0	A	0	0.07	0	A	0	0.07	0	A	0
NB	1 L/R		0.12	9	A	3	0.10	9	A	3	0.12	9	A	3

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Overall</b>			<b>0.17</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.18</b>	<b>4.2</b>	<b>A</b>	<b>-</b>	<b>0.19</b>	<b>5</b>	<b>A</b>	<b>-</b>

Table 10.3 – Future Total (2031) Intersection Operational Analysis Results – No RIRO – Street ‘D’ Signalized

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Street D/Walmart East Access/Pickering Pkwy - Signalized</b>														
<b>EB</b>	1 L/T/R		0.83	37	D	186	<b>1.72</b>	350	<b>F</b>	#627	<b>2.10</b>	519	<b>F</b>	m#450
<b>WBL</b>	1 L	40	0.36	20	C	25	<b>1.04</b>	131	<b>F</b>	m#64	<b>1.70</b>	388	<b>F</b>	m#85
<b>WB</b>	1 T/R		0.49	20	B	78	0.61	29	C	m147	0.80	40	D	192
<b>NBL</b>	1 L		0.50	30	C	74	0.72	38	D	110	0.82	38	D	#149
<b>NB</b>	1 T/R		0.48	7	A	24	0.47	10	A	31	0.54	15	B	57
<b>SBL</b>	1 L		0.09	25	C	11	0.26	27	C	26	0.30	24	C	25
<b>SB</b>	1 T/R		0.09	18	B	10	0.21	15	B	15	0.29	15	B	19
<b>Overall</b>			<b>0.62</b>	<b>27</b>	<b>B</b>	<b>-</b>	<b>1.23</b>	<b>189</b>	<b>F</b>	<b>-</b>	<b>1.42</b>	<b>252</b>	<b>F</b>	<b>-</b>

Table 10.4 – Future Total (2036) Intersection Operational Analysis Results – No RIRO

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	46	D	24	0.58	53	D	34	0.58	56	E	33
EB	1 T & 1 T/R		0.86	36	D	39	0.74	31	C	43	0.66	25	C	35
WBL	2 L	60	1.53	282	F	#157	0.80	40	D	52	0.91	50	D	m#95
WBT	1 T		0.20	30	C	37	0.31	13	B	22	0.27	16	B	m38
WBR	1 R	45	0.55	23	C	73	0.85	23	C	127	0.93	31	C	m#158
NBL	1 L	135	0.70	40	D	m#46	0.81	40	D	m#64	0.74	28	C	#50
NBT	3 T		0.55	28	C	63	1.22	128	F	m#230	0.72	25	C	91
NBR	1 R	60	0.59	7	A	24	1.07	53	D	m#135	0.87	16	B	#135
SBL	1 L	110	0.93	56	E	#96	1.42	233	F	#190	2.22	583	F	#239
SBT	3 T		1.01	54	D	#197	0.76	36	D	99	0.60	32	C	79
SBR	1 R	160	0.29	4	A	15	0.14	1	A	0	0.16	1	A	0
<b>Overall</b>			<b>1.10</b>	<b>71</b>	<b>F</b>	<b>-</b>	<b>1.18</b>	<b>79</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>78</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.35	5	A	m19.4	0.65	10	B	m21.4	1.37	194	F	m#87
EBT	1 T		0.56	8	A	m76.4	0.83	7	A	m56.9	1.00	24	C	m129
EBR	1 R		0.03	3	A	m1.5	0.04	0	A	m0.3	0.08	3	A	m0.4
WBL	1 L	35	0.01	9	A	2	0.07	20	B	6	0.45	45	D	#19
WB	1 T & 1 T/R		0.37	10	A	60	0.57	22	C	106	0.70	29	C	107
NBL	1 L	25	0.40	54	D	14	0.66	79	E	22	1.47	301	F	#66
NB	1 T/R		0.08	21	C	7	0.28	19	B	16	0.17	13	B	19
SBL	1 L	25	0.31	44	D	19	0.58	53	D	34	0.29	27	C	35

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SB</b>	1 T/R		0.75	14	B	29	0.63	13	B	25	0.84	27	C	#131
<b>Overall</b>			<b>0.62</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.78</b>	<b>24</b>	<b>C</b>	<b>-</b>	<b>0.93</b>	<b>68</b>	<b>E</b>	<b>-</b>
<b>Street D/Walmart East Access/Pickering Pkwy - Signalized</b>														
<b>EB</b>	1 L/T/R		0.69	16	B	182	1.24	137	F	#516	1.18	116	F	#468
<b>WBL</b>	1 L	40	0.17	10	A	16	0.40	18	B	25	0.51	28	C	38
<b>WB</b>	1 T/R		0.43	11	B	86	0.50	13	B	104	0.60	19	B	143
<b>NBL</b>	1 L		0.67	50	D	69	0.88	63	E	#125	0.83	50	D	119
<b>NB</b>	1 T/R		0.34	2	A	0	0.47	6	A	10	0.42	3	A	0
<b>SBL</b>	1 L		0.15	36	D	13	0.38	38	D	30	0.43	36	D	30
<b>SB</b>	1 T/R		0.06	0	A	0	0.16	1	A	0	0.25	2	A	0
<b>Overall</b>			<b>0.56</b>	<b>18</b>	<b>A</b>	<b>-</b>	<b>0.94</b>	<b>82</b>	<b>E</b>	<b>-</b>	<b>0.87</b>	<b>65</b>	<b>D</b>	<b>-</b>
<b>Street E/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
<b>WB</b>	1 L/T/R		0.09	3	A	3	0.37	16	C	13	0.26	8	A	8
<b>NBL</b>	1 L		1.49	315	F	109	28.9	Err	F	Err	14.05	Err	F	Err
<b>NB</b>	1 T/R		0.49	18	C	21	0.65	36	E	34	0.61	26	D	31
<b>SB</b>	1 L/T/R		0.20	102	F	5	12.5	Err	F	Err	11.23	Err	F	Err
<b>Overall</b>			<b>0.88</b>	<b>40</b>	<b>E</b>	<b>-</b>	<b>1.11</b>	<b>974</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>1213</b>	<b>F</b>	<b>-</b>
<b>Street A/Street C - Unsignalized</b>														
<b>NBR</b>	1 R		0.13	9	A	4	0.11	9	A	3	0.13	9	A	4
<b>Overall</b>			<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.17</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
<b>WBL</b>	1 L		0.09	7	A	3	0.10	8	A	3	0.12	8	A	3
<b>WBR</b>	1 R		0.02	0	A	0	0.01	0	A	0	0.02	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>NB</b>	1 T/R		0.27	13	B	9	0.24	12	B	7	0.31	13	A	11
<b>Overall</b>			<b>0.24</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>10</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.28	21	C	9	0.81	145	F	33	1.71	525	F	66
<b>WB</b>	1 L/T/R		0.20	10	B	6	0.39	11	B	15	0.46	13	B	20
<b>NB</b>	1 T/R		0.09	0	A	0	0.08	0	A	0	0.09	0	A	0
<b>SBL</b>	1 L		0.15	8	A	4	0.23	8	A	7	0.27	9	A	9
<b>SB</b>	1 T/R		0.05	0	A	0	0.05	0	A	0	0.06	0	A	0
<b>Overall</b>			<b>0.46</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>17</b>	<b>C</b>	<b>-</b>	<b>0.69</b>	<b>47</b>	<b>E</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
<b>EBL</b>	1 L	25	0.09	8	A	2	0.07	7	A	2	0.09	8	A	2
<b>WB</b>	1 T/R		0.01	0	A	0	0.01	0	A	0	0.01	0	A	0
<b>SB</b>	1 L		0.07	11	B	2	0.02	10	B	1	0.03	11	A	1
<b>Overall</b>			<b>0.24</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.24</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street D/Street B - Unsignalized</b>														
<b>EB</b>	1 T/R		0.04	0	A	0	0.04	0	A	0	0.05	0	A	0
<b>WB</b>	1 L/T		0.06	1	A	2	0.11	1	A	3	0.00	0	A	0
<b>SB</b>	1 L/R		0.14	9	A	4	0.14	9	A	4	0.18	10	A	5
<b>Overall</b>			<b>0.34</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.07	10	B	2	0.03	11	B	1	0.04	12	B	1
<b>WB</b>	1 T/R		0.27	11	B	9	0.19	11	B	6	0.27	12	B	9
<b>NBL</b>	1 L	15	0.07	8	A	0	0.02	8	A	0	0.02	9	A	0
<b>NB</b>	1 T/R		0.15	0	A	0	0.15	0	A	0	0.19	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L	25	0.06	8	A	2	0.09	8	A	2	0.10	8	A	3
<b>SB</b>	1 T/R		0.16	0	A	0	0.27	0	A	0	0.10	8	A	3
<b>Overall</b>			<b>0.39</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
<b>EB</b>	1 L/R		0.29	12	B	10	0.33	14	B	12	0.43	16	C	18
<b>NB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>SB</b>	1 T/R		0.19	0	A	0	0.28	0	A	0	0.31	0	A	0
<b>Overall</b>			<b>0.35</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>5</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.05	0	A	0	0.07	0	A	0	0.07	0	A	0
<b>WB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>NB</b>	1 L/R		0.20	10	A	6	0.15	10	A	4	0.20	10	A	6
<b>Overall</b>			<b>0.21</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>6</b>	<b>A</b>	<b>-</b>

Table 10.5 – Future Total (2041) Intersection Operational Analysis Results – No RIRO

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	46	D	24	0.58	53	D	34	0.58	56	E	33
EB	1 T & 1 T/R		0.86	36	D	39	0.74	31	C	43	0.66	25	C	35
WBL	2 L	60	1.53	282	F	#157	0.80	40	D	52	0.91	50	D	m#95
WBT	1 T		0.20	30	C	37	0.31	13	B	22	0.27	16	B	m38
WBR	1 R	45	0.55	23	C	73	0.85	23	C	127	0.93	31	C	m#158
NBL	1 L	135	0.70	40	D	m#46	0.81	39	D	m#61	0.75	29	C	#57
NBT	3 T		0.56	28	C	64	1.23	136	F	m#235	0.73	25	C	92
NBR	1 R	60	0.59	7	A	24	1.07	55	E	m#130	0.87	16	B	#135
SBL	1 L	110	0.93	58	E	#97	1.42	233	F	#190	2.22	579	F	#239
SBT	3 T		1.03	59	E	#202	0.78	36	D	101	0.61	33	C	81
SBR	1 R	160	0.29	4	A	15	0.14	1	A	0	0.16	1	A	0
<b>Overall</b>			<b>1.12</b>	<b>72</b>	<b>F</b>	<b>-</b>	<b>1.19</b>	<b>82</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>77</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.35	5	A	m19	0.65	10	B	m21	1.37	194	F	m#87
EBT	1 T		0.56	8	A	m75	0.83	7	A	m56	1.00	24	C	m129
EBR	1 R		0.03	3	A	m1.5	0.04	0	A	m0.3	0.08	3	A	m0.4
WBL	1 L	35	0.01	9	A	2	0.07	20	B	6	0.45	45	D	#19
WB	1 T & 1 T/R		0.37	10	A	60	0.57	22	C	106	0.70	29	C	107
NBL	1 L	25	0.40	54	D	14	0.66	79	E	22	1.47	301	F	#66
NB	1 T/R		0.08	21	C	7	0.28	19	B	16	0.17	13	B	19
SBL	1 L	25	0.31	44	D	19	0.58	53	D	34	0.29	27	C	35

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SB</b>	1 T/R		0.75	14	B	29	0.63	13	B	25	0.84	27	C	#131
<b>Overall</b>			<b>0.62</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.78</b>	<b>24</b>	<b>C</b>	<b>-</b>	<b>0.93</b>	<b>68</b>	<b>E</b>	<b>-</b>
<b>Street D/Walmart East Access/Pickering Pkwy - Signalized</b>														
<b>EB</b>	1 L/T/R		0.69	16	B	182	1.24	137	F	#516	1.18	116	F	#468
<b>WBL</b>	1 L	40	0.17	10	A	16	0.40	18	B	25	0.51	28	C	38
<b>WB</b>	1 T/R		0.43	11	B	86	0.50	13	B	104	0.60	19	B	143
<b>NBL</b>	1 L		0.67	50	D	69	0.88	63	E	#125	0.83	50	D	119
<b>NB</b>	1 T/R		0.34	2	A	0	0.47	6	A	10	0.42	3	A	0
<b>SBL</b>	1 L		0.15	36	D	13	0.38	38	D	30	0.43	36	D	30
<b>SB</b>	1 T/R		0.06	0	A	0	0.16	1	A	0	0.25	2	A	0
<b>Overall</b>			<b>0.56</b>	<b>18</b>	<b>A</b>	<b>-</b>	<b>0.94</b>	<b>82</b>	<b>E</b>	<b>-</b>	<b>0.87</b>	<b>65</b>	<b>D</b>	<b>-</b>
<b>Street E/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
<b>WB</b>	1 L/T/R		0.09	3	A	3	0.37	16	C	13	0.26	8	A	8
<b>NBL</b>	1 L		1.49	315	F	109	28.9	Err	F	Err	14.05	Err	F	Err
<b>NB</b>	1 T/R		0.49	18	C	21	0.65	36	E	34	0.61	26	D	31
<b>SB</b>	1 L/T/R		0.20	102	F	5	12.5	Err	F	Err	11.23	Err	F	Err
<b>Overall</b>			<b>0.88</b>	<b>40</b>	<b>E</b>	<b>-</b>	<b>1.11</b>	<b>974</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>1213</b>	<b>F</b>	<b>-</b>
<b>Street A/Street C - Unsignalized</b>														
<b>NBR</b>	1 R		0.13	9	A	4	0.11	9	A	3	0.13	9	A	4
<b>Overall</b>			<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.17</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
<b>WBL</b>	1 L	30	0.09	7	A	3	0.10	8	A	3	0.12	8	A	3
<b>WBR</b>	1 R		0.02	0	A	0	0.01	0	A	0	0.02	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>NB</b>	1 T/R		0.27	13	B	9	0.24	12	B	7	0.31	13	B	11
<b>Overall</b>			<b>0.24</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>10</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.28	21	C	9	0.81	145	F	33	1.71	525	F	66
<b>WB</b>	1 L/T/R		0.20	10	B	6	0.39	11	B	15	0.46	13	B	20
<b>NB</b>	1 T/R		0.09	0	A	0	0.08	0	A	0	0.09	0	A	0
<b>SBL</b>	1 L		0.15	8	A	4	0.23	8	A	7	0.27	9	A	9
<b>SB</b>	1 T/R		0.05	0	A	0	0.05	0	A	0	0.06	0	A	0
<b>Overall</b>			<b>0.46</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>17</b>	<b>C</b>	<b>-</b>	<b>0.69</b>	<b>47</b>	<b>E</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
<b>EBL</b>	1 L	25	0.09	8	A	2	0.07	7	A	2	0.09	8	A	2
<b>WB</b>	1 T/R		0.01	0	A	0	0.01	0	A	0	0.01	0	A	0
<b>SB</b>	1 L		0.07	11	B	2	0.02	10	B	1	0.03	11	A	1
<b>Overall</b>			<b>0.24</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.24</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street B - Unsignalized</b>														
<b>EB</b>	1 T/R		0.04	0	A	0	0.04	0	A	0	0.05	0	A	0
<b>WB</b>	1 L/T		0.06	3	A	2	0.11	4	A	3	0.00	0	A	0
<b>NB</b>	1 L/R		0.14	9	A	4	0.14	9	A	4	0.18	10	A	5
<b>Overall</b>			<b>0.34</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.07	10	B	2	0.03	11	B	1	0.04	12	B	1
<b>WB</b>	1 T/R		0.27	11	B	9	0.19	11	B	6	0.27	12	B	9
<b>NBL</b>	1 L	15	0.01	8	A	0	0.02	8	A	0	0.02	9	A	0
<b>NB</b>	1 T/R		0.15	0	A	0	0.15	0	A	0	0.19	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L	25	0.06	8	A	2	0.08	8	A	2	0.10	8	A	3
<b>SB</b>	1 T/R		0.16	0	A	0	0.27	0	A	0	0.30	0	A	0
<b>Overall</b>			<b>0.39</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
<b>EB</b>	1 L/R		0.29	12	B	10	0.33	14	B	12	0.43	16	C	18
<b>NB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>SB</b>	1 T/R		0.19	0	A	0	0.28	0	A	0	0.31	0	A	0
<b>Overall</b>			<b>0.35</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.31</b>	<b>0</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.05	0	A	0	0.07	0	A	0	0.07	0	A	0
<b>WB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>NB</b>	1 L/R		0.20	10	A	6	0.15	10	A	4	0.20	10	A	6
<b>Overall</b>			<b>0.21</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>6</b>	<b>A</b>	<b>-</b>

Table 10.6 – Future Total (2046) Intersection Operational Analysis Results – No RIRO

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>Brock Rd./Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.38	46	D	24	0.58	53	D	34	0.58	55	E	33
EB	1 T & 1 T/R		0.86	36	D	39	0.74	31	C	43	0.66	25	C	35
WBL	2 L	60	1.53	282	F	#157	0.80	40	D	52	0.91	50	D	m#95
WBT	1 T		0.20	30	C	37	0.31	13	B	22	0.27	16	B	m38
WBR	1 R	45	0.55	23	C	73	0.85	23	C	127	0.93	31	C	m#159
NBL	1 L	135	0.70	39	D	m#46	0.81	38	D	m#58	0.77	31	C	#59
NBT	3 T		0.57	28	C	65	1.26	147	F	m#234	0.74	25	C	94
NBR	1 R	60	0.59	7	A	24	1.08	59	E	m#121	0.87	15	B	#135
SBL	1 L	110	0.95	62	E	#98	1.42	233	F	#190	2.22	583	F	#239
SBT	3 T		1.05	66	E	#210	0.79	37	D	104	0.63	33	C	84
SBR	1 R	160	0.29	4	A	15	0.14	1	A	0	0.16	1	A	0
<b>Overall</b>			<b>1.13</b>	<b>75</b>	<b>F</b>	<b>-</b>	<b>1.21</b>	<b>86</b>	<b>F</b>	<b>-</b>	<b>1.10</b>	<b>77</b>	<b>F</b>	<b>-</b>
<b>Canadian Tire Access/Walmart West Access/Pickering Pkwy - Signalized</b>														
EBL	1 L	40	0.35	5	A	m19	0.65	10	B	m21.1	1.37	194	F	m#87
EBT	1 T		0.56	8	A	m74	0.83	7	A	m55.2	1.00	24	C	m128
EBR	1 R		0.03	3	A	m1.5	0.04	0	A	m0.2	0.08	3	A	m0.4
WBL	1 L	35	0.01	9	A	2	0.07	20	B	6	0.45	45	D	#19
WB	1 T & 1 T/R		0.37	10	A	60	0.57	22	C	106	0.70	29	C	107
NBL	1 L	25	0.40	54	D	14	0.66	79	E	22	1.47	301	F	#66
NB	1 T/R		0.08	21	C	7	0.28	19	B	16	0.17	13	B	19
SBL	1 L	25	0.31	44	D	19	0.58	53	D	34	0.29	27	C	35

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
SB	1 T/R		0.75	14	B	29	0.63	13	B	25	0.84	27	C	#131
<b>Overall</b>			<b>0.62</b>	<b>11</b>	<b>B</b>	<b>-</b>	<b>0.78</b>	<b>25</b>	<b>C</b>	<b>-</b>	<b>0.93</b>	<b>68</b>	<b>E</b>	<b>-</b>
<b>Street D/Walmart East Access/Pickering Pkwy - Signalized</b>														
EB	1 L/T/R		0.69	16	B	182	1.24	137	F	#516	1.18	116	F	#468
WBL	1 L	40	0.17	10	A	16	0.40	18	B	25	0.51	28	C	38
WB	1 T/R		0.43	11	B	86	0.50	13	B	104	0.60	19	B	143
NBL	1 L		0.67	50	D	69	0.88	63	E	#125	0.83	50	D	119
NB	1 T/R		0.34	2	A	0	0.47	6	A	10	0.42	3	A	0
SBL	1 L		0.15	36	D	13	0.38	38	D	30	0.43	36	D	30
SB	1 T/R		0.06	0	A	0	0.16	1	A	0	0.25	2	A	0
<b>Overall</b>			<b>0.56</b>	<b>18</b>	<b>A</b>	<b>-</b>	<b>0.94</b>	<b>82</b>	<b>E</b>	<b>-</b>	<b>0.87</b>	<b>65</b>	<b>D</b>	<b>-</b>
<b>Street E/Walmart East Access/Pickering Pkwy - Unsignalized</b>														
EB	1 L/T/R		0.00	0	A	0	0.00	0	A	0	0.01	0	A	0
WB	1 L/T/R		0.09	3	A	3	0.37	16	C	13	0.26	8	A	8
NBL	1 L		1.49	315	F	109	28.9	Err	F	Err	14.05	Err	F	Err
NB	1 T/R		0.49	18	C	21	0.65	36	E	34	0.61	26	D	31
SB	1 L/T/R		0.20	102	F	5	12.5	Err	F	Err	11.23	Err	F	Err
<b>Overall</b>			<b>0.88</b>	<b>40</b>	<b>E</b>	<b>-</b>	<b>1.11</b>	<b>974</b>	<b>F</b>	<b>-</b>	<b>1.22</b>	<b>1213</b>	<b>F</b>	<b>-</b>
<b>Street A/Street C - Unsignalized</b>														
NBR	1 R		0.13	9	A	4	0.11	9	A	3	0.13	9	A	4
<b>Overall</b>			<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.17</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.18</b>	<b>9</b>	<b>A</b>	<b>-</b>
<b>Tower 1/2 Access/Street C/Street B - Unsignalized</b>														
WBL	1 L	30	0.09	7	A	3	0.10	8	A	3	0.12	8	A	3
WBR	1 R		0.02	0	A	0	0.01	0	A	0	0.02	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>NB</b>	1 T/R		0.27	13	B	9	0.24	12	B	7	0.31	13	B	11
<b>Overall</b>			<b>0.24</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>9</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>10</b>	<b>A</b>	<b>-</b>
<b>Street D/Tower 3 Access/Tower 6 Access - Unsignalized</b>														
<b>EB</b>	1 L/T/R		0.28	21	C	9	0.81	145	F	33	1.71	525	F	66
<b>WB</b>	1 L/T/R		0.20	10	B	6	0.39	11	B	15	0.46	13	B	20
<b>NB</b>	1 T/R		0.09	0	A	0	0.08	0	A	0	0.09	0	A	0
<b>SBL</b>	1 L		0.15	8	A	4	0.23	8	A	7	0.27	9	A	9
<b>SB</b>	1 T/R		0.05	0	A	0	0.05	0	A	0	0.06	0	A	0
<b>Overall</b>			<b>0.46</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.61</b>	<b>17</b>	<b>A</b>	<b>-</b>	<b>0.69</b>	<b>47</b>	<b>A</b>	<b>-</b>
<b>Street D/Street A - Unsignalized</b>														
<b>EBL</b>	1 L	25	0.09	8	A	2	0.07	7	A	2	0.09	8	A	2
<b>WB</b>	1 T/R		0.01	0	A	0	0.01	0	A	0	0.01	0	A	0
<b>SB</b>	1 L		0.07	11	B	2	0.02	10	B	1	0.03	11	B	1
<b>Overall</b>			<b>0.24</b>	<b>8</b>	<b>A</b>	<b>-</b>	<b>0.22</b>	<b>7</b>	<b>A</b>	<b>-</b>	<b>0.24</b>	<b>7</b>	<b>A</b>	<b>-</b>
<b>Tower 2/4 Access/Street B - Unsignalized</b>														
<b>EB</b>	1 T/R		0.04	0	A	0	0.04	0	A	0	0.05	0	A	0
<b>WB</b>	1 L/T		0.06	3	A	2	0.11	4	A	3	0.00	0	A	0
<b>NB</b>	1 L/R		0.14	9	A	4	0.14	9	A	4	0.18	10	A	5
<b>Overall</b>			<b>0.34</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.39</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.26</b>	<b>4</b>	<b>A</b>	<b>-</b>
<b>Street E/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.07	10	B	2	0.03	11	B	1	0.04	12	B	1
<b>WB</b>	1 T/R		0.27	11	B	9	0.19	11	B	6	0.27	12	B	9
<b>NBL</b>	1 L	15	0.01	8	A	0	0.02	8	A	0	0.02	9	A	0
<b>NB</b>	1 T/R		0.15	0	A	0	0.15	0	A	0	0.19	0	A	0

Movements	Lanes	Storage Length (m)	AM Peak Hour				PM Peak Hour				SAT Midday			
			v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)	v/c	Delay (s)	LOS	Queue (m)
<b>SBL</b>	1 L	25	0.06	8	A	2	0.09	8	A	2	0.10	8	A	3
<b>SB</b>	1 T/R		0.6	0	A	0	0.27	0	A	0	0.30	0	A	0
<b>Overall</b>			<b>0.39</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.44</b>	<b>3</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>3</b>	<b>A</b>	<b>-</b>
<b>Tower 4/5 Access/Street E/Street B - Unsignalized</b>														
<b>EB</b>	1 L/R		0.29	12	B	10	0.33	14	B	12	0.43	16	C	18
<b>NB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>SB</b>	1 T/R		0.19	0	A	0	0.28	0	A	0	0.31	0	A	0
<b>Overall</b>			<b>0.35</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.43</b>	<b>4</b>	<b>A</b>	<b>-</b>	<b>0.49</b>	<b>5</b>	<b>A</b>	<b>-</b>
<b>Tower 5/7 Access/Street A - Unsignalized</b>														
<b>EB</b>	1 T/R		0.05	0	A	0	0.07	0	A	0	0.07	0	A	0
<b>WB</b>	1 L/T		0.00	0	A	0	0.00	0	A	0	0.00	0	A	0
<b>NB</b>	1 L/R		0.20	10	A	6	0.15	10	A	4	0.20	10	A	6
<b>Overall</b>			<b>0.21</b>	<b>6</b>	<b>A</b>	<b>-</b>	<b>0.20</b>	<b>5</b>	<b>A</b>	<b>-</b>	<b>0.23</b>	<b>6</b>	<b>A</b>	<b>-</b>

## 11.0 Conceptual Design of Brock Road and Proposed Street A Intersection

Based on the implementation of Phase 1 of the proposed development and maintain safe operations, the existing The Shops at Pickering Ridge access with Brock Road will be modified from its original layout to accommodate the new southeast through roadway which will provide access to the Phase1. Due to the modification of the access, a conceptual design was prepared to illustrate how the right-in-right-out access will tie in with the proposed Street 'A' (formerly The Shops at Pickering Ridge Access).

The conceptual design was completed to accommodate a WB-20 (Semi Tractor Trailor) design vehicle which would be the most critical vehicle utilizing the access. As part of the design, a 70-metre northbound right-turn lane was also implemented along Brock Road. The completed conceptual design along with all design dimensions can be seen in **Appendix 19**.

### 11.1 Driver Sightline Assessment

As part of this study, a review of driver sightlines was conducted for the right-in-right-out access with Brock Road examining required sight distance and stopping sight distances for different traffic movements at the intersection. The sightline assessment was completed in accordance with the standards outlined in *Section 9.8 of Chapter 9 – Intersections* of the *2017 Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads*. Given the proposed access is a right-in-right-out configuration, the following scenarios have been considered:

- Intersection sight distance for vehicles turning right from the access onto Brock Road (i.e., adequate time/space to recognize the speed and spacing of oncoming traffic and safely make their manoeuvre); and
- Stopping sight distance for vehicles travelling north along Brock Road (i.e., adequate time/space to come to a complete stop if a vehicle egresses the access at an inappropriate time).

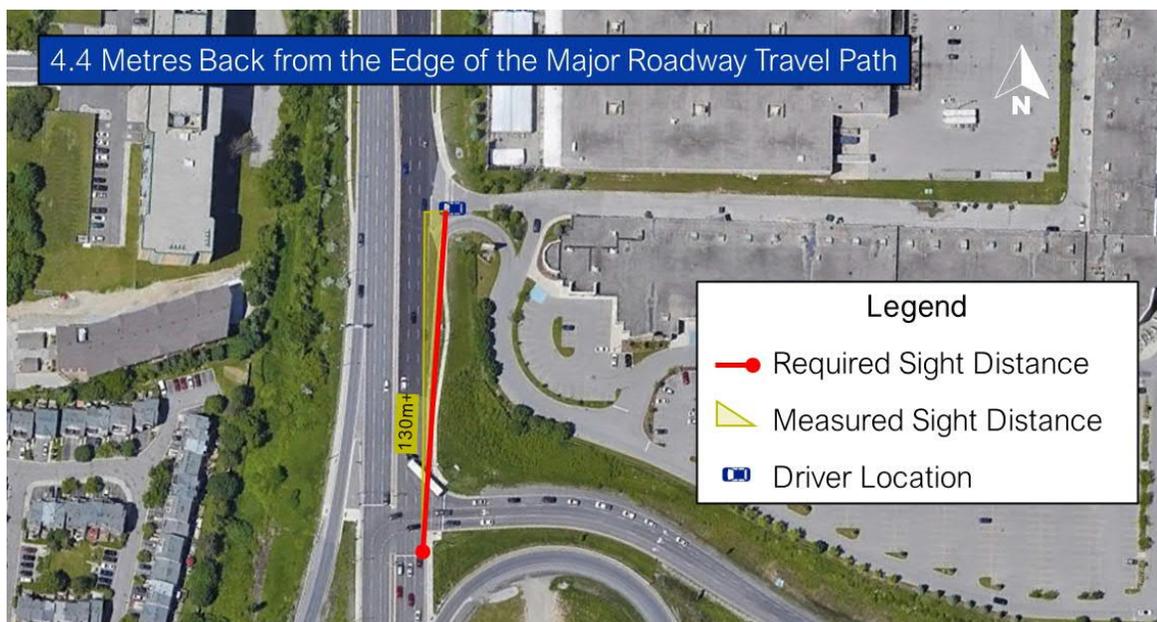
**Table 11.1** below summarizes the minimum sight distance requirements for both scenarios described above, based on a design speed of 70km/hr and a 2% downgrade heading northbound along Brock Road.

**Table 11.1 – Minimum Sight Distance Requirements**

Scenario	Sight Distance for Passenger Cars (m)
Case B2 – Right Turn from the Minor Road (Proposed Access)	130
Stopping Sight Distance for Northbound vehicles along Brock Road	110

As shown in **Table 11.1**, vehicles egressing the access should be provided with a minimum sight distance of 130 metres, while vehicles heading northbound along Brock Road should be provided with a minimum sight distance of 110 metres.

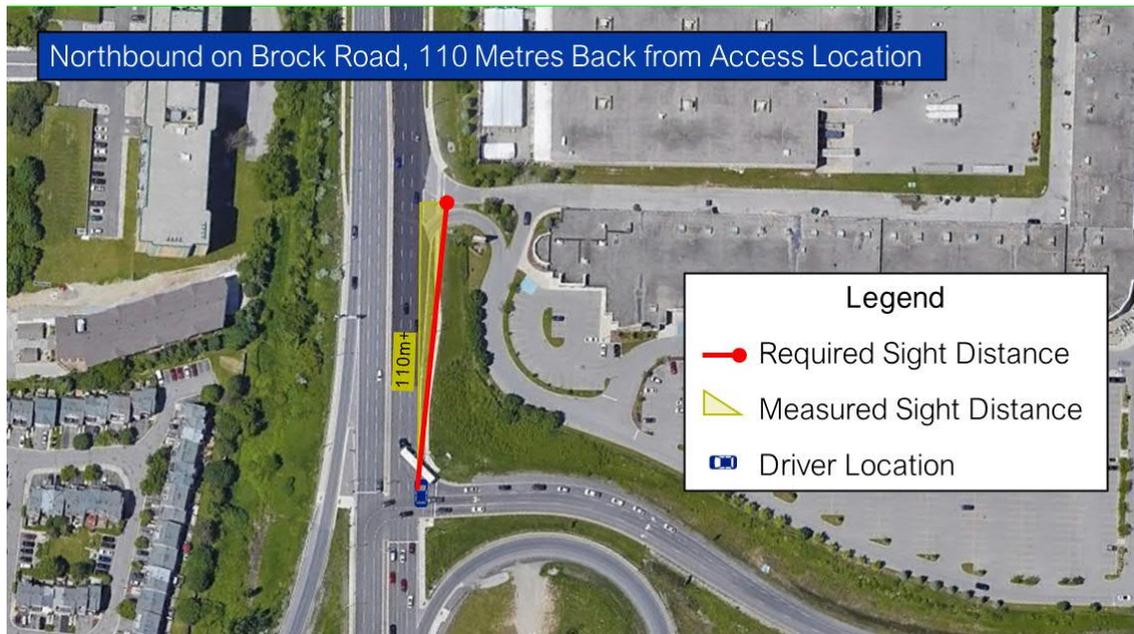
The existing driver sight distances for Case B2 were measured from a driver eye point located approximately 4.4 metres from the edge of the travelled roadway according to TAC criteria found under Section 9.8 of the guideline; however, TAC also notes that drivers rarely maintain this ideal separation, with most drivers situating themselves much closer to the edge of the major roadway. Nonetheless, as a conservative approach, the sightline analysis considers the ideal spacing with the driver eye situated 4.4 metres back from the edge of the major roadway. It should be noted that the sight distance measurements were taken from a location where the future proposed access will be located which is slightly south of the existing access. The measured sightline is presented graphically in **Figure 11.1**.



**Figure 11.1 – Case B2 Sightline Measurement from Access**

As illustrated in **Figure 11.1**, driver sightlines to the south of the intersection meet the TAC requirement of 130 metres for a right turn maneuver (Case B2). As shown in the figure the point at which the 130 metres is met is just beyond the intersection of Brock Road with the Highway 401 East-North/South Off-Ramp. It should be noted however that driver sight distance was in fact greater than this distance as there are no physical obstructions of horizontal or vertical roadway issues in this direction.

**Figure 11.2** presents the measured stopping sight distance for vehicles travelling northbound along Brock Road.



**Figure 11.2 – Stopping Sight Distance Measurement to Access**

As presented in **Figure 11.2** driver sightlines along Brock Road to the north toward the site access meet the TAC requirement of 110 metres for stopping sight distance. As shown in the figure the point at which the 110 metres is met just within the Brock Road intersection with the Highway 401 East-North/South Off-Ramp. Similar to the Case B2 measurement presented earlier it should be noted that the driver sight distance was in fact greater than this measurement as there are no physical obstructions of horizontal or vertical roadway issues in this direction and driver are able to see the intersection from a further distance.

## 12.0 Vehicle & Bicycle Space Parking Review

### 12.1 Vehicle Parking Space Review

#### 12.1.1 City of Pickering Zoning By-Laws

The City of Pickering is currently in the process of reviewing their existing Zoning By-laws with the intent to consolidate the existing six by-laws which are currently in place. As part of this review the City is updating current zoning to better reflect the policies within the Official Plan and development guidelines connected to this plan. In February 2024, a second draft of the consolidated Zoning By-Law was produced based on input from stakeholders and the public on the first draft from May 2022. Within the City's current Official Plan dated October 2018, the 1755 Pickering Parkway lands are currently within what's know as the Specialty Retailing Node Zone. However, according to the Interactive Zoning map which accompanies the current draft consolidated Zoning By-law document, the 1755 Pickering Parkway lands are currently within the Kingston Road Corridor and Specialty Retailing Node Intensification Area. This zoning area is part of an Official Plan Amendment (OPA 38) which has been approved by the City and Region of Durham and is currently awaiting final approval based on the outcome from a future Ontario Lands Tribunal.

#### 12.1.2 Kingston Road Corridor and Specialty Retailing Node Intensification Study

The Kingston Road Corridor and Specialty Retailing Node Intensification Plan dated November 2019 is a study outlining the recommended initiatives for achieving strategic growth area objectives of the Provincial Growth Plan and specific corridor objectives of the Durham Regional Official Plan within the South Pickering urban area. As an extension of the previously completed South Pickering Intensification Study, community input highlighted the need for intensification along Kingston Road and the Specialty Retailing Node including higher density development, active transportation facilities, and vibrant mixed-use transit supportive communities.

Within the Kingston Road Corridor and Specialty Retailing Node Intensification Plan document there are four distinct "precincts" identified. The 1755 Pickering Parkway lands fall within what is known as the "Brock" precinct as presented in **Figure 12.1**. The Brock precinct is envisioned within the plan as a complete community with transit-supportive densities characterized as an area with a concentration of residential buildings, employment hubs, large areas of open space and easy access to the Pickering Go Station.

As part of the overall framework of the intensification plan for all precincts, Section 3.5.9 of the study mentions how reduced minimum parking standards are encouraged to reflect the future nature of the precincts as compact, high density urban areas with strong pedestrian and transit-oriented environments. Shared parking between different land uses will also be encouraged to reduce overall parking needs and better reflect the mixed-use nature of the precincts.



Source: Figure 78, Kingston Road Corridor and Specialty Retailing Node Intensification Plan

Figure 12.1 – Brock Precinct Intensification Plan

### 12.1.3 Pickering City Centre Zoning By-Law

Considering the recommendations of the Kingston Road Corridor and Specialty Retailing Node Intensification Plan for the 1755 Pickering Parkway lands and how the proposed development is tailored to achieve the objectives of this plan, the current parking rates applicable to this area may not be appropriate.

The City of Pickering's City Centre Zoning By-Law 7553/17 dated April 3, 2017 which reflects current high-density lands surrounding the Pickering Go Station and Pickering Town Centre would be a more applicable regulation to follow given the future vision and intensification of the Brock Precinct. The 1755 Pickering Parkway lands are located immediately east of the City Centre Zoning lands. Future transit, pedestrian and cycling initiatives along Brock Road and Kingston Road will improve transportation connectivity

between these lands, and the future of the Brock Precinct will have all the characteristics of a more “City Centre” area.

As outlined in Table 1 – Minimum Parking Requirements under Section 3.0 Parking Regulations of the City Centre By-law document, current parking requirements for an apartment building are 0.8 spaces per dwelling unit and additional 0.15 spaces per dwelling unit for visitors. These rates are also consistent within Table 5.1 Minimum Parking Space Requirements of the second draft consolidated Zoning By-law for City Centre Zones.

The parking requirements outlined in Table 1 of the City Centre By-law for retail store are 3.5 spaces per 100 m<sup>2</sup> of gross leasable floor area. However, within Table 5.1 of the consolidated Zoning By-law, the parking requirement for a retail store is 2.5 spaces per 100 m<sup>2</sup> of gross leasable floor area for City Centre Zones.

Based on these rates, the total vehicle parking spaces required for the proposed 1755 Pickering Parkway development are presented in **Table 12.1**

**Table 12.1 – Estimated Vehicle Parking Supply**

Land Use	City Centre By-Law Parking Rates	Dwelling Units/GFA	No. of Parking Spaces
Residential	0.8 spaces per dwelling unit	5,249 DU	4,200
	0.15 spaces per dwelling unit (Visitor)	5,249 DU	788
Retail	2.5 spaces per 100 m <sup>2</sup> of gross floor area	26,693 m <sup>2</sup>	668
<b>Total Required Parking Spaces</b>			<b>5,656</b>

As presented in **Table 12.1.**, the total parking requirements for the 1755 Pickering Parkway development would be 4,988 residential parking spaces and 688 commercial parking spaces for a total of 5,656 spaces required for the site.

**12.1.4 Review of Other Municipal Vehicle Parking Rates**

As part of identifying a suitable parking rate for the proposed 1755 Pickering Parkway development, a review of parking rates within other municipalities throughout Ontario was also conducted. In particular, municipalities which have established parking rates for similar type land uses areas (high-density, active transportation and transit supportive areas) were reviewed. **Table 12.2** presents existing or proposed apartment/mixed-use building parking

rates from several similar municipalities including the City of Vaughan, Town of Newmarket, City of Oshawa, and the City of Ottawa.

**Table 12.2 – Apartment/Mixed-Use Building Parking Rates from Other Municipalities**

Municipality	Parking Rates (spaces per unit / visitor spaces per unit)			
	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom
Newmarket <sup>1</sup>	0.7 / 0.15	0.8 / 0.15	1.0 / 0.15	1.2 / 0.15
Vaughan <sup>2</sup>	0.4 – 1.5 / 0.15			
Oshawa <sup>3</sup>	0.5 / 0.25	0.5 / 0.25	0.75 / 0.25	1.0 / 0.25
Ottawa <sup>4</sup>	0.5 / na			

<sup>1</sup> Town of Newmarket Urban Centres Zoning By-law 2019-06, December 2023  
<sup>2</sup> City of Vaughan Zoning By-law 001-2021, January 17, 2024 – (Vaughan Metropolitan Centre)  
<sup>3</sup> City of Oshawa Parking Study, January 22, 2021 - (Intensification Areas)  
<sup>4</sup> City of Ottawa Zoning By-law 2008-250 Consolidation – (Area B – Outer Urban/Inner Suburban)

As presented in **Table 12.2**, a range of parking rates were found including as low as 0.4 spaces per unit for the City of Vaughan and as high as 1.5 within Vaughan as well. For visitor spaces the parking rates ranged from 0.15 to 0.25 spaces per unit.

The Town of Newmarket and City of Oshawa provide rates for dwelling units dependent on the number of bedrooms within the unit. For the Town of Newmarket, bachelor and single bedroom apartments have rates of 0.7 and 0.8 spaces respectively where 2 to 3 bedrooms consist of slightly higher rates of 1.0 and 1.2 spaces respectively. In addition, the Town of Newmarket also allows for a 30% reduction to these parking rates based on a locations proximity to transit service. Similarly, the City of Oshawa has several rates dependent on the number of bedrooms contained within the dwelling unit including 0.5 spaces per unit for bachelor and single bedroom units and 0.75 spaces per unit for units with two bedrooms.

The City of Ottawa was found to have a parking rate of 0.5 spaces per unit as part of Zoning Area B know as the Outer Urban/Inner Suburban zones. As part of this area no visitor parking space rate is provided.

Based on a review of the various parking rates found within similar municipalities for land use areas similar to the future Brock Precinct area, the City Centre parking rates were found to be within a similar order of magnitude or in some cases higher than other municipal rates. Given the future intensification of the Brock Precinct and its similarities to the other municipal parking rates for intensification areas, metropolitan centre’s, and outer urban/

inner suburban areas, utilizing the City Centre parking rates for estimating the future parking needs of the proposed 1755 Pickering Parkway development does not seem unreasonable.

### **12.1.5 Shared Parking**

The proposed 1755 Pickering Parkway development will consist of both residential and commercial land uses contained within each building. The nature of parking demand for these two land uses however are opposite of one another. For example, peak parking demand for residential land uses would typically occur between the late evening when residents arrive home from work or running errands (i.e., after 6:00 p.m.) through overnight till the morning when residents would leave for work. During this time period, commercial land uses as part of mixed-use buildings would not be in operation requiring the need for parking spaces. The need for commercial parking spaces would typically occur between the late morning until the early evening (i.e., 9:00 a.m. to 6:00 p.m.) before establishments would close for the day. During this time, the need for residential parking spaces would be minimal as resident will have left the site for work.

As a result, determining the required number of parking spaces for each land use and combining them to establish the total number of parking spaces needed for the proposed development would not be an accurate reflection of the actual parking demands. In other words, the total calculated parking spaces required for residential and commercial lands uses would not be cumulative as some sharing of parking between the land uses would take place lessening the total required parking for the site.

This sharing of use is also reflected in the Urban Centre's zoning by-law for the Town of Newmarket where percentage reductions between 10% and 35% can be applied to overall parking demands of commercial land uses in mixed-use buildings based on peak time periods.

### **12.1.6 ITE Parking Generation Manual**

Average parking rates for Land Use Code 222: Multi-Family Housing (High-Rise) were also reviewed within the ITE's Parking Generation Manual 5th Edition, January 2019. The average rates reviewed in the manual were based on three different location or area types. These included Dense Multi-Use Urban with no nearby rail transit, Dense Multi-Use Urban within a 1/2 mile to rail transit, and the City Centre Core area setting. The average rate for each area setting are presented in **Table 12.3**.

**Table 12.3 – ITE Parking Generation Manual – Parking Ratios**

Setting/Locations	Average Rate (Spaces per dwelling unit)
Dense Multi-Use Urban (No nearby rail transit)	0.55
Dense Multi-Use Urban (<1/2 mile to rail transit)	0.44
City Centre Core	0.46

As presented in the **Table 12.3**, the average parking rates determined for all three land use settings are lower than the current City of Pickering’s City Centre By-law rates. As a result, the City Centre parking rates proposed for the 1755 Pickering Parkway development can be deemed acceptable for estimating the future parking requirements for the site.

**12.1.7 Vehicle Parking Space Review Summary**

The 1755 Pickering Parkway development will reflect the intensification efforts of the Brock Precinct with higher density development, active transportation facilities, mixed land uses supported by future transit and connection to higher order rail transit through the Pickering Go Station. As a result, the City of Pickering’s City Centre By-law parking rates may be more applicable to the development than current rates as part of the current Specialty Retailing zone which is under review.

Through a review of other municipality rates for similar area types, the City Centre parking rates fall within the range of other municipalities and do not seem unreasonable for the future 1755 Pickering Parkway development. In addition, the City Centre rates were found to be higher than rates found within the ITE’s Parking Generation Manual.

It should be noted however that the parking needs for the proposed site may in fact be lower considering and shared parking between the residential and commercial land uses given that peak demands for each land use would occur during different times of the day and total parking requirements would not necessarily be cumulative.

## 12.2 Bicycle Parking Space Review

**Table 12.4** presents the required bicycle parking spaces for the proposed development based on the Section 5.13 Bicycle Parking Space Requirements, from the Draft Consolidated Zoning By-Law dated February 1, 2024.

Table 12.4 – Estimated Bicycle Parking Supply

Land Use	Zoning Requirement	Dwelling Units/GFA	Proposed Bicycle Parking
Residential	0.5 spaces per dwelling unit	5,249 DU	2,625
Retail	2 spaces per 1000 m <sup>2</sup> of gross floor Area	26,693 m <sup>2</sup>	54
<b>Total Required Bicycle Parking Spaces</b>			<b>2,679</b>

Based on these bicycle parking rates; the proposed development would require a 2,625 bicycle parking spaces for the residential land use and 54 spaces for the commercial land uses for a total of 2,679 bicycle parking spaces as presented in **Table 12.4**.

## 13.0 Summary of Analysis Conclusions

The following sections present a summary of analysis conclusions derived from the completion of the Traffic Impact Study for the proposed mixed-use development at 1755 Pickering Parkway in the City of Pickering, Ontario.

### 13.1 Proposed Development

- The 1755 Pickering Parkway development is proposed to consist of a total of 5,250 residential units and 287,318 ft<sup>2</sup> of retail space split between 7 proposed “blocks” of proposed towers of various storeys. For the purpose of this study, the development is proposed to be built in three phases with Block 1 constituting Phase 1, Blocks 2 to 4 constituting Phase 2 and Blocks 5 to 7 constituting Phase 3.

### 13.2 Existing (2023) Traffic Conditions

#### Intersection Operational Analysis

- The signalized intersection of Brock Road and Kingston Road currently operates with an overall v/c ratio of greater than 1.00 during both the weekday a.m. and p.m. peak hours with several movements operating at LOS ‘F’ with significant delays. During the Saturday midday peak hour the overall intersection is approaching and also contains several movements at LOS ‘F’ with significant delays.
- The signalized intersection of Brock Road with the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp overall is approaching capacity during all three peak hours. During the p.m. peak hour there are several movements operating over capacity with a LOS ‘F’ and significant delays.
- The unsignalized intersections along Pickering Parkway are all operating well with no critical intersection movements to note during any of the peak hours analyzed.

### 13.3 Future (2026) Traffic Conditions

#### Future Background (2026) Intersection Operational Analysis

- The signalized intersection of Brock Road with Kingston Road is forecast to continue operating with overall intersection v/c ratios greater than or approaching 1.00 with several individual movements approaching or exceeding this threshold.

- The signalized intersection of Brock Road with the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp is also forecast to continue operating with overall intersection v/c ratios greater than 1.00 along with several movements also operating over capacity particularly during the p.m. peak hour.
- The unsignalized intersections along Pickering Parkway are all forecast to operate well with no critical intersection movements to note during any of the peak hours analyzed.

### **Phase 1 Development Site Trips**

- Phase 1 of the proposed 1755 Pickering Parkway development is forecast to generate 259 total two-way trips (123 inbound, 136 outbound) during the weekday a.m. peak hour. During the p.m. peak hour, the site is forecast to generate 186 primary trips (96 inbound, 90 outbound), 33 pass-by trips (16 inbound, 17 outbound) and 32 diverted trips (15 inbound, 17 outbound). During the Saturday Midday peak hour, the site is forecast to generate 224 primary trips (109 inbound, 115 outbound), 36 pass-by trips (19 inbound, 17 outbound) and 35 diverted trips (18 inbound, 17 outbound).

### **Future Total (2026) Intersection Operational Analysis**

- The addition of site generated traffic from Phase 1 of the proposed development has had only a minor impact to overall intersection operations within the study area. Overall intersection and individual movement v/c ratios increase slightly at Brock Road with Kingston Road and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp, with both intersections forecast to continuing operating over capacity.
- Overall intersection v/c ratios at Brock Road with Pickering Parkway have also gone up slightly with the addition of Phase 1 site trips with some overall reserve capacity available.
- The right-in-right-out access at Brock Road and Street 'A' (existing The Shops at Pickering Ridge) access is forecast to operate well with no queuing forecast for northbound traffic which would extend south impacting the Highway 401 E-N/S Off-Ramp. In addition, no queuing is forecast for the new internal site intersections implemented as part of Phase 1 (Street 'A' with Street 'B' or Street 'C').
- All other unsignalized intersection along Pickering Parkway are forecast to continue operating well under future total 2026 traffic conditions.

## 13.4 Future (2031) Traffic Conditions

### Future Background (2031) Intersection Operational Analysis

- The addition of background traffic growth and development site trips to the study area intersections, overall v/c ratios, movement v/c ratios, levels of service and delay are forecast to increase at all intersections including Brock Road with Kingston Road, Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp which were already operating over capacity with several critical movements at each intersection.
- At the existing The Shops at Pickering Ridge Accesses with Pickering Parkway the northbound movements existing the site are forecast to have notable delays and v/c's near or above 1.00.

### Phase 2 to 4 Development Site Trips

- Phases 2 to 4 will require the demolition of 39,567 ft<sup>2</sup> (36,535 ft<sup>2</sup> currently occupied) of total existing retail within Building 'A' and the relocation of 73,692 ft<sup>2</sup> of existing commercial demolished from Buildings 'B' and 'C' to the newly constructed Phase 1 to 4 buildings. Considering the removal and relocations of existing commercial compared with what is being proposed as Part of Phase 2 to 4, there will actually be a reduction in the GFA of commercial on site with the implementation of these phases. As a result, the net difference in commercial trips will need to be removed from the study area intersections.
- Phases 2 to 4 of the proposed 1755 Pickering Parkway development is forecast to generate 579 total two-way trips (221 inbound, 358 outbound) during the weekday a.m. peak hour. During the p.m. peak hour, the site is forecast to generate 603 primary trips (325 inbound, 278 outbound), 44 pass-by trips (21 inbound, 23 outbound) and 42 diverted trips (20 inbound, 22 outbound). During the Saturday Midday peak hour, the site is forecast to generate 707 primary trips (352 inbound, 355 outbound), 50 pass-by trips (26 inbound, 24 outbound) and 48 diverted trips (25 inbound, 23 outbound).

### Future Total (2031) Intersection Operational Analysis

- The addition of site generated traffic from Phases 2 to 4 of the proposed development has impacted a number of intersections along Pickering Parkway including Street 'D' and 'E' (former The Shops at Pickering Ridge accesses) where delays for northbound and southbound traffic exiting onto Pickering Parkway are forecast to experience significant delays. In order to safely accommodate these movements in the future, these

intersections would need to be signalized. A signal warrant analysis was conducted and determined that traffic signals are warranted for Street 'E' only. The spacing between the existing traffic signal to the east and the proposed signal with Street 'D' is approximately 180 metres which does not meet TAC's minimum typical intersection spacing of 200 metres. Although this spacing is not met, the implementation of dedicated eastbound turn lanes at the Street 'D' intersection could help mitigate spacing and potential queuing issues between the intersections.

- The Street 'E' intersection with Pickering Parkway is carrying a significant number of existing commercial volumes during the afternoon and Saturday Midday peak hours in addition to site generated traffic from Phases 2 to 4. However, in future horizon years with the removal of more existing commercial traffic volumes intersection operations for Street 'D' are anticipated to improve. In addition, traffic volumes between both the intersections of Street 'E' and Street 'D' are anticipated to be balanced during both the afternoon peak hour and Saturday Midday peak hour.
- The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with no queuing that would extend south to impact the Highway 401 E-N/S Off-Ramp.
- All of the proposed internal roadway intersections as part of Phases 1 through 4 are forecast to operate well with no critical movements, delays, or v/c ratios.

## 13.5 Future (2036) Traffic Conditions

### Future Background (2036) Intersection Operational Analysis

- The addition of background traffic growth is forecast to improve overall intersection operations and individual movements at many of the study area intersections along Brock Road and Kingston Road due to implementation of mixed-use development including residential and commercial. Many of the same study area intersections highlighted under future 2026 and 2031 traffic conditions are forecast to continue operating with overall intersection v/c ratios and individual movements greater than 1.00 with significant delays.

### Phase 5 to 7 Development Site Trips

- Phases 5 to 7 of the proposed 1755 Pickering Parkway development is forecast to generate 589 total two-way trips (264 inbound, 325 outbound) during the weekday a.m. peak hour. During the p.m. peak hour, the site is forecast to generate 563 primary trips (279 inbound, 284 outbound), 154 pass-by trips (74 inbound, 80 outbound) and 149 diverted trips (72 inbound, 77 outbound). During the Saturday Midday peak hour, the

site is forecast to generate 674 primary trips (323 inbound, 351 outbound), 189 pass-by trips (98 inbound, 91 outbound) and 182 diverted trips (95 inbound, 87 outbound).

### **Future Total (2036) Intersection Operational Analysis**

- With the addition of site generated traffic from Phases 5 to 7 of the proposed development plus the removal of all remaining existing commercial traffic volumes, the Pickering Parkway intersections with Brock Road and Street 'E' are forecast to improve operationally contrary to the future total 2031 traffic conditions.
- The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well with no queuing that would extend southerly to impact the Highway 401 E-N/S Off-Ramp.
- All of the proposed internal roadway intersections as part of Phases 1 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios.

## **13.6 Future (2041 & 2046) Traffic Conditions**

- The signalized intersections of Brock Road with Kingston Road, Pickering Parkway and the Highway 401 W-N/S Off-Ramp/N/S-E On-Ramp are forecast to continue operating with many critical movements experiencing significant delays and overall intersection v/c's greater than 1.00 under almost all peak hours.
- The intersection of Pickering Parkway and Street 'D' is forecast to continue operating well as a traffic signal with ample reserve capacity.
- Critical movements and delay are still forecast for the unsignalized intersection of Pickering Parkway with Street 'E' however it is anticipated that volumes from this intersection would reroute to the traffic signal at Street 'D' to avoid existing delays.
- The Brock Road and Street 'A' right-in-right-out access is forecast to continue operating well under both future planning horizon years with queuing from the northbound movements not forecast to extend southerly impacting operations at the Highway 401 E-N/S Off-Ramp.
- All of the proposed internal roadway intersections as part of Phases 1 through 7 are forecast to operate well with no critical movements, delays, or v/c ratios under the proposed lane configurations and traffic control.

## 13.7 Sensitivity Analysis – No RIRO at Brock Road

- The removal of access to the site via the right-in-right-out access off of Brock Road has significantly impacted operations at Pickering Parkway with Brock Road and Street 'D' and Street 'E' particularly at the 2031 horizon year. The increase in traffic to the westbound left turn and northbound right turn movements at the signalized intersection of Brock Road and Pickering Road has had a negative impact to capacity, delay and 95th percentile queues of these movements.
- At the 2031 horizon year the Pickering Parkway and Street 'D' intersections would require signalization to alleviate issues however under signalized traffic control presented in Table 10.3 the overall intersection capacity is still forecast to be over 1.00 with several critical movements.
- Significant queuing, delay and capacity issues are also forecast for the Pickering Parkway and Street 'E' intersection with the increase in traffic volumes to this intersection.

## 13.8 Driver Sightline Review

- A review of driver sightlines at the intersection of Brock Road and the right-in-right-out access found that the required sight distance to perform a right turn maneuver from the access meets TAC standards. In addition, the required stopping sight distance for vehicles travelling northbound along Brock Road toward the access also meets TAC requirements.

## 14.0 Improvement Recommendations

### 14.1 Future (2026) Total Conditions

The following improvements are recommended to accommodate the traffic volumes forecasted during this horizon:

- The existing northbound right turn lane at the Brock Road and Right-In/Right-Out intersection be improved by extending it southerly to facilitate safe operation of vehicles accessing the proposed site as per conceptual plan provided in Appendix 18.

## 14.2 Future (2031) Total Conditions

The following improvements are recommended to accommodate the traffic volumes forecasted during this horizon:

- Intersection of Street 'D' with Pickering Parkway to be signalized.
- Proposed internal unsignalized intersections of Street 'A' with Street 'D' and 'E' plus be provided with exclusive left turning lanes.

## 14.3 Future (2036) Total Conditions

The following improvements are recommended to accommodate the traffic volumes forecasted during this horizon:

- Proposed internal unsignalized intersections of Street 'A' with Street 'D' and 'E' be provided with exclusive left turning lanes.

## **APPENDIX 1**

### Development Site Plan & Phasing Plan



This drawing, as an instrument of service, is provided by and is the property of Turner Fleischer Architects Inc. The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify Turner Fleischer Architects Inc. of any variations from the approved information. This drawing is not to be scaled. The architect is not responsible for the accuracy of survey, structural, mechanical, electrical, etc. information shown on this drawing. Refer to the appropriate contract drawings before proceeding with the work. Construction must conform to all applicable codes and requirements of authority having jurisdiction. The contractor working from drawings not specifically marked 'For Construction' must assume full responsibility and bear costs for any corrections or damages resulting from his work.

1755 PICKERING PARKWAY SITE STATISTICS		
STATISTICS	SM	SF
PROPOSED SITE AREA:	94,841	1,020,858
NEW PROPOSAL NFA	323,089	3,477,700
FSI	3.41	

**NFA CALCULATION**  
NFA EXCLUDES PARKING, LOADING SPACE, STORAGE, ELECTRICAL & MECHANICAL, AMENITY AREA, MECHANICAL PENTHOUSE, ELEVATOR, GARBAGE AND VENTILATING SHAFTS AS PER CITY OF PICKERING ZONING BY-LAW

DESCRIPTION	TYPE	FLOORS #	TOTAL NFA		RESIDENTIAL		RETAIL/COMMERCIAL NFA		TOTAL NFA		NFA EXCLUDED (*1)		FLOOR PLATE AREA (*1)		
			m2	ft2	m2	ft2	m2	ft2	m2	ft2	m2	ft2			
BLOCK 1 (*1)	RESIDENTIAL/RETAIL	31	56,181	604,726	42,279	455,090	630	1,669	17,965	57,850	622,691	27,241	293,220	83,421.00	897,936
BLOCK 2	RESIDENTIAL/LIVE-WORK	43	74,557	802,527	69,045	743,189	1,090	907	9,758	75,464	812,285	9,653	103,902	85,117	916,187
BLOCK 3	RESIDENTIAL/RETAIL	26	29,515	317,094	27,262	293,660	448	1,384	14,863	30,898	332,587	3,207	34,515	34,106	387,102
BLOCK 4	RESIDENTIAL/LIVE-WORK	43	58,695	637,790	53,716	578,197	1,022	677	7,290	59,373	639,081	7,999	86,105	67,372	725,185
BLOCK 5	RESIDENTIAL/LIVE-WORK	26	39,701	427,333	36,207	389,730	641	712	7,664	40,413	434,997	4,085	43,975	44,498	478,972
BLOCK 6	RESIDENTIAL/COMMERCIAL	23	23,255	250,314	21,136	227,511	762	20,375	43,630	469,626	5,030	54,146	48,660	523,772	
BLOCK 7	RESIDENTIAL/LIVE-WORK	20	41,185	443,315	39,210	422,048	659	380	4,090	41,565	447,405	3,310	35,632	44,876	483,037
<b>GRAND TOTAL</b>		158	323,089	3,477,700	288,875	3,109,425	5,240	26,103	280,972	348,192	3,766,672	60,526	651,494	408,048	4,392,191

1) For extensive statistics for blocks 1 please refer to each buildings drawing set.

BLOCK	EXISTING SITE (INCLUDING PARK AND ROADS)	
	m <sup>2</sup>	ft <sup>2</sup>
1	11,814.00	127,164.84
2	25,945.00	279,269.66
3	6,347.70	68,326.07
4	17,437.40	187,694.81
5	10,899.40	117,320.17
6	8,199.00	88,253.30
7	14,162.20	152,440.65
<b>TOTAL</b>	94,804.70	1,020,469.30

BLOCK 2		
STATISTICS	SM	SF
PROPOSED SITE AREA:	25,945	279,270
NEW PROPOSAL NFA	76,664	812,285
FSI	2.91	
NEW RESIDENTIAL UNITS	1,990	
UPH	430	
NET AVERAGE UNIT SIZE	63	162

DESCRIPTION	TYPE	FLOORS #	TOTAL NFA		RESIDENTIAL		RETAIL/COMMERCIAL NFA		TOTAL NFA		NFA EXCLUDED (*1)		FLOOR PLATE AREA (*1)	
			m2	ft2	m2	ft2	m2	ft2	m2	ft2				
USP PARKING														
F-1	RESIDENTIAL BASE	1	200	2,153	200	2,153	0	0	200	2,153	0	0	200	2,153
F-2	RESIDENTIAL BASE	6	14,620	157,772	13,226	143,274	2,394	25,500	14,620	157,772	2,394	25,500	14,620	157,772
F-3	RESIDENTIAL BASE	6	14,620	157,772	13,226	143,274	2,394	25,500	14,620	157,772	2,394	25,500	14,620	157,772
F-4	RESIDENTIAL TOWER	30	32,303	351,148	27,838	299,818	4,465	48,330	32,303	351,148	4,465	48,330	32,303	351,148
MH	RESIDENTIAL TOWER	43	74,557	802,527	69,045	743,189	1,090	907	74,557	802,527	1,090	907	74,557	802,527
<b>GRAND TOTAL</b>			147,900	1,591,372	135,334	1,453,845	11,249	124,330	147,900	1,591,372	11,249	124,330	147,900	1,591,372

PARKING REQUESTED			
DESCRIPTION	VISITOR	RESIDENTIAL	TOTAL
BATCH	0	0	0
	153	819	972

1) ASSUMING RESIDENTIAL PARKING RATIO= 0.8 / UNIT  
2) ASSUMING VISITOR PARKING RATIO= 0.15 / UNIT  
3) ASSUMING RETAIL PARKING RATIO= 3.5 / 100 M2

PARKING PROVIDED						
SURFACE	USP	USP	USP	USP	USP	TOTAL
0	240	240	240	240	81	1,071

AMENITY REQUIRED			
RATIO	INDOOR M2	OUTDOOR M2	TOTAL
2 M2 / INDOOR UNIT & 1 M2 / OUTDOOR UNIT	2160	2160	4320

AMENITY PROVIDED			
OUTDOOR M2	INDOOR M2	FT2	TOTAL
1000	1700	18280	2800
2160	2160	23376	4500

BLOCK 3		
STATISTICS	SM	SF
PROPOSED SITE AREA:	8,348	88,327
NEW PROPOSAL NFA	30,999	332,589
FSI	3.67	
NEW RESIDENTIAL UNITS	448	
UPH	762	
NET AVERAGE UNIT SIZE	61	159

DESCRIPTION	TYPE	FLOORS #	TOTAL NFA		RESIDENTIAL		RETAIL/COMMERCIAL NFA		TOTAL NFA		NFA EXCLUDED (*1)		FLOOR PLATE AREA (*1)	
			m2	ft2	m2	ft2	m2	ft2	m2	ft2				
USP PARKING														
F-1	RESIDENTIAL BASE	1	200	2,153	200	2,153	0	0	200	2,153	0	0	200	2,153
F-2	RESIDENTIAL BASE	6	14,620	157,772	13,226	143,274	2,394	25,500	14,620	157,772	2,394	25,500	14,620	157,772
F-3	RESIDENTIAL BASE	6	14,620	157,772	13,226	143,274	2,394	25,500	14,620	157,772	2,394	25,500	14,620	157,772
F-4	RESIDENTIAL TOWER	30	32,303	351,148	27,838	299,818	4,465	48,330	32,303	351,148	4,465	48,330	32,303	351,148
MH	RESIDENTIAL TOWER	43	74,557	802,527	69,045	743,189	1,090	907	74,557	802,527	1,090	907	74,557	802,527
<b>GRAND TOTAL</b>			147,900	1,591,372	135,334	1,453,845	11,249	124,330	147,900	1,591,372	11,249	124,330	147,900	1,591,372

PARKING REQUESTED			
DESCRIPTION	VISITOR	RESIDENTIAL	TOTAL
BATCH	0	0	0
	153	819	972

1) ASSUMING RESIDENTIAL PARKING RATIO= 0.8 / UNIT  
2) ASSUMING VISITOR PARKING RATIO= 0.15 / UNIT  
3) ASSUMING RETAIL PARKING RATIO= 3.5 / 100 M2

PARKING PROVIDED						
SURFACE	USP	USP	USP	USP	USP	TOTAL
0	240	240	240	240	81	1,071

AMENITY REQUIRED			
RATIO	INDOOR M2	OUTDOOR M2	TOTAL
1 M2 / INDOOR UNIT & 1 M2 / OUTDOOR UNIT	864	864	1,728

AMENITY PROVIDED			
OUTDOOR M2	INDOOR M2	FT2	TOTAL
448	448	4,848	896
864	864	9,298	1,732

BLOCK 4		
STATISTICS	SM	SF
PROPOSED SITE AREA:	17,477	187,695
NEW PROPOSAL NFA	59,373	639,081
FSI	3.40	
NEW RESIDENTIAL UNITS	1,622	
UPH	596	
NET AVERAGE UNIT SIZE	53	136

DESCRIPTION	TYPE	FLOORS #	TOTAL NFA		RESIDENTIAL		RETAIL/COMMERCIAL NFA		TOTAL NFA		NFA EXCLUDED (*1)		FLOOR PLATE AREA (*1)	
			m2	ft2	m2	ft2	m2	ft2	m2	ft2				
USP PARKING														
F-1	RESIDENTIAL BASE	1	200	2,153	200	2,153	0	0	200	2,153	0	0	200	2,153
F-2	RESIDENTIAL BASE	4	8,348	88,327	7,500	80,250	848	9,077	8,348	88,327	848	9,077	8,348	88,327
F-3	RESIDENTIAL BASE	3	3,207	34,075	2,838	30,402	369	3,975	3,207	34,075	369	3,975	3,207	34,075
F-4	RESIDENTIAL TOWER	30	32,303	351,148	27,838	299,818	4,465	48,330	32,303	351,148	4,465	48,330	32,303	351,148
MH	RESIDENTIAL TOWER	43	74,557	802,527	69,045	743,189	1,090	907	74,557	802,527	1,090	907	74,557	802,527
<b>GRAND TOTAL</b>			118,635	1,269,233	107,521	1,156,852	16,772	181,682	118,635	1,269,233	16,772	181,682	118,635	1,269,233

PARKING REQUESTED			
DESCRIPTION	VISITOR	RESIDENTIAL	TOTAL
BATCH	0	0	0
	153	819	972

1) ASSUMING RESIDENTIAL PARKING RATIO= 0.8 / UNIT  
2) ASSUMING VISITOR PARKING RATIO= 0.15 / UNIT  
3) ASSUMING RETAIL PARKING RATIO= 3.5 / 100 M2

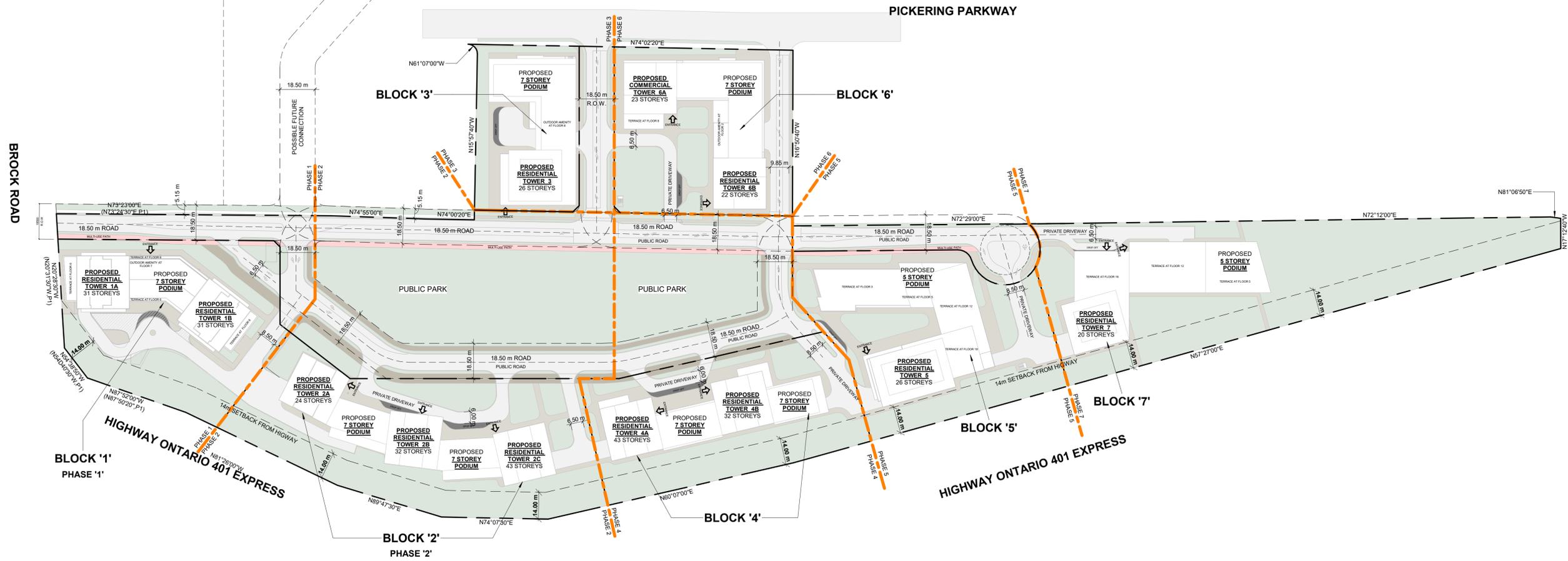
PARKING PROVIDED						
SURFACE	USP	USP	USP	USP	USP	TOTAL
0	160	172	172	172	60	536

AMENITY REQUIRED			
RATIO	INDOOR M2	OUTDOOR M2	TOTAL
2 M2 / INDOOR UNIT & 1 M2 / OUTDOOR UNIT	2044	2044	4088

AMENITY PROVIDED			
OUTDOOR M2	INDOOR M2	FT2	TOTAL
1022	1702	18280	2800
2044	2044	22284	4088

BLOCK 5		
STATISTICS	SM	SF
PROPOSED SITE AREA:	19,899	211,240
NEW PROPOSAL NFA	48,413	514,997
FSI	2.41	
NEW RESIDENTIAL UNITS	644	
UPH	588	
NET AVERAGE UNIT SIZE	76	168

DESCRIPTION	TYPE	FLOORS #	TOTAL NFA		RESIDENTIAL		RETAIL/COMMERCIAL NFA		TOTAL NFA		NFA EXCLUDED (*1)		FLOOR PLATE AREA (*1)	
			m2	ft2	m2	ft2	m2	ft2	m2	ft2				
USP PARKING														
F-1	RESIDENTIAL BASE	1	1,742	18,764	1,742	18,764	0	0	1,742	18,764	0	0	1,742	18,764
F-2	RESIDENTIAL BASE	4	7,073	75,856	6,366	68,604	707	7,592	7,073	75,856	707	7,592	7,073	75,856
F-3	RESIDENTIAL BASE	3	3,167	33,855	2,850	30,675	317	3,417	3,167	33,855	317	3,417	3,167	33,855
F-4	RESIDENTIAL TOWER	30	32,303	351,148	27,838	299,818	4,465	48,330	32,303	351,148	4,465	48,330	32,303	351,148
MH	RESIDENTIAL TOWER	43	74,557	802,527	69,045	743,189	1,090	907	74,557	802,527	1,090	907	74,557	802,527
<b>GRAND TOTAL</b>			118,635	1,269,233	107,521	1,156,852	16,772	181,682	118,635	1,269,233	16,772	181,682	118,635	1,269,233



#	DATE	DESCRIPTION	BY
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PROJECT  
**PICKERING DESIGN CENTRE  
MASTER PLAN**  
1775 PICKERING PARKWAY  
PICKERING, ON.

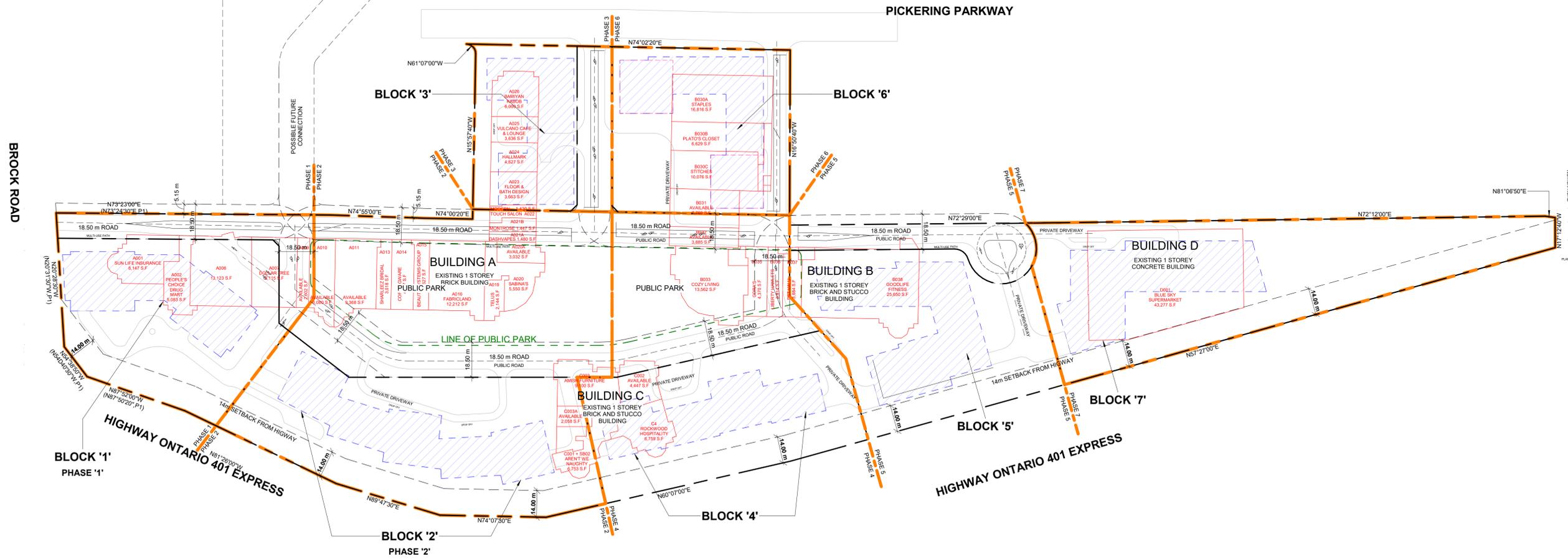
DRAWING  
**SITE PLAN / ROOF PLAN**

PROJECT NO. 06.037RZ	
PROJECT DATE 2024-03-01	
DRAWN BY AGO	
CHECKED BY AAF	
SCALE 1 : 1100	

DRAWING NO. <b>SPA006</b>	REV.
------------------------------	------

This drawing, as an instrument of service, is provided by and is the property of Turner Fleischer Architects Inc. The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify Turner Fleischer Architects Inc. of any variations from the supplied information. This drawing is not to be scaled. The architect is not responsible for the accuracy of survey, structural, mechanical, electrical, etc. information shown on this drawing. Refer to the appropriate consultant drawings before proceeding with the work. Contractor must conform to all applicable codes and requirements of all relevant having jurisdiction. The contractor working from drawings not specifically marked 'for Contractor' must assume full responsibility and bear costs for any corrections or damages resulting from his work.

## PHASING PLAN ALL PHASES



### PHASING PLAN LEGEND

LOCATION OF EXISTING BUILDINGS

LOCATION OF PROPOSED BUILDINGS

PHASING BOUNDARY

LINE OF PUBLIC PARK

#	DATE	DESCRIPTION	BY
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**PICKERING DESIGN CENTRE  
MASTER PLAN**  
1775 PICKERING PARKWAY  
PICKERING, ON.

**PHASING PLAN - ALL PHASES**

PROJECT NO.  
06.037RZ  
PROJECT DATE  
2024-03-01  
DRAWN BY  
AGO  
CHECKED BY  
AYU  
SCALE  
1:1100



DRAWING NO. SPA008A REV.

## **APPENDIX 2**

### Traffic Impact Study Terms of Reference



Paige Harrison

---

From: Doug Robertson <Doug.Robertson@Durham.ca>  
Sent: March 13, 2023 4:49 PM  
To: Matthew Di Maria; Peter Castellan; Wirch, Paul; Zahoor, Nadeem  
Cc: 'robert.m@zpplan.com'; 'Harry Froussios - Zelinka Priamo Ltd.'; Nick Palomba; Altaf Hussain; Lynda Motschenbacher; Michael Prevedel; Chris Leitch; Khalil Barakzai  
Subject: RE: 1755 Pickering Parkway - Updated TIS Terms of Reference  
  
Categories: Filed by Newforma

**[CAUTION EXTERNAL EMAIL]** Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Matthew,

Regional staff have reviewed the proposed Terms of Reference, and our comments are as follows:

1. Your study must comply with the Region's Traffic Impact Study Guidelines, including the requirements for Synchro analysis (Chapter 9 in the [Design Specifications for Traffic Control Devices, Pavement Marking, Signage and Roadside Protection](#)), except as otherwise agreed by the Region. As noted in your email below, our comments on the previous TIS submission are to be addressed in the revised study.
2. The study area, analysis periods, and horizon years are acceptable.
3. New turning movement counts (March 2022 or later) are to be used in the study, since the original counts are now almost five years old and do not reflect current traffic patterns. The most current intersection turning movement counts, ATR counts and AADT data available from the Region can be downloaded from our web site through the interactive [traffic counts map](#). Where recent Regional or City data is not available, new counts are to be collected.
4. Other traffic data, including signal timings, are available for purchase from our Traffic Engineering & Operations Division ([traffic@durham.ca](mailto:traffic@durham.ca) 905-666-8116).
5. The study is to include a site visit to observe existing infrastructure and operations for all travel modes. Key observations are to be included in the report, including any observed operational or safety issues. Observations of existing traffic operations (e.g. queue lengths) should be used to validate the existing conditions Synchro analysis results.
6. It is reasonable to assume that the non-auto mode share will continue to increase beyond the original 2036 ultimate horizon year. Your study can assume 5% increase in non-auto mode share by 2031, 10% by 2036 (as per our previous comments), 20% by 2041, and 30% by 2046, reflecting an additional 10% growth for each of the latter two horizon years. For the AM peak hour outbound example noted in our previous comments, this would result in the following non-auto mode shares: 24.5% in 2026; 25.7% in 2031; 27% in 2036; 29.4% in 2041; and 31.9% in 2046.

7. The Travel Demand Management (TDM) section of the study is to provide recommendations on infrastructure and programs to minimize travel demand and encourage non-auto travel mode use by the residents, employees, and customers of the development. The TDM recommendations are to be site-specific, and the study is to identify who would be responsible for the initial implementation and on-going operation (as applicable) of each recommended facility or program. As part of the TDM discussion, the TIS is to address existing and planned cycling infrastructure as it relates to the subject site and key destinations, including reference to the Regional Cycling Plan and the Pickering ITMP.
8. The 0.5% per year background traffic growth rate (plus background developments) is acceptable. Note that this rate reflects an assumption of increased non-auto mode share for growth in background travel demand in the future. Please check with the City of Pickering whether the assumptions for background development remain valid, and whether any additional background developments should be assumed for the later horizon years (e.g., build-out of the 1899 Brock Road redevelopment).
9. For clarity, the noted changes to the Synchro analysis of the Kingston Road intersections apply after implementation of the Durham-Scarborough BRT. This section of the BRT is currently expected to be complete by the 2026 horizon year.
10. The proposed changes to the standard PHF for the 2041 and 2046 horizon years are acceptable.
11. The right-in/right-out (RI/RO) access on Brock Road may create traffic operations and safety issues due to its short spacing from the Highway 401 westbound ramp terminal intersection, but it also presents an opportunity to divert some traffic away from the congested Brock Road/Pickering Parkway intersection. The Region will use the results of this study to decide whether the RI/RO access will be permitted to remain with the initial phase of development and with subsequent development phases. To facilitate this decision, the study will need to demonstrate that the potential impacts are minimized and that the potential benefits are significant. Specifically, the study will need to:
  - a) Show no potential for queue spill-back onto Brock Road;
  - b) Demonstrate that there is adequate sight distance for traffic approaching the access to avoid any stopped traffic, i.e. decision sight distance to TAC standards for a 70 km/h design speed;
  - c) Demonstrate that there is adequate sight distance for a driver turning right out of the access to select a safe gap in approaching northbound traffic as per TAC standards for a 70 km/h design speed;
  - d) Provide a functional design plan for an extended northbound right turn lane to maximize the available deceleration distance for northbound right turning vehicles; and
  - e) Estimate the operational benefits at the Brock Road/Pickering Parkway intersection that result from diverting site traffic at the RI/RO access rather than forcing it all to go through the intersection. This will require estimates of the diverted traffic volumes and Synchro analysis of the Pickering Parkway intersection with and without the RI/RO access at each horizon year, rather than the single horizon year (2046) proposed for the sensitivity analysis in the Terms of Reference.
12. The site circulation review will need to clearly show how internal circulation will be designed to effectively prevent any potential for queue spill-back onto Brock Road through the RI/RO

access. This may require completing traffic operations analysis of internal intersection(s) to provide queue length estimates. The site is to be designed such that it can function effectively with or without the RI/RO access so that this access can be removed if required by the Region and/or MTO.

13. Given the scale of the proposed development and the extended development timeline, follow-up studies will be required for subsequent phases of the development to update assumptions and confirm findings, improvement requirements/designs, etc. The need for follow-up studies is to be specifically noted in the TIS.

Please contact me if you have any questions on the above.

Regards,  
Doug



Doug Robertson, M.A.Sc., P.Eng., PTOE | Senior Project Manager  
Works Department | Transportation Infrastructure Division  
The Regional Municipality of Durham  
[Doug.Robertson@durham.ca](mailto:Doug.Robertson@durham.ca) | 905-668-4113 extension 3733 | [durham.ca](http://durham.ca)  
My pronouns are he/him.



---

From: Matthew Di Maria <MDiMaria@rvanderson.com>  
Sent: February 22, 2023 6:34 PM  
To: Doug Robertson <Doug.Robertson@Durham.ca>; Peter Castellan <Peter.Castellan@Durham.ca>; Wirch, Paul <pwirch@pickering.ca>; Zahoor, Nadeem <nzahoor@pickering.ca>  
Cc: 'robert.m@zpplan.com' <robert.m@zpplan.com>; 'Harry Froussios - Zelinka Priamo Ltd.' <harry.f@zpplan.com>; Nick Palomba <NPalomba@rvanderson.com>; Altaf Hussain <ahussain@rvanderson.com>  
Subject: RE: 1755 Pickering Parkway - Updated TIS Terms of Reference

Hi Everyone,

Further to our meeting yesterday, below is the proposed Terms of Reference (TOR) for updating our Traffic Impact Study for the 1755 Pickering Parkway Development. In addition to these criteria, all comments received from the Region via letter dated January 26, 2023 in regards to the completed July 4<sup>th</sup>, 2022 TIS will be addressed accordingly.

1. The study area intersections for operational analysis will remain consistent with the previously completed July 4, 2022, report:
  - a. Brock Road at Kingston Road (Region)
  - b. Brock Road at Pickering Way (Region)
  - c. Brock Rd. & Existing RIRO access (Region)
  - d. Kingston Road at Notion Road (Region)
  - e. Brock Road at the Hwy 401 Westbound Ramp Terminal (MTO)
  - f. Brock Road at the Hwy 401 Eastbound Ramp Terminal (MTO)
  - g. Notion Road at Pickering Parkway (City)
  - h. Pickering Parkway at the Canadian Tire/Walmart Site Access (City)
  - i. Pickering Parkway at proposed site access
2. The existing TMC data utilized in the previous TIS will remain consistent. (Derived from the 1899 Brock Rd. TIS completed March 26, 2021, by WSP. The counts were collected in 2018 as part of that study).

3. Analysis peak hours will remain consistent with the previously completed TIS:
  - a. Weekday a.m. peak hour
  - b. Weekday p.m. peak hour
  - c. Saturday midday peak hour
4. The following horizon years of analysis will be included in the study along with corresponding background developments included within those horizons:

Phase	No. of Residential Units	Commercial GFA (ft <sup>2</sup> )	Horizon Year	Background Developments (build-out year)
1	630	17,965	2026 (Phase 1 Build-out)	2165 Brock Road (2019) 1640 Kington Road (2021) Durham Live Casino (2023) 1899 Brock Road P1 (2024) 2055 Brock Road (2024) 2065 & 2071 Brock (2024) Universal City (2026) 1856 Notion Road (2026) (0.5% Background growth per annum - see item 10)
Phases 2 to 4	2,558	28,223	2031 (5 yrs. beyond Ph1 build-out)	Universal City (2027) Film Studio (2028) 1695 Bayly Street TIS (2028) 1899 Brock Road P2 (2029) 1970 Brock Road (2030) (0.5% Background growth per annum - see item 10)
Phases 5 to 7	2,038	241,130	2036 (10 yrs. beyond Ph1 build-out)	0.5% Background growth per annum (see item 10)
Full Site Build-out	5,226	287,318	2041 (5 yrs. beyond full build-out of the site)	0.5% Background growth per annum (see item 10)
			2046 (10 yrs. beyond full build-out of the site)	

5. Trip Generation for the development will be based on land use codes found in the ITE Trip Generation Manual 11th Edition including:

Land Use Code	Description	Land Use Subcategory	Setting/Location
222	Multifamily Housing (High-rise)	Not close to Rail Transit	General Urban/Suburban
820	Shopping Center (>150K)	All sites	General Urban/Suburban

6. Trip Distribution and assignment for the site generated development trips will remain consistent with the previously completed TIS (utilized percentages derived from TTS as presented in the 1899 Brock Rd. TIS).
7. 2026 modal split assumptions will stay consistent with the previously completed TIS (percentages extracted from the 1899 Brock Rd. TIS). Utilizing the percentage increases as identified in the Region's comments on the previous TIS, the table identifies the forecast mode splits for 2031 and 2036. The overall increase as shown in the bottom row of the table seems low given the proposed investments in transit (e.g. BRT, high frequency) as

identified in Item 9. We would ask the Region to review the percent increase previously provided and confirm if additional increases are required.

Phase	Horizon Year	Mode Share Increase	AM Peak Hour		PM & SAT Peak Hour	
			Inbound	Outbound	Inbound	Outbound
1	2026	-	7.2%	24.5%	26.2%	5.4%
Phases 2 to 4	2031	5% (e.g. 7.2x1.05)	7.6%	25.7%	27.5%	5.7%
Phases 5 to 7	2036 to 2046	10% (e.g. 7.2x1.1)	8%	27%	29%	6%
Overall Increase			0.8%	2.5%	2.8%	0.6%

8. TIS will include a discussion on TDM measures to be implemented to achieve modal share increases presented in the table above.
9. ITE internal trip capture estimation tool and pass-by percentages will be utilized as appropriate. Consistent with previous TIS.
10. Future road network improvements to be reflected in the analysis:
  - a. Notion Road Fly-over (implemented at 2031 horizon year)
  - b. Scarborough Bus Rapid Transit Line (Kingston Rd. – Assume 2031 implementation year)
  - c. High-frequency bus route along Brock Rd. (2031)
11. Background traffic growth will remain consistent with the previous TIS. 0.5% per annum for through movements along Brock Road and Kingston Road and all turn movements at the MTO ramps.
12. Synchro analysis file parameters to be utilized based on the Regions comments on the previous TIS:
  - a. Kingston Rd. Intersections:
    - i. Change general purpose lane configuration as needed to match the preliminary design plans (note that the bus-only lanes are not coded into Synchro as they do not contribute to the general traffic capacity of the intersection);
    - ii. Change eastbound/westbound left turn operation from protected-permitted to protected-only;
    - iii. Extend northbound/southbound all-red clearance interval to account for the additional width across Highway 2; and
    - iv. Extend northbound/southbound pedestrian times to account for the additional width across Highway 2.
  - b. Given the extended horizon years for this TIS (2041 & 2046) and the spreading of peak hours to peak periods, we would recommend utilizing a PHF of 1.00 for the 2041 and 2046 horizons and PHF of 0.95 for all other analysis scenarios. We feel this would be more representative.
13. A sensitivity analysis of the removal of the right-in right-out access on Brock Rd. will be conducted for the 2046 horizon year as a worst-case analysis. If issues are discovered in the ultimate horizon, previous horizons will be examined to determine at what stage the issues arise.
14. Review draft site plan internal circulation to discourage cut through traffic using the developments internal road network.
15. RVA has been requested to provide input and recommendation on required parking supply under the future land uses stages. Can the City please provide guidance on analysis approach for justification of future parking rates if they are to vary from the existing zoning by-law. Specifically:
  - a. Requirement for a literature and best practices review from other like municipalities with similar development characteristics, and/or

- b. Parking study at proxy site(s) if available. If this option, how many proxy sites and how many days of survey would be required. We would assume a meeting to discuss proposed proxy locations prior to any study. RVA would be open to a discussion on this matter if needed.

If there are any questions or comments regarding the TOR, please feel free to reach out to me directly and we will clarify.

**Matthew Di Maria, C.E.T., RSP<sub>1</sub>, CAPM**

Transportation Planner



R.V. Anderson Associates Limited  
43 Church Street, Suite 104, St. Catharines ON L2R 7E1  
t 905 685 5049 ext. 4237

[LinkedIn](#) | [Facebook](#) | [Website](#)



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From: Wirch, Paul <[pwirch@pickering.ca](mailto:pwirch@pickering.ca)>

Sent: February 17, 2023 2:01 PM

To: 'robert.m@zpplan.com' <[robert.m@zpplan.com](mailto:robert.m@zpplan.com)>

Cc: 'Harry Froussios - Zelinka Priamo Ltd.' <[harry.f@zpplan.com](mailto:harry.f@zpplan.com)>; Nick Palomba <[NPalomba@rvanderson.com](mailto:NPalomba@rvanderson.com)>;

Matthew Di Maria <[MDiMaria@rvanderson.com](mailto:MDiMaria@rvanderson.com)>; Altaf Hussain <[ahussain@rvanderson.com](mailto:ahussain@rvanderson.com)>; Zahoor, Nadeem

<[nzahoor@pickering.ca](mailto:nzahoor@pickering.ca)>; [peter.castellan@durham.ca](mailto:peter.castellan@durham.ca); [doug.robertson@durham.ca](mailto:doug.robertson@durham.ca)

Subject: RE: 1755 Pickering Parkway - Transportation, MTO, et al.

**[CAUTION EXTERNAL EMAIL]** Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello Rob,

We have yet to receive a list of questions or topics for Tuesday's meeting. Please forward us an agenda before end of day.

Thank you,

**Paul Wirch** RPP

**Principal Planner** | City Development

905.420.4660 ext. 2140 | 1.866.683.2760

[pwirch@pickering.ca](mailto:pwirch@pickering.ca)

---

From: Robert MacFarlane - Zelinka Priamo Ltd. <[robert.m@zpplan.com](mailto:robert.m@zpplan.com)>

Sent: Wednesday, February 8, 2023 8:53 AM

To: Wirch, Paul <[pwirch@pickering.ca](mailto:pwirch@pickering.ca)>

Cc: 'Harry Froussios - Zelinka Priamo Ltd.' <[harry.f@zpplan.com](mailto:harry.f@zpplan.com)>; 'Nick Palomba' <[NPalomba@rvanderson.com](mailto:NPalomba@rvanderson.com)>;

'Matthew Di Maria' <[MDiMaria@rvanderson.com](mailto:MDiMaria@rvanderson.com)>; 'Altaf Hussain' <[ahussain@rvanderson.com](mailto:ahussain@rvanderson.com)>; Zahoor, Nadeem

<[nzahoor@pickering.ca](mailto:nzahoor@pickering.ca)>; [peter.castellan@durham.ca](mailto:peter.castellan@durham.ca); [doug.robertson@durham.ca](mailto:doug.robertson@durham.ca)

Subject: RE: 1755 Pickering Parkway - Transportation, MTO, et al.

Hi Paul, thank you for forwarding along. Our availability for a transportation focused meeting during the week of Feb 21 is as follows:

**APPENDIX 3**  
Traffic Count Data



## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:45:00  
To: 08:45:00

**Intersection:** Brock Rd & Kingston Rd  
**Site Code:** 2330600001  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1721	703	2424
	62	68	130
	0	0	0
<b>Totals</b>	<b>1783</b>	<b>771</b>	<b>2554</b>

### Brock Rd

	0	0	0	0
	13	34	15	0
	174	1325	221	1
<b>Totals</b>	<b>187</b>	<b>1359</b>	<b>236</b>	<b>1</b>

### East Approach

	Out	In	Total
	965	643	1608
	45	41	86
	0	0	0
<b>Totals</b>	<b>1010</b>	<b>684</b>	<b>1694</b>

### Kingston Rd

				Totals
	0	0	0	<b>0</b>
	0	5	82	<b>87</b>
	0	23	265	<b>288</b>
	0	6	215	<b>221</b>

Peds: 13

Peds: 15



Peds: 18

Peds: 16

### Kingston Rd

Totals			
<b>0</b>	0	0	0
<b>170</b>	162	8	0
<b>476</b>	455	21	0
<b>364</b>	348	16	0

### West Approach

	Out	In	Total
	562	732	1294
	34	44	78
	0	0	0
<b>Totals</b>	<b>596</b>	<b>776</b>	<b>1372</b>

Totals				
<b>113</b>	103	458	157	2
<b>10</b>	10	55	3	0
<b>0</b>	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	720	1890	2610
	68	56	124
	0	0	0
<b>Totals</b>	<b>788</b>	<b>1946</b>	<b>2734</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:45:00  
To: 17:45:00

**Intersection:** Brock Rd & Kingston Rd  
**Site Code:** 2330600001  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1291	1769	3060
	43	22	65
	0	0	0
<b>Totals</b>	<b>1334</b>	<b>1791</b>	<b>3125</b>

### Brock Rd

	0	0	0	0
	5	32	6	0
	213	848	228	2
<b>Totals</b>	<b>218</b>	<b>880</b>	<b>234</b>	<b>2</b>

### East Approach

	Out	In	Total
	1135	1645	2780
	22	24	46
	0	0	0
<b>Totals</b>	<b>1157</b>	<b>1669</b>	<b>2826</b>

### Kingston Rd

				Totals
	0	0	0	0
	0	7	242	249
	0	14	987	1001
	0	3	288	291

Peds: 31

Peds: 35



Peds: 30

Peds: 38

### Kingston Rd

Totals			
	2	0	0
	280	278	2
	640	625	15
	235	230	5

### West Approach

	Out	In	Total
	1517	1114	2631
	24	20	44
	0	0	0
<b>Totals</b>	<b>1541</b>	<b>1134</b>	<b>2675</b>

Totals				
	276	1247	428	2
	0	13	4	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	1953	1368	3321
	17	40	57
	0	0	0
<b>Totals</b>	<b>1970</b>	<b>1408</b>	<b>3378</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Brock Rd & Kingston Rd  
**Site Code:** 2330600011  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1363	1466	2829
	12	9	21
	0	0	0
<b>Totals</b>	<b>1375</b>	<b>1475</b>	<b>2850</b>

### Brock Rd

	0	0	0	0
	1	9	2	0
	205	927	231	0
<b>Totals</b>	<b>206</b>	<b>936</b>	<b>233</b>	<b>0</b>

### East Approach

	Out	In	Total
	1290	1307	2597
	9	13	22
	0	0	0
<b>Totals</b>	<b>1299</b>	<b>1320</b>	<b>2619</b>

### Kingston Rd

				Totals
	0	0	1	1
	0	3	203	206
	0	9	714	723
	0	2	389	391

Peds: 24

Peds: 31



Peds: 29

### Kingston Rd

Totals			
	2	0	0
	271	0	0
	781	7	0
	245	2	0

Peds: 38

### West Approach

	Out	In	Total
	1307	1248	2555
	14	9	23
	0	0	0
<b>Totals</b>	<b>1321</b>	<b>1257</b>	<b>2578</b>

Totals				
	269	998	362	0
	1	6	2	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	1620	1559	3179
	9	13	22
	0	0	0
<b>Totals</b>	<b>1629</b>	<b>1572</b>	<b>3201</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:45:00  
To: 08:45:00

**Intersection:** Brock Rd & Pickering Pkwy  
**Site Code:** 2330600002  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1776	697	2473
	54	64	118
	0	0	0
<b>Totals</b>	<b>1830</b>	<b>761</b>	<b>2591</b>

### Brock Rd

	0	0	0	0
	8	45	1	0
	185	1548	43	0
<b>Totals</b>	<b>193</b>	<b>1593</b>	<b>44</b>	<b>0</b>

### East Approach

	Out	In	Total
	362	279	641
	40	28	68
	0	0	0
<b>Totals</b>	<b>402</b>	<b>307</b>	<b>709</b>

### Pickering Pkwy

				Totals
	0	0	0	<b>0</b>
	0	1	53	<b>54</b>
	0	3	54	<b>57</b>
	0	3	234	<b>237</b>

Peds: 9

Peds: 8



Peds: 2

### Pickering Pkwy

Totals			
<b>0</b>	0	0	0
<b>38</b>	35	3	0
<b>67</b>	63	4	0
<b>297</b>	264	33	0

Peds: 3

### West Approach

	Out	In	Total
	341	387	728
	7	19	26
	0	0	0
<b>Totals</b>	<b>348</b>	<b>406</b>	<b>754</b>

Totals				
<b>146</b>	<b>139</b>	<b>609</b>	<b>182</b>	<b>0</b>
	7	60	24	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	930	2046	2976
	91	81	172
	0	0	0
<b>Totals</b>	<b>1021</b>	<b>2127</b>	<b>3148</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:45:00  
To: 17:45:00

**Intersection:** Brock Rd & Pickering Pkwy  
**Site Code:** 2330600002  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1058	1766	2824
	37	22	59
	0	0	0
<b>Totals</b>	<b>1095</b>	<b>1788</b>	<b>2883</b>

### Brock Rd

	0	0	0	0
	1	35	1	0
	74	829	155	0
<b>Totals</b>	<b>75</b>	<b>864</b>	<b>156</b>	<b>0</b>

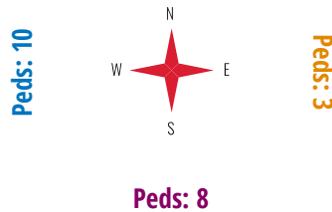
### East Approach

	Out	In	Total
	689	725	1414
	12	19	31
	0	0	0
<b>Totals</b>	<b>701</b>	<b>744</b>	<b>1445</b>

### Pickering Pkwy

				Totals
	0	0	0	0
	0	0	81	81
	0	2	206	208
	0	2	242	244

Peds: 13



### Pickering Pkwy

Totals			
0	0	0	0
171	171	0	0
189	186	3	0
341	332	9	0

### West Approach

	Out	In	Total
	529	531	1060
	4	8	12
	0	0	0
<b>Totals</b>	<b>533</b>	<b>539</b>	<b>1072</b>

Totals				
275	271	1514	364	0
4	4	22	16	0
0	0	0	0	0

Brock Rd

### South Approach

Out	In	Total
2149	1403	3552
42	46	88
0	0	0
<b>2191</b>	<b>1449</b>	<b>3640</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Brock Rd & Pickering Pkwy  
**Site Code:** 2330600012  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1183	1287	2470
	9	11	20
	0	1	1
<b>Totals</b>	<b>1192</b>	<b>1299</b>	<b>2491</b>

### Brock Rd

	0	0	0	0
	0	8	1	0
	91	889	203	0
<b>Totals</b>	<b>91</b>	<b>897</b>	<b>204</b>	<b>0</b>

### East Approach

	Out	In	Total
	969	755	1724
	7	8	15
	1	1	2
<b>Totals</b>	<b>977</b>	<b>764</b>	<b>1741</b>

### Pickering Pkwy

				Totals
	0	0	0	<b>0</b>
	0	0	76	<b>76</b>
	0	1	218	<b>219</b>
	1	2	203	<b>206</b>

**Peds: 20**

**Peds: 4**



**Peds: 0**

### Pickering Pkwy

Totals			
<b>0</b>	0	0	0
<b>186</b>	184	1	1
<b>217</b>	216	1	0
<b>574</b>	569	5	0

**Peds: 10**

### West Approach

	Out	In	Total
	497	532	1029
	3	4	7
	1	0	1
<b>Totals</b>	<b>501</b>	<b>536</b>	<b>1037</b>

Totals				
<b>228</b>	<b>1037</b>	<b>341</b>	<b>5</b>	
	225	1027	334	5
	3	10	6	0
	0	0	1	0

### Brock Rd

### South Approach

	Out	In	Total
	1591	1666	3257
	19	15	34
	1	1	2
<b>Totals</b>	<b>1611</b>	<b>1682</b>	<b>3293</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:45:00  
To: 08:45:00

**Intersection:** Brock Rd & RIRO Access (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600003  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1920	919	2839
	75	101	176
	0	0	0
<b>Totals</b>	<b>1995</b>	<b>1020</b>	<b>3015</b>

### Brock Rd

	0	0	0
	75	0	0
	1920	0	0
<b>Totals</b>	<b>1995</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	8	53	61
	0	0	0
	0	0	0
<b>Totals</b>	<b>8</b>	<b>53</b>	<b>61</b>

Peds: 0

Peds: 0



Peds: 1

Peds: 0

### RIRO Access (The Shops at Pickering Ridge Plaza)

Totals			
	0	0	0
	8	8	0
	0	0	0

Totals			
	911	53	0
	101	0	0
	0	0	0

### South Approach

	Out	In	Total
	964	1920	2884
	101	75	176
	0	0	0
<b>Totals</b>	<b>1065</b>	<b>1995</b>	<b>3060</b>

Brock Rd

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 17:00:00  
To: 18:00:00

**Intersection:** Brock Rd & RIRO Access (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600003  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1499	2055	3554
	44	38	82
	0	0	0
<b>Totals</b>	<b>1543</b>	<b>2093</b>	<b>3636</b>

### Brock Rd

	0	0	0
	44	0	0
	1499	0	0
<b>Totals</b>	<b>1543</b>	<b>0</b>	<b>0</b>



Peds: 0

Peds: 0



Peds: 0

Peds: 0

	Northbound	Eastbound	Southbound
<b>Totals</b>	<b>2034</b>	<b>224</b>	<b>0</b>
	1996	223	0
	38	1	0
	0	0	0

Brock Rd

### East Approach

	Out	In	Total
	59	223	282
	0	1	1
	0	0	0
<b>Totals</b>	<b>59</b>	<b>224</b>	<b>283</b>

### RIRO Access (The Shops at Pickering Ridge Plaza)

	Totals			
	0	0	0	0
	59	59	0	0
	0	0	0	0

### South Approach

	Out	In	Total
	2219	1499	3718
	39	44	83
	0	0	0
<b>Totals</b>	<b>2258</b>	<b>1543</b>	<b>3801</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 13:00:00  
To: 14:00:00

**Intersection:** Brock Rd & RIRO Access (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600013  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1783	1692	3475
	17	17	34
	0	0	0
<b>Totals</b>	<b>1800</b>	<b>1709</b>	<b>3509</b>

### Brock Rd

	0	0	0
	17	0	0
	1783	0	0
<b>Totals</b>	<b>1800</b>	<b>0</b>	<b>0</b>



Peds: 0

Peds: 0



Peds: 3

Peds: 0

	↑	→	↻
<b>Totals</b>	<b>1619</b>	<b>285</b>	<b>0</b>
	1602	281	0
	17	4	0
	0	0	0

Brock Rd

### East Approach

	Out	In	Total
	90	281	371
	0	4	4
	0	0	0
<b>Totals</b>	<b>90</b>	<b>285</b>	<b>375</b>

### RIRO Access (The Shops at Pickering Ridge Plaza)

	Totals			
	0	0	0	0
	90	90	0	0
	0	0	0	0

### South Approach

	Out	In	Total
	1883	1783	3666
	21	17	38
	0	0	0
<b>Totals</b>	<b>1904</b>	<b>1800</b>	<b>3704</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:30:00  
To: 08:30:00

**Intersection:** Brock Rd & Hwy 401 WB Ramp Terminal  
**Site Code:** 2330600004  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	2215	948	3163
	82	110	192
	0	0	0
<b>Totals</b>	<b>2297</b>	<b>1058</b>	<b>3355</b>

### Brock Rd

	0	0	0	0
	43	39	0	0
	1035	1180	0	0
<b>Totals</b>	<b>1078</b>	<b>1219</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	850	160	1010
	40	71	111
	0	0	0
<b>Totals</b>	<b>890</b>	<b>231</b>	<b>1121</b>

### Hwy 401 WB Ramp Terminal

				Totals
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0

Peds: 0

Peds: 0



Peds: 1

Peds: 0

### Hwy 401 WB Ramp Terminal

Totals			
0	0	0	0
259	241	18	0
0	0	0	0
631	609	22	0

### West Approach

	Out	In	Total
	0	1035	1035
	0	43	43
	0	0	0
<b>Totals</b>	<b>0</b>	<b>1078</b>	<b>1078</b>

Totals				
0	799	231	0	
	0	707	160	0
	0	92	71	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	867	1789	2656
	163	61	224
	0	0	0
<b>Totals</b>	<b>1030</b>	<b>1850</b>	<b>2880</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 17:00:00  
To: 18:00:00

**Intersection:** Brock Rd & Hwy 401 WB Ramp Terminal  
**Site Code:** 2330600004  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1503	2320	3823
	41	41	82
	0	0	0
<b>Totals</b>	<b>1544</b>	<b>2361</b>	<b>3905</b>

### Brock Rd

	0	0	0	0
	11	30	0	0
	659	844	0	0
<b>Totals</b>	<b>670</b>	<b>874</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	677	542	1219
	58	43	101
	0	0	0
<b>Totals</b>	<b>735</b>	<b>585</b>	<b>1320</b>

### Hwy 401 WB Ramp Terminal

				Totals
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0

Peds: 0

Peds: 0



Peds: 4

Peds: 0

### Hwy 401 WB Ramp Terminal

Totals			
	0	0	0
	456	445	11
	0	0	0
	279	232	47

### West Approach

	Out	In	Total
	0	659	659
	0	11	11
	0	0	0
<b>Totals</b>	<b>0</b>	<b>670</b>	<b>670</b>

Totals				
	0	1875	542	0
	0	30	43	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	2417	1076	3493
	73	77	150
	0	0	0
<b>Totals</b>	<b>2490</b>	<b>1153</b>	<b>3643</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 13:00:00  
To: 14:00:00

**Intersection:** Brock Rd & Hwy 401 WB Ramp Terminal  
**Site Code:** 2330600014  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1788	1876	3664
	17	19	36
	0	0	0
<b>Totals</b>	<b>1805</b>	<b>1895</b>	<b>3700</b>

### Brock Rd

	0	0	0	0
	11	6	0	0
	807	981	0	0
<b>Totals</b>	<b>818</b>	<b>987</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	682	262	944
	10	15	25
	0	0	0
<b>Totals</b>	<b>692</b>	<b>277</b>	<b>969</b>

### Hwy 401 WB Ramp Terminal

	Totals
	0
	0
	0

Peds: 0



### Hwy 401 WB Ramp Terminal

Totals			
0	0	0	0
504	499	5	0
0	0	0	0
188	183	5	0

### West Approach

	Out	In	Total
	0	807	807
	0	11	11
	0	0	0
<b>Totals</b>	<b>0</b>	<b>818</b>	<b>818</b>

Totals				
0	1391	277	0	
	0	1377	262	0
	0	14	15	0
	0	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	1639	1164	2803
	29	11	40
	0	0	0
<b>Totals</b>	<b>1668</b>	<b>1175</b>	<b>2843</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:30:00  
To: 08:30:00

**Intersection:** Brock Rd & Hwy 401 EB Ramp Terminal  
**Site Code:** 2330600005  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1790	867	2657
	62	163	225
	0	0	0
<b>Totals</b>	<b>1852</b>	<b>1030</b>	<b>2882</b>

### Brock Rd

	0	0	0
	45	17	0
	1327	463	0
<b>Totals</b>	<b>1372</b>	<b>480</b>	<b>0</b>

### East Approach

	Out	In	Total
	0	737	737
	0	57	57
	0	0	0
<b>Totals</b>	<b>0</b>	<b>794</b>	<b>794</b>

### Hwy 401 EB Ramp Terminal

				Totals
	0	29	469	<b>498</b>
	0	0	0	<b>0</b>
	0	76	617	<b>693</b>

Peds: 0

### Hwy 401 EB Ramp Terminal

Totals			

Peds: 7



Peds: 1

Peds: 0

### West Approach

	Out	In	Total
	1086	0	1086
	105	0	105
	0	0	0
<b>Totals</b>	<b>1191</b>	<b>0</b>	<b>1191</b>



Totals	532	314	0
	398	274	0
	134	40	0
	0	0	0

Brock Rd

### South Approach

	Out	In	Total
	672	1944	2616
	174	121	295
	0	0	0
<b>Totals</b>	<b>846</b>	<b>2065</b>	<b>2911</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:15:00  
To: 17:15:00

**Intersection:** Brock Rd & Hwy 401 EB Ramp Terminal  
**Site Code:** 2330600005  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	956	2472	3428
	103	86	189
	0	1	1
<b>Totals</b>	<b>1059</b>	<b>2559</b>	<b>3618</b>

### Brock Rd

	0	0	0
	93	10	0
	664	288	4
<b>Totals</b>	<b>757</b>	<b>298</b>	<b>4</b>

### East Approach

	Out	In	Total
	0	646	646
	0	27	27
	0	0	0
<b>Totals</b>	<b>0</b>	<b>673</b>	<b>673</b>

### Hwy 401 EB Ramp Terminal

				Totals
	0	13	1079	<b>1092</b>
	0	2	0	<b>2</b>
	0	73	408	<b>481</b>

Peds: 0

Peds: 5



Peds: 7

Peds: 0

### Hwy 401 EB Ramp Terminal

Totals			

### West Approach

	Out	In	Total
	1487	0	1487
	88	0	88
	0	0	0
<b>Totals</b>	<b>1575</b>	<b>0</b>	<b>1575</b>

Totals			
	1389	358	0
	73	15	0
	1	0	0

Brock Rd

### South Approach

	Out	In	Total
	1747	1072	2819
	88	166	254
	1	0	1
<b>Totals</b>	<b>1836</b>	<b>1238</b>	<b>3074</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 13:00:00  
To: 14:00:00

**Intersection:** Brock Rd & Hwy 401 EB Ramp Terminal  
**Site Code:** 2330600015  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Brock Rd runs N/S

### North Approach

	Out	In	Total
	1164	1639	2803
	10	29	39
	0	0	0
<b>Totals</b>	<b>1174</b>	<b>1668</b>	<b>2842</b>

### Brock Rd

	0	0	0
	7	3	0
	627	534	3
<b>Totals</b>	<b>634</b>	<b>537</b>	<b>3</b>

### East Approach

	Out	In	Total
	0	783	783
	0	6	6
	0	0	0
<b>Totals</b>	<b>0</b>	<b>789</b>	<b>789</b>

### Hwy 401 EB Ramp Terminal

				Totals
	0	7	891	<b>898</b>
	0	0	0	<b>0</b>
	0	20	408	<b>428</b>

Peds: 0

Peds: 0



Peds: 0

Peds: 0

### Hwy 401 EB Ramp Terminal

Totals			

### West Approach

	Out	In	Total
	1299	0	1299
	27	0	27
	0	0	0
<b>Totals</b>	<b>1326</b>	<b>0</b>	<b>1326</b>

Totals			
	745	249	0
	22	3	0
	0	0	0

**Brock Rd**

### South Approach

	Out	In	Total
	994	1035	2029
	25	27	52
	0	0	0
<b>Totals</b>	<b>1019</b>	<b>1062</b>	<b>2081</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Pickering Pkwy & Canadian Tire - Walmart Site Access  
**Site Code:** 2330600006  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	126	165	291
	6	7	13
	0	0	0
<b>Totals</b>	<b>132</b>	<b>172</b>	<b>304</b>

### Commerical Entrance

	0	0	0	0
	4	0	2	0
	100	7	19	0
<b>Totals</b>	<b>104</b>	<b>7</b>	<b>21</b>	<b>0</b>

### East Approach

	Out	In	Total
	237	166	403
	33	23	56
	0	0	0
<b>Totals</b>	<b>270</b>	<b>189</b>	<b>459</b>

### Pickering Pkwy

			Totals	
0	0	1	1	
0	6	130	136	
0	21	140	161	
0	0	26	26	

Peds: 7

Peds: 2



Peds: 1

Peds: 2

### Pickering Pkwy

Totals			
0	0	0	0
31	30	1	0
236	204	32	0
3	3	0	0

### West Approach

	Out	In	Total
	297	336	633
	27	37	64
	0	0	0
<b>Totals</b>	<b>324</b>	<b>373</b>	<b>697</b>

Totals				
32	5	7	0	
31	5	7	0	
1	0	0	0	
0	0	0	0	

Commerical Entrance

### South Approach

Out	In	Total
43	36	79
1	0	1
0	0	0
<b>44</b>	<b>36</b>	<b>80</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:45:00  
To: 17:45:00

**Intersection:** Pickering Pkwy & Canadian Tire - Walmart Site Access  
**Site Code:** 2330600006  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	249	344	593
	2	2	4
	0	0	0
<b>Totals</b>	<b>251</b>	<b>346</b>	<b>597</b>

### Commerical Entrance

	0	0	0	0
	1	0	1	0
	180	13	56	0
<b>Totals</b>	<b>181</b>	<b>13</b>	<b>57</b>	<b>0</b>

### East Approach

	Out	In	Total
	429	500	929
	8	19	27
	0	0	0
<b>Totals</b>	<b>437</b>	<b>519</b>	<b>956</b>

### Pickering Pkwy

				Totals
	0	0	4	<b>4</b>
	0	2	277	<b>279</b>
	0	18	418	<b>436</b>
	0	0	45	<b>45</b>

Peds: 5

Peds: 3



Peds: 4

Peds: 11

### Pickering Pkwy

Totals			
<b>0</b>	0	0	0
<b>46</b>	46	0	0
<b>384</b>	376	8	0
<b>7</b>	7	0	0

### West Approach

	Out	In	Total
	744	624	1368
	20	10	30
	0	0	0
<b>Totals</b>	<b>764</b>	<b>634</b>	<b>1398</b>

Totals				
<b>65</b>	64	21	26	0
<b>1</b>	1	0	0	0
<b>0</b>	0	0	0	0

Commerical Entrance

### South Approach

Out	In	Total
111	65	176
1	0	1
0	0	0
<b>112</b>	<b>65</b>	<b>177</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Pickering Pkwy & Canadian Tire - Walmart Site Access  
**Site Code:** 2330600016  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	430	459	889
	2	2	4
	0	0	0
<b>Totals</b>	<b>432</b>	<b>461</b>	<b>893</b>

### Commerical Entrance

	0	0	0	0
	1	0	1	0
	324	34	72	0
<b>Totals</b>	<b>325</b>	<b>34</b>	<b>73</b>	<b>0</b>

### East Approach

	Out	In	Total
	635	441	1076
	8	9	17
	0	0	0
<b>Totals</b>	<b>643</b>	<b>450</b>	<b>1093</b>

### Pickering Pkwy

			Totals	
0	0	1	1	
0	0	347	347	
0	8	341	349	
0	0	69	69	

Peds: 6

Peds: 2



Peds: 1

Peds: 8

### Pickering Pkwy

Totals			
0	0	0	0
68	67	1	0
554	547	7	0
21	21	0	0

### West Approach

	Out	In	Total
	758	990	1748
	8	8	16
	0	0	0
<b>Totals</b>	<b>766</b>	<b>998</b>	<b>1764</b>

Totals				
118	46	28	0	
118	45	28	0	
0	1	0	0	
0	0	0	0	

Commerical Entrance

### South Approach

Out	In	Total
191	124	315
1	0	1
0	0	0
<b>192</b>	<b>124</b>	<b>316</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Pickering Pkwy & Site Access 1 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600007  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	45	49	94
	0	0	0
	0	0	0
<b>Totals</b>	<b>45</b>	<b>49</b>	<b>94</b>

### Commerical Entrance

	0	0	0	0
	0	0	0	0
	30	3	12	0
<b>Totals</b>	<b>30</b>	<b>3</b>	<b>12</b>	<b>0</b>

### East Approach

	Out	In	Total
	198	134	332
	32	24	56
	0	0	0
<b>Totals</b>	<b>230</b>	<b>158</b>	<b>388</b>

### Pickering Pkwy

				Totals	
0	0	0	0	0	
0	0	22	22	22	
0	23	119	142	142	
0	0	25	25	25	

Peds: 3

Peds: 1



Peds: 1

Peds: 0

### Pickering Pkwy

Totals			
0	0	0	0
24	24	0	0
198	166	32	0
8	8	0	0

### West Approach

	Out	In	Total
	166	237	403
	23	33	56
	0	0	0
<b>Totals</b>	<b>189</b>	<b>270</b>	<b>459</b>

Totals				
42	3	4	0	
41	3	3	0	
1	0	1	0	
0	0	0	0	

Commerical Entrance

### South Approach

	Out	In	Total
	47	36	83
	2	0	2
	0	0	0
<b>Totals</b>	<b>49</b>	<b>36</b>	<b>85</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 17:00:00  
To: 18:00:00

**Intersection:** Pickering Pkwy & Site Access 1 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600007  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	136	132	268
	0	0	0
	0	0	0
<b>Totals</b>	<b>136</b>	<b>132</b>	<b>268</b>

### Commerical Entrance

	0	0	0	0
	0	0	0	0
	75	9	52	0
<b>Totals</b>	<b>75</b>	<b>9</b>	<b>52</b>	<b>0</b>

### East Approach

	Out	In	Total
	303	395	698
	2	16	18
	0	0	0
<b>Totals</b>	<b>305</b>	<b>411</b>	<b>716</b>

### Pickering Pkwy

			Totals	
0	0	0	0	
0	0	41	41	
0	15	315	330	
0	6	141	147	

Peds: 3

Peds: 0



Peds: 5

Peds: 5

### Pickering Pkwy

Totals			
0	0	0	0
57	57	0	0
228	226	2	0
20	20	0	0

### West Approach

	Out	In	Total
	497	434	931
	21	5	26
	0	0	0
<b>Totals</b>	<b>518</b>	<b>439</b>	<b>957</b>

Totals				
<b>136</b>	<b>34</b>	<b>29</b>	<b>0</b>	
	133	34	28	0
	3	0	1	0
	0	0	0	0

Commerical Entrance

### South Approach

	Out	In	Total
	195	170	365
	4	6	10
	0	0	0
<b>Totals</b>	<b>199</b>	<b>176</b>	<b>375</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Pickering Pkwy & Site Access 1 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600017  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	170	186	356
	1	1	2
	0	0	0
<b>Totals</b>	<b>171</b>	<b>187</b>	<b>358</b>

### Commerical Entrance

	0	0	0	0
	0	0	1	0
	104	15	51	0
<b>Totals</b>	<b>104</b>	<b>15</b>	<b>52</b>	<b>0</b>

### East Approach

	Out	In	Total
	460	359	819
	7	10	17
	0	0	0
<b>Totals</b>	<b>467</b>	<b>369</b>	<b>836</b>

### Pickering Pkwy

			Totals	
0	0	0	0	
0	0	35	35	
0	9	262	271	
0	0	172	172	

Peds: 1

Peds: 4



Peds: 6

Peds: 2

### Pickering Pkwy

Totals			
0	0	0	0
101	100	1	0
343	338	5	0
23	22	1	0

### West Approach

	Out	In	Total
	469	658	1127
	9	6	15
	0	0	0
<b>Totals</b>	<b>478</b>	<b>664</b>	<b>1142</b>

<b>Totals</b>	<b>217</b>	<b>51</b>	<b>46</b>	<b>0</b>
	216	51	46	0
	1	0	0	0
	0	0	0	0

Commerical Entrance

### South Approach

	Out	In	Total
	313	209	522
	1	1	2
	0	0	0
<b>Totals</b>	<b>314</b>	<b>210</b>	<b>524</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Pickering Pkwy & Site Access 2 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600008  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	3	6	9
	1	0	1
	0	0	0
<b>Totals</b>	<b>4</b>	<b>6</b>	<b>10</b>

### Commerical Entrance

	0	0	0	0
	1	0	0	0
	0	1	2	0
<b>Totals</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>

### East Approach

	Out	In	Total
	211	139	350
	31	24	55
	0	0	0
<b>Totals</b>	<b>242</b>	<b>163</b>	<b>405</b>

### Pickering Pkwy

			Totals
0	0	0	0
0	0	0	0
0	24	127	151
0	0	8	8

Peds: 2

Peds: 2



Peds: 1

Peds: 1

### Pickering Pkwy

Totals			
0	0	0	0
6	6	0	0
219	188	31	0
17	17	0	0

### West Approach

	Out	In	Total
	135	198	333
	24	33	57
	0	0	0
<b>Totals</b>	<b>159</b>	<b>231</b>	<b>390</b>

Totals			
11	0	10	0
10	0	0	0
0	0	0	0

Commerical Entrance

### South Approach

	Out	In	Total
	20	26	46
	1	0	1
	0	0	0
<b>Totals</b>	<b>21</b>	<b>26</b>	<b>47</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 17:00:00  
To: 18:00:00

**Intersection:** Pickering Pkwy & Site Access 2 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600008  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	14	9	23
	0	0	0
	0	0	0
<b>Totals</b>	<b>14</b>	<b>9</b>	<b>23</b>

### Commerical Entrance

	0	0	0	0
	0	0	0	0
	5	3	6	0
<b>Totals</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>0</b>

### East Approach

	Out	In	Total
	261	431	692
	2	15	17
	0	0	0
<b>Totals</b>	<b>263</b>	<b>446</b>	<b>709</b>

### Pickering Pkwy

				Totals
	0	0	1	1
	0	0	4	4
	0	15	353	368
	0	0	36	36

Peds: 4

Peds: 1



Peds: 0

Peds: 1

### Pickering Pkwy

Totals			
	0	0	0
	3	3	0
	209	207	2
	51	51	0

### West Approach

	Out	In	Total
	394	301	695
	15	3	18
	0	0	0
<b>Totals</b>	<b>409</b>	<b>304</b>	<b>713</b>

Totals				
	89	2	72	0
	1	0	0	0
	0	0	0	0

Commerical Entrance

### South Approach

	Out	In	Total
	162	90	252
	1	0	1
	0	0	0
<b>Totals</b>	<b>163</b>	<b>90</b>	<b>253</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Pickering Pkwy & Site Access 2 (The Shops at Pickering Ridge Plaza)  
**Site Code:** 2330600018  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Pickering Pkwy runs E/W

### North Approach

	Out	In	Total
	23	27	50
	0	2	2
	0	0	0
<b>Totals</b>	<b>23</b>	<b>29</b>	<b>52</b>

### Commerical Entrance

	0	0	0	0
	0	0	0	0
	6	2	15	0
<b>Totals</b>	<b>6</b>	<b>2</b>	<b>15</b>	<b>0</b>

### East Approach

	Out	In	Total
	382	383	765
	6	8	14
	0	0	0
<b>Totals</b>	<b>388</b>	<b>391</b>	<b>779</b>

### Pickering Pkwy

				Totals
	0	0	0	<b>0</b>
	0	2	9	<b>11</b>
	0	8	283	<b>291</b>
	0	0	66	<b>66</b>

Peds: 0

Peds: 2



Peds: 2

Peds: 0

### Pickering Pkwy

Totals			
<b>0</b>	0	0	0
<b>18</b>	18	0	0
<b>327</b>	321	6	0
<b>43</b>	43	0	0

### West Approach

	Out	In	Total
	358	461	819
	10	6	16
	0	0	0
<b>Totals</b>	<b>368</b>	<b>467</b>	<b>835</b>

Totals				
<b>134</b>	<b>134</b>	<b>0</b>	<b>85</b>	<b>0</b>
	134	0	85	0
	0	0	0	0
	0	0	0	0

Commerical Entrance

### South Approach

	Out	In	Total
	219	111	330
	0	0	0
	0	0	0
<b>Totals</b>	<b>219</b>	<b>111</b>	<b>330</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:45:00  
To: 08:45:00

**Intersection:** Notion Rd & Pickering Pkwy  
**Site Code:** 2330600009  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Commerical Entrance runs E/W

### North Approach

	Out	In	Total
	144	111	255
	23	16	39
	0	0	0
<b>Totals</b>	<b>167</b>	<b>127</b>	<b>294</b>

### Notion Rd

	0	0	0	0
	17	0	6	0
	144	0	0	0
<b>Totals</b>	<b>161</b>	<b>0</b>	<b>6</b>	<b>0</b>

### East Approach

	Out	In	Total
	0	0	0
	15	17	32
	0	0	0
<b>Totals</b>	<b>15</b>	<b>17</b>	<b>32</b>

### Pickering Pkwy

				Totals
	0	0	0	<b>0</b>
	0	10	111	<b>121</b>
	0	11	0	<b>11</b>
	0	0	0	<b>0</b>

Peds: 0

Peds: 0



Peds: 0

Peds: 0

### Commerical Entrance

Totals			
<b>0</b>	0	0	0
<b>6</b>	0	6	0
<b>9</b>	0	9	0
<b>0</b>	0	0	0

### West Approach

	Out	In	Total
	111	144	255
	21	26	47
	0	0	0
<b>Totals</b>	<b>132</b>	<b>170</b>	<b>302</b>

Totals				
<b>0</b>	0	0	0	0
<b>0</b>	0	0	0	0
<b>0</b>	0	0	0	0

Notion Rd

### South Approach

Out	In	Total
0	0	0
0	0	0
0	0	0
<b>0</b>	<b>0</b>	<b>0</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:00:00  
To: 17:00:00

**Intersection:** Notion Rd & Pickering Pkwy  
**Site Code:** 2330600009  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Commerical Entrance runs E/W

### North Approach

	Out	In	Total
	189	331	520
	5	13	18
	0	0	0
<b>Totals</b>	<b>194</b>	<b>344</b>	<b>538</b>

### Notion Rd

	0	0	0	0
	3	0	2	0
	189	0	0	0
<b>Totals</b>	<b>192</b>	<b>0</b>	<b>2</b>	<b>0</b>

### East Approach

	Out	In	Total
	5	0	5
	7	5	12
	0	0	0
<b>Totals</b>	<b>12</b>	<b>5</b>	<b>17</b>

### Pickering Pkwy

				Totals
	0	0	1	1
	0	12	328	340
	0	3	0	3
	0	0	0	0

Peds: 0

Peds: 0



Peds: 0

Peds: 1

### Commerical Entrance

Totals			
0	0	0	0
3	2	1	0
7	1	6	0
2	2	0	0

### West Approach

	Out	In	Total
	329	191	520
	15	9	24
	0	0	0
<b>Totals</b>	<b>344</b>	<b>200</b>	<b>544</b>

Totals				
0	1	0	0	
0	0	0	0	
0	0	0	0	

Notion Rd

### South Approach

Out	In	Total
1	2	3
0	0	0
0	0	0
<b>Totals</b>	<b>2</b>	<b>3</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 13:00:00  
To: 14:00:00

**Intersection:** Notion Rd & Pickering Pkwy  
**Site Code:** 2330600019  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Commerical Entrance runs E/W

### North Approach

	Out	In	Total
	255	272	527
	5	7	12
	0	0	0
<b>Totals</b>	<b>260</b>	<b>279</b>	<b>539</b>

### Notion Rd

	0	0	0	0
	5	0	0	0
	255	0	0	0
<b>Totals</b>	<b>260</b>	<b>0</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	0	0	0
	0	1	1
	0	0	0
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>1</b>

### Pickering Pkwy

				Totals
	0	0	0	0
	0	7	272	279
	0	1	0	1
	0	0	0	0

Peds: 3

Peds: 0



Peds: 0

Peds: 0

### Commerical Entrance

Totals			
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

### West Approach

	Out	In	Total
	272	255	527
	8	5	13
	0	0	0
<b>Totals</b>	<b>280</b>	<b>260</b>	<b>540</b>

Totals				
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Notion Rd

### South Approach

Out	In	Total
0	0	0
0	0	0
0	0	0
<b>0</b>	<b>0</b>	<b>0</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 07:45:00  
To: 08:45:00

**Intersection:** Kingston Rd & Notion Rd  
**Site Code:** 2330600010  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Kingston Rd runs E/W

### North Approach

	Out	In	Total
	3	2	5
	0	0	0
	0	0	0
<b>Totals</b>	<b>3</b>	<b>2</b>	<b>5</b>

### Commercial Entrance

	0	0	0	0
	0	0	0	0
	2	0	1	0
<b>Totals</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>

### East Approach

	Out	In	Total
	1085	699	1784
	43	42	85
	0	0	0
<b>Totals</b>	<b>1128</b>	<b>741</b>	<b>1869</b>

### Kingston Rd

				Totals
	0	0	1	1
	0	0	2	2
	0	30	605	635
	0	4	18	22

Peds: 7

Peds: 1



Peds: 2

Peds: 7

### Kingston Rd

Totals			
	0	0	0
	0	0	0
	965	933	32
	163	152	11

### West Approach

	Out	In	Total
	626	943	1569
	34	34	68
	0	0	0
<b>Totals</b>	<b>660</b>	<b>977</b>	<b>1637</b>

Totals				
	7	0	93	0
	2	0	12	0
	0	0	0	0

Notion Rd

### South Approach

	Out	In	Total
	100	170	270
	14	15	29
	0	0	0
<b>Totals</b>	<b>114</b>	<b>185</b>	<b>299</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 15:00:00  
To: 18:00:00

### One Hour Peak

From: 16:45:00  
To: 17:45:00

**Intersection:** Kingston Rd & Notion Rd  
**Site Code:** 2330600010  
**Count Date:** Sep 28, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Kingston Rd runs E/W

### North Approach

	Out	In	Total
	2	3	5
	0	0	0
	0	0	0
<b>Totals</b>	<b>2</b>	<b>3</b>	<b>5</b>

### Commercial Entrance

	0	0	0	0
	0	0	0	0
	2	0	0	0
<b>Totals</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

### East Approach

	Out	In	Total
	1096	1873	2969
	23	25	48
	0	0	0
<b>Totals</b>	<b>1119</b>	<b>1898</b>	<b>3017</b>

### Kingston Rd

				Totals
	0	0	0	0
	0	0	3	3
	0	20	1496	1516
<b>Totals</b>	<b>0</b>	<b>6</b>	<b>33</b>	<b>39</b>

Peds: 5

Peds: 4



Peds: 2

Peds: 9

### Kingston Rd

Totals			
	0	0	0
	0	0	0
	963	944	19
<b>Totals</b>	<b>156</b>	<b>152</b>	<b>4</b>

### West Approach

	Out	In	Total
	1532	973	2505
	26	19	45
	0	0	0
<b>Totals</b>	<b>1558</b>	<b>992</b>	<b>2550</b>

Totals				
	27	0	377	0
	0	0	5	0
	0	0	0	0

Notion Rd

### South Approach

	Out	In	Total
	404	185	589
	5	10	15
	0	0	0
<b>Totals</b>	<b>409</b>	<b>195</b>	<b>604</b>

- Cars

- Trucks

- Bicycles

### Comments

## Peak Hour Diagram

### Specified Period

From: 11:00:00  
To: 14:00:00

### One Hour Peak

From: 12:15:00  
To: 13:15:00

**Intersection:** Kingston Rd & Notion Rd  
**Site Code:** 2330600020  
**Count Date:** Sep 30, 2023

**Weather conditions:** Clear

**\*\* Signalized Intersection \*\***

**Major Road:** Kingston Rd runs E/W

### North Approach

	Out	In	Total
	2	6	8
	0	1	1
	0	0	0
<b>Totals</b>	<b>2</b>	<b>7</b>	<b>9</b>

### Commercial Entrance

	0	0	0	0
	0	0	0	0
	0	1	1	0
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>

### East Approach

	Out	In	Total
	1329	1489	2818
	10	12	22
	0	3	3
<b>Totals</b>	<b>1339</b>	<b>1504</b>	<b>2843</b>

### Kingston Rd

				Totals
	0	0	0	0
	0	1	4	5
	3	10	1187	1200
	0	1	69	70

Peds: 2

Peds: 1



Peds: 7

Peds: 6

### Kingston Rd

Totals			
	0	0	0
	0	0	0
	1101	1092	9
	238	237	1

### West Approach

	Out	In	Total
	1260	1136	2396
	12	9	21
	3	0	3
<b>Totals</b>	<b>1275</b>	<b>1145</b>	<b>2420</b>

Totals				
	44	2	301	0
	0	0	2	0
	0	0	0	0

Notion Rd

### South Approach

	Out	In	Total
	347	307	654
	2	2	4
	0	0	0
<b>Totals</b>	<b>349</b>	<b>309</b>	<b>658</b>

- Cars

- Trucks

- Bicycles

### Comments

## **APPENDIX 4**

### Existing Signal Timing Data



INTERSECTION SIGNAL TIMING REPORT			
Location	Kingston Road @ Brock Road		
Date	September 24/2020	C&E No.	33919792
Prepared for	WSP Canada Inc.		
Prepared by	C. Maw		

AM Peak 05:30-09:00

Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize								
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	12	44.4	10.8	52.8	10.8	45.6	19.2	44.4
Maximum Split (%)	10.0%	37.0%	9.0%	44.0%	9.0%	38.0%	16.0%	37.0%
Minimum Split (s)	9	38	9	40	9	38	9	40
Yellow Time (s)	3	4.2	3	4.2	3	4.2	3	4.2
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		21		22		21		22
Flash Dont Walk (s)		9		10		9		10

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 76.8 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 234: RR 1 (BROCK RD) & HIGHWAY 2



PM Peak 14:30-20:00

Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes							
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	13.2	45.6	19.2	42	14.4	44.4	15.6	45.6
Maximum Split (%)	11.0%	38.0%	16.0%	35.0%	12.0%	37.0%	13.0%	38.0%
Minimum Split (s)	9	38	9	40	9	38	9	40
Yellow Time (s)	3	4.2	3	4.2	3	4.2	3	4.2
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		21		22		21		22
Flash Dont Walk (s)		9		10		9		10

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 99.6 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 234: RR 1 (BROCK RD) & HWY 2 (KINGSTON RD)



Weekend Peak 09:00 - 21:00

Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	9.9	42.9	15.4	41.8	9.9	42.9	15.4	41.8
Maximum Split (%)	9.0%	39.0%	14.0%	38.0%	9.0%	39.0%	14.0%	38.0%
Minimum Split (s)	9	38	9	40	9	38	9	40
Yellow Time (s)	3	4.2	3	4.2	3	4.2	3	4.2
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		21		22		21		22
Flash Dont Walk (s)		9		10		9		10

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	120
Offset: 37.4 (34%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 234: RR 1 (BROCK RD) & HWY 2 (KINGSTON RD)



\*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.

INTERSECTION SIGNAL TIMING REPORT			
Location	Brock Rd. (RR 1) @ METC Entrance		
Date	September 24/2020	C&E No.	33919792
Prepared for	WSP Canada Inc.		Prepared by C. Maw

AM Peak 05:30-09:00

Phase Number	1	2	6
Movement	SBL	NBT	SBTL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	
Recall Mode	None	C-Max	C-Max
Maximum Split (s)	18	82	100
Maximum Split (%)	18.0%	82.0%	100.0%
Minimum Split (s)	12	28	28
Yellow Time (s)	3	4.2	4.2
All-Red Time (s)	0	1.5	1.5
Minimum Initial (s)	5	15	15
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)		14	14
Flash Dont Walk (s)		5	5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	40
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Splits and Phases: 292: RR 1 (BROCK RD) & METC ENTRANCE



PM Peak 14:30-19:00

Phase Number	1	2	6
Movement	SBL	NBT	SBTL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	
Recall Mode	None	C-Max	C-Max
Maximum Split (s)	15	85	100
Maximum Split (%)	15.0%	85.0%	100.0%
Minimum Split (s)	12	28	28
Yellow Time (s)	3	4.2	4.2
All-Red Time (s)	0	1.5	1.5
Minimum Initial (s)	5	15	15
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)		14	14
Flash Dont Walk (s)		5	5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Splits and Phases: 292: RR 1 (BROCK RD) & METC ENTRANCE



Weekend Peak 10:00 - 18:00

Phase Number	1	2	6
Movement	SBL	NBT	SBTL
Lead/Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	
Recall Mode	None	C-Max	C-Max
Maximum Split (s)	16	84	100
Maximum Split (%)	16.0%	84.0%	100.0%
Minimum Split (s)	12	28	28
Yellow Time (s)	3	4.2	4.2
All-Red Time (s)	0	1.5	1.5
Minimum Initial (s)	5	15	15
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)		14	14
Flash Dont Walk (s)		5	5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Splits and Phases: 292: RR 1 (BROCK RD) & METC ENTRANCE



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INTERSECTION SIGNAL TIMING REPORT			
Location	Brock Rd. (RR 1) and Pickering Pkwy.		
Date	September 24/2020	C&E No.	33919792
Prepared for	WSP Canada Inc.		Prepared by C. Maw

AM Peak 05:30-09:00

Phase Number	1	2	3	4	5	6	8
Movement	SBL NBTL	WBL EBTL	NBL SBTL	WBT			
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	None	None	None	C-Max	None
Maximum Split (s)	9	45	23	23	10	44	46
Maximum Split (%)	9.0%	45.0%	23.0%	23.0%	10.0%	44.0%	46.0%
Minimum Split (s)	9	28	16	38	9	31	34
Yellow Time (s)	3	4.2	3.7	3.7	3	4.2	3.7
All-Red Time (s)	0	1.9	2.8	2.8	0	1.9	2.8
Minimum Initial (s)	5	20	8	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0
Walk Time (s)		16		21		18	19
Flash Dont Walk (s)		5		9		6	7

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 135  
 Offset: 37 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Splits and Phases: 230: RR 1 (BROCK RD) & PICKERING PARKWAY



PM Peak 14:30-19:00

Phase Number	1	2	3	4	5	6	8
Movement	SBL NBTL	WBL EBTL	NBL SBTL	WBT			
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	None	None	None	C-Max	None
Maximum Split (s)	9	41	24	26	15	35	50
Maximum Split (%)	9.0%	41.0%	24.0%	26.0%	15.0%	35.0%	50.0%
Minimum Split (s)	9	28	16	38	9	31	34
Yellow Time (s)	3	4.2	3.7	3.7	3	4.2	3.7
All-Red Time (s)	0	1.9	2.8	2.8	0	1.9	2.8
Minimum Initial (s)	5	20	8	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0
Walk Time (s)		16		21		18	19
Flash Dont Walk (s)		5		9		6	7

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 105  
 Offset: 27 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Splits and Phases: 230: RR 1 (BROCK RD) & PICKERING PARKWAY



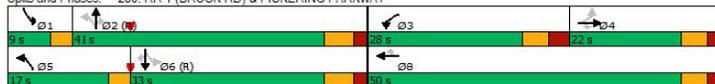
Weekend Peak 08:00 - 21:00

Phase Number	1	2	3	4	5	6	8
Movement	SBL NBTL	WBL EBTL	NBL SBTL	WBT			
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	None	None	None	C-Max	None
Maximum Split (s)	9	41	28	22	17	33	50
Maximum Split (%)	9.0%	41.0%	28.0%	22.0%	17.0%	33.0%	50.0%
Minimum Split (s)	9	28	16	38	9	31	34
Yellow Time (s)	3	4.2	3.7	3.7	3	4.2	3.7
All-Red Time (s)	0	1.9	2.8	2.8	0	1.9	2.8
Minimum Initial (s)	5	20	8	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0
Walk Time (s)		16		21		18	19
Flash Dont Walk (s)		5		9		6	7

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 105  
 Offset: 38 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Splits and Phases: 230: RR 1 (BROCK RD) & PICKERING PARKWAY



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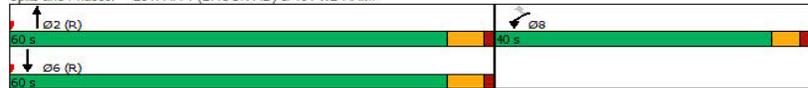
	<b>INTERSECTION SIGNAL TIMING REPORT</b>			
	Location	Brock Rd. (RR 1) and Hwy. 401 WB Ramp		
	Date	September 24/2020	C&E No.	33919792
Prepared for	WSP Canada Inc.			
		Prepared by	C. Maw	

**AM Peak 05:30-09:00**

	↑	↓	↘
Phase Number	2	6	8
Movement	NBT	SBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	C-Max	None
Maximum Split (s)	60	60	40
Maximum Split (%)	60.0%	60.0%	40.0%
Minimum Split (s)	27	27	17
Yellow Time (s)	4.4	4.4	3.6
All-Red Time (s)	1.4	1.4	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	13	13	
Flash Dorr Walk (s)	5	5	

<b>Intersection Summary</b>	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	65
Offset: 51 (51%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 231: RR 1 (BROCK RD) & 401 WB RAMP



**PM Peak 14:30-21:00**

	↑	↓	↘
Phase Number	2	6	8
Movement	NBT	SBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	C-Max	None
Maximum Split (s)	68	68	32
Maximum Split (%)	68.0%	68.0%	32.0%
Minimum Split (s)	27	27	17
Yellow Time (s)	4.4	4.4	3.6
All-Red Time (s)	1.4	1.4	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	13	13	
Flash Dorr Walk (s)	5	5	

<b>Intersection Summary</b>	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	140
Offset: 66 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 231: RR 1 (BROCK RD) & 401 WB RAMP



**Weekend Peak 08:00 - 21:00**

	↑	↓	↘
Phase Number	2	6	8
Movement	NBT	SBT	WBL
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	C-Max	None
Maximum Split (s)	65	65	35
Maximum Split (%)	65.0%	65.0%	35.0%
Minimum Split (s)	27	27	17
Yellow Time (s)	4.4	4.4	3.6
All-Red Time (s)	1.4	1.4	2.2
Minimum Initial (s)	20	20	8
Vehicle Extension (s)	3	3	3
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	13	13	
Flash Dorr Walk (s)	5	5	

<b>Intersection Summary</b>	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 231: RR 1 (BROCK RD) & 401 WB RAMP



*\*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*

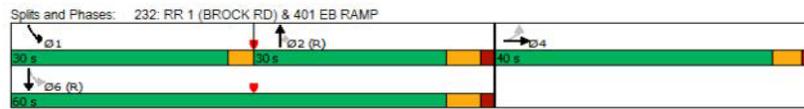
INTERSECTION SIGNAL TIMING REPORT			
Location	Brock Rd. (RR 1) and Hwy. 401 EB Ramp		
Date	September 24/2020	C&E No.	33919792
Prepared for	WSP Canada Inc.		Prepared by C. Maw

AM Peak 05:30-09:00

Phase Number	1	2	4	6
Movement	SBL	NBT	EBTL	SBTL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max
Maximum Split (s)	30	30	40	60
Maximum Split (%)	30.0%	30.0%	40.0%	60.0%
Minimum Split (s)	9	27	17	27
Yellow Time (s)	3	4.2	3.6	4.2
All-Red Time (s)	0	1.8	2	1.8
Minimum Initial (s)	5	20	8	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		15		15
Flash Dont Walk (s)		5		5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 86 (86%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

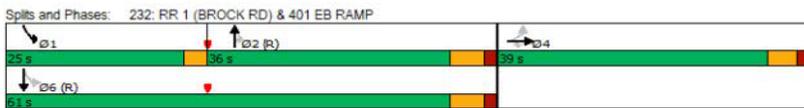


PM Peak 14:30-21:00

Phase Number	1	2	4	6
Movement	SBL	NBT	EBTL	SBTL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max
Maximum Split (s)	25	36	39	61
Maximum Split (%)	25.0%	36.0%	39.0%	61.0%
Minimum Split (s)	9	27	17	27
Yellow Time (s)	3	4.2	3.6	4.2
All-Red Time (s)	0	1.8	2	1.8
Minimum Initial (s)	5	20	8	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		15		15
Flash Dont Walk (s)		5		5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	130
Offset: 44 (44%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

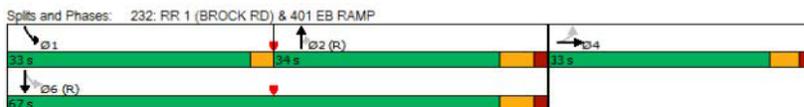


Weekend Peak 08:00 - 21:00

Phase Number	1	2	4	6
Movement	SBL	NBT	EBTL	SBTL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max
Maximum Split (s)	33	34	33	67
Maximum Split (%)	33.0%	34.0%	33.0%	67.0%
Minimum Split (s)	9	27	17	27
Yellow Time (s)	3	4.2	3.6	4.2
All-Red Time (s)	0	1.8	2	1.8
Minimum Initial (s)	5	20	8	20
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		15		15
Flash Dont Walk (s)		5		5

**Intersection Summary**

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 97 (97%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	



\*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.

INTERSECTION SIGNAL TIMING REPORT				
Location	Pickering Pkwy. And Canadian Tire Entrance			
Date	September 24/2020	C&E No.	33919792	Prepared by C. Maw
Prepared for	WSP Canada Inc.			

AM Peak 05:30-09:00

Phase Number	2	4	5	6	8
Movement	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag			Lead	Lag	
Lead-Lag Optimize			Yes	Yes	
Recall Mode	C-Max	None	None	C-Max	None
Maximum Split (s)	66	34	31	35	34
Maximum Split (%)	66.0%	34.0%	31.0%	35.0%	34.0%
Minimum Split (s)	27	25	9	27	25
Yellow Time (s)	3.7	3.3	3	3.7	3.3
All-Red Time (s)	2.5	2.7	0	2.5	2.7
Minimum Initial (s)	20	8	5	20	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)	14	13		14	13
Flash Dont Walk (s)	5	5		5	5

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 65  
 Offset: 2 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Splits and Phases: 269: CANADIAN TIRE ENT/PLAZA ENTRANCE & PICKERING PARKWAY



PM Peak 14:30-21:00

Phase Number	2	4	5	6	8
Movement	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag			Lead	Lag	
Lead-Lag Optimize			Yes	Yes	
Recall Mode	C-Max	None	None	C-Max	None
Maximum Split (s)	62	38	19	43	38
Maximum Split (%)	62.0%	38.0%	19.0%	43.0%	38.0%
Minimum Split (s)	27	25	9	27	25
Yellow Time (s)	3.7	3.3	3	3.7	3.3
All-Red Time (s)	2.5	2.7	0	2.5	2.7
Minimum Initial (s)	20	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)	14	13		14	13
Flash Dont Walk (s)	5	5		5	5

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 65  
 Offset: 42 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Splits and Phases: 269: CANADIAN TIRE ENT/PLAZA ENT & PICKERING PARKWAY



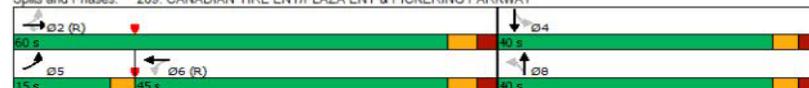
Weekend Peak 08:00 - 21:00

Phase Number	2	4	5	6	8
Movement	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag			Lead	Lag	
Lead-Lag Optimize			Yes	Yes	
Recall Mode	C-Max	None	None	C-Max	None
Maximum Split (s)	60	40	15	45	40
Maximum Split (%)	60.0%	40.0%	15.0%	45.0%	40.0%
Minimum Split (s)	27	25	9	27	25
Yellow Time (s)	3.7	3.3	3	3.7	3.3
All-Red Time (s)	2.5	2.7	0	2.5	2.7
Minimum Initial (s)	20	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)	14	13		14	13
Flash Dont Walk (s)	5	5		5	5

Intersection Summary

Cycle Length 100  
 Control Type Actuated-Coordinated  
 Natural Cycle 90  
 Offset: 33 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Splits and Phases: 269: CANADIAN TIRE ENT/PLAZA ENT & PICKERING PARKWAY



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INTERSECTION SIGNAL TIMING REPORT				
	Location	Hwy.2 and Notion Rd.		
	Date	September 24/2020	C&E No.	33919792
	Prepared for	WSP Canada Inc.		
	Prepared by	C. Maw		

AM Peak 05:30-09:00

	↙	→	↓	←	↑
Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	14	54	32	68	32
Maximum Split (%)	14.0%	54.0%	32.0%	68.0%	32.0%
Minimum Split (s)	9	27	27	27	27
Yellow Time (s)	3	4	3.3	4	3.3
All-Red Time (s)	0	1.8	2.7	1.8	2.7
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		13	15	13	15
Flash Dont Walk (s)		5	5	5	5

Intersection Summary	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 237: NOTION RD & HWY 2 (KINGSTON RD)



PM Peak 14:30-21:00

	↙	→	↓	←	↑
Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	11	59	30	70	30
Maximum Split (%)	11.0%	59.0%	30.0%	70.0%	30.0%
Minimum Split (s)	9	27	27	27	27
Yellow Time (s)	3	4	3.3	4	3.3
All-Red Time (s)	0	1.8	2.7	1.8	2.7
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		13	15	13	15
Flash Dont Walk (s)		5	5	5	5

Intersection Summary	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	140
Offset: 40 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 237: NOTION RD & HWY 2 (KINGSTON RD)

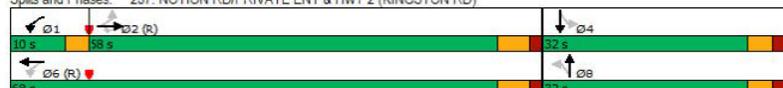


Weekend Peak 08:00 - 21:00

	↙	→	↓	←	↑
Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	10	58	32	68	32
Maximum Split (%)	10.0%	58.0%	32.0%	68.0%	32.0%
Minimum Split (s)	9	27	27	27	27
Yellow Time (s)	3	4	3.3	4	3.3
All-Red Time (s)	0	1.8	2.7	1.8	2.7
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		13	15	13	15
Flash Dont Walk (s)		5	5	5	5

Intersection Summary	
Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 28 (28%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 237: NOTION RD/PRIVATE ENT & HWY 2 (KINGSTON RD)



\*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.

## **APPENDIX 5**

### Existing (2023) Synchro HCM Outputs



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	313	240	396	517	185	123	558	174	258	1477	203
v/c Ratio	0.86	0.29	0.40	3.05	0.45	0.30	0.72	0.37	0.29	0.58	0.79	0.30
Control Delay	110.9	31.4	13.9	960.1	33.0	5.4	45.4	32.7	5.7	23.9	37.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	31.4	13.9	960.1	33.0	5.4	45.4	32.7	5.7	23.9	37.3	4.7
Queue Length 50th (m)	23.7	30.4	15.7	~170.7	52.7	0.0	16.1	39.5	0.0	36.9	117.9	0.0
Queue Length 95th (m)	#56.6	42.9	38.4	#233.6	69.3	16.2	#43.4	50.8	16.3	56.0	137.5	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	593	130	1151	621	171	1493	609	453	1872	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.29	0.40	3.05	0.45	0.30	0.72	0.37	0.29	0.57	0.79	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	288	221	364	476	170	113	513	160	237	1359	187	
Future Volume (vph)	87	288	221	364	476	170	113	513	160	237	1359	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1698	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.37	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	182	4673	1536	653	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	313	240	396	517	185	123	558	174	258	1477	203	
RTOR Reduction (vph)	0	0	103	0	0	124	0	0	118	0	0	128	
Lane Group Flow (vph)	95	313	137	396	517	61	123	558	56	258	1477	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.39	0.32	0.32	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1495	491	423	1871	545	
v/s Ratio Prot	0.06	0.09		c0.23	c0.15		c0.05	0.12		c0.07	c0.29		
v/s Ratio Perm			0.09			0.04	0.24		0.04	0.21		0.05	
v/c Ratio	0.86	0.29	0.28	3.05	0.45	0.12	0.75	0.37	0.11	0.61	0.79	0.14	
Uniform Delay, d1	55.6	30.5	30.3	55.5	31.5	27.9	26.8	31.5	28.8	20.8	33.5	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.0	0.7	1.4	940.9	1.3	0.5	16.6	0.7	0.5	2.5	3.5	0.5	
Delay (s)	101.5	31.1	31.8	996.4	32.8	28.5	43.5	32.2	29.3	23.3	37.0	25.5	
Level of Service	F	C	C	F	C	C	D	C	C	C	D	C	
Approach Delay (s)		41.7			379.6			33.2			34.0		
Approach LOS		D			F			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			118.5		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			110.8%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	690	24	177	1049	124	3
v/c Ratio	0.01	0.29	0.03	0.29	0.38	0.53	0.02
Control Delay	6.3	7.0	0.0	3.2	3.7	18.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	7.0	0.0	3.2	3.7	18.7	0.0
Queue Length 50th (m)	0.2	24.6	0.0	4.8	24.5	1.9	0.0
Queue Length 95th (m)	1.3	41.4	0.0	11.4	41.1	18.9	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	353	2347	921	639	2767	494	485
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.29	0.03	0.28	0.38	0.25	0.01
<b>Intersection Summary</b>							

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Existing (2023) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	635	22	163	965	0	9	0	105	1	0	2
Future Volume (vph)	3	635	22	163	965	0	9	0	105	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1798	3438	1320	1684	3505			1462			1685	
Flt Permitted	0.27	1.00	1.00	0.36	1.00			0.97			0.88	
Satd. Flow (perm)	517	3438	1320	641	3505			1425			1514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	690	24	177	1049	0	10	0	114	1	0	2
RTOR Reduction (vph)	0	0	8	0	0	0	0	104	0	0	3	0
Lane Group Flow (vph)	3	690	16	177	1049	0	0	20	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	68.2	68.2	68.2	78.9	78.9			9.1			9.1	
Effective Green, g (s)	68.2	68.2	68.2	78.9	78.9			9.1			9.1	
Actuated g/C Ratio	0.68	0.68	0.68	0.79	0.79			0.09			0.09	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	352	2344	900	586	2765			129			137	
v/s Ratio Prot		0.20		0.02	c0.30							
v/s Ratio Perm	0.01		0.01	0.21				c0.01			0.00	
v/c Ratio	0.01	0.29	0.02	0.30	0.38			0.16			0.00	
Uniform Delay, d1	5.1	6.3	5.1	2.7	3.2			41.9			41.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.3	0.0	0.3	0.4			0.6			0.0	
Delay (s)	5.1	6.6	5.2	3.0	3.6			42.5			41.3	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		6.6			3.5			42.5			41.3	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.0		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				15.0			
Intersection Capacity Utilization			66.8%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	59	320	323	73	41	159	727	198	48	1732	210
v/c Ratio	0.38	0.85dr	0.70	0.12	0.08	0.68	0.31	0.25	0.11	0.82	0.28
Control Delay	46.8	31.3	50.2	19.6	1.7	41.1	21.3	7.3	11.8	30.4	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.8	31.3	50.2	19.6	1.7	41.1	21.3	7.3	11.8	30.4	4.0
Queue Length 50th (m)	11.3	19.3	31.9	9.4	0.2	20.8	38.2	4.6	4.1	116.8	0.0
Queue Length 95th (m)	23.3	32.5	44.6	15.2	1.9	#53.3	47.2	14.0	10.5	#145.4	14.5
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	215	617	520	707	618	234	2310	779	421	2125	752
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.52	0.62	0.10	0.07	0.68	0.31	0.25	0.11	0.82	0.28

**Intersection Summary**

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
AM Peak Hour

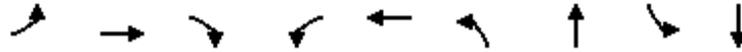
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	57	237	297	67	38	146	669	182	44	1593	193
Future Volume (vph)	54	57	237	297	67	38	146	669	182	44	1593	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1753	3081		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.71	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	1309	3081		3155	1792	1462	160	4759	1397	677	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	62	258	323	73	41	159	727	198	48	1732	210
RTOR Reduction (vph)	0	116	0	0	0	27	0	0	104	0	0	121
Lane Group Flow (vph)	59	204	0	323	73	14	159	727	94	48	1732	89
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	11.8	11.8		14.7	33.0	33.0	54.4	47.3	47.3	46.3	42.2	42.2
Effective Green, g (s)	11.8	11.8		14.7	33.0	33.0	54.4	47.3	47.3	46.3	42.2	42.2
Actuated g/C Ratio	0.12	0.12		0.15	0.33	0.33	0.54	0.47	0.47	0.46	0.42	0.42
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	154	363		463	591	482	230	2251	660	358	2125	631
v/s Ratio Prot		c0.07		c0.10	0.04		c0.06	0.15		0.01	c0.34	
v/s Ratio Perm	0.05					0.01	0.31		0.07	0.06		0.06
v/c Ratio	0.38	0.85dr		0.70	0.12	0.03	0.69	0.32	0.14	0.13	0.82	0.14
Uniform Delay, d1	40.7	41.7		40.5	23.4	22.7	17.8	16.4	14.9	14.8	25.5	17.8
Progression Factor	1.00	1.00		1.03	0.88	0.70	1.63	1.20	2.15	1.00	1.00	1.00
Incremental Delay, d2	1.6	2.0		4.5	0.1	0.0	8.3	0.4	0.4	0.2	3.6	0.5
Delay (s)	42.3	43.7		46.3	20.7	16.0	37.3	20.0	32.4	15.0	29.0	18.2
Level of Service	D	D		D	C	B	D	C	C	B	C	B
Approach Delay (s)		43.5			39.2			24.8			27.6	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	149	175	28	3	291	35	13	23	121
v/c Ratio	0.17	0.13	0.02	0.00	0.14	0.33	0.08	0.19	0.50
Control Delay	2.8	3.6	1.7	6.3	5.7	50.5	28.2	45.3	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	3.6	1.7	6.3	5.7	50.5	28.2	45.3	17.0
Queue Length 50th (m)	3.3	7.3	0.0	0.2	8.7	6.9	1.0	4.5	1.5
Queue Length 95th (m)	12.6	15.6	m0.8	m1.0	15.8	16.5	6.7	12.1	18.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	1021	1322	1245	837	2146	328	482	361	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.13	0.02	0.00	0.14	0.11	0.03	0.06	0.23

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	161	26	3	236	31	32	5	7	21	7	104
Future Volume (vph)	137	161	26	3	236	31	32	5	7	21	7	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1681	1574	1798	3133		1748	1701		1636	1553	
Flt Permitted	0.55	1.00	1.00	0.65	1.00		0.64	1.00		0.75	1.00	
Satd. Flow (perm)	998	1681	1574	1224	3133		1174	1701		1290	1553	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	175	28	3	257	34	35	5	8	23	8	113
RTOR Reduction (vph)	0	0	6	0	4	0	0	7	0	0	103	0
Lane Group Flow (vph)	149	175	22	3	287	0	35	6	0	23	18	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	78.7	78.7	78.7	68.5	68.5		9.1	9.1		9.1	9.1	
Effective Green, g (s)	78.7	78.7	78.7	68.5	68.5		9.1	9.1		9.1	9.1	
Actuated g/C Ratio	0.79	0.79	0.79	0.68	0.68		0.09	0.09		0.09	0.09	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	837	1322	1238	838	2146		106	154		117	141	
v/s Ratio Prot	c0.01	0.10			0.09			0.00				0.01
v/s Ratio Perm	c0.13		0.01	0.00			c0.03			0.02		
v/c Ratio	0.18	0.13	0.02	0.00	0.13		0.33	0.04		0.20	0.13	
Uniform Delay, d1	2.5	2.5	2.3	5.0	5.5		42.6	41.5		42.1	41.8	
Progression Factor	1.22	1.23	1.83	1.04	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2	0.0	0.0	0.1		1.8	0.1		0.8	0.4	
Delay (s)	3.2	3.3	4.2	5.2	5.6		44.4	41.6		42.9	42.2	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		3.3			5.6			43.6			42.3	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.20									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			57.3%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

5: Pickering Ridge West Access/Walmart East Access & Pickering Pkwy

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	142	25	8	198	24	42	3	4	12	3	30
Future Volume (Veh/h)	22	142	25	8	198	24	42	3	4	12	3	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	154	27	9	215	26	46	3	4	13	3	33
Pedestrians		1			1						3	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked												
vC, conflicting volume	244			181			484	478	168	471	478	232
vC1, stage 1 conf vol							216	216		249	249	
vC2, stage 2 conf vol							268	262		222	229	
vCu, unblocked vol	244			181			484	478	168	471	478	232
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			99			92	100	100	98	100	96
cM capacity (veh/h)	1331			1407			613	602	821	650	609	809
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	205	9	241	46	7	13	36					
Volume Left	24	9	0	46	0	13	0					
Volume Right	27	0	26	0	4	0	33					
cSH	1331	1407	1700	613	710	650	788					
Volume to Capacity	0.02	0.01	0.14	0.08	0.01	0.02	0.05					
Queue Length 95th (m)	0.4	0.2	0.0	1.9	0.2	0.5	1.1					
Control Delay (s)	1.0	7.6	0.0	11.3	10.1	10.7	9.8					
Lane LOS	A	A		B	B	B	A					
Approach Delay (s)	1.0	0.3		11.2		10.0						
Approach LOS				B		B						
<b>Intersection Summary</b>												
Average Delay			2.5									
Intersection Capacity Utilization			41.4%		ICU Level of Service					A		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	151	8	17	219	6	11	0	10	2	1	1
Future Volume (Veh/h)	0	151	8	17	219	6	11	0	10	2	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	164	9	18	238	7	12	0	11	2	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	247			174			450	452	170	460	454	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247			174			450	452	170	460	454	246
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			99			98	100	99	100	100	100
cM capacity (veh/h)	1328			1414			499	498	877	501	498	601
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	173	263	23	4								
Volume Left	0	18	12	2								
Volume Right	9	7	11	1								
cSH	1328	1414	628	522								
Volume to Capacity	0.00	0.01	0.04	0.01								
Queue Length 95th (m)	0.0	0.3	0.9	0.2								
Control Delay (s)	0.0	0.6	10.9	11.9								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.6	10.9	11.9								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			35.4%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
7: Notion Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	11	0	0	9	6	0	0	0	6	0	161
Future Volume (Veh/h)	121	11	0	0	9	6	0	0	0	6	0	161
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	12	0	0	10	7	0	0	0	7	0	175
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	114	102	88	108	189	0	175			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114	102	88	108	189	0	175			0		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	84	98	100	100	98	99	100			99		
cM capacity (veh/h)	828	633	976	860	559	857	1414			1161		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	144	17	0	182								
Volume Left	132	0	0	7								
Volume Right	0	7	0	175								
cSH	807	652	1700	1161								
Volume to Capacity	0.18	0.03	0.00	0.01								
Queue Length 95th (m)	5.2	0.6	0.0	0.1								
Control Delay (s)	10.4	10.7	0.0	0.4								
Lane LOS	B	B		A								
Approach Delay (s)	10.4	10.7	0.0	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			30.9%		ICU Level of Service					A		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	8	1012	53	0	2256			
Future Volume (Veh/h)	0	8	1012	53	0	2256			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	9	1100	58	0	2452			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.73	0.93			0.93				
vC, conflicting volume	1918	368			1159				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	287	36			891				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	99			100				
cM capacity (veh/h)	501	958			712				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	9	367	367	367	58	817	817	817	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	9	0	0	0	58	0	0	0	
cSH	958	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.01	0.22	0.22	0.22	0.03	0.48	0.48	0.48	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	8.8	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			46.9%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	714	254	876	1327
v/c Ratio	0.78	0.55	0.31	0.43
Control Delay	39.6	18.7	10.3	8.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.6	18.7	10.3	8.2
Queue Length 50th (m)	68.8	22.7	22.7	29.0
Queue Length 95th (m)	82.1	46.3	30.5	45.3
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1161	554	2845	3094
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.46	0.31	0.43
<b>Intersection Summary</b>				

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	631	259	806	0	0	1221
Future Volume (vph)	631	259	806	0	0	1221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3389	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3389	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	686	282	876	0	0	1327
RTOR Reduction (vph)	4	94	0	0	0	0
Lane Group Flow (vph)	710	160	876	0	0	1327
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.0	27.0	61.4			61.4
Effective Green, g (s)	27.0	27.0	61.4			61.4
Actuated g/C Ratio	0.27	0.27	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	915	370	2843			3092
v/s Ratio Prot			0.19			c0.26
v/s Ratio Perm	c0.21	0.12				
v/c Ratio	0.78	0.43	0.31			0.43
Uniform Delay, d1	33.7	30.2	9.2			10.1
Progression Factor	1.00	1.00	1.04			0.73
Incremental Delay, d2	4.2	0.8	0.2			0.3
Delay (s)	37.9	31.0	9.7			7.7
Level of Service	D	C	A			A
Approach Delay (s)	36.1		9.7			7.7
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			16.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			77.9%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	454	426	414	927	522	1491
v/c Ratio	0.88	0.88	0.85	0.79	0.94	0.75
Control Delay	51.3	48.1	44.1	35.3	47.8	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	48.1	44.1	35.3	47.8	19.6
Queue Length 50th (m)	88.0	74.8	68.2	57.5	90.0	139.0
Queue Length 95th (m)	#143.6	#135.4	#122.9	#80.5	#149.6	144.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	514	518	1180	569	1978
Starvation Cap Reductn	0	0	0	0	0	9
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.83	0.80	0.79	0.92	0.76

**Intersection Summary**

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

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	498	0	693	0	0	0	0	539	314	480	1372	0	
Future Volume (vph)	498	0	693	0	0	0	0	539	314	480	1372	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.88	0.85					0.94		1.00	1.00		
Flt Protected	0.95	0.99	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1370	1382					4031		1735	3505		
Flt Permitted	0.95	0.99	1.00					1.00		0.16	1.00		
Satd. Flow (perm)	1618	1370	1382					4031		285	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	541	0	753	0	0	0	0	586	341	522	1491	0	
RTOR Reduction (vph)	0	44	44	0	0	0	0	101	0	0	0	0	
Lane Group Flow (vph)	454	382	370	0	0	0	0	826	0	522	1491	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	32.0	32.0	32.0					26.7		56.4	56.4		
Effective Green, g (s)	32.0	32.0	32.0					26.7		56.4	56.4		
Actuated g/C Ratio	0.32	0.32	0.32					0.27		0.56	0.56		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	517	438	442					1076		547	1976		
v/s Ratio Prot								0.20		c0.25	0.43		
v/s Ratio Perm	c0.28	0.28	0.27							c0.28			
v/c Ratio	0.88	0.87	0.84					0.77		0.95	0.75		
Uniform Delay, d1	32.2	32.1	31.6					33.8		25.5	16.5		
Progression Factor	1.00	1.00	1.00					1.00		0.97	0.98		
Incremental Delay, d2	15.5	17.1	12.9					5.3		25.1	2.4		
Delay (s)	47.6	49.1	44.5					39.0		50.0	18.6		
Level of Service	D	D	D					D		D	B		
Approach Delay (s)		47.1			0.0			39.0			26.7		
Approach LOS		D			A			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			35.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			77.9%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	271	1088	316	307	696	258	302	1370	470	257	957	237
v/c Ratio	1.83	0.92	0.48	2.05	0.59	0.39	0.94	0.86	0.76	1.02	0.64	0.38
Control Delay	430.3	51.6	10.7	521.5	35.9	6.8	60.1	45.2	29.7	94.0	38.5	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	430.3	51.6	10.7	521.5	35.9	6.8	60.1	45.2	29.7	94.0	38.5	6.2
Queue Length 50th (m)	-101.4	135.7	13.2	-119.5	75.1	3.7	46.0	116.5	61.5	-49.7	74.9	0.7
Queue Length 95th (m)	#156.0	#177.6	38.8	#177.3	95.6	23.4	#100.2	136.3	106.1	#104.2	90.6	19.5
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	148	1185	664	150	1173	665	322	1600	617	251	1504	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.83	0.92	0.48	2.05	0.59	0.39	0.94	0.86	0.76	1.02	0.64	0.38

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Existing (2023) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	1001	291	282	640	237	278	1260	432	236	880	218
Future Volume (vph)	249	1001	291	282	640	237	278	1260	432	236	880	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1803	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.18	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	334	5136	1531	204	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	271	1088	316	307	696	258	302	1370	470	257	957	237
RTOR Reduction (vph)	0	0	160	0	0	158	0	0	140	0	0	163
Lane Group Flow (vph)	271	1088	156	307	696	100	302	1370	330	257	957	74
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Effective Green, g (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Actuated g/C Ratio	0.08	0.33	0.33	0.08	0.33	0.33	0.43	0.31	0.31	0.41	0.30	0.30
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	1185	504	150	1173	507	311	1600	477	245	1504	454
v/s Ratio Prot	0.15	c0.30		c0.17	0.20		c0.11	0.27		c0.11	0.19	
v/s Ratio Perm			0.10			0.07	0.30		0.22	c0.32		0.05
v/c Ratio	1.83	0.92	0.31	2.05	0.59	0.20	0.97	0.86	0.69	1.05	0.64	0.16
Uniform Delay, d1	54.9	38.5	29.9	54.9	33.4	28.7	25.7	38.8	36.2	32.7	36.2	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	399.1	12.7	1.6	493.4	2.2	0.9	43.0	6.1	8.0	70.9	2.1	0.8
Delay (s)	454.0	51.2	31.4	548.3	35.6	29.6	68.7	44.9	44.2	103.6	38.3	31.6
Level of Service	F	D	C	F	D	C	E	D	D	F	D	C
Approach Delay (s)		112.6			159.2			48.1			48.8	
Approach LOS		F			F			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			86.3									F
HCM 2000 Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			120.0									20.0
Intersection Capacity Utilization			108.5%									G
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1648	42	170	1047	444	2
v/c Ratio	0.01	0.89	0.06	0.77	0.47	0.92	0.00
Control Delay	14.0	30.7	1.9	41.3	11.3	47.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	30.7	1.9	41.3	11.3	47.6	0.0
Queue Length 50th (m)	0.3	164.5	0.0	17.7	59.4	56.1	0.0
Queue Length 95th (m)	1.9	#221.5	3.1	#53.7	77.1	#111.2	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	267	1845	727	224	2225	534	541
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.89	0.06	0.76	0.47	0.83	0.00

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Existing (2023) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1516	39	156	963	0	27	0	382	0	0	2
Future Volume (vph)	3	1516	39	156	963	0	27	0	382	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1800	3574	1348	1752	3539			1461			1617	
Flt Permitted	0.27	1.00	1.00	0.07	1.00			0.98			1.00	
Satd. Flow (perm)	518	3574	1348	135	3539			1439			1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1648	42	170	1047	0	29	0	415	0	0	2
RTOR Reduction (vph)	0	0	20	0	0	0	0	123	0	0	1	0
Lane Group Flow (vph)	3	1648	22	170	1047	0	0	321	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	51.7	51.7	51.7	62.9	62.9			25.1			25.1	
Effective Green, g (s)	51.7	51.7	51.7	62.9	62.9			25.1			25.1	
Actuated g/C Ratio	0.52	0.52	0.52	0.63	0.63			0.25			0.25	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	267	1847	696	217	2226			361			405	
v/s Ratio Prot		c0.46		c0.06	0.30						0.00	
v/s Ratio Perm	0.01		0.02	0.43				c0.22				
v/c Ratio	0.01	0.89	0.03	0.78	0.47			0.89			0.00	
Uniform Delay, d1	11.7	21.7	11.9	24.5	9.8			36.1			28.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	7.0	0.1	16.7	0.7			22.4			0.0	
Delay (s)	11.8	28.7	11.9	41.2	10.5			58.5			28.1	
Level of Service	B	C	B	D	B			E			C	
Approach Delay (s)		28.3			14.8			58.5			28.1	
Approach LOS		C			B			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.4			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			95.9%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	491	371	205	186	299	1670	413	170	939	82
v/c Ratio	0.51	0.75	0.71	0.30	0.27	0.75	0.85	0.53	0.69	0.57	0.13
Control Delay	48.6	31.0	45.3	22.0	5.9	31.7	30.4	7.5	35.1	30.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	31.0	45.3	22.0	5.9	31.7	30.4	7.5	35.1	30.2	0.4
Queue Length 50th (m)	16.8	29.7	37.9	32.1	0.4	31.7	109.7	8.4	17.1	61.0	0.0
Queue Length 95th (m)	31.3	45.5	53.6	43.9	18.6	#82.6	#149.0	22.1	#61.2	76.3	0.0
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	230	797	595	810	782	399	1975	778	247	1657	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.62	0.62	0.25	0.24	0.75	0.85	0.53	0.69	0.57	0.13

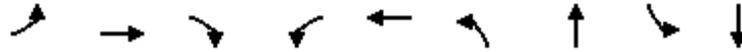
Intersection Summary

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 		 		  	 	  	  	 
Traffic Volume (vph)	81	208	244	341	189	171	275	1536	380	156	864	75
Future Volume (vph)	81	208	244	341	189	171	275	1536	380	156	864	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1785	3250		3400	1863	1572	1786	5136	1516	1787	4988	1534
Flt Permitted	0.63	1.00		0.95	1.00	1.00	0.19	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1182	3250		3400	1863	1572	357	5136	1516	227	4988	1534
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	226	265	371	205	186	299	1670	413	170	939	82
RTOR Reduction (vph)	0	173	0	0	0	110	0	0	195	0	0	55
Lane Group Flow (vph)	88	318	0	371	205	76	299	1670	218	170	939	27
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	14.8	14.8		15.4	36.7	36.7	50.7	38.4	38.4	42.5	33.2	33.2
Effective Green, g (s)	14.8	14.8		15.4	36.7	36.7	50.7	38.4	38.4	42.5	33.2	33.2
Actuated g/C Ratio	0.15	0.15		0.15	0.37	0.37	0.51	0.38	0.38	0.42	0.33	0.33
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	174	481		523	683	576	388	1972	582	241	1656	509
v/s Ratio Prot		c0.10		c0.11	0.11		c0.11	c0.33		0.07	0.19	
v/s Ratio Perm	0.07					0.05	0.28		0.14	0.23		0.02
v/c Ratio	0.51	0.66		0.71	0.30	0.13	0.77	0.85	0.37	0.71	0.57	0.05
Uniform Delay, d1	39.2	40.2		40.2	22.5	21.1	16.4	28.1	22.2	21.2	27.5	22.7
Progression Factor	1.00	1.00		0.94	0.97	1.42	1.40	0.90	0.85	1.00	1.00	1.00
Incremental Delay, d2	2.3	3.4		4.3	0.2	0.1	7.2	3.7	1.4	9.0	1.4	0.2
Delay (s)	41.5	43.6		42.2	22.2	29.9	30.1	29.2	20.2	30.2	28.9	22.9
Level of Service	D	D		D	C	C	C	C	C	C	C	C
Approach Delay (s)		43.3			33.8			27.7			28.7	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.7		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				22.1			
Intersection Capacity Utilization			83.9%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	308	474	49	8	467	71	51	62	211
v/c Ratio	0.40	0.34	0.04	0.01	0.22	0.89	0.21	0.37	0.57
Control Delay	3.6	3.7	0.6	9.6	8.4	116.9	22.7	45.0	13.2
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	4.0	0.6	9.6	8.4	116.9	22.7	45.0	13.2
Queue Length 50th (m)	8.6	23.7	0.0	0.5	17.0	14.5	4.2	11.8	2.6
Queue Length 95th (m)	23.0	43.8	m1.2	m2.3	29.3	#34.3	14.3	23.4	22.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	825	1375	1167	570	2161	204	567	427	643
Starvation Cap Reductn	0	376	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.47	0.04	0.01	0.22	0.35	0.09	0.15	0.33

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	436	45	7	384	46	65	21	26	57	13	181
Future Volume (vph)	283	436	45	7	384	46	65	21	26	57	13	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1782	1827	1537	1778	3477		1764	1714		1751	1593	
Flt Permitted	0.46	1.00	1.00	0.49	1.00		0.34	1.00		0.72	1.00	
Satd. Flow (perm)	866	1827	1537	920	3477		640	1714		1334	1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	308	474	49	8	417	50	71	23	28	62	14	197
RTOR Reduction (vph)	0	0	10	0	6	0	0	25	0	0	172	0
Lane Group Flow (vph)	308	474	39	8	461	0	71	27	0	62	39	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	75.3	75.3	75.3	62.0	62.0		12.5	12.5		12.5	12.5	
Effective Green, g (s)	75.3	75.3	75.3	62.0	62.0		12.5	12.5		12.5	12.5	
Actuated g/C Ratio	0.75	0.75	0.75	0.62	0.62		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	746	1375	1157	570	2155		80	214		166	199	
v/s Ratio Prot	c0.04	0.26			0.13			0.02				0.02
v/s Ratio Perm	c0.27		0.03	0.01			c0.11			0.05		
v/c Ratio	0.41	0.34	0.03	0.01	0.21		0.89	0.12		0.37	0.19	
Uniform Delay, d1	3.8	4.1	3.1	7.3	8.3		43.1	38.9		40.2	39.2	
Progression Factor	0.71	0.66	0.29	0.93	0.90		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.6	0.0	0.0	0.2		63.6	0.3		1.4	0.5	
Delay (s)	3.0	3.3	1.0	6.8	7.7		106.6	39.1		41.6	39.7	
Level of Service	A	A	A	A	A		F	D		D	D	
Approach Delay (s)		3.0			7.7			78.4			40.1	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			79.1%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

5: Pickering Ridge West Access/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	330	147	20	228	57	136	34	29	52	9	75
Future Volume (Veh/h)	41	330	147	20	228	57	136	34	29	52	9	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	359	160	22	248	62	148	37	32	57	10	82
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	313			524			913	891	449	910	940	282
vC1, stage 1 conf vol							534	534		326	326	
vC2, stage 2 conf vol							379	357		584	614	
vCu, unblocked vol	313			433			858	834	351	855	888	282
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			63	91	95	85	98	89
cM capacity (veh/h)	1256			1036			403	434	626	378	404	760
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	564	22	310	148	69	57	92					
Volume Left	45	22	0	148	0	57	0					
Volume Right	160	0	62	0	32	0	82					
cSH	1256	1036	1700	403	506	378	693					
Volume to Capacity	0.04	0.02	0.18	0.37	0.14	0.15	0.13					
Queue Length 95th (m)	0.9	0.5	0.0	13.2	3.8	4.2	3.6					
Control Delay (s)	1.0	8.6	0.0	19.0	13.2	16.2	11.0					
Lane LOS	A	A		C	B	C	B					
Approach Delay (s)	1.0	0.6		17.2		13.0						
Approach LOS				C		B						
<b>Intersection Summary</b>												
Average Delay			5.1									
Intersection Capacity Utilization			68.5%		ICU Level of Service					C		
Analysis Period (min)			15									

6: East Site Access/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	368	36	51	209	3	89	2	72	6	3	5
Future Volume (Veh/h)	5	368	36	51	209	3	89	2	72	6	3	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	400	39	55	227	3	97	2	78	7	3	5
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	234			440			776	774	420	851	792	234
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	234			440			776	774	420	851	792	234
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			67	99	88	97	99	99
cM capacity (veh/h)	1341			1130			297	313	637	235	305	807
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	444	285	177	15								
Volume Left	5	55	97	7								
Volume Right	39	3	78	5								
cSH	1341	1130	389	328								
Volume to Capacity	0.00	0.05	0.46	0.05								
Queue Length 95th (m)	0.1	1.2	18.4	1.1								
Control Delay (s)	0.1	2.0	21.8	16.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.1	2.0	21.8	16.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			59.2%		ICU Level of Service					B		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
7: Notion Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	341	3	0	2	7	3	0	1	0	2	0	192
Future Volume (Veh/h)	341	3	0	2	7	3	0	1	0	2	0	192
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	371	3	0	2	8	3	0	1	0	2	0	209
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	116	110	106	112	214	1	209			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	116	110	106	112	214	1	209			1		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	56	100	100	100	99	100	100			100		
cM capacity (veh/h)	842	628	954	865	558	1000	1374			1160		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	374	13	1	211								
Volume Left	371	2	0	2								
Volume Right	0	3	0	209								
cSH	840	662	1374	1160								
Volume to Capacity	0.45	0.02	0.00	0.00								
Queue Length 95th (m)	18.5	0.5	0.0	0.0								
Control Delay (s)	12.7	10.5	0.0	0.1								
Lane LOS	B	B		A								
Approach Delay (s)	12.7	10.5	0.0	0.1								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			8.2									
Intersection Capacity Utilization			46.1%	ICU Level of Service							A	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations									
Traffic Volume (veh/h)	0	59	2202	224	0	1544			
Future Volume (Veh/h)	0	59	2202	224	0	1544			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	64	2393	243	0	1678			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.83	0.75			0.75				
vC, conflicting volume	2952	798			2636				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1464	0			2031				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	92			100				
cM capacity (veh/h)	100	824			213				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	64	798	798	798	243	559	559	559	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	64	0	0	0	243	0	0	0	
cSH	824	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.08	0.47	0.47	0.47	0.14	0.33	0.33	0.33	
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	9.7	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.1						
Intersection Capacity Utilization			52.9%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	541	258	2141	950
v/c Ratio	0.79	0.78	0.64	0.29
Control Delay	44.3	51.4	11.1	9.9
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	44.3	51.4	11.4	9.9
Queue Length 50th (m)	52.7	52.6	68.3	34.2
Queue Length 95th (m)	68.9	81.7	m59.1	48.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	801	384	3351	3319
Starvation Cap Reductn	0	0	484	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.67	0.75	0.29

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	279	456	1970	0	0	874
Future Volume (vph)	279	456	1970	0	0	874
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.93	0.85	1.00			1.00
Flt Protected	0.97	1.00	1.00			1.00
Satd. Flow (prot)	3033	1441	5085			5036
Flt Permitted	0.97	1.00	1.00			1.00
Satd. Flow (perm)	3033	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	303	496	2141	0	0	950
RTOR Reduction (vph)	7	7	0	0	0	0
Lane Group Flow (vph)	534	251	2141	0	0	950
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	22.5	22.5	65.9			65.9
Effective Green, g (s)	22.5	22.5	65.9			65.9
Actuated g/C Ratio	0.22	0.22	0.66			0.66
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	682	324	3351			3318
v/s Ratio Prot			c0.42			0.19
v/s Ratio Perm	c0.18	0.17				
v/c Ratio	0.78	0.77	0.64			0.29
Uniform Delay, d1	36.5	36.4	10.0			7.2
Progression Factor	1.00	1.00	1.03			1.28
Incremental Delay, d2	5.9	11.0	0.1			0.2
Delay (s)	42.3	47.4	10.4			9.3
Level of Service	D	D	B			A
Approach Delay (s)	43.9		10.4			9.3
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			17.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			101.7%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	629	612	471	1995	328	925
v/c Ratio	1.11	1.15	0.90	1.18	0.85	0.52
Control Delay	104.4	118.2	46.7	119.6	49.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.4	118.2	46.7	119.6	49.1	11.1
Queue Length 50th (m)	~155.2	~161.6	75.4	~180.7	51.6	51.4
Queue Length 95th (m)	#227.1	#237.2	#142.9	#226.1	83.7	46.1
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	534	522	1686	456	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	1.15	0.90	1.18	0.72	0.52

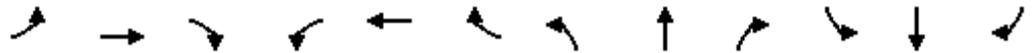
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1092	2	481	0	0	0	0	1463	373	302	851	0
Future Volume (vph)	1092	2	481	0	0	0	0	1463	373	302	851	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.99	0.85					0.97		1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1698	1593	1334					4763		1752	3223	
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00	
Satd. Flow (perm)	1698	1593	1334					4763		197	3223	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1187	2	523	0	0	0	0	1590	405	328	925	0
RTOR Reduction (vph)	0	3	77	0	0	0	0	42	0	0	0	0
Lane Group Flow (vph)	629	609	394	0	0	0	0	1953	0	328	925	0
Confl. Peds. (#/hr)								5		7	7	5
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	33.4	33.4	33.4					34.5		55.0	55.0	
Effective Green, g (s)	33.4	33.4	33.4					34.5		55.0	55.0	
Actuated g/C Ratio	0.33	0.33	0.33					0.34		0.55	0.55	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	567	532	445					1643		380	1772	
v/s Ratio Prot								c0.41		c0.15	0.29	
v/s Ratio Perm	0.37	0.38	0.30							0.32		
v/c Ratio	1.11	1.14	0.89					1.19		0.86	0.52	
Uniform Delay, d1	33.3	33.3	31.5					32.8		27.6	14.2	
Progression Factor	1.00	1.00	1.00					1.00		1.32	0.70	
Incremental Delay, d2	71.4	85.3	18.7					91.3		17.1	1.0	
Delay (s)	104.7	118.6	50.2					124.1		53.4	10.9	
Level of Service	F	F	D					F		D	B	
Approach Delay (s)		94.7			0.0			124.1			22.1	
Approach LOS		F			A			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			88.2									F
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			100.0							14.6		
Intersection Capacity Utilization			101.7%									G
Analysis Period (min)			15									

c Critical Lane Group

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	225	786	425	268	849	295	292	1085	393	253	1017	224
v/c Ratio	2.01	0.64	0.66	2.39	0.69	0.45	1.13	0.63	0.62	1.05	0.59	0.35
Control Delay	511.8	33.0	22.8	673.7	47.7	27.0	118.8	32.7	20.5	97.2	31.9	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	511.8	33.0	22.8	673.7	47.7	27.0	118.8	32.7	20.5	97.2	31.9	8.6
Queue Length 50th (m)	-79.6	77.6	46.9	-101.5	105.4	39.7	-45.1	75.0	38.8	-35.7	69.1	7.2
Queue Length 95th (m)	#128.7	99.1	83.8	m#155.4	126.5	70.1	#101.1	90.7	72.7	#88.6	83.9	25.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	644	112	1237	655	259	1727	638	240	1727	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.01	0.64	0.66	2.39	0.69	0.45	1.13	0.63	0.62	1.05	0.59	0.35

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	723	391	247	781	271	269	998	362	233	936	206
Future Volume (vph)	207	723	391	247	781	271	269	998	362	233	936	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1804	5136	1537	1786	5136	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.18	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	345	5136	1537	297	5136	1549
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	786	425	268	849	295	292	1085	393	253	1017	224
RTOR Reduction (vph)	0	0	116	0	0	115	0	0	121	0	0	117
Lane Group Flow (vph)	225	786	309	268	849	180	292	1085	272	253	1017	107
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	1237	528	112	1237	540	247	1727	516	229	1727	521
v/s Ratio Prot	0.13	0.22		c0.15	c0.24		c0.09	0.21		0.08	0.20	
v/s Ratio Perm			0.20			0.12	c0.40		0.18	0.37		0.07
v/c Ratio	2.01	0.64	0.58	2.39	0.69	0.33	1.18	0.63	0.53	1.10	0.59	0.20
Uniform Delay, d1	51.5	30.1	29.5	51.5	30.8	26.6	27.4	30.7	29.4	26.7	30.2	26.0
Progression Factor	1.00	1.00	1.00	0.88	1.44	2.26	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	484.0	2.5	4.7	651.2	2.9	1.5	115.5	1.7	3.8	90.4	1.5	0.9
Delay (s)	535.6	32.6	34.1	696.5	47.2	61.7	142.9	32.5	33.2	117.0	31.7	26.9
Level of Service	F	C	C	F	D	E	F	C	C	F	C	C
Approach Delay (s)		111.9			173.4			50.9			45.4	
Approach LOS		F			F			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			92.2									F
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			110.0							20.0		
Intersection Capacity Utilization			106.1%							G		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1304	76	259	1197	379	2
v/c Ratio	0.02	0.66	0.09	0.73	0.48	0.87	0.01
Control Delay	22.2	31.7	12.5	27.6	9.2	44.1	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	31.7	12.5	27.6	9.2	44.1	31.0
Queue Length 50th (m)	0.8	137.6	3.3	21.9	59.0	48.6	0.4
Queue Length 95th (m)	m1.1	m161.7	m9.1	#60.6	91.6	80.6	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	204	1966	876	355	2495	536	421
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.66	0.09	0.73	0.48	0.71	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Existing (2023) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1200	70	238	1101	0	44	2	303	1	1	0
Future Volume (vph)	5	1200	70	238	1101	0	44	2	303	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1623			1851	
Flt Permitted	0.24	1.00	1.00	0.12	1.00			0.96			0.84	
Satd. Flow (perm)	372	3574	1544	228	3574			1563			1588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1304	76	259	1197	0	48	2	329	1	1	0
RTOR Reduction (vph)	0	0	27	0	0	0	0	133	0	0	0	0
Lane Group Flow (vph)	5	1304	49	259	1197	0	0	246	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	60.5	60.5	60.5	76.8	76.8			21.2			21.2	
Effective Green, g (s)	60.5	60.5	60.5	76.8	76.8			21.2			21.2	
Actuated g/C Ratio	0.55	0.55	0.55	0.70	0.70			0.19			0.19	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	204	1965	849	349	2495			301			306	
v/s Ratio Prot		0.36		c0.09	0.33							
v/s Ratio Perm	0.01		0.03	c0.43				c0.16			0.00	
v/c Ratio	0.02	0.66	0.06	0.74	0.48			0.82			0.01	
Uniform Delay, d1	11.3	17.5	11.5	17.8	7.5			42.5			35.9	
Progression Factor	1.70	1.66	2.63	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.2	0.1	8.3	0.7			15.6			0.0	
Delay (s)	19.3	30.3	30.3	26.1	8.2			58.1			35.9	
Level of Service	B	C	C	C	A			E			D	
Approach Delay (s)		30.3			11.4			58.1			35.9	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.0			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			84.5%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
 SAT Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	462	624	236	202	253	1127	371	222	975	99
v/c Ratio	0.56	0.77	0.87	0.31	0.28	0.74	0.63	0.47	0.82	0.60	0.16
Control Delay	55.3	32.1	49.4	20.0	7.6	28.5	24.6	5.2	47.3	32.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	32.1	49.4	20.0	7.6	28.5	24.6	5.2	47.3	32.0	0.6
Queue Length 50th (m)	16.0	26.6	66.0	36.2	10.4	30.4	64.3	17.4	25.4	64.3	0.0
Queue Length 95th (m)	31.5	43.7	m#87.9	m52.0	m25.2	#49.1	80.8	8.8	#78.6	81.4	0.3
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	177	682	745	826	775	363	1799	791	272	1612	612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.68	0.84	0.29	0.26	0.70	0.63	0.47	0.82	0.60	0.16

**Intersection Summary**

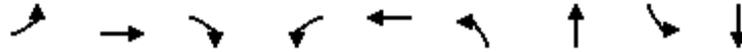
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	76	219	206	574	217	186	233	1037	341	204	897	91	
Future Volume (vph)	76	219	206	574	217	186	233	1037	341	204	897	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1775	3296		3467	1900	1544	1787	5136	1571	1805	5136	1570	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.17	1.00	1.00	0.17	1.00	1.00	
Satd. Flow (perm)	1143	3296		3467	1900	1544	316	5136	1571	316	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	83	238	224	624	236	202	253	1127	371	222	975	99	
RTOR Reduction (vph)	0	177	0	0	0	110	0	0	241	0	0	68	
Lane Group Flow (vph)	83	285	0	624	236	92	253	1127	130	222	975	31	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	12.9	12.9		20.8	40.2	40.2	47.2	35.0	35.0	40.6	31.4	31.4	
Effective Green, g (s)	12.9	12.9		20.8	40.2	40.2	47.2	35.0	35.0	40.6	31.4	31.4	
Actuated g/C Ratio	0.13	0.13		0.21	0.40	0.40	0.47	0.35	0.35	0.41	0.31	0.31	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	147	425		721	763	620	337	1797	549	265	1612	492	
v/s Ratio Prot		c0.09		c0.18	0.12		c0.10	0.22		c0.08	0.19		
v/s Ratio Perm	0.07					0.06	0.26		0.08	c0.26		0.02	
v/c Ratio	0.56	0.67		0.87	0.31	0.15	0.75	0.63	0.24	0.84	0.60	0.06	
Uniform Delay, d1	40.9	41.5		38.2	20.4	19.0	18.1	27.1	23.0	21.0	29.0	24.0	
Progression Factor	1.00	1.00		0.97	0.96	1.89	0.93	0.85	1.28	1.00	1.00	1.00	
Incremental Delay, d2	4.9	4.1		9.5	0.2	0.1	8.4	1.5	0.9	20.0	1.7	0.2	
Delay (s)	45.8	45.7		46.4	19.8	36.0	25.2	24.5	30.5	41.1	30.7	24.3	
Level of Service	D	D		D	B	D	C	C	C	D	C	C	
Approach Delay (s)		45.7			38.5			25.8			32.0		
Approach LOS		D			D			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			32.8		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			85.1%		ICU Level of Service						E		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	378	379	75	23	676	128	80	79	390
v/c Ratio	0.68	0.32	0.07	0.05	0.41	1.36	0.18	0.25	0.59
Control Delay	12.5	6.4	0.6	18.8	19.5	248.3	18.1	29.4	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	6.4	0.6	18.8	19.5	248.3	18.1	29.4	8.2
Queue Length 50th (m)	11.9	15.1	0.1	2.7	48.1	~33.6	7.9	12.8	5.8
Queue Length 95th (m)	m#46.1	m46.1	m0.4	8.3	69.8	#64.0	17.3	22.6	27.5
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	565	1183	1011	478	1669	132	616	449	783
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.32	0.07	0.05	0.41	0.97	0.13	0.18	0.50

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	348	349	69	21	554	68	118	46	28	73	34	325
Future Volume (vph)	348	349	69	21	554	68	118	46	28	73	34	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1863	1549	1783	3502		1803	1756		1783	1619	
Flt Permitted	0.32	1.00	1.00	0.54	1.00		0.20	1.00		0.70	1.00	
Satd. Flow (perm)	604	1863	1549	1007	3502		388	1756		1323	1619	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	378	379	75	23	602	74	128	50	30	79	37	353
RTOR Reduction (vph)	0	0	27	0	8	0	0	23	0	0	267	0
Lane Group Flow (vph)	378	379	48	23	668	0	128	57	0	79	123	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.5	63.5	63.5	47.4	47.4		24.3	24.3		24.3	24.3	
Effective Green, g (s)	63.5	63.5	63.5	47.4	47.4		24.3	24.3		24.3	24.3	
Actuated g/C Ratio	0.64	0.64	0.64	0.47	0.47		0.24	0.24		0.24	0.24	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	540	1183	983	477	1659		94	426		321	393	
v/s Ratio Prot	c0.09	0.20			0.19			0.03				0.08
v/s Ratio Perm	c0.35		0.03	0.02			c0.33			0.06		
v/c Ratio	0.70	0.32	0.05	0.05	0.40		1.36	0.13		0.25	0.31	
Uniform Delay, d1	9.4	8.4	6.9	14.2	17.1		37.9	29.6		30.5	31.0	
Progression Factor	0.69	0.57	0.17	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.6	0.1	0.2	0.7		216.9	0.1		0.4	0.5	
Delay (s)	9.6	5.4	1.3	14.3	17.8		254.7	29.8		30.9	31.5	
Level of Service	A	A	A	B	B		F	C		C	C	
Approach Delay (s)		6.9			17.7			168.2			31.4	
Approach LOS		A			B			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			84.1%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

5: Pickering Ridge West Access/Walmart East Access & Pickering Pkwy

SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	271	172	23	343	101	217	51	46	52	15	104
Future Volume (Veh/h)	35	271	172	23	343	101	217	51	46	52	15	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	295	187	25	373	110	236	55	50	57	16	113
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	0.90
vC, conflicting volume	484			484			1014	1000	396	1027	1039	433
vC1, stage 1 conf vol							466	466		479	479	
vC2, stage 2 conf vol							548	534		548	560	
vCu, unblocked vol	484			377			963	948	280	977	991	433
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			29	86	93	84	96	82
cM capacity (veh/h)	1088			1057			331	403	686	349	395	624
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	520	25	483	236	105	57	129					
Volume Left	38	25	0	236	0	57	0					
Volume Right	187	0	110	0	50	0	113					
cSH	1088	1057	1700	331	502	349	582					
Volume to Capacity	0.03	0.02	0.28	0.71	0.21	0.16	0.22					
Queue Length 95th (m)	0.9	0.6	0.0	41.6	6.3	4.6	6.7					
Control Delay (s)	1.0	8.5	0.0	38.9	14.1	17.3	12.9					
Lane LOS	A	A		E	B	C	B					
Approach Delay (s)	1.0	0.4		31.3		14.3						
Approach LOS				D		B						
<b>Intersection Summary</b>												
Average Delay			9.0									
Intersection Capacity Utilization			79.7%		ICU Level of Service					D		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	291	66	43	327	18	134	0	85	15	2	6
Future Volume (Veh/h)	11	291	66	43	327	18	134	0	85	15	2	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	316	72	47	355	20	146	0	92	16	2	7
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	375			388			845	845	354	929	871	367
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	375			388			845	845	354	929	871	367
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			46	100	87	92	99	99
cM capacity (veh/h)	1101			1182			269	287	693	208	277	682
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	400	422	238	25								
Volume Left	12	47	146	16								
Volume Right	72	20	92	7								
cSH	1101	1182	353	265								
Volume to Capacity	0.01	0.04	0.67	0.09								
Queue Length 95th (m)	0.3	1.0	37.5	2.5								
Control Delay (s)	0.4	1.3	34.0	20.0								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.4	1.3	34.0	20.0								
Approach LOS			D	C								
<b>Intersection Summary</b>												
Average Delay			8.6									
Intersection Capacity Utilization			59.7%		ICU Level of Service				B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
7: Notion Rd. & Pickering Pkwy

Existing (2023) Traffic Analysis  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	279	1	0	0	0	0	0	0	0	0	0	260
Future Volume (Veh/h)	279	1	0	0	0	0	0	0	0	0	0	260
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	303	1	0	0	0	0	0	0	0	0	0	283
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	144	142	142	142	283	3	283			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	144	142	142	142	283	3	283			0		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	63	100	100	100	100	100	100			100		
cM capacity (veh/h)	820	601	912	831	629	1084	1291			1636		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	304	0	0	283								
Volume Left	303	0	0	0								
Volume Right	0	0	0	283								
cSH	819	1700	1700	1636								
Volume to Capacity	0.37	0.02	0.00	0.00								
Queue Length 95th (m)	13.8	0.0	0.0	0.0								
Control Delay (s)	12.0	0.0	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	12.0	0.0	0.0	0.0								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			6.2									
Intersection Capacity Utilization			44.9%	ICU Level of Service							A	
Analysis Period (min)			15									

											
Movement	WBL	WBR	NBT	NBR	SBL	SBT					
Lane Configurations			  			  					
Traffic Volume (veh/h)	0	90	1619	285	0	1805					
Future Volume (Veh/h)	0	90	1619	285	0	1805					
Sign Control	Yield		Free			Free					
Grade	0%		0%			0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92					
Hourly flow rate (vph)	0	98	1760	310	0	1962					
Pedestrians	3										
Lane Width (m)	3.6										
Walking Speed (m/s)	1.2										
Percent Blockage	0										
Right turn flare (veh)											
Median type	None					None					
Median storage (veh)											
Upstream signal (m)	119					257					
pX, platoon unblocked	0.91	0.87				0.87					
vC, conflicting volume	2417	590				2073					
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1239	0				1700					
iC, single (s)	6.8	6.9				4.1					
iC, 2 stage (s)											
tF (s)	3.5	3.3				2.2					
p0 queue free %	100	90				100					
cM capacity (veh/h)	155	943				328					
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3			
Volume Total	98	587	587	587	310	654	654	654			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	98	0	0	0	310	0	0	0			
cSH	943	1700	1700	1700	1700	1700	1700	1700			
Volume to Capacity	0.10	0.35	0.35	0.35	0.18	0.38	0.38	0.38			
Queue Length 95th (m)	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Lane LOS	A										
Approach Delay (s)	9.3	0.0				0.0					
Approach LOS	A										
Intersection Summary											
Average Delay			0.2								
Intersection Capacity Utilization			43.5%		ICU Level of Service		A				
Analysis Period (min)			15								



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	478	274	1522	1073
v/c Ratio	0.62	0.77	0.45	0.32
Control Delay	35.4	46.6	13.2	15.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.4	46.6	13.2	15.0
Queue Length 50th (m)	43.1	53.0	66.0	49.0
Queue Length 95th (m)	52.6	75.9	m74.6	85.9
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1123	513	3349	3349
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.53	0.45	0.32

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	188	504	1400	0	0	987
Future Volume (vph)	188	504	1400	0	0	987
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3239	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3239	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	204	548	1522	0	0	1073
RTOR Reduction (vph)	18	18	0	0	0	0
Lane Group Flow (vph)	460	256	1522	0	0	1073
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	23.2	23.2	65.2			65.2
Effective Green, g (s)	23.2	23.2	65.2			65.2
Actuated g/C Ratio	0.23	0.23	0.65			0.65
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	751	337	3348			3348
v/s Ratio Prot			c0.30			0.21
v/s Ratio Perm	0.14	c0.18				
v/c Ratio	0.61	0.76	0.45			0.32
Uniform Delay, d1	34.4	35.8	8.6			7.7
Progression Factor	1.00	1.00	1.36			1.74
Incremental Delay, d2	1.5	9.4	0.2			0.2
Delay (s)	35.9	45.2	12.0			13.5
Level of Service	D	D	B			B
Approach Delay (s)	39.3		12.0			13.5
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			18.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			87.1%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	517	506	418	1121	587	690
v/c Ratio	0.94	0.89	0.68	0.74	1.20	0.35
Control Delay	59.2	47.8	20.0	32.5	143.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	47.8	20.0	32.5	143.1	4.1
Queue Length 50th (m)	105.3	93.9	37.0	69.7	-116.6	11.4
Queue Length 95th (m)	#172.3	#161.2	74.7	86.5	#205.6	13.9
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	580	628	1520	491	1996
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.87	0.67	0.74	1.20	0.35

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
 10: Brock Rd. & Hwy 401 W-N/S Off-Ramp/Hwy 401 N/S-E On-Ramp

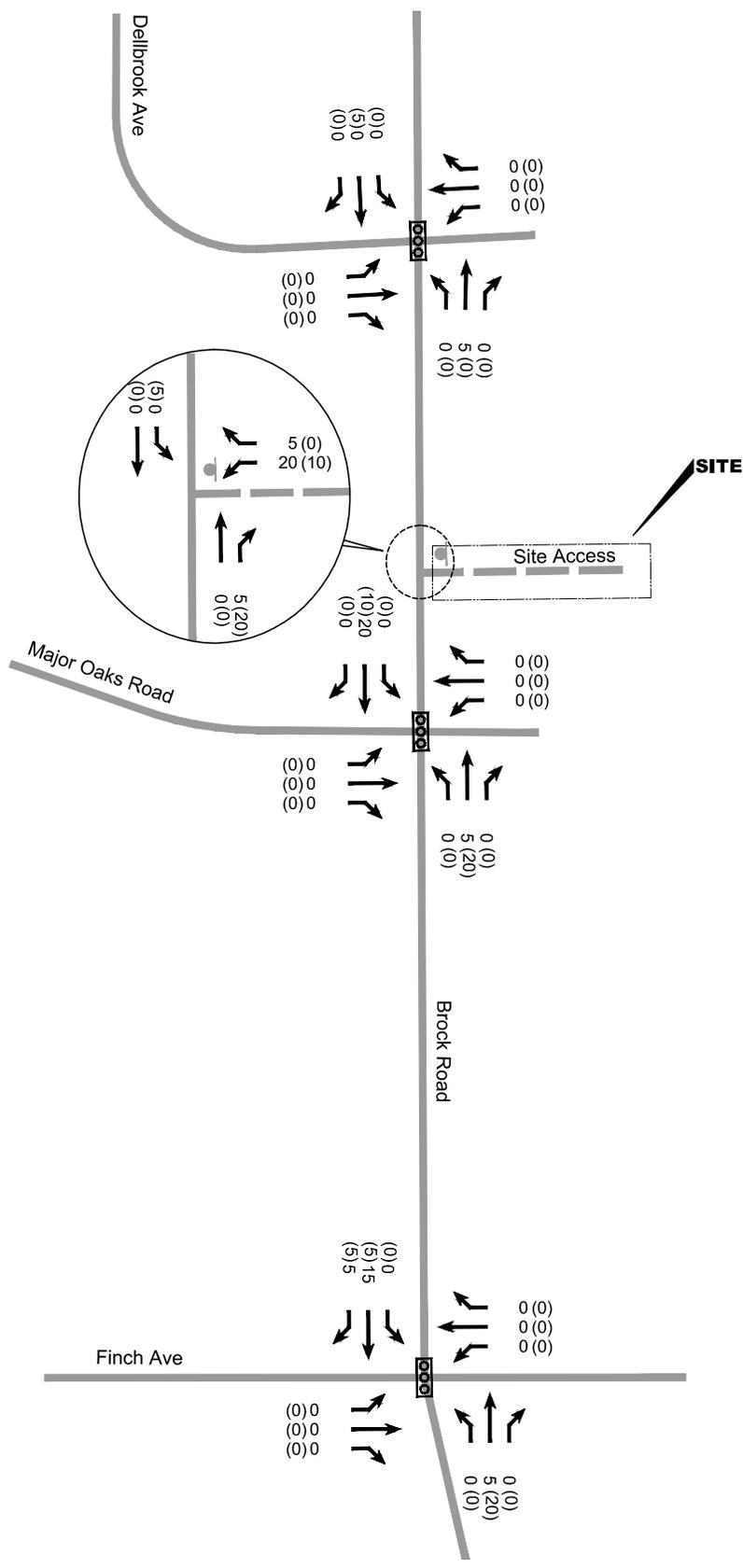
Existing (2023) Traffic Analysis  
 SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	898	0	428	0	0	0	0	779	252	540	635	0	
Future Volume (vph)	898	0	428	0	0	0	0	779	252	540	635	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1609	1461					4874		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1609	1461					4874		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	976	0	465	0	0	0	0	847	274	587	690	0	
RTOR Reduction (vph)	0	44	142	0	0	0	0	58	0	0	0	0	
Lane Group Flow (vph)	517	462	276	0	0	0	0	1063	0	587	690	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	32.5	32.5	32.5					30.0		55.9	55.9		
Effective Green, g (s)	32.5	32.5	32.5					30.0		55.9	55.9		
Actuated g/C Ratio	0.32	0.32	0.32					0.30		0.56	0.56		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	551	522	474					1462		484	1997		
v/s Ratio Prot								0.22		c0.28	0.19		
v/s Ratio Perm	c0.30	0.29	0.19							c0.40			
v/c Ratio	0.94	0.89	0.58					0.73		1.21	0.35		
Uniform Delay, d1	32.8	32.0	28.1					31.3		28.7	12.1		
Progression Factor	1.00	1.00	1.00					1.00		1.56	0.30		
Incremental Delay, d2	23.8	16.3	1.8					3.2		113.0	0.5		
Delay (s)	56.5	48.3	29.9					34.5		157.7	4.0		
Level of Service	E	D	C					C		F	A		
Approach Delay (s)		45.9			0.0			34.5			74.7		
Approach LOS		D			A			C			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			52.2									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			87.1%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

## **APPENDIX 6**

# Background Development Site Traffic Volumes





Date Plotted: November 9, 2017 File name: P:\17734\03\Graphics\Fig08-01-ST.dwg

### SITE TRAFFIC VOLUMES

00 AM Peak Hour  
(00) PM Peak Hour



### 5.3 Site Trip Distribution and Assignment

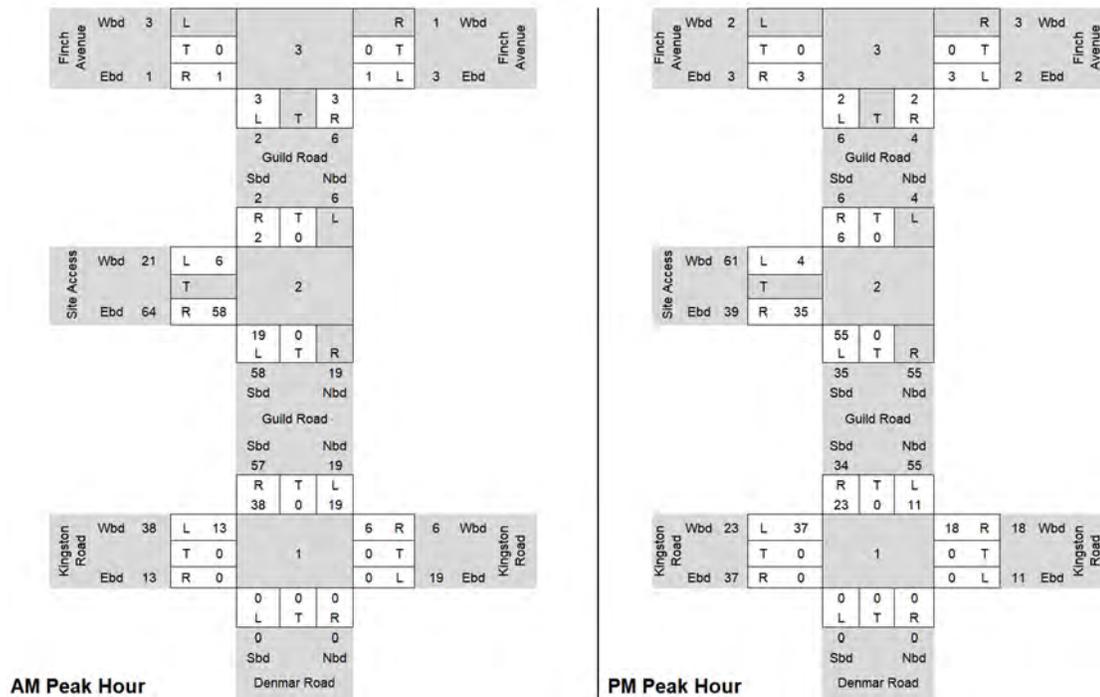
The distribution of site traffic was derived from 2011 Transportation Tomorrow Survey (TTS) summary data for the City of Pickering and assigned to the road network based on existing traffic patterns. Additionally, this data was compared to site distribution of the nearby residential Marshall Homes Traffic Study for consistency.

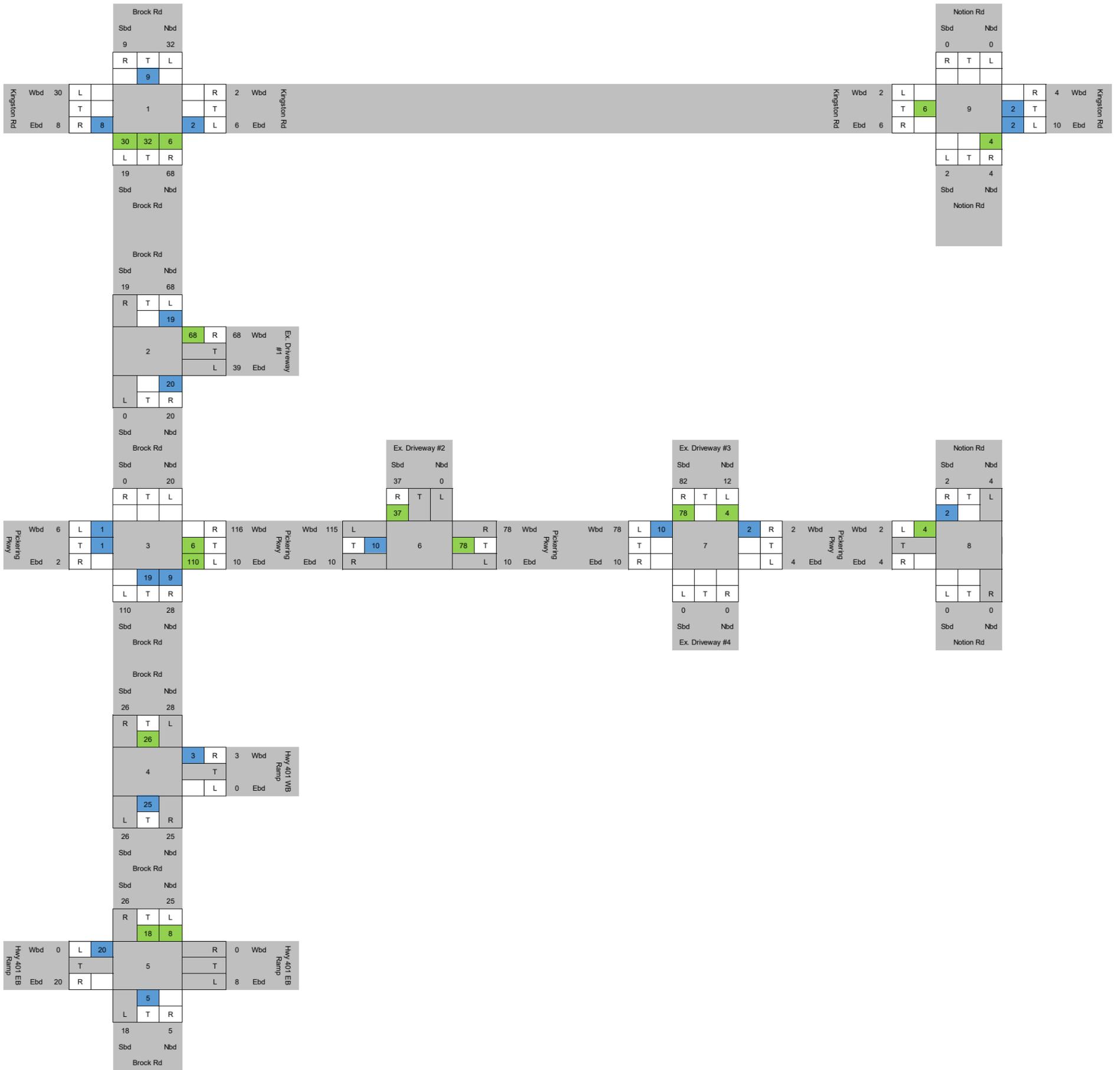
**Table 5-2 Site Trip Distribution**

Trip Orientation	Distribution (%)
North	5
South	5
East	30
West	60
Total	100

The estimated site trips generated by the proposed residential development as assigned to the nearby road network for the weekday a.m. and p.m. peak hours is shown in **Figure 5-1**.

**Figure 5-1 Site Traffic Volumes**





Scale: NTS

Figure 5-1  
Phase 1 Site Trips AM  
1899 Brock Rd, Pickering - Transportation Impact Study



Note 20M-00427-00 Traffic Model\_20210128.dwg



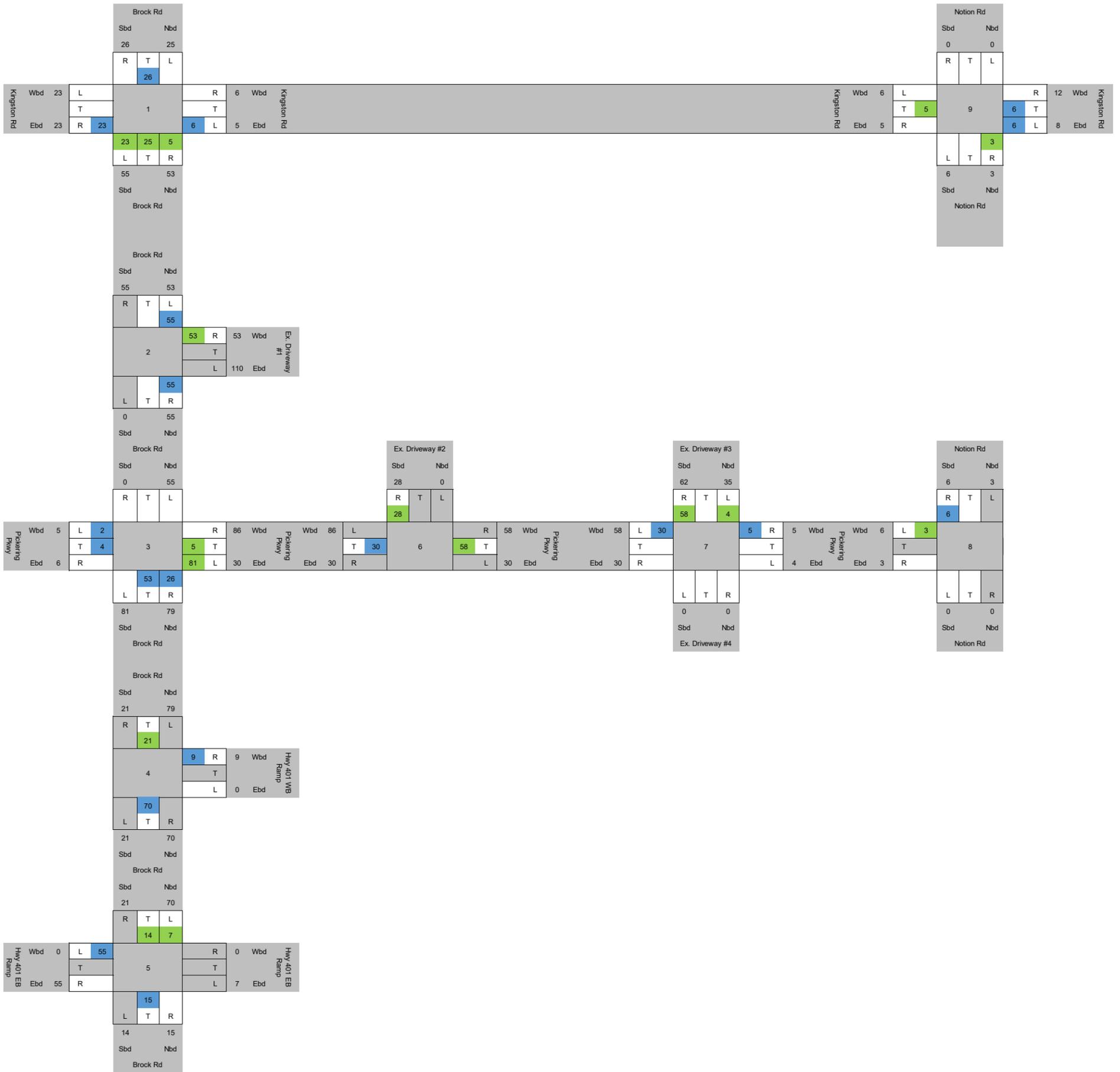


Figure 5-3  
Phase 1 2029 SAT Site Trips  
1899 Brock Rd, Pickering - Transportation Impact Study

■ Inbound Trips  
■ Outbound Trips

Scale: NTS



Note 20M-00427-00 Traffic Model\_20210128.dwg

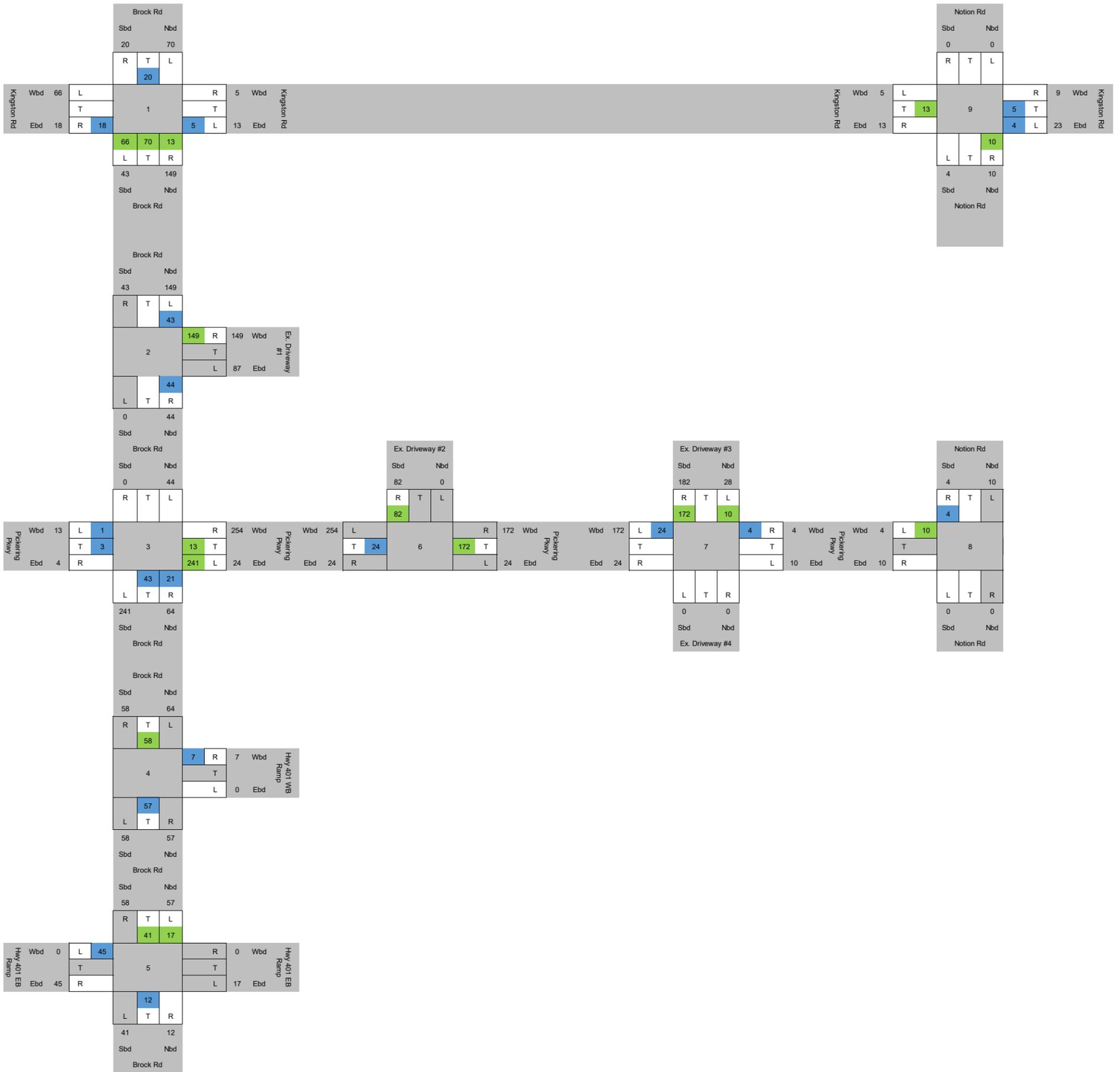


Figure 5-4  
 Block 1 2034 AM Site Trips  
 1899 Brock Rd, Pickering - Transportation Impact Study

■ Inbound Trips  
■ Outbound Trips

Scale: NTS



Note 20M-00427-00 Traffic Model\_20210128.dwg

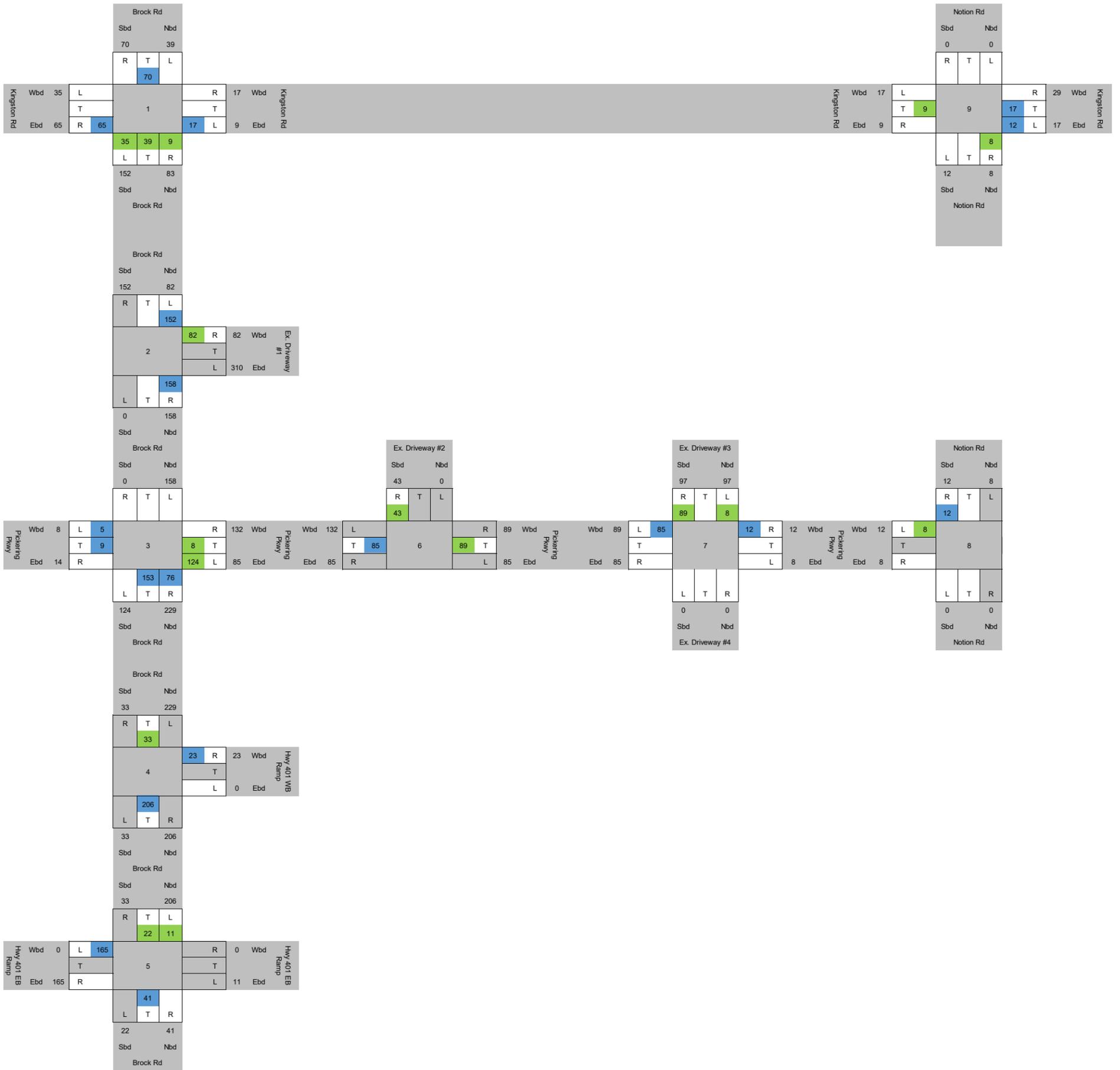


Figure 5-5  
 Block 1 2034 PM Site Trips  
 1899 Brock Rd, Pickering - Transportation Impact Study

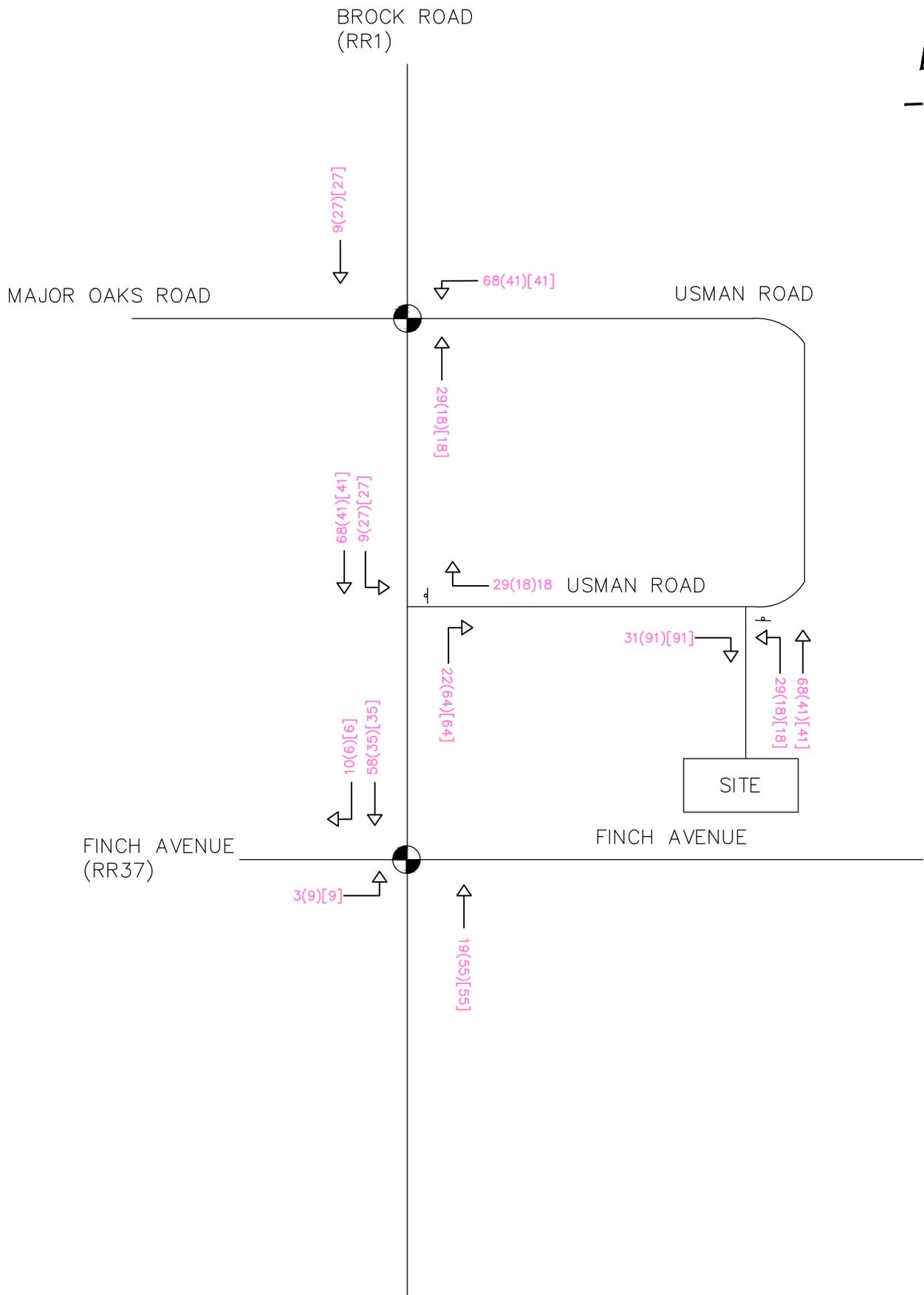
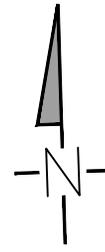
■ Inbound Trips  
■ Outbound Trips

Scale: NTS



Note 20M-00427-00 Traffic Model\_20210128.dwg





NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	A.M. (P.M.) [FRIDAY] PEAK HOUR TRAFFIC VOLUMES

Project	2055 Brock Road Duffins Forest Inc. 2055 Brock Road	
Drawing	Trip Assignment	



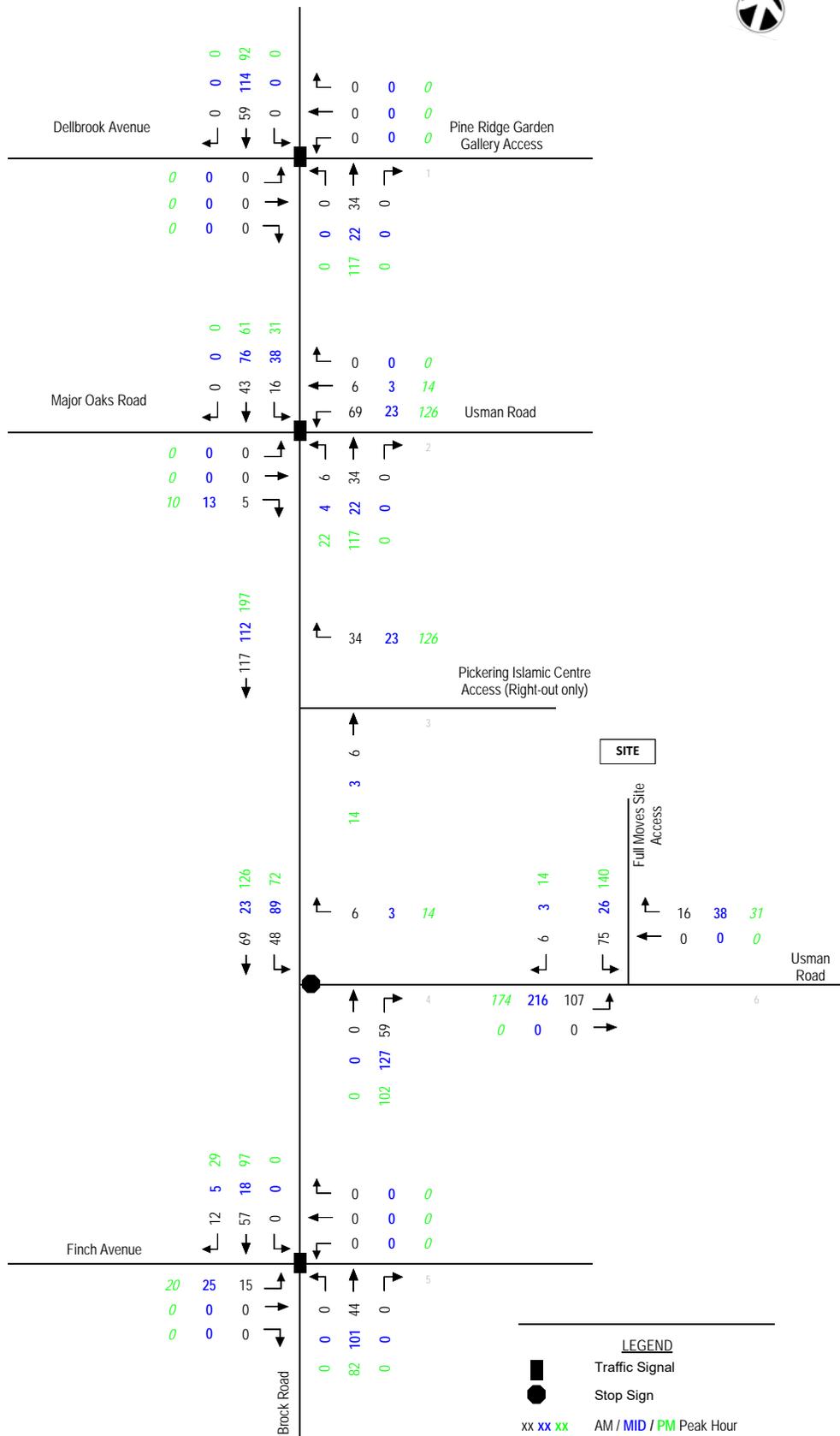
**CROZIER & ASSOCIATES**  
Consulting Engineers

THE HARBOUREDGE BUILDING,  
40 HURON STREET, SUITE 301,  
COLLINGWOOD, ON L9Y 4R3  
705 446-3510 T  
705 446-3520 F  
WWW.CFCROZIER.CA  
INFO@CFCROZIER.CA

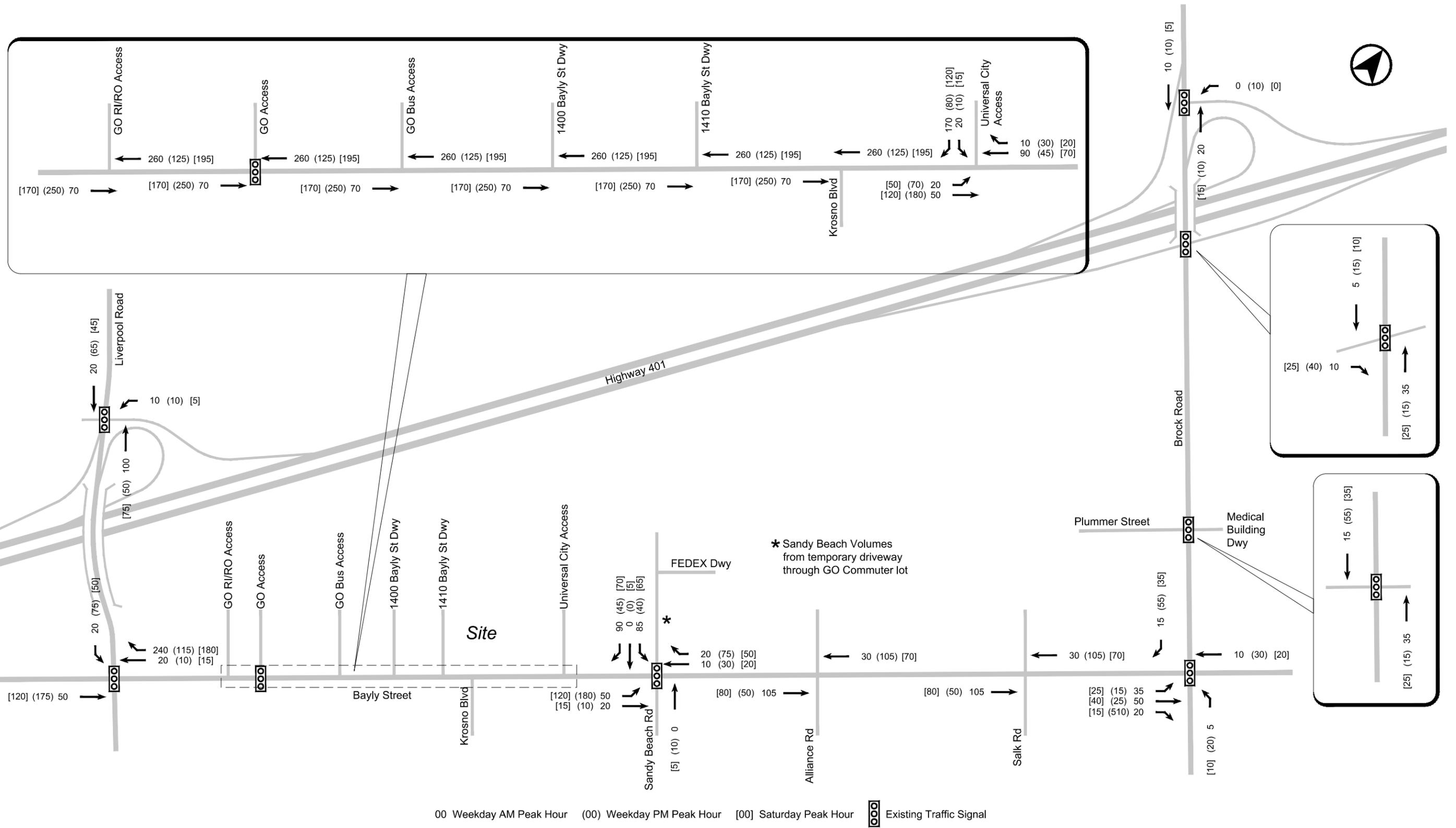
Drawn By	S.A.	Design By	M.J.	Project	1807-5430
Scale	N.T.S.	Date	OCT 4, 2019	Check By	M.C.

FIG. 9

Figure 7: Site Traffic Assignment, Weekday AM, Midday and PM Peak Hours

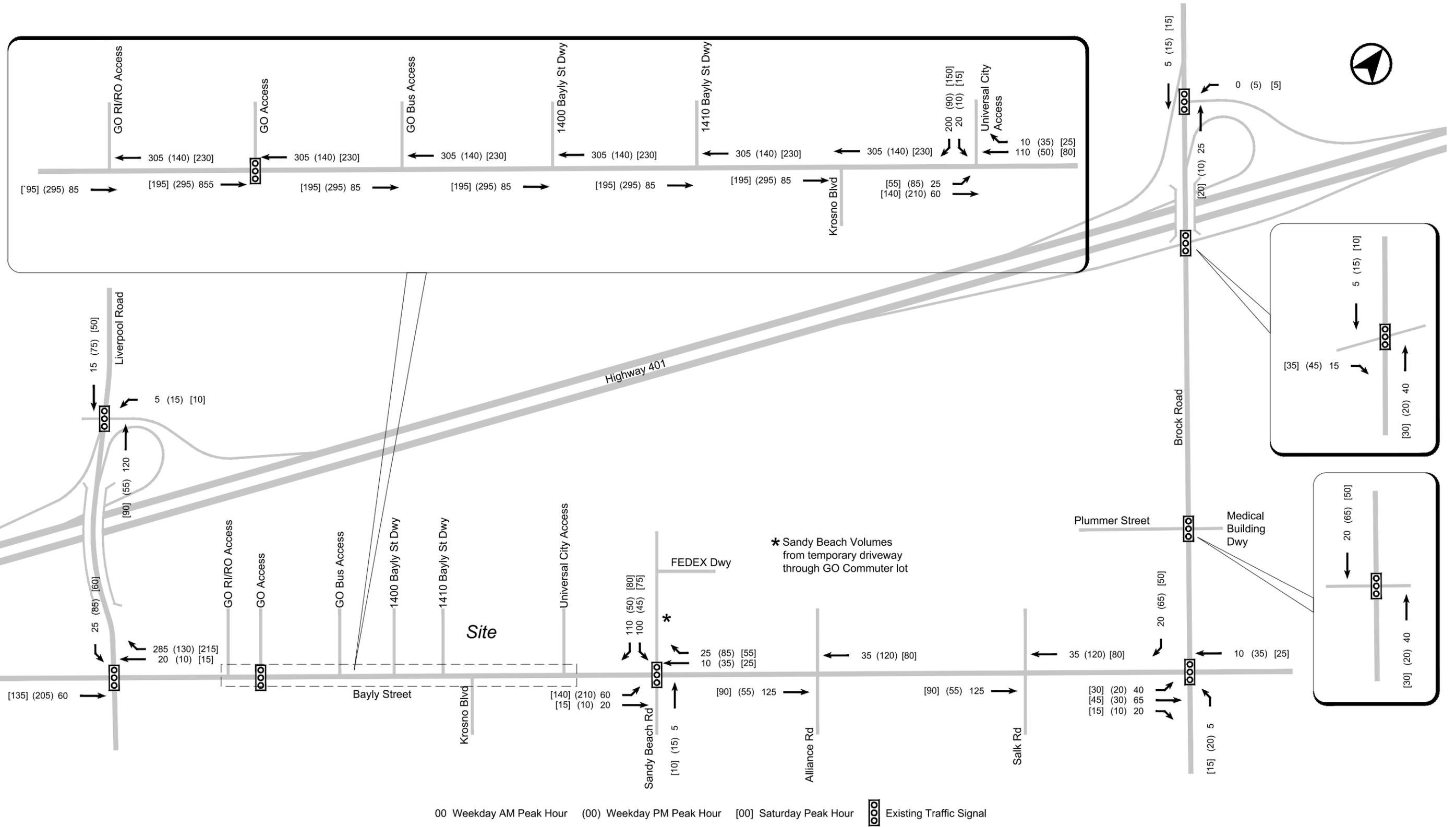


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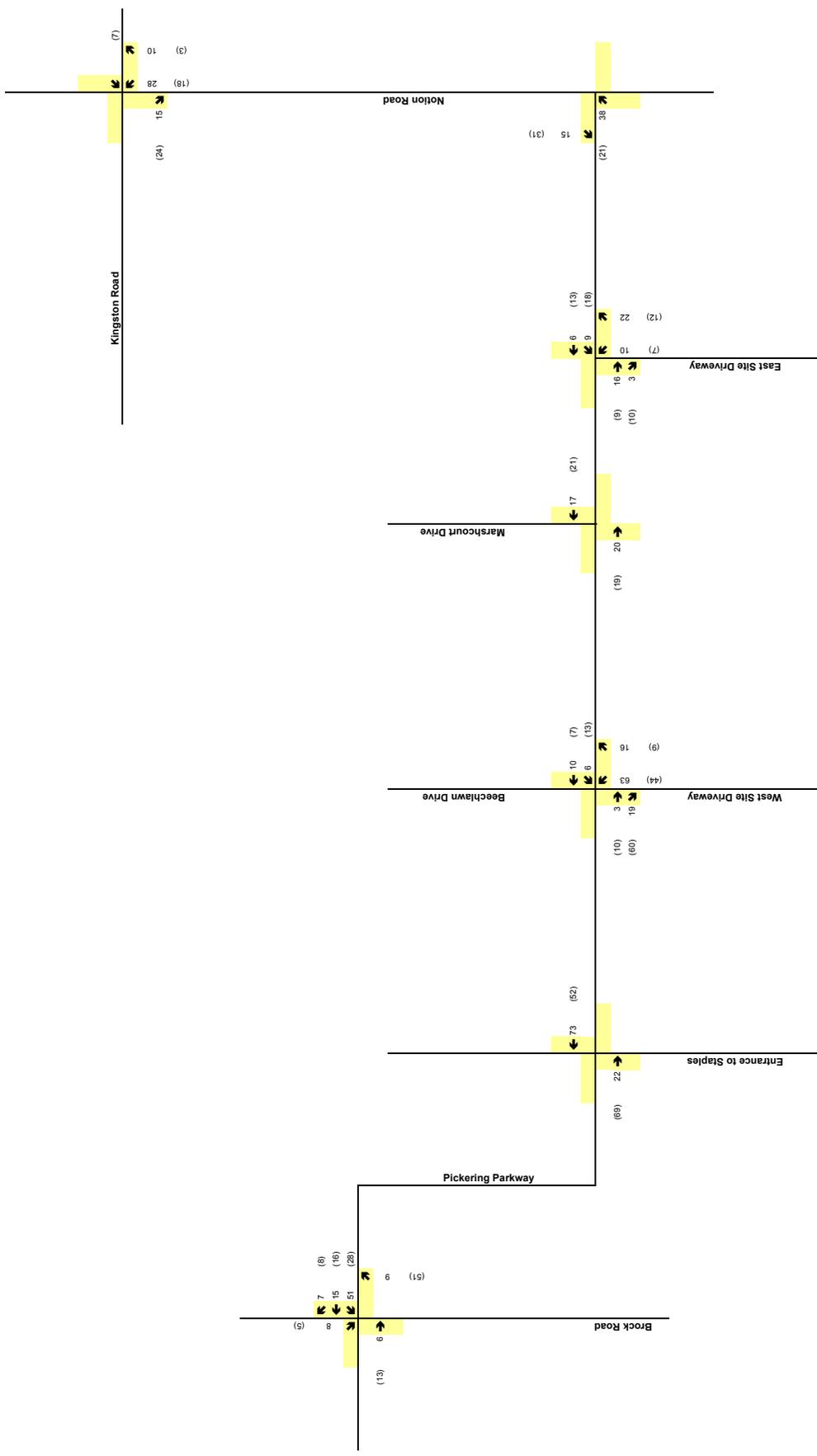
**NEW SITE TRAFFIC VOLUMES  
9 Year (2026)**

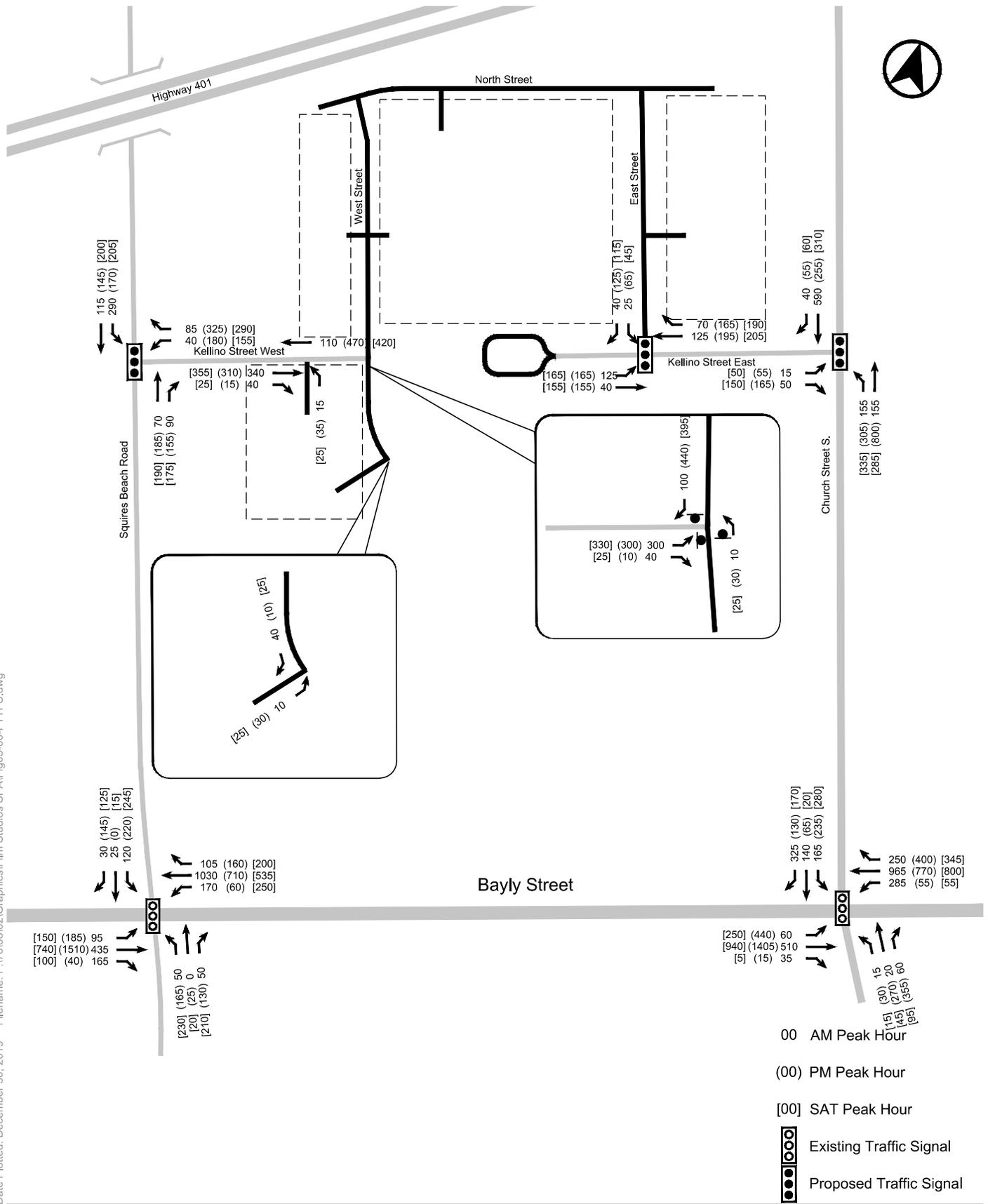
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## NEW SITE TRAFFIC VOLUMES 10 Year (2027)

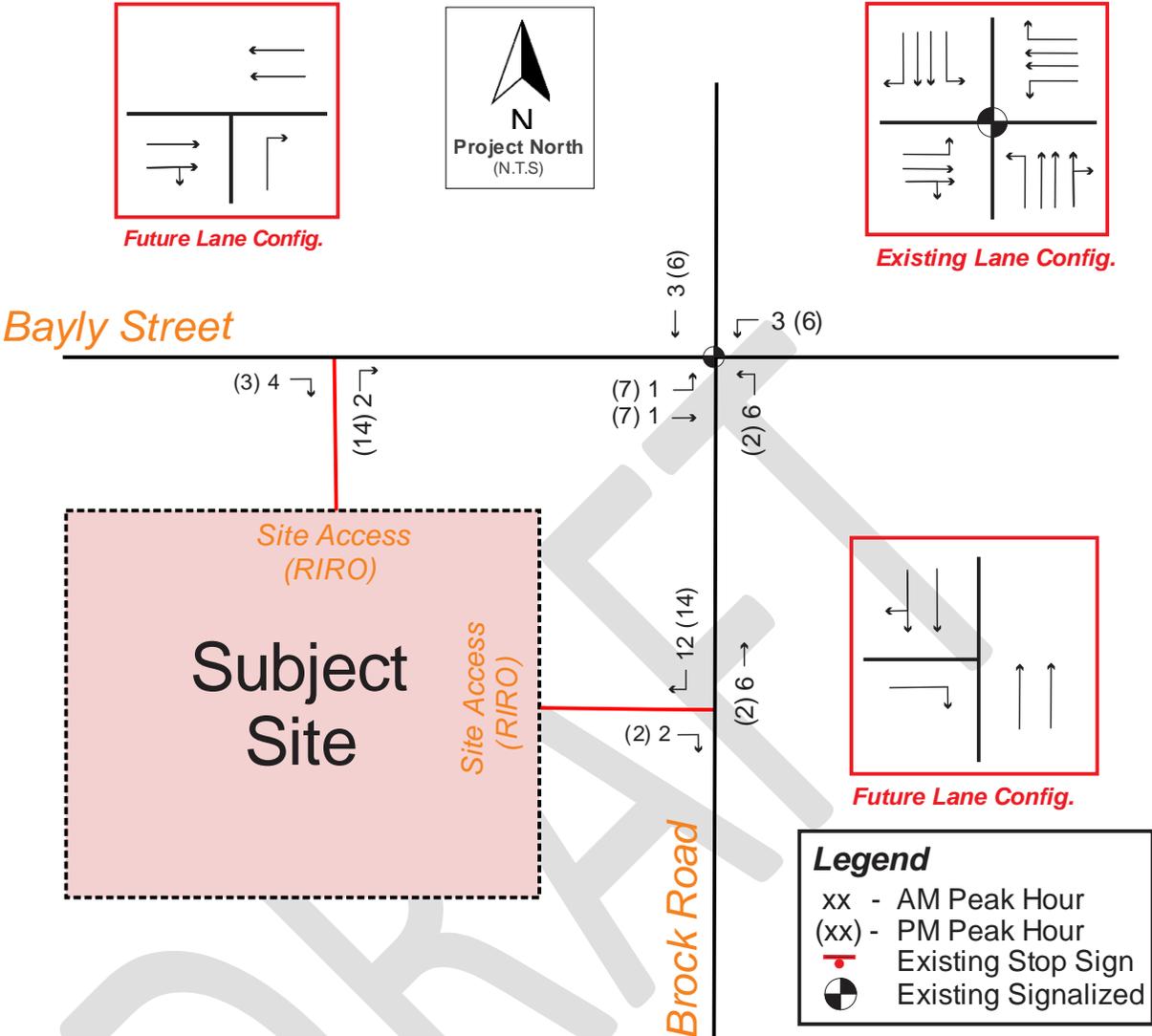
**Figure 3.2**  
 Site-Generated Traffic Volumes  
 Notion Road, Pickering





## FUTURE TOTAL TRAFFIC VOLUMES (WITH FILM STUDIO)

Figure 4-1 - Site Generated Traffic Volumes



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted future (2028) total traffic volumes under proposed conditions (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 5-1** and were analyzed using Synchro 10 software. The detailed calculations are provided in **Appendix H** and summarized in **Table 5.1**.

## 4.2 Site Trip Distribution and Assignment

The distribution of subject site trips was based on the 2006 Transportation Tomorrow Survey (TTS) and the proximity of the subject site regarding major roadways and the location of employment centres.

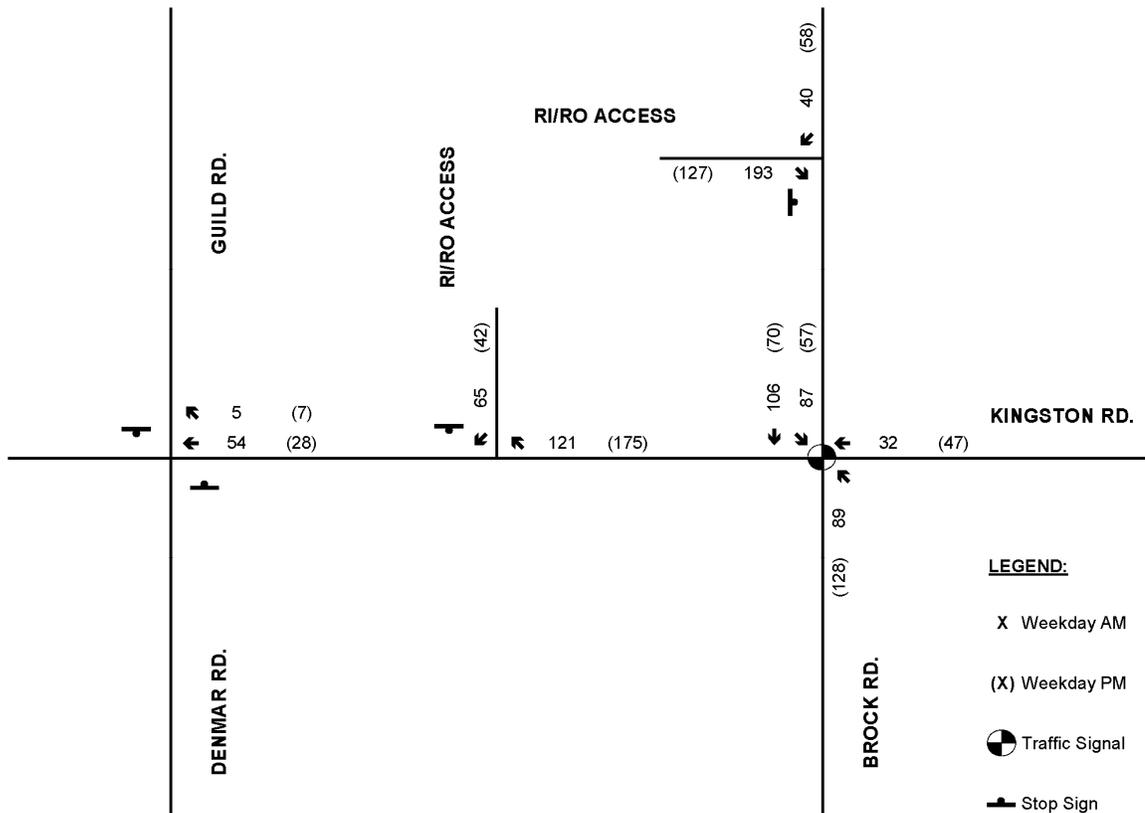
**Table 3** summarizes the inbound and outbound site trip distribution adopted in the study to assign site trips to the study area network for the weekday am and pm peak hours.

**Table 3: Site Trip Distribution**

Travel Orientation (To / From)	Distribution (%)
North on Brock Road	5
South on Brock Road	55
East on Kingston Road	20
West on Kingston Road	20
<b>Total</b>	<b>100</b>

**Figure 4-1** shows the resulting site trips generated by the subject development as assigned to the nearby road network for the weekday am and weekday pm peak hours.

**Figure 4-1 Estimated New Site Traffic**



## **APPENDIX 7**

# Future Background (2026) Synchro HCM Outputs



1755 Pickering Pkway TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	340	249	398	535	185	155	707	180	258	1677	203
v/c Ratio	0.86	0.32	0.42	3.06	0.46	0.30	0.91	0.47	0.29	0.66	0.90	0.30
Control Delay	110.9	31.8	14.9	966.9	33.3	5.4	74.0	34.2	5.7	27.0	43.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	31.8	14.9	966.9	33.3	5.4	74.0	34.2	5.7	27.0	43.1	4.7
Queue Length 50th (m)	23.7	33.3	17.7	~171.7	54.8	0.0	21.9	51.9	0.0	36.9	142.0	0.0
Queue Length 95th (m)	#56.6	46.4	41.4	#234.6	71.9	16.2	#63.9	65.0	16.5	56.0	164.0	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	592	130	1151	621	171	1493	613	400	1871	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.32	0.42	3.06	0.46	0.30	0.91	0.47	0.29	0.65	0.90	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

1755 Pickering Pkway TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	313	229	366	492	170	143	650	166	237	1543	187	
Future Volume (vph)	87	313	229	366	492	170	143	650	166	237	1543	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1700	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.28	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	182	4673	1536	509	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	340	249	398	535	185	155	707	180	258	1677	203	
RTOR Reduction (vph)	0	0	102	0	0	124	0	0	122	0	0	128	
Lane Group Flow (vph)	95	340	147	398	535	61	155	707	58	258	1677	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.39	0.32	0.32	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1495	491	373	1871	545	
v/s Ratio Prot	0.06	0.10		c0.23	c0.15		c0.06	0.15		c0.08	c0.33		
v/s Ratio Perm			0.10			0.04	0.30		0.04	0.24		0.05	
v/c Ratio	0.86	0.32	0.30	3.06	0.46	0.12	0.94	0.47	0.12	0.69	0.90	0.14	
Uniform Delay, d1	55.6	30.7	30.6	55.5	31.7	27.9	28.9	32.7	28.8	21.1	35.5	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.0	0.8	1.6	947.8	1.4	0.5	51.8	1.1	0.5	5.5	7.2	0.5	
Delay (s)	101.5	31.5	32.1	1003.3	33.0	28.5	80.7	33.8	29.3	26.6	42.7	25.5	
Level of Service	F	C	C	F	C	C	F	C	C	C	D	C	
Approach Delay (s)		41.5			377.7			40.0			39.1		
Approach LOS		D			F			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			115.6		HCM 2000 Level of Service					F			
HCM 2000 Volume to Capacity ratio			0.92										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			110.9%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	732	40	179	1078	169	3
v/c Ratio	0.01	0.32	0.04	0.31	0.40	0.65	0.01
Control Delay	8.0	8.3	1.1	4.0	4.5	24.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	8.3	1.1	4.0	4.5	24.7	0.0
Queue Length 50th (m)	0.2	27.3	0.0	5.2	26.6	7.8	0.0
Queue Length 95th (m)	1.5	51.4	2.2	14.5	52.0	27.5	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	333	2283	898	602	2713	486	471
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.32	0.04	0.30	0.40	0.35	0.01

Intersection Summary

1755 Pickering Pkway TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	673	37	165	992	0	37	0	119	1	0	2
Future Volume (vph)	3	673	37	165	992	0	37	0	119	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1799	3438	1320	1684	3505			1466			1685	
Flt Permitted	0.27	1.00	1.00	0.34	1.00			0.92			0.86	
Satd. Flow (perm)	502	3438	1320	604	3505			1361			1469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	732	40	179	1078	0	40	0	129	1	0	2
RTOR Reduction (vph)	0	0	13	0	0	0	0	115	0	0	3	0
Lane Group Flow (vph)	3	732	27	179	1078	0	0	54	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	66.4	66.4	66.4	77.4	77.4			10.6			10.6	
Effective Green, g (s)	66.4	66.4	66.4	77.4	77.4			10.6			10.6	
Actuated g/C Ratio	0.66	0.66	0.66	0.77	0.77			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	333	2282	876	553	2712			144			155	
v/s Ratio Prot		0.21		0.03	c0.31							
v/s Ratio Perm	0.01		0.02	0.22				c0.04			0.00	
v/c Ratio	0.01	0.32	0.03	0.32	0.40			0.37			0.00	
Uniform Delay, d1	5.7	7.2	5.8	3.1	3.7			41.6			40.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.3	0.4			1.6			0.0	
Delay (s)	5.7	7.5	5.8	3.5	4.1			43.2			40.0	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		7.4			4.0			43.2			40.0	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.3		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				15.0			
Intersection Capacity Utilization			71.2%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	328	498	96	49	159	858	217	57	1918	210
v/c Ratio	0.38	0.87dr	0.96	0.15	0.09	0.69	0.41	0.29	0.16	0.95	0.29
Control Delay	46.1	34.1	74.8	21.7	4.4	42.3	23.4	6.1	12.7	42.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	34.1	74.8	21.7	4.4	42.3	23.4	6.1	12.7	42.0	4.1
Queue Length 50th (m)	11.4	21.8	55.2	12.5	0.2	20.4	42.6	4.7	5.1	-142.6	0.0
Queue Length 95th (m)	23.2	35.4	#86.4	23.2	5.1	#53.8	52.4	12.3	12.2	#181.5	14.5
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	211	604	520	707	618	232	2105	739	357	2012	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.54	0.96	0.14	0.08	0.69	0.41	0.29	0.16	0.95	0.29

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkway TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
AM Peak Hour

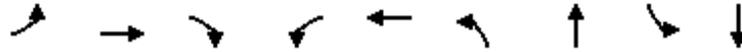
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	64	237	458	88	45	146	789	200	52	1765	193
Future Volume (vph)	55	64	237	458	88	45	146	789	200	52	1765	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3089		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	1283	3089		3155	1792	1462	169	4759	1397	560	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	70	258	498	96	49	159	858	217	57	1918	210
RTOR Reduction (vph)	0	100	0	0	0	32	0	0	122	0	0	126
Lane Group Flow (vph)	60	228	0	498	96	17	159	858	95	57	1918	84
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.4	12.4		16.5	35.4	35.4	52.0	43.6	43.6	45.3	39.9	39.9
Effective Green, g (s)	12.4	12.4		16.5	35.4	35.4	52.0	43.6	43.6	45.3	39.9	39.9
Actuated g/C Ratio	0.12	0.12		0.16	0.35	0.35	0.52	0.44	0.44	0.45	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	383		520	634	517	228	2074	609	318	2009	596
v/s Ratio Prot		c0.07		c0.16	0.05		c0.06	0.18		0.01	c0.38	
v/s Ratio Perm	0.05					0.01	0.30		0.07	0.07		0.06
v/c Ratio	0.38	0.87dr		0.96	0.15	0.03	0.70	0.41	0.16	0.18	0.95	0.14
Uniform Delay, d1	40.3	41.4		41.4	22.0	21.1	20.2	19.4	17.1	15.5	29.2	19.1
Progression Factor	1.00	1.00		1.06	1.00	1.35	1.67	1.13	1.74	1.00	1.00	1.00
Incremental Delay, d2	1.5	2.5		28.5	0.1	0.0	8.4	0.6	0.5	0.3	11.9	0.5
Delay (s)	41.8	43.9		72.4	22.1	28.5	42.1	22.6	30.2	15.8	41.1	19.6
Level of Service	D	D		E	C	C	D	C	C	B	D	B
Approach Delay (s)		43.6			61.6			26.4			38.4	
Approach LOS		D			E			C			D	

Intersection Summary

HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	199	28	3	372	35	13	27	206
v/c Ratio	0.20	0.15	0.02	0.00	0.18	0.48	0.07	0.21	0.62
Control Delay	3.3	4.0	2.1	7.3	6.5	63.3	27.0	44.3	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	4.0	2.1	7.3	6.5	63.3	27.0	44.3	15.7
Queue Length 50th (m)	3.6	8.0	0.0	0.2	12.1	7.0	1.0	5.2	1.5
Queue Length 95th (m)	15.7	19.8	m1.5	m1.1	21.2	16.8	6.5	13.2	22.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	974	1309	1233	807	2117	208	482	361	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.15	0.02	0.00	0.18	0.17	0.03	0.07	0.36

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	183	26	3	309	33	32	5	7	25	7	182
Future Volume (vph)	147	183	26	3	309	33	32	5	7	25	7	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1727	1681	1574	1798	3139		1749	1701		1636	1543	
Flt Permitted	0.51	1.00	1.00	0.63	1.00		0.40	1.00		0.75	1.00	
Satd. Flow (perm)	923	1681	1574	1197	3139		744	1701		1290	1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	199	28	3	336	36	35	5	8	27	8	198
RTOR Reduction (vph)	0	0	6	0	4	0	0	7	0	0	178	0
Lane Group Flow (vph)	160	199	22	3	368	0	35	6	0	27	28	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Effective Green, g (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.78	0.78	0.78	0.67	0.67		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	779	1309	1226	806	2115		73	168		127	152	
v/s Ratio Prot	c0.02	0.12			0.12			0.00			0.02	
v/s Ratio Perm	c0.14		0.01	0.00			c0.05			0.02		
v/c Ratio	0.21	0.15	0.02	0.00	0.17		0.48	0.03		0.21	0.18	
Uniform Delay, d1	2.7	2.8	2.5	5.3	6.0		42.6	40.7		41.5	41.3	
Progression Factor	1.22	1.23	1.99	1.07	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2	0.0	0.0	0.2		4.9	0.1		0.8	0.6	
Delay (s)	3.5	3.7	5.0	5.7	6.1		47.5	40.8		42.3	41.9	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		3.7			6.1			45.7			42.0	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.24									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			72.4%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	168	25	8	273	24	42	3	4	12	3	30
Future Volume (Veh/h)	22	168	25	8	273	24	42	3	4	12	3	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	183	27	9	297	26	46	3	4	13	3	33
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked												
vC, conflicting volume	326			210			595	588	198	582	589	314
vC1, stage 1 conf vol							244	244		331	331	
vC2, stage 2 conf vol							350	344		251	258	
vCu, unblocked vol	326			210			595	588	198	582	589	314
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			99			92	99	99	98	99	95
cM capacity (veh/h)	1242			1373			550	552	790	591	562	729
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	234	9	323	46	7	13	36					
Volume Left	24	9	0	46	0	13	0					
Volume Right	27	0	26	0	4	0	33					
cSH	1242	1373	1700	550	667	591	711					
Volume to Capacity	0.02	0.01	0.19	0.08	0.01	0.02	0.05					
Queue Length 95th (m)	0.5	0.2	0.0	2.2	0.3	0.5	1.3					
Control Delay (s)	1.0	7.6	0.0	12.1	10.5	11.2	10.3					
Lane LOS	A	A		B	B	B	B					
Approach Delay (s)	1.0	0.2		11.9		10.6						
Approach LOS				B		B						
<b>Intersection Summary</b>												
Average Delay			2.2									
Intersection Capacity Utilization			44.8%		ICU Level of Service					A		
Analysis Period (min)			15									

6: East Site Access/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	177	8	17	294	6	11	0	10	2	1	1
Future Volume (Veh/h)	0	177	8	17	294	6	11	0	10	2	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	192	9	18	320	7	12	0	11	2	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	329			202			560	562	198	570	564	328
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	329			202			560	562	198	570	564	328
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			99			97	100	99	100	100	100
cM capacity (veh/h)	1240			1381			420	432	846	424	431	534
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	201	345	23	4								
Volume Left	0	18	12	2								
Volume Right	9	7	11	1								
cSH	1240	1381	554	449								
Volume to Capacity	0.00	0.01	0.04	0.01								
Queue Length 95th (m)	0.0	0.3	1.0	0.2								
Control Delay (s)	0.0	0.5	11.8	13.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.5	11.8	13.1								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			0.9									
Intersection Capacity Utilization			40.4%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkway TIS  
7: Notion Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	11	0	0	9	6	0	0	0	6	0	178
Future Volume (Veh/h)	163	11	0	0	9	6	0	0	0	6	0	178
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	177	12	0	0	10	7	0	0	0	7	0	193
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	122	110	96	116	207	0	193			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	122	110	96	116	207	0	193			0		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	78	98	100	100	98	99	100			99		
cM capacity (veh/h)	816	625	965	848	544	857	1392			1161		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	189	17	0	200								
Volume Left	177	0	0	7								
Volume Right	0	7	0	193								
cSH	801	641	1700	1161								
Volume to Capacity	0.24	0.03	0.00	0.01								
Queue Length 95th (m)	7.3	0.7	0.0	0.1								
Control Delay (s)	10.9	10.8	0.0	0.3								
Lane LOS	B	B		A								
Approach Delay (s)	10.9	10.8	0.0	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			34.3%		ICU Level of Service					A		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	8	1157	53	0	2602			
Future Volume (Veh/h)	0	8	1157	53	0	2602			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	9	1258	58	0	2828			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.68	0.91			0.91				
vC, conflicting volume	2202	420			1317				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	190	0			984				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	99			100				
cM capacity (veh/h)	536	987			642				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	9	419	419	419	58	943	943	943	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	9	0	0	0	58	0	0	0	
cSH	987	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.01	0.25	0.25	0.25	0.03	0.55	0.55	0.55	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	8.7	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			53.6%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	731	282	1003	1488
v/c Ratio	0.77	0.64	0.36	0.49
Control Delay	38.6	28.7	13.2	11.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.6	28.7	13.2	11.4
Queue Length 50th (m)	70.2	39.6	33.1	53.2
Queue Length 95th (m)	83.1	65.0	m36.3	m58.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1263	561	2805	3050
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.50	0.36	0.49

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	288	923	0	0	1369
Future Volume (vph)	644	288	923	0	0	1369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3388	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3388	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	313	1003	0	0	1488
RTOR Reduction (vph)	4	58	0	0	0	0
Lane Group Flow (vph)	727	224	1003	0	0	1488
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.8	27.8	60.6			60.6
Effective Green, g (s)	27.8	27.8	60.6			60.6
Actuated g/C Ratio	0.28	0.28	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	941	381	2806			3051
v/s Ratio Prot			0.22			c0.30
v/s Ratio Perm	c0.21	0.16				
v/c Ratio	0.77	0.59	0.36			0.49
Uniform Delay, d1	33.2	31.2	9.9			11.0
Progression Factor	1.00	1.00	1.23			0.94
Incremental Delay, d2	4.0	2.3	0.1			0.3
Delay (s)	37.2	33.5	12.3			10.7
Level of Service	D	C	B			B
Approach Delay (s)	36.2		12.3			10.7
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			18.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			85.1%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	479	462	452	1010	591	1597
v/c Ratio	0.98	0.99	0.97	0.88	1.01	0.79
Control Delay	70.9	69.9	66.4	41.4	66.5	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	69.9	66.4	41.4	66.5	18.4
Queue Length 50th (m)	101.2	90.9	84.2	64.2	-116.3	125.7
Queue Length 95th (m)	#170.7	#165.2	#153.8	#89.3	#179.7	140.4
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	491	468	465	1144	584	2032
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.99	0.97	0.88	1.01	0.79

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	565	0	717	0	0	0	0	609	320	544	1469	0	
Future Volume (vph)	565	0	717	0	0	0	0	609	320	544	1469	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.89	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.99	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1391	1382					4038		1736	3505		
Flt Permitted	0.95	0.99	1.00					1.00		0.14	1.00		
Satd. Flow (perm)	1618	1391	1382					4038		252	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	614	0	779	0	0	0	0	662	348	591	1597	0	
RTOR Reduction (vph)	0	45	45	0	0	0	0	95	0	0	0	0	
Lane Group Flow (vph)	479	417	407	0	0	0	0	915	0	591	1597	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	30.4	30.4	30.4					26.0		58.0	58.0		
Effective Green, g (s)	30.4	30.4	30.4					26.0		58.0	58.0		
Actuated g/C Ratio	0.30	0.30	0.30					0.26		0.58	0.58		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	491	422	420					1049		576	2032		
v/s Ratio Prot								0.23		c0.30	0.46		
v/s Ratio Perm	0.30	0.30	0.29							c0.30			
v/c Ratio	0.98	0.99	0.97					0.87		1.03	0.79		
Uniform Delay, d1	34.4	34.6	34.3					35.4		27.5	16.2		
Progression Factor	1.00	1.00	1.00					1.00		1.07	0.94		
Incremental Delay, d2	34.0	40.1	35.3					10.0		41.7	2.7		
Delay (s)	68.5	74.7	69.6					45.4		71.2	18.0		
Level of Service	E	E	E					D		E	B		
Approach Delay (s)		70.9			0.0			45.4			32.4		
Approach LOS		E			A			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			47.0									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.04										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			85.1%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	271	1122	348	307	729	266	318	1605	474	257	1175	237
v/c Ratio	1.16	1.02	0.58	1.23	0.65	0.43	1.35	1.04	0.72	1.20	0.81	0.39
Control Delay	155.9	73.2	18.9	175.9	38.6	11.2	210.7	75.8	20.8	153.7	44.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.9	73.2	18.9	175.9	38.6	11.2	210.7	75.8	20.8	153.7	44.6	6.0
Queue Length 50th (m)	-79.6	-155.0	30.4	-93.7	81.6	12.0	-85.4	-157.6	40.7	-59.5	98.8	0.0
Queue Length 95th (m)	#134.2	#198.4	62.3	#151.5	103.4	35.4	#144.6	#188.6	83.2	#114.0	117.2	19.0
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	233	1101	604	250	1120	620	235	1540	662	214	1454	607
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	1.02	0.58	1.23	0.65	0.43	1.35	1.04	0.72	1.20	0.81	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

1755 Pickering Pkway TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	249	1032	320	282	671	245	293	1477	436	236	1081	218	
Future Volume (vph)	249	1032	320	282	671	245	293	1477	436	236	1081	218	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1804	5136	1531	1752	4988	1508	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	211	5136	1531	211	4988	1508	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	271	1122	348	307	729	266	318	1605	474	257	1175	237	
RTOR Reduction (vph)	0	0	136	0	0	135	0	0	203	0	0	168	
Lane Group Flow (vph)	271	1122	212	307	729	131	318	1605	271	257	1175	69	
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35	
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	16.0	37.0	37.0	17.0	38.0	38.0	47.0	36.0	36.0	45.0	35.0	35.0	
Effective Green, g (s)	16.0	37.0	37.0	17.0	38.0	38.0	47.0	36.0	36.0	45.0	35.0	35.0	
Actuated g/C Ratio	0.13	0.31	0.31	0.14	0.32	0.32	0.39	0.30	0.30	0.38	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	233	1101	468	250	1120	484	228	1540	459	207	1454	439	
v/s Ratio Prot	0.15	c0.31		c0.17	0.21		c0.13	0.31		0.10	0.24		
v/s Ratio Perm			0.14			0.09	c0.42		0.18	0.36		0.05	
v/c Ratio	1.16	1.02	0.45	1.23	0.65	0.27	1.39	1.04	0.59	1.24	0.81	0.16	
Uniform Delay, d1	52.0	41.5	33.4	51.5	35.3	30.6	30.6	42.0	35.7	31.2	39.4	31.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	110.1	32.0	3.2	132.6	2.9	1.4	202.1	34.8	5.5	142.7	4.9	0.8	
Delay (s)	162.1	73.5	36.5	184.1	38.2	32.0	232.7	76.8	41.2	173.9	44.3	32.3	
Level of Service	F	E	D	F	D	C	F	E	D	F	D	C	
Approach Delay (s)		79.9			71.4			90.4			62.6		
Approach LOS		E			E			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			77.8		HCM 2000 Level of Service				E				
HCM 2000 Volume to Capacity ratio			1.23										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				20.0				
Intersection Capacity Utilization			109.4%		ICU Level of Service				H				
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1697	68	183	1096	471	2
v/c Ratio	0.01	0.95	0.10	0.81	0.51	0.94	0.00
Control Delay	14.0	38.4	4.3	46.8	12.4	52.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	38.4	4.3	46.8	12.4	52.4	0.0
Queue Length 50th (m)	0.3	173.9	0.3	20.3	65.0	63.3	0.0
Queue Length 95th (m)	1.9	#232.8	7.4	#59.4	82.3	#125.8	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	241	1779	703	225	2166	527	533
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.95	0.10	0.81	0.51	0.89	0.00

**Intersection Summary**

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

1755 Pickering Pkway TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1561	63	168	1008	0	45	0	388	0	0	2
Future Volume (vph)	3	1561	63	168	1008	0	45	0	388	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1801	3574	1348	1752	3539			1462			1617	
Flt Permitted	0.26	1.00	1.00	0.08	1.00			0.97			1.00	
Satd. Flow (perm)	485	3574	1348	140	3539			1421			1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1697	68	183	1096	0	49	0	422	0	0	2
RTOR Reduction (vph)	0	0	33	0	0	0	0	119	0	0	1	0
Lane Group Flow (vph)	3	1697	35	183	1096	0	0	352	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	49.8	49.8	49.8	61.2	61.2			26.8			26.8	
Effective Green, g (s)	49.8	49.8	49.8	61.2	61.2			26.8			26.8	
Actuated g/C Ratio	0.50	0.50	0.50	0.61	0.61			0.27			0.27	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	241	1779	671	221	2165			380			433	
v/s Ratio Prot		c0.47		c0.07	0.31						0.00	
v/s Ratio Perm	0.01		0.03	0.44				c0.25				
v/c Ratio	0.01	0.95	0.05	0.83	0.51			0.93			0.00	
Uniform Delay, d1	12.7	24.0	12.9	26.6	10.9			35.6			26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	12.9	0.1	21.8	0.8			28.0			0.0	
Delay (s)	12.8	36.9	13.1	48.4	11.8			63.6			26.8	
Level of Service	B	D	B	D	B			E			C	
Approach Delay (s)		36.0			17.0			63.6			26.8	
Approach LOS		D			B			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			32.8			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			99.1%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	510	461	226	195	299	1957	505	175	1120	82
v/c Ratio	0.50	0.77	0.81	0.31	0.27	0.83	1.04	0.66	0.72	0.75	0.14
Control Delay	47.8	33.1	48.9	20.7	5.7	46.1	57.5	10.6	37.6	35.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	33.1	48.9	20.7	5.7	46.1	57.5	10.6	37.6	35.5	0.5
Queue Length 50th (m)	17.0	33.3	47.6	34.4	0.7	46.8	~163.7	16.0	18.6	76.5	0.0
Queue Length 95th (m)	32.1	49.7	#68.6	49.1	20.0	m#91.9	#195.0	31.0	#60.4	93.6	0.0
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	226	788	595	810	781	360	1886	766	243	1503	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.65	0.77	0.28	0.25	0.83	1.04	0.66	0.72	0.75	0.14

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

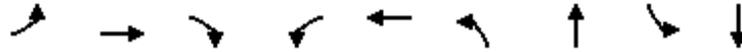
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkway TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	225	244	424	208	179	275	1800	465	161	1030	75
Future Volume (vph)	83	225	244	424	208	179	275	1800	465	161	1030	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1785	3262		3400	1863	1572	1787	5136	1516	1787	4988	1534
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1160	3262		3400	1863	1572	227	5136	1516	250	4988	1534
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	245	265	461	226	195	299	1957	505	175	1120	82
RTOR Reduction (vph)	0	160	0	0	0	106	0	0	210	0	0	57
Lane Group Flow (vph)	90	350	0	461	226	89	299	1957	295	175	1120	25
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.5	15.5		16.7	38.7	38.7	48.7	36.7	36.7	39.1	30.1	30.1
Effective Green, g (s)	15.5	15.5		16.7	38.7	38.7	48.7	36.7	36.7	39.1	30.1	30.1
Actuated g/C Ratio	0.16	0.16		0.17	0.39	0.39	0.49	0.37	0.37	0.39	0.30	0.30
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	505		567	720	608	353	1884	556	236	1501	461
v/s Ratio Prot		c0.11		c0.14	0.12		c0.13	c0.38		0.07	0.22	
v/s Ratio Perm	0.08					0.06	0.28		0.19	0.22		0.02
v/c Ratio	0.50	0.69		0.81	0.31	0.15	0.85	1.04	0.53	0.74	0.75	0.05
Uniform Delay, d1	38.7	40.0		40.1	21.4	19.9	24.3	31.6	24.9	24.3	31.5	24.8
Progression Factor	1.00	1.00		0.92	0.95	1.21	1.47	0.90	0.82	1.00	1.00	1.00
Incremental Delay, d2	2.2	4.1		8.5	0.2	0.1	11.8	27.9	2.4	11.8	3.4	0.2
Delay (s)	40.9	44.1		45.4	20.5	24.2	47.6	56.6	22.7	36.1	34.9	25.1
Level of Service	D	D		D	C	C	D	E	C	D	C	C
Approach Delay (s)		43.6			34.3			49.4			34.5	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			42.8		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1	
Intersection Capacity Utilization			92.0%		ICU Level of Service						F	
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	349	549	49	8	529	71	51	65	253
v/c Ratio	0.48	0.40	0.04	0.02	0.25	0.96	0.20	0.37	0.61
Control Delay	4.1	4.0	0.6	10.4	9.4	138.3	21.9	43.7	12.5
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	4.3	0.6	10.4	9.4	138.3	21.9	43.7	12.5
Queue Length 50th (m)	8.5	25.6	0.0	0.6	20.4	14.7	4.2	12.3	2.5
Queue Length 95th (m)	27.7	50.2	m1.2	m2.4	m34.2	#35.7	14.0	24.0	23.8
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	778	1361	1153	517	2097	178	567	427	671
Starvation Cap Reductn	0	357	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.55	0.04	0.02	0.25	0.40	0.09	0.15	0.38

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	321	505	45	7	436	51	65	21	26	60	13	220
Future Volume (vph)	321	505	45	7	436	51	65	21	26	60	13	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1783	1827	1537	1781	3479		1765	1714		1751	1590	
Flt Permitted	0.43	1.00	1.00	0.46	1.00		0.30	1.00		0.72	1.00	
Satd. Flow (perm)	800	1827	1537	860	3479		559	1714		1334	1590	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	349	549	49	8	474	55	71	23	28	65	14	239
RTOR Reduction (vph)	0	0	9	0	6	0	0	24	0	0	207	0
Lane Group Flow (vph)	349	549	40	8	523	0	71	27	0	65	46	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.5	74.5	74.5	60.1	60.1		13.3	13.3		13.3	13.3	
Effective Green, g (s)	74.5	74.5	74.5	60.1	60.1		13.3	13.3		13.3	13.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.60	0.60		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	708	1361	1145	516	2090		74	227		177	211	
v/s Ratio Prot	c0.06	0.30			0.15			0.02			0.03	
v/s Ratio Perm	c0.31		0.03	0.01			c0.13			0.05		
v/c Ratio	0.49	0.40	0.04	0.02	0.25		0.96	0.12		0.37	0.22	
Uniform Delay, d1	4.2	4.6	3.3	8.0	9.4		43.1	38.2		39.5	38.7	
Progression Factor	0.65	0.61	0.27	0.90	0.88		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7	0.0	0.1	0.3		89.6	0.2		1.3	0.5	
Delay (s)	3.1	3.5	0.9	7.3	8.5		132.7	38.4		40.8	39.2	
Level of Service	A	A	A	A	A		F	D		D	D	
Approach Delay (s)		3.2			8.5			93.3			39.5	
Approach LOS		A			A			F			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			84.9%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	402	147	20	285	57	136	34	29	52	9	75
Future Volume (Veh/h)	41	402	147	20	285	57	136	34	29	52	9	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	437	160	22	310	62	148	37	32	57	10	82
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	375			602			1053	1031	527	1050	1080	344
vC1, stage 1 conf vol							612	612		388	388	
vC2, stage 2 conf vol							441	419		662	692	
vCu, unblocked vol	375			485			995	970	400	992	1025	344
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			58	91	94	83	97	88
cM capacity (veh/h)	1192			959			355	390	568	331	362	702
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	642	22	372	148	69	57	92					
Volume Left	45	22	0	148	0	57	0					
Volume Right	160	0	62	0	32	0	82					
cSH	1192	959	1700	355	456	331	637					
Volume to Capacity	0.04	0.02	0.22	0.42	0.15	0.17	0.14					
Queue Length 95th (m)	0.9	0.6	0.0	15.9	4.2	4.9	4.0					
Control Delay (s)	1.0	8.8	0.0	22.2	14.3	18.1	11.6					
Lane LOS	A	A		C	B	C	B					
Approach Delay (s)	1.0	0.5		19.7		14.1						
Approach LOS				C		B						
<b>Intersection Summary</b>												
Average Delay			5.1									
Intersection Capacity Utilization			75.2%		ICU Level of Service					D		
Analysis Period (min)			15									

6: East Site Access/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	440	36	51	266	3	89	2	72	6	3	5
Future Volume (Veh/h)	5	440	36	51	266	3	89	2	72	6	3	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	478	39	55	289	3	97	2	78	7	3	5
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked				1.00			1.00	1.00	1.00	1.00	1.00	1.00
vC, conflicting volume	296			518			916	914	498	991	932	296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	296			515			915	913	495	989	931	296
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			59	99	86	96	99	99
cM capacity (veh/h)	1273			1057			238	258	576	185	252	746
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	522	347	177	15								
Volume Left	5	55	97	7								
Volume Right	39	3	78	5								
cSH	1273	1057	321	266								
Volume to Capacity	0.00	0.05	0.55	0.06								
Queue Length 95th (m)	0.1	1.3	25.1	1.4								
Control Delay (s)	0.1	1.8	29.1	19.3								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.1	1.8	29.1	19.3								
Approach LOS			D	C								
<b>Intersection Summary</b>												
Average Delay			5.8									
Intersection Capacity Utilization			66.0%		ICU Level of Service				C			
Analysis Period (min)			15									

1755 Pickering Pkway TIS  
7: Notion Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	3	0	2	7	3	0	1	0	2	0	228
Future Volume (Veh/h)	365	3	0	2	7	3	0	1	0	2	0	228
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	397	3	0	2	8	3	0	1	0	2	0	248
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	136	129	125	132	253	1	248			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	136	129	125	132	253	1	248			1		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	51	100	100	100	98	100	100			100		
cM capacity (veh/h)	817	611	930	840	528	1000	1330			1160		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	400	13	1	250								
Volume Left	397	2	0	2								
Volume Right	0	3	0	248								
cSH	815	633	1330	1160								
Volume to Capacity	0.49	0.02	0.00	0.00								
Queue Length 95th (m)	22.0	0.5	0.0	0.0								
Control Delay (s)	13.6	10.8	0.0	0.1								
Lane LOS	B	B		A								
Approach Delay (s)	13.6	10.8	0.0	0.1								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			8.4									
Intersection Capacity Utilization			49.7%		ICU Level of Service					A		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	59	2567	224	0	1805			
Future Volume (Veh/h)	0	59	2567	224	0	1805			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	64	2790	243	0	1962			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.76	0.66				0.66			
vC, conflicting volume	3444	930				3033			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1401	0				2292			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	91				100			
cM capacity (veh/h)	102	725				149			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	64	930	930	930	243	654	654	654	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	64	0	0	0	243	0	0	0	
cSH	725	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.09	0.55	0.55	0.55	0.14	0.38	0.38	0.38	
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	10.4	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			0.1						
Intersection Capacity Utilization			59.9%		ICU Level of Service		B		
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	615	293	2451	1078
v/c Ratio	0.84	0.84	0.75	0.33
Control Delay	46.8	56.8	12.8	13.0
Queue Delay	0.0	0.0	0.7	0.0
Total Delay	46.8	56.8	13.5	13.0
Queue Length 50th (m)	59.4	60.0	81.9	46.7
Queue Length 95th (m)	80.3	#105.4	m61.4	60.8
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	798	380	3270	3239
Starvation Cap Reductn	0	0	430	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.77	0.86	0.33

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	295	540	2255	0	0	992
Future Volume (vph)	295	540	2255	0	0	992
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.93	0.85	1.00			1.00
Flt Protected	0.97	1.00	1.00			1.00
Satd. Flow (prot)	3036	1441	5085			5036
Flt Permitted	0.97	1.00	1.00			1.00
Satd. Flow (perm)	3036	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	321	587	2451	0	0	1078
RTOR Reduction (vph)	3	3	0	0	0	0
Lane Group Flow (vph)	612	290	2451	0	0	1078
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	24.1	24.1	64.3			64.3
Effective Green, g (s)	24.1	24.1	64.3			64.3
Actuated g/C Ratio	0.24	0.24	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	731	347	3269			3238
v/s Ratio Prot			c0.48			0.21
v/s Ratio Perm	c0.20	0.20				
v/c Ratio	0.84	0.84	0.75			0.33
Uniform Delay, d1	36.1	36.1	12.3			8.1
Progression Factor	1.00	1.00	0.98			1.52
Incremental Delay, d2	8.3	15.8	0.1			0.2
Delay (s)	44.4	51.9	12.2			12.5
Level of Service	D	D	B			B
Approach Delay (s)	46.8		12.2			12.5
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			112.5%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	722	727	519	2129	383	1016
v/c Ratio	1.27	1.36	1.03	1.35	0.91	0.57
Control Delay	167.1	201.8	75.5	189.2	57.4	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	167.1	201.8	75.5	189.2	57.4	9.3
Queue Length 50th (m)	~197.0	~216.3	~105.1	~216.6	66.0	46.1
Queue Length 95th (m)	#271.5	#296.2	#174.4	#248.0	m#105.5	42.7
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	536	506	1582	460	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.27	1.36	1.03	1.35	0.83	0.57

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1278	2	531	0	0	0	0	1579	380	352	935	0	
Future Volume (vph)	1278	2	531	0	0	0	0	1579	380	352	935	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1595	1334					4771		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00		
Satd. Flow (perm)	1698	1595	1334					4771		208	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1389	2	577	0	0	0	0	1716	413	383	1016	0	
RTOR Reduction (vph)	0	3	61	0	0	0	0	39	0	0	0	0	
Lane Group Flow (vph)	722	724	458	0	0	0	0	2090	0	383	1016	0	
Confl. Peds. (#/hr)							5		7	7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					32.4		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					32.4		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.32		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	532	445					1545		417	1772		
v/s Ratio Prot								c0.44		c0.18	0.32		
v/s Ratio Perm	0.43	0.45	0.34							0.32			
v/c Ratio	1.27	1.36	1.03					1.35		0.92	0.57		
Uniform Delay, d1	33.3	33.3	33.3					33.8		28.5	14.8		
Progression Factor	1.00	1.00	1.00					1.00		1.38	0.54		
Incremental Delay, d2	136.4	174.0	50.2					163.0		23.3	1.2		
Delay (s)	169.7	207.3	83.5					196.8		62.8	9.2		
Level of Service	F	F	F					F		E	A		
Approach Delay (s)		160.8			0.0			196.8			23.9		
Approach LOS		F			A			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			139.9									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.26										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			112.5%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

1755 Pickering Pkway TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	225	801	450	275	866	295	317	1210	399	253	1110	224
v/c Ratio	2.01	0.65	0.70	2.46	0.70	0.45	1.34	0.70	0.63	1.19	0.64	0.35
Control Delay	511.8	33.3	25.2	700.7	48.4	27.4	200.5	34.3	21.6	144.8	33.0	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	511.8	33.3	25.2	700.7	48.4	27.4	200.5	34.3	21.6	144.8	33.0	9.2
Queue Length 50th (m)	-79.6	79.5	53.8	-104.8	107.7	40.6	-68.4	86.3	41.5	-48.7	77.2	8.2
Queue Length 95th (m)	#128.7	101.2	93.7	m#159.0	129.0	70.7	#126.0	103.2	76.0	#101.5	93.1	27.0
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	642	112	1237	653	237	1727	634	213	1727	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.01	0.65	0.70	2.46	0.70	0.45	1.34	0.70	0.63	1.19	0.64	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkway TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	737	414	253	797	271	292	1113	367	233	1021	206
Future Volume (vph)	207	737	414	253	797	271	292	1113	367	233	1021	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1804	5136	1537	1787	5136	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	285	5136	1537	226	5136	1549
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	801	450	275	866	295	317	1210	399	253	1110	224
RTOR Reduction (vph)	0	0	114	0	0	113	0	0	117	0	0	113
Lane Group Flow (vph)	225	801	336	275	866	182	317	1210	282	253	1110	111
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	1237	528	112	1237	540	227	1727	516	205	1727	521
v/s Ratio Prot	0.13	0.22		c0.15	c0.24		c0.10	0.24		0.09	0.22	
v/s Ratio Perm			0.22			0.12	c0.47		0.18	0.41		0.07
v/c Ratio	2.01	0.65	0.64	2.46	0.70	0.34	1.40	0.70	0.55	1.23	0.64	0.21
Uniform Delay, d1	51.5	30.3	30.1	51.5	31.0	26.6	26.5	31.7	29.7	25.3	30.9	26.1
Progression Factor	1.00	1.00	1.00	0.88	1.45	2.25	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	484.0	2.6	5.7	678.7	3.0	1.5	203.0	2.4	4.1	140.2	1.9	0.9
Delay (s)	535.6	32.9	35.9	723.9	47.9	61.4	229.5	34.1	33.8	165.4	32.8	27.0
Level of Service	F	C	D	F	D	E	F	C	C	F	C	C
Approach Delay (s)		110.4			180.1			66.2			53.1	
Approach LOS		F			F			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			98.6									F
HCM 2000 Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			110.0							20.0		
Intersection Capacity Utilization			107.7%									G
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1336	76	265	1227	383	2
v/c Ratio	0.03	0.70	0.09	0.74	0.49	0.88	0.01
Control Delay	22.2	33.5	12.6	31.9	9.5	44.9	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	33.5	12.6	31.9	9.5	44.9	31.0
Queue Length 50th (m)	0.8	143.0	3.3	27.8	62.0	50.0	0.4
Queue Length 95th (m)	m1.1	m163.7	m8.7	#67.1	94.9	82.4	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	193	1917	855	357	2484	534	423
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.70	0.09	0.74	0.49	0.72	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkway TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2026) Traffic Analysis  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1229	70	244	1129	0	44	2	306	1	1	0
Future Volume (vph)	5	1229	70	244	1129	0	44	2	306	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1623			1851	
Flt Permitted	0.23	1.00	1.00	0.11	1.00			0.96			0.84	
Satd. Flow (perm)	361	3574	1544	203	3574			1564			1597	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1336	76	265	1227	0	48	2	333	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	131	0	0	0	0
Lane Group Flow (vph)	5	1336	48	265	1227	0	0	252	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.0	59.0	59.0	76.5	76.5			21.5			21.5	
Effective Green, g (s)	59.0	59.0	59.0	76.5	76.5			21.5			21.5	
Actuated g/C Ratio	0.54	0.54	0.54	0.70	0.70			0.20			0.20	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	193	1916	828	352	2485			305			312	
v/s Ratio Prot		0.37		c0.10	0.34							
v/s Ratio Perm	0.01		0.03	c0.42				c0.16			0.00	
v/c Ratio	0.03	0.70	0.06	0.75	0.49			0.83			0.01	
Uniform Delay, d1	12.0	18.9	12.2	21.9	7.8			42.5			35.6	
Progression Factor	1.70	1.65	2.66	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.4	0.1	8.8	0.7			16.5			0.0	
Delay (s)	20.5	32.5	32.5	30.7	8.5			58.9			35.7	
Level of Service	C	C	C	C	A			E			D	
Approach Delay (s)		32.5			12.4			58.9			35.7	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			26.5			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			85.4%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	466	712	241	202	253	1283	399	222	1038	99
v/c Ratio	0.57	0.77	0.96	0.31	0.27	0.78	0.72	0.49	0.94	0.66	0.17
Control Delay	55.9	32.9	59.4	18.9	6.8	34.0	25.9	4.6	71.4	33.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	32.9	59.4	18.9	6.8	34.0	25.9	4.6	71.4	33.6	0.6
Queue Length 50th (m)	16.4	27.5	77.5	36.7	11.0	28.0	75.3	15.8	-29.8	69.9	0.0
Queue Length 95th (m)	32.0	44.7	m#108.1	m50.4	m23.2	#63.6	94.3	4.7	#87.4	87.4	0.3
Internal Link Dist (m)		176.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	176	679	745	826	772	345	1792	808	236	1563	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.69	0.96	0.29	0.26	0.73	0.72	0.49	0.94	0.66	0.17

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

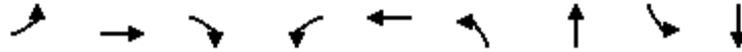
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkway TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	78	223	206	655	222	186	233	1180	367	204	955	91	
Future Volume (vph)	78	223	206	655	222	186	233	1180	367	204	955	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1775	3299		3467	1900	1544	1787	5136	1571	1805	5136	1570	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1138	3299		3467	1900	1544	266	5136	1571	249	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	85	242	224	712	241	202	253	1283	399	222	1038	99	
RTOR Reduction (vph)	0	173	0	0	0	105	0	0	260	0	0	69	
Lane Group Flow (vph)	85	293	0	712	241	97	253	1283	139	222	1038	30	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	13.0	13.0		21.5	41.0	41.0	46.4	34.9	34.9	39.0	30.5	30.5	
Effective Green, g (s)	13.0	13.0		21.5	41.0	41.0	46.4	34.9	34.9	39.0	30.5	30.5	
Actuated g/C Ratio	0.13	0.13		0.22	0.41	0.41	0.46	0.35	0.35	0.39	0.30	0.30	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	147	428		745	779	633	319	1792	548	229	1566	478	
v/s Ratio Prot		c0.09		c0.21	0.13		c0.10	0.25		c0.08	0.20		
v/s Ratio Perm	0.07					0.06	0.26		0.09	c0.29		0.02	
v/c Ratio	0.58	0.68		0.96	0.31	0.15	0.79	0.72	0.25	0.97	0.66	0.06	
Uniform Delay, d1	40.9	41.5		38.8	19.9	18.6	19.2	28.2	23.3	23.0	30.3	24.6	
Progression Factor	1.00	1.00		0.96	0.92	1.55	0.99	0.83	1.05	1.00	1.00	1.00	
Incremental Delay, d2	5.4	4.5		20.0	0.2	0.1	11.3	2.2	1.0	50.2	2.2	0.3	
Delay (s)	46.3	46.0		57.3	18.5	28.9	30.3	25.7	25.3	73.2	32.5	24.9	
Level of Service	D	D		E	B	C	C	C	C	E	C	C	
Approach Delay (s)		46.1			44.2			26.2			38.6		
Approach LOS		D			D			C			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			35.9		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			88.6%		ICU Level of Service						E		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	411	379	75	23	681	128	80	84	453
v/c Ratio	0.80	0.34	0.08	0.05	0.45	1.24	0.15	0.22	0.63
Control Delay	21.3	7.9	0.7	19.7	22.1	198.8	16.4	26.4	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	7.9	0.7	19.7	22.1	198.8	16.4	26.4	10.2
Queue Length 50th (m)	34.9	34.9	0.1	2.9	53.1	-29.2	7.0	12.1	13.2
Queue Length 95th (m)	m#61.2	m42.9	m0.3	8.3	70.3	#66.2	17.3	23.8	42.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	515	1099	943	431	1506	122	616	449	787
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.34	0.08	0.05	0.45	1.05	0.13	0.19	0.58

**Intersection Summary**

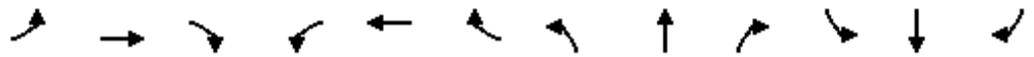
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	349	69	21	554	73	118	46	28	77	34	383
Future Volume (vph)	378	349	69	21	554	73	118	46	28	77	34	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1863	1549	1783	3498		1803	1756		1783	1615	
Flt Permitted	0.30	1.00	1.00	0.54	1.00		0.19	1.00		0.70	1.00	
Satd. Flow (perm)	566	1863	1549	1007	3498		359	1756		1323	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	379	75	23	602	79	128	50	30	84	37	416
RTOR Reduction (vph)	0	0	30	0	10	0	0	21	0	0	257	0
Lane Group Flow (vph)	411	379	45	23	671	0	128	59	0	84	196	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.0	59.0	59.0	42.8	42.8		28.8	28.8		28.8	28.8	
Effective Green, g (s)	59.0	59.0	59.0	42.8	42.8		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.59	0.59	0.59	0.43	0.43		0.29	0.29		0.29	0.29	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	497	1099	913	430	1497		103	505		381	465	
v/s Ratio Prot	c0.11	0.20			0.19			0.03				0.12
v/s Ratio Perm	c0.38		0.03	0.02			c0.36			0.06		
v/c Ratio	0.83	0.34	0.05	0.05	0.45		1.24	0.12		0.22	0.42	
Uniform Delay, d1	12.2	10.6	8.7	16.7	20.2		35.6	26.2		27.1	28.8	
Progression Factor	0.85	0.60	0.20	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.3	0.6	0.1	0.2	1.0		167.6	0.1		0.3	0.6	
Delay (s)	18.6	7.0	1.8	17.0	21.2		203.2	26.3		27.4	29.5	
Level of Service	B	A	A	B	C		F	C		C	C	
Approach Delay (s)		12.1			21.1			135.1			29.1	
Approach LOS		B			C			F			C	

Intersection Summary

HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	275	172	23	348	101	217	51	46	52	15	104
Future Volume (Veh/h)	35	275	172	23	348	101	217	51	46	52	15	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	299	187	25	378	110	236	55	50	57	16	113
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	489			488			1024	1010	400	1036	1048	438
vC1, stage 1 conf vol							470	470		484	484	
vC2, stage 2 conf vol							553	539		552	564	
vCu, unblocked vol	489			365			966	950	267	980	993	438
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			28	86	93	84	96	82
cM capacity (veh/h)	1084			1053			328	400	688	348	392	620
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	524	25	488	236	105	57	129					
Volume Left	38	25	0	236	0	57	0					
Volume Right	187	0	110	0	50	0	113					
cSH	1084	1053	1700	328	500	348	579					
Volume to Capacity	0.04	0.02	0.29	0.72	0.21	0.16	0.22					
Queue Length 95th (m)	0.9	0.6	0.0	42.2	6.3	4.6	6.8					
Control Delay (s)	1.0	8.5	0.0	39.7	14.1	17.4	13.0					
Lane LOS	A	A		E	B	C	B					
Approach Delay (s)	1.0	0.4		31.8		14.3						
Approach LOS				D		B						
<b>Intersection Summary</b>												
Average Delay			9.1									
Intersection Capacity Utilization			80.1%		ICU Level of Service					D		
Analysis Period (min)			15									

6: East Site Access/Walmart East Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	295	66	43	332	18	134	0	85	15	2	6
Future Volume (Veh/h)	11	295	66	43	332	18	134	0	85	15	2	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	321	72	47	361	20	146	0	92	16	2	7
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	381			393			856	856	359	940	882	373
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			393			856	856	359	940	882	373
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			45	100	87	92	99	99
cM capacity (veh/h)	1095			1177			265	282	689	204	273	676
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	405	428	238	25								
Volume Left	12	47	146	16								
Volume Right	72	20	92	7								
cSH	1095	1177	347	261								
Volume to Capacity	0.01	0.04	0.69	0.10								
Queue Length 95th (m)	0.3	1.0	38.6	2.5								
Control Delay (s)	0.4	1.3	35.2	20.3								
Lane LOS	A	A	E	C								
Approach Delay (s)	0.4	1.3	35.2	20.3								
Approach LOS			E	C								
<b>Intersection Summary</b>												
Average Delay			8.7									
Intersection Capacity Utilization			60.0%		ICU Level of Service					B		
Analysis Period (min)			15									

1755 Pickering Pkway TIS  
7: Notion Rd. & Pickering Pkwy

Future Background (2026) Traffic Analysis  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	1	0	0	0	0	0	0	0	0	0	266
Future Volume (Veh/h)	282	1	0	0	0	0	0	0	0	0	0	266
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	307	1	0	0	0	0	0	0	0	0	0	289
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	148	144	144	145	289	3	289			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148	144	144	145	289	3	289			0		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	62	100	100	100	100	100	100			100		
cM capacity (veh/h)	816	599	908	827	624	1084	1284			1636		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	308	0	0	289								
Volume Left	307	0	0	0								
Volume Right	0	0	0	289								
cSH	816	1700	1700	1636								
Volume to Capacity	0.38	0.02	0.00	0.00								
Queue Length 95th (m)	14.2	0.0	0.0	0.0								
Control Delay (s)	12.1	0.0	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	12.1	0.0	0.0	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			6.2									
Intersection Capacity Utilization			45.5%		ICU Level of Service					A		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	90	1800	285	0	1962			
Future Volume (Veh/h)	0	90	1800	285	0	1962			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	98	1957	310	0	2133			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.92	0.83			0.83				
vC, conflicting volume	2671	655			2270				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1265	0			1821				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	89			100				
cM capacity (veh/h)	150	906			283				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	98	652	652	652	310	711	711	711	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	98	0	0	0	310	0	0	0	
cSH	906	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.11	0.38	0.38	0.38	0.18	0.42	0.42	0.42	
Queue Length 95th (m)	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	9.5	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			47.0%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	517	292	1689	1142
v/c Ratio	0.63	0.78	0.52	0.35
Control Delay	35.2	47.1	14.4	16.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.2	47.1	14.4	16.7
Queue Length 50th (m)	46.8	57.6	74.3	59.0
Queue Length 95th (m)	56.5	82.1	m79.0	m92.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1118	507	3260	3260
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.58	0.52	0.35

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	207	537	1554	0	0	1051
Future Volume (vph)	207	537	1554	0	0	1051
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3241	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3241	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	584	1689	0	0	1142
RTOR Reduction (vph)	11	11	0	0	0	0
Lane Group Flow (vph)	506	281	1689	0	0	1142
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	24.9	24.9	63.5			63.5
Effective Green, g (s)	24.9	24.9	63.5			63.5
Actuated g/C Ratio	0.25	0.25	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	807	362	3261			3261
v/s Ratio Prot			c0.33			0.22
v/s Ratio Perm	0.16	c0.19				
v/c Ratio	0.63	0.78	0.52			0.35
Uniform Delay, d1	33.4	34.9	9.9			8.6
Progression Factor	1.00	1.00	1.28			1.74
Incremental Delay, d2	1.5	10.0	0.2			0.2
Delay (s)	34.9	44.9	13.0			15.1
Level of Service	C	D	B			B
Approach Delay (s)	38.5		13.0			15.1
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			94.3%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	576	560	452	1201	616	751
v/c Ratio	1.02	0.96	0.74	0.79	1.30	0.38
Control Delay	76.3	59.7	25.8	34.5	183.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	59.7	25.8	34.5	183.1	3.9
Queue Length 50th (m)	-126.6	110.7	51.7	77.1	-139.7	12.1
Queue Length 95th (m)	#201.4	#189.8	94.8	94.8	#219.6	14.3
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	581	609	1519	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.96	0.74	0.79	1.30	0.38

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	999	0	462	0	0	0	0	848	257	567	691	0	
Future Volume (vph)	999	0	462	0	0	0	0	848	257	567	691	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1610	1461					4882		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1610	1461					4882		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1086	0	502	0	0	0	0	922	279	616	751	0	
RTOR Reduction (vph)	0	43	121	0	0	0	0	55	0	0	0	0	
Lane Group Flow (vph)	576	517	331	0	0	0	0	1146	0	616	751	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	537	487					1464		468	1965		
v/s Ratio Prot								0.23		c0.29	0.21		
v/s Ratio Perm	c0.34	0.32	0.23							c0.43			
v/c Ratio	1.02	0.96	0.68					0.78		1.32	0.38		
Uniform Delay, d1	33.3	32.7	28.7					32.0		28.9	12.8		
Progression Factor	1.00	1.00	1.00					1.00		1.58	0.26		
Incremental Delay, d2	41.8	29.3	3.8					4.3		156.1	0.5		
Delay (s)	75.1	62.0	32.4					36.3		201.7	3.9		
Level of Service	E	E	C					D		F	A		
Approach Delay (s)		58.4			0.0			36.3			93.0		
Approach LOS		E			A			D			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			63.4									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			94.3%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

**APPENDIX 8**  
Trip Generation Tables



Trip Generation Analysis

Horizon Year	Phase	ITE Land Use (Code)	DU or 1000 ft <sup>2</sup>	Peak Hour	Trip Generation Equation	Baseline Vehicle Trips	Directional Distribution		Directional Site Trips		Total Check	New External Vehicle Trips			Pass-by Trips			Diverted Trips			Total New External Trips				
							In	Out	In	Out		In	Out	Total	%	Total	In	Out	%	Total	In	Out	In	Out	Total
2026	Phase 1	Multifamily Housing (High-Rise) (LUC 222)	630	AM	$T = 0.22(X) + 18.85$	157	26%	74%	41	116	157	41	95	136	-	-	-	-	-	-	-	-	-		
				PM	$T = 0.26(X) + 23.12$	187	62%	38%	116	71	187	74	64	138	-	-	-	-	-	-	-	-	-		
				SAT	$T = 0.30(X) + 30.34$	219	57%	43%	125	94	219	82	88	170	-	-	-	-	-	-	-	-	-		
		Shopping Center (LUC 820)	18	AM	$T = 0.59(X) + 133.55$	144	62%	38%	89	55	144	82	41	123	-	-	-	-	-	-	-	-	-		
				PM	$\ln(T) = 0.72 \ln(X) + 3.02$	164	48%	52%	79	85	164	53	60	113	29%	33	16	17	28%	32	15	17	22	26	48
				SAT	$\ln(T) = 0.76 \ln(X) + 3.00$	181	52%	48%	94	87	181	64	61	125	29%	36	19	17	28%	35	18	17	27	27	54
2031	Phase 2 to 4	Multifamily Housing (High-Rise) (LUC 222)	2558	AM	$T = 0.22(X) + 18.85$	582	26%	74%	151	431	582	138	317	455	-	-	-	-	-	-	-	-			
				PM	$T = 0.26(X) + 23.12$	688	62%	38%	427	261	688	297	241	538	-	-	-	-	-	-	-	-	-		
				SAT	$T = 0.30(X) + 30.34$	798	57%	43%	455	343	798	317	317	634	-	-	-	-	-	-	-	-	-		
		Shopping Center (LUC 820)	28.0	AM	$T = 0.59(X) + 133.55$	150	62%	38%	93	57	150	83	41	124	-	-	-	-	-	-	-	-	-		
				PM	$\ln(T) = 0.72 \ln(X) + 3.02$	226	48%	52%	108	118	226	69	82	151	29%	44	21	23	28%	42	20	22	28	37	65
				SAT	$\ln(T) = 0.76 \ln(X) + 3.00$	253	52%	48%	132	121	253	86	85	171	29%	50	26	24	28%	48	25	23	35	38	73
2036	Phase 5 to 7	Multifamily Housing (High-Rise) (LUC 222)	2038	AM	$T = 0.22(X) + 18.85$	467	26%	74%	121	346	467	110	250	360	-	-	-	-	-	-	-	-			
				PM	$T = 0.26(X) + 23.12$	553	62%	38%	343	210	553	170	164	334	-	-	-	-	-	-	-	-	-		
				SAT	$T = 0.30(X) + 30.34$	642	57%	43%	366	276	642	178	217	395	-	-	-	-	-	-	-	-	-		
		Shopping Center (LUC 820)	241.0	AM	$T = 0.59(X) + 133.55$	276	62%	38%	171	105	276	154	75	229	-	-	-	-	-	-	-	-	-		
				PM	$\ln(T) = 0.72 \ln(X) + 3.02$	1063	48%	52%	510	553	1063	255	277	532	29%	154	74	80	28%	149	72	77	109	120	229
				SAT	$\ln(T) = 0.76 \ln(X) + 3.00$	1298	52%	48%	675	623	1298	338	312	650	29%	189	98	91	28%	182	95	87	145	134	279

Totals	Peak Hour	Baseline Vehicle Trips
Phase 1	AM	301
	PM	351
	SAT	400
Phase 2 to 4	AM	732
	PM	914
Phase 5 to 7	AM	743
	PM	1616
	SAT	1940
Total Site Generated Trips	AM	1776
	PM	2881
	SAT	3391

Directional Site Trips	In	Out
Phase 1	130	171
	195	156
	219	181
Phase 2 to 4	244	488
	535	379
Phase 5 to 7	587	464
	292	451
	853	763
Total Site Generated Trips	1041	899
	666	1110
	1583	1298
	1847	1544

New External Vehicle Trips			
In	Out	Total	
Phase 1	123	136	259
	127	124	251
	146	149	295
Phase 2 to 4	221	358	579
	366	323	689
Phase 5 to 7	403	402	805
	264	325	589
	425	441	866
Total Site Generated Trips	516	529	1045
	608	819	1427
	918	888	1806
	1065	1080	2145

Pass-by Trips		
Total	In	Out
Phase 1	-	-
	33	16
	36	19
Phase 2 to 4	-	-
	44	21
Phase 5 to 7	50	26
	-	-
	154	74
Total Site Generated Trips	189	98
	-	-
	231	111
	275	143

Diverted Trips			Total New External Trips		
Total	In	Out	In	Out	Total
Phase 1	-	-	-	-	-
	32	15	17	22	26
	35	18	17	27	27
Phase 2 to 4	-	-	-	-	-
	42	20	22	28	37
Phase 5 to 7	48	25	23	35	38
	-	-	-	-	-
	149	72	77	109	120
Total Site Generated Trips	182	95	87	145	134
	-	-	-	-	-
	223	107	116	159	183
	265	138	127	207	406

**APPENDIX 9**

Internal Capture Estimation Tool Outputs



NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	1755 Pickering Pkwy TIS			Organization:	RVA
Project Location:	Pickering, Ontario			Performed By:	RVA
Scenario Description:	Phase 1 Development			Date:	
Analysis Year:	2026			Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	17,965	1000 sf GFA	144	89	55
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	678	DU	168	44	124
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				312	133	179

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.17	4%	3%	1.16	12%	11%
Restaurant						
Cinema/Entertainment						
Residential	1.13	4%	3%	1.16	12%	11%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	362	154	208
Internal Capture Percentage	1%	1%	1%
External Vehicle-Trips <sup>5</sup>	259	123	136
External Transit-Trips <sup>6</sup>	31	6	25
External Non-Motorized Trips <sup>6</sup>	27	4	23

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	1%	2%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

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<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.17	89	104	1.16	55	64
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	44	50	1.16	124	144
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	19		8	0	9	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	29	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		33	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	8		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	18	0	0		0
Hotel	0	4	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	1	103	104	82	4	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	49	50	41	2	1
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	1	63	64	41	8	7
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	143	144	95	17	16
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
<b>Project Name:</b>	1755 Pickering Pkwy TIS	<b>Organization:</b>	RVA
<b>Project Location:</b>	Pickering, Ontario	<b>Performed By:</b>	RVA
<b>Scenario Description:</b>	Phase 1 Development	<b>Date:</b>	
<b>Analysis Year:</b>	2026	<b>Checked By:</b>	
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	17,965	1000 sf GFA	164	79	85
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	678	DU	199	123	76
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				363	202	161

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	13%	13%	1.18	3%	2%
Restaurant						
Cinema/Entertainment						
Residential	1.15	13%	13%	1.21	3%	2%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	26	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	10	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	429	237	192
Internal Capture Percentage	17%	15%	19%
External Vehicle-Trips <sup>5</sup>	251	127	124
External Transit-Trips <sup>6</sup>	30	26	4
External Non-Motorized Trips <sup>6</sup>	29	26	3

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	18%	11%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

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<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	79	96	1.18	85	100
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	123	141	1.21	76	92
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		29	4	26	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	39	19	0		3
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	6	0
Retail	0		0	0	65	0
Restaurant	0	48		0	23	0
Cinema/Entertainment	0	4	0		6	0
Residential	0	10	0	0		0
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	10	86	96	53	11	11
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	26	115	141	74	15	15
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	26	74	100	60	2	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	82	92	64	2	2
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
<b>Project Name:</b>	1755 Pickering Pkwy TIS	<b>Organization:</b>	RVA
<b>Project Location:</b>	Pickering, Ontario	<b>Performed By:</b>	RVA
<b>Scenario Description:</b>	Phase 1 Development	<b>Date:</b>	
<b>Analysis Year:</b>	2026	<b>Checked By:</b>	
<b>Analysis Period:</b>	SAT Street Peak Hour	<b>Date:</b>	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	17,965	1000 sf GFA	181	94	87
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	678	DU	234	133	101
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				415	227	188

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	13%	13%	1.18	3%	2%
Restaurant						
Cinema/Entertainment						
Residential	1.15	13%	13%	1.21	3%	2%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	27	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	11	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	492	267	225
Internal Capture Percentage	15%	14%	17%
External Vehicle-Trips <sup>5</sup>	295	146	149
External Transit-Trips <sup>6</sup>	34	29	5
External Non-Motorized Trips <sup>6</sup>	33	29	4

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	18%	9%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	94	114	1.18	87	103
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	133	153	1.21	101	122
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		30	4	27	5
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	51	26	0		4
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		9	0	0	6	0
Retail	0		0	0	70	0
Restaurant	0	57		0	24	0
Cinema/Entertainment	0	5	0		6	0
Residential	0	11	0	0		0
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	11	103	114	64	13	13
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	27	126	153	82	16	16
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	27	76	103	61	2	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	111	122	88	3	2
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
<b>Project Name:</b>	1755 Pickering Pkwy TIS			<b>Organization:</b>	RVA
<b>Project Location:</b>	Pickering, Ontario			<b>Performed By:</b>	RVA
<b>Scenario Description:</b>	Phase 2 to 4 Development			<b>Date:</b>	
<b>Analysis Year:</b>	2031			<b>Checked By:</b>	
<b>Analysis Period:</b>	AM Street Peak Hour			<b>Date:</b>	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	9,000	1000 sf GFA	150	93	57
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,558	DU	582	151	431
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				732	244	488

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.17	4%	3%	1.16	13%	13%
Restaurant						
Cinema/Entertainment						
Residential	1.13	4%	3%	1.16	13%	13%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	846	280	566
Internal Capture Percentage	2%	3%	1%
External Vehicle-Trips <sup>5</sup>	578	221	357
External Transit-Trips <sup>6</sup>	83	11	72
External Non-Motorized Trips <sup>6</sup>	80	8	72

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	5%	5%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

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<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.17	93	109	1.16	57	66
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	151	171	1.16	431	500
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	19		9	0	9	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	5	100	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		35	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	9		0	9	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	19	0	0		0
Hotel	0	4	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	5	104	109	83	4	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	168	171	138	7	5
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	3	63	66	41	8	8
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	495	500	316	64	64
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
<b>Project Name:</b>	1755 Pickering Pkwy TIS	<b>Organization:</b>	RVA
<b>Project Location:</b>	Pickering, Ontario	<b>Performed By:</b>	RVA
<b>Scenario Description:</b>	Phase 2 to 4 Development	<b>Date:</b>	
<b>Analysis Year:</b>	2031	<b>Checked By:</b>	
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	9,000	1000 sf GFA	226	108	118
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,558	DU	688	427	261
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				914	535	379

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	14%	14%	1.18	3%	3%
Restaurant						
Cinema/Entertainment						
Residential	1.15	14%	14%	1.21	3%	3%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	36	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	13	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,077	622	455
Internal Capture Percentage	9%	8%	11%
External Vehicle-Trips <sup>5</sup>	671	353	318
External Transit-Trips <sup>6</sup>	93	81	12
External Non-Motorized Trips <sup>6</sup>	93	81	12

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	7%	4%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	108	131	1.18	118	139
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	427	491	1.21	261	316
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		40	6	36	7
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	133	66	0		9
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		10	0	0	20	0
Retail	0		0	0	226	0
Restaurant	0	66		0	79	0
Cinema/Entertainment	0	5	0		20	0
Residential	0	13	0	0		0
Hotel	0	3	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	13	118	131	69	17	17
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	36	455	491	284	64	64
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	36	103	139	82	3	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	303	316	236	9	9
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	1755 Pickering Pkwy TIS			Organization:	RVA
Project Location:	Pickering, Ontario			Performed By:	RVA
Scenario Description:	Phase 2 to 4 Development			Date:	
Analysis Year:	2031			Checked By:	
Analysis Period:	SAT Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	9,000	1000 sf GFA	253	132	121
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,558	DU	798	455	343
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				1,051	587	464

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	14%	14%	1.18	3%	3%
Restaurant						
Cinema/Entertainment						
Residential	1.15	14%	14%	1.21	3%	3%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	37	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	16	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,241	683	558
Internal Capture Percentage	9%	8%	9%
External Vehicle-Trips <sup>5</sup>	785	390	395
External Transit-Trips <sup>6</sup>	103	88	15
External Non-Motorized Trips <sup>6</sup>	103	88	15

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	7%	4%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	132	160	1.18	121	143
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	455	523	1.21	343	415
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		41	6	37	7
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	17	174	87	0		12
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		13	0	0	21	0
Retail	0		0	0	241	0
Restaurant	0	80		0	84	0
Cinema/Entertainment	0	6	0		21	0
Residential	0	16	0	0		0
Hotel	0	3	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	16	144	160	86	20	20
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	37	486	523	304	68	68
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	37	106	143	85	3	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	16	399	415	310	12	12
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	1755 Pickering Pkwy TIS	Organization:	RVA		
Project Location:	Pickering, Ontario	Performed By:	RVA		
Scenario Description:	Phase 5 to 7 Development	Date:			
Analysis Year:	2036	Checked By:			
Analysis Period:	AM Street Peak Hour	Date:			

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	146,000	1000 sf GFA	276	171	105
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,038	DU	467	121	346
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				743	292	451

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.17	4%	4%	1.16	14%	13%
Restaurant						
Cinema/Entertainment						
Residential	1.13	4%	4%	1.16	14%	13%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	860	337	523
Internal Capture Percentage	2%	2%	1%
External Vehicle-Trips <sup>5</sup>	588	264	324
External Transit-Trips <sup>6</sup>	86	13	73
External Non-Motorized Trips <sup>6</sup>	80	13	67

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	2%	2%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.17	171	200	1.16	105	122
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	121	137	1.16	346	401
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	35		16	0	17	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	8	4	80	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		64	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	16		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	34	0	0		0
Hotel	0	8	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	4	196	200	154	8	8
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	134	137	110	5	5
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	3	119	122	75	17	15
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	397	401	249	56	52
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A  
<sup>2</sup>Person-Trips  
<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator  
\*Indicates computation that has been rounded to the nearest whole number.

**NCHRP 684 Internal Trip Capture Estimation Tool**

<b>Project Name:</b>	1755 Pickering Pkwy TIS	<b>Organization:</b>	RVA
<b>Project Location:</b>	Pickering, Ontario	<b>Performed By:</b>	RVA
<b>Scenario Description:</b>	Phase 2 to 4 Development	<b>Date:</b>	
<b>Analysis Year:</b>	2031	<b>Checked By:</b>	
<b>Analysis Period:</b>	PM Street Peak Hour	<b>Date:</b>	

**Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)**

Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	146,000	1000 sf GFA	1,063	510	553
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,038	DU	553	343	210
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				1,616	853	763

**Table 2-P: Mode Split and Vehicle Occupancy Estimates**

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	15%	14%	1.18	3%	3%
Restaurant						
Cinema/Entertainment						
Residential	1.15	15%	14%	1.21	3%	3%
Hotel						
All Other Land Uses <sup>2</sup>						

**Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

**Table 4-P: Internal Person-Trip Origin-Destination Matrix\***

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	170	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	62	0	0		0
Hotel	0	0	0	0	0	

**Table 5-P: Computations Summary**

	Total	Entering	Exiting
All Person-Trips	1,918	1,011	907
Internal Capture Percentage	24%	23%	26%
External Vehicle-Trips <sup>5</sup>	999	464	535
External Transit-Trips <sup>6</sup>	137	117	20
External Non-Motorized Trips <sup>6</sup>	129	109	20

**Table 6-P: Internal Trip Capture Percentages by Land Use**

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	43%	24%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	510	617	1.18	553	653
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	343	394	1.21	210	254
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	13		189	26	170	33
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	10	107	53	0		8
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		49	0	0	16	0
Retail	0		0	0	181	0
Restaurant	0	309		0	63	0
Cinema/Entertainment	0	25	0		16	0
Residential	0	62	0	0		0
Hotel	0	12	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	62	555	617	326	83	78
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	170	224	394	138	34	31
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	170	483	653	386	14	14
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	62	192	254	149	6	6
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	1755 Pickering Pkwy TIS			Organization:	RVA
Project Location:	Pickering, Ontario			Performed By:	RVA
Scenario Description:	Phase 2 to 4 Development			Date:	
Analysis Year:	2031			Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips <sup>3</sup>		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	146,000	1000 sf GFA	1,298	675	623
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	2,038	DU	642	366	276
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
				1,940	1,041	899

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized	Veh. Occ. <sup>4</sup>	% Transit	% Non-Motorized
Office						
Retail	1.21	15%	14%	1.18	3%	3%
Restaurant						
Cinema/Entertainment						
Residential	1.15	15%	14%	1.21	3%	3%
Hotel						
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	191	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	82	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	2,307	1,238	1,069
Internal Capture Percentage	24%	22%	26%
External Vehicle-Trips <sup>5</sup>	1,202	573	629
External Transit-Trips <sup>6</sup>	169	145	24
External Non-Motorized Trips <sup>6</sup>	159	135	24

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	45%	25%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

<b>Project Name:</b>	1755 Pickering Pkwy TIS
<b>Analysis Period:</b>	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.21	675	817	1.18	623	735
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	366	421	1.21	276	334
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	15		213	29	191	37
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	140	70	0		10
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		65	0	0	17	0
Retail	0		0	0	194	0
Restaurant	0	409		0	67	0
Cinema/Entertainment	0	33	0		17	0
Residential	0	82	0	0		0
Hotel	0	16	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	82	735	817	431	110	103
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	191	230	421	142	35	32
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	0	0	0	0	0	0
Retail	191	544	735	434	16	16
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	82	252	334	195	8	8
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

**APPENDIX 10**

**Future Total (2026) Synchro HCM Outputs**



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	340	271	398	535	185	179	733	180	258	1702	203
v/c Ratio	0.86	0.32	0.46	3.06	0.46	0.30	1.05	0.49	0.29	0.68	0.91	0.30
Control Delay	110.9	31.8	16.7	966.9	33.3	5.4	109.3	34.5	5.7	27.7	44.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	31.8	16.7	966.9	33.3	5.4	109.3	34.5	5.7	27.7	44.2	4.7
Queue Length 50th (m)	23.7	33.3	22.2	~171.7	54.8	0.0	~31.5	54.2	0.0	36.9	145.1	0.0
Queue Length 95th (m)	#56.6	46.4	47.9	#234.6	71.9	16.2	#79.6	67.5	16.5	56.0	167.6	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	592	130	1151	621	171	1493	613	392	1871	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.32	0.46	3.06	0.46	0.30	1.05	0.49	0.29	0.66	0.91	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	313	249	366	492	170	165	674	166	237	1566	187
Future Volume (vph)	87	313	249	366	492	170	165	674	166	237	1566	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1701	5036	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	182	4673	1536	486	5036	1468
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	340	271	398	535	185	179	733	180	258	1702	203
RTOR Reduction (vph)	0	0	102	0	0	124	0	0	122	0	0	128
Lane Group Flow (vph)	95	340	169	398	535	61	179	733	58	258	1702	75
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.39	0.32	0.32	0.46	0.37	0.37
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1495	491	366	1871	545
v/s Ratio Prot	0.06	0.10		c0.23	c0.15		c0.07	0.16		c0.08	0.34	
v/s Ratio Perm			0.11			0.04	c0.35		0.04	0.24		0.05
v/c Ratio	0.86	0.32	0.35	3.06	0.46	0.12	1.08	0.49	0.12	0.70	0.91	0.14
Uniform Delay, d1	55.6	30.7	31.1	55.5	31.7	27.9	30.4	32.9	28.8	21.2	35.8	25.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.0	0.8	1.9	947.8	1.4	0.5	94.5	1.2	0.5	6.1	8.1	0.5
Delay (s)	101.5	31.5	33.0	1003.3	33.0	28.5	124.9	34.1	29.3	27.3	43.9	25.5
Level of Service	F	C	C	F	C	C	F	C	C	C	D	C
Approach Delay (s)		41.5			377.7			48.2			40.2	
Approach LOS		D			F			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			116.4	HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				20.0				
Intersection Capacity Utilization			110.9%	ICU Level of Service				H				
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	732	40	192	1078	180	3
v/c Ratio	0.01	0.32	0.04	0.34	0.40	0.66	0.01
Control Delay	8.0	8.4	1.2	4.2	4.5	24.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	8.4	1.2	4.2	4.5	24.2	0.0
Queue Length 50th (m)	0.2	27.5	0.0	5.6	26.6	7.8	0.0
Queue Length 95th (m)	1.5	52.4	2.3	15.8	52.7	28.2	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	331	2273	895	602	2710	495	462
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.32	0.04	0.32	0.40	0.36	0.01
<b>Intersection Summary</b>							

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 1 (2026) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	673	37	177	992	0	37	0	129	1	0	2
Future Volume (vph)	3	673	37	177	992	0	37	0	129	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1799	3438	1320	1684	3505			1466			1685	
Flt Permitted	0.27	1.00	1.00	0.34	1.00			0.92			0.84	
Satd. Flow (perm)	502	3438	1320	603	3505			1367			1433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	732	40	192	1078	0	40	0	140	1	0	2
RTOR Reduction (vph)	0	0	14	0	0	0	0	125	0	0	3	0
Lane Group Flow (vph)	3	732	26	192	1078	0	0	55	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	66.1	66.1	66.1	77.3	77.3			10.7			10.7	
Effective Green, g (s)	66.1	66.1	66.1	77.3	77.3			10.7			10.7	
Actuated g/C Ratio	0.66	0.66	0.66	0.77	0.77			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	331	2272	872	554	2709			146			153	
v/s Ratio Prot		0.21		0.03	c0.31							
v/s Ratio Perm	0.01		0.02	0.24				c0.04			0.00	
v/c Ratio	0.01	0.32	0.03	0.35	0.40			0.38			0.00	
Uniform Delay, d1	5.8	7.3	5.9	3.2	3.7			41.5			39.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.4	0.4			1.6			0.0	
Delay (s)	5.8	7.7	5.9	3.6	4.2			43.2			39.9	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		7.6			4.1			43.2			39.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.5		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				15.0			
Intersection Capacity Utilization			71.7%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total Phase 1 (2026) Traffic Analysis  
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	335	577	96	49	163	908	217	103	1918	210
v/c Ratio	0.37	0.87dr	1.11	0.15	0.09	0.71	0.44	0.30	0.30	0.96	0.29
Control Delay	45.6	35.0	115.4	22.6	5.3	42.6	25.4	6.7	14.2	42.9	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	35.0	115.4	22.6	5.3	42.6	25.4	6.7	14.2	42.9	4.1
Queue Length 50th (m)	11.4	23.0	~71.8	12.5	0.2	20.8	49.7	4.5	9.5	~142.6	0.0
Queue Length 95th (m)	23.2	36.7	#106.4	24.8	6.0	m#55.4	58.7	12.3	19.5	#181.5	14.5
Internal Link Dist (m)		188.9		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	211	603	520	707	618	230	2071	730	343	2002	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.56	1.11	0.14	0.08	0.71	0.44	0.30	0.30	0.96	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 1 (2026) Traffic Analysis  
AM Peak Hour

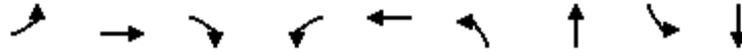
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	71	237	531	88	45	150	835	200	95	1765	193
Future Volume (vph)	55	71	237	531	88	45	150	835	200	95	1765	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3097		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	1283	3097		3155	1792	1462	169	4759	1397	509	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	77	258	577	96	49	163	908	217	103	1918	210
RTOR Reduction (vph)	0	97	0	0	0	32	0	0	124	0	0	126
Lane Group Flow (vph)	60	238	0	577	96	17	163	908	93	103	1918	84
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.6	12.6		16.5	35.6	35.6	51.8	42.9	42.9	45.7	39.8	39.8
Effective Green, g (s)	12.6	12.6		16.5	35.6	35.6	51.8	42.9	42.9	45.7	39.8	39.8
Actuated g/C Ratio	0.13	0.13		0.16	0.36	0.36	0.52	0.43	0.43	0.46	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	161	390		520	637	520	227	2041	599	306	2004	595
v/s Ratio Prot		c0.08		c0.18	0.05		c0.06	0.19		0.02	c0.38	
v/s Ratio Perm	0.05					0.01	0.31		0.07	0.13		0.06
v/c Ratio	0.37	0.87dr		1.11	0.15	0.03	0.72	0.44	0.16	0.34	0.96	0.14
Uniform Delay, d1	40.1	41.4		41.8	21.9	21.0	20.4	20.1	17.5	15.7	29.3	19.2
Progression Factor	1.00	1.00		1.09	1.04	1.66	1.56	1.18	1.92	1.00	1.00	1.00
Incremental Delay, d2	1.5	2.8		72.7	0.1	0.0	9.7	0.7	0.5	0.7	12.3	0.5
Delay (s)	41.5	44.2		118.3	22.9	34.9	41.4	24.5	34.0	16.4	41.5	19.7
Level of Service	D	D		F	C	C	D	C	C	B	D	B
Approach Delay (s)		43.8			99.9			28.2			38.3	
Approach LOS		D			F			C			D	

Intersection Summary

HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	253	28	3	451	35	13	27	206
v/c Ratio	0.21	0.19	0.02	0.00	0.21	0.48	0.07	0.21	0.62
Control Delay	3.2	3.8	1.5	7.0	6.7	63.3	27.0	44.3	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	3.8	1.5	7.0	6.7	63.3	27.0	44.3	15.7
Queue Length 50th (m)	4.5	11.4	0.1	0.2	15.2	7.0	1.0	5.2	1.5
Queue Length 95th (m)	13.6	21.7	m0.0	m1.2	25.9	16.8	6.5	13.2	22.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	939	1309	1233	768	2120	208	482	361	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.19	0.02	0.00	0.21	0.17	0.03	0.07	0.36

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	233	26	3	382	33	32	5	7	25	7	182
Future Volume (vph)	147	233	26	3	382	33	32	5	7	25	7	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1729	1681	1574	1798	3143		1749	1701		1636	1543	
Flt Permitted	0.47	1.00	1.00	0.60	1.00		0.40	1.00		0.75	1.00	
Satd. Flow (perm)	856	1681	1574	1140	3143		744	1701		1290	1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	253	28	3	415	36	35	5	8	27	8	198
RTOR Reduction (vph)	0	0	6	0	3	0	0	7	0	0	178	0
Lane Group Flow (vph)	160	253	22	3	448	0	35	6	0	27	28	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Effective Green, g (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.78	0.78	0.78	0.67	0.67		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	732	1309	1226	768	2118		73	168		127	152	
v/s Ratio Prot	c0.02	0.15			0.14			0.00				0.02
v/s Ratio Perm	c0.15		0.01	0.00			c0.05			0.02		
v/c Ratio	0.22	0.19	0.02	0.00	0.21		0.48	0.03		0.21	0.18	
Uniform Delay, d1	2.7	2.9	2.5	5.3	6.2		42.6	40.7		41.5	41.3	
Progression Factor	1.14	1.07	1.41	1.04	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3	0.0	0.0	0.2		4.9	0.1		0.8	0.6	
Delay (s)	3.3	3.4	3.5	5.5	6.3		47.5	40.8		42.3	41.9	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		3.4			6.3			45.7			42.0	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			72.4%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	168	75	26	273	24	115	3	17	12	3	30
Future Volume (Veh/h)	22	168	75	26	273	24	115	3	17	12	3	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	183	82	28	297	26	125	3	18	13	3	33
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				1.00			1.00	1.00	1.00	1.00	1.00	1.00
vC, conflicting volume	326			265			660	654	225	662	682	314
vC1, stage 1 conf vol							272	272		369	369	
vC2, stage 2 conf vol							388	382		292	313	
vCu, unblocked vol	326			259			657	650	219	658	678	314
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			98			76	99	98	98	99	95
cM capacity (veh/h)	1242			1311			514	521	764	538	517	729
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	289	28	323	125	21	13	36					
Volume Left	24	28	0	125	0	13	0					
Volume Right	82	0	26	0	18	0	33					
cSH	1242	1311	1700	514	717	538	705					
Volume to Capacity	0.02	0.02	0.19	0.24	0.03	0.02	0.05					
Queue Length 95th (m)	0.5	0.5	0.0	7.6	0.7	0.6	1.3					
Control Delay (s)	0.8	7.8	0.0	14.2	10.2	11.9	10.4					
Lane LOS	A	A		B	B	B	B					
Approach Delay (s)	0.8	0.6		13.6		10.8						
Approach LOS				B		B						
<b>Intersection Summary</b>												
Average Delay			3.6									
Intersection Capacity Utilization			52.1%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	190	8	17	312	6	11	0	10	2	1	1
Future Volume (Veh/h)	0	190	8	17	312	6	11	0	10	2	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	207	9	18	339	7	12	0	11	2	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	348			217			594	596	214	604	598	346
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348			217			594	596	214	604	598	346
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			99			97	100	99	100	100	100
cM capacity (veh/h)	1220			1364			399	413	830	402	412	519
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	216	364	23	4								
Volume Left	0	18	12	2								
Volume Right	9	7	11	1								
cSH	1220	1364	531	429								
Volume to Capacity	0.00	0.01	0.04	0.01								
Queue Length 95th (m)	0.0	0.3	1.1	0.2								
Control Delay (s)	0.0	0.5	12.1	13.5								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.5	12.1	13.5								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			0.8									
Intersection Capacity Utilization			41.3%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	11	0	0	9	6	0	0	0	6	0	190
Future Volume (Veh/h)	173	11	0	0	9	6	0	0	0	6	0	190
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	188	12	0	0	10	7	0	0	0	7	0	207
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	130	118	104	124	221	0	207			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	130	118	104	124	221	0	207			0		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	77	98	100	100	98	99	100			99		
cM capacity (veh/h)	807	619	957	839	534	857	1376			1161		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	200	17	0	214								
Volume Left	188	0	0	7								
Volume Right	0	7	0	207								
cSH	793	632	1700	1161								
Volume to Capacity	0.25	0.03	0.00	0.01								
Queue Length 95th (m)	8.0	0.7	0.0	0.1								
Control Delay (s)	11.1	10.9	0.0	0.3								
Lane LOS	B	B		A								
Approach Delay (s)	11.1	10.9	0.0	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			35.6%		ICU Level of Service					A		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	58	1157	108	0	2675			
Future Volume (Veh/h)	0	58	1157	108	0	2675			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	63	1258	117	0	2908			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.68	0.90			0.90				
vC, conflicting volume	2228	420			1376				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	214	0			1040				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	94			100				
cM capacity (veh/h)	519	984			610				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	63	419	419	419	117	969	969	969	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	63	0	0	0	117	0	0	0	
cSH	984	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.06	0.25	0.25	0.25	0.07	0.57	0.57	0.57	
Queue Length 95th (m)	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	8.9	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.1						
Intersection Capacity Utilization			55.0%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	733	294	1049	1515
v/c Ratio	0.78	0.67	0.37	0.50
Control Delay	39.1	29.9	10.9	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.1	29.9	10.9	10.4
Queue Length 50th (m)	70.5	41.9	28.4	49.8
Queue Length 95th (m)	84.1	68.7	m33.0	m52.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1160	524	2813	3058
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	6
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.56	0.37	0.50

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	301	965	0	0	1394
Future Volume (vph)	644	301	965	0	0	1394
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3387	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3387	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	327	1049	0	0	1515
RTOR Reduction (vph)	4	60	0	0	0	0
Lane Group Flow (vph)	729	234	1049	0	0	1515
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.7	27.7	60.7			60.7
Effective Green, g (s)	27.7	27.7	60.7			60.7
Actuated g/C Ratio	0.28	0.28	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	938	380	2811			3056
v/s Ratio Prot			0.23			c0.30
v/s Ratio Perm	c0.22	0.17				
v/c Ratio	0.78	0.62	0.37			0.50
Uniform Delay, d1	33.3	31.5	10.0			11.0
Progression Factor	1.00	1.00	1.01			0.87
Incremental Delay, d2	4.1	3.0	0.1			0.2
Delay (s)	37.4	34.5	10.2			9.8
Level of Service	D	C	B			A
Approach Delay (s)	36.6		10.2			9.8
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			17.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			86.7%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	490	474	460	1025	602	1613
v/c Ratio	0.91	0.94	0.92	0.97	1.05	0.83
Control Delay	55.5	55.8	52.6	54.3	78.3	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	55.8	52.6	54.3	78.3	21.2
Queue Length 50th (m)	98.0	88.6	81.2	68.1	-125.8	132.4
Queue Length 95th (m)	#161.1	#158.4	#146.3	#98.6	#190.1	164.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	523	518	1062	571	1936
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.91	0.89	0.97	1.05	0.83

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	593	0	717	0	0	0	0	623	320	554	1484	0	
Future Volume (vph)	593	0	717	0	0	0	0	623	320	554	1484	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.90	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.98	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1398	1382					4040		1736	3505		
Flt Permitted	0.95	0.98	1.00					1.00		0.15	1.00		
Satd. Flow (perm)	1618	1398	1382					4040		271	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	645	0	779	0	0	0	0	677	348	602	1613	0	
RTOR Reduction (vph)	0	43	43	0	0	0	0	93	0	0	0	0	
Lane Group Flow (vph)	490	431	417	0	0	0	0	932	0	602	1613	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.1	33.1	33.1					24.0		55.3	55.3		
Effective Green, g (s)	33.1	33.1	33.1					24.0		55.3	55.3		
Actuated g/C Ratio	0.33	0.33	0.33					0.24		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	535	462	457					969		564	1938		
v/s Ratio Prot								0.23		c0.30	0.46		
v/s Ratio Perm	0.30	0.31	0.30							c0.29			
v/c Ratio	0.92	0.93	0.91					0.96		1.07	0.83		
Uniform Delay, d1	32.1	32.4	32.0					37.6		27.6	18.5		
Progression Factor	1.00	1.00	1.00					1.00		1.04	0.89		
Incremental Delay, d2	20.4	25.7	22.3					21.1		54.4	3.7		
Delay (s)	52.5	58.1	54.3					58.6		82.9	20.3		
Level of Service	D	E	D					E		F	C		
Approach Delay (s)		54.9			0.0			58.6			37.3		
Approach LOS		D			A			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			47.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			86.7%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	50	0
Future Volume (Veh/h)	0	0	0	0	50	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	54	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				0	0	0
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	95	100
cM capacity (veh/h)				1623	1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	54	0		
Volume Left	0	0	54	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1023	1700		
Volume to Capacity	0.00	0.00	0.05	0.00		
Queue Length 95th (m)	0.0	0.0	1.3	0.0		
Control Delay (s)	0.0	0.0	8.7	0.0		
Lane LOS				A	A	
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS				A		
Intersection Summary						
Average Delay				8.7		
Intersection Capacity Utilization				20.1%	ICU Level of Service	A
Analysis Period (min)				15		

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 1 (2026) Traffic Analysis  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	55	68	0	0	0	50	86	0	0	0
Future Volume (Veh/h)	0	0	55	68	0	0	0	50	86	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	60	74	0	0	0	54	93	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			60			148	148	0	268	208	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			60			148	148	0	268	208	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	92	91	100	100	100
cM capacity (veh/h)	1623			1544			790	708	1085	568	656	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	60	74	0	147							
Volume Left	0	0	74	0	0							
Volume Right	0	60	0	0	93							
cSH	1700	1700	1544	1700	907							
Volume to Capacity	0.00	0.04	0.05	0.00	0.16							
Queue Length 95th (m)	0.0	0.0	1.2	0.0	4.6							
Control Delay (s)	0.0	0.0	7.4	0.0	9.7							
Lane LOS			A		A							
Approach Delay (s)	0.0		7.4		9.7							
Approach LOS					A							
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			18.3%		ICU Level of Service				A			
Analysis Period (min)			15									

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	55	0	50	0	0
Future Volume (Veh/h)	0	55	0	50	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	60	0	54	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			60		84	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			60		84	30
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1544		918	1044
Direction, Lane #						
	EB 1	WB 1				
Volume Total	60	54				
Volume Left	0	0				
Volume Right	60	0				
cSH	1700	1700				
Volume to Capacity	0.04	0.03				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			20.1%		ICU Level of Service	A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	801	473	279	866	290	342	1235	402	253	1135	220
v/c Ratio	1.97	0.65	0.74	2.49	0.70	0.44	1.48	0.72	0.63	1.22	0.66	0.35
Control Delay	496.6	33.3	27.5	716.2	48.7	27.3	260.1	34.7	21.8	156.7	33.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	496.6	33.3	27.5	716.2	48.7	27.3	260.1	34.7	21.8	156.7	33.3	9.1
Queue Length 50th (m)	-77.8	79.5	60.1	-106.7	107.8	39.5	-83.1	88.7	42.2	-51.1	79.4	7.9
Queue Length 95th (m)	#126.8	101.2	102.6	m#161.1	129.1	m69.1	#141.7	105.8	77.3	#103.9	95.7	26.3
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	641	112	1237	653	231	1727	634	208	1727	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.97	0.65	0.74	2.49	0.70	0.44	1.48	0.72	0.63	1.22	0.66	0.35

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	737	435	257	797	267	315	1136	370	233	1044	202
Future Volume (vph)	203	737	435	257	797	267	315	1136	370	233	1044	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1804	5136	1537	1787	5136	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.14	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	270	5136	1537	213	5136	1549
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	801	473	279	866	290	342	1235	402	253	1135	220
RTOR Reduction (vph)	0	0	114	0	0	113	0	0	117	0	0	112
Lane Group Flow (vph)	221	801	359	279	866	177	342	1235	285	253	1135	108
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	1237	528	112	1237	540	222	1727	516	201	1727	521
v/s Ratio Prot	0.12	0.22		c0.16	c0.24		c0.11	0.24		0.09	0.22	
v/s Ratio Perm			0.24			0.11	c0.52		0.19	0.42		0.07
v/c Ratio	1.97	0.65	0.68	2.49	0.70	0.33	1.54	0.72	0.55	1.26	0.66	0.21
Uniform Delay, d1	51.5	30.3	30.7	51.5	31.0	26.5	26.3	31.9	29.7	25.0	31.1	26.0
Progression Factor	1.00	1.00	1.00	0.87	1.46	2.30	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	468.4	2.6	6.9	694.6	3.0	1.5	264.5	2.6	4.2	150.2	2.0	0.9
Delay (s)	520.0	32.9	37.7	739.4	48.2	62.3	290.7	34.5	33.9	175.2	33.1	26.9
Level of Service	F	C	D	F	D	E	F	C	C	F	C	C
Approach Delay (s)		106.4			185.5			78.6			54.6	
Approach LOS		F			F			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			102.6				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.26									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			109.2%				ICU Level of Service				H	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1336	76	274	1227	391	2
v/c Ratio	0.03	0.71	0.09	0.77	0.50	0.88	0.01
Control Delay	22.2	34.1	12.6	35.3	9.7	45.7	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	34.1	12.6	35.3	9.7	45.7	31.0
Queue Length 50th (m)	0.8	143.2	3.3	31.8	63.6	51.8	0.4
Queue Length 95th (m)	m1.1	m163.2	m8.7	#98.2	94.9	85.4	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	190	1887	843	358	2468	534	427
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.71	0.09	0.77	0.50	0.73	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 1 (2026) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1229	70	252	1129	0	44	2	314	1	1	0
Future Volume (vph)	5	1229	70	252	1129	0	44	2	314	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1623			1851	
Flt Permitted	0.23	1.00	1.00	0.10	1.00			0.96			0.85	
Satd. Flow (perm)	361	3574	1544	196	3574			1565			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1336	76	274	1227	0	48	2	341	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	130	0	0	0	0
Lane Group Flow (vph)	5	1336	48	274	1227	0	0	261	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	58.1	58.1	58.1	76.0	76.0			22.0			22.0	
Effective Green, g (s)	58.1	58.1	58.1	76.0	76.0			22.0			22.0	
Actuated g/C Ratio	0.53	0.53	0.53	0.69	0.69			0.20			0.20	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	190	1887	815	353	2469			313			321	
v/s Ratio Prot		0.37		c0.11	0.34							
v/s Ratio Perm	0.01		0.03	c0.43				c0.17			0.00	
v/c Ratio	0.03	0.71	0.06	0.78	0.50			0.83			0.01	
Uniform Delay, d1	12.4	19.6	12.6	23.6	8.0			42.2			35.2	
Progression Factor	1.70	1.63	2.66	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.5	0.1	10.2	0.7			17.0			0.0	
Delay (s)	21.2	33.5	33.7	33.8	8.7			59.2			35.3	
Level of Service	C	C	C	C	A			E			D	
Approach Delay (s)		33.4			13.3			59.2			35.3	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.4			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			85.8%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	473	789	241	202	260	1337	399	279	1033	99
v/c Ratio	0.57	0.78	1.06	0.31	0.27	0.80	0.75	0.56	1.20	0.67	0.17
Control Delay	55.2	33.9	83.2	18.1	6.8	35.7	26.5	5.7	148.1	34.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	33.9	83.2	18.1	6.8	35.7	26.5	5.7	148.1	34.0	0.7
Queue Length 50th (m)	16.3	28.7	~92.4	36.9	12.2	28.7	79.5	15.2	-58.0	70.5	0.0
Queue Length 95th (m)	32.0	46.2	m#126.7	m51.6	m24.9	#66.9	100.9	4.9	#116.5	86.9	0.3
Internal Link Dist (m)		188.9		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	176	676	745	826	771	346	1792	707	233	1539	593
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.70	1.06	0.29	0.26	0.75	0.75	0.56	1.20	0.67	0.17

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

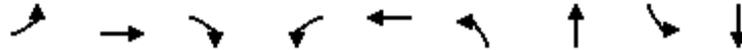
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 1 (2026) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	78	229	206	726	222	186	239	1230	367	257	950	91	
Future Volume (vph)	78	229	206	726	222	186	239	1230	367	257	950	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1775	3303		3467	1900	1544	1787	5136	1313	1805	5136	1570	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1138	3303		3467	1900	1544	264	5136	1313	253	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	85	249	224	789	241	202	260	1337	399	279	1033	99	
RTOR Reduction (vph)	0	169	0	0	0	104	0	0	249	0	0	69	
Lane Group Flow (vph)	85	304	0	789	241	98	260	1337	150	279	1033	30	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	22%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	13.2	13.2		21.5	41.2	41.2	46.2	34.9	34.9	38.3	30.0	30.0	
Effective Green, g (s)	13.2	13.2		21.5	41.2	41.2	46.2	34.9	34.9	38.3	30.0	30.0	
Actuated g/C Ratio	0.13	0.13		0.22	0.41	0.41	0.46	0.35	0.35	0.38	0.30	0.30	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	150	435		745	782	636	323	1792	458	225	1540	471	
v/s Ratio Prot		c0.09		c0.23	0.13		c0.11	0.26		c0.10	0.20		
v/s Ratio Perm	0.07					0.06	0.27		0.11	c0.37		0.02	
v/c Ratio	0.57	0.70		1.06	0.31	0.15	0.80	0.75	0.33	1.24	0.67	0.06	
Uniform Delay, d1	40.7	41.5		39.2	19.8	18.5	19.5	28.7	23.9	24.4	30.7	25.0	
Progression Factor	1.00	1.00		0.93	0.88	1.54	0.99	0.83	0.86	1.00	1.00	1.00	
Incremental Delay, d2	4.8	4.8		46.5	0.2	0.1	12.1	2.5	1.7	139.9	2.3	0.3	
Delay (s)	45.6	46.3		83.2	17.7	28.6	31.5	26.3	22.2	164.4	33.0	25.2	
Level of Service	D	D		F	B	C	C	C	C	F	C	C	
Approach Delay (s)		46.2			61.4			26.2			58.4		
Approach LOS		D			E			C			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			45.4		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			1.06										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			94.7%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	411	443	75	23	758	128	80	84	453
v/c Ratio	0.83	0.40	0.08	0.06	0.52	1.24	0.15	0.22	0.64
Control Delay	26.4	7.9	0.9	19.9	23.8	198.8	16.4	26.4	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	7.9	0.9	19.9	23.8	198.8	16.4	26.4	11.9
Queue Length 50th (m)	42.2	40.0	0.2	2.9	61.1	-29.2	7.0	12.1	17.0
Queue Length 95th (m)	m#56.4	m44.9	m0.3	8.3	79.9	#66.2	17.3	23.8	48.2
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	493	1099	939	391	1454	122	616	449	770
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.40	0.08	0.06	0.52	1.05	0.13	0.19	0.59

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	408	69	21	625	73	118	46	28	77	34	383
Future Volume (vph)	378	408	69	21	625	73	118	46	28	77	34	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1804	1863	1549	1784	3505		1803	1756		1783	1615	
Flt Permitted	0.25	1.00	1.00	0.51	1.00		0.19	1.00		0.70	1.00	
Satd. Flow (perm)	480	1863	1549	951	3505		359	1756		1323	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	443	75	23	679	79	128	50	30	84	37	416
RTOR Reduction (vph)	0	0	26	0	9	0	0	21	0	0	239	0
Lane Group Flow (vph)	411	443	49	23	749	0	128	59	0	84	214	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.0	59.0	59.0	41.3	41.3		28.8	28.8		28.8	28.8	
Effective Green, g (s)	59.0	59.0	59.0	41.3	41.3		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.59	0.59	0.59	0.41	0.41		0.29	0.29		0.29	0.29	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	477	1099	913	392	1447		103	505		381	465	
v/s Ratio Prot	c0.13	0.24			0.21			0.03				0.13
v/s Ratio Perm	c0.38		0.03	0.02			c0.36			0.06		
v/c Ratio	0.86	0.40	0.05	0.06	0.52		1.24	0.12		0.22	0.46	
Uniform Delay, d1	13.1	11.0	8.7	17.7	21.9		35.6	26.2		27.1	29.2	
Progression Factor	1.21	0.58	0.22	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.4	0.7	0.1	0.3	1.3		167.6	0.1		0.3	0.7	
Delay (s)	25.2	7.0	2.0	17.9	23.2		203.2	26.3		27.4	29.9	
Level of Service	C	A	A	B	C		F	C		C	C	
Approach Delay (s)		14.7			23.1			135.1			29.5	
Approach LOS		B			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			91.4%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	270	231	37	344	101	292	51	60	52	15	104
Future Volume (Veh/h)	35	270	231	37	344	101	292	51	60	52	15	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	293	251	40	374	110	317	55	65	57	16	113
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	0.86
vC, conflicting volume	485			546			1076	1062	426	1103	1132	434
vC1, stage 1 conf vol							496	496		510	510	
vC2, stage 2 conf vol							579	565		593	622	
vCu, unblocked vol	485			396			1009	993	258	1041	1074	434
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			0	86	90	82	96	82
cM capacity (veh/h)	999			1012			310	380	674	312	356	624
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	582	40	484	317	120	57	129					
Volume Left	38	40	0	317	0	57	0					
Volume Right	251	0	110	0	65	0	113					
cSH	999	1012	1700	310	498	312	571					
Volume to Capacity	0.04	0.04	0.28	1.02	0.24	0.18	0.23					
Queue Length 95th (m)	0.9	1.0	0.0	90.8	7.5	5.3	6.9					
Control Delay (s)	1.0	8.7	0.0	95.1	14.5	19.1	13.1					
Lane LOS	A	A		F	B	C	B					
Approach Delay (s)	1.0	0.7		72.9		15.0						
Approach LOS				F		B						
<b>Intersection Summary</b>												
Average Delay			20.6									
Intersection Capacity Utilization			87.5%		ICU Level of Service					E		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	305	66	43	342	18	134	0	85	15	2	6
Future Volume (Veh/h)	11	305	66	43	342	18	134	0	85	15	2	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	332	72	47	372	20	146	0	92	16	2	7
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	392			404			878	878	370	962	904	384
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	392			404			878	878	370	962	904	384
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			43	100	86	92	99	99
cM capacity (veh/h)	1085			1166			256	274	679	197	265	667
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	416	439	238	25								
Volume Left	12	47	146	16								
Volume Right	72	20	92	7								
cSH	1085	1166	337	252								
Volume to Capacity	0.01	0.04	0.71	0.10								
Queue Length 95th (m)	0.3	1.0	40.9	2.6								
Control Delay (s)	0.4	1.3	37.8	20.9								
Lane LOS	A	A	E	C								
Approach Delay (s)	0.4	1.3	37.8	20.9								
Approach LOS			E	C								
<b>Intersection Summary</b>												
Average Delay			9.1									
Intersection Capacity Utilization			60.7%		ICU Level of Service				B			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	1	0	0	0	0	0	0	0	0	0	274
Future Volume (Veh/h)	290	1	0	0	0	0	0	0	0	0	0	274
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	315	1	0	0	0	0	0	0	0	0	0	298
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	152	149	149	150	298	3	298			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152	149	149	150	298	3	298			0		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	61	100	100	100	100	100	100			100		
cM capacity (veh/h)	811	595	903	822	617	1084	1275			1636		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	316	0	0	298								
Volume Left	315	0	0	0								
Volume Right	0	0	0	298								
cSH	810	1700	1700	1636								
Volume to Capacity	0.39	0.02	0.00	0.00								
Queue Length 95th (m)	14.9	0.0	0.0	0.0								
Control Delay (s)	12.3	0.0	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	12.3	0.0	0.0	0.0								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			46.4%	ICU Level of Service							A	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	150	1795	353	0	2029			
Future Volume (Veh/h)	0	150	1795	353	0	2029			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	163	1951	384	0	2205			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.91	0.82				0.82			
vC, conflicting volume	2689	653				2338			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1251	0				1875			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	82				100			
cM capacity (veh/h)	152	896				267			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	163	650	650	650	384	735	735	735	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	163	0	0	0	384	0	0	0	
cSH	896	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.18	0.38	0.38	0.38	0.23	0.43	0.43	0.43	
Queue Length 95th (m)	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	9.9	0.0					0.0		
Approach LOS	A								
Intersection Summary									
Average Delay			0.3						
Intersection Capacity Utilization			50.6%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	520	298	1745	1171
v/c Ratio	0.62	0.79	0.54	0.36
Control Delay	34.8	47.2	14.9	16.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.8	47.2	14.9	16.6
Queue Length 50th (m)	47.0	59.3	77.6	60.2
Queue Length 95th (m)	56.8	83.6	m80.8	m91.8
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1115	506	3234	3234
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.59	0.54	0.36

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	549	1605	0	0	1077
Future Volume (vph)	203	549	1605	0	0	1077
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr <sub>t</sub>	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3238	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3238	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	597	1745	0	0	1171
RTOR Reduction (vph)	10	10	0	0	0	0
Lane Group Flow (vph)	510	288	1745	0	0	1171
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	25.4	25.4	63.0			63.0
Effective Green, g (s)	25.4	25.4	63.0			63.0
Actuated g/C Ratio	0.25	0.25	0.63			0.63
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	822	369	3235			3235
v/s Ratio Prot			c0.34			0.23
v/s Ratio Perm	0.16	c0.20				
v/c Ratio	0.62	0.78	0.54			0.36
Uniform Delay, d1	33.0	34.7	10.4			8.9
Progression Factor	1.00	1.00	1.28			1.67
Incremental Delay, d2	1.5	10.3	0.2			0.2
Delay (s)	34.5	45.0	13.5			15.0
Level of Service	C	D	B			B
Approach Delay (s)	38.3		13.5			15.0
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			96.6%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	587	592	450	1213	625	771
v/c Ratio	1.04	1.02	0.75	0.80	1.32	0.39
Control Delay	81.3	73.0	26.6	34.9	191.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	73.0	26.6	34.9	191.2	3.8
Queue Length 50th (m)	~136.3	~126.1	53.3	78.2	~146.4	12.1
Queue Length 95th (m)	#206.4	#206.1	96.2	96.2	#223.6	14.4
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	581	603	1518	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.04	1.02	0.75	0.80	1.32	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1039	0	460	0	0	0	0	859	257	575	709	0	
Future Volume (vph)	1039	0	460	0	0	0	0	859	257	575	709	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1611	1461					4884		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1611	1461					4884		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1129	0	500	0	0	0	0	934	279	625	771	0	
RTOR Reduction (vph)	0	43	115	0	0	0	0	54	0	0	0	0	
Lane Group Flow (vph)	587	549	335	0	0	0	0	1159	0	625	771	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	538	487					1465		468	1965		
v/s Ratio Prot								0.24		c0.29	0.22		
v/s Ratio Perm	c0.35	0.34	0.23							c0.44			
v/c Ratio	1.04	1.02	0.69					0.79		1.34	0.39		
Uniform Delay, d1	33.3	33.3	28.8					32.1		28.9	12.9		
Progression Factor	1.00	1.00	1.00					1.00		1.60	0.25		
Incremental Delay, d2	47.2	43.9	4.0					4.4		164.2	0.6		
Delay (s)	80.5	77.2	32.8					36.6		210.6	3.8		
Level of Service	F	E	C					D		F	A		
Approach Delay (s)		66.1			0.0			36.6			96.4		
Approach LOS		E			A			D			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			67.6									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.26										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			96.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Volume (veh/h)	0	0	0	0	60	0
Future Volume (Veh/h)	0	0	0	0	60	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	65	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	65	0		
Volume Left	0	0	65	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1023	1700		
Volume to Capacity	0.00	0.00	0.06	0.00		
Queue Length 95th (m)	0.0	0.0	1.6	0.0		
Control Delay (s)	0.0	0.0	8.8	0.0		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			38.5%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 1 (2026) Traffic Analysis  
 SAT Peak Hour

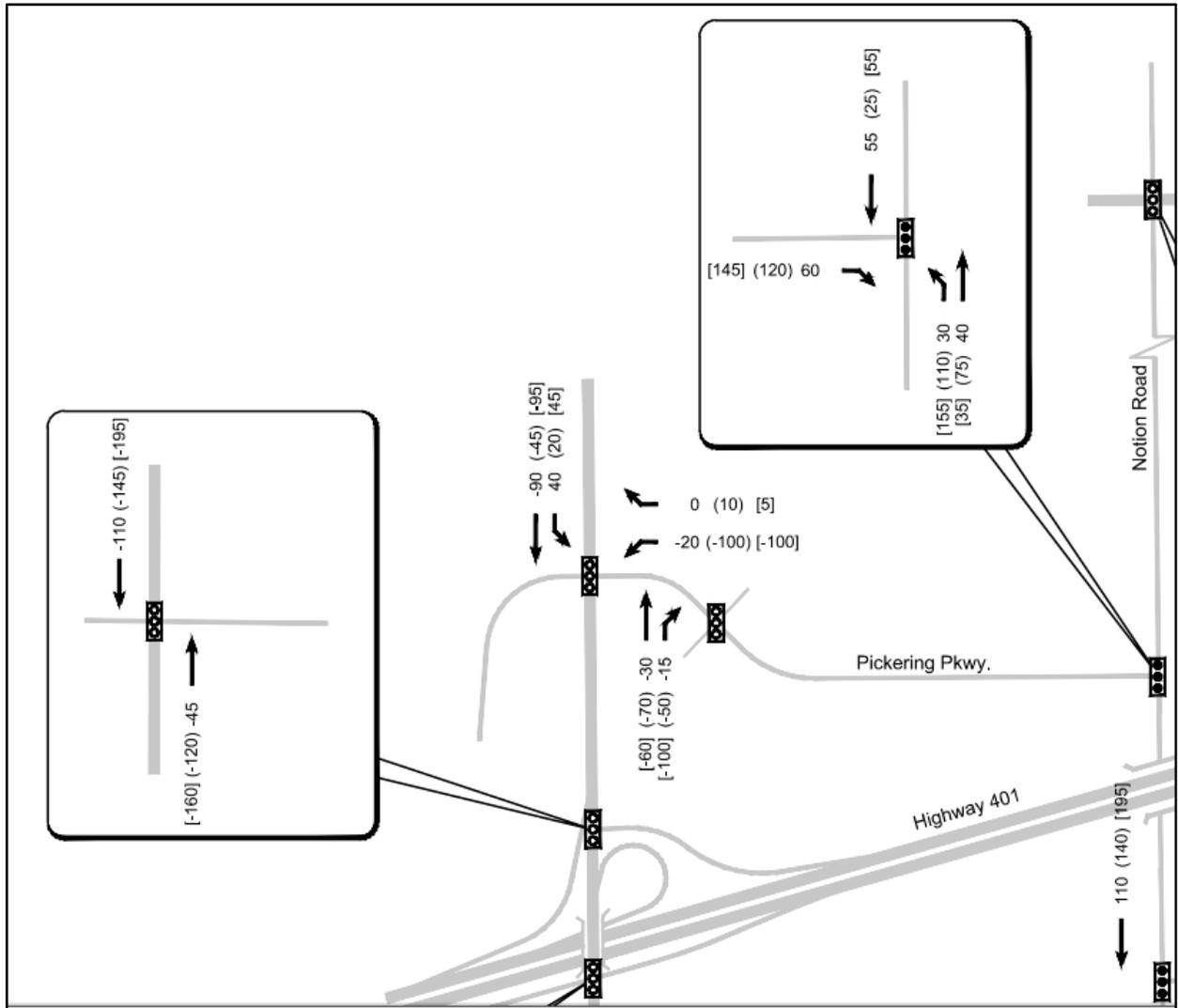
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	68	78	0	0	0	60	89	0	0	0
Future Volume (Veh/h)	0	0	68	78	0	0	0	60	89	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	74	85	0	0	0	65	97	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			74			170	170	0	300	244	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			74			170	170	0	300	244	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			100	90	91	100	100	100
cM capacity (veh/h)	1623			1526			760	683	1085	528	621	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	74	85	0	162							
Volume Left	0	0	85	0	0							
Volume Right	0	74	0	0	97							
cSH	1700	1700	1526	1700	878							
Volume to Capacity	0.00	0.04	0.06	0.00	0.18							
Queue Length 95th (m)	0.0	0.0	1.4	0.0	5.4							
Control Delay (s)	0.0	0.0	7.5	0.0	10.0							
Lane LOS			A		B							
Approach Delay (s)	0.0		7.5		10.0							
Approach LOS					B							
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			19.6%		ICU Level of Service				A			
Analysis Period (min)			15									

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	353	0	60	0	0
Future Volume (Veh/h)	0	353	0	60	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	384	0	65	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			384		257	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			384		257	192
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1174		732	850
Direction, Lane #						
	EB 1	WB 1				
Volume Total	384	65				
Volume Left	0	0				
Volume Right	384	0				
cSH	1700	1700				
Volume to Capacity	0.23	0.04				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			38.5%	ICU Level of Service	A	
Analysis Period (min)			15			

## **APPENDIX 11**

### **Notion Rd. EA – Existing Traffic Redistribution**





## SQUIRES BEACH ROAD-NOTION ROAD CONNECTION EXISTING TRAFFIC VOLUME REDISTRIBUTION



*Squires Beach Rd - Notion Rd EA*  
7608-02 October 2019

**APPENDIX 12**

**Future Background (2031) Synchro HCM  
Outputs**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	368	290	403	582	185	347	847	195	352	1874	203
v/c Ratio	0.86	0.34	0.49	3.10	0.51	0.30	2.03	0.58	0.32	0.99	1.00	0.30
Control Delay	110.9	32.1	18.5	981.8	36.2	13.7	508.7	15.2	2.2	69.2	59.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	32.1	18.5	981.8	36.2	13.7	508.7	15.2	2.2	69.2	59.0	4.7
Queue Length 50th (m)	23.7	36.4	26.7	~177.0	67.5	7.7	~121.5	47.5	1.4	53.9	~169.1	0.0
Queue Length 95th (m)	#56.6	50.2	54.0	#242.2	87.8	34.1	#184.1	25.5	0.0	#113.3	#208.2	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	591	130	1151	621	171	1456	612	355	1871	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.34	0.49	3.10	0.51	0.30	2.03	0.58	0.32	0.99	1.00	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy  
1: Brock Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	339	267	371	535	170	319	779	179	324	1724	187	
Future Volume (vph)	87	339	267	371	535	170	319	779	179	324	1724	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1701	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.22	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	186	4673	1536	388	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	368	290	403	582	185	347	847	195	352	1874	203	
RTOR Reduction (vph)	0	0	101	0	0	124	0	0	134	0	0	128	
Lane Group Flow (vph)	95	368	189	403	582	61	347	847	61	352	1874	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.38	0.31	0.31	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1456	478	343	1871	545	
v/s Ratio Prot	0.06	0.11		c0.23	c0.17		c0.14	0.18		c0.13	0.37		
v/s Ratio Perm			0.12			0.04	c0.65		0.04	0.35		0.05	
v/c Ratio	0.86	0.34	0.39	3.10	0.51	0.12	2.10	0.58	0.13	1.03	1.00	0.14	
Uniform Delay, d1	55.6	31.0	31.5	55.5	32.2	27.9	32.2	34.7	29.6	25.1	37.7	25.0	
Progression Factor	1.00	1.00	1.00	0.91	1.07	3.02	2.05	0.39	0.22	1.00	1.00	1.00	
Incremental Delay, d2	46.0	0.9	2.3	963.5	1.5	0.5	515.0	1.6	0.5	55.5	21.2	0.5	
Delay (s)	101.5	31.9	33.8	1014.1	35.9	84.9	581.1	15.1	7.1	80.6	58.9	25.5	
Level of Service	F	C	C	F	D	F	F	B	A	F	E	C	
Approach Delay (s)		41.4			380.6			155.4			59.2		
Approach LOS		D			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			145.7		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.48										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			119.9%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	837	110	225	1134	236	3
v/c Ratio	0.01	0.37	0.12	0.45	0.42	0.80	0.01
Control Delay	13.0	12.8	7.8	6.8	6.2	41.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	12.8	7.8	6.8	6.2	41.6	0.0
Queue Length 50th (m)	0.3	56.2	8.0	10.9	42.7	26.5	0.0
Queue Length 95th (m)	m0.8	m73.0	m13.9	26.0	77.2	52.0	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	312	2260	883	614	2677	476	464
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.37	0.12	0.37	0.42	0.50	0.01

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

1755 Pickering Pkwy  
2: Notion Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	770	101	207	1043	0	53	0	164	1	0	2
Future Volume (vph)	3	770	101	207	1043	0	53	0	164	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1466			1685	
Flt Permitted	0.25	1.00	1.00	0.29	1.00			0.91			0.87	
Satd. Flow (perm)	475	3438	1316	522	3505			1357			1499	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	837	110	225	1134	0	58	0	178	1	0	2
RTOR Reduction (vph)	0	0	19	0	0	0	0	111	0	0	3	0
Lane Group Flow (vph)	3	837	91	225	1134	0	0	125	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	78.9	78.9	78.9	91.7	91.7			16.3			16.3	
Effective Green, g (s)	78.9	78.9	78.9	91.7	91.7			16.3			16.3	
Actuated g/C Ratio	0.66	0.66	0.66	0.76	0.76			0.14			0.14	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	312	2260	865	493	2678			184			203	
v/s Ratio Prot		0.24		c0.04	0.32							
v/s Ratio Perm	0.01		0.07	c0.31				c0.09			0.00	
v/c Ratio	0.01	0.37	0.11	0.46	0.42			0.68			0.00	
Uniform Delay, d1	7.1	9.3	7.6	4.6	4.9			49.4			44.8	
Progression Factor	1.17	1.16	1.33	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4	0.2	0.7	0.5			9.9			0.0	
Delay (s)	8.4	11.1	10.3	5.2	5.4			59.3			44.8	
Level of Service	A	B	B	A	A			E			D	
Approach Delay (s)		11.0			5.4			59.3			44.8	
Approach LOS		B			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.5			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			76.8%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy  
3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	337	754	109	48	163	1059	253	146	1973	210
v/c Ratio	0.40	0.91dr	1.33	0.17	0.09	0.56	0.53	0.35	0.45	1.03	0.30
Control Delay	54.9	43.3	201.7	28.4	7.7	36.3	30.4	7.6	26.5	71.6	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	43.3	201.7	28.4	7.7	36.3	30.4	7.6	26.5	71.6	20.8
Queue Length 50th (m)	14.1	29.5	-127.6	18.7	0.2	24.6	68.0	6.6	29.5	-193.3	23.2
Queue Length 95th (m)	27.2	44.0	#163.3	32.4	7.9	51.1	79.3	16.9	m30.7	m#186.0	m20.0
Internal Link Dist (m)		188.9		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	332	889	565	888	751	291	2017	728	326	1921	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.38	1.33	0.12	0.06	0.56	0.53	0.35	0.45	1.03	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy  
3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
AM Peak Hour

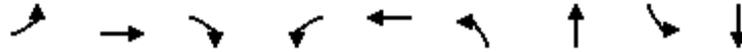
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	73	237	694	100	44	150	974	233	134	1815	193
Future Volume (vph)	56	73	237	694	100	44	150	974	233	134	1815	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1751	3097		3155	1792	1459	1719	4759	1396	1769	5036	1491
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.08	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1265	3097		3155	1792	1459	148	4759	1396	399	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	79	258	754	109	48	163	1059	253	146	1973	210
RTOR Reduction (vph)	0	91	0	0	0	31	0	0	136	0	0	130
Lane Group Flow (vph)	61	246	0	754	109	17	163	1059	117	146	1973	80
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	14.7	14.7		21.5	42.7	42.7	64.7	50.9	50.9	56.6	45.8	45.8
Effective Green, g (s)	14.7	14.7		21.5	42.7	42.7	64.7	50.9	50.9	56.6	45.8	45.8
Actuated g/C Ratio	0.12	0.12		0.18	0.36	0.36	0.54	0.42	0.42	0.47	0.38	0.38
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	154	379		565	637	519	287	2018	592	311	1922	569
v/s Ratio Prot		c0.08		c0.24	0.06		c0.08	0.22		0.04	c0.39	
v/s Ratio Perm	0.05					0.01	0.23		0.08	0.18		0.05
v/c Ratio	0.40	0.91dr		1.33	0.17	0.03	0.57	0.52	0.20	0.47	1.03	0.14
Uniform Delay, d1	48.6	50.2		49.2	26.5	25.2	25.5	25.6	21.7	18.6	37.1	24.2
Progression Factor	1.00	1.00		1.03	1.08	1.43	1.38	1.10	1.48	1.90	1.62	5.41
Incremental Delay, d2	1.7	3.8		162.1	0.1	0.0	2.4	0.9	0.7	0.1	14.6	0.0
Delay (s)	50.2	54.0		212.6	28.8	36.1	37.4	29.0	32.9	35.5	74.7	131.3
Level of Service	D	D		F	C	D	D	C	C	D	E	F
Approach Delay (s)		53.4			181.3			30.6			77.3	
Approach LOS		D			F			C			E	

Intersection Summary

HCM 2000 Control Delay	80.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



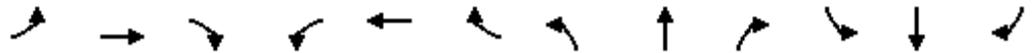
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	291	34	3	379	29	18	49	387
v/c Ratio	0.24	0.22	0.03	0.00	0.17	0.48	0.10	0.38	0.78
Control Delay	2.1	2.5	1.1	6.3	5.4	74.1	26.1	57.3	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	2.5	1.1	6.3	5.4	74.1	26.1	57.3	17.2
Queue Length 50th (m)	1.6	3.0	0.0	0.2	10.2	7.0	1.2	11.8	1.9
Queue Length 95th (m)	12.7	22.3	m2.0	m1.1	19.6	16.3	7.8	22.7	32.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	901	1342	1262	774	2210	255	701	535	860
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.22	0.03	0.00	0.17	0.11	0.03	0.09	0.45

Intersection Summary

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

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	268	31	3	316	33	27	5	12	45	7	349
Future Volume (vph)	181	268	31	3	316	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1725	1681	1573	1797	3138		1750	1666		1636	1535	
Flt Permitted	0.51	1.00	1.00	0.58	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	924	1681	1573	1101	3138		614	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	291	34	3	343	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	6	0	3	0	0	12	0	0	341	0
Lane Group Flow (vph)	197	291	28	3	376	0	29	6	0	49	46	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.8	95.8	95.8	84.4	84.4		12.0	12.0		12.0	12.0	
Effective Green, g (s)	95.8	95.8	95.8	84.4	84.4		12.0	12.0		12.0	12.0	
Actuated g/C Ratio	0.80	0.80	0.80	0.70	0.70		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	793	1341	1255	774	2207		61	166		128	153	
v/s Ratio Prot	c0.02	0.17			0.12			0.00				0.03
v/s Ratio Perm	c0.18		0.02	0.00			c0.05			0.04		
v/c Ratio	0.25	0.22	0.02	0.00	0.17		0.48	0.04		0.38	0.30	
Uniform Delay, d1	2.8	3.0	2.5	5.3	6.0		51.0	48.8		50.5	50.1	
Progression Factor	0.56	0.60	0.76	0.82	0.79		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.0	0.0	0.2		5.7	0.1		1.9	1.1	
Delay (s)	1.7	2.1	1.9	4.4	4.9		56.8	48.9		52.4	51.2	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		2.0			4.9			53.7			51.3	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

5: Pickering Ridge Access 1/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	222	76	43	281	34	46	3	89	27	3	25
Future Volume (Veh/h)	27	222	76	43	281	34	46	3	89	27	3	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	241	83	47	305	37	50	3	97	29	3	27
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	345			324			769	780	284	860	802	328
vC1, stage 1 conf vol							340	340		420	420	
vC2, stage 2 conf vol							428	439		440	382	
vCu, unblocked vol	345			300			754	765	259	847	788	328
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			96			89	99	86	93	99	96
cM capacity (veh/h)	1222			1247			469	469	714	403	463	716
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	353	47	342	50	100	29	30					
Volume Left	29	47	0	50	0	29	0					
Volume Right	83	0	37	0	97	0	27					
cSH	1222	1247	1700	469	703	403	679					
Volume to Capacity	0.02	0.04	0.20	0.11	0.14	0.07	0.04					
Queue Length 95th (m)	0.6	0.9	0.0	2.8	4.0	1.9	1.1					
Control Delay (s)	0.9	8.0	0.0	13.6	11.0	14.6	10.5					
Lane LOS	A	A		B	B	B	B					
Approach Delay (s)	0.9	1.0		11.8		12.5						
Approach LOS				B		B						
<b>Intersection Summary</b>												
Average Delay			3.4									
Intersection Capacity Utilization			54.0%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	332	7	23	348	11	10	0	17	7	1	1
Future Volume (Veh/h)	0	332	7	23	348	11	10	0	17	7	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	361	8	25	378	12	11	0	18	8	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	392			370			804	808	367	820	806	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	392			370			804	808	367	820	806	388
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			98			96	100	97	97	100	100
cM capacity (veh/h)	1176			1199			286	310	682	283	310	489
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	369	415	29	10								
Volume Left	0	25	11	8								
Volume Right	8	12	18	1								
cSH	1176	1199	447	298								
Volume to Capacity	0.00	0.02	0.06	0.03								
Queue Length 95th (m)	0.0	0.5	1.7	0.8								
Control Delay (s)	0.0	0.7	13.6	17.5								
Lane LOS		A	B	C								
Approach Delay (s)	0.0	0.7	13.6	17.5								
Approach LOS			B	C								
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			48.6%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	11	148	0	9	6	48	45	0	6	95	189
Future Volume (Veh/h)	179	11	148	0	9	6	48	45	0	6	95	189
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	195	12	161	0	10	7	52	49	0	7	103	205
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	384	372	206	540	475	49	308			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	384	372	206	540	475	49	308			49		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	63	97	81	100	97	99	96			99		
cM capacity (veh/h)	526	411	840	348	353	800	1264			1106		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	368	17	101	315								
Volume Left	195	0	52	7								
Volume Right	161	7	0	205								
cSH	622	459	1264	1106								
Volume to Capacity	0.59	0.04	0.04	0.01								
Queue Length 95th (m)	30.9	0.9	1.0	0.2								
Control Delay (s)	18.8	13.1	4.3	0.2								
Lane LOS	C	B	A	A								
Approach Delay (s)	18.8	13.1	4.3	0.2								
Approach LOS	C	B										
Intersection Summary												
Average Delay			9.6									
Intersection Capacity Utilization			58.2%		ICU Level of Service					B		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	57	1336	87	0	2901			
Future Volume (Veh/h)	0	57	1336	87	0	2901			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	62	1452	95	0	3153			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.69	0.88			0.88				
vC, conflicting volume	2504	485			1548				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	452	0			1147				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	94			100				
cM capacity (veh/h)	374	960			542				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	62	484	484	484	95	1051	1051	1051	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	62	0	0	0	95	0	0	0	
cSH	960	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.06	0.28	0.28	0.28	0.06	0.62	0.62	0.62	
Queue Length 95th (m)	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	9.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.1						
Intersection Capacity Utilization			59.4%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	751	334	1177	1521
v/c Ratio	0.76	0.78	0.41	0.49
Control Delay	43.3	46.4	16.1	10.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.3	46.4	16.1	10.8
Queue Length 50th (m)	88.3	75.2	48.0	49.5
Queue Length 95th (m)	95.1	100.2	m47.5	m48.0
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1419	598	2838	3086
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	55
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.56	0.41	0.50

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	657	341	1083	0	0	1399
Future Volume (vph)	657	341	1083	0	0	1399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3385	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3385	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	714	371	1177	0	0	1521
RTOR Reduction (vph)	4	29	0	0	0	0
Lane Group Flow (vph)	747	305	1177			1521
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	34.9	34.9	73.5			73.5
Effective Green, g (s)	34.9	34.9	73.5			73.5
Actuated g/C Ratio	0.29	0.29	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	984	399	2836			3084
v/s Ratio Prot			0.25			c0.30
v/s Ratio Perm	0.22	c0.22				
v/c Ratio	0.76	0.76	0.42			0.49
Uniform Delay, d1	38.7	38.8	12.1			12.9
Progression Factor	1.00	1.00	1.22			0.76
Incremental Delay, d2	3.4	8.5	0.0			0.1
Delay (s)	42.1	47.2	14.8			10.0
Level of Service	D	D	B			A
Approach Delay (s)	43.7		14.8			10.0
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			94.3%		ICU Level of Service	F
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	548	533	503	1104	654	1580
v/c Ratio	1.06	1.09	1.05	0.99	1.11	0.77
Control Delay	96.2	101.1	90.8	64.8	104.0	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.2	101.1	90.8	64.8	104.0	25.9
Queue Length 50th (m)	~156.9	~152.3	~132.6	92.7	~172.7	156.1
Queue Length 95th (m)	# 230.3	# 229.5	# 205.4	# 126.2	# 248.0	183.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	517	491	479	1117	587	2044
Starvation Cap Reductn	0	0	0	0	0	6
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.09	1.05	0.99	1.11	0.78

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	710	0	747	0	0	0	0	680	336	602	1454	0	
Future Volume (vph)	710	0	747	0	0	0	0	680	336	602	1454	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.91	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.98	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1420	1382					4042		1736	3505		
Flt Permitted	0.95	0.98	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1618	1420	1382					4042		215	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	772	0	812	0	0	0	0	739	365	654	1580	0	
RTOR Reduction (vph)	0	37	37	0	0	0	0	74	0	0	0	0	
Lane Group Flow (vph)	548	496	466	0	0	0	0	1030	0	654	1580	0	
Confl. Peds. (#/hr)							7		1	1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	38.4	38.4	38.4					31.0		70.0	70.0		
Effective Green, g (s)	38.4	38.4	38.4					31.0		70.0	70.0		
Actuated g/C Ratio	0.32	0.32	0.32					0.26		0.58	0.58		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	517	454	442					1044		581	2044		
v/s Ratio Prot								0.25		c0.34	0.45		
v/s Ratio Perm	0.34	0.35	0.34							c0.32			
v/c Ratio	1.06	1.09	1.05					0.99		1.13	0.77		
Uniform Delay, d1	40.8	40.8	40.8					44.3		34.3	19.0		
Progression Factor	1.00	1.00	1.00					1.00		1.07	1.20		
Incremental Delay, d2	56.4	69.3	57.6					24.8		74.9	2.6		
Delay (s)	97.2	110.1	98.4					69.1		111.6	25.4		
Level of Service	F	F	F					E		F	C		
Approach Delay (s)		101.9			0.0			69.1			50.6		
Approach LOS		F			A			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			71.3		HCM 2000 Level of Service						E		
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					14.6			
Intersection Capacity Utilization			94.3%		ICU Level of Service					F			
Analysis Period (min)			15										

c Critical Lane Group

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Volume (veh/h)	0	0	0	0	50	0
Future Volume (Veh/h)	0	0	0	0	50	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	54	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	54	0		
Volume Left	0	0	54	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1023	1700		
Volume to Capacity	0.00	0.00	0.05	0.00		
Queue Length 95th (m)	0.0	0.0	1.3	0.0		
Control Delay (s)	0.0	0.0	8.7	0.0		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			20.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy  
 12: Tower 1 & 2 Access/Street C & Street B

Future Background (2031) Traffic Analysis  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	41	82	0	0	0	50	86	0	0	0
Future Volume (Veh/h)	0	0	41	82	0	0	0	50	86	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	45	89	0	0	0	54	93	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			45			178	178	0	298	223	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			45			178	178	0	298	223	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			100	92	91	100	100	100
cM capacity (veh/h)	1623			1563			750	675	1085	537	637	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	45	89	0	147							
Volume Left	0	0	89	0	0							
Volume Right	0	45	0	0	93							
cSH	1700	1700	1563	1700	887							
Volume to Capacity	0.00	0.03	0.06	0.00	0.17							
Queue Length 95th (m)	0.0	0.0	1.4	0.0	4.7							
Control Delay (s)	0.0	0.0	7.4	0.0	9.9							
Lane LOS			A		A							
Approach Delay (s)	0.0		7.4		9.9							
Approach LOS					A							
Intersection Summary												
Average Delay			7.5									
Intersection Capacity Utilization			19.1%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		
Traffic Volume (veh/h)	0	41	0	50	0	0
Future Volume (Veh/h)	0	41	0	50	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	45	0	54	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			45		76	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			45		76	22
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1563		927	1054

Direction, Lane #	EB 1	WB 1
Volume Total	45	54
Volume Left	0	0
Volume Right	45	0
cSH	1700	1700
Volume to Capacity	0.03	0.03
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary		
Average Delay	0.0	
Intersection Capacity Utilization	20.0%	ICU Level of Service A
Analysis Period (min)	15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	267	1149	437	303	805	287	514	1700	485	318	1380	234
v/c Ratio	1.67	1.04	0.67	1.59	0.70	0.43	1.74	1.10	0.80	1.17	0.95	0.40
Control Delay	360.8	79.8	19.9	315.2	43.6	18.9	362.6	70.1	12.4	138.1	56.1	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	360.8	79.8	19.9	315.2	43.6	18.9	362.6	70.1	12.4	138.1	56.1	7.8
Queue Length 50th (m)	-96.3	-162.3	37.7	-107.9	109.4	29.3	-166.0	-178.4	100.4	-75.9	122.7	3.4
Queue Length 95th (m)	#151.0	#205.7	76.8	m#163.0	m129.2	m58.0	m#143.5	m144.5	m69.3	#135.2	#154.2	23.4
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	160	1101	648	191	1150	671	295	1540	607	272	1454	592
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.67	1.04	0.67	1.59	0.70	0.43	1.74	1.10	0.80	1.17	0.95	0.40

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy  
1: Brock Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	1057	402	279	741	264	473	1564	446	293	1270	215
Future Volume (vph)	246	1057	402	279	741	264	473	1564	446	293	1270	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	211	5136	1531	211	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	267	1149	437	303	805	287	514	1700	485	318	1380	234
RTOR Reduction (vph)	0	0	180	0	0	174	0	0	148	0	0	152
Lane Group Flow (vph)	267	1149	257	303	805	113	514	1700	337	318	1380	82
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	11.0	37.0	37.0	13.0	39.0	39.0	51.0	36.0	36.0	49.0	35.0	35.0
Effective Green, g (s)	11.0	37.0	37.0	13.0	39.0	39.0	51.0	36.0	36.0	49.0	35.0	35.0
Actuated g/C Ratio	0.09	0.31	0.31	0.11	0.32	0.32	0.42	0.30	0.30	0.41	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	1101	468	191	1150	497	288	1540	459	265	1454	439
v/s Ratio Prot	c0.15	c0.32		0.17	0.23		c0.22	0.33		0.14	0.28	
v/s Ratio Perm			0.17			0.07	c0.53		0.22	0.35		0.05
v/c Ratio	1.67	1.04	0.55	1.59	0.70	0.23	1.78	1.10	0.73	1.20	0.95	0.19
Uniform Delay, d1	54.5	41.5	34.6	53.5	35.4	29.5	34.7	42.0	37.7	34.4	41.6	31.8
Progression Factor	1.00	1.00	1.00	0.79	1.13	3.22	1.23	0.49	0.50	1.00	1.00	1.00
Incremental Delay, d2	326.8	39.2	4.6	284.3	3.1	0.9	354.4	47.8	1.0	120.5	14.2	0.9
Delay (s)	381.3	80.7	39.1	326.7	43.2	96.1	397.1	68.2	19.8	154.9	55.9	32.8
Level of Service	F	F	D	F	D	F	F	E	B	F	E	C
Approach Delay (s)		114.2			115.6			122.2			69.4	
Approach LOS		F			F			F			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			106.2				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.48									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			119.2%				ICU Level of Service				H	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1802	97	205	1187	592	2
v/c Ratio	0.01	1.01	0.12	0.98	0.55	1.06	0.00
Control Delay	19.0	36.0	10.0	87.8	15.1	84.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	36.0	10.0	87.8	15.1	84.5	0.0
Queue Length 50th (m)	0.3	~152.9	5.7	34.4	85.7	~130.5	0.0
Queue Length 95th (m)	m0.3	m144.4	m5.5	#85.0	104.3	#202.9	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	203	1787	792	209	2152	560	522
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	1.01	0.12	0.98	0.55	1.06	0.00

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

1755 Pickering Pkwy  
2: Notion Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1658	89	189	1092	0	65	0	479	0	0	2
Future Volume (vph)	3	1658	89	189	1092	0	65	0	479	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1801	3574	1529	1752	3539			1584			1599	
Flt Permitted	0.21	1.00	1.00	0.06	1.00			0.96			1.00	
Satd. Flow (perm)	406	3574	1529	117	3539			1529			1599	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1802	97	205	1187	0	71	0	521	0	0	2
RTOR Reduction (vph)	0	0	28	0	0	0	0	115	0	0	1	0
Lane Group Flow (vph)	3	1802	70	205	1187	0	0	477	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	60.0	60.0	60.0	73.0	73.0			35.0			35.0	
Effective Green, g (s)	60.0	60.0	60.0	73.0	73.0			35.0			35.0	
Actuated g/C Ratio	0.50	0.50	0.50	0.61	0.61			0.29			0.29	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	203	1787	764	207	2152			445			466	
v/s Ratio Prot		0.50		c0.08	0.34						0.00	
v/s Ratio Perm	0.01		0.05	c0.52				c0.31				
v/c Ratio	0.01	1.01	0.09	0.99	0.55			1.07			0.00	
Uniform Delay, d1	15.1	30.0	15.7	38.7	13.9			42.5			30.1	
Progression Factor	1.23	0.89	1.29	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	8.6	0.0	59.6	1.0			63.4			0.0	
Delay (s)	18.7	35.4	20.3	98.4	14.9			105.9			30.1	
Level of Service	B	D	C	F	B			F			C	
Approach Delay (s)		34.6			27.2			105.9			30.1	
Approach LOS		C			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			42.8			HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			109.7%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy  
3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	518	497	229	203	304	2266	526	239	1175	82
v/c Ratio	0.56	0.78	1.21	0.38	0.33	0.69	1.18	0.72	0.64	0.68	0.13
Control Delay	59.2	37.3	161.2	38.6	16.7	31.2	122.4	25.7	17.8	34.8	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	37.3	161.2	38.6	16.7	31.2	122.4	25.7	17.8	34.8	8.0
Queue Length 50th (m)	22.5	39.6	~79.7	50.2	15.6	55.2	~244.2	55.8	25.8	107.6	3.6
Queue Length 95th (m)	38.6	55.8	#115.5	67.1	35.7	m74.8	#275.8	m90.7	m45.5	m107.5	m4.0
Internal Link Dist (m)		188.9		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	303	1011	410	815	773	442	1921	727	376	1728	624
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.51	1.21	0.28	0.26	0.69	1.18	0.72	0.64	0.68	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

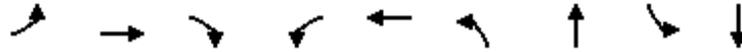
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy  
3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	233	244	457	211	187	280	2085	484	220	1081	75	
Future Volume (vph)	88	233	244	457	211	187	280	2085	484	220	1081	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1781	3264		3400	1863	1567	1787	5136	1514	1787	4988	1528	
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.10	1.00	1.00	
Satd. Flow (perm)	1155	3264		3400	1863	1567	221	5136	1514	181	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	253	265	497	229	203	304	2266	526	239	1175	82	
RTOR Reduction (vph)	0	179	0	0	0	106	0	0	161	0	0	54	
Lane Group Flow (vph)	96	339	0	497	229	97	304	2266	365	239	1175	28	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	17.8	17.8		14.5	38.8	38.8	68.6	44.9	44.9	62.2	41.5	41.5	
Effective Green, g (s)	17.8	17.8		14.5	38.8	38.8	68.6	44.9	44.9	62.2	41.5	41.5	
Actuated g/C Ratio	0.15	0.15		0.12	0.32	0.32	0.57	0.37	0.37	0.52	0.35	0.35	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	171	484		410	602	506	440	1921	566	370	1725	528	
v/s Ratio Prot		c0.10		c0.15	0.12		c0.14	c0.44		0.11	0.24		
v/s Ratio Perm	0.08					0.06	0.26		0.24	0.22		0.02	
v/c Ratio	0.56	0.70		1.21	0.38	0.19	0.69	1.18	0.64	0.65	0.68	0.05	
Uniform Delay, d1	47.5	48.6		52.8	31.3	29.3	24.8	37.5	31.0	28.4	33.6	26.2	
Progression Factor	1.00	1.00		1.03	1.20	2.01	1.13	1.13	1.37	0.50	0.99	111.47	
Incremental Delay, d2	4.2	4.5		115.5	0.4	0.2	2.8	84.3	3.3	1.0	0.6	0.1	
Delay (s)	51.6	53.1		170.0	38.0	59.2	30.8	126.5	45.6	15.1	33.9	2916.5	
Level of Service	D	D		F	D	E	C	F	D	B	C	F	
Approach Delay (s)		52.9			113.2			103.4			188.9		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			120.7		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.01										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					22.1			
Intersection Capacity Utilization			101.9%		ICU Level of Service					G			
Analysis Period (min)			15										
c Critical Lane Group													



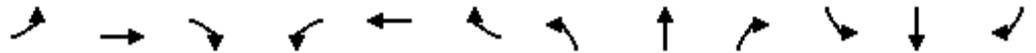
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	566	43	13	601	49	73	98	273
v/c Ratio	0.60	0.40	0.04	0.02	0.27	0.80	0.30	0.62	0.65
Control Delay	6.2	3.6	1.0	11.2	10.1	117.5	21.7	65.7	14.4
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	4.0	1.0	11.2	10.1	117.5	21.7	65.7	14.4
Queue Length 50th (m)	12.3	21.4	0.3	1.0	25.5	12.0	5.2	23.5	3.1
Queue Length 95th (m)	22.0	28.6	m0.5	m3.7	m50.0	#28.3	18.4	39.5	28.1
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	914	1419	1194	535	2201	123	440	315	579
Starvation Cap Reductn	16	386	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.55	0.04	0.02	0.27	0.40	0.17	0.31	0.47

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	521	40	12	482	71	45	21	46	90	13	238
Future Volume (vph)	396	521	40	12	482	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1783	1827	1528	1776	3464		1765	1666		1748	1587	
Flt Permitted	0.39	1.00	1.00	0.45	1.00		0.27	1.00		0.71	1.00	
Satd. Flow (perm)	735	1827	1528	845	3464		509	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	566	43	13	524	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	7	0	5	0	0	44	0	0	227	0
Lane Group Flow (vph)	430	566	36	13	596	0	49	29	0	98	46	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	93.2	93.2	93.2	76.1	76.1		14.6	14.6		14.6	14.6	
Effective Green, g (s)	93.2	93.2	93.2	76.1	76.1		14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.78	0.78	0.78	0.63	0.63		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	693	1418	1186	535	2196		61	202		158	193	
v/s Ratio Prot	c0.07	0.31			0.17			0.02			0.03	
v/s Ratio Perm	c0.41		0.02	0.02			c0.10			0.08		
v/c Ratio	0.62	0.40	0.03	0.02	0.27		0.80	0.14		0.62	0.24	
Uniform Delay, d1	4.3	4.3	3.1	8.2	9.7		51.3	47.1		50.1	47.7	
Progression Factor	0.92	0.58	0.50	0.92	0.89		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.6	0.0	0.1	0.3		51.7	0.3		7.4	0.6	
Delay (s)	5.3	3.2	1.6	7.6	8.9		103.0	47.4		57.4	48.3	
Level of Service	A	A	A	A	A		F	D		E	D	
Approach Delay (s)		4.0			8.9			69.8			50.7	
Approach LOS		A			A			E			D	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

5: Pickering Ridge Access 1/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	533	177	66	384	87	128	30	94	82	8	55
Future Volume (Veh/h)	31	533	177	66	384	87	128	30	94	82	8	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	579	192	72	417	95	139	33	102	89	9	60
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	515			776			1374	1407	685	1478	1456	468
vC1, stage 1 conf vol							748	748		612	612	
vC2, stage 2 conf vol							626	659		866	844	
vCu, unblocked vol	515			656			1353	1392	550	1474	1448	468
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			91			48	89	78	42	96	90
cM capacity (veh/h)	1058			804			266	290	453	154	248	598
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	805	72	512	139	135	89	69					
Volume Left	34	72	0	139	0	89	0					
Volume Right	192	0	95	0	102	0	60					
cSH	1058	804	1700	266	399	154	505					
Volume to Capacity	0.03	0.09	0.30	0.52	0.34	0.58	0.14					
Queue Length 95th (m)	0.8	2.4	0.0	22.3	11.8	24.1	3.8					
Control Delay (s)	0.8	9.9	0.0	32.5	18.6	56.5	13.3					
Lane LOS	A	A		D	C	F	B					
Approach Delay (s)	0.8	1.2		25.6		37.6						
Approach LOS				D		E						
<b>Intersection Summary</b>												
Average Delay			7.9									
Intersection Capacity Utilization			88.2%		ICU Level of Service					E		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	671	31	62	462	8	73	2	76	11	3	0
Future Volume (Veh/h)	5	671	31	62	462	8	73	2	76	11	3	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	729	34	67	502	9	79	2	83	12	3	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	
vC, conflicting volume	515			764			1400	1406	747	1484	1418	512
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515			740			1397	1403	722	1484	1416	512
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			25	98	80	84	98	100
cM capacity (veh/h)	1057			847			105	125	416	74	122	564
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	768	578	164	15								
Volume Left	5	67	79	12								
Volume Right	34	9	83	0								
cSH	1057	847	170	80								
Volume to Capacity	0.00	0.08	0.96	0.19								
Queue Length 95th (m)	0.1	2.1	59.8	5.1								
Control Delay (s)	0.1	2.1	114.5	59.7								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.1	2.1	114.5	59.7								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			13.8									
Intersection Capacity Utilization			84.1%		ICU Level of Service					E		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	3	159	2	7	3	126	96	0	2	35	235
Future Volume (Veh/h)	367	3	159	2	7	3	126	96	0	2	35	235
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	399	3	173	2	8	3	137	104	0	2	38	255
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	554	548	166	723	675	104	293			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554	548	166	723	675	104	293			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	80	99	97	100	89			100		
cM capacity (veh/h)	392	297	882	251	256	873	1280			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	575	13	241	295								
Volume Left	399	2	137	2								
Volume Right	173	3	0	255								
cSH	470	305	1280	1048								
Volume to Capacity	1.22	0.04	0.11	0.00								
Queue Length 95th (m)	181.2	1.1	2.9	0.0								
Control Delay (s)	145.1	17.3	5.0	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	145.1	17.3	5.0	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			75.5									
Intersection Capacity Utilization			75.4%	ICU Level of Service							D	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	101	2843	246	0	1900			
Future Volume (Veh/h)	0	101	2843	246	0	1900			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	110	3090	267	0	2065			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.68	0.58			0.58				
vC, conflicting volume	3778	1030			3357				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1506	0			2537				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	83			100				
cM capacity (veh/h)	77	635			104				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	110	1030	1030	1030	267	688	688	688	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	110	0	0	0	267	0	0	0	
cSH	635	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.17	0.61	0.61	0.61	0.16	0.40	0.40	0.40	
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.9	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			67.9%		ICU Level of Service			C	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	662	331	2704	1007
v/c Ratio	0.82	0.87	0.83	0.31
Control Delay	50.5	64.3	16.5	8.1
Queue Delay	0.0	0.0	15.0	0.0
Total Delay	50.5	64.3	31.5	8.1
Queue Length 50th (m)	77.5	83.6	125.8	23.0
Queue Length 95th (m)	98.6	#132.4	m69.3	m25.7
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	893	424	3251	3220
Starvation Cap Reductn	0	0	605	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.78	1.02	0.31

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←←←	←	↑↑↑			↑↑↑
Traffic Volume (vph)	304	610	2488	0	0	926
Future Volume (vph)	304	610	2488	0	0	926
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3038	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3038	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	663	2704	0	0	1007
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	661	330	2704	0	0	1007
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.7	31.7	76.7			76.7
Effective Green, g (s)	31.7	31.7	76.7			76.7
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	802	380	3250			3218
v/s Ratio Prot			c0.53			0.20
v/s Ratio Perm	0.22	c0.23				
v/c Ratio	0.82	0.87	0.83			0.31
Uniform Delay, d1	41.5	42.1	16.7			9.8
Progression Factor	1.00	1.00	0.92			0.77
Incremental Delay, d2	6.9	18.4	0.2			0.2
Delay (s)	48.4	60.5	15.6			7.7
Level of Service	D	E	B			A
Approach Delay (s)	52.4		15.6			7.7
Approach LOS	D		B			A

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	128.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	876	874	572	2158	525	923
v/c Ratio	1.39	1.47	1.02	1.30	1.47	0.54
Control Delay	218.9	251.6	74.1	171.8	256.1	21.9
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	218.9	251.6	74.1	172.0	256.1	21.9
Queue Length 50th (m)	~305.0	~329.0	~139.1	~248.6	~162.6	76.1
Queue Length 95th (m)	#388.1	#416.5	#214.2	#279.5	#232.6	102.8
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	628	594	561	1663	357	1718
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	121	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.39	1.47	1.02	1.40	1.47	0.54

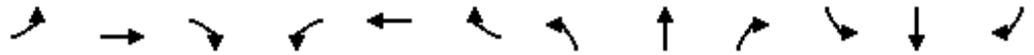
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1549	2	585	0	0	0	0	1588	397	483	849	0
Future Volume (vph)	1549	2	585	0	0	0	0	1588	397	483	849	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.99	0.85					0.97		1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1698	1598	1334					4762		1752	3223	
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00	
Satd. Flow (perm)	1698	1598	1334					4762		168	3223	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1684	2	636	0	0	0	0	1726	432	525	923	0
RTOR Reduction (vph)	0	3	68	0	0	0	0	36	0	0	0	0
Lane Group Flow (vph)	876	871	504	0	0	0	0	2122	0	525	923	0
Confl. Peds. (#/hr)							5		7	7		5
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	44.4	44.4	44.4					41.0		64.0	64.0	
Effective Green, g (s)	44.4	44.4	44.4					41.0		64.0	64.0	
Actuated g/C Ratio	0.37	0.37	0.37					0.34		0.53	0.53	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	628	591	493					1627		353	1718	
v/s Ratio Prot								0.45		c0.25	0.29	
v/s Ratio Perm	0.52	0.55	0.38							c0.55		
v/c Ratio	1.39	1.47	1.02					1.30		1.49	0.54	
Uniform Delay, d1	37.8	37.8	37.8					39.5		38.1	18.3	
Progression Factor	1.00	1.00	1.00					1.00		1.11	1.12	
Incremental Delay, d2	187.3	222.6	46.3					141.4		233.0	1.1	
Delay (s)	225.1	260.4	84.1					180.9		275.3	21.6	
Level of Service	F	F	F					F		F	C	
Approach Delay (s)		203.7			0.0			180.9			113.6	
Approach LOS		F			A			F			F	

Intersection Summary

HCM 2000 Control Delay	173.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	128.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	1	0	0	0	50	0
Future Volume (Veh/h)	1	0	0	0	50	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	0	0	54	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1		1	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1		1	1
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1622		1022	1084
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	1	0	54	0		
Volume Left	0	0	54	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1022	1700		
Volume to Capacity	0.00	0.00	0.05	0.00		
Queue Length 95th (m)	0.0	0.0	1.3	0.0		
Control Delay (s)	0.0	0.0	8.7	0.0		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			8.6			
Intersection Capacity Utilization			20.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy  
12: Tower 1 & 2 Access/Street C & Street B

Future Background (2031) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	51	76	0	0	0	50	74	0	0	0
Future Volume (Veh/h)	0	0	51	76	0	0	0	50	74	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	55	83	0	0	0	54	80	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			55			166	166	0	273	221	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			55			166	166	0	273	221	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	92	93	100	100	100
cM capacity (veh/h)	1623			1550			766	688	1085	568	641	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	55	83	0	134							
Volume Left	0	0	83	0	0							
Volume Right	0	55	0	0	80							
cSH	1700	1700	1550	1700	880							
Volume to Capacity	0.00	0.03	0.05	0.00	0.15							
Queue Length 95th (m)	0.0	0.0	1.4	0.0	4.3							
Control Delay (s)	0.0	0.0	7.5	0.0	9.8							
Lane LOS			A		A							
Approach Delay (s)	0.0		7.5		9.8							
Approach LOS					A							
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			18.0%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		
Traffic Volume (veh/h)	0	51	0	50	0	0
Future Volume (Veh/h)	0	51	0	50	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	55	0	54	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			55		82	28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			55		82	28
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1550		921	1048

Direction, Lane #	EB 1	WB 1
Volume Total	55	54
Volume Left	0	0
Volume Right	55	0
cSH	1700	1700
Volume to Capacity	0.03	0.03
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary		
Average Delay	0.0	
Intersection Capacity Utilization	20.0%	ICU Level of Service A
Analysis Period (min)	15	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	828	530	293	888	290	396	1329	412	253	1228	220
v/c Ratio	1.15	0.75	0.82	1.41	0.79	0.43	1.41	0.89	0.65	0.91	0.82	0.36
Control Delay	156.8	42.5	31.4	246.2	50.8	17.0	220.5	42.6	21.2	64.6	45.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.8	42.5	31.4	246.2	50.8	17.0	220.5	42.6	21.2	64.6	45.0	6.0
Queue Length 50th (m)	~64.1	97.1	67.1	~100.6	90.5	9.4	~108.6	125.6	69.7	43.9	103.8	0.0
Queue Length 95th (m)	#115.1	121.3	#128.8	m#158.0	135.5	m50.6	m#122.2	m126.8	m75.4	#94.1	122.6	18.6
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	193	1101	645	208	1131	672	280	1498	632	278	1498	606
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.75	0.82	1.41	0.79	0.43	1.41	0.89	0.65	0.91	0.82	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy  
1: Brock Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
Existing SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	203	762	488	270	817	267	364	1223	379	233	1130	202	
Future Volume (vph)	203	762	488	270	817	267	364	1223	379	233	1130	202	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	217	5136	1533	215	5136	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	221	828	530	293	888	290	396	1329	412	253	1228	220	
RTOR Reduction (vph)	0	0	176	0	0	179	0	0	185	0	0	156	
Lane Group Flow (vph)	221	828	354	293	888	111	396	1329	227	253	1228	64	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	13.0	37.0	37.0	14.0	38.0	38.0	49.0	35.0	35.0	49.0	35.0	35.0	
Effective Green, g (s)	13.0	37.0	37.0	14.0	38.0	38.0	49.0	35.0	35.0	49.0	35.0	35.0	
Actuated g/C Ratio	0.11	0.31	0.31	0.12	0.32	0.32	0.41	0.29	0.29	0.41	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	193	1101	468	208	1131	493	273	1498	447	271	1498	450	
v/s Ratio Prot	0.12	0.23		c0.16	c0.25		c0.17	0.26		0.11	0.24		
v/s Ratio Perm			0.23			0.07	c0.42		0.15	0.27		0.04	
v/c Ratio	1.15	0.75	0.76	1.41	0.79	0.23	1.45	0.89	0.51	0.93	0.82	0.14	
Uniform Delay, d1	53.5	37.4	37.4	53.0	37.3	30.2	33.3	40.6	35.3	31.9	39.6	31.4	
Progression Factor	1.00	1.00	1.00	0.97	1.21	2.82	0.53	0.90	1.34	1.00	1.00	1.00	
Incremental Delay, d2	109.3	4.8	10.8	208.0	5.0	1.0	215.8	5.6	2.7	37.0	5.1	0.7	
Delay (s)	162.8	42.1	48.2	259.3	50.3	86.1	233.4	42.3	50.0	68.9	44.7	32.1	
Level of Service	F	D	D	F	D	F	F	D	D	E	D	C	
Approach Delay (s)		61.1			99.0			79.2			46.7		
Approach LOS		E			F			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			71.2									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.20										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			112.6%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1375	148	288	1267	432	2
v/c Ratio	0.03	0.68	0.17	0.73	0.48	0.90	0.01
Control Delay	32.6	41.7	23.4	30.0	8.1	39.9	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	41.7	23.4	30.0	8.1	39.9	36.0
Queue Length 50th (m)	0.9	184.0	21.4	33.7	60.2	41.4	0.4
Queue Length 95th (m)	m1.5	m211.7	m31.6	70.5	97.5	78.4	2.7
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	194	2010	891	430	2635	582	359
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.68	0.17	0.67	0.48	0.74	0.01

**Intersection Summary**

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

1755 Pickering Pkwy  
2: Notion Rd. & Kingston Rd.

Future Background (2031) Traffic Analysis  
Existing SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1265	136	265	1166	0	49	2	347	1	1	0
Future Volume (vph)	5	1265	136	265	1166	0	49	2	347	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1621			1851	
Flt Permitted	0.22	1.00	1.00	0.11	1.00			0.96			0.78	
Satd. Flow (perm)	347	3574	1541	203	3574			1559			1488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1375	148	288	1267	0	53	2	377	1	1	0
RTOR Reduction (vph)	0	0	24	0	0	0	0	227	0	0	0	0
Lane Group Flow (vph)	5	1375	124	288	1267	0	0	205	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	67.5	67.5	67.5	88.5	88.5			19.5			19.5	
Effective Green, g (s)	67.5	67.5	67.5	88.5	88.5			19.5			19.5	
Actuated g/C Ratio	0.56	0.56	0.56	0.74	0.74			0.16			0.16	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	195	2010	866	390	2635			253			241	
v/s Ratio Prot		0.38		c0.11	0.35							
v/s Ratio Perm	0.01		0.08	c0.43				c0.13			0.00	
v/c Ratio	0.03	0.68	0.14	0.74	0.48			0.81			0.01	
Uniform Delay, d1	11.7	18.7	12.5	24.6	6.4			48.5			42.1	
Progression Factor	1.88	1.89	2.25	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.3	0.2	7.2	0.6			17.6			0.0	
Delay (s)	22.1	36.6	28.3	31.8	7.0			66.0			42.2	
Level of Service	C	D	C	C	A			E			D	
Approach Delay (s)		35.7			11.6			66.0			42.2	
Approach LOS		D			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.8			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			89.1%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy  
 3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
 Existing SAT Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	475	810	246	203	260	1435	354	318	961	99
v/c Ratio	0.57	0.77	1.19	0.33	0.28	0.64	1.05	0.68	0.70	0.59	0.17
Control Delay	61.1	38.7	133.9	21.6	5.0	29.0	81.5	23.1	24.6	25.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	38.7	133.9	21.6	5.0	29.0	81.5	23.1	24.6	25.7	4.7
Queue Length 50th (m)	20.9	37.5	~126.9	49.2	15.4	32.3	~146.7	26.2	21.5	77.8	5.5
Queue Length 95th (m)	36.8	53.2	m#158.5	m58.9	m23.1	72.9	#169.6	59.8	m#79.2	m91.3	m7.6
Internal Link Dist (m)		188.9		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	296	1000	678	973	886	409	1365	520	452	1633	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.47	1.19	0.25	0.23	0.64	1.05	0.68	0.70	0.59	0.17

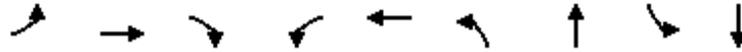
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

1755 Pickering Pkwy  
3: Brock Rd. & Pickering Pkwy

Future Background (2031) Traffic Analysis  
Existing SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	231	206	745	226	187	239	1320	326	293	884	91	
Future Volume (vph)	82	231	206	745	226	187	239	1320	326	293	884	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1769	3301		3467	1900	1536	1786	5136	1313	1805	5136	1567	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.22	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1129	3301		3467	1900	1536	409	5136	1313	218	5136	1567	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	251	224	810	246	203	260	1435	354	318	961	99	
RTOR Reduction (vph)	0	157	0	0	0	124	0	0	172	0	0	68	
Lane Group Flow (vph)	89	318	0	810	246	79	260	1435	182	318	961	31	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	22%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	16.8	16.8		23.5	46.8	46.8	51.4	31.9	31.9	60.6	38.1	38.1	
Effective Green, g (s)	16.8	16.8		23.5	46.8	46.8	51.4	31.9	31.9	60.6	38.1	38.1	
Actuated g/C Ratio	0.14	0.14		0.20	0.39	0.39	0.43	0.27	0.27	0.51	0.32	0.32	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	158	462		678	741	599	398	1365	349	449	1630	497	
v/s Ratio Prot		c0.10		c0.23	0.13		0.11	c0.28		c0.15	0.19		
v/s Ratio Perm	0.08					0.05	0.17		0.14	0.21		0.02	
v/c Ratio	0.56	0.69		1.19	0.33	0.13	0.65	1.05	0.52	0.71	0.59	0.06	
Uniform Delay, d1	48.2	49.1		48.2	25.6	23.5	23.4	44.0	37.6	29.2	34.4	28.5	
Progression Factor	1.00	1.00		0.82	0.83	1.51	1.29	1.03	1.24	0.70	0.70	1.02	
Incremental Delay, d2	4.5	4.3		97.8	0.2	0.1	3.4	37.8	4.9	2.1	0.6	0.1	
Delay (s)	52.7	53.4		137.4	21.4	35.5	33.6	83.0	51.6	22.6	24.7	29.3	
Level of Service	D	D		F	C	D	C	F	D	C	C	C	
Approach Delay (s)		53.3			98.3			71.3			24.5		
Approach LOS		D			F			E			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			63.6		HCM 2000 Level of Service						E		
HCM 2000 Volume to Capacity ratio			0.93										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			99.0%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	391	64	34	656	112	102	128	624
v/c Ratio	0.89	0.41	0.08	0.13	0.72	1.29	0.15	0.26	0.64
Control Delay	41.4	12.9	3.1	37.3	44.4	222.1	11.9	25.5	6.0
Queue Delay	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	13.4	3.1	37.3	44.4	222.1	11.9	25.5	6.0
Queue Length 50th (m)	68.6	44.6	1.0	7.0	82.0	-33.3	7.3	20.2	5.4
Queue Length 95th (m)	#141.9	63.3	m2.0	m15.6	#112.1	#71.4	18.7	35.1	33.2
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	547	958	815	256	908	95	746	540	1012
Starvation Cap Reductn	3	232	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.54	0.08	0.13	0.72	1.18	0.14	0.24	0.62

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

Existing SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	360	59	31	493	110	103	46	48	118	34	540
Future Volume (vph)	433	360	59	31	493	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1804	1863	1543	1779	3452		1805	1717		1782	1607	
Flt Permitted	0.19	1.00	1.00	0.53	1.00		0.12	1.00		0.69	1.00	
Satd. Flow (perm)	361	1863	1543	994	3452		227	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	391	64	34	536	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	22	0	15	0	0	32	0	0	361	0
Lane Group Flow (vph)	471	391	42	34	641	0	112	70	0	128	263	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	61.7	61.7	61.7	31.0	31.0		46.1	46.1		46.1	46.1	
Effective Green, g (s)	61.7	61.7	61.7	31.0	31.0		46.1	46.1		46.1	46.1	
Actuated g/C Ratio	0.51	0.51	0.51	0.26	0.26		0.38	0.38		0.38	0.38	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	518	957	793	256	891		87	659		497	617	
v/s Ratio Prot	c0.21	0.21			0.19			0.04				0.16
v/s Ratio Perm	c0.26		0.03	0.03			c0.49			0.10		
v/c Ratio	0.91	0.41	0.05	0.13	0.72		1.29	0.11		0.26	0.43	
Uniform Delay, d1	27.5	17.9	14.6	34.2	40.5		37.0	23.7		25.3	27.2	
Progression Factor	0.98	0.61	0.42	0.93	0.95		1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.2	1.0	0.1	1.1	5.0		191.8	0.1		0.3	0.5	
Delay (s)	43.1	12.0	6.2	32.7	43.3		228.8	23.8		25.5	27.7	
Level of Service	D	B	A	C	D		F	C		C	C	
Approach Delay (s)		27.4			42.8			131.1			27.3	
Approach LOS		C			D			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			40.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			101.8%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	332	217	75	379	156	197	44	129	92	13	79
Future Volume (Veh/h)	20	332	217	75	379	156	197	44	129	92	13	79
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	361	236	82	412	170	214	48	140	100	14	86
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	0.84
vC, conflicting volume	583			599			1198	1272	487	1355	1305	502
vC1, stage 1 conf vol							525	525		662	662	
vC2, stage 2 conf vol							673	747		693	643	
vCu, unblocked vol	583			423			1139	1228	290	1327	1267	502
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			91			24	85	78	50	95	85
cM capacity (veh/h)	916			958			282	316	627	200	299	571
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	619	82	582	214	188	100	100					
Volume Left	22	82	0	214	0	100	0					
Volume Right	236	0	170	0	140	0	86					
cSH	916	958	1700	282	501	200	506					
Volume to Capacity	0.02	0.09	0.34	0.76	0.38	0.50	0.20					
Queue Length 95th (m)	0.6	2.2	0.0	45.4	13.8	20.0	5.8					
Control Delay (s)	0.6	9.1	0.0	49.1	16.4	39.7	13.8					
Lane LOS	A	A		E	C	E	B					
Approach Delay (s)	0.6	1.1		33.8		26.8						
Approach LOS				D		D						
<b>Intersection Summary</b>												
Average Delay			10.7									
Intersection Capacity Utilization			75.7%		ICU Level of Service					D		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	490	60	55	497	28	112	0	87	25	2	1
Future Volume (Veh/h)	9	490	60	55	497	28	112	0	87	25	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	533	65	60	540	30	122	0	95	27	2	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	570			598			1264	1276	568	1358	1293	557
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			598			1264	1276	568	1358	1293	557
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			11	100	82	73	99	100
cM capacity (veh/h)	928			989			138	156	526	99	153	533
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	608	630	217	30								
Volume Left	10	60	122	27								
Volume Right	65	30	95	1								
cSH	928	989	203	104								
Volume to Capacity	0.01	0.06	1.07	0.29								
Queue Length 95th (m)	0.3	1.5	79.2	8.7								
Control Delay (s)	0.3	1.6	131.0	53.2								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.3	1.6	131.0	53.2								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			21.0									
Intersection Capacity Utilization			77.7%		ICU Level of Service					D		
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	1	204	0	0	0	178	45	0	0	75	273
Future Volume (Veh/h)	283	1	204	0	0	0	178	45	0	0	75	273
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	308	1	222	0	0	0	193	49	0	0	82	297
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	668	666	230	888	814	52	379			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	668	666	230	888	814	52	379			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	5	100	73	100	100	100	84			100		
cM capacity (veh/h)	323	234	814	169	264	1019	1191			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	531	0	242	379								
Volume Left	308	0	193	0								
Volume Right	222	0	0	297								
cSH	432	1700	1191	1571								
Volume to Capacity	1.23	0.04	0.16	0.00								
Queue Length 95th (m)	172.9	0.0	4.6	0.0								
Control Delay (s)	150.4	0.0	7.2	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	150.4	0.0	7.2	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			70.8									
Intersection Capacity Utilization			77.9%	ICU Level of Service	D							
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	138	1864	305	0	1996			
Future Volume (Veh/h)	0	138	1864	305	0	1996			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	150	2026	332	0	2170			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.90	0.83				0.83			
vC, conflicting volume	2752	678				2361			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1433	0				1909			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	83				100			
cM capacity (veh/h)	114	898				260			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	150	675	675	675	332	723	723	723	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	150	0	0	0	332	0	0	0	
cSH	898	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.17	0.40	0.40	0.40	0.20	0.43	0.43	0.43	
Queue Length 95th (m)	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	9.8	0.0					0.0		
Approach LOS	A								
Intersection Summary									
Average Delay			0.3						
Intersection Capacity Utilization			51.2%		ICU Level of Service		A		
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	544	313	1743	999
v/c Ratio	0.64	0.80	0.53	0.30
Control Delay	41.0	55.0	13.6	14.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.0	55.0	13.6	14.5
Queue Length 50th (m)	60.2	77.1	63.0	40.1
Queue Length 95th (m)	69.4	102.4	m61.0	m43.3
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1252	566	3294	3294
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.55	0.53	0.30

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	212	577	1604	0	0	919
Future Volume (vph)	212	577	1604	0	0	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3237	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3237	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	627	1743	0	0	999
RTOR Reduction (vph)	8	8	0	0	0	0
Lane Group Flow (vph)	536	305	1743	0	0	999
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.4	31.4	77.0			77.0
Effective Green, g (s)	31.4	31.4	77.0			77.0
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	847	380	3295			3295
v/s Ratio Prot			c0.34			0.19
v/s Ratio Perm	0.17	c0.21				
v/c Ratio	0.63	0.80	0.53			0.30
Uniform Delay, d1	39.2	41.4	11.7			9.6
Progression Factor	1.00	1.00	1.05			1.36
Incremental Delay, d2	1.6	11.6	0.1			0.2
Delay (s)	40.7	53.0	12.3			13.1
Level of Service	D	D	B			B
Approach Delay (s)	45.2		12.3			13.1
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			20.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			97.4%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	662	666	492	1130	641	591
v/c Ratio	1.03	1.03	0.69	1.06	1.09	0.32
Control Delay	81.0	78.8	20.5	88.2	104.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	78.8	20.5	88.2	104.0	17.5
Queue Length 50th (m)	~185.0	~185.1	52.7	~107.9	~166.0	42.2
Queue Length 95th (m)	#262.6	#267.5	97.7	#138.6	#239.9	52.2
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	642	644	709	1065	590	1876
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	1.03	0.69	1.06	1.09	0.32

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1171	0	503	0	0	0	0	772	268	590	544	0	
Future Volume (vph)	1171	0	503	0	0	0	0	772	268	590	544	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1611	1461					4866		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.14	1.00		
Satd. Flow (perm)	1698	1611	1461					4866		269	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1273	0	547	0	0	0	0	839	291	641	591	0	
RTOR Reduction (vph)	0	34	157	0	0	0	0	52	0	0	0	0	
Lane Group Flow (vph)	662	632	335	0	0	0	0	1078	0	641	591	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	45.4	45.4	45.4					25.0		63.0	63.0		
Effective Green, g (s)	45.4	45.4	45.4					25.0		63.0	63.0		
Actuated g/C Ratio	0.38	0.38	0.38					0.21		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	642	609	552					1013		583	1876		
v/s Ratio Prot								0.22		c0.32	0.17		
v/s Ratio Perm	0.39	0.39	0.23							c0.26			
v/c Ratio	1.03	1.04	0.61					1.06		1.10	0.32		
Uniform Delay, d1	37.3	37.3	30.1					47.5		34.2	16.2		
Progression Factor	1.00	1.00	1.00					1.00		1.40	1.05		
Incremental Delay, d2	43.8	46.5	1.9					46.9		66.8	0.4		
Delay (s)	81.1	83.8	32.0					94.4		114.8	17.4		
Level of Service	F	F	C					F		F	B		
Approach Delay (s)		68.8			0.0			94.4			68.1		
Approach LOS		E			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			75.5									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.10										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			97.4%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	60	0
Future Volume (Veh/h)	0	0	0	0	60	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	65	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	65	0		
Volume Left	0	0	65	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1023	1700		
Volume to Capacity	0.00	0.00	0.06	0.00		
Queue Length 95th (m)	0.0	0.0	1.6	0.0		
Control Delay (s)	0.0	0.0	8.8	0.0		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			20.2%	ICU Level of Service	A	
Analysis Period (min)	15					

1755 Pickering Pkwy  
12: Tower 1 & 2 Access/Street C & Street B

Future Background (2031) Traffic Analysis  
Existing SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	57	89	0	0	0	60	89	0	0	0
Future Volume (Veh/h)	0	0	57	89	0	0	0	60	89	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	62	97	0	0	0	65	97	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			62			194	194	0	324	256	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			62			194	194	0	324	256	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			100	90	91	100	100	100
cM capacity (veh/h)	1623			1541			729	657	1085	505	607	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	62	97	0	162							
Volume Left	0	0	97	0	0							
Volume Right	0	62	0	0	97							
cSH	1700	1700	1541	1700	860							
Volume to Capacity	0.00	0.04	0.06	0.00	0.19							
Queue Length 95th (m)	0.0	0.0	1.6	0.0	5.5							
Control Delay (s)	0.0	0.0	7.5	0.0	10.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		7.5		10.2							
Approach LOS					B							
Intersection Summary												
Average Delay			7.4									
Intersection Capacity Utilization			20.2%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		
Traffic Volume (veh/h)	0	57	0	60	0	0
Future Volume (Veh/h)	0	57	0	60	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	62	0	65	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			62		96	31
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			62		96	31
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1541		903	1043
Direction, Lane #						
	EB 1	WB 1				
Volume Total	62	65				
Volume Left	0	0				
Volume Right	62	0				
cSH	1700	1700				
Volume to Capacity	0.04	0.04				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			20.2%		ICU Level of Service	A
Analysis Period (min)			15			

**APPENDIX 13**

**Future Total (2031) Synchro HCM Outputs**



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	368	374	403	582	185	489	999	195	352	1966	203
v/c Ratio	0.70	0.35	0.58	2.14	0.49	0.29	2.13	0.73	0.33	1.21	1.27	0.34
Control Delay	81.0	32.6	16.6	556.0	34.3	13.4	541.9	23.5	3.2	149.3	161.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	32.6	16.6	556.0	34.3	13.4	541.9	23.5	3.2	149.3	161.1	5.8
Queue Length 50th (m)	23.3	36.7	27.9	~161.4	66.8	8.5	~182.5	34.0	2.5	-82.5	~224.7	0.0
Queue Length 95th (m)	#48.5	50.6	60.8	#226.4	87.0	35.2	m#188.0	m34.1	m2.8	#143.8	#255.5	17.4
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	141	1058	640	188	1198	639	230	1362	586	290	1552	593
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.35	0.58	2.14	0.49	0.29	2.13	0.73	0.33	1.21	1.27	0.34

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	339	344	371	535	170	450	919	179	324	1809	187	
Future Volume (vph)	87	339	344	371	535	170	450	919	179	324	1809	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.15	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	199	4673	1536	270	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	368	374	403	582	185	489	999	195	352	1966	203	
RTOR Reduction (vph)	0	0	158	0	0	121	0	0	138	0	0	140	
Lane Group Flow (vph)	95	368	216	403	582	64	489	999	57	352	1966	63	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	9.5	38.0	38.0	13.0	41.5	41.5	47.0	35.0	35.0	51.0	37.0	37.0	
Effective Green, g (s)	9.5	38.0	38.0	13.0	41.5	41.5	47.0	35.0	35.0	51.0	37.0	37.0	
Actuated g/C Ratio	0.08	0.32	0.32	0.11	0.35	0.35	0.39	0.29	0.29	0.42	0.31	0.31	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	134	1058	482	188	1200	518	223	1362	448	281	1552	452	
v/s Ratio Prot	0.06	0.11		c0.23	c0.17		c0.22	0.21		c0.15	0.39		
v/s Ratio Perm			0.14			0.04	c0.64		0.04	0.38		0.04	
v/c Ratio	0.71	0.35	0.45	2.14	0.48	0.12	2.19	0.73	0.13	1.25	1.27	0.14	
Uniform Delay, d1	53.9	31.5	32.7	53.5	30.9	26.8	32.9	38.3	31.3	27.4	41.5	30.0	
Progression Factor	1.00	1.00	1.00	0.90	1.05	3.06	2.00	0.56	0.52	1.00	1.00	1.00	
Incremental Delay, d2	15.8	0.9	3.0	530.6	1.3	0.4	544.2	1.8	0.3	139.6	125.3	0.6	
Delay (s)	69.7	32.4	35.7	578.7	33.8	82.5	610.0	23.3	16.6	167.0	166.8	30.6	
Level of Service	E	C	D	F	C	F	F	C	B	F	F	C	
Approach Delay (s)		38.1			229.2			193.0			155.9		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			163.9		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.52										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			128.8%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	837	110	264	1134	287	3
v/c Ratio	0.01	0.38	0.13	0.52	0.43	0.83	0.01
Control Delay	15.3	13.7	8.9	8.4	7.0	40.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	13.7	8.9	8.4	7.0	40.3	0.0
Queue Length 50th (m)	0.3	50.6	4.0	14.2	45.9	30.3	0.0
Queue Length 95th (m)	m0.8	m68.7	m14.3	33.5	83.7	58.4	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	301	2180	854	612	2634	507	449
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.38	0.13	0.43	0.43	0.57	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 2 (2031) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	770	101	243	1043	0	53	0	211	1	0	2
Future Volume (vph)	3	770	101	243	1043	0	53	0	211	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frb, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1465			1685	
Flt Permitted	0.25	1.00	1.00	0.29	1.00			0.93			0.84	
Satd. Flow (perm)	475	3438	1316	513	3505			1374			1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	837	110	264	1134	0	58	0	229	1	0	2
RTOR Reduction (vph)	0	0	20	0	0	0	0	141	0	0	3	0
Lane Group Flow (vph)	3	837	90	264	1134	0	0	146	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	76.1	76.1	76.1	90.2	90.2			17.8			17.8	
Effective Green, g (s)	76.1	76.1	76.1	90.2	90.2			17.8			17.8	
Actuated g/C Ratio	0.63	0.63	0.63	0.75	0.75			0.15			0.15	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	301	2180	834	494	2634			203			214	
v/s Ratio Prot		0.24		c0.05	0.32							
v/s Ratio Perm	0.01		0.07	c0.35				c0.11			0.00	
v/c Ratio	0.01	0.38	0.11	0.53	0.43			0.72			0.00	
Uniform Delay, d1	8.1	10.6	8.6	5.3	5.5			48.7			43.5	
Progression Factor	1.15	1.06	1.27	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4	0.2	1.1	0.5			11.9			0.0	
Delay (s)	9.3	11.6	11.1	6.4	6.0			60.7			43.5	
Level of Service	A	B	B	A	A			E			D	
Approach Delay (s)		11.6			6.1			60.7			43.5	
Approach LOS		B			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.0			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			79.3%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	360	854	109	48	187	1353	253	322	1973	210
v/c Ratio	0.37	0.88dr	1.45	0.16	0.08	0.54	1.04	0.49	0.69	1.17	0.33
Control Delay	53.1	44.0	245.9	28.1	4.6	31.7	77.5	16.5	31.1	126.8	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	44.0	245.9	28.1	4.6	31.7	77.5	16.5	31.1	126.8	22.7
Queue Length 50th (m)	14.0	32.4	~150.7	19.9	0.1	25.7	~135.8	11.0	78.3	~213.9	24.4
Queue Length 95th (m)	26.9	47.2	#192.3	30.7	m5.0	54.6	#159.0	36.0	m63.1	m150.1	m16.7
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	332	895	591	903	776	347	1304	512	465	1689	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.40	1.45	0.12	0.06	0.54	1.04	0.49	0.69	1.17	0.33

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 2 (2031) Traffic Analysis  
AM Peak Hour

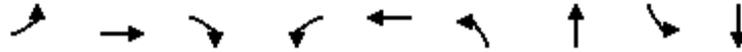
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	94	237	786	100	44	172	1245	233	296	1815	193
Future Volume (vph)	56	94	237	786	100	44	172	1245	233	296	1815	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1751	3120		3155	1792	1459	1719	4759	1396	1770	5036	1491
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1265	3120		3155	1792	1459	220	4759	1396	208	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	102	258	854	109	48	187	1353	253	322	1973	210
RTOR Reduction (vph)	0	91	0	0	0	30	0	0	130	0	0	139
Lane Group Flow (vph)	61	269	0	854	109	18	187	1353	123	322	1973	71
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.5	15.5		22.5	44.5	44.5	52.5	32.9	32.9	62.9	40.3	40.3
Effective Green, g (s)	15.5	15.5		22.5	44.5	44.5	52.5	32.9	32.9	62.9	40.3	40.3
Actuated g/C Ratio	0.13	0.13		0.19	0.37	0.37	0.44	0.27	0.27	0.52	0.34	0.34
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	163	403		591	664	541	341	1304	382	460	1691	500
v/s Ratio Prot		c0.09		c0.27	0.06		0.09	0.28		c0.16	c0.39	
v/s Ratio Perm	0.05					0.01	0.15		0.09	0.21		0.05
v/c Ratio	0.37	0.88dr		1.45	0.16	0.03	0.55	1.04	0.32	0.70	1.17	0.14
Uniform Delay, d1	47.8	49.8		48.8	25.3	24.0	25.2	43.5	34.7	29.0	39.9	27.8
Progression Factor	1.00	1.00		1.01	1.13	3.64	1.17	1.01	1.16	1.14	1.48	5.53
Incremental Delay, d2	1.4	4.2		209.5	0.1	0.0	1.7	34.4	2.1	0.4	75.7	0.1
Delay (s)	49.3	54.0		258.9	28.6	87.6	31.0	78.5	42.2	33.4	134.6	153.6
Level of Service	D	D		F	C	F	C	E	D	C	F	F
Approach Delay (s)		53.3			225.9			68.4			123.2	
Approach LOS		D			F			E			F	

Intersection Summary

HCM 2000 Control Delay	119.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	490	34	3	479	29	18	49	387
v/c Ratio	0.26	0.37	0.03	0.00	0.22	0.48	0.10	0.37	0.78
Control Delay	1.5	1.7	0.0	6.3	6.1	73.4	25.8	56.1	16.7
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.5	1.9	0.0	6.3	6.1	73.4	25.8	56.1	16.7
Queue Length 50th (m)	2.3	7.3	0.0	0.2	17.5	7.0	1.2	11.7	1.8
Queue Length 95th (m)	m4.3	11.1	m0.0	m1.1	33.5	16.5	7.9	22.7	32.5
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	807	1336	1256	642	2201	203	577	438	773
Starvation Cap Reductn	0	265	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.46	0.03	0.00	0.22	0.14	0.03	0.11	0.50

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	451	31	3	408	33	27	5	12	45	7	349
Future Volume (vph)	181	451	31	3	408	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	1681	1573	1799	3144		1750	1666		1636	1535	
Flt Permitted	0.46	1.00	1.00	0.48	1.00		0.32	1.00		0.75	1.00	
Satd. Flow (perm)	840	1681	1573	918	3144		594	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	490	34	3	443	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	6	0	2	0	0	12	0	0	340	0
Lane Group Flow (vph)	197	490	28	3	477	0	29	6	0	49	47	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.4	95.4	95.4	83.9	83.9		12.4	12.4		12.4	12.4	
Effective Green, g (s)	95.4	95.4	95.4	83.9	83.9		12.4	12.4		12.4	12.4	
Actuated g/C Ratio	0.80	0.80	0.80	0.70	0.70		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	730	1336	1250	641	2198		61	172		132	158	
v/s Ratio Prot	0.02	c0.29			0.15			0.00				0.03
v/s Ratio Perm	0.20		0.02	0.00			c0.05			0.04		
v/c Ratio	0.27	0.37	0.02	0.00	0.22		0.48	0.04		0.37	0.30	
Uniform Delay, d1	2.9	3.6	2.6	5.4	6.4		50.7	48.4		50.2	49.8	
Progression Factor	0.28	0.25	0.00	0.77	0.82		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7	0.0	0.0	0.2		5.7	0.1		1.8	1.1	
Delay (s)	1.0	1.6	0.0	4.2	5.5		56.5	48.5		51.9	50.8	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		1.3			5.5			53.4			51.0	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	278	203	116	318	34	99	3	345	27	3	25
Future Volume (Veh/h)	27	278	203	116	318	34	99	3	345	27	3	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	302	221	126	346	37	108	3	375	29	3	27
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	386			523			1098	1108	414	1468	1200	368
vC1, stage 1 conf vol							470	470		620	620	
vC2, stage 2 conf vol							628	638		848	581	
vCu, unblocked vol	386			440			1064	1075	321	1465	1175	368
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			88			67	99	39	15	99	96
cM capacity (veh/h)	1181			1042			328	343	618	34	303	679
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	552	126	383	108	378	29	30					
Volume Left	29	126	0	108	0	29	0					
Volume Right	221	0	37	0	375	0	27					
cSH	1181	1042	1700	328	614	34	604					
Volume to Capacity	0.02	0.12	0.23	0.33	0.62	0.85	0.05					
Queue Length 95th (m)	0.6	3.3	0.0	11.2	33.6	23.9	1.3					
Control Delay (s)	0.7	8.9	0.0	21.3	19.8	278.3	11.3					
Lane LOS	A	A		C	C	F	B					
Approach Delay (s)	0.7	2.2		20.1		142.5						
Approach LOS				C		F						
<b>Intersection Summary</b>												
Average Delay			12.3									
Intersection Capacity Utilization			79.8%		ICU Level of Service					D		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	588	63	50	421	11	47	0	187	7	1	1
Future Volume (Veh/h)	0	588	63	50	421	11	47	0	187	7	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	639	68	54	458	12	51	0	203	8	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	472			708			1250	1254	675	1451	1282	468
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	472			708			1250	1254	675	1451	1282	468
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			94			63	100	56	86	99	100
cM capacity (veh/h)	1099			899			137	163	457	58	156	435
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	707	524	254	10								
Volume Left	0	54	51	8								
Volume Right	68	12	203	1								
cSH	1099	899	311	68								
Volume to Capacity	0.00	0.06	0.82	0.15								
Queue Length 95th (m)	0.0	1.5	54.8	3.9								
Control Delay (s)	0.0	1.6	52.7	66.8								
Lane LOS		A	F	F								
Approach Delay (s)	0.0	1.6	52.7	66.8								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			10.0									
Intersection Capacity Utilization			84.0%		ICU Level of Service				E			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	11	519	0	9	6	100	45	0	6	95	225
Future Volume (Veh/h)	226	11	519	0	9	6	100	45	0	6	95	225
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	246	12	564	0	10	7	109	49	0	7	103	245
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	518	506	226	1076	629	49	348			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	518	506	226	1076	629	49	348			49		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	40	96	31	100	96	99	91			99		
cM capacity (veh/h)	409	320	819	56	267	800	1222			1106		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	822	17	158	355								
Volume Left	246	0	109	7								
Volume Right	564	7	0	245								
cSH	619	368	1222	1106								
Volume to Capacity	1.33	0.05	0.09	0.01								
Queue Length 95th (m)	274.4	1.2	2.3	0.2								
Control Delay (s)	178.6	15.3	5.9	0.2								
Lane LOS	F	C	A	A								
Approach Delay (s)	178.6	15.3	5.9	0.2								
Approach LOS	F	C										
Intersection Summary												
Average Delay			109.5									
Intersection Capacity Utilization			88.8%		ICU Level of Service					E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	350	1336	286	0	2993			
Future Volume (Veh/h)	0	350	1336	286	0	2993			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	380	1452	311	0	3253			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.75	0.86			0.86				
vC, conflicting volume	2537	485			1764				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	592	0			1305				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	59			100				
cM capacity (veh/h)	332	933			460				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	380	484	484	484	311	1084	1084	1084	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	380	0	0	0	311	0	0	0	
cSH	933	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.41	0.28	0.28	0.28	0.18	0.64	0.64	0.64	
Queue Length 95th (m)	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.5	0.0				0.0			
Approach LOS	B								
Intersection Summary									
Average Delay			0.8						
Intersection Capacity Utilization			61.2%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	776	349	1353	1530
v/c Ratio	0.74	0.80	0.49	0.51
Control Delay	40.9	48.6	18.6	12.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.9	48.6	18.6	12.6
Queue Length 50th (m)	87.8	81.9	61.5	52.8
Queue Length 95th (m)	94.8	106.9	m53.7	m45.7
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1443	599	2760	3002
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.58	0.49	0.51

**Intersection Summary**

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖↖	↗	↑↑↑			↑↑↑
Traffic Volume (vph)	657	378	1245	0	0	1408
Future Volume (vph)	657	378	1245	0	0	1408
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.96	1.00	1.00			1.00
Satd. Flow (prot)	3370	1374	4631			5036
Flt Permitted	0.96	1.00	1.00			1.00
Satd. Flow (perm)	3370	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	714	411	1353	0	0	1530
RTOR Reduction (vph)	7	16	0	0	0	0
Lane Group Flow (vph)	769	333	1353	0	0	1530
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	36.9	36.9	71.5			71.5
Effective Green, g (s)	36.9	36.9	71.5			71.5
Actuated g/C Ratio	0.31	0.31	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1036	422	2759			3000
v/s Ratio Prot			0.29			c0.30
v/s Ratio Perm	0.23	c0.24				
v/c Ratio	0.74	0.79	0.49			0.51
Uniform Delay, d1	37.3	38.0	13.8			14.1
Progression Factor	1.00	1.00	1.23			0.82
Incremental Delay, d2	2.9	9.5	0.1			0.1
Delay (s)	40.2	47.5	17.1			11.6
Level of Service	D	D	B			B
Approach Delay (s)	42.5		17.1			11.6
Approach LOS	D		B			B

Intersection Summary

HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	607	593	560	1416	664	1580
v/c Ratio	1.20	1.21	1.20	1.11	1.26	0.76
Control Delay	146.6	145.1	141.5	97.8	161.3	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.6	145.1	141.5	97.8	161.3	25.0
Queue Length 50th (m)	~192.6	~186.7	~167.0	~141.4	~195.7	145.2
Queue Length 95th (m)	#268.1	#266.2	#242.2	#173.0	#269.3	165.1
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	504	491	468	1277	528	2073
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.20	1.21	1.20	1.11	1.26	0.76

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	872	0	747	0	0	0	0	934	369	611	1454	0	
Future Volume (vph)	872	0	747	0	0	0	0	934	369	611	1454	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.94	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1455	1382					4058		1736	3505		
Flt Permitted	0.95	0.97	1.00					1.00		0.10	1.00		
Satd. Flow (perm)	1618	1455	1382					4058		187	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	948	0	812	0	0	0	0	1015	401	664	1580	0	
RTOR Reduction (vph)	0	38	38	0	0	0	0	60	0	0	0	0	
Lane Group Flow (vph)	607	555	522	0	0	0	0	1357	0	664	1580	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	37.4	37.4	37.4					36.0		71.0	71.0		
Effective Green, g (s)	37.4	37.4	37.4					36.0		71.0	71.0		
Actuated g/C Ratio	0.31	0.31	0.31					0.30		0.59	0.59		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	504	453	430					1217		523	2073		
v/s Ratio Prot								0.33		c0.34	0.45		
v/s Ratio Perm	0.38	0.38	0.38							c0.41			
v/c Ratio	1.20	1.23	1.21					1.11		1.27	0.76		
Uniform Delay, d1	41.3	41.3	41.3					42.0		35.9	18.2		
Progression Factor	1.00	1.00	1.00					1.00		1.07	1.22		
Incremental Delay, d2	109.6	119.8	116.1					63.3		134.0	2.4		
Delay (s)	150.9	161.1	157.4					105.3		172.4	24.5		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		156.4			0.0			105.3			68.3		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			106.6									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.28										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			104.9%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	5	0	0	201	142	70
Future Volume (Veh/h)	5	0	0	201	142	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	0	218	154	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				5	223	5
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				5	223	5
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	80	93
cM capacity (veh/h)				1616	765	1078
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	5	218	154	76		
Volume Left	0	0	154	0		
Volume Right	0	0	0	76		
cSH	1700	1700	765	1078		
Volume to Capacity	0.00	0.13	0.20	0.07		
Queue Length 95th (m)	0.0	0.0	6.0	1.8		
Control Delay (s)	0.0	0.0	10.9	8.6		
Lane LOS				B	A	
Approach Delay (s)	0.0	0.0	10.1			
Approach LOS				B		
Intersection Summary						
Average Delay				5.1		
Intersection Capacity Utilization				43.3%	ICU Level of Service	A
Analysis Period (min)				15		

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	127	108	181	0	55	0	157	172	0	0	0
Future Volume (Veh/h)	0	127	108	181	0	55	0	157	172	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	138	117	197	0	60	0	171	187	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	60			255			532	592	138	804	649	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			255			532	592	138	804	649	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			100	52	79	100	100	100
cM capacity (veh/h)	1544			1310			405	356	910	133	330	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	138	117	197	60	358							
Volume Left	0	0	197	0	0							
Volume Right	0	117	0	60	187							
cSH	1700	1700	1310	1700	522							
Volume to Capacity	0.08	0.07	0.15	0.04	0.69							
Queue Length 95th (m)	0.0	0.0	4.2	0.0	41.7							
Control Delay (s)	0.0	0.0	8.2	0.0	25.6							
Lane LOS			A		D							
Approach Delay (s)	0.0		6.3		25.6							
Approach LOS					D							
Intersection Summary												
Average Delay			12.4									
Intersection Capacity Utilization			45.5%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	5	0	0	117	1	84	325	0	1	282	0
Future Volume (Veh/h)	70	5	0	0	117	1	84	325	0	1	282	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	5	0	0	127	1	91	353	0	1	307	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	128			5			438	285	5	461	284	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			5			438	285	5	461	284	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			70	40	100	100	48	100
cM capacity (veh/h)	1458			1616			302	592	1078	259	592	923
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	76	5	0	128	444	308						
Volume Left	76	0	0	0	91	1						
Volume Right	0	0	0	1	0	0						
cSH	1458	1700	1700	1700	494	590						
Volume to Capacity	0.05	0.00	0.00	0.08	0.90	0.52						
Queue Length 95th (m)	1.3	0.0	0.0	0.0	81.1	24.2						
Control Delay (s)	7.6	0.0	0.0	0.0	48.3	17.6						
Lane LOS	A				E	C						
Approach Delay (s)	7.1		0.0		48.3	17.6						
Approach LOS					E	C						
Intersection Summary												
Average Delay			28.5									
Intersection Capacity Utilization			57.2%		ICU Level of Service				B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	49	67	0	0	0	0	235	0	12	89	181
Future Volume (Veh/h)	174	49	67	0	0	0	0	235	0	12	89	181
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	53	73	0	0	0	0	255	0	13	97	197
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			126			713	468	90	595	504	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			126			713	468	90	595	504	0
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			100			100	41	100	94	77	82
cM capacity (veh/h)	1623			1460			213	436	968	205	415	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	315	0	255	307								
Volume Left	189	0	0	13								
Volume Right	73	0	0	197								
cSH	1623	1700	436	642								
Volume to Capacity	0.12	0.00	0.59	0.48								
Queue Length 95th (m)	3.2	0.0	29.2	20.7								
Control Delay (s)	4.9	0.0	24.3	15.7								
Lane LOS	A		C	C								
Approach Delay (s)	4.9	0.0	24.3	15.7								
Approach LOS			C	C								
Intersection Summary												
Average Delay			14.3									
Intersection Capacity Utilization			49.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	5	0	0	75	136	42	71	0	58	25	1
Future Volume (Veh/h)	1	5	0	0	75	136	42	71	0	58	25	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	5	0	0	82	148	46	77	0	63	27	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	512	322	28	324	323	77	28			77		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	322	28	324	323	77	28			77		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	100	85	85	97			96		
cM capacity (veh/h)	338	554	1048	591	553	984	1585			1522		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	5	0	230	46	77	63	28				
Volume Left	1	0	0	0	46	0	63	0				
Volume Right	0	0	0	148	0	0	0	1				
cSH	338	554	1700	770	1585	1700	1522	1700				
Volume to Capacity	0.00	0.01	0.00	0.30	0.03	0.05	0.04	0.02				
Queue Length 95th (m)	0.1	0.2	0.0	10.0	0.7	0.0	1.0	0.0				
Control Delay (s)	15.7	11.6	0.0	11.7	7.3	0.0	7.5	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	12.2		11.7		2.7		5.2					
Approach LOS	B		B									
Intersection Summary												
Average Delay			7.9									
Intersection Capacity Utilization			28.8%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	0	113	25	0
Future Volume (Veh/h)	0	61	0	113	25	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	66	0	123	27	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150	27	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	27	27			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	842	1048	1587			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	66	123	27			
Volume Left	0	0	0			
Volume Right	66	0	0			
cSH	1048	1587	1700			
Volume to Capacity	0.06	0.00	0.02			
Queue Length 95th (m)	1.6	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			16.4%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	63	0	0	211	0
Future Volume (Veh/h)	0	63	0	0	211	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	68	0	0	229	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			68		34	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		34	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		77	100
cM capacity (veh/h)			1533		979	1039
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	0	229			
Volume Left	0	0	229			
Volume Right	68	0	0			
cSH	1700	1700	979			
Volume to Capacity	0.04	0.00	0.23			
Queue Length 95th (m)	0.0	0.0	7.3			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			22.3%	ICU Level of Service		A
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕		
Traffic Volume (veh/h)	5	235	0	343	0	0
Future Volume (Veh/h)	5	235	0	343	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	255	0	373	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			260	506	132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			260	506	132	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1304	526	917	
Direction, Lane #	EB 1	WB 1				
Volume Total	260	373				
Volume Left	0	0				
Volume Right	255	0				
cSH	1700	1700				
Volume to Capacity	0.15	0.22				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.3%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	1149	570	296	805	295	628	1823	492	318	1523	226
v/c Ratio	1.62	1.04	0.88	1.83	0.74	0.47	1.93	1.06	0.75	1.31	1.05	0.38
Control Delay	342.8	79.8	38.0	419.6	47.6	23.9	446.2	50.7	10.2	193.5	78.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	342.8	79.8	38.0	419.6	47.6	23.9	446.2	50.7	10.2	193.5	78.5	7.6
Queue Length 50th (m)	-92.7	-162.3	80.4	-112.1	109.5	38.5	-214.7	-188.3	110.4	-83.7	-150.3	2.9
Queue Length 95th (m)	#146.9	#205.7	#151.1	m#165.6	m129.2	m69.0	m#138.4	m112.8	m30.2	#143.0	#181.5	22.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	160	1101	646	162	1091	626	325	1712	652	243	1454	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.63	1.04	0.88	1.83	0.74	0.47	1.93	1.06	0.75	1.31	1.05	0.38

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	239	1057	524	272	741	271	578	1677	453	293	1401	208	
Future Volume (vph)	239	1057	524	272	741	271	578	1677	453	293	1401	208	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	200	5136	1531	211	4988	1508	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	260	1149	570	296	805	295	628	1823	492	318	1523	226	
RTOR Reduction (vph)	0	0	178	0	0	154	0	0	142	0	0	149	
Lane Group Flow (vph)	260	1149	392	296	805	141	628	1823	350	318	1523	77	
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35	
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	11.0	37.0	37.0	11.0	37.0	37.0	55.0	40.0	40.0	47.0	35.0	35.0	
Effective Green, g (s)	11.0	37.0	37.0	11.0	37.0	37.0	55.0	40.0	40.0	47.0	35.0	35.0	
Actuated g/C Ratio	0.09	0.31	0.31	0.09	0.31	0.31	0.46	0.33	0.33	0.39	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	160	1101	468	162	1091	472	319	1712	510	236	1454	439	
v/s Ratio Prot	0.15	c0.32		c0.17	0.23		c0.28	0.35		0.13	0.31		
v/s Ratio Perm			0.26			0.09	c0.62		0.23	0.39		0.05	
v/c Ratio	1.62	1.04	0.84	1.83	0.74	0.30	1.97	1.06	0.69	1.35	1.05	0.18	
Uniform Delay, d1	54.5	41.5	38.7	54.5	37.2	31.6	36.5	40.0	34.6	32.9	42.5	31.7	
Progression Factor	1.00	1.00	1.00	0.78	1.17	2.44	1.24	0.45	0.47	1.00	1.00	1.00	
Incremental Delay, d2	308.0	39.2	16.3	392.1	3.8	1.4	436.9	30.7	0.7	181.8	37.1	0.9	
Delay (s)	362.5	80.7	55.0	434.5	47.2	78.5	482.4	48.7	16.9	214.7	79.6	32.6	
Level of Service	F	F	D	F	D	E	F	D	B	F	E	C	
Approach Delay (s)		110.3			135.9			135.9			95.2		
Approach LOS		F			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			119.9									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.66										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			124.6%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1802	97	259	1187	637	2
v/c Ratio	0.02	1.06	0.15	1.15	0.57	1.14	0.00
Control Delay	22.7	60.4	12.4	136.8	16.4	109.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	60.4	12.4	136.8	16.4	109.4	0.0
Queue Length 50th (m)	0.4	~251.7	6.8	~58.3	89.8	~151.1	0.0
Queue Length 95th (m)	m0.4	m#160.1	m6.2	#113.4	109.5	#225.1	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	191	1697	666	225	2093	561	549
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.06	0.15	1.15	0.57	1.14	0.00

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 2 (2031) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1658	89	238	1092	0	65	0	521	0	0	2
Future Volume (vph)	3	1658	89	238	1092	0	65	0	521	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1801	3574	1342	1752	3539			1462			1615	
Flt Permitted	0.21	1.00	1.00	0.07	1.00			0.96			1.00	
Satd. Flow (perm)	403	3574	1342	123	3539			1414			1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1802	97	259	1187	0	71	0	566	0	0	2
RTOR Reduction (vph)	0	0	29	0	0	0	0	125	0	0	1	0
Lane Group Flow (vph)	3	1802	68	259	1187	0	0	512	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.0	57.0	57.0	71.0	71.0			37.0			37.0	
Effective Green, g (s)	57.0	57.0	57.0	71.0	71.0			37.0			37.0	
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59			0.31			0.31	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	191	1697	637	222	2093			435			497	
v/s Ratio Prot		0.50		c0.11	0.34						0.00	
v/s Ratio Perm	0.01		0.05	c0.58				c0.36				
v/c Ratio	0.02	1.06	0.11	1.17	0.57			1.18			0.00	
Uniform Delay, d1	16.7	31.5	17.4	38.8	15.1			41.5			28.7	
Progression Factor	1.32	0.99	1.43	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	29.4	0.0	112.8	1.1			101.1			0.0	
Delay (s)	22.1	60.5	24.9	151.6	16.2			142.6			28.7	
Level of Service	C	E	C	F	B			F			C	
Approach Delay (s)		58.6			40.4			142.6			28.7	
Approach LOS		E			D			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			65.4			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			1.20									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			115.0%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	539	600	229	203	328	2511	526	532	1165	82
v/c Ratio	0.53	0.79	1.57	0.38	0.32	0.72	1.47	0.81	1.19	0.69	0.13
Control Delay	56.0	38.6	302.4	32.1	10.6	30.0	248.0	33.9	112.3	32.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	38.6	302.4	32.1	10.6	30.0	248.0	33.9	112.3	32.6	6.9
Queue Length 50th (m)	22.2	43.5	~109.8	47.4	11.1	58.0	~313.2	79.0	~145.1	101.5	2.9
Queue Length 95th (m)	38.1	59.8	#147.7	65.8	31.3	m69.8	#343.6	m84.8	m#161.2	m99.1	m2.2
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	303	1007	382	799	788	457	1707	648	447	1681	610
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.54	1.57	0.29	0.26	0.72	1.47	0.81	1.19	0.69	0.13

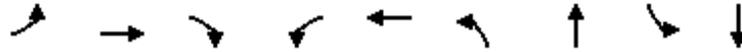
**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 2 (2031) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	252	244	552	211	187	302	2310	484	489	1072	75	
Future Volume (vph)	88	252	244	552	211	187	302	2310	484	489	1072	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1781	3276		3400	1863	1567	1787	5136	1514	1787	4988	1528	
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.13	1.00	1.00	0.10	1.00	1.00	
Satd. Flow (perm)	1155	3276		3400	1863	1567	237	5136	1514	186	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	274	265	600	229	203	328	2511	526	532	1165	82	
RTOR Reduction (vph)	0	169	0	0	0	137	0	0	146	0	0	54	
Lane Group Flow (vph)	96	371	0	600	229	66	328	2511	380	532	1165	28	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	18.9	18.9		13.5	38.9	38.9	65.0	39.9	39.9	66.0	40.4	40.4	
Effective Green, g (s)	18.9	18.9		13.5	38.9	38.9	65.0	39.9	39.9	66.0	40.4	40.4	
Actuated g/C Ratio	0.16	0.16		0.11	0.32	0.32	0.54	0.33	0.33	0.55	0.34	0.34	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	181	515		382	603	507	452	1707	503	443	1679	514	
v/s Ratio Prot		c0.11		c0.18	0.12		0.15	c0.49		c0.26	0.23		
v/s Ratio Perm	0.08					0.04	0.24		0.25	0.40		0.02	
v/c Ratio	0.53	0.72		1.57	0.38	0.13	0.73	1.47	0.76	1.20	0.69	0.05	
Uniform Delay, d1	46.5	48.0		53.2	31.3	28.6	25.8	40.0	35.7	37.4	34.4	26.9	
Progression Factor	1.00	1.00		0.92	0.99	2.68	1.01	1.15	1.30	0.60	0.91	97.51	
Incremental Delay, d2	3.0	4.8		268.6	0.4	0.1	3.2	213.8	5.8	92.5	0.2	0.0	
Delay (s)	49.4	52.8		317.8	31.5	76.8	29.2	259.7	52.2	115.2	31.7	2621.9	
Level of Service	D	D		F	C	E	C	F	D	F	C	F	
Approach Delay (s)		52.3			206.8			204.8			176.0		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			183.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.27										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			124.2%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	879	43	13	704	49	73	98	273
v/c Ratio	0.66	0.63	0.04	0.03	0.32	0.80	0.28	0.58	0.64
Control Delay	8.0	3.2	0.3	12.2	11.0	116.5	20.7	61.7	13.6
Queue Delay	0.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	4.7	0.3	12.2	11.0	116.5	20.7	61.7	13.6
Queue Length 50th (m)	6.6	14.5	0.2	0.8	29.0	12.0	5.2	23.4	3.1
Queue Length 95th (m)	m16.7	m51.8	m0.5	m5.3	m73.4	#27.3	17.9	38.5	27.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	787	1405	1181	381	2173	99	386	271	535
Starvation Cap Reductn	55	325	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.81	0.04	0.03	0.32	0.49	0.19	0.36	0.51

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	809	40	12	577	71	45	21	46	90	13	238
Future Volume (vph)	396	809	40	12	577	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1827	1528	1788	3475		1765	1666		1748	1587	
Flt Permitted	0.34	1.00	1.00	0.33	1.00		0.26	1.00		0.71	1.00	
Satd. Flow (perm)	642	1827	1528	612	3475		479	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	879	43	13	627	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	6	0	5	0	0	44	0	0	226	0
Lane Group Flow (vph)	430	879	37	13	699	0	49	29	0	98	47	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	92.3	92.3	92.3	74.8	74.8		15.5	15.5		15.5	15.5	
Effective Green, g (s)	92.3	92.3	92.3	74.8	74.8		15.5	15.5		15.5	15.5	
Actuated g/C Ratio	0.77	0.77	0.77	0.62	0.62		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	631	1405	1175	381	2166		61	215		168	204	
v/s Ratio Prot	c0.08	0.48			0.20			0.02				0.03
v/s Ratio Perm	c0.44		0.02	0.02			c0.10			0.08		
v/c Ratio	0.68	0.63	0.03	0.03	0.32		0.80	0.14		0.58	0.23	
Uniform Delay, d1	5.0	6.2	3.3	8.7	10.7		50.8	46.3		49.2	46.9	
Progression Factor	1.43	0.30	0.12	0.88	0.86		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.9	0.0	0.2	0.4		51.7	0.3		5.1	0.6	
Delay (s)	8.4	2.8	0.4	7.9	9.6		102.5	46.6		54.3	47.5	
Level of Service	A	A	A	A	A		F	D		D	D	
Approach Delay (s)		4.5			9.6			69.1			49.3	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			102.0%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	617	380	155	416	87	188	30	292	75	1	48
Future Volume (Veh/h)	31	617	380	155	416	87	188	30	292	75	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	671	413	168	452	95	204	33	317	82	1	52
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	0.71
vC, conflicting volume	550			1089			1791	1836	888	2122	1996	502
vC1, stage 1 conf vol							950	950		838	838	
vC2, stage 2 conf vol							840	886		1284	1157	
vCu, unblocked vol	550			920			1911	1975	636	2379	2199	502
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			68			0	81	5	0	98	91
cM capacity (veh/h)	1027			529			152	169	335	1	47	572
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	1118	168	547	204	350	82	53					
Volume Left	34	168	0	204	0	82	0					
Volume Right	413	0	95	0	317	0	52					
cSH	1027	529	1700	152	306	1	473					
Volume to Capacity	0.03	0.32	0.32	1.34	1.14	144.52	0.11					
Queue Length 95th (m)	0.8	10.8	0.0	100.5	116.0	Err	3.0					
Control Delay (s)	1.0	14.9	0.0	246.8	132.7	Err	13.6					
Lane LOS	A	B		F	F	F	B					
Approach Delay (s)	1.0	3.5		174.7		6078.8						
Approach LOS				F		F						
Intersection Summary												
Average Delay			365.2									
Intersection Capacity Utilization			122.4%	ICU Level of Service		H						
Analysis Period (min)			15									

6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	859	124	108	542	8	114	2	207	11	3	0
Future Volume (Veh/h)	5	859	124	108	542	8	114	2	207	11	3	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	934	135	117	589	9	124	2	225	12	3	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	602			1070			1842	1848	1002	2069	1912	598
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	602			1027			1877	1883	953	2126	1953	598
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			81			0	96	22	0	94	100
cM capacity (veh/h)	982			621			40	52	288	6	47	504
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	1074	715	351	15								
Volume Left	5	117	124	12								
Volume Right	135	9	225	0								
cSH	982	621	90	7								
Volume to Capacity	0.01	0.19	3.89	2.06								
Queue Length 95th (m)	0.1	5.5	Err	23.2								
Control Delay (s)	0.2	4.9	Err	1456.7								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.2	4.9	Err	1456.7								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			1640.5									
Intersection Capacity Utilization			116.5%		ICU Level of Service				H			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	409	3	428	2	7	3	198	96	0	2	35	284
Future Volume (Veh/h)	409	3	428	2	7	3	198	96	0	2	35	284
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	445	3	465	2	8	3	215	104	0	2	38	309
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	738	730	194	1198	885	104	347			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	738	730	194	1198	885	104	347			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	45	97	95	100	82			100		
cM capacity (veh/h)	275	208	852	64	173	873	1223			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	913	13	319	349								
Volume Left	445	2	215	2								
Volume Right	465	3	0	309								
cSH	420	160	1223	1048								
Volume to Capacity	2.18	0.08	0.18	0.00								
Queue Length 95th (m)	534.3	2.1	5.1	0.0								
Control Delay (s)	557.9	29.5	6.3	0.1								
Lane LOS	F	D	A	A								
Approach Delay (s)	557.9	29.5	6.3	0.1								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			321.0									
Intersection Capacity Utilization			101.3%		ICU Level of Service				G			
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	359	2833	597	0	1985			
Future Volume (Veh/h)	0	359	2833	597	0	1985			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	390	3079	649	0	2158			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.57	0.48			0.48				
vC, conflicting volume	3798	1026			3728				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	978	0			2876				
tC, single (s)	7.1	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.7	3.3			2.2				
p0 queue free %	100	24			100				
cM capacity (veh/h)	128	516			62				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	390	1026	1026	1026	649	719	719	719	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	390	0	0	0	649	0	0	0	
cSH	516	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.76	0.60	0.60	0.60	0.38	0.42	0.42	0.42	
Queue Length 95th (m)	52.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	30.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	D								
Approach Delay (s)	30.5	0.0				0.0			
Approach LOS	D								
Intersection Summary									
Average Delay			1.9						
Intersection Capacity Utilization			83.6%		ICU Level of Service			E	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	682	359	3024	1035
v/c Ratio	0.86	0.95	0.93	0.33
Control Delay	53.8	79.4	18.2	4.9
Queue Delay	0.0	0.0	45.2	0.0
Total Delay	53.8	79.4	63.4	4.9
Queue Length 50th (m)	82.2	95.2	210.0	15.2
Queue Length 95th (m)	#107.6	#161.2	m66.2	m16.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	816	387	3262	3169
Starvation Cap Reductn	0	0	663	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.93	1.16	0.33

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←←←	←	↑↑↑			↑↑↑
Traffic Volume (vph)	297	661	2782	0	0	952
Future Volume (vph)	297	661	2782	0	0	952
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3040	1441	5085			4940
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3040	1441	5085			4940
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	718	3024	0	0	1035
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	681	358	3024			1035
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	5%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.4	31.4	77.0			77.0
Effective Green, g (s)	31.4	31.4	77.0			77.0
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	795	377	3262			3169
v/s Ratio Prot			c0.59			0.21
v/s Ratio Perm	0.22	c0.25				
v/c Ratio	0.86	0.95	0.93			0.33
Uniform Delay, d1	42.2	43.5	19.0			9.7
Progression Factor	1.00	1.00	0.89			0.49
Incremental Delay, d2	9.0	33.6	0.6			0.1
Delay (s)	51.2	77.1	17.5			4.9
Level of Service	D	E	B			A
Approach Delay (s)	60.1		17.5			4.9
Approach LOS	E		B			A

Intersection Summary

HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	141.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	1044	1029	565	2386	536	940
v/c Ratio	1.59	1.66	0.98	1.44	1.63	0.56
Control Delay	301.9	330.5	65.0	230.8	324.8	24.9
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	301.9	330.5	65.0	231.5	324.8	24.9
Queue Length 50th (m)	~388.6	~410.4	126.7	~292.7	~175.9	90.5
Queue Length 95th (m)	#474.3	#500.9	#209.5	#322.9	m#244.3	118.1
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	621	574	1662	328	1665
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	326	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.59	1.66	0.98	1.79	1.63	0.56

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1847	2	578	0	0	0	0	1769	426	493	865	0	
Future Volume (vph)	1847	2	578	0	0	0	0	1769	426	493	865	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1604	1334					4767		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00		
Satd. Flow (perm)	1698	1604	1334					4767		168	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	2008	2	628	0	0	0	0	1923	463	536	940	0	
RTOR Reduction (vph)	0	2	58	0	0	0	0	34	0	0	0	0	
Lane Group Flow (vph)	1044	1027	507	0	0	0	0	2352	0	536	940	0	
Confl. Peds. (#/hr)								5		7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	46.4	46.4	46.4					41.0		62.0	62.0		
Effective Green, g (s)	46.4	46.4	46.4					41.0		62.0	62.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.34		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	656	620	515					1628		324	1665		
v/s Ratio Prot								0.49		c0.25	0.29		
v/s Ratio Perm	0.61	0.64	0.38							c0.61			
v/c Ratio	1.59	1.66	0.98					1.44		1.65	0.56		
Uniform Delay, d1	36.8	36.8	36.4					39.5		37.9	19.8		
Progression Factor	1.00	1.00	1.00					1.00		1.01	1.18		
Incremental Delay, d2	273.3	302.7	35.3					203.8		306.9	1.3		
Delay (s)	310.1	339.5	71.7					243.3		345.2	24.6		
Level of Service	F	F	E					F		F	C		
Approach Delay (s)		270.5			0.0			243.3			141.0		
Approach LOS		F			A			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			231.1									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.69										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			141.2%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	0	0	201	130	54
Future Volume (Veh/h)	2	0	0	201	130	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	0	0	218	141	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				2	220	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				2	220	2
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	82	95
cM capacity (veh/h)				1620	768	1082
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	2	218	141	59		
Volume Left	0	0	141	0		
Volume Right	0	0	0	59		
cSH	1700	1700	768	1082		
Volume to Capacity	0.00	0.13	0.18	0.05		
Queue Length 95th (m)	0.0	0.0	5.3	1.4		
Control Delay (s)	0.0	0.0	10.7	8.5		
Lane LOS				B	A	
Approach Delay (s)	0.0	0.0	10.1			
Approach LOS				B		
Intersection Summary						
Average Delay				4.8		
Intersection Capacity Utilization				53.1%	ICU Level of Service	A
Analysis Period (min)				15		

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	257	151	180	0	41	0	143	148	0	0	0
Future Volume (Veh/h)	0	257	151	180	0	41	0	143	148	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	279	164	196	0	45	0	155	161	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	45			443			671	716	279	910	835	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	45			443			671	716	279	910	835	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	47	79	100	100	100
cM capacity (veh/h)	1563			1117			320	293	760	103	250	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	279	164	196	45	316							
Volume Left	0	0	196	0	0							
Volume Right	0	164	0	45	161							
cSH	1700	1700	1117	1700	427							
Volume to Capacity	0.16	0.10	0.18	0.03	0.74							
Queue Length 95th (m)	0.0	0.0	5.1	0.0	47.8							
Control Delay (s)	0.0	0.0	8.9	0.0	33.9							
Lane LOS			A		D							
Approach Delay (s)	0.0		7.2		33.9							
Approach LOS					D							
Intersection Summary												
Average Delay			12.5									
Intersection Capacity Utilization			50.1%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	0	0	91	5	87	266	0	5	342	0
Future Volume (Veh/h)	54	2	0	0	91	5	87	266	0	5	342	0
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	2	0	0	99	5	95	289	0	5	372	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	104			2			405	224	2	366	222	102
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			2			405	224	2	366	222	102
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			68	55	100	99	43	100
cM capacity (veh/h)	1488			1620			295	648	1082	374	650	954
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	59	2	0	104	384	377						
Volume Left	59	0	0	0	95	5						
Volume Right	0	0	0	5	0	0						
cSH	1488	1700	1700	1700	500	644						
Volume to Capacity	0.04	0.00	0.00	0.06	0.77	0.59						
Queue Length 95th (m)	1.0	0.0	0.0	0.0	54.1	30.4						
Control Delay (s)	7.5	0.0	0.0	0.0	32.1	18.2						
Lane LOS	A				D	C						
Approach Delay (s)	7.3			0.0	32.1	18.2						
Approach LOS					D	C						
Intersection Summary												
Average Delay			21.2									
Intersection Capacity Utilization			56.7%		ICU Level of Service				B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis  
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	94	143	0	0	0	0	215	0	28	160	180
Future Volume (Veh/h)	150	94	143	0	0	0	0	215	0	28	160	180
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	163	102	155	0	0	0	0	234	0	30	174	196
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			257			788	506	180	622	583	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			257			788	506	180	622	583	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			100	45	100	86	54	82
cM capacity (veh/h)	1623			1308			151	422	863	208	381	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	420	0	234	400								
Volume Left	163	0	0	30								
Volume Right	155	0	0	196								
cSH	1623	1700	422	512								
Volume to Capacity	0.10	0.00	0.55	0.78								
Queue Length 95th (m)	2.7	0.0	26.2	56.8								
Control Delay (s)	3.4	0.0	23.6	32.7								
Lane LOS	A		C	D								
Approach Delay (s)	3.4	0.0	23.6	32.7								
Approach LOS			C	D								
Intersection Summary												
Average Delay			19.0									
Intersection Capacity Utilization			64.3%		ICU Level of Service				C			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	0	59	103	32	69	0	102	37	5
Future Volume (Veh/h)	5	2	0	0	59	103	32	69	0	102	37	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	2	0	0	64	112	35	75	0	111	40	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	554	410	42	408	412	75	45			75		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554	410	42	408	412	75	45			75		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	87	89	98			93		
cM capacity (veh/h)	328	482	1028	512	480	986	1563			1524		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	2	0	176	35	75	111	45				
Volume Left	5	0	0	0	35	0	111	0				
Volume Right	0	0	0	112	0	0	0	5				
cSH	328	482	1700	713	1563	1700	1524	1700				
Volume to Capacity	0.02	0.00	0.00	0.25	0.02	0.04	0.07	0.03				
Queue Length 95th (m)	0.4	0.1	0.0	7.8	0.5	0.0	1.9	0.0				
Control Delay (s)	16.1	12.5	0.0	11.7	7.4	0.0	7.5	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	15.1		11.7		2.3		5.4					
Approach LOS	C		B									
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			28.4%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	122	0	101	37	0
Future Volume (Veh/h)	0	122	0	101	37	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	133	0	110	40	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150	40	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	40	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	87	100			
cM capacity (veh/h)	842	1031	1570			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	133	110	40			
Volume Left	0	0	0			
Volume Right	133	0	0			
cSH	1031	1570	1700			
Volume to Capacity	0.13	0.00	0.02			
Queue Length 95th (m)	3.5	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.2			
Intersection Capacity Utilization			19.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	104	0	0	162	0
Future Volume (Veh/h)	0	104	0	0	162	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	113	0	0	176	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			113		56	56
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			113		56	56
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		81	100
cM capacity (veh/h)			1476		951	1010
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	113	0	176			
Volume Left	0	0	176			
Volume Right	113	0	0			
cSH	1700	1700	951			
Volume to Capacity	0.07	0.00	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			22.1%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		
Traffic Volume (veh/h)	2	408	0	308	0	0
Future Volume (Veh/h)	2	408	0	308	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	443	0	335	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			445		558	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			445		558	224
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1115		490	816
Direction, Lane #	EB 1	WB 1				
Volume Total	445	335				
Volume Left	0	0				
Volume Right	443	0				
cSH	1700	1700				
Volume to Capacity	0.26	0.20				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			53.1%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	211	828	676	303	888	280	543	1485	421	253	1384	210
v/c Ratio	1.19	0.75	1.08	1.57	0.79	0.43	1.84	0.91	0.64	1.02	0.92	0.35
Control Delay	172.6	42.5	87.1	313.1	51.6	19.0	401.4	36.4	18.3	93.0	52.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	172.6	42.5	87.1	313.1	51.6	19.0	401.4	36.4	18.3	93.0	52.5	6.0
Queue Length 50th (m)	-62.7	97.1	-145.9	-109.5	96.0	15.5	-178.5	139.4	76.7	-48.0	121.8	0.0
Queue Length 95th (m)	#112.8	121.3	#220.9	m#168.2	130.4	m48.8	m#156.9	m122.3	m68.7	#102.0	#150.7	18.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	178	1101	625	193	1131	654	295	1626	653	248	1498	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.75	1.08	1.57	0.79	0.43	1.84	0.91	0.64	1.02	0.92	0.35

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	194	762	622	279	817	258	500	1366	387	233	1273	193	
Future Volume (vph)	194	762	622	279	817	258	500	1366	387	233	1273	193	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	200	5136	1533	215	5136	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	211	828	676	303	888	280	543	1485	421	253	1384	210	
RTOR Reduction (vph)	0	0	157	0	0	161	0	0	168	0	0	149	
Lane Group Flow (vph)	211	828	519	303	888	119	543	1485	253	253	1384	61	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Effective Green, g (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Actuated g/C Ratio	0.10	0.31	0.31	0.11	0.32	0.32	0.44	0.32	0.32	0.39	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	178	1101	468	193	1131	493	288	1626	485	241	1498	450	
v/s Ratio Prot	0.12	0.23		c0.17	0.25		c0.23	0.29		0.10	0.27		
v/s Ratio Perm			c0.34			0.08	c0.60		0.16	0.31		0.04	
v/c Ratio	1.19	0.75	1.11	1.57	0.79	0.24	1.89	0.91	0.52	1.05	0.92	0.14	
Uniform Delay, d1	54.0	37.4	41.5	53.5	37.3	30.3	35.1	39.4	33.6	32.2	41.2	31.3	
Progression Factor	1.00	1.00	1.00	0.98	1.24	2.61	0.39	0.82	1.16	1.00	1.00	1.00	
Incremental Delay, d2	126.2	4.8	74.7	278.0	5.0	1.0	403.0	3.7	1.4	71.7	11.0	0.6	
Delay (s)	180.2	42.1	116.2	330.3	51.1	80.4	416.9	36.0	40.4	103.9	52.2	32.0	
Level of Service	F	D	F	F	D	F	F	D	D	F	D	C	
Approach Delay (s)		88.3			114.2			121.2			57.0		
Approach LOS		F			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			96.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.59										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			120.7%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1375	148	342	1267	488	2
v/c Ratio	0.03	0.73	0.18	0.83	0.49	0.92	0.01
Control Delay	31.0	45.4	24.9	43.9	8.8	41.5	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	45.4	24.9	43.9	8.8	41.5	36.0
Queue Length 50th (m)	1.0	190.7	21.7	53.6	67.3	46.8	0.4
Queue Length 95th (m)	m1.3	m209.8	m30.9	#104.6	94.6	#101.0	2.7
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	182	1882	837	436	2588	600	350
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.73	0.18	0.78	0.49	0.81	0.01

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1265	136	315	1166	0	49	2	398	1	1	0
Future Volume (vph)	5	1265	136	315	1166	0	49	2	398	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1618			1851	
Flt Permitted	0.22	1.00	1.00	0.09	1.00			0.96			0.79	
Satd. Flow (perm)	347	3574	1541	175	3574			1563			1503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1375	148	342	1267	0	53	2	433	1	1	0
RTOR Reduction (vph)	0	0	26	0	0	0	0	254	0	0	0	0
Lane Group Flow (vph)	5	1375	122	342	1267	0	0	234	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.2	63.2	63.2	86.9	86.9			21.1			21.1	
Effective Green, g (s)	63.2	63.2	63.2	86.9	86.9			21.1			21.1	
Actuated g/C Ratio	0.53	0.53	0.53	0.72	0.72			0.18			0.18	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	182	1882	811	407	2588			274			264	
v/s Ratio Prot		0.38		c0.14	0.35							
v/s Ratio Perm	0.01		0.08	c0.46				c0.15			0.00	
v/c Ratio	0.03	0.73	0.15	0.84	0.49			0.85			0.01	
Uniform Delay, d1	13.6	21.9	14.6	31.5	7.1			48.0			40.8	
Progression Factor	1.68	1.80	2.17	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.6	0.2	14.4	0.7			22.0			0.0	
Delay (s)	23.1	41.1	32.0	45.9	7.7			69.9			40.8	
Level of Service	C	D	C	D	A			E			D	
Approach Delay (s)		40.1			15.9			69.9			40.8	
Approach LOS		D			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			33.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			94.1%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	504	936	246	203	288	1747	354	641	949	99
v/c Ratio	0.60	0.77	1.84	0.37	0.29	0.66	1.27	0.64	1.24	0.51	0.15
Control Delay	62.5	40.4	407.0	22.2	5.6	26.2	164.1	25.9	137.0	23.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	62.5	40.5	407.0	22.2	5.6	26.2	164.1	25.9	137.6	23.1	3.4
Queue Length 50th (m)	20.9	43.6	~181.7	50.8	16.3	34.2	~197.5	30.4	~171.4	73.2	3.3
Queue Length 95th (m)	36.9	59.0	m#214.6	m56.2	m20.0	71.8	#230.0	71.7	m#197.7	m76.4	m4.7
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	251	988	510	869	844	452	1378	552	515	1850	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	3	0	0	0	0	0	3	37	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.51	1.84	0.28	0.24	0.64	1.27	0.64	1.34	0.51	0.15

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

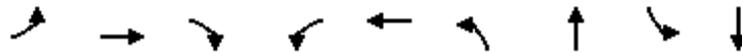
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	258	206	861	226	187	265	1607	326	590	873	91
Future Volume (vph)	82	258	206	861	226	187	265	1607	326	590	873	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1501	3308		3502	1881	1591	1805	5187	1549	1805	5187	1579
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.28	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	958	3308		3502	1881	1591	526	5187	1549	218	5187	1579
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	280	224	936	246	203	288	1747	354	641	949	99
RTOR Reduction (vph)	0	138	0	0	0	131	0	0	141	0	0	64
Lane Group Flow (vph)	89	366	0	936	246	72	288	1747	213	641	949	35
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	18.7	18.7		17.5	42.7	42.7	50.7	31.9	31.9	64.7	42.9	42.9
Effective Green, g (s)	18.7	18.7		17.5	42.7	42.7	50.7	31.9	31.9	64.7	42.9	42.9
Actuated g/C Ratio	0.16	0.16		0.15	0.36	0.36	0.42	0.27	0.27	0.54	0.36	0.36
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	149	515		510	669	566	422	1378	411	511	1854	564
v/s Ratio Prot		c0.11		c0.27	0.13		0.11	0.34		c0.31	0.18	
v/s Ratio Perm	0.09					0.05	0.18		0.14	c0.36		0.02
v/c Ratio	0.60	0.71		1.84	0.37	0.13	0.68	1.27	0.52	1.25	0.51	0.06
Uniform Delay, d1	47.1	48.1		51.2	28.6	26.1	23.8	44.0	37.5	36.1	30.3	25.3
Progression Factor	1.00	1.00		0.77	0.76	1.58	1.20	1.04	1.19	0.70	0.72	0.83
Incremental Delay, d2	6.3	4.6		380.4	0.2	0.1	4.0	125.7	4.0	116.0	0.1	0.0
Delay (s)	53.4	52.7		419.9	22.0	41.4	32.6	171.4	48.7	141.4	21.8	21.1
Level of Service	D	D		F	C	D	C	F	D	F	C	C
Approach Delay (s)		52.8			293.7			136.5			67.1	
Approach LOS		D			F			F			E	

**Intersection Summary**

HCM 2000 Control Delay	144.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	123.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	743	64	34	782	112	102	128	624
v/c Ratio	0.99	0.80	0.08	0.24	0.90	1.06	0.14	0.25	0.65
Control Delay	57.6	16.7	3.7	39.3	55.2	141.9	12.2	25.2	8.3
Queue Delay	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	29.8	3.7	39.3	55.2	141.9	12.2	25.2	8.3
Queue Length 50th (m)	-91.5	103.9	1.1	6.9	98.7	-29.8	7.5	20.5	15.6
Queue Length 95th (m)	m#109.0	m71.7	m2.2	m16.3	#133.3	#67.9	19.0	35.6	53.2
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	476	929	782	143	873	108	732	529	966
Starvation Cap Reductn	0	177	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.99	0.08	0.24	0.90	1.04	0.14	0.24	0.65

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	684	59	31	609	110	103	46	48	118	34	540
Future Volume (vph)	433	684	59	31	609	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1543	1791	3471		1805	1717		1782	1607	
Flt Permitted	0.12	1.00	1.00	0.31	1.00		0.14	1.00		0.69	1.00	
Satd. Flow (perm)	232	1863	1543	578	3471		266	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	743	64	34	662	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	14	0	12	0	0	31	0	0	314	0
Lane Group Flow (vph)	471	743	50	34	770	0	112	71	0	128	310	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.9	59.9	59.9	29.8	29.8		47.9	47.9		47.9	47.9	
Effective Green, g (s)	59.9	59.9	59.9	29.8	29.8		47.9	47.9		47.9	47.9	
Actuated g/C Ratio	0.50	0.50	0.50	0.25	0.25		0.40	0.40		0.40	0.40	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	471	929	770	143	861		106	685		517	641	
v/s Ratio Prot	c0.23	0.40			0.22			0.04			0.19	
v/s Ratio Perm	c0.27		0.03	0.06			c0.42			0.10		
v/c Ratio	1.00	0.80	0.07	0.24	0.89		1.06	0.10		0.25	0.48	
Uniform Delay, d1	35.9	25.1	15.6	36.0	43.6		36.0	22.6		24.0	26.8	
Progression Factor	1.00	0.52	0.34	0.95	0.96		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.0	2.9	0.1	3.9	13.7		103.5	0.1		0.3	0.6	
Delay (s)	62.0	15.9	5.4	38.0	55.6		139.5	22.7		24.3	27.4	
Level of Service	E	B	A	D	E		F	C		C	C	
Approach Delay (s)		32.4			54.9			83.8			26.9	
Approach LOS		C			D			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			40.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			115.0%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	423	444	168	421	156	268	44	382	92	13	79
Future Volume (Veh/h)	20	423	444	168	421	156	268	44	382	92	13	79
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	460	483	183	458	170	291	48	415	100	14	86
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.61			0.61	0.61	0.61	0.61	0.61	0.61
vC, conflicting volume	629			945			1668	1742	710	2100	1899	548
vC1, stage 1 conf vol							748	748		910	910	
vC2, stage 2 conf vol							921	995		1190	989	
vCu, unblocked vol	629			597			1774	1895	213	2477	2149	548
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			69			0	73	18	0	84	84
cM capacity (veh/h)	962			595			144	177	508	1	85	538
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	965	183	628	291	463	100	100					
Volume Left	22	183	0	291	0	100	0					
Volume Right	483	0	170	0	415	0	86					
cSH	962	595	1700	144	425	1	308					
Volume to Capacity	0.02	0.31	0.37	2.03	1.09	73.88	0.32					
Queue Length 95th (m)	0.6	10.4	0.0	185.2	125.9	Err	11.0					
Control Delay (s)	0.6	13.7	0.0	537.6	100.8	Err	22.2					
Lane LOS	A	B		F	F	F	C					
Approach Delay (s)	0.6	3.1		269.4		5010.6						
Approach LOS				F		F						
<b>Intersection Summary</b>												
Average Delay			442.6									
Intersection Capacity Utilization			127.2%		ICU Level of Service				H			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	733	163	106	580	28	164	0	257	25	2	1
Future Volume (Veh/h)	9	733	163	106	580	28	164	0	257	25	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	797	177	115	630	30	178	0	279	27	2	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	660			974			1784	1796	888	2062	1869	647
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	660			974			1784	1796	888	2062	1869	647
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			84			0	100	19	0	97	100
cM capacity (veh/h)	857			716			54	67	345	7	61	474
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	984	775	457	30								
Volume Left	10	115	178	27								
Volume Right	177	30	279	1								
cSH	857	716	112	7								
Volume to Capacity	0.01	0.16	4.09	4.01								
Queue Length 95th (m)	0.3	4.6	Err	Err								
Control Delay (s)	0.3	4.1	Err	Err								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.3	4.1	Err	Err								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			2169.6									
Intersection Capacity Utilization			120.3%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	334	1	558	0	0	0	257	45	0	0	75	323
Future Volume (Veh/h)	334	1	558	0	0	0	257	45	0	0	75	323
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	363	1	607	0	0	0	279	49	0	0	82	351
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	868	864	258	1472	1040	52	433			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	868	864	258	1472	1040	52	433			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	99	23	100	100	100	75			100		
cM capacity (veh/h)	220	156	786	20	175	1019	1137			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	971	0	328	433								
Volume Left	363	0	279	0								
Volume Right	607	0	0	351								
cSH	400	1700	1137	1571								
Volume to Capacity	2.43	0.08	0.25	0.00								
Queue Length 95th (m)	609.6	0.0	7.7	0.0								
Control Delay (s)	672.4	0.0	8.2	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	672.4	0.0	8.2	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			378.5									
Intersection Capacity Utilization			110.0%		ICU Level of Service		H					
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	462	1852	690	0	2102			
Future Volume (Veh/h)	0	462	1852	690	0	2102			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	502	2013	750	0	2285			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.83	0.77			0.77				
vC, conflicting volume	2778	674			2766				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1322	0			2235				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	40			100				
cM capacity (veh/h)	125	833			180				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	502	671	671	671	750	762	762	762	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	502	0	0	0	750	0	0	0	
cSH	833	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.60	0.39	0.39	0.39	0.44	0.45	0.45	0.45	
Queue Length 95th (m)	33.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	C								
Approach Delay (s)	15.6	0.0					0.0		
Approach LOS	C								
Intersection Summary									
Average Delay			1.4						
Intersection Capacity Utilization			71.1%	ICU Level of Service	C				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	564	343	2087	1028
v/c Ratio	0.62	0.83	0.65	0.32
Control Delay	39.5	56.8	16.9	16.5
Queue Delay	0.0	0.0	0.4	0.0
Total Delay	39.5	56.8	17.3	16.5
Queue Length 50th (m)	61.7	85.9	83.3	41.5
Queue Length 95th (m)	72.0	114.7	m70.2	m38.4
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1165	527	3198	3198
Starvation Cap Reductn	0	0	534	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.65	0.78	0.32

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	631	1920	0	0	946
Future Volume (vph)	203	631	1920	0	0	946
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr <sub>t</sub>	0.91	0.85	1.00			1.00
Fl <sub>t</sub> Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3228	1455	5136			5136
Fl <sub>t</sub> Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3228	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	686	2087	0	0	1028
RTOR Reduction (vph)	4	4	0	0	0	0
Lane Group Flow (vph)	560	339	2087	0	0	1028
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	33.7	33.7	74.7			74.7
Effective Green, g (s)	33.7	33.7	74.7			74.7
Actuated g/C Ratio	0.28	0.28	0.62			0.62
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	906	408	3197			3197
v/s Ratio Prot			c0.41			0.20
v/s Ratio Perm	0.17	c0.23				
v/c Ratio	0.62	0.83	0.65			0.32
Uniform Delay, d <sub>1</sub>	37.6	40.5	14.4			10.7
Progression Factor	1.00	1.00	1.07			1.42
Incremental Delay, d <sub>2</sub>	1.3	13.5	0.1			0.0
Delay (s)	38.8	54.0	15.5			15.2
Level of Service	D	D	B			B
Approach Delay (s)	44.6		15.5			15.2
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			22.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.71			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			114.3%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	843	833	485	1427	653	609
v/c Ratio	1.29	1.27	0.69	1.09	1.35	0.33
Control Delay	172.3	163.3	20.9	94.1	206.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	172.3	163.3	20.9	94.1	206.9	16.5
Queue Length 50th (m)	~279.4	~277.4	54.6	~142.0	~199.9	38.3
Queue Length 95th (m)	#362.0	#364.6	98.4	#173.3	#275.2	57.4
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	657	708	1307	485	1846
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.29	1.27	0.69	1.09	1.35	0.33

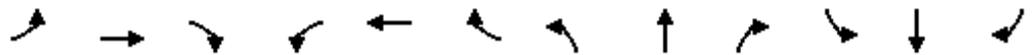
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1492	0	496	0	0	0	0	1011	302	601	560	0	
Future Volume (vph)	1492	0	496	0	0	0	0	1011	302	601	560	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Fr <sub>t</sub>	1.00	0.99	0.85					0.97		1.00	1.00		
Fl <sub>t</sub> Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1615	1461					4884		1787	3574		
Fl <sub>t</sub> Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1615	1461					4884		221	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1622	0	539	0	0	0	0	1099	328	653	609	0	
RTOR Reduction (vph)	0	34	144	0	0	0	0	45	0	0	0	0	
Lane Group Flow (vph)	843	799	341	0	0	0	0	1382	0	653	609	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	46.4	46.4	46.4					31.0		62.0	62.0		
Effective Green, g (s)	46.4	46.4	46.4					31.0		62.0	62.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.26		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	656	624	564					1261		479	1846		
v/s Ratio Prot								0.28		c0.32	0.17		
v/s Ratio Perm	c0.50	0.49	0.23							c0.39			
v/c Ratio	1.29	1.28	0.61					1.10		1.36	0.33		
Uniform Delay, d <sub>1</sub>	36.8	36.8	29.5					44.5		36.3	16.9		
Progression Factor	1.00	1.00	1.00					1.00		1.45	0.94		
Incremental Delay, d <sub>2</sub>	139.6	138.4	1.8					55.7		176.0	0.5		
Delay (s)	176.4	175.2	31.3					100.2		228.7	16.4		
Level of Service	F	F	C					F		F	B		
Approach Delay (s)		143.4			0.0			100.2			126.2		
Approach LOS		F			A			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			126.2									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.36										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			114.3%									ICU Level of Service	H
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	222	0	0	2	60	0
Future Volume (Veh/h)	222	0	0	2	60	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	0	0	2	65	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			241		243	241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			241		243	241
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	100
cM capacity (veh/h)			1326		745	798
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	241	2	65	0		
Volume Left	0	0	65	0		
Volume Right	0	0	0	0		
cSH	1700	1700	745	1700		
Volume to Capacity	0.14	0.00	0.09	0.05		
Queue Length 95th (m)	0.0	0.0	2.3	0.0		
Control Delay (s)	0.0	0.0	10.3	0.0		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			44.1%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	275	167	208	0	55	0	177	178	0	0	0
Future Volume (Veh/h)	0	275	167	208	0	55	0	177	178	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	299	182	226	0	60	0	192	193	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	60			481			751	811	299	1040	933	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			481			751	811	299	1040	933	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			79			100	23	74	100	100	100
cM capacity (veh/h)	1544			1082			274	248	741	48	211	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	299	182	226	60	385							
Volume Left	0	0	226	0	0							
Volume Right	0	182	0	60	193							
cSH	1700	1700	1082	1700	372							
Volume to Capacity	0.18	0.11	0.21	0.04	1.03							
Queue Length 95th (m)	0.0	0.0	6.3	0.0	102.8							
Control Delay (s)	0.0	0.0	9.2	0.0	90.1							
Lane LOS			A		F							
Approach Delay (s)	0.0		7.3		90.1							
Approach LOS					F							
Intersection Summary												
Average Delay			31.9									
Intersection Capacity Utilization			56.2%		ICU Level of Service				B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	2	0	0	116	5	106	347	7	5	384	0
Future Volume (Veh/h)	70	2	0	0	116	5	106	347	7	5	384	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	2	0	0	126	5	115	377	8	5	417	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	131			2			488	285	2	479	282	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	131			2			488	285	2	479	282	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			44	36	99	98	30	100
cM capacity (veh/h)	1454			1620			204	592	1082	233	594	921
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	76	2	0	131	500	422						
Volume Left	76	0	0	0	115	5						
Volume Right	0	0	0	5	8	0						
cSH	1454	1700	1700	1700	413	583						
Volume to Capacity	0.05	0.00	0.00	0.08	1.21	0.72						
Queue Length 95th (m)	1.3	0.0	0.0	0.0	161.0	48.4						
Control Delay (s)	7.6	0.0	0.0	0.0	144.2	25.7						
Lane LOS	A				F	D						
Approach Delay (s)	7.4		0.0		144.2	25.7						
Approach LOS					F	D						
Intersection Summary												
Average Delay			73.8									
Intersection Capacity Utilization			68.7%		ICU Level of Service				C			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	99	156	0	0	0	0	269	0	30	176	208
Future Volume (Veh/h)	180	99	156	0	0	0	0	269	0	30	176	208
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	196	108	170	0	0	0	0	292	0	33	191	226
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			278			906	585	193	731	670	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			278			906	585	193	731	670	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			100			100	21	100	70	43	79
cM capacity (veh/h)	1623			1285			102	372	849	109	332	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	474	0	292	450								
Volume Left	196	0	0	33								
Volume Right	170	0	0	226								
cSH	1623	1700	372	415								
Volume to Capacity	0.12	0.00	0.79	1.08								
Queue Length 95th (m)	3.3	0.0	52.8	122.9								
Control Delay (s)	3.7	0.0	42.2	100.5								
Lane LOS	A		E	F								
Approach Delay (s)	3.7	0.0	42.2	100.5								
Approach LOS			E	F								
Intersection Summary												
Average Delay			48.8									
Intersection Capacity Utilization			72.5%		ICU Level of Service					C		
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	0	75	135	41	87	0	112	42	5
Future Volume (Veh/h)	5	2	0	0	75	135	41	87	0	112	42	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	2	0	0	82	147	45	95	0	122	46	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	666	478	48	476	480	95	51			95		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	666	478	48	476	480	95	51			95		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	81	85	97			92		
cM capacity (veh/h)	248	434	1020	456	433	962	1555			1499		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	2	0	229	45	95	122	51				
Volume Left	5	0	0	0	45	0	122	0				
Volume Right	0	0	0	147	0	0	0	5				
cSH	248	434	1700	669	1555	1700	1499	1700				
Volume to Capacity	0.02	0.00	0.00	0.34	0.03	0.06	0.08	0.03				
Queue Length 95th (m)	0.5	0.1	0.0	12.2	0.7	0.0	2.1	0.0				
Control Delay (s)	19.8	13.3	0.0	13.2	7.4	0.0	7.6	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	17.9		13.2		2.4		5.4					
Approach LOS	C		B									
Intersection Summary												
Average Delay			8.0									
Intersection Capacity Utilization			31.8%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	129	0	128	42	0
Future Volume (Veh/h)	0	129	0	128	42	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	140	0	139	46	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185	46	46			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185	46	46			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	100			
cM capacity (veh/h)	804	1023	1562			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	140	139	46			
Volume Left	0	0	0			
Volume Right	140	0	0			
cSH	1023	1562	1700			
Volume to Capacity	0.14	0.00	0.03			
Queue Length 95th (m)	3.8	0.0	0.0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			21.4%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	114	0	0	210	0
Future Volume (Veh/h)	0	114	0	0	210	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	124	0	0	228	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		62	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		62	62
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		76	100
cM capacity (veh/h)			1463		944	1003
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	124	0	228			
Volume Left	0	0	228			
Volume Right	124	0	0			
cSH	1700	1700	944			
Volume to Capacity	0.07	0.00	0.24			
Queue Length 95th (m)	0.0	0.0	7.6			
Control Delay (s)	0.0	0.0	10.0			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			6.5			
Intersection Capacity Utilization			25.4%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		
Traffic Volume (veh/h)	2	442	0	282	0	0
Future Volume (Veh/h)	2	442	0	282	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	480	0	307	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			482		549	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			482		549	242
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1081		497	797
Direction, Lane #	EB 1	WB 1				
Volume Total	482	307				
Volume Left	0	0				
Volume Right	480	0				
cSH	1700	1700				
Volume to Capacity	0.28	0.18				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			44.1%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	552	126	383	108	378	29	30
v/c Ratio	0.48	0.21	0.33	0.43	0.76	0.18	0.16
Control Delay	6.7	10.3	10.5	44.4	15.5	37.9	18.8
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	10.3	10.5	44.4	15.5	37.9	18.8
Queue Length 50th (m)	25.6	9.7	32.1	23.9	0.7	6.1	0.7
Queue Length 95th (m)	55.2	30.2	83.7	34.8	32.2	12.5	9.1
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1151	606	1165	253	637	170	492
Starvation Cap Reductn	157	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.21	0.33	0.43	0.59	0.17	0.06
<b>Intersection Summary</b>							

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	278	203	116	318	34	99	3	345	27	3	25
Future Volume (vph)	27	278	203	116	318	34	99	3	345	27	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.99		1.00	0.85		1.00	0.86	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1648		1805	1631		1768	1276		1804	1623	
Flt Permitted		0.97		0.45	1.00		0.61	1.00		0.30	1.00	
Satd. Flow (perm)		1597		852	1631		1144	1276		563	1623	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	302	221	126	346	37	108	3	375	29	3	27
RTOR Reduction (vph)	0	12	0	0	2	0	0	324	0	0	24	0
Lane Group Flow (vph)	0	540	0	126	381	0	108	54	0	29	6	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		84.3		84.3	84.3		22.9	16.2		17.5	13.5	
Effective Green, g (s)		84.3		84.3	84.3		22.9	16.2		17.5	13.5	
Actuated g/C Ratio		0.70		0.70	0.70		0.19	0.13		0.15	0.11	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1121		598	1145		253	172		123	182	
v/s Ratio Prot					0.23		c0.02	0.04		0.01	0.00	
v/s Ratio Perm		c0.34		0.15			c0.06			0.03		
v/c Ratio		0.48		0.21	0.33		0.43	0.31		0.24	0.03	
Uniform Delay, d1		8.0		6.2	6.9		41.9	46.9		44.9	47.4	
Progression Factor		0.65		1.31	1.32		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4		0.8	0.8		1.2	1.0		1.0	0.1	
Delay (s)		6.7		9.0	9.9		43.0	47.9		45.9	47.5	
Level of Service		A		A	A		D	D		D	D	
Approach Delay (s)		6.7			9.7			46.8			46.7	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			85.1%			ICU Level of Service				E		
Analysis Period (min)			15									

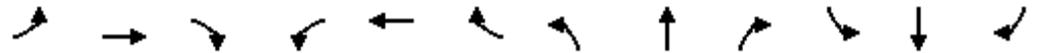
c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1118	168	547	204	350	82	53
v/c Ratio	0.93	0.50	0.42	0.81	0.79	0.49	0.25
Control Delay	29.2	21.1	13.3	69.3	23.0	49.2	15.6
Queue Delay	12.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	21.1	13.3	69.3	23.0	49.2	15.6
Queue Length 50th (m)	243.2	23.5	69.7	46.6	12.4	17.4	0.2
Queue Length 95th (m)	# 368.4	m46.2	m98.7	67.0	45.8	29.9	12.1
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1203	339	1315	251	488	166	289
Starvation Cap Reductn	96	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.50	0.42	0.81	0.72	0.49	0.18

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	31	617	380	155	416	87	188	30	292	75	1	48
Future Volume (vph)	31	617	380	155	416	87	188	30	292	75	1	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.97		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.97		1.00	0.86		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1702		1801	1826		1770	1546		1802	1620	
Flt Permitted		0.97		0.25	1.00		0.66	1.00		0.31	1.00	
Satd. Flow (perm)		1657		472	1826		1222	1546		593	1620	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	671	413	168	452	95	204	33	317	82	1	52
RTOR Reduction (vph)	0	15	0	0	5	0	0	263	0	0	46	0
Lane Group Flow (vph)	0	1103	0	168	542	0	204	87	0	82	7	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		85.4		85.4	85.4		20.4	14.1		17.8	12.8	
Effective Green, g (s)		85.4		85.4	85.4		20.4	14.1		17.8	12.8	
Actuated g/C Ratio		0.71		0.71	0.71		0.17	0.12		0.15	0.11	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1179		335	1299		236	181		138	172	
v/s Ratio Prot					0.30		c0.05	0.06		0.02	0.00	
v/s Ratio Perm		c0.67		0.36			c0.10			0.06		
v/c Ratio		0.94		0.50	0.42		0.86	0.48		0.59	0.04	
Uniform Delay, d1		14.9		7.8	7.1		47.9	49.5		45.9	48.1	
Progression Factor		1.09		1.68	1.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2		13.1		5.1	1.0		26.4	2.0		6.7	0.1	
Delay (s)		29.3		18.1	13.0		74.3	51.5		52.6	48.2	
Level of Service		C		B	B		E	D		D	D	
Approach Delay (s)		29.3			14.2			59.9			50.9	
Approach LOS		C			B			E			D	

Intersection Summary

HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	965	183	628	291	463	100	100
v/c Ratio	0.84	0.54	0.52	0.87	0.90	0.61	0.38
Control Delay	21.5	26.8	18.6	66.2	36.3	51.3	16.8
Queue Delay	48.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	26.8	18.6	66.2	36.3	51.3	16.8
Queue Length 50th (m)	212.6	30.0	97.8	63.3	36.0	19.3	3.1
Queue Length 95th (m)	#297.6	m59.1	150.8	#99.2	#90.5	33.2	19.0
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1148	336	1202	334	563	165	323
Starvation Cap Reductn	274	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.54	0.52	0.87	0.82	0.61	0.31

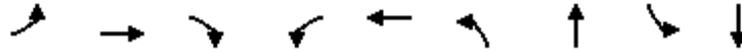
**Intersection Summary**

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

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

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	423	444	168	421	156	268	44	382	92	13	79
Future Volume (vph)	20	423	444	168	421	156	268	44	382	92	13	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.93		1.00	0.96		1.00	0.87		1.00	0.87	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1721		1734	1793		1799	1586		1767	1627	
Flt Permitted		0.98		0.28	1.00		0.55	1.00		0.29	1.00	
Satd. Flow (perm)		1688		506	1793		1043	1586		531	1627	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	460	483	183	458	170	291	48	415	100	14	86
RTOR Reduction (vph)	0	27	0	0	10	0	0	272	0	0	76	0
Lane Group Flow (vph)	0	938	0	183	618	0	291	191	0	100	24	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		79.8		79.8	79.8		28.0	18.5		20.2	14.0	
Effective Green, g (s)		79.8		79.8	79.8		28.0	18.5		20.2	14.0	
Actuated g/C Ratio		0.66		0.66	0.66		0.23	0.15		0.17	0.12	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1122		336	1192		310	244		153	189	
v/s Ratio Prot					0.34		c0.08	0.12		0.03	0.01	
v/s Ratio Perm		c0.56		0.36			c0.13			0.08		
v/c Ratio		0.84		0.54	0.52		0.94	0.78		0.65	0.13	
Uniform Delay, d1		15.2		10.6	10.3		44.0	48.8		44.4	47.5	
Progression Factor		0.99		1.57	1.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7		6.1	1.6		34.9	15.2		9.6	0.3	
Delay (s)		20.7		22.7	17.9		78.9	64.0		54.0	47.8	
Level of Service		C		C	B		E	E		D	D	
Approach Delay (s)		20.7			19.0			69.8			50.9	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			132.6%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



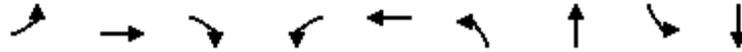
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	302	221	126	383	108	378	29	30
v/c Ratio	0.05	0.28	0.20	0.18	0.36	0.35	0.71	0.14	0.13
Control Delay	8.6	9.3	3.0	9.0	9.9	28.1	12.0	23.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	9.3	3.0	9.0	9.9	28.1	12.0	23.8	14.1
Queue Length 50th (m)	1.6	20.0	2.6	7.7	26.3	16.2	0.4	4.2	0.5
Queue Length 95th (m)	7.0	49.2	15.1	22.8	63.8	24.4	26.2	9.0	7.4
Internal Link Dist (m)		149.3			92.6		87.4		79.6
Turn Bay Length (m)	20.0		20.0	40.0					
Base Capacity (vph)	624	1063	1109	703	1062	307	685	211	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.28	0.20	0.18	0.36	0.35	0.55	0.14	0.05
<b>Intersection Summary</b>									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	278	203	116	318	34	99	3	345	27	3	25
Future Volume (vph)	27	278	203	116	318	34	99	3	345	27	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1798	1638	1615	1805	1632		1768	1277		1804	1624	
Flt Permitted	0.51	1.00	1.00	0.57	1.00		0.60	1.00		0.32	1.00	
Satd. Flow (perm)	961	1638	1615	1084	1632		1116	1277		603	1624	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	302	221	126	346	37	108	3	375	29	3	27
RTOR Reduction (vph)	0	0	65	0	3	0	0	310	0	0	23	0
Lane Group Flow (vph)	29	302	156	126	380	0	108	68	0	29	7	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	56.5	56.5	56.5	56.5	56.5		20.9	15.5		15.1	12.6	
Effective Green, g (s)	56.5	56.5	56.5	56.5	56.5		20.9	15.5		15.1	12.6	
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63		0.23	0.17		0.17	0.14	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	603	1028	1013	680	1024		298	219		134	227	
v/s Ratio Prot		0.18			c0.23		c0.02	0.05		0.01	0.00	
v/s Ratio Perm	0.03		0.10	0.12			c0.06			0.03		
v/c Ratio	0.05	0.29	0.15	0.19	0.37		0.36	0.31		0.22	0.03	
Uniform Delay, d1	6.4	7.6	6.9	7.1	8.1		28.3	32.6		32.1	33.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7	0.3	0.6	1.0		0.8	0.8		0.8	0.1	
Delay (s)	6.6	8.4	7.2	7.7	9.2		29.1	33.4		32.9	33.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		7.8			8.8			32.4			33.2	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			73.3%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

Existing PM Peak Hour



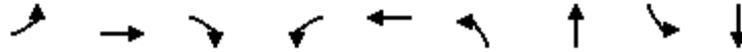
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	671	413	168	547	204	350	82	53
v/c Ratio	0.08	0.61	0.42	0.49	0.49	0.58	0.75	0.37	0.19
Control Delay	9.5	15.0	6.9	17.7	12.2	33.0	22.1	27.6	10.9
Queue Delay	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	16.0	6.9	17.7	12.2	33.0	22.1	27.6	10.9
Queue Length 50th (m)	2.3	67.6	16.9	15.2	47.5	30.3	18.0	11.3	0.2
Queue Length 95th (m)	7.7	126.1	43.7	42.1	89.6	44.6	46.8	19.9	9.6
Internal Link Dist (m)		149.3			92.6		87.4		79.6
Turn Bay Length (m)	20.0		20.0	40.0					
Base Capacity (vph)	439	1104	990	342	1122	352	534	220	391
Starvation Cap Reductn	0	209	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.75	0.42	0.49	0.49	0.58	0.66	0.37	0.14
Intersection Summary									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	617	380	155	416	87	188	30	292	75	1	48
Future Volume (vph)	31	617	380	155	416	87	188	30	292	75	1	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.86		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1810	1503	1800	1827		1770	1552		1802	1620	
Flt Permitted	0.38	1.00	1.00	0.30	1.00		0.64	1.00		0.29	1.00	
Satd. Flow (perm)	720	1810	1503	560	1827		1196	1552		558	1620	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	671	413	168	452	95	204	33	317	82	1	52
RTOR Reduction (vph)	0	0	74	0	7	0	0	203	0	0	44	0
Lane Group Flow (vph)	34	671	339	168	540	0	204	147	0	82	9	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	54.2	54.2	54.2	54.2	54.2		22.0	15.3		18.6	13.6	
Effective Green, g (s)	54.2	54.2	54.2	54.2	54.2		22.0	15.3		18.6	13.6	
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.60		0.24	0.17		0.21	0.15	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	433	1090	905	337	1100		335	263		184	244	
v/s Ratio Prot		c0.37			0.30		c0.05	0.10		0.02	0.01	
v/s Ratio Perm	0.05		0.23	0.30			c0.10			0.07		
v/c Ratio	0.08	0.62	0.37	0.50	0.49		0.61	0.56		0.45	0.04	
Uniform Delay, d1	7.5	11.3	9.2	10.2	10.1		29.5	34.3		30.2	32.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	2.6	1.2	5.2	1.6		3.1	2.7		1.7	0.1	
Delay (s)	7.8	13.9	10.4	15.4	11.7		32.6	37.0		31.9	32.7	
Level of Service	A	B	B	B	B		C	D		C	C	
Approach Delay (s)		12.4			12.5			35.4			32.2	
Approach LOS		B			B			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.6				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			92.1%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

2031 Future Total Phase 2 SAT Traffic  
 Existing SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	460	483	183	628	291	463	100	100
v/c Ratio	0.07	0.45	0.48	0.43	0.62	0.64	0.77	0.45	0.35
Control Delay	12.2	14.6	7.3	17.2	17.4	29.7	19.0	27.1	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	14.6	7.3	17.2	17.4	29.7	19.0	27.1	13.3
Queue Length 50th (m)	1.6	42.6	16.5	16.7	63.8	43.4	23.8	13.2	2.4
Queue Length 95th (m)	6.7	85.8	50.8	43.8	128.8	55.8	54.8	20.8	15.1
Internal Link Dist (m)		149.3			92.6		87.4		79.6
Turn Bay Length (m)	20.0		20.0	40.0					
Base Capacity (vph)	311	1028	1000	428	1012	460	690	221	413
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.45	0.48	0.43	0.62	0.63	0.67	0.45	0.24
<b>Intersection Summary</b>									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	20	423	444	168	421	156	268	44	382	92	13	79	
Future Volume (vph)	20	423	444	168	421	156	268	44	382	92	13	79	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.97		1.00	0.98		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.87		1.00	0.87		
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1804	1845	1575	1732	1794		1801	1593		1767	1629		
Flt Permitted	0.29	1.00	1.00	0.42	1.00		0.54	1.00		0.33	1.00		
Satd. Flow (perm)	558	1845	1575	768	1794		1029	1593		620	1629		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	22	460	483	183	458	170	291	48	415	100	14	86	
RTOR Reduction (vph)	0	0	124	0	13	0	0	252	0	0	75	0	
Lane Group Flow (vph)	22	460	359	183	615	0	291	211	0	100	25	0	
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4	
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%	
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		2			6		3	8		7	4		
Permitted Phases	2		2	6			8			4			
Actuated Green, G (s)	49.6	49.6	49.6	49.6	49.6		28.2	19.9		17.0	12.0		
Effective Green, g (s)	49.6	49.6	49.6	49.6	49.6		28.2	19.9		17.0	12.0		
Actuated g/C Ratio	0.55	0.55	0.55	0.55	0.55		0.31	0.22		0.19	0.13		
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	307	1016	868	423	988		433	352		180	217		
v/s Ratio Prot		0.25			c0.34		c0.10	0.13		0.03	0.02		
v/s Ratio Perm	0.04		0.23	0.24			c0.11			0.07			
v/c Ratio	0.07	0.45	0.41	0.43	0.62		0.67	0.60		0.56	0.12		
Uniform Delay, d1	9.4	12.1	11.7	11.9	13.8		25.4	31.5		31.8	34.3		
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.5	1.5	1.5	3.2	3.0		4.1	2.7		3.7	0.2		
Delay (s)	9.9	13.5	13.2	15.1	16.8		29.5	34.2		35.4	34.6		
Level of Service	A	B	B	B	B		C	C		D	C		
Approach Delay (s)		13.3			16.4			32.4			35.0		
Approach LOS		B			B			C			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			21.1		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)						15.5		
Intersection Capacity Utilization			98.6%		ICU Level of Service						F		
Analysis Period (min)			15										

c Critical Lane Group

## **APPENDIX 14**

### **Future Total (2031) Signal Warrant Analysis**



Pickering Pkwy/Street D - (peak hour signal warrant)-2031

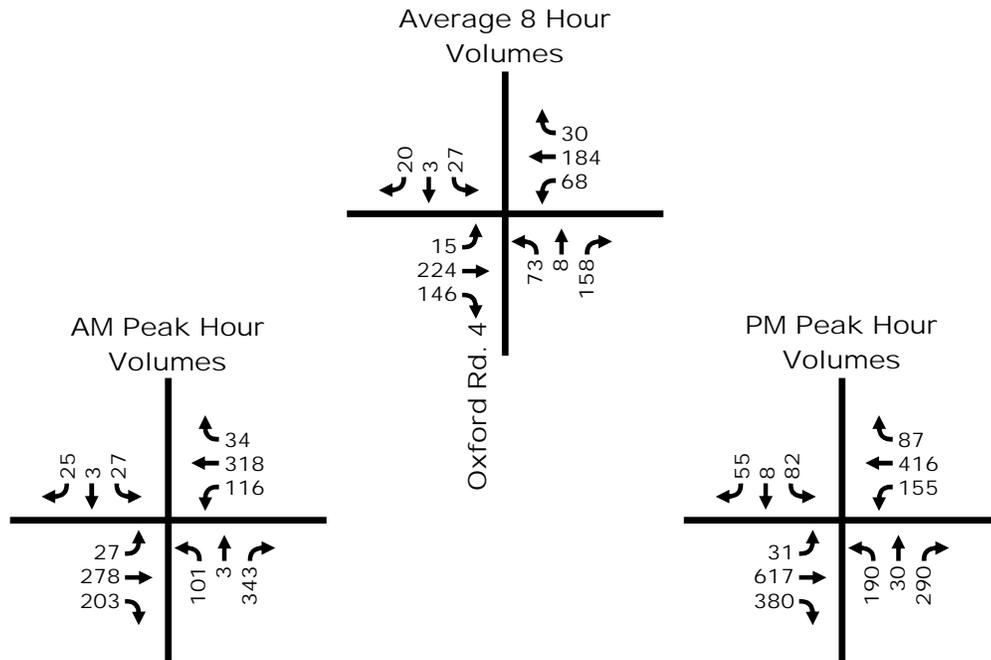
Signal Warrant	Description	Minimum Requirement for Two Lane Roadways	Compliance			
		Free Flow - Operating Speed Greater Than or Equal to 70 km/h	Sectional %	Entire %	Warrant	
Intersection	1. Minimum Vehicular Volume	(1) A Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	480	199%	161%	100% Yes
		(4) B Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	180	161%		
	2. Delay to Cross Traffic	(1) A Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	139%	139%	
		(2) B Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	50	216%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)

No

Yes



Pickering Pkwy/Street E - (peak hour signal warrant)-2031 Total

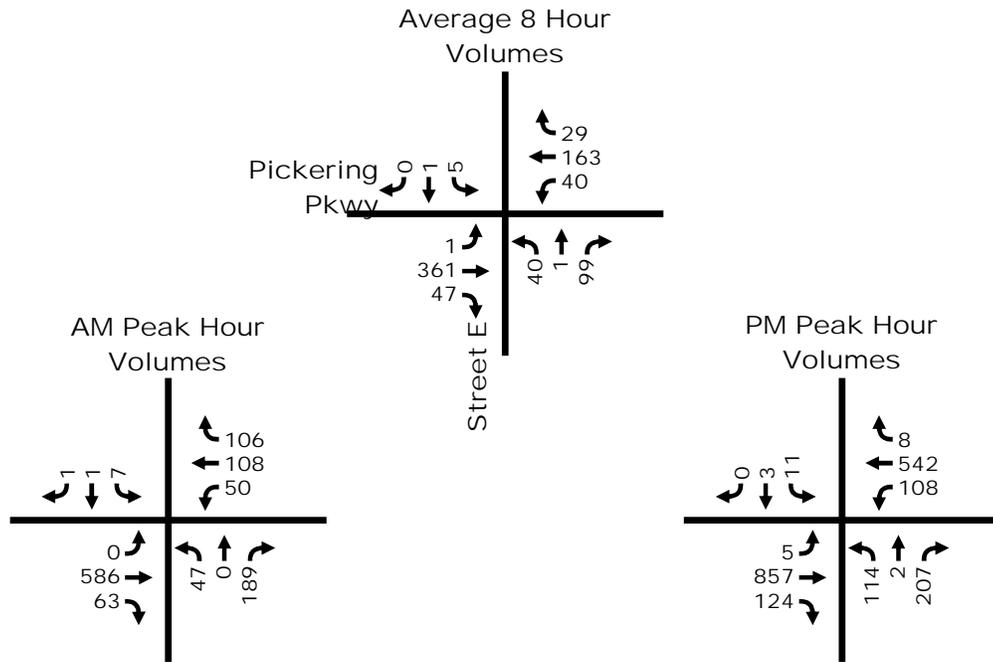
Signal Warrant		Description		Minimum Requirement for Two Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	720	109%	86%	86% No
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	170	86%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	720	89%	61%	
		(2) B	Combined Vehicle and Pedestrian Volume <u>Crossing</u> the Major Street for Each of the Same 8 Hours	75	61%		

Notes

- 1 Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above
- 2 For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08
- 3 The Lowest Sectional Percentage Governs the Entire Warrant
- 4 For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)

No

No



**APPENDIX 15**

**Future Background (2036) Synchro HCM  
Outputs**



1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	377	351	401	597	185	464	982	192	352	1979	203
v/c Ratio	0.63	0.36	0.57	1.99	0.50	0.29	2.30	0.72	0.33	1.26	1.24	0.34
Control Delay	70.9	32.8	18.9	486.6	34.6	13.1	618.9	24.3	4.3	165.9	150.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.9	32.8	18.9	486.6	34.6	13.1	618.9	24.3	4.3	165.9	150.2	5.7
Queue Length 50th (m)	22.8	37.8	31.3	~156.8	68.3	6.7	~176.3	29.9	0.3	-84.5	~223.2	0.0
Queue Length 95th (m)	41.4	51.9	63.4	#220.7	88.6	33.2	m#207.3	m43.5	m7.5	#145.9	#254.0	17.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	170	1058	614	202	1195	637	202	1362	584	280	1594	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.36	0.57	1.99	0.50	0.29	2.30	0.72	0.33	1.26	1.24	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	347	323	369	549	170	427	903	177	324	1821	187	
Future Volume (vph)	87	347	323	369	549	170	427	903	177	324	1821	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.15	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	199	4673	1536	274	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	377	351	401	597	185	464	982	192	352	1979	203	
RTOR Reduction (vph)	0	0	132	0	0	121	0	0	136	0	0	139	
Lane Group Flow (vph)	95	377	219	401	597	64	464	982	56	352	1979	64	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	10.7	38.0	38.0	14.0	41.3	41.3	45.0	35.0	35.0	51.0	38.0	38.0	
Effective Green, g (s)	10.7	38.0	38.0	14.0	41.3	41.3	45.0	35.0	35.0	51.0	38.0	38.0	
Actuated g/C Ratio	0.09	0.32	0.32	0.12	0.34	0.34	0.38	0.29	0.29	0.42	0.32	0.32	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	151	1058	482	202	1194	516	196	1362	448	271	1594	464	
v/s Ratio Prot	0.06	0.11		c0.23	c0.17		c0.20	0.21		c0.14	0.39		
v/s Ratio Perm			0.14			0.04	c0.69		0.04	0.41		0.04	
v/c Ratio	0.63	0.36	0.45	1.99	0.50	0.12	2.37	0.72	0.12	1.30	1.24	0.14	
Uniform Delay, d1	52.7	31.6	32.7	53.0	31.2	27.0	31.2	38.1	31.2	26.4	41.0	29.3	
Progression Factor	1.00	1.00	1.00	0.92	1.05	2.91	2.09	0.58	0.74	1.00	1.00	1.00	
Incremental Delay, d2	8.0	0.9	3.1	459.3	1.4	0.5	625.4	2.2	0.4	158.9	114.2	0.6	
Delay (s)	60.7	32.5	35.8	508.0	34.0	78.8	690.6	24.2	23.4	185.3	155.2	29.9	
Level of Service	E	C	D	F	C	E	F	C	C	F	F	C	
Approach Delay (s)		37.2			201.7			212.9			149.4		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			161.3		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.58										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			127.6%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	857	101	230	1165	247	3
v/c Ratio	0.01	0.37	0.11	0.45	0.43	0.79	0.01
Control Delay	12.3	11.5	7.1	6.2	5.5	35.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	11.5	7.1	6.2	5.5	35.4	0.0
Queue Length 50th (m)	0.2	47.8	3.2	9.6	39.1	19.1	0.0
Queue Length 95th (m)	m0.8	m65.7	m10.9	24.7	75.0	46.2	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	310	2324	907	619	2736	499	419
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.37	0.11	0.37	0.43	0.49	0.01

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	788	93	212	1072	0	45	0	182	1	0	2
Future Volume (vph)	3	788	93	212	1072	0	45	0	182	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1465			1685	
Flt Permitted	0.24	1.00	1.00	0.29	1.00			0.93			0.81	
Satd. Flow (perm)	460	3438	1316	516	3505			1376			1380	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	857	101	230	1165	0	49	0	198	1	0	2
RTOR Reduction (vph)	0	0	18	0	0	0	0	147	0	0	3	0
Lane Group Flow (vph)	3	857	83	230	1165	0	0	100	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	81.1	81.1	81.1	93.7	93.7			14.3				14.3
Effective Green, g (s)	81.1	81.1	81.1	93.7	93.7			14.3				14.3
Actuated g/C Ratio	0.68	0.68	0.68	0.78	0.78			0.12				0.12
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	310	2323	889	496	2736			163				164
v/s Ratio Prot		0.25		c0.04	0.33							
v/s Ratio Perm	0.01		0.06	c0.32				c0.07				0.00
v/c Ratio	0.01	0.37	0.09	0.46	0.43			0.61				0.00
Uniform Delay, d1	6.3	8.4	6.7	4.0	4.3			50.2				46.6
Progression Factor	1.23	1.15	1.42	1.00	1.00			1.00				1.00
Incremental Delay, d2	0.0	0.3	0.2	0.7	0.5			6.7				0.0
Delay (s)	7.9	10.0	9.7	4.7	4.8			56.9				46.6
Level of Service	A	A	A	A	A			E				D
Approach Delay (s)		10.0			4.8			56.9				46.6
Approach LOS		A			A			E				D
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.7			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			77.7%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	346	805	100	45	183	1316	234	265	2022	210
v/c Ratio	0.38	0.90dr	1.42	0.16	0.08	0.54	0.92	0.43	0.61	1.14	0.32
Control Delay	54.0	43.6	238.2	29.2	3.4	31.7	53.9	15.0	30.7	117.2	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	43.6	238.2	29.2	3.4	31.7	53.9	15.0	30.7	117.2	23.0
Queue Length 50th (m)	14.1	30.7	-141.0	17.8	0.2	25.9	125.8	10.1	62.7	-214.4	24.2
Queue Length 95th (m)	27.1	45.4	#178.2	30.2	3.0	53.5	#143.8	31.0	m53.5	m157.1	m17.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	334	892	565	888	765	339	1435	543	438	1773	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.39	1.42	0.11	0.06	0.54	0.92	0.43	0.61	1.14	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
AM Peak Hour

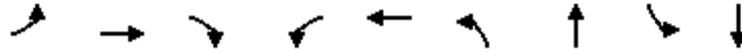
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	81	237	741	92	41	168	1211	215	244	1860	193
Future Volume (vph)	56	81	237	741	92	41	168	1211	215	244	1860	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3106		3155	1792	1459	1719	4759	1396	1770	5036	1491
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1276	3106		3155	1792	1459	200	4759	1396	190	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	88	258	805	100	45	183	1316	234	265	2022	210
RTOR Reduction (vph)	0	91	0	0	0	29	0	0	122	0	0	136
Lane Group Flow (vph)	61	255	0	805	100	16	183	1316	112	265	2022	74
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.0	15.0		21.5	43.0	43.0	55.3	36.2	36.2	64.4	42.3	42.3
Effective Green, g (s)	15.0	15.0		21.5	43.0	43.0	55.3	36.2	36.2	64.4	42.3	42.3
Actuated g/C Ratio	0.12	0.12		0.18	0.36	0.36	0.46	0.30	0.30	0.54	0.35	0.35
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	388		565	642	522	333	1435	421	433	1775	525
v/s Ratio Prot		c0.08		c0.26	0.06		0.09	0.28		c0.13	c0.40	
v/s Ratio Perm	0.05					0.01	0.17		0.08	0.20		0.05
v/c Ratio	0.38	0.90dr		1.42	0.16	0.03	0.55	0.92	0.27	0.61	1.14	0.14
Uniform Delay, d1	48.3	50.0		49.2	26.2	25.0	24.3	40.5	31.8	26.3	38.9	26.5
Progression Factor	1.00	1.00		1.01	1.13	3.68	1.17	1.08	1.31	1.24	1.57	5.79
Incremental Delay, d2	1.5	4.0		201.1	0.1	0.0	1.7	10.1	1.4	0.2	63.4	0.1
Delay (s)	49.8	54.0		250.9	29.7	92.0	30.1	53.6	43.2	32.8	124.4	153.3
Level of Service	D	D		F	C	F	C	D	D	C	F	F
Approach Delay (s)		53.4			220.1			49.7			117.1	
Approach LOS		D			F			D			F	

Intersection Summary

HCM 2000 Control Delay	109.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	400	34	3	419	29	18	49	387
v/c Ratio	0.25	0.30	0.03	0.00	0.19	0.48	0.10	0.38	0.78
Control Delay	1.9	2.3	0.9	6.0	4.7	74.1	26.1	57.3	17.2
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	2.5	0.9	6.0	4.7	74.1	26.1	57.3	17.2
Queue Length 50th (m)	1.7	4.5	0.0	0.1	9.7	7.0	1.2	11.8	1.9
Queue Length 95th (m)	9.7	22.6	m0.9	m0.7	17.7	16.3	7.8	22.7	32.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	866	1342	1261	700	2210	255	701	535	860
Starvation Cap Reductn	0	339	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.40	0.03	0.00	0.19	0.11	0.03	0.09	0.45

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	368	31	3	352	33	27	5	12	45	7	349
Future Volume (vph)	181	368	31	3	352	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1726	1681	1573	1798	3141		1750	1666		1636	1535	
Flt Permitted	0.49	1.00	1.00	0.53	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	890	1681	1573	997	3141		614	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	400	34	3	383	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	5	0	2	0	0	12	0	0	341	0
Lane Group Flow (vph)	197	400	29	3	417	0	29	6	0	49	46	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.8	95.8	95.8	84.4	84.4		12.0	12.0		12.0	12.0	
Effective Green, g (s)	95.8	95.8	95.8	84.4	84.4		12.0	12.0		12.0	12.0	
Actuated g/C Ratio	0.80	0.80	0.80	0.70	0.70		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	769	1341	1255	701	2209		61	166		128	153	
v/s Ratio Prot	0.02	c0.24			0.13			0.00				0.03
v/s Ratio Perm	0.19		0.02	0.00			c0.05			0.04		
v/c Ratio	0.26	0.30	0.02	0.00	0.19		0.48	0.04		0.38	0.30	
Uniform Delay, d1	2.8	3.2	2.5	5.3	6.1		51.0	48.8		50.5	50.1	
Progression Factor	0.49	0.47	0.50	0.76	0.66		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5	0.0	0.0	0.2		5.7	0.1		1.9	1.1	
Delay (s)	1.5	2.0	1.3	4.0	4.2		56.8	48.9		52.4	51.2	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		1.8			4.2			53.7			51.3	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			73.8%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	462	79	372	58	278	29	27
v/c Ratio	0.37	0.11	0.29	0.32	0.43	0.16	0.04
Control Delay	4.0	5.6	6.2	48.4	2.1	44.6	0.2
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	5.6	6.2	48.4	2.1	44.6	0.2
Queue Length 50th (m)	19.3	5.1	28.0	12.2	0.0	6.1	0.0
Queue Length 95th (m)	39.7	13.9	55.6	25.0	0.0	14.9	0.0
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1242	746	1268	182	760	185	786
Starvation Cap Reductn	297	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.11	0.29	0.32	0.37	0.16	0.03

Intersection Summary

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	271	127	73	308	34	53	0	256	27	0	25
Future Volume (vph)	27	271	127	73	308	34	53	0	256	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1649		1805	1631		1768	1272		1803	1592	
Flt Permitted		0.96		0.51	1.00		0.54	1.00		0.62	1.00	
Satd. Flow (perm)		1590		961	1631		1013	1272		1186	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	295	138	79	335	37	58	0	278	29	0	27
RTOR Reduction (vph)	0	7	0	0	2	0	0	258	0	0	26	0
Lane Group Flow (vph)	0	455	0	79	370	0	58	20	0	29	1	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		91.3		91.3	91.3		15.5	8.7		10.9	6.4	
Effective Green, g (s)		91.3		91.3	91.3		15.5	8.7		10.9	6.4	
Actuated g/C Ratio		0.76		0.76	0.76		0.13	0.07		0.09	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1209		731	1240		173	92		130	84	
v/s Ratio Prot					0.23		c0.02	0.02		0.01	0.00	
v/s Ratio Perm		c0.29		0.08			c0.02			0.01		
v/c Ratio		0.38		0.11	0.30		0.34	0.22		0.22	0.02	
Uniform Delay, d1		4.8		3.7	4.4		47.1	52.4		50.4	53.8	
Progression Factor		0.70		1.30	1.27		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9		0.3	0.6		1.2	1.2		0.9	0.1	
Delay (s)		4.2		5.2	6.3		48.4	53.7		51.3	53.9	
Level of Service		A		A	A		D	D		D	D	
Approach Delay (s)		4.2			6.1			52.7			52.6	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			77.7%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	499	56	27	378	11	37	0	170	7	0	1
Future Volume (Veh/h)	0	499	56	27	378	11	37	0	170	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	542	61	29	411	12	40	0	185	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	425			604			1052	1056	574	1236	1081	421
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			583			1041	1046	553	1229	1071	421
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			97			79	100	65	92	100	100
cM capacity (veh/h)	1143			978			191	218	524	96	210	466
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	603	452	225	9								
Volume Left	0	29	40	8								
Volume Right	61	12	185	1								
cSH	1143	978	400	105								
Volume to Capacity	0.00	0.03	0.56	0.09								
Queue Length 95th (m)	0.0	0.7	26.7	2.2								
Control Delay (s)	0.0	0.9	24.9	42.4								
Lane LOS		A	C	E								
Approach Delay (s)	0.0	0.9	24.9	42.4								
Approach LOS			C	E								
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization			61.5%		ICU Level of Service				B			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	11	453	0	9	6	79	45	0	6	95	186
Future Volume (Veh/h)	189	11	453	0	9	6	79	45	0	6	95	186
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	205	12	492	0	10	7	86	49	0	7	103	202
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	451	439	204	937	540	49	305			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	451	439	204	937	540	49	305			49		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	56	97	42	100	97	99	93			99		
cM capacity (veh/h)	464	362	842	94	312	800	1267			1106		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	709	17	135	312								
Volume Left	205	0	86	7								
Volume Right	492	7	0	202								
cSH	669	417	1267	1106								
Volume to Capacity	1.06	0.04	0.07	0.01								
Queue Length 95th (m)	151.8	1.0	1.7	0.2								
Control Delay (s)	76.1	14.0	5.3	0.2								
Lane LOS	F	B	A	A								
Approach Delay (s)	76.1	14.0	5.3	0.2								
Approach LOS	F	B										
Intersection Summary												
Average Delay			46.9									
Intersection Capacity Utilization			79.1%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	293	1347	199	0	3012			
Future Volume (Veh/h)	0	293	1347	199	0	3012			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	318	1464	216	0	3274			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.73	0.86			0.86				
vC, conflicting volume	2556	489			1681				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	575	0			1235				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	66			100				
cM capacity (veh/h)	331	941			493				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	318	488	488	488	216	1091	1091	1091	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	318	0	0	0	216	0	0	0	
cSH	941	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.34	0.29	0.29	0.29	0.13	0.64	0.64	0.64	
Queue Length 95th (m)	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	10.8	0.0				0.0			
Approach LOS	B								
Intersection Summary									
Average Delay			0.6						
Intersection Capacity Utilization			61.5%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	774	349	1296	1532
v/c Ratio	0.76	0.80	0.47	0.51
Control Delay	42.2	48.1	15.7	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.2	48.1	15.7	12.2
Queue Length 50th (m)	89.2	80.3	50.0	50.5
Queue Length 95th (m)	97.0	106.2	m43.4	m45.0
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1362	571	2787	3031
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	14
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.61	0.47	0.51

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	676	357	1192	0	0	1409
Future Volume (vph)	676	357	1192	0	0	1409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3384	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3384	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	735	388	1296	0	0	1532
RTOR Reduction (vph)	3	23	0	0	0	0
Lane Group Flow (vph)	771	326	1296	0	0	1532
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	36.2	36.2	72.2			72.2
Effective Green, g (s)	36.2	36.2	72.2			72.2
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1020	414	2786			3029
v/s Ratio Prot			0.28			c0.30
v/s Ratio Perm	0.23	c0.24				
v/c Ratio	0.76	0.79	0.47			0.51
Uniform Delay, d1	37.9	38.4	13.2			13.7
Progression Factor	1.00	1.00	1.09			0.82
Incremental Delay, d2	3.2	9.5	0.1			0.1
Delay (s)	41.1	47.9	14.5			11.2
Level of Service	D	D	B			B
Approach Delay (s)	43.2		14.5			11.2
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			103.1%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group

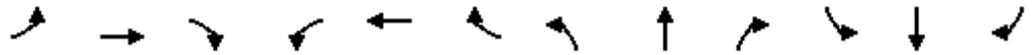


Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	599	585	559	1368	661	1605
v/c Ratio	1.16	1.17	1.17	1.16	1.19	0.79
Control Delay	128.8	131.2	129.8	119.7	132.1	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.8	131.2	129.8	119.7	132.1	26.3
Queue Length 50th (m)	~184.6	~179.8	~163.5	~141.7	~185.4	157.8
Queue Length 95th (m)	#260.1	#259.4	#238.6	#173.0	#260.2	182.0
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	517	499	479	1177	557	2044
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.16	1.17	1.17	1.16	1.19	0.79

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	835	0	768	0	0	0	0	889	370	608	1477	0
Future Volume (vph)	835	0	768	0	0	0	0	889	370	608	1477	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.93	0.85					0.96		1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1618	1445	1382					4054		1736	3505	
Flt Permitted	0.95	0.97	1.00					1.00		0.11	1.00	
Satd. Flow (perm)	1618	1445	1382					4054		203	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	908	0	835	0	0	0	0	966	402	661	1605	0
RTOR Reduction (vph)	0	37	37	0	0	0	0	62	0	0	0	0
Lane Group Flow (vph)	599	548	522	0	0	0	0	1306	0	661	1605	0
Confl. Peds. (#/hr)							7		1	1		7
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	38.4	38.4	38.4					33.0		70.0	70.0	
Effective Green, g (s)	38.4	38.4	38.4					33.0		70.0	70.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.28		0.58	0.58	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	517	462	442					1114		552	2044	
v/s Ratio Prot								0.32		c0.34	0.46	
v/s Ratio Perm	0.37	0.38	0.38							c0.36		
v/c Ratio	1.16	1.19	1.18					1.17		1.20	0.79	
Uniform Delay, d1	40.8	40.8	40.8					43.5		35.3	19.2	
Progression Factor	1.00	1.00	1.00					1.00		1.07	1.20	
Incremental Delay, d2	91.3	103.5	102.2					87.2		103.5	2.7	
Delay (s)	132.1	144.3	143.0					130.7		141.2	25.8	
Level of Service	F	F	F					F		F	C	
Approach Delay (s)		139.7			0.0			130.7			59.5	
Approach LOS		F			A			F			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			103.6									F
HCM 2000 Volume to Capacity ratio			1.22									
Actuated Cycle Length (s)			120.0							14.6		
Intersection Capacity Utilization			103.1%								G	
Analysis Period (min)			15									

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	0	0	201	92	70
Future Volume (Veh/h)	5	0	0	201	92	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	0	218	100	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				5	223	5
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				5	223	5
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	87	93
cM capacity (veh/h)				1616	765	1078
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	5	218	100	76		
Volume Left	0	0	100	0		
Volume Right	0	0	0	76		
cSH	1700	1700	765	1078		
Volume to Capacity	0.00	0.13	0.13	0.07		
Queue Length 95th (m)	0.0	0.0	3.6	1.8		
Control Delay (s)	0.0	0.0	10.4	8.6		
Lane LOS				B	A	
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS				A		
Intersection Summary						
Average Delay				4.2		
Intersection Capacity Utilization				37.9%	ICU Level of Service	A
Analysis Period (min)				15		

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Background (2036) Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	127	67	99	0	55	0	107	86	0	0	0
Future Volume (Veh/h)	0	127	67	99	0	55	0	107	86	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	138	73	108	0	60	0	116	93	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	60			211			354	414	138	505	427	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			211			354	414	138	505	427	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			100	76	90	100	100	100
cM capacity (veh/h)	1544			1360			565	487	910	330	478	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	138	73	108	60	209							
Volume Left	0	0	108	0	0							
Volume Right	0	73	0	60	93							
cSH	1700	1700	1360	1700	614							
Volume to Capacity	0.08	0.04	0.08	0.04	0.34							
Queue Length 95th (m)	0.0	0.0	2.1	0.0	12.0							
Control Delay (s)	0.0	0.0	7.9	0.0	13.9							
Lane LOS			A		B							
Approach Delay (s)	0.0		5.1		13.9							
Approach LOS					B							
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			33.1%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Background (2036) Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	5	0	0	117	1	84	239	0	1	200	0
Future Volume (Veh/h)	70	5	0	0	117	1	84	239	0	1	200	0
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	5	0	0	127	1	91	260	0	1	217	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	128			5			392	285	5	414	284	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			5			392	285	5	414	284	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			77	56	100	100	63	100
cM capacity (veh/h)	1458			1616			390	592	1078	347	592	923
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	76	5	0	128	351	218						
Volume Left	76	0	0	0	91	1						
Volume Right	0	0	0	1	0	0						
cSH	1458	1700	1700	1700	522	590						
Volume to Capacity	0.05	0.00	0.00	0.08	0.67	0.37						
Queue Length 95th (m)	1.3	0.0	0.0	0.0	40.0	13.6						
Control Delay (s)	7.6	0.0	0.0	0.0	24.9	14.6						
Lane LOS	A				C	B						
Approach Delay (s)	7.1		0.0		24.9	14.6						
Approach LOS					C	B						
Intersection Summary												
Average Delay	16.1											
Intersection Capacity Utilization	48.4%			ICU Level of Service						A		
Analysis Period (min)	15											

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Background (2036) Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	49	67	0	0	0	0	235	0	12	89	99
Future Volume (Veh/h)	88	49	67	0	0	0	0	235	0	12	89	99
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	53	73	0	0	0	0	255	0	13	97	108
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			126			438	282	90	409	318	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			126			438	282	90	409	318	0
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			100	57	100	96	83	90
cM capacity (veh/h)	1623			1460			395	590	968	351	563	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	222	0	255	218								
Volume Left	96	0	0	13								
Volume Right	73	0	0	108								
cSH	1623	1700	590	706								
Volume to Capacity	0.06	0.00	0.43	0.31								
Queue Length 95th (m)	1.5	0.0	17.4	10.5								
Control Delay (s)	3.4	0.0	15.7	12.4								
Lane LOS	A		C	B								
Approach Delay (s)	3.4	0.0	15.7	12.4								
Approach LOS			C	B								
Intersection Summary												
Average Delay			10.7									
Intersection Capacity Utilization			39.5%	ICU Level of Service					A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Background (2036) Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	5	0	0	75	136	42	71	0	58	25	1
Future Volume (Veh/h)	1	5	0	0	75	136	42	71	0	58	25	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	5	0	0	82	148	46	77	0	63	27	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	512	322	28	324	323	77	28			77		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	322	28	324	323	77	28			77		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	100	85	85	97			96		
cM capacity (veh/h)	338	554	1048	591	553	984	1585			1522		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	5	0	230	46	77	63	28				
Volume Left	1	0	0	0	46	0	63	0				
Volume Right	0	0	0	148	0	0	0	1				
cSH	338	554	1700	770	1585	1700	1522	1700				
Volume to Capacity	0.00	0.01	0.00	0.30	0.03	0.05	0.04	0.02				
Queue Length 95th (m)	0.1	0.2	0.0	10.0	0.7	0.0	1.0	0.0				
Control Delay (s)	15.7	11.6	0.0	11.7	7.3	0.0	7.5	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	12.2		11.7		2.7		5.2					
Approach LOS	B		B									
Intersection Summary												
Average Delay			7.9									
Intersection Capacity Utilization			28.8%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Background (2036) Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	0	113	25	0
Future Volume (Veh/h)	0	61	0	113	25	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	66	0	123	27	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150	27	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	27	27			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	842	1048	1587			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	66	123	27			
Volume Left	0	0	0			
Volume Right	66	0	0			
cSH	1048	1587	1700			
Volume to Capacity	0.06	0.00	0.02			
Queue Length 95th (m)	1.6	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			16.4%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	63	0	0	211	0
Future Volume (Veh/h)	0	63	0	0	211	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	68	0	0	229	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			68		34	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		34	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		77	100
cM capacity (veh/h)			1533		979	1039
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	0	229			
Volume Left	0	0	229			
Volume Right	68	0	0			
cSH	1700	1700	979			
Volume to Capacity	0.04	0.00	0.23			
Queue Length 95th (m)	0.0	0.0	7.3			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			7.6			
Intersection Capacity Utilization			22.3%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	194	0	293	0	0
Future Volume (Veh/h)	5	194	0	293	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	211	0	318	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			216	428	110	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			216	428	110	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1354	583	943	
Direction, Lane #	EB 1	WB 1				
Volume Total	216	318				
Volume Left	0	0				
Volume Right	211	0				
cSH	1700	1700				
Volume to Capacity	0.13	0.19				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			37.9%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	263	1182	546	299	826	283	597	1797	475	318	1498	229
v/c Ratio	1.64	1.07	0.87	1.57	0.72	0.43	2.02	1.11	0.76	1.31	1.03	0.39
Control Delay	350.5	89.1	38.1	306.3	45.3	21.3	486.9	68.0	9.4	193.1	73.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	350.5	89.1	38.1	306.3	45.3	21.3	486.9	68.0	9.4	193.1	73.6	7.1
Queue Length 50th (m)	-94.2	-171.3	79.3	-106.2	112.8	35.0	-207.8	-190.4	73.3	-83.7	-145.6	2.0
Queue Length 95th (m)	#148.4	#215.0	#147.1	m#163.2	m134.4	m66.8	m#152.6	m125.1	m32.7	#143.0	#176.5	21.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	160	1101	628	191	1150	652	295	1626	629	243	1454	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.64	1.07	0.87	1.57	0.72	0.43	2.02	1.11	0.76	1.31	1.03	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
PM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		 			 			  			  			
Traffic Volume (vph)	242	1087	502	275	760	260	549	1653	437	293	1378	211		
Future Volume (vph)	242	1087	502	275	760	260	549	1653	437	293	1378	211		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00		
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00		
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	200	5136	1531	211	4988	1508		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	263	1182	546	299	826	283	597	1797	475	318	1498	229		
RTOR Reduction (vph)	0	0	160	0	0	155	0	0	145	0	0	154		
Lane Group Flow (vph)	263	1182	386	299	826	128	597	1797	330	318	1498	75		
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35		
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm		
Protected Phases	5	2		1	6		3	8		7	4			
Permitted Phases			2			6	8		8	4		4		
Actuated Green, G (s)	11.0	37.0	37.0	13.0	39.0	39.0	53.0	38.0	38.0	47.0	35.0	35.0		
Effective Green, g (s)	11.0	37.0	37.0	13.0	39.0	39.0	53.0	38.0	38.0	47.0	35.0	35.0		
Actuated g/C Ratio	0.09	0.31	0.31	0.11	0.32	0.32	0.44	0.32	0.32	0.39	0.29	0.29		
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	160	1101	468	191	1150	497	288	1626	484	236	1454	439		
v/s Ratio Prot	c0.15	c0.33		0.17	0.23		c0.26	0.35		0.13	0.30			
v/s Ratio Perm			0.25			0.08	c0.65		0.22	0.39		0.05		
v/c Ratio	1.64	1.07	0.83	1.57	0.72	0.26	2.07	1.11	0.68	1.35	1.03	0.17		
Uniform Delay, d1	54.5	41.5	38.5	53.5	35.7	29.8	35.6	41.0	35.7	32.9	42.5	31.7		
Progression Factor	1.00	1.00	1.00	0.78	1.16	2.74	1.35	0.42	0.42	1.00	1.00	1.00		
Incremental Delay, d2	316.0	49.2	15.2	275.5	3.4	1.1	483.9	48.3	0.7	181.8	31.7	0.8		
Delay (s)	370.5	90.7	53.7	317.0	44.9	82.9	531.9	65.5	15.8	214.7	74.2	32.5		
Level of Service	F	F	D	F	D	F	F	E	B	F	E	C		
Approach Delay (s)		117.5			110.3			154.4			91.4			
Approach LOS		F			F			F			F			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			122.6									HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio			1.66											
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	20.0	
Intersection Capacity Utilization			123.2%										ICU Level of Service	H
Analysis Period (min)			15											

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1851	72	184	1217	510	2
v/c Ratio	0.02	1.03	0.10	0.87	0.56	0.96	0.00
Control Delay	22.3	47.6	9.7	63.5	15.6	58.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	47.6	9.7	63.5	15.6	58.5	0.0
Queue Length 50th (m)	0.4	~260.8	3.0	29.1	93.3	88.2	0.0
Queue Length 95th (m)	m0.4	m#153.6	m2.7	#72.3	113.5	#157.8	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	195	1791	700	213	2161	556	545
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.03	0.10	0.86	0.56	0.92	0.00

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1703	66	169	1120	0	34	0	435	0	0	2
Future Volume (vph)	3	1703	66	169	1120	0	34	0	435	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1801	3574	1342	1752	3539			1461			1615	
Flt Permitted	0.21	1.00	1.00	0.06	1.00			0.98			1.00	
Satd. Flow (perm)	389	3574	1342	117	3539			1435			1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1851	72	184	1217	0	37	0	473	0	0	2
RTOR Reduction (vph)	0	0	27	0	0	0	0	117	0	0	1	0
Lane Group Flow (vph)	3	1851	45	184	1217	0	0	393	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	60.1	60.1	60.1	73.3	73.3			34.7			34.7	
Effective Green, g (s)	60.1	60.1	60.1	73.3	73.3			34.7			34.7	
Actuated g/C Ratio	0.50	0.50	0.50	0.61	0.61			0.29			0.29	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	194	1789	672	210	2161			414			467	
v/s Ratio Prot		c0.52		c0.07	0.34						0.00	
v/s Ratio Perm	0.01		0.03	0.46				c0.27				
v/c Ratio	0.02	1.03	0.07	0.88	0.56			0.95			0.00	
Uniform Delay, d1	15.1	29.9	15.5	36.3	13.9			41.8			30.3	
Progression Factor	1.35	0.98	1.53	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	17.9	0.0	30.9	1.1			31.0			0.0	
Delay (s)	20.4	47.4	23.7	67.2	14.9			72.8			30.3	
Level of Service	C	D	C	E	B			E			C	
Approach Delay (s)		46.5			21.8			72.8			30.3	
Approach LOS		D			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			41.0			HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			105.4%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	503	438	195	186	323	2460	435	437	1196	82
v/c Ratio	0.56	0.78	1.15	0.34	0.30	0.68	1.34	0.66	1.02	0.71	0.13
Control Delay	59.8	36.8	138.7	34.1	9.4	31.1	190.4	26.4	43.3	34.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	36.8	138.7	34.1	9.4	31.1	190.4	26.4	43.3	34.9	7.3
Queue Length 50th (m)	22.6	37.5	~67.2	40.9	5.4	59.3	~290.0	57.6	~98.5	104.6	2.9
Queue Length 95th (m)	38.6	53.7	#101.8	55.9	23.9	m78.4	#321.3	m70.7	m#121.6	m103.2	m2.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	312	1010	382	799	778	475	1836	664	430	1682	611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.50	1.15	0.24	0.24	0.68	1.34	0.66	1.02	0.71	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

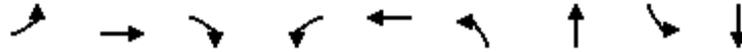
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	219	244	403	179	171	297	2263	400	402	1100	75	
Future Volume (vph)	88	219	244	403	179	171	297	2263	400	402	1100	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1780	3255		3400	1863	1567	1787	5136	1514	1787	4988	1528	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.10	1.00	1.00	
Satd. Flow (perm)	1190	3255		3400	1863	1567	205	5136	1514	186	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	238	265	438	195	186	323	2460	435	437	1196	82	
RTOR Reduction (vph)	0	181	0	0	0	128	0	0	123	0	0	54	
Lane Group Flow (vph)	96	322	0	438	195	58	323	2460	312	437	1196	28	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	17.2	17.2		13.5	37.2	37.2	69.7	42.9	42.9	64.7	40.4	40.4	
Effective Green, g (s)	17.2	17.2		13.5	37.2	37.2	69.7	42.9	42.9	64.7	40.4	40.4	
Actuated g/C Ratio	0.14	0.14		0.11	0.31	0.31	0.58	0.36	0.36	0.54	0.34	0.34	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	170	466		382	577	485	472	1836	541	424	1679	514	
v/s Ratio Prot		c0.10		c0.13	0.10		c0.15	c0.48		c0.21	0.24		
v/s Ratio Perm	0.08					0.04	0.24		0.21	0.35		0.02	
v/c Ratio	0.56	0.69		1.15	0.34	0.12	0.68	1.34	0.58	1.03	0.71	0.05	
Uniform Delay, d1	47.9	48.9		53.2	31.9	29.7	26.4	38.5	31.2	37.6	34.7	26.9	
Progression Factor	1.00	1.00		0.99	1.05	2.14	1.06	1.11	1.31	0.61	0.98	106.42	
Incremental Delay, d2	4.2	4.4		91.7	0.3	0.1	2.5	155.3	2.7	21.9	0.2	0.0	
Delay (s)	52.2	53.3		144.6	33.7	63.6	30.5	198.1	43.7	44.9	34.4	2861.4	
Level of Service	D	D		F	C	E	C	F	D	D	C	F	
Approach Delay (s)		53.1			99.8			160.4			172.2		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			145.6		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			113.6%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



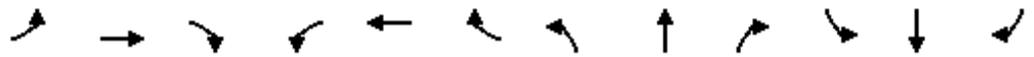
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	658	43	13	490	49	73	98	273
v/c Ratio	0.55	0.47	0.04	0.03	0.22	0.80	0.29	0.60	0.64
Control Delay	4.7	3.2	0.6	9.0	7.6	117.1	21.2	64.1	14.1
Queue Delay	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	3.7	0.6	9.0	7.6	117.1	21.2	64.1	14.1
Queue Length 50th (m)	9.0	18.6	0.1	0.8	16.2	12.0	5.2	23.5	3.1
Queue Length 95th (m)	m11.8	m22.5	m0.2	m3.1	28.8	#27.7	18.1	39.1	27.7
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	964	1414	1189	494	2194	112	413	293	557
Starvation Cap Reductn	70	358	0	0	0	0	0	0	0
Spillback Cap Reductn	0	120	0	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.62	0.04	0.03	0.22	0.44	0.18	0.33	0.49

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	605	40	12	380	71	45	21	46	90	13	238
Future Volume (vph)	396	605	40	12	380	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1782	1827	1528	1780	3447		1765	1666		1748	1587	
Flt Permitted	0.45	1.00	1.00	0.41	1.00		0.27	1.00		0.71	1.00	
Satd. Flow (perm)	841	1827	1528	777	3447		499	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	658	43	13	413	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	7	0	7	0	0	44	0	0	227	0
Lane Group Flow (vph)	430	658	36	13	483	0	49	29	0	98	46	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	92.9	92.9	92.9	76.2	76.2		14.9	14.9		14.9	14.9	
Effective Green, g (s)	92.9	92.9	92.9	76.2	76.2		14.9	14.9		14.9	14.9	
Actuated g/C Ratio	0.77	0.77	0.77	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	758	1414	1182	493	2188		61	206		162	197	
v/s Ratio Prot	c0.06	0.36			0.14			0.02				0.03
v/s Ratio Perm	c0.37		0.02	0.02			c0.10			0.08		
v/c Ratio	0.57	0.47	0.03	0.03	0.22		0.80	0.14		0.60	0.23	
Uniform Delay, d1	4.2	4.8	3.1	8.1	9.3		51.1	46.8		49.8	47.4	
Progression Factor	0.78	0.43	0.25	0.75	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.7	0.0	0.1	0.2		51.7	0.3		6.2	0.6	
Delay (s)	3.9	2.8	0.8	6.2	6.8		102.8	47.2		56.0	48.0	
Level of Service	A	A	A	A	A		F	D		E	D	
Approach Delay (s)		3.1			6.8			69.5			50.1	
Approach LOS		A			A			E			D	

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	896	97	472	65	215	89	60
v/c Ratio	0.70	0.21	0.35	0.31	0.55	0.51	0.10
Control Delay	13.1	8.7	8.8	47.2	5.5	54.9	0.3
Queue Delay	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	8.7	8.8	47.2	5.5	54.9	0.3
Queue Length 50th (m)	140.0	9.6	50.0	14.0	0.0	19.4	0.0
Queue Length 95th (m)	178.8	m18.1	m72.8	27.7	0.0	35.7	0.0
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1271	454	1365	212	496	173	698
Starvation Cap Reductn	161	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.21	0.35	0.31	0.43	0.51	0.09

Intersection Summary

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

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	590	203	89	347	87	60	0	198	82	0	55
Future Volume (vph)	31	590	203	89	347	87	60	0	198	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.2	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1737		1799	1817		1770	1511		1799	1615	
Flt Permitted		0.97		0.32	1.00		0.72	1.00		0.40	1.00	
Satd. Flow (perm)		1688		609	1817		1337	1511		750	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	641	221	97	377	95	65	0	215	89	0	60
RTOR Reduction (vph)	0	7	0	0	6	0	0	200	0	0	55	0
Lane Group Flow (vph)	0	889	0	97	466	0	65	15	0	89	5	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		89.2		89.2	89.2		13.6	8.6		16.8	10.1	
Effective Green, g (s)		89.2		89.2	89.2		13.6	8.6		16.8	10.1	
Actuated g/C Ratio		0.74		0.74	0.74		0.11	0.07		0.14	0.08	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.2	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1254		452	1350		169	108		163	135	
v/s Ratio Prot					0.26		0.02	0.01		c0.03	0.00	
v/s Ratio Perm		c0.53		0.16			0.03			c0.05		
v/c Ratio		0.71		0.21	0.35		0.38	0.14		0.55	0.04	
Uniform Delay, d1		8.4		4.7	5.3		49.0	52.2		46.8	50.5	
Progression Factor		1.22		1.61	1.64		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2		1.1	0.7		1.5	0.6		3.7	0.1	
Delay (s)		13.4		8.6	9.4		50.4	52.9		50.6	50.6	
Level of Service		B		A	A		D	D		D	D	
Approach Delay (s)		13.4			9.3			52.3			50.6	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.7		
Intersection Capacity Utilization			100.7%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

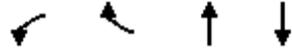
6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	769	93	46	480	8	41	0	131	11	0	0
Future Volume (Veh/h)	5	769	93	46	480	8	41	0	131	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	836	101	50	522	9	45	0	142	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	0.71
vC, conflicting volume	535			938			1525	1532	888	1669	1578	532
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	535			714			1535	1545	643	1736	1610	532
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			29	100	58	55	100	100
cM capacity (veh/h)	1040			640			64	76	341	27	69	549
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	942	581	187	12								
Volume Left	5	50	45	12								
Volume Right	101	9	142	0								
cSH	1040	640	166	27								
Volume to Capacity	0.00	0.08	1.12	0.45								
Queue Length 95th (m)	0.1	2.0	78.2	11.1								
Control Delay (s)	0.1	2.1	163.1	220.1								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.1	2.1	163.1	220.1								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			20.0									
Intersection Capacity Utilization			74.9%		ICU Level of Service				D			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	3	367	2	7	3	168	96	0	2	35	192
Future Volume (Veh/h)	306	3	367	2	7	3	168	96	0	2	35	192
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	333	3	399	2	8	3	183	104	0	2	38	209
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	624	616	144	1018	721	104	247			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624	616	144	1018	721	104	247			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	3	99	56	98	97	100	86			100		
cM capacity (veh/h)	343	259	909	108	231	873	1331			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	735	13	287	249								
Volume Left	333	2	183	2								
Volume Right	399	3	0	209								
cSH	517	230	1331	1048								
Volume to Capacity	1.42	0.06	0.14	0.00								
Queue Length 95th (m)	280.9	1.4	3.8	0.0								
Control Delay (s)	223.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	223.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			129.2									
Intersection Capacity Utilization			84.5%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	258	2816	351	0	1882			
Future Volume (Veh/h)	0	258	2816	351	0	1882			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	280	3061	382	0	2046			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.66	0.56			0.56				
vC, conflicting volume	3743	1020			3443				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1267	0			2598				
iC, single (s)	7.1	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.7	3.3			2.2				
p0 queue free %	100	54			100				
cM capacity (veh/h)	93	602			94				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	280	1020	1020	1020	382	682	682	682	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	280	0	0	0	382	0	0	0	
cSH	602	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.46	0.60	0.60	0.60	0.22	0.40	0.40	0.40	
Queue Length 95th (m)	19.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	C								
Approach Delay (s)	16.1	0.0				0.0			
Approach LOS	C								
Intersection Summary									
Average Delay			0.8						
Intersection Capacity Utilization			77.1%		ICU Level of Service		D		
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	659	323	2818	909
v/c Ratio	0.84	0.87	0.86	0.28
Control Delay	52.8	65.5	17.3	6.7
Queue Delay	0.0	0.0	31.0	0.0
Total Delay	52.8	65.5	48.2	6.7
Queue Length 50th (m)	77.5	81.5	163.9	18.2
Queue Length 95th (m)	99.8	#132.5	m69.2	m21.0
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	853	406	3286	3193
Starvation Cap Reductn	0	0	638	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.80	1.06	0.28

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖↖	↗	↑↑↑			↑↑↑
Traffic Volume (vph)	309	594	2593	0	0	836
Future Volume (vph)	309	594	2593	0	0	836
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.93	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3037	1441	5085			4940
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3037	1441	5085			4940
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	336	646	2818	0	0	909
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	658	322	2818	0	0	909
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	5%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	30.8	30.8	77.6			77.6
Effective Green, g (s)	30.8	30.8	77.6			77.6
Actuated g/C Ratio	0.26	0.26	0.65			0.65
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	779	369	3288			3194
v/s Ratio Prot			c0.55			0.18
v/s Ratio Perm	0.22	c0.22				
v/c Ratio	0.84	0.87	0.86			0.28
Uniform Delay, d1	42.3	42.7	16.8			9.2
Progression Factor	1.00	1.00	0.95			0.68
Incremental Delay, d2	8.3	19.6	0.3			0.2
Delay (s)	50.6	62.3	16.3			6.4
Level of Service	D	E	B			A
Approach Delay (s)	54.5		16.3			6.4
Approach LOS	D		B			A

Intersection Summary

HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	133.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	983	974	583	2296	473	886
v/c Ratio	1.53	1.60	1.01	1.35	1.44	0.52
Control Delay	276.3	308.2	71.6	193.2	243.9	23.4
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	276.3	308.2	71.6	193.6	243.9	23.4
Queue Length 50th (m)	-359.3	-382.7	-134.6	-271.2	-142.3	77.5
Queue Length 95th (m)	#444.0	#472.6	#216.6	#301.7	#211.4	99.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	642	607	575	1702	328	1692
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	207	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.53	1.60	1.01	1.54	1.44	0.52

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1739	2	596	0	0	0	0	1682	431	435	815	0	
Future Volume (vph)	1739	2	596	0	0	0	0	1682	431	435	815	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1601	1334					4759		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00		
Satd. Flow (perm)	1698	1601	1334					4759		164	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1890	2	648	0	0	0	0	1828	468	473	886	0	
RTOR Reduction (vph)	0	2	71	0	0	0	0	38	0	0	0	0	
Lane Group Flow (vph)	983	972	512	0	0	0	0	2258	0	473	886	0	
Confl. Peds. (#/hr)								5	7	7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	45.4	45.4	45.4					42.0		63.0	63.0		
Effective Green, g (s)	45.4	45.4	45.4					42.0		63.0	63.0		
Actuated g/C Ratio	0.38	0.38	0.38					0.35		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	642	605	504					1665		324	1692		
v/s Ratio Prot								0.47		c0.22	0.27		
v/s Ratio Perm	0.58	0.61	0.38							c0.55			
v/c Ratio	1.53	1.61	1.02					1.36		1.46	0.52		
Uniform Delay, d1	37.3	37.3	37.3					39.0		38.1	18.7		
Progression Factor	1.00	1.00	1.00					1.00		1.03	1.18		
Incremental Delay, d2	246.8	280.7	44.2					164.4		222.4	1.1		
Delay (s)	284.1	318.0	81.5					203.4		261.6	23.2		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		250.6			0.0			203.4			106.1		
Approach LOS		F			A			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			201.4									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.56										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			133.6%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	0	0	201	80	54
Future Volume (Veh/h)	2	0	0	201	80	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	0	0	218	87	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			2		220	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2		220	2
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		89	95
cM capacity (veh/h)			1620		768	1082
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	2	218	87	59		
Volume Left	0	0	87	0		
Volume Right	0	0	0	59		
cSH	1700	1700	768	1082		
Volume to Capacity	0.00	0.13	0.11	0.05		
Queue Length 95th (m)	0.0	0.0	3.1	1.4		
Control Delay (s)	0.0	0.0	10.3	8.5		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			47.2%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Background (2036) Traffic Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	257	100	104	0	41	0	93	74	0	0	0
Future Volume (Veh/h)	0	257	100	104	0	41	0	93	74	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	279	109	113	0	45	0	101	80	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	45			388			505	550	279	636	614	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	45			388			505	550	279	636	614	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	75	89	100	100	100
cM capacity (veh/h)	1563			1170			442	400	760	262	368	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	279	109	113	45	181							
Volume Left	0	0	113	0	0							
Volume Right	0	109	0	45	80							
cSH	1700	1700	1170	1700	506							
Volume to Capacity	0.16	0.06	0.10	0.03	0.36							
Queue Length 95th (m)	0.0	0.0	2.6	0.0	12.9							
Control Delay (s)	0.0	0.0	8.4	0.0	16.0							
Lane LOS			A		C							
Approach Delay (s)	0.0		6.0		16.0							
Approach LOS					C							
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			38.7%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Background (2036) Traffic Conditions  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	0	0	91	5	87	198	0	5	279	0
Future Volume (Veh/h)	54	2	0	0	91	5	87	198	0	5	279	0
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	2	0	0	99	5	95	215	0	5	303	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	104			2			370	224	2	329	222	102
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			2			370	224	2	329	222	102
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			74	67	100	99	53	100
cM capacity (veh/h)	1488			1620			362	648	1082	450	650	954
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	59	2	0	104	310	308						
Volume Left	59	0	0	0	95	5						
Volume Right	0	0	0	5	0	0						
cSH	1488	1700	1700	1700	522	646						
Volume to Capacity	0.04	0.00	0.00	0.06	0.59	0.48						
Queue Length 95th (m)	1.0	0.0	0.0	0.0	30.7	20.6						
Control Delay (s)	7.5	0.0	0.0	0.0	21.5	15.6						
Lane LOS	A				C	C						
Approach Delay (s)	7.3			0.0	21.5	15.6						
Approach LOS					C	C						
Intersection Summary												
Average Delay			15.2									
Intersection Capacity Utilization			49.9%		ICU Level of Service		A					
Analysis Period (min)			15									

1755 Pickering Pkwy TIS

Future Background (2036) Traffic Conditions

15: Tower 2 & 4/Street D & Street B

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	94	143	0	0	0	0	215	0	28	160	104
Future Volume (Veh/h)	76	94	143	0	0	0	0	215	0	28	160	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	155	0	0	0	0	234	0	30	174	113
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			257			546	346	180	462	423	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			257			546	346	180	462	423	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	57	100	91	65	90
cM capacity (veh/h)	1623			1308			282	548	863	327	496	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	340	0	234	317								
Volume Left	83	0	0	30								
Volume Right	155	0	0	113								
cSH	1623	1700	548	580								
Volume to Capacity	0.05	0.00	0.43	0.55								
Queue Length 95th (m)	1.3	0.0	17.0	26.3								
Control Delay (s)	2.1	0.0	16.4	18.4								
Lane LOS	A		C	C								
Approach Delay (s)	2.1	0.0	16.4	18.4								
Approach LOS			C	C								
Intersection Summary												
Average Delay			11.7									
Intersection Capacity Utilization			55.5%		ICU Level of Service					B		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Background (2036) Traffic Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	0	59	103	32	69	0	102	37	5
Future Volume (Veh/h)	5	2	0	0	59	103	32	69	0	102	37	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	2	0	0	64	112	35	75	0	111	40	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	554	410	42	408	412	75	45			75		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554	410	42	408	412	75	45			75		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	87	89	98			93		
cM capacity (veh/h)	328	482	1028	512	480	986	1563			1524		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	2	0	176	35	75	111	45				
Volume Left	5	0	0	0	35	0	111	0				
Volume Right	0	0	0	112	0	0	0	5				
cSH	328	482	1700	713	1563	1700	1524	1700				
Volume to Capacity	0.02	0.00	0.00	0.25	0.02	0.04	0.07	0.03				
Queue Length 95th (m)	0.4	0.1	0.0	7.8	0.5	0.0	1.9	0.0				
Control Delay (s)	16.1	12.5	0.0	11.7	7.4	0.0	7.5	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	15.1		11.7		2.3		5.4					
Approach LOS	C		B									
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			28.4%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Background (2036) Traffic Conditions  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	122	0	101	37	0
Future Volume (Veh/h)	0	122	0	101	37	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	133	0	110	40	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150	40	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	40	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	87	100			
cM capacity (veh/h)	842	1031	1570			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	133	110	40			
Volume Left	0	0	0			
Volume Right	133	0	0			
cSH	1031	1570	1700			
Volume to Capacity	0.13	0.00	0.02			
Queue Length 95th (m)	3.5	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.2			
Intersection Capacity Utilization			19.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	104	0	0	162	0
Future Volume (Veh/h)	0	104	0	0	162	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	113	0	0	176	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			113		56	56
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			113		56	56
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		81	100
cM capacity (veh/h)			1476		951	1010
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	113	0	176			
Volume Left	0	0	176			
Volume Right	113	0	0			
cSH	1700	1700	951			
Volume to Capacity	0.07	0.00	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			22.1%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	357	0	258	0	0
Future Volume (Veh/h)	2	357	0	258	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	388	0	280	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			390	476	196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			390	476	196	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1169	548	845	
Direction, Lane #	EB 1	WB 1				
Volume Total	390	280				
Volume Left	0	0				
Volume Right	388	0				
cSH	1700	1700				
Volume to Capacity	0.23	0.16				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			47.2%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	215	852	647	287	914	285	502	1420	395	253	1346	214
v/c Ratio	1.11	0.77	1.00	1.38	0.81	0.42	1.79	0.95	0.63	0.91	0.90	0.36
Control Delay	147.5	43.4	62.0	235.3	46.1	11.5	382.9	43.4	18.5	64.6	50.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	147.5	43.4	62.0	235.3	46.1	11.5	382.9	43.4	18.5	64.6	50.0	6.0
Queue Length 50th (m)	-61.0	100.6	-111.9	-96.4	85.5	3.6	-161.6	134.1	67.5	43.9	117.2	0.0
Queue Length 95th (m)	#111.0	125.8	#194.3	#154.4	128.3	41.6	m#157.6	m126.4	m66.8	#94.1	#138.9	18.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	193	1101	645	208	1131	673	280	1498	631	278	1498	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.77	1.00	1.38	0.81	0.42	1.79	0.95	0.63	0.91	0.90	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
Saturday MIDDAY

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	198	784	595	264	841	262	462	1306	363	233	1238	197	
Future Volume (vph)	198	784	595	264	841	262	462	1306	363	233	1238	197	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	217	5136	1533	215	5136	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	215	852	647	287	914	285	502	1420	395	253	1346	214	
RTOR Reduction (vph)	0	0	176	0	0	180	0	0	184	0	0	152	
Lane Group Flow (vph)	215	852	471	287	914	105	502	1420	211	253	1346	62	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	13.0	37.0	37.0	14.0	38.0	38.0	49.0	35.0	35.0	49.0	35.0	35.0	
Effective Green, g (s)	13.0	37.0	37.0	14.0	38.0	38.0	49.0	35.0	35.0	49.0	35.0	35.0	
Actuated g/C Ratio	0.11	0.31	0.31	0.12	0.32	0.32	0.41	0.29	0.29	0.41	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	193	1101	468	208	1131	493	273	1498	447	271	1498	450	
v/s Ratio Prot	0.12	0.24		c0.16	0.26		c0.21	0.28		0.11	0.26		
v/s Ratio Perm			c0.31			0.07	c0.53		0.14	0.27		0.04	
v/c Ratio	1.11	0.77	1.01	1.38	0.81	0.21	1.84	0.95	0.47	0.93	0.90	0.14	
Uniform Delay, d1	53.5	37.7	41.5	53.0	37.7	30.0	33.7	41.6	34.9	32.3	40.8	31.4	
Progression Factor	1.00	1.00	1.00	0.97	1.06	1.92	0.44	0.83	1.30	1.00	1.00	1.00	
Incremental Delay, d2	98.7	5.3	43.0	196.3	5.8	0.9	384.6	8.2	1.8	37.0	8.9	0.6	
Delay (s)	152.2	43.0	84.5	247.6	45.7	58.6	399.4	42.8	47.2	69.3	49.7	32.0	
Level of Service	F	D	F	F	D	E	F	D	D	E	D	C	
Approach Delay (s)		72.4			87.1			120.8			50.4		
Approach LOS		E			F			F			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			85.2		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.46										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			117.7%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1414	123	267	1303	345	2
v/c Ratio	0.02	0.64	0.13	0.65	0.46	0.81	0.01
Control Delay	26.0	33.9	17.8	19.7	5.3	25.8	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	33.9	17.8	19.7	5.3	25.8	42.5
Queue Length 50th (m)	0.7	177.8	13.3	19.0	40.7	14.5	0.5
Queue Length 95th (m)	m1.4	m210.8	m23.8	53.7	83.5	45.4	2.9
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	207	2215	976	452	2826	587	308
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.64	0.13	0.59	0.46	0.59	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Background (2036) Traffic Conditions  
Saturday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1301	113	246	1199	0	15	2	301	1	1	0
Future Volume (vph)	5	1301	113	246	1199	0	15	2	301	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1605			1850	
Flt Permitted	0.21	1.00	1.00	0.12	1.00			0.98			0.70	
Satd. Flow (perm)	335	3574	1541	224	3574			1584			1321	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1414	123	267	1303	0	16	2	327	1	1	0
RTOR Reduction (vph)	0	0	21	0	0	0	0	253	0	0	0	0
Lane Group Flow (vph)	5	1414	102	267	1303	0	0	92	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.4	74.4	74.4	94.9	94.9			13.1			13.1	
Effective Green, g (s)	74.4	74.4	74.4	94.9	94.9			13.1			13.1	
Actuated g/C Ratio	0.62	0.62	0.62	0.79	0.79			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	207	2215	955	407	2826			172			144	
v/s Ratio Prot		0.40		c0.10	0.36							
v/s Ratio Perm	0.01		0.07	c0.42				c0.06			0.00	
v/c Ratio	0.02	0.64	0.11	0.66	0.46			0.53			0.01	
Uniform Delay, d1	8.8	14.3	9.3	18.1	4.1			50.6			47.7	
Progression Factor	1.81	1.97	2.38	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.9	0.1	3.8	0.5			3.2			0.0	
Delay (s)	16.1	29.1	22.2	21.9	4.7			53.7			47.7	
Level of Service	B	C	C	C	A			D			D	
Approach Delay (s)		28.5			7.6			53.7			47.7	
Approach LOS		C			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.6			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			85.7%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
 Saturday Midday



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	452	687	190	176	282	1640	226	521	980	99
v/c Ratio	0.65	0.73	1.35	0.30	0.27	0.64	1.15	0.43	0.97	0.50	0.15
Control Delay	69.6	33.7	203.9	26.8	5.2	24.9	117.1	18.8	38.6	22.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	33.7	203.9	26.8	5.2	24.9	117.1	18.8	38.6	22.2	3.7
Queue Length 50th (m)	21.3	31.6	-116.3	35.9	5.5	33.1	~180.5	17.3	56.1	76.9	3.5
Queue Length 95th (m)	37.0	46.3	m#144.2	m45.0	m16.4	66.0	#203.8	39.5	m#150.4	m84.5	m5.7
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	264	1009	510	869	830	453	1422	520	536	1954	668
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.45	1.35	0.22	0.21	0.62	1.15	0.43	0.97	0.50	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

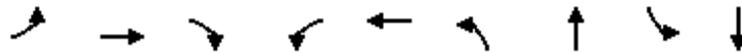
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Background (2036) Traffic Conditions  
Saturday MIDDAY

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	210	206	632	175	162	259	1509	208	479	902	91	
Future Volume (vph)	82	210	206	632	175	162	259	1509	208	479	902	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1501	3277		3502	1881	1591	1805	5187	1549	1805	5187	1579	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.28	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1008	3277		3502	1881	1591	528	5187	1549	212	5187	1579	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	228	224	687	190	176	282	1640	226	521	980	99	
RTOR Reduction (vph)	0	175	0	0	0	117	0	0	96	0	0	62	
Lane Group Flow (vph)	89	277	0	687	190	59	282	1640	130	521	980	37	
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1	
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	16.3	16.3		17.5	40.3	40.3	51.8	32.9	32.9	67.1	45.2	45.2	
Effective Green, g (s)	16.3	16.3		17.5	40.3	40.3	51.8	32.9	32.9	67.1	45.2	45.2	
Actuated g/C Ratio	0.14	0.14		0.15	0.34	0.34	0.43	0.27	0.27	0.56	0.38	0.38	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	136	445		510	631	534	429	1422	424	532	1953	594	
v/s Ratio Prot		0.08		c0.20	0.10		0.10	c0.32		c0.25	0.19		
v/s Ratio Perm	c0.09					0.04	0.18		0.08	0.29		0.02	
v/c Ratio	0.65	0.62		1.35	0.30	0.11	0.66	1.15	0.31	0.98	0.50	0.06	
Uniform Delay, d1	49.2	49.0		51.2	29.4	27.5	23.0	43.5	34.5	35.5	28.7	23.9	
Progression Factor	1.00	1.00		0.92	0.91	1.24	1.22	1.02	1.09	0.64	0.72	0.91	
Incremental Delay, d2	10.8	2.7		166.6	0.2	0.1	3.3	76.8	1.7	14.6	0.2	0.0	
Delay (s)	60.0	51.7		213.5	26.9	34.1	31.3	121.3	39.3	37.5	20.8	21.7	
Level of Service	E	D		F	C	C	C	F	D	D	C	C	
Approach Delay (s)		53.0			149.8			100.9			26.3		
Approach LOS		D			F			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			83.3		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			107.9%		ICU Level of Service						G		
Analysis Period (min)			15										
c Critical Lane Group													



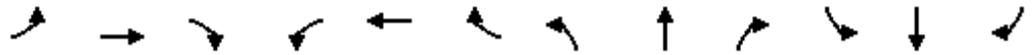
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	442	64	34	450	112	102	128	624
v/c Ratio	0.73	0.42	0.07	0.11	0.38	1.78	0.17	0.29	0.67
Control Delay	18.0	9.8	2.7	32.3	26.8	432.9	12.1	27.8	6.4
Queue Delay	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	10.2	2.7	32.3	26.8	432.9	12.1	27.8	6.4
Queue Length 50th (m)	31.2	28.2	0.3	5.5	35.8	-40.0	8.0	22.1	5.9
Queue Length 95th (m)	m63.9	m51.0	m1.6	13.5	59.8	#74.1	17.5	32.9	30.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	694	1043	880	320	1171	84	801	583	1046
Starvation Cap Reductn	14	235	0	0	0	0	0	0	0
Spillback Cap Reductn	0	26	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.55	0.07	0.11	0.38	1.33	0.13	0.22	0.60

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	407	59	31	304	110	103	46	48	118	34	540
Future Volume (vph)	433	407	59	31	304	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1863	1543	1780	3396		1805	1717		1782	1607	
Flt Permitted	0.39	1.00	1.00	0.51	1.00		0.10	1.00		0.69	1.00	
Satd. Flow (perm)	743	1863	1543	949	3396		187	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	442	64	34	330	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	16	0	25	0	0	34	0	0	388	0
Lane Group Flow (vph)	471	442	48	34	425	0	112	68	0	128	236	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	67.2	67.2	67.2	40.5	40.5		40.6	40.6		40.6	40.6	
Effective Green, g (s)	67.2	67.2	67.2	40.5	40.5		40.6	40.6		40.6	40.6	
Actuated g/C Ratio	0.56	0.56	0.56	0.34	0.34		0.34	0.34		0.34	0.34	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	624	1043	864	320	1146		63	580		438	543	
v/s Ratio Prot	c0.15	0.24			0.13			0.04				0.15
v/s Ratio Perm	c0.27		0.03	0.04			c0.60			0.10		
v/c Ratio	0.75	0.42	0.06	0.11	0.37		1.78	0.12		0.29	0.43	
Uniform Delay, d1	16.4	15.2	12.0	27.3	30.1		39.7	27.3		29.2	30.8	
Progression Factor	0.75	0.48	0.28	0.82	0.79		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.9	0.1	0.6	0.9		406.3	0.1		0.4	0.6	
Delay (s)	15.8	8.2	3.5	23.0	24.7		446.0	27.4		29.5	31.3	
Level of Service	B	A	A	C	C		F	C		C	C	
Approach Delay (s)		11.5			24.5			246.5			31.0	
Approach LOS		B			C			F			C	

Intersection Summary

HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

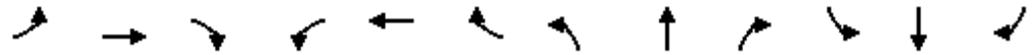
Saturday MIDDAY



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	669	101	510	77	275	100	86
v/c Ratio	0.54	0.19	0.40	0.35	0.51	0.46	0.13
Control Delay	7.5	9.1	9.8	45.4	3.4	48.0	0.4
Queue Delay	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	9.1	9.8	45.4	3.4	48.0	0.4
Queue Length 50th (m)	69.0	8.4	47.0	16.0	0.0	21.0	0.0
Queue Length 95th (m)	85.7	m23.0	95.1	30.1	0.0	37.6	0.0
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1250	525	1291	218	656	224	757
Starvation Cap Reductn	303	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.19	0.40	0.35	0.42	0.45	0.11

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	20	368	227	93	313	156	71	0	253	92	0	79
Future Volume (vph)	20	368	227	93	313	156	71	0	253	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753		1732	1773		1796	1551		1765	1583	
Flt Permitted		0.98		0.40	1.00		0.70	1.00		0.33	1.00	
Satd. Flow (perm)		1714		727	1773		1326	1551		619	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	400	247	101	340	170	77	0	275	100	0	86
RTOR Reduction (vph)	0	13	0	0	11	0	0	255	0	0	77	0
Lane Group Flow (vph)	0	656	0	101	499	0	77	20	0	100	9	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		86.0		86.0	86.0		14.1	8.7		21.8	13.1	
Effective Green, g (s)		86.0		86.0	86.0		14.1	8.7		21.8	13.1	
Actuated g/C Ratio		0.72		0.72	0.72		0.12	0.07		0.18	0.11	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1228		521	1270		176	112		206	172	
v/s Ratio Prot					0.28		0.02	0.01		c0.04	0.01	
v/s Ratio Perm		c0.38		0.14			0.03			c0.05		
v/c Ratio		0.53		0.19	0.39		0.44	0.18		0.49	0.05	
Uniform Delay, d1		7.8		5.6	6.7		48.8	52.3		42.9	47.9	
Progression Factor		0.81		1.42	1.45		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6		0.8	0.9		1.7	0.8		1.8	0.1	
Delay (s)		7.9		8.8	10.6		50.6	53.1		44.7	48.0	
Level of Service		A		A	B		D	D		D	D	
Approach Delay (s)		7.9			10.3			52.5			46.2	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			86.8%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	608	103	51	509	28	52	0	170	25	0	1
Future Volume (Veh/h)	9	608	103	51	509	28	52	0	170	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	661	112	55	553	30	57	0	185	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	0.85
vC, conflicting volume	583			773			1418	1430	719	1602	1471	570
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			647			1404	1418	583	1620	1466	570
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			40	100	58	30	100	100
cM capacity (veh/h)	917			808			94	109	439	39	101	524
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	783	638	242	28								
Volume Left	10	55	57	27								
Volume Right	112	30	185	1								
cSH	917	808	236	40								
Volume to Capacity	0.01	0.07	1.03	0.70								
Queue Length 95th (m)	0.3	1.7	79.3	20.6								
Control Delay (s)	0.3	1.8	110.1	208.6								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.3	1.8	110.1	208.6								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			20.0									
Intersection Capacity Utilization			79.4%		ICU Level of Service					D		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	1	479	0	0	0	225	45	0	0	75	231
Future Volume (Veh/h)	203	1	479	0	0	0	225	45	0	0	75	231
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	221	1	521	0	0	0	245	49	0	0	82	251
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	750	746	208	1268	872	52	333			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	750	746	208	1268	872	52	333			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	20	99	38	100	100	100	80			100		
cM capacity (veh/h)	276	198	838	47	233	1019	1238			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	743	0	294	333								
Volume Left	221	0	245	0								
Volume Right	521	0	0	251								
cSH	521	1700	1238	1571								
Volume to Capacity	1.43	0.06	0.20	0.00								
Queue Length 95th (m)	284.9	0.0	5.9	0.0								
Control Delay (s)	225.0	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	225.0	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			123.6									
Intersection Capacity Utilization			87.5%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	324	1783	385	0	1926			
Future Volume (Veh/h)	0	324	1783	385	0	1926			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	352	1938	418	0	2093			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.90	0.83				0.83			
vC, conflicting volume	2639	649				2359			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1384	0				1919			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	61				100			
cM capacity (veh/h)	123	903				259			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	352	646	646	646	418	698	698	698	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	352	0	0	0	418	0	0	0	
cSH	903	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.39	0.38	0.38	0.38	0.25	0.41	0.41	0.41	
Queue Length 95th (m)	14.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.5	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			0.8						
Intersection Capacity Utilization			61.2%		ICU Level of Service		B		
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	525	295	1785	820
v/c Ratio	0.64	0.80	0.53	0.24
Control Delay	42.5	56.2	14.2	14.2
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	42.5	56.2	14.4	14.2
Queue Length 50th (m)	58.7	72.9	71.2	32.8
Queue Length 95th (m)	68.8	98.6	m65.1	m35.7
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1228	554	3362	3362
Starvation Cap Reductn	0	0	640	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.53	0.66	0.24

**Intersection Summary**

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↗	↑↑↑			↑↑↑
Traffic Volume (vph)	212	543	1642	0	0	754
Future Volume (vph)	212	543	1642	0	0	754
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr <sub>t</sub>	0.92	0.85	1.00			1.00
Fl <sub>t</sub> Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3242	1455	5136			5136
Fl <sub>t</sub> Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3242	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	590	1785	0	0	820
RTOR Reduction (vph)	8	8	0	0	0	0
Lane Group Flow (vph)	517	287	1785	0	0	820
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	29.8	29.8	78.6			78.6
Effective Green, g (s)	29.8	29.8	78.6			78.6
Actuated g/C Ratio	0.25	0.25	0.65			0.65
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	805	361	3364			3364
v/s Ratio Prot			c0.35			0.16
v/s Ratio Perm	0.16	c0.20				
v/c Ratio	0.64	0.80	0.53			0.24
Uniform Delay, d <sub>1</sub>	40.3	42.3	10.9			8.5
Progression Factor	1.00	1.00	1.17			1.50
Incremental Delay, d <sub>2</sub>	1.8	11.5	0.1			0.1
Delay (s)	42.1	53.8	12.9			12.8
Level of Service	D	D	B			B
Approach Delay (s)	46.3		12.9			12.8
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			20.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			102.2%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	758	756	499	1266	557	503
v/c Ratio	1.13	1.13	0.66	1.07	1.08	0.28
Control Delay	111.5	108.1	15.6	87.5	105.2	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.5	108.1	15.6	87.5	105.2	16.7
Queue Length 50th (m)	~229.4	~229.4	40.2	~122.0	~141.0	31.4
Queue Length 95th (m)	#309.2	#314.7	82.4	#153.1	#212.7	46.3
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	670	670	759	1187	515	1816
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.13	1.13	0.66	1.07	1.08	0.28

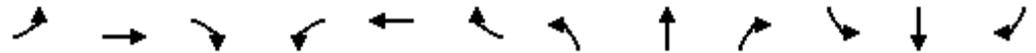
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1341	0	511	0	0	0	0	861	304	512	463	0	
Future Volume (vph)	1341	0	511	0	0	0	0	861	304	512	463	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Fr <sub>t</sub>	1.00	0.99	0.85					0.96		1.00	1.00		
Fl <sub>t</sub> Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1613	1461					4864		1787	3574		
Fl <sub>t</sub> Permitted	0.95	0.96	1.00					1.00		0.13	1.00		
Satd. Flow (perm)	1698	1613	1461					4864		243	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1458	0	555	0	0	0	0	936	330	557	503	0	
RTOR Reduction (vph)	0	33	183	0	0	0	0	53	0	0	0	0	
Lane Group Flow (vph)	758	723	316	0	0	0	0	1213	0	557	503	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	47.4	47.4	47.4					28.0		61.0	61.0		
Effective Green, g (s)	47.4	47.4	47.4					28.0		61.0	61.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.23		0.51	0.51		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	670	637	577					1134		509	1816		
v/s Ratio Prot								0.25		c0.27	0.14		
v/s Ratio Perm	0.45	0.45	0.22							c0.28			
v/c Ratio	1.13	1.13	0.55					1.07		1.09	0.28		
Uniform Delay, d1	36.3	36.3	28.0					46.0		35.6	16.9		
Progression Factor	1.00	1.00	1.00					1.00		1.37	0.96		
Incremental Delay, d2	76.9	78.9	1.1					47.5		67.5	0.4		
Delay (s)	113.2	115.2	29.1					93.5		116.3	16.5		
Level of Service	F	F	C					F		F	B		
Approach Delay (s)		93.1			0.0			93.5			69.0		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			87.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			102.2%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	222	0	0	2	102	70
Future Volume (Veh/h)	222	0	0	2	102	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	0	0	2	111	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			241		243	241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			241		243	241
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	90
cM capacity (veh/h)			1326		745	798
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	241	2	111	76		
Volume Left	0	0	111	0		
Volume Right	0	0	0	76		
cSH	1700	1700	745	798		
Volume to Capacity	0.14	0.00	0.15	0.10		
Queue Length 95th (m)	0.0	0.0	4.2	2.5		
Control Delay (s)	0.0	0.0	10.7	10.0		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			42.9%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Background (2036) Traffic Conditions  
Saturday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	275	110	119	0	55	0	117	89	0	0	0
Future Volume (Veh/h)	0	275	110	119	0	55	0	117	89	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	299	120	129	0	60	0	127	97	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	60			419			557	617	299	718	677	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			419			557	617	299	718	677	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			100	65	87	100	100	100
cM capacity (veh/h)	1544			1140			403	360	741	200	332	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	299	120	129	60	224							
Volume Left	0	0	129	0	0							
Volume Right	0	120	0	60	97							
cSH	1700	1700	1140	1700	463							
Volume to Capacity	0.18	0.07	0.11	0.04	0.48							
Queue Length 95th (m)	0.0	0.0	3.1	0.0	20.7							
Control Delay (s)	0.0	0.0	8.6	0.0	19.9							
Lane LOS			A		C							
Approach Delay (s)	0.0		5.8		19.9							
Approach LOS					C							
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			42.7%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Background (2036) Traffic Conditions  
Saturday Midday

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	2	0	0	116	5	106	256	7	5	310	0
Future Volume (Veh/h)	70	2	0	0	116	5	106	256	7	5	310	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	2	0	0	126	5	115	278	8	5	337	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	131			2			448	285	2	430	282	128
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	131			2			448	285	2	430	282	128
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			58	53	99	98	43	100
cM capacity (veh/h)	1454			1620			276	592	1082	324	594	921
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	76	2	0	131	401	342						
Volume Left	76	0	0	0	115	5						
Volume Right	0	0	0	5	8	0						
cSH	1454	1700	1700	1700	449	586						
Volume to Capacity	0.05	0.00	0.00	0.08	0.89	0.58						
Queue Length 95th (m)	1.3	0.0	0.0	0.0	77.2	29.9						
Control Delay (s)	7.6	0.0	0.0	0.0	50.8	19.4						
Lane LOS	A				F	C						
Approach Delay (s)	7.4		0.0		50.8	19.4						
Approach LOS					F	C						
Intersection Summary												
Average Delay			29.0									
Intersection Capacity Utilization			60.0%		ICU Level of Service				B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Background (2036) Traffic Conditions  
 Saturday MIDDAY

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	99	156	0	0	0	0	269	0	30	176	119
Future Volume (Veh/h)	91	99	156	0	0	0	0	269	0	30	176	119
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	99	108	170	0	0	0	0	292	0	33	191	129
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			278			616	391	193	537	476	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			278			616	391	193	537	476	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			100	43	100	86	58	88
cM capacity (veh/h)	1623			1285			229	511	849	238	458	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	377	0	292	353								
Volume Left	99	0	0	33								
Volume Right	170	0	0	129								
cSH	1623	1700	511	523								
Volume to Capacity	0.06	0.00	0.57	0.67								
Queue Length 95th (m)	1.6	0.0	28.3	40.2								
Control Delay (s)	2.3	0.0	21.0	25.0								
Lane LOS	A		C	C								
Approach Delay (s)	2.3	0.0	21.0	25.0								
Approach LOS			C	C								
Intersection Summary												
Average Delay			15.5									
Intersection Capacity Utilization			62.1%		ICU Level of Service					B		
Analysis Period (min)			15									

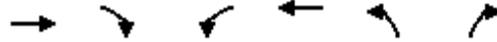
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	0	75	135	41	87	0	112	42	5
Future Volume (Veh/h)	5	2	0	0	75	135	41	87	0	112	42	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	2	0	0	82	147	45	95	0	122	46	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	666	478	48	476	480	95	51			95		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	666	478	48	476	480	95	51			95		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	81	85	97			92		
cM capacity (veh/h)	248	434	1020	456	433	962	1555			1499		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	2	0	229	45	95	122	51				
Volume Left	5	0	0	0	45	0	122	0				
Volume Right	0	0	0	147	0	0	0	5				
cSH	248	434	1700	669	1555	1700	1499	1700				
Volume to Capacity	0.02	0.00	0.00	0.34	0.03	0.06	0.08	0.03				
Queue Length 95th (m)	0.5	0.1	0.0	12.2	0.7	0.0	2.1	0.0				
Control Delay (s)	19.8	13.3	0.0	13.2	7.4	0.0	7.6	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	17.9		13.2		2.4		5.4					
Approach LOS	C		B									
Intersection Summary												
Average Delay			8.0									
Intersection Capacity Utilization			31.8%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	129	0	128	42	0
Future Volume (Veh/h)	0	129	0	128	42	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	140	0	139	46	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185	46	46			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185	46	46			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	100			
cM capacity (veh/h)	804	1023	1562			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	140	139	46			
Volume Left	0	0	0			
Volume Right	140	0	0			
cSH	1023	1562	1700			
Volume to Capacity	0.14	0.00	0.03			
Queue Length 95th (m)	3.8	0.0	0.0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			21.4%	ICU Level of Service		A
Analysis Period (min)			15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	114	0	0	210	0
Future Volume (Veh/h)	0	114	0	0	210	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	124	0	0	228	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		62	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		62	62
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		76	100
cM capacity (veh/h)			1463		944	1003
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	124	0	228			
Volume Left	0	0	228			
Volume Right	124	0	0			
cSH	1700	1700	944			
Volume to Capacity	0.07	0.00	0.24			
Queue Length 95th (m)	0.0	0.0	7.6			
Control Delay (s)	0.0	0.0	10.0			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			6.5			
Intersection Capacity Utilization			25.4%	ICU Level of Service		A
Analysis Period (min)			15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		
Traffic Volume (veh/h)	2	385	0	222	0	0
Future Volume (Veh/h)	2	385	0	222	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	418	0	241	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			420		452	211
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			420		452	211
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1139		565	829

Direction, Lane #	EB 1	WB 1
Volume Total	420	241
Volume Left	0	0
Volume Right	418	0
cSH	1700	1700
Volume to Capacity	0.25	0.14
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary		
Average Delay	0.0	
Intersection Capacity Utilization	42.9%	ICU Level of Service A
Analysis Period (min)	15	

**APPENDIX 16**

**Future Total (2036) Synchro HCM Outputs**



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	377	374	401	597	185	465	984	192	352	2007	203
v/c Ratio	0.66	0.36	0.60	2.13	0.51	0.29	2.15	0.70	0.32	1.24	1.26	0.34
Control Delay	75.0	32.8	19.2	551.6	35.6	13.4	553.6	19.2	2.1	156.4	157.5	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.0	32.8	19.2	551.6	35.6	13.4	553.6	19.2	2.1	156.4	157.5	5.7
Queue Length 50th (m)	23.0	37.8	33.5	~160.6	69.0	6.8	~172.8	28.4	0.0	-81.7	~228.5	0.0
Queue Length 95th (m)	#44.9	51.9	67.1	#224.6	89.5	33.6	m#176.9	m29.1	m0.1	#143.1	#259.3	17.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	156	1058	625	188	1182	633	216	1401	595	285	1594	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.36	0.60	2.13	0.51	0.29	2.15	0.70	0.32	1.24	1.26	0.34

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	347	344	369	549	170	428	905	177	324	1846	187	
Future Volume (vph)	87	347	344	369	549	170	428	905	177	324	1846	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1455	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	194	4673	1536	289	5036	1455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	377	374	401	597	185	465	984	192	352	2007	203	
RTOR Reduction (vph)	0	0	142	0	0	122	0	0	134	0	0	139	
Lane Group Flow (vph)	95	377	232	401	597	63	465	984	58	352	2007	64	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	8%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	10.1	38.0	38.0	13.0	40.9	40.9	47.0	36.0	36.0	51.0	38.0	38.0	
Effective Green, g (s)	10.1	38.0	38.0	13.0	40.9	40.9	47.0	36.0	36.0	51.0	38.0	38.0	
Actuated g/C Ratio	0.08	0.32	0.32	0.11	0.34	0.34	0.39	0.30	0.30	0.42	0.32	0.32	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	143	1058	482	188	1183	511	210	1401	460	275	1594	460	
v/s Ratio Prot	0.06	0.11		c0.23	c0.17		c0.20	0.21		c0.14	0.40		
v/s Ratio Perm			0.15			0.04	c0.67		0.04	0.40		0.04	
v/c Ratio	0.66	0.36	0.48	2.13	0.50	0.12	2.21	0.70	0.13	1.28	1.26	0.14	
Uniform Delay, d1	53.3	31.6	33.1	53.5	31.5	27.2	32.2	37.2	30.5	26.5	41.0	29.3	
Progression Factor	1.00	1.00	1.00	0.92	1.07	2.98	2.07	0.47	0.32	1.00	1.00	1.00	
Incremental Delay, d2	11.1	0.9	3.4	525.9	1.4	0.5	553.9	1.5	0.3	151.0	121.8	0.6	
Delay (s)	64.4	32.5	36.5	575.1	35.0	81.4	620.6	19.0	10.1	177.5	162.8	29.9	
Level of Service	E	C	D	F	D	F	F	B	B	F	F	C	
Approach Delay (s)		37.8			225.3			188.5			154.3		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			161.0		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.49										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			128.2%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	857	101	249	1165	252	3
v/c Ratio	0.01	0.37	0.11	0.49	0.43	0.80	0.01
Control Delay	12.7	11.4	7.0	6.8	5.6	41.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	11.4	7.0	6.8	5.6	41.3	0.0
Queue Length 50th (m)	0.0	46.1	3.1	10.7	39.7	22.4	0.0
Queue Length 95th (m)	m0.8	m68.5	m11.4	27.0	75.6	50.0	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	308	2305	900	637	2729	490	409
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.37	0.11	0.39	0.43	0.51	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2036) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	788	93	229	1072	0	45	0	187	1	0	2
Future Volume (vph)	3	788	93	229	1072	0	45	0	187	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1465			1685	
Flt Permitted	0.24	1.00	1.00	0.29	1.00			0.93			0.81	
Satd. Flow (perm)	460	3438	1316	514	3505			1377			1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	857	101	249	1165	0	49	0	203	1	0	2
RTOR Reduction (vph)	0	0	18	0	0	0	0	148	0	0	3	0
Lane Group Flow (vph)	3	857	83	249	1165	0	0	104	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	80.4	80.4	80.4	93.4	93.4			14.6			14.6	
Effective Green, g (s)	80.4	80.4	80.4	93.4	93.4			14.6			14.6	
Actuated g/C Ratio	0.67	0.67	0.67	0.78	0.78			0.12			0.12	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	308	2303	881	497	2728			167			168	
v/s Ratio Prot		0.25		c0.04	0.33							
v/s Ratio Perm	0.01		0.06	c0.35				c0.08			0.00	
v/c Ratio	0.01	0.37	0.09	0.50	0.43			0.62			0.00	
Uniform Delay, d1	6.6	8.7	7.0	4.2	4.4			50.1			46.3	
Progression Factor	1.21	1.10	1.35	1.00	1.00			1.34			1.00	
Incremental Delay, d2	0.0	0.3	0.2	0.8	0.5			6.9			0.0	
Delay (s)	8.0	9.9	9.6	5.0	4.9			73.9			46.3	
Level of Service	A	A	A	A	A			E			D	
Approach Delay (s)		9.9			4.9			73.9			46.3	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.4			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			77.9%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	358	802	100	45	189	1320	234	315	2022	210
v/c Ratio	0.37	0.88dr	1.36	0.15	0.08	0.54	1.06	0.48	0.65	1.21	0.33
Control Delay	53.1	43.9	209.6	26.7	3.2	31.4	82.9	16.6	29.0	141.8	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	43.9	209.6	26.7	3.2	31.4	82.9	16.6	29.0	141.8	21.8
Queue Length 50th (m)	14.0	32.2	~136.8	18.0	0.2	25.2	~131.4	9.2	74.8	~223.8	24.1
Queue Length 95th (m)	27.0	46.8	#177.7	27.6	m2.7	55.3	#160.0	34.3	m62.3	m#155.0	m16.4
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	334	895	591	903	776	353	1251	489	486	1675	636
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.40	1.36	0.11	0.06	0.54	1.06	0.48	0.65	1.21	0.33

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis  
AM Peak Hour

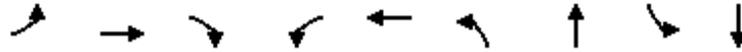
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	92	237	738	92	41	174	1214	215	290	1860	193
Future Volume (vph)	56	92	237	738	92	41	174	1214	215	290	1860	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3118		3155	1792	1459	1719	4759	1396	1770	5036	1491
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.13	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1276	3118		3155	1792	1459	230	4759	1396	216	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	100	258	802	100	45	189	1320	234	315	2022	210
RTOR Reduction (vph)	0	91	0	0	0	28	0	0	122	0	0	140
Lane Group Flow (vph)	61	267	0	802	100	17	189	1320	112	315	2022	70
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.5	15.5		22.5	44.5	44.5	51.5	31.5	31.5	62.9	39.9	39.9
Effective Green, g (s)	15.5	15.5		22.5	44.5	44.5	51.5	31.5	31.5	62.9	39.9	39.9
Actuated g/C Ratio	0.13	0.13		0.19	0.37	0.37	0.43	0.26	0.26	0.52	0.33	0.33
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	164	402		591	664	541	346	1249	366	481	1674	495
v/s Ratio Prot		c0.09		c0.25	0.06		0.09	0.28		c0.16	c0.40	
v/s Ratio Perm	0.05					0.01	0.14		0.08	0.19		0.05
v/c Ratio	0.37	0.88dr		1.36	0.15	0.03	0.55	1.06	0.30	0.65	1.21	0.14
Uniform Delay, d1	47.8	49.8		48.8	25.2	24.0	25.5	44.2	35.5	27.4	40.0	28.0
Progression Factor	1.00	1.00		1.01	1.08	3.67	1.14	0.99	1.13	1.12	1.44	5.30
Incremental Delay, d2	1.4	4.1		171.3	0.1	0.0	1.7	41.2	2.0	0.3	94.1	0.1
Delay (s)	49.2	53.9		220.5	27.1	88.1	30.8	84.9	42.1	31.0	151.7	148.7
Level of Service	D	D		F	C	F	C	F	D	C	F	F
Approach Delay (s)		53.2			193.8			73.3			136.5	
Approach LOS		D			F			E			F	

Intersection Summary

HCM 2000 Control Delay	120.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	462	34	3	415	29	18	49	387
v/c Ratio	0.25	0.35	0.03	0.00	0.19	0.48	0.10	0.37	0.78
Control Delay	1.4	1.6	0.0	7.0	6.0	73.7	25.8	56.4	16.9
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.4	1.8	0.0	7.0	6.0	73.7	25.8	56.4	16.9
Queue Length 50th (m)	2.2	6.2	0.0	0.2	12.3	7.0	1.2	11.7	1.8
Queue Length 95th (m)	4.2	10.2	m0.0	m0.9	22.8	16.4	7.9	22.7	32.5
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	843	1338	1257	659	2202	214	605	460	793
Starvation Cap Reductn	0	283	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.44	0.03	0.00	0.19	0.14	0.03	0.11	0.49

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	425	31	3	349	33	27	5	12	45	7	349
Future Volume (vph)	181	425	31	3	349	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1726	1681	1573	1799	3140		1750	1666		1636	1535	
Flt Permitted	0.49	1.00	1.00	0.50	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	893	1681	1573	942	3140		599	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	462	34	3	379	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	6	0	3	0	0	12	0	0	340	0
Lane Group Flow (vph)	197	462	28	3	412	0	29	6	0	49	47	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.5	95.5	95.5	84.0	84.0		12.3	12.3		12.3	12.3	
Effective Green, g (s)	95.5	95.5	95.5	84.0	84.0		12.3	12.3		12.3	12.3	
Actuated g/C Ratio	0.80	0.80	0.80	0.70	0.70		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	769	1337	1251	659	2198		61	170		131	157	
v/s Ratio Prot	0.02	c0.27			0.13			0.00				0.03
v/s Ratio Perm	0.19		0.02	0.00			c0.05			0.04		
v/c Ratio	0.26	0.35	0.02	0.00	0.19		0.48	0.04		0.37	0.30	
Uniform Delay, d1	2.9	3.4	2.5	5.4	6.2		50.8	48.5		50.3	49.9	
Progression Factor	0.28	0.24	0.00	0.90	0.85		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.0	0.0	0.2		5.7	0.1		1.8	1.1	
Delay (s)	1.0	1.4	0.0	4.9	5.5		56.5	48.6		52.1	50.9	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		1.2			5.5			53.5			51.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.2		
Intersection Capacity Utilization			76.8%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	524	63	391	37	187	29	27
v/c Ratio	0.43	0.09	0.31	0.18	0.31	0.17	0.04
Control Delay	4.8	4.7	5.5	42.3	1.3	43.3	0.1
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	4.7	5.5	42.3	1.3	43.3	0.1
Queue Length 50th (m)	32.1	3.8	28.1	7.7	0.0	6.1	0.0
Queue Length 95th (m)	47.3	8.7	45.1	m17.0	0.0	14.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1232	696	1260	327	677	331	751
Starvation Cap Reductn	197	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.09	0.31	0.11	0.28	0.09	0.04

**Intersection Summary**

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

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Future Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1647		1805	1631		1767	1272		1803	1592	
Flt Permitted		0.96		0.47	1.00		0.70	1.00		0.50	1.00	
Satd. Flow (perm)		1593		902	1631		1310	1272		949	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	392	103	63	354	37	37	0	187	29	0	27
RTOR Reduction (vph)	0	4	0	0	1	0	0	174	0	0	25	0
Lane Group Flow (vph)	0	520	0	63	390	0	37	13	0	29	2	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		91.3		91.3	91.3		13.6	8.4		12.8	8.0	
Effective Green, g (s)		91.3		91.3	91.3		13.6	8.4		12.8	8.0	
Actuated g/C Ratio		0.76		0.76	0.76		0.11	0.07		0.11	0.07	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1212		686	1240		168	89		135	106	
v/s Ratio Prot					0.24		c0.01	0.01		0.01	0.00	
v/s Ratio Perm		c0.33		0.07			c0.02			0.01		
v/c Ratio		0.43		0.09	0.31		0.22	0.15		0.21	0.02	
Uniform Delay, d1		5.1		3.7	4.5		48.2	52.4		48.7	52.3	
Progression Factor		0.69		1.00	1.00		0.97	1.00		1.00	1.00	
Incremental Delay, d2		1.1		0.3	0.7		0.7	0.8		0.8	0.1	
Delay (s)		4.6		4.0	5.2		47.4	53.2		49.5	52.4	
Level of Service		A		A	A		D	D		D	D	
Approach Delay (s)		4.6			5.0			52.2			50.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			76.1%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	415	146	85	363	11	55	0	254	7	0	1
Future Volume (Veh/h)	0	415	146	85	363	11	55	0	254	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	451	159	92	395	12	60	0	276	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	0.92
vC, conflicting volume	409			611			1120	1124	532	1394	1198	405
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			535			1087	1092	449	1385	1172	405
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			90			62	100	51	85	100	100
cM capacity (veh/h)	1159			960			159	180	564	53	161	477
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	610	499	60	276	9							
Volume Left	0	92	60	0	8							
Volume Right	159	12	0	276	1							
cSH	1159	960	159	564	59							
Volume to Capacity	0.00	0.10	0.38	0.49	0.15							
Queue Length 95th (m)	0.0	2.5	12.9	21.4	4.0							
Control Delay (s)	0.0	2.6	40.7	17.3	77.2							
Lane LOS		A	E	C	F							
Approach Delay (s)	0.0	2.6	21.5		77.2							
Approach LOS			C		F							
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			81.1%		ICU Level of Service				D			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	11	445	0	9	6	94	45	0	6	95	203
Future Volume (Veh/h)	194	11	445	0	9	6	94	45	0	6	95	203
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	12	484	0	10	7	102	49	0	7	103	221
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			496			962	693	254	714	932	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			496			962	693	254	714	932	14
tC, single (s)	4.2			4.1			7.1	6.5	6.2	8.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	4.4	4.0	3.4
p0 queue free %	86			100			8	85	100	96	56	79
cM capacity (veh/h)	1562			1078			111	319	790	195	232	1041
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	707	17	151	331								
Volume Left	211	0	102	7								
Volume Right	484	7	0	221								
cSH	1562	1078	140	479								
Volume to Capacity	0.14	0.00	1.08	0.69								
Queue Length 95th (m)	3.7	0.0	65.8	41.9								
Control Delay (s)	3.3	0.0	160.4	27.7								
Lane LOS	A		F	D								
Approach Delay (s)	3.3	0.0	160.4	27.7								
Approach LOS			F	D								
Intersection Summary												
Average Delay			29.6									
Intersection Capacity Utilization			80.7%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	302	1347	225	0	3009			
Future Volume (Veh/h)	0	302	1347	225	0	3009			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	328	1464	245	0	3271			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.75	0.86			0.86				
vC, conflicting volume	2555	489			1710				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	684	0			1272				
iC, single (s)	6.9	7.0			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.4			2.2				
p0 queue free %	100	64			100				
cM capacity (veh/h)	285	922			478				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	328	488	488	488	245	1090	1090	1090	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	328	0	0	0	245	0	0	0	
cSH	922	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.36	0.29	0.29	0.29	0.14	0.64	0.64	0.64	
Queue Length 95th (m)	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.0	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			0.7						
Intersection Capacity Utilization			61.5%	ICU Level of Service		B			
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	773	338	1302	1527
v/c Ratio	0.76	0.79	0.47	0.50
Control Delay	42.3	47.8	18.4	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.3	47.8	18.4	12.2
Queue Length 50th (m)	90.0	79.2	60.1	50.2
Queue Length 95th (m)	96.5	103.8	m54.1	m43.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1448	601	2795	3039
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.56	0.47	0.50

**Intersection Summary**

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←←←	←	↑↑↑			↑↑↑
Traffic Volume (vph)	676	346	1198	0	0	1405
Future Volume (vph)	676	346	1198	0	0	1405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3385	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3385	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	735	376	1302	0	0	1527
RTOR Reduction (vph)	4	19	0	0	0	0
Lane Group Flow (vph)	769	319	1302			1527
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	36.0	36.0	72.4			72.4
Effective Green, g (s)	36.0	36.0	72.4			72.4
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1015	412	2794			3038
v/s Ratio Prot			0.28			c0.30
v/s Ratio Perm	0.23	c0.23				
v/c Ratio	0.76	0.77	0.47			0.50
Uniform Delay, d1	38.0	38.3	13.1			13.5
Progression Factor	1.00	1.00	1.29			0.83
Incremental Delay, d2	3.3	8.8	0.1			0.1
Delay (s)	41.3	47.1	16.9			11.2
Level of Service	D	D	B			B
Approach Delay (s)	43.1		16.9			11.2
Approach LOS	D		B			B

**Intersection Summary**

HCM 2000 Control Delay		22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio		0.59		
Actuated Cycle Length (s)		120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization		103.2%	ICU Level of Service	G
Analysis Period (min)		15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	603	587	559	1358	663	1605
v/c Ratio	1.20	1.21	1.19	1.06	1.26	0.77
Control Delay	143.6	144.3	140.7	80.7	160.6	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	143.6	144.3	140.7	80.7	160.6	25.1
Queue Length 50th (m)	~190.5	~184.2	~166.5	~129.4	~194.8	145.7
Queue Length 95th (m)	#266.0	#263.8	#241.5	#160.7	#269.1	165.7
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	504	487	468	1281	528	2073
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.20	1.21	1.19	1.06	1.26	0.77

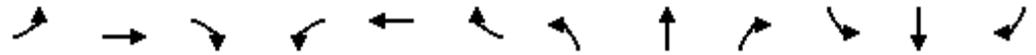
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	841	0	768	0	0	0	0	873	376	610	1477	0	
Future Volume (vph)	841	0	768	0	0	0	0	873	376	610	1477	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.93	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1445	1382					4052		1736	3505		
Flt Permitted	0.95	0.97	1.00					1.00		0.10	1.00		
Satd. Flow (perm)	1618	1445	1382					4052		187	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	914	0	835	0	0	0	0	949	409	663	1605	0	
RTOR Reduction (vph)	0	38	38	0	0	0	0	65	0	0	0	0	
Lane Group Flow (vph)	603	549	521	0	0	0	0	1293	0	663	1605	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	37.4	37.4	37.4					36.0		71.0	71.0		
Effective Green, g (s)	37.4	37.4	37.4					36.0		71.0	71.0		
Actuated g/C Ratio	0.31	0.31	0.31					0.30		0.59	0.59		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	504	450	430					1215		523	2073		
v/s Ratio Prot								0.32		c0.34	0.46		
v/s Ratio Perm	0.37	0.38	0.38							c0.41			
v/c Ratio	1.20	1.22	1.21					1.06		1.27	0.77		
Uniform Delay, d1	41.3	41.3	41.3					42.0		35.8	18.5		
Progression Factor	1.00	1.00	1.00					1.00		1.07	1.20		
Incremental Delay, d2	106.5	117.8	115.2					44.7		133.3	2.5		
Delay (s)	147.8	159.1	156.5					86.7		171.6	24.6		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		154.4			0.0			86.7			67.6		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			100.6									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.28										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			103.2%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	99	0	0	230	72	56
Future Volume (Veh/h)	99	0	0	230	72	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	0	0	250	78	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			108		358	108
vC1, stage 1 conf vol					108	
vC2, stage 2 conf vol					250	
vCu, unblocked vol			108		358	108
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	94
cM capacity (veh/h)			1483		749	946
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	108	250	78	61		
Volume Left	0	0	78	0		
Volume Right	0	0	0	61		
cSH	1700	1700	749	946		
Volume to Capacity	0.06	0.15	0.10	0.06		
Queue Length 95th (m)	0.0	0.0	2.8	1.7		
Control Delay (s)	0.0	0.0	10.4	9.1		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			39.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

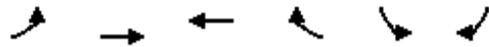
Future Total Phase 3 (2036) Traffic Analysis  
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	71	55	93	0	28	0	100	66	0	0	0
Future Volume (Veh/h)	0	71	55	93	0	28	0	100	66	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	60	101	0	30	0	109	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	30			137			279	309	77	406	339	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	30			137			279	309	77	406	339	0
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			100	81	93	100	100	100
cM capacity (veh/h)	1583			1447			637	563	984	416	542	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	77	60	101	30	181							
Volume Left	0	0	101	0	0							
Volume Right	0	60	0	30	72							
cSH	1700	1700	1447	1700	679							
Volume to Capacity	0.05	0.04	0.07	0.02	0.27							
Queue Length 95th (m)	0.0	0.0	1.8	0.0	8.6							
Control Delay (s)	0.0	0.0	7.7	0.0	12.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		5.9		12.2							
Approach LOS					B							
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			27.8%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total Phase 3 (2036) Traffic Analysis  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	28	65	0	101	17	56	59	132	1	20
Future Volume (Veh/h)	49	0	28	65	0	101	17	56	59	132	1	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	0	30	71	0	110	18	61	64	143	1	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	505	459	12	446	438	93	23			125		
vC1, stage 1 conf vol	298	298		129	129							
vC2, stage 2 conf vol	207	161		317	309							
vCu, unblocked vol	505	459	12	446	438	93	23			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	97	88	100	89	99			90		
cM capacity (veh/h)	507	540	1069	568	553	964	1592			1462		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	83	181	18	125	143	23						
Volume Left	53	71	18	0	143	0						
Volume Right	30	110	0	64	0	22						
cSH	626	757	1592	1700	1462	1700						
Volume to Capacity	0.13	0.24	0.01	0.07	0.10	0.01						
Queue Length 95th (m)	3.6	7.4	0.3	0.0	2.6	0.0						
Control Delay (s)	11.6	11.2	7.3	0.0	7.7	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	11.6	11.2	0.9		6.7							
Approach LOS	B	B										
Intersection Summary												
Average Delay			7.4									
Intersection Capacity Utilization			30.9%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	132	23	137	1	1	93
Future Volume (Veh/h)	132	23	137	1	1	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	143	25	149	1	1	101
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150				460	150
vC1, stage 1 conf vol					150	
vC2, stage 2 conf vol					311	
vCu, unblocked vol	150				460	150
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				100	89
cM capacity (veh/h)	1431				634	897
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	143	25	150	1	101	
Volume Left	143	0	0	1	0	
Volume Right	0	0	1	0	101	
cSH	1431	1700	1700	634	897	
Volume to Capacity	0.10	0.01	0.09	0.00	0.11	
Queue Length 95th (m)	2.7	0.0	0.0	0.0	3.0	
Control Delay (s)	7.8	0.0	0.0	10.7	9.5	
Lane LOS	A			B	A	
Approach Delay (s)	6.6		0.0	9.5		
Approach LOS				A		
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			27.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	95	38	59	93	0	126
Future Volume (Veh/h)	95	38	59	93	0	126
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	41	64	101	0	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			144		352	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			144		352	124
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	85
cM capacity (veh/h)			1438		616	927
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	144	165	137			
Volume Left	0	64	0			
Volume Right	41	0	137			
cSH	1700	1438	927			
Volume to Capacity	0.08	0.04	0.15			
Queue Length 95th (m)	0.0	1.1	4.1			
Control Delay (s)	0.0	3.2	9.6			
Lane LOS		A	A			
Approach Delay (s)	0.0	3.2	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			33.3%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2036) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	23	0	0	68	123	69	186	0	54	177	0
Future Volume (Veh/h)	1	23	0	0	68	123	69	186	0	54	177	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	25	0	0	74	134	75	202	0	59	192	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	833	662	192	674	662	202	192			202		
vC1, stage 1 conf vol	310	310		352	352							
vC2, stage 2 conf vol	523	352		322	310							
vCu, unblocked vol	833	662	192	674	662	202	192			202		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	95	100	100	85	84	95			96		
cM capacity (veh/h)	302	485	850	489	486	839	1381			1370		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	25	0	208	75	202	59	192				
Volume Left	1	0	0	0	75	0	59	0				
Volume Right	0	0	0	134	0	0	0	0				
cSH	302	485	1700	667	1381	1700	1370	1700				
Volume to Capacity	0.00	0.05	0.00	0.31	0.05	0.12	0.04	0.11				
Queue Length 95th (m)	0.1	1.3	0.0	10.6	1.4	0.0	1.1	0.0				
Control Delay (s)	17.0	12.8	0.0	12.8	7.8	0.0	7.7	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	13.0		12.8		2.1		1.8					
Approach LOS	B		B									
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			34.3%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	27	0	61	25	152
Future Volume (Veh/h)	194	27	0	61	25	152
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	29	0	66	27	165
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176	110	192			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	110	192			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	97	100			
cM capacity (veh/h)	814	944	1381			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	240	66	192			
Volume Left	211	0	0			
Volume Right	29	0	165			
cSH	828	1381	1700			
Volume to Capacity	0.29	0.00	0.11			
Queue Length 95th (m)	9.6	0.0	0.0			
Control Delay (s)	11.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.1	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	5.4					
Intersection Capacity Utilization	29.8%			ICU Level of Service	A	
Analysis Period (min)	15					

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	70	0	16	175	0
Future Volume (Veh/h)	7	70	0	16	175	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	76	0	17	190	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			84		63	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			84		63	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1513		943	1023
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	84	17	190			
Volume Left	0	0	190			
Volume Right	76	0	0			
cSH	1700	1513	943			
Volume to Capacity	0.05	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	6.0			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			21.1%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	99	126	0	302	0	0
Future Volume (Veh/h)	99	126	0	302	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	137	0	328	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			245		504	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			245		504	176
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1321		527	867
Direction, Lane #	EB 1	WB 1				
Volume Total	245	328				
Volume Left	0	0				
Volume Right	137	0				
cSH	1700	1700				
Volume to Capacity	0.14	0.19				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.0%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	1182	553	284	826	298	616	1826	491	318	1515	214
v/c Ratio	1.70	1.07	0.86	1.60	0.72	0.47	1.99	1.07	0.76	1.39	1.04	0.37
Control Delay	375.5	89.1	36.2	324.8	42.6	22.2	471.1	50.0	9.3	229.0	76.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	375.5	89.1	36.2	324.8	42.6	22.2	471.1	50.0	9.3	229.0	76.8	7.5
Queue Length 50th (m)	-90.3	-171.3	76.5	-101.9	112.5	39.0	-212.4	-188.8	87.5	-87.6	-148.7	2.5
Queue Length 95th (m)	#143.4	#215.0	#144.6	m#157.4	m133.8	m70.0	m#136.0	m93.6	m21.7	#146.9	#179.7	21.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	146	1101	640	177	1150	639	310	1712	642	228	1454	581
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.70	1.07	0.86	1.60	0.72	0.47	1.99	1.07	0.76	1.39	1.04	0.37

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1087	509	261	760	274	567	1680	452	293	1394	197
Future Volume (vph)	228	1087	509	261	760	274	567	1680	452	293	1394	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	200	5136	1531	211	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1182	553	284	826	298	616	1826	491	318	1515	214
RTOR Reduction (vph)	0	0	172	0	0	142	0	0	132	0	0	142
Lane Group Flow (vph)	248	1182	381	284	826	156	616	1826	359	318	1515	72
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.0	37.0	37.0	12.0	39.0	39.0	54.0	40.0	40.0	46.0	35.0	35.0
Effective Green, g (s)	10.0	37.0	37.0	12.0	39.0	39.0	54.0	40.0	40.0	46.0	35.0	35.0
Actuated g/C Ratio	0.08	0.31	0.31	0.10	0.32	0.32	0.45	0.33	0.33	0.38	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	146	1101	468	177	1150	497	304	1712	510	222	1454	439
v/s Ratio Prot	c0.14	c0.33		0.16	0.23		c0.27	0.36		0.13	0.30	
v/s Ratio Perm			0.25			0.10	c0.64		0.23	0.42		0.05
v/c Ratio	1.70	1.07	0.81	1.60	0.72	0.31	2.03	1.07	0.70	1.43	1.04	0.16
Uniform Delay, d1	55.0	41.5	38.3	54.0	35.7	30.4	36.2	40.0	34.8	31.9	42.5	31.6
Progression Factor	1.00	1.00	1.00	0.80	1.09	2.04	1.36	0.41	0.39	1.00	1.00	1.00
Incremental Delay, d2	341.9	49.2	14.3	293.9	3.4	1.4	462.9	31.4	0.8	218.5	35.3	0.8
Delay (s)	396.9	90.7	52.7	337.1	42.2	63.7	511.9	47.7	14.4	250.4	77.8	32.4
Level of Service	F	F	D	F	D	E	F	D	B	F	E	C
Approach Delay (s)		118.4			106.2			139.7			99.9	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			119.3									F
HCM 2000 Volume to Capacity ratio			1.65									
Actuated Cycle Length (s)			120.0							20.0		
Intersection Capacity Utilization			123.4%									H
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1851	72	196	1217	527	2
v/c Ratio	0.01	0.99	0.10	1.00	0.55	1.06	0.00
Control Delay	16.7	28.4	6.3	94.0	14.0	87.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	28.4	6.3	94.0	14.0	87.8	0.0
Queue Length 50th (m)	0.3	142.7	1.6	32.0	84.6	~116.0	0.0
Queue Length 95th (m)	m0.3	m129.5	m1.5	#82.4	102.8	#186.3	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	205	1876	730	196	2211	498	502
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.99	0.10	1.00	0.55	1.06	0.00

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2036) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1703	66	180	1120	0	34	0	451	0	0	2
Future Volume (vph)	3	1703	66	180	1120	0	34	0	451	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1801	3574	1342	1752	3539			1461			1615	
Flt Permitted	0.21	1.00	1.00	0.06	1.00			0.98			1.00	
Satd. Flow (perm)	390	3574	1342	112	3539			1435			1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1851	72	196	1217	0	37	0	490	0	0	2
RTOR Reduction (vph)	0	0	26	0	0	0	0	104	0	0	1	0
Lane Group Flow (vph)	3	1851	46	196	1217	0	0	423	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8		4			
Actuated Green, G (s)	63.0	63.0	63.0	75.0	75.0			33.0			33.0	
Effective Green, g (s)	63.0	63.0	63.0	75.0	75.0			33.0			33.0	
Actuated g/C Ratio	0.52	0.52	0.52	0.62	0.62			0.28			0.28	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	204	1876	704	193	2211			394			444	
v/s Ratio Prot		0.52		c0.08	0.34						0.00	
v/s Ratio Perm	0.01		0.03	c0.56				c0.29				
v/c Ratio	0.01	0.99	0.07	1.02	0.55			1.07			0.00	
Uniform Delay, d1	13.6	28.1	14.0	39.1	12.9			43.5			31.5	
Progression Factor	1.19	0.85	1.18	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	3.9	0.0	68.9	1.0			66.6			0.0	
Delay (s)	16.2	27.6	16.6	108.0	13.9			110.1			31.5	
Level of Service	B	C	B	F	B			F			C	
Approach Delay (s)		27.2			26.9			110.1			31.5	
Approach LOS		C			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			107.0%			ICU Level of Service		G				
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	506	492	195	186	330	2525	435	497	1176	82
v/c Ratio	0.58	0.78	1.39	0.35	0.31	0.68	1.48	0.70	1.01	0.67	0.13
Control Delay	61.0	35.7	230.8	35.8	11.1	28.1	251.2	30.0	40.5	32.2	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	35.7	230.8	35.8	11.1	28.1	251.2	30.0	40.5	32.2	9.4
Queue Length 50th (m)	22.6	36.0	~85.2	41.4	7.7	56.0	~315.1	61.8	113.3	101.3	4.9
Queue Length 95th (m)	38.8	52.4	#121.2	56.8	25.5	m75.5	#346.1	m73.3	m#135.7	m101.1	m4.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	312	1020	354	784	767	482	1707	623	491	1767	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.50	1.39	0.25	0.24	0.68	1.48	0.70	1.01	0.67	0.13

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

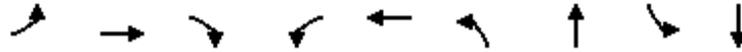
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	222	244	453	179	171	304	2323	400	457	1082	75	
Future Volume (vph)	88	222	244	453	179	171	304	2323	400	457	1082	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1780	3257		3400	1863	1567	1787	5136	1514	1787	4988	1528	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	1190	3257		3400	1863	1567	261	5136	1514	177	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	241	265	492	195	186	330	2525	435	497	1176	82	
RTOR Reduction (vph)	0	194	0	0	0	131	0	0	120	0	0	53	
Lane Group Flow (vph)	96	313	0	492	195	55	330	2525	315	497	1176	29	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	16.8	16.8		12.5	35.8	35.8	66.0	39.9	39.9	71.2	42.5	42.5	
Effective Green, g (s)	16.8	16.8		12.5	35.8	35.8	66.0	39.9	39.9	71.2	42.5	42.5	
Actuated g/C Ratio	0.14	0.14		0.10	0.30	0.30	0.55	0.33	0.33	0.59	0.35	0.35	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	455		354	555	467	475	1707	503	490	1766	541	
v/s Ratio Prot		c0.10		c0.14	0.10		0.15	c0.49		c0.24	0.24		
v/s Ratio Perm	0.08					0.04	0.23		0.21	0.36		0.02	
v/c Ratio	0.58	0.69		1.39	0.35	0.12	0.69	1.48	0.63	1.01	0.67	0.05	
Uniform Delay, d1	48.3	49.1		53.8	33.0	30.6	23.1	40.0	33.8	37.3	32.7	25.5	
Progression Factor	1.00	1.00		0.98	1.06	2.46	1.05	1.11	1.28	0.60	0.95	4.69	
Incremental Delay, d2	4.8	4.3		191.5	0.4	0.1	2.8	217.7	3.8	15.9	0.2	0.0	
Delay (s)	53.1	53.4		244.1	35.3	75.6	27.0	262.2	46.9	38.5	31.2	119.6	
Level of Service	D	D		F	D	E	C	F	D	D	C	F	
Approach Delay (s)		53.3			161.5			210.2			37.4		
Approach LOS		D			F			F			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			142.7		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.19										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					22.1			
Intersection Capacity Utilization			119.3%		ICU Level of Service					H			
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	721	43	13	543	49	73	98	273
v/c Ratio	0.58	0.51	0.04	0.03	0.25	0.79	0.30	0.61	0.65
Control Delay	5.3	2.9	0.3	9.1	7.8	116.6	21.5	65.0	14.3
Queue Delay	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	3.5	0.3	9.1	7.8	116.6	21.5	65.0	14.3
Queue Length 50th (m)	6.9	16.4	0.1	0.7	15.4	12.0	5.2	23.5	3.1
Queue Length 95th (m)	m11.7	m24.0	m0.2	m3.9	38.4	#27.9	18.3	39.3	27.9
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	915	1417	1191	467	2208	118	427	304	568
Starvation Cap Reductn	60	339	0	0	0	0	0	0	0
Spillback Cap Reductn	0	172	0	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.67	0.04	0.03	0.25	0.42	0.17	0.32	0.48

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	663	40	12	429	71	45	21	46	90	13	238
Future Volume (vph)	396	663	40	12	429	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1783	1827	1528	1782	3456		1770	1666		1748	1587	
Flt Permitted	0.42	1.00	1.00	0.39	1.00		0.27	1.00		0.71	1.00	
Satd. Flow (perm)	790	1827	1528	734	3456		507	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	721	43	13	466	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	6	0	6	0	0	44	0	0	227	0
Lane Group Flow (vph)	430	721	37	13	537	0	49	29	0	98	46	0
Confl. Peds. (#/hr)	5		11	11		5			4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	93.1	93.1	93.1	76.5	76.5		14.7	14.7		14.7	14.7	
Effective Green, g (s)	93.1	93.1	93.1	76.5	76.5		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.78	0.78	0.78	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	725	1417	1185	467	2203		62	204		159	194	
v/s Ratio Prot	c0.07	0.39			0.16			0.02				0.03
v/s Ratio Perm	c0.39		0.02	0.02			c0.10			0.08		
v/c Ratio	0.59	0.51	0.03	0.03	0.24		0.79	0.14		0.62	0.24	
Uniform Delay, d1	4.2	5.0	3.1	8.0	9.3		51.2	47.0		50.0	47.6	
Progression Factor	0.90	0.35	0.14	0.77	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.8	0.0	0.1	0.3		48.2	0.3		6.9	0.6	
Delay (s)	4.6	2.5	0.4	6.3	7.0		99.4	47.3		56.9	48.2	
Level of Service	A	A	A	A	A		F	D		E	D	
Approach Delay (s)		3.2			7.0			68.2			50.5	
Approach LOS		A			A			E			D	

Intersection Summary		
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.64	B
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	94.3%	15.2
Analysis Period (min)	15	ICU Level of Service
		F

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	961	79	474	118	195	89	60
v/c Ratio	0.80	0.21	0.37	0.40	0.47	0.37	0.11
Control Delay	19.1	8.9	8.9	42.7	3.9	43.0	0.4
Queue Delay	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	8.9	8.9	42.7	3.9	43.0	0.4
Queue Length 50th (m)	174.5	8.1	53.7	24.7	0.0	18.3	0.0
Queue Length 95th (m)	271.3	m16.4	m77.8	40.3	0.0	31.9	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1205	384	1282	353	503	371	658
Starvation Cap Reductn	85	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.21	0.37	0.33	0.39	0.24	0.09

Intersection Summary

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

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Future Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.97		1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1755		1800	1817		1770	1511		1792	1615	
Flt Permitted		0.97		0.29	1.00		0.47	1.00		0.62	1.00	
Satd. Flow (perm)		1708		546	1817		882	1511		1179	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	748	179	79	379	95	118	0	195	89	0	60
RTOR Reduction (vph)	0	5	0	0	5	0	0	177	0	0	57	0
Lane Group Flow (vph)	0	956	0	79	469	0	118	18	0	89	3	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		83.2		83.2	83.2		24.6	11.0		16.7	6.4	
Effective Green, g (s)		83.2		83.2	83.2		24.6	11.0		16.7	6.4	
Actuated g/C Ratio		0.69		0.69	0.69		0.21	0.09		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1184		378	1259		291	138		216	86	
v/s Ratio Prot					0.26		c0.05	0.01		0.04	0.00	
v/s Ratio Perm		c0.56		0.14			c0.03			0.02		
v/c Ratio		0.81		0.21	0.37		0.41	0.13		0.41	0.04	
Uniform Delay, d1		12.8		6.6	7.6		40.7	50.1		46.8	53.9	
Progression Factor		1.03		1.05	1.09		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.5		1.2	0.8		0.9	0.4		1.3	0.2	
Delay (s)		18.7		8.2	9.1		41.6	50.5		48.1	54.1	
Level of Service		B		A	A		D	D		D	D	
Approach Delay (s)		18.7			9.0			47.2			50.5	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				15.5	
Intersection Capacity Utilization			102.3%				ICU Level of Service				G	
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	731	210	96	446	8	64	0	189	11	0	0
Future Volume (Veh/h)	5	731	210	96	446	8	64	0	189	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	795	228	104	485	9	70	0	205	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.60			0.60	0.60	0.60	0.60	0.60	0.60
vC, conflicting volume	498			1024			1618	1626	910	1826	1736	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			705			1698	1710	515	2044	1893	494
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			0	100	39	0	100	100
cM capacity (veh/h)	1073			540			37	44	337	8	34	577
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1028	598	70	205	12							
Volume Left	5	104	70	0	12							
Volume Right	228	9	0	205	0							
cSH	1073	540	37	337	8							
Volume to Capacity	0.00	0.19	1.88	0.61	1.44							
Queue Length 95th (m)	0.1	5.7	60.6	30.2	18.9							
Control Delay (s)	0.1	5.3	650.1	30.9	1072.9							
Lane LOS	A	A	F	D	F							
Approach Delay (s)	0.1	5.3	188.5		1072.9							
Approach LOS			F		F							
Intersection Summary												
Average Delay			35.6									
Intersection Capacity Utilization			102.5%		ICU Level of Service				G			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Future Volume (Veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	3	397	2	8	3	179	104	0	2	38	221
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	622	614	150	1014	725	104	259			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	614	150	1014	725	104	259			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	56	98	97	100	86			100		
cM capacity (veh/h)	344	260	902	109	230	873	1317			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	750	13	283	261								
Volume Left	350	2	179	2								
Volume Right	397	3	0	221								
cSH	511	229	1317	1048								
Volume to Capacity	1.47	0.06	0.14	0.00								
Queue Length 95th (m)	299.3	1.4	3.8	0.0								
Control Delay (s)	243.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	243.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			140.9									
Intersection Capacity Utilization			85.8%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	345	2798	375	0	1913			
Future Volume (Veh/h)	0	345	2798	375	0	1913			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	375	3041	408	0	2079			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.66	0.56			0.56				
vC, conflicting volume	3734	1014			3449				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1364	0			2630				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	39			100				
cM capacity (veh/h)	93	613			92				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	375	1014	1014	1014	408	693	693	693	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	375	0	0	0	408	0	0	0	
cSH	613	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.61	0.60	0.60	0.60	0.24	0.41	0.41	0.41	
Queue Length 95th (m)	33.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	19.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	C								
Approach Delay (s)	19.7	0.0					0.0		
Approach LOS	C								
Intersection Summary									
Average Delay			1.3						
Intersection Capacity Utilization			82.1%		ICU Level of Service		E		
Analysis Period (min)	15								



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	660	339	2784	949
v/c Ratio	0.83	0.89	0.85	0.29
Control Delay	50.9	68.2	17.7	6.5
Queue Delay	0.0	0.0	27.7	0.0
Total Delay	50.9	68.2	45.4	6.5
Queue Length 50th (m)	76.9	85.9	170.1	17.7
Queue Length 95th (m)	99.3	#141.0	m71.4	m19.5
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	867	412	3258	3226
Starvation Cap Reductn	0	0	622	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.82	1.06	0.29

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	295	624	2561	0	0	873
Future Volume (vph)	295	624	2561	0	0	873
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3039	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3039	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	321	678	2784	0	0	949
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	659	338	2784	0	0	949
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.5	31.5	76.9			76.9
Effective Green, g (s)	31.5	31.5	76.9			76.9
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	797	378	3258			3227
v/s Ratio Prot			c0.55			0.19
v/s Ratio Perm	0.22	c0.23				
v/c Ratio	0.83	0.89	0.85			0.29
Uniform Delay, d1	41.7	42.6	17.1			9.5
Progression Factor	1.00	1.00	0.96			0.64
Incremental Delay, d2	7.0	22.4	0.3			0.1
Delay (s)	48.7	65.0	16.7			6.3
Level of Service	D	E	B			A
Approach Delay (s)	54.2		16.7			6.3
Approach LOS	D		B			A

Intersection Summary

HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	132.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	965	955	567	2292	478	921
v/c Ratio	1.47	1.54	0.98	1.35	1.53	0.55
Control Delay	250.3	280.2	64.2	192.2	280.8	22.6
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	250.3	280.2	64.2	192.6	280.8	22.6
Queue Length 50th (m)	~345.6	~368.0	126.1	~270.1	~149.0	80.3
Queue Length 95th (m)	#430.4	#457.3	#209.4	#300.6	#218.2	108.9
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	620	577	1702	313	1665
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	211	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.47	1.54	0.98	1.54	1.53	0.55

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1707	2	580	0	0	0	0	1662	446	440	847	0
Future Volume (vph)	1707	2	580	0	0	0	0	1662	446	440	847	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.99	0.85					0.97		1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1698	1602	1334					4752		1752	3223	
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00	
Satd. Flow (perm)	1698	1602	1334					4752		164	3223	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1855	2	630	0	0	0	0	1807	485	478	921	0
RTOR Reduction (vph)	0	2	61	0	0	0	0	40	0	0	0	0
Lane Group Flow (vph)	965	953	506	0	0	0	0	2252	0	478	921	0
Confl. Peds. (#/hr)								5		7	7	5
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	46.4	46.4	46.4					42.0		62.0	62.0	
Effective Green, g (s)	46.4	46.4	46.4					42.0		62.0	62.0	
Actuated g/C Ratio	0.39	0.39	0.39					0.35		0.52	0.52	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	656	619	515					1663		309	1665	
v/s Ratio Prot								0.47		c0.22	0.29	
v/s Ratio Perm	0.57	0.60	0.38							c0.58		
v/c Ratio	1.47	1.54	0.98					1.35		1.55	0.55	
Uniform Delay, d1	36.8	36.8	36.4					39.0		37.8	19.6	
Progression Factor	1.00	1.00	1.00					1.00		1.07	1.07	
Incremental Delay, d2	220.2	251.0	34.8					163.3		260.8	1.3	
Delay (s)	257.0	287.8	71.2					202.3		301.4	22.3	
Level of Service	F	F	E					F		F	C	
Approach Delay (s)		226.5			0.0			202.3			117.6	
Approach LOS		F			A			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			192.9									F
HCM 2000 Volume to Capacity ratio			1.58									
Actuated Cycle Length (s)			120.0							14.6		
Intersection Capacity Utilization			132.8%								H	
Analysis Period (min)			15									

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	162	0	0	230	66	56
Future Volume (Veh/h)	162	0	0	230	66	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	0	0	250	72	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			176		426	176
vC1, stage 1 conf vol	176					
vC2, stage 2 conf vol	250					
vCu, unblocked vol			176		426	176
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)	5.4					
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	93
cM capacity (veh/h)			1400		723	867
Direction, Lane #						
	EB 1	WB 1	NB 1	NB 2		
Volume Total	176	250	72	61		
Volume Left	0	0	72	0		
Volume Right	0	0	0	61		
cSH	1700	1700	723	867		
Volume to Capacity	0.10	0.15	0.10	0.07		
Queue Length 95th (m)	0.0	0.0	2.6	1.8		
Control Delay (s)	0.0	0.0	10.5	9.5		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS	B					
Intersection Summary						
Average Delay	2.4					
Intersection Capacity Utilization			47.3%	ICU Level of Service		A
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2036) Traffic Analysis  
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	137	76	91	0	21	0	101	46	0	0	0
Future Volume (Veh/h)	0	137	76	91	0	21	0	101	46	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	149	83	99	0	23	0	110	50	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	23			232			347	370	149	452	430	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			232			347	370	149	452	430	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			100	79	94	100	100	100
cM capacity (veh/h)	1592			1336			573	518	898	387	479	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	149	83	99	23	160							
Volume Left	0	0	99	0	0							
Volume Right	0	83	0	23	50							
cSH	1700	1700	1336	1700	597							
Volume to Capacity	0.09	0.05	0.07	0.01	0.27							
Queue Length 95th (m)	0.0	0.0	1.9	0.0	8.6							
Control Delay (s)	0.0	0.0	7.9	0.0	13.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.4		13.2							
Approach LOS					B							
Intersection Summary												
Average Delay			5.6									
Intersection Capacity Utilization			30.4%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total Phase 3 (2036) Traffic Analysis  
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	2	22	137	2	197	29	2	109	208	2	33
Future Volume (Veh/h)	40	2	22	137	2	197	29	2	109	208	2	33
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	2	24	149	2	214	32	2	118	226	2	36
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			TWLTL		
Median storage (veh)							2			2		
Upstream signal (m)												61
pX, platoon unblocked												
vC, conflicting volume	753	656	20	604	615	61	38			120		
vC1, stage 1 conf vol	472	472		125	125							
vC2, stage 2 conf vol	281	184		479	490							
vCu, unblocked vol	753	656	20	604	615	61	38			120		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	98	65	100	79	98			85		
cM capacity (veh/h)	312	421	1058	423	418	1004	1572			1468		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	69	365	32	120	226	38						
Volume Left	43	149	32	0	226	0						
Volume Right	24	214	0	118	0	36						
cSH	418	640	1572	1700	1468	1700						
Volume to Capacity	0.17	0.57	0.02	0.07	0.15	0.02						
Queue Length 95th (m)	4.7	28.8	0.5	0.0	4.4	0.0						
Control Delay (s)	15.3	17.8	7.3	0.0	7.9	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	15.3	17.8	1.5		6.8							
Approach LOS	C	C										
Intersection Summary												
Average Delay			11.3									
Intersection Capacity Utilization			45.9%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	28	124	5	5	155
Future Volume (Veh/h)	190	28	124	5	5	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	207	30	135	5	5	168
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	140				582	138
vC1, stage 1 conf vol					138	
vC2, stage 2 conf vol					444	
vCu, unblocked vol	140				582	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				99	82
cM capacity (veh/h)	1443				531	911
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	207	30	140	5	168	
Volume Left	207	0	0	5	0	
Volume Right	0	0	5	0	168	
cSH	1443	1700	1700	531	911	
Volume to Capacity	0.14	0.02	0.08	0.01	0.18	
Queue Length 95th (m)	4.0	0.0	0.0	0.2	5.4	
Control Delay (s)	7.9	0.0	0.0	11.8	9.8	
Lane LOS	A			B	A	
Approach Delay (s)	6.9		0.0	9.9		
Approach LOS				A		
Intersection Summary						
Average Delay			6.1			
Intersection Capacity Utilization			30.7%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	96	79	94	91	0	129
Future Volume (Veh/h)	96	79	94	91	0	129
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	104	86	102	99	0	140
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			190		450	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			190		450	147
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	84
cM capacity (veh/h)			1384		525	900
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	190	201	140			
Volume Left	0	102	0			
Volume Right	86	0	140			
cSH	1700	1384	900			
Volume to Capacity	0.11	0.07	0.16			
Queue Length 95th (m)	0.0	1.9	4.4			
Control Delay (s)	0.0	4.3	9.7			
Lane LOS	A		A			
Approach Delay (s)	0.0	4.3	9.7			
Approach LOS	A					
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			37.9%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2036) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	28	0	2	21	36	74	165	0	82	224	0
Future Volume (Veh/h)	2	28	0	2	21	36	74	165	0	82	224	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	30	0	2	23	39	80	179	0	89	243	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			TWLTL		
Median storage (veh)										2		
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	810	760	243	775	760	179	243			179		
vC1, stage 1 conf vol	421	421		339	339							
vC2, stage 2 conf vol	390	339		436	421							
vCu, unblocked vol	810	760	243	775	760	179	243			179		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	93	100	100	95	95	94			94		
cM capacity (veh/h)	406	441	796	415	430	864	1323			1397		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	2	30	2	62	80	179	89	243				
Volume Left	2	0	2	0	80	0	89	0				
Volume Right	0	0	0	39	0	0	0	0				
cSH	406	441	415	629	1323	1700	1397	1700				
Volume to Capacity	0.00	0.07	0.00	0.10	0.06	0.11	0.06	0.14				
Queue Length 95th (m)	0.1	1.7	0.1	2.6	1.5	0.0	1.6	0.0				
Control Delay (s)	13.9	13.8	13.7	11.4	7.9	0.0	7.8	0.0				
Lane LOS	B	B	B	B	A		A					
Approach Delay (s)	13.8		11.4		2.4		2.1					
Approach LOS	B		B									
Intersection Summary												
Average Delay				3.6								
Intersection Capacity Utilization				29.2%			ICU Level of Service			A		
Analysis Period (min)				15								



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	165	48	0	62	39	185
Future Volume (Veh/h)	165	48	0	62	39	185
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	179	52	0	67	42	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	210	142	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210	142	243			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	94	100			
cM capacity (veh/h)	779	905	1323			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	231	67	243			
Volume Left	179	0	0			
Volume Right	52	0	201			
cSH	804	1323	1700			
Volume to Capacity	0.29	0.00	0.14			
Queue Length 95th (m)	9.5	0.0	0.0			
Control Delay (s)	11.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.3	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay				4.8		
Intersection Capacity Utilization				32.2%	ICU Level of Service	A
Analysis Period (min)				15		

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	13	46	2	12	45	2
Future Volume (Veh/h)	13	46	2	12	45	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	50	2	13	49	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			64		56	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			64		56	39
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	100
cM capacity (veh/h)			1538		950	1033
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	64	15	51			
Volume Left	0	2	49			
Volume Right	50	0	2			
cSH	1700	1538	953			
Volume to Capacity	0.04	0.00	0.05			
Queue Length 95th (m)	0.0	0.0	1.4			
Control Delay (s)	0.0	1.0	9.0			
Lane LOS		A	A			
Approach Delay (s)	0.0	1.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			13.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	162	213	0	345	0	0
Future Volume (Veh/h)	162	213	0	345	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	232	0	375	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	408			667	292	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408			667	292	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	100	
cM capacity (veh/h)	1151			424	747	
<b>Direction, Lane #</b>						
	EB 1	WB 1				
Volume Total	408	375				
Volume Left	0	0				
Volume Right	232	0				
cSH	1700	1700				
Volume to Capacity	0.24	0.22				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	47.3%			ICU Level of Service	A	
Analysis Period (min)	15					

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	852	667	308	914	264	526	1447	413	253	1371	193
v/c Ratio	1.10	0.77	1.07	1.60	0.81	0.40	1.78	0.89	0.63	1.02	0.92	0.33
Control Delay	145.3	43.4	82.3	324.4	45.6	11.4	376.9	36.0	18.6	93.0	51.6	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	145.3	43.4	82.3	324.4	45.6	11.4	376.9	36.0	18.6	93.0	51.6	6.1
Queue Length 50th (m)	-54.5	100.6	-141.2	-112.2	84.5	4.0	-170.2	133.8	74.0	-48.0	120.3	0.0
Queue Length 95th (m)	#103.0	125.8	#216.2	#171.3	126.2	39.4	m#156.2	m122.0	m69.5	#102.0	#148.4	17.4
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	178	1101	625	193	1131	656	295	1626	652	248	1498	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.77	1.07	1.60	0.81	0.40	1.78	0.89	0.63	1.02	0.92	0.33

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	179	784	614	283	841	243	484	1331	380	233	1261	178	
Future Volume (vph)	179	784	614	283	841	243	484	1331	380	233	1261	178	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	200	5136	1533	215	5136	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	195	852	667	308	914	264	526	1447	413	253	1371	193	
RTOR Reduction (vph)	0	0	157	0	0	163	0	0	167	0	0	137	
Lane Group Flow (vph)	195	852	510	308	914	101	526	1447	246	253	1371	56	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Effective Green, g (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Actuated g/C Ratio	0.10	0.31	0.31	0.11	0.32	0.32	0.44	0.32	0.32	0.39	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	178	1101	468	193	1131	493	288	1626	485	241	1498	450	
v/s Ratio Prot	0.11	0.24		c0.17	0.26		c0.23	0.28		0.10	0.27		
v/s Ratio Perm			c0.34			0.06	c0.58		0.16	0.31		0.04	
v/c Ratio	1.10	0.77	1.09	1.60	0.81	0.20	1.83	0.89	0.51	1.05	0.92	0.13	
Uniform Delay, d1	54.0	37.7	41.5	53.5	37.7	30.0	35.1	39.0	33.4	32.0	41.1	31.2	
Progression Factor	1.00	1.00	1.00	0.99	1.04	1.78	0.41	0.82	1.20	1.00	1.00	1.00	
Incremental Delay, d2	95.3	5.3	68.1	289.6	5.8	0.9	377.6	3.5	1.6	71.7	10.2	0.6	
Delay (s)	149.3	43.0	109.6	342.4	45.1	54.1	392.0	35.7	41.6	103.7	51.3	31.8	
Level of Service	F	D	F	F	D	D	F	D	D	F	D	C	
Approach Delay (s)		81.0			108.3			115.2			56.5		
Approach LOS		F			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			91.5		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.56										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			120.0%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1414	123	277	1303	356	2
v/c Ratio	0.02	0.64	0.13	0.66	0.46	0.81	0.01
Control Delay	26.2	35.2	18.4	21.5	5.4	25.3	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	35.2	18.4	21.5	5.4	25.3	42.5
Queue Length 50th (m)	0.8	182.5	13.8	22.3	40.3	14.1	0.5
Queue Length 95th (m)	m1.3	m211.3	m24.8	57.2	84.0	45.2	2.9
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	206	2199	969	461	2826	597	308
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.64	0.13	0.60	0.46	0.60	0.01

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1301	113	255	1199	0	15	2	311	1	1	0
Future Volume (vph)	5	1301	113	255	1199	0	15	2	311	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1605			1850	
Flt Permitted	0.21	1.00	1.00	0.12	1.00			0.99			0.70	
Satd. Flow (perm)	335	3574	1541	221	3574			1584			1320	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1414	123	277	1303	0	16	2	338	1	1	0
RTOR Reduction (vph)	0	0	21	0	0	0	0	265	0	0	0	0
Lane Group Flow (vph)	5	1414	102	277	1303	0	0	91	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	73.8	73.8	73.8	94.9	94.9			13.1			13.1	
Effective Green, g (s)	73.8	73.8	73.8	94.9	94.9			13.1			13.1	
Actuated g/C Ratio	0.61	0.61	0.61	0.79	0.79			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	206	2198	947	413	2826			172			144	
v/s Ratio Prot		0.40		c0.10	0.36							
v/s Ratio Perm	0.01		0.07	c0.43				c0.06			0.00	
v/c Ratio	0.02	0.64	0.11	0.67	0.46			0.53			0.01	
Uniform Delay, d1	9.0	14.7	9.5	19.6	4.1			50.5			47.7	
Progression Factor	1.79	1.99	2.38	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.9	0.1	4.2	0.5			3.1			0.0	
Delay (s)	16.3	30.2	22.8	23.9	4.7			53.7			47.7	
Level of Service	B	C	C	C	A			D			D	
Approach Delay (s)		29.6			8.0			53.7			47.7	
Approach LOS		C			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.3			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			86.2%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	462	746	190	176	291	1710	226	613	954	99
v/c Ratio	0.57	0.76	1.57	0.31	0.29	0.64	1.21	0.43	1.10	0.49	0.15
Control Delay	62.0	37.1	296.2	27.6	5.7	23.6	141.2	19.4	74.7	20.8	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	37.1	296.2	27.6	5.7	23.6	141.2	19.4	74.7	20.8	2.9
Queue Length 50th (m)	21.0	34.2	~136.9	37.6	9.2	33.2	~195.3	18.1	~146.6	64.2	2.4
Queue Length 95th (m)	36.8	50.0	m#164.8	m46.6	m18.1	64.9	#218.9	43.3	m#174.0	m77.0	m4.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	311	1007	476	862	793	475	1408	522	558	1962	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.46	1.57	0.22	0.22	0.61	1.21	0.43	1.10	0.49	0.15

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

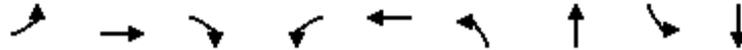
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	219	206	686	175	162	268	1573	208	564	878	91	
Future Volume (vph)	82	219	206	686	175	162	268	1573	208	564	878	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1767	3293		3467	1900	1536	1786	5136	1571	1805	5136	1567	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.29	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1186	3293		3467	1900	1536	541	5136	1571	212	5136	1567	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	238	224	746	190	176	291	1710	226	613	954	99	
RTOR Reduction (vph)	0	168	0	0	0	119	0	0	92	0	0	61	
Lane Group Flow (vph)	89	294	0	746	190	57	291	1710	134	613	954	38	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	15.9	15.9		16.5	38.9	38.9	52.6	32.9	32.9	68.5	45.8	45.8	
Effective Green, g (s)	15.9	15.9		16.5	38.9	38.9	52.6	32.9	32.9	68.5	45.8	45.8	
Actuated g/C Ratio	0.13	0.13		0.14	0.32	0.32	0.44	0.27	0.27	0.57	0.38	0.38	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	157	436		476	615	497	441	1408	430	553	1960	598	
v/s Ratio Prot		c0.09		c0.22	0.10		0.11	c0.33		c0.30	0.19		
v/s Ratio Perm	0.08					0.04	0.18		0.09	0.33		0.02	
v/c Ratio	0.57	0.67		1.57	0.31	0.11	0.66	1.21	0.31	1.11	0.49	0.06	
Uniform Delay, d1	48.8	49.6		51.8	30.5	28.5	22.6	43.5	34.6	35.7	28.2	23.5	
Progression Factor	1.00	1.00		0.91	0.89	1.26	1.19	1.00	1.09	0.74	0.69	0.72	
Incremental Delay, d2	4.6	4.1		263.1	0.2	0.1	3.3	102.8	1.7	51.7	0.1	0.0	
Delay (s)	53.5	53.7		310.4	27.4	35.9	30.2	146.5	39.3	78.1	19.6	16.9	
Level of Service	D	D		F	C	D	C	F	D	E	B	B	
Approach Delay (s)		53.6			218.6			120.4			40.9		
Approach LOS		D			F			F			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			109.6		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.15										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			117.0%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	545	64	34	507	112	102	128	624
v/c Ratio	0.79	0.54	0.08	0.13	0.47	1.78	0.16	0.28	0.66
Control Delay	19.1	9.8	2.5	31.8	29.6	437.7	11.9	26.7	6.2
Queue Delay	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	10.6	2.5	31.8	29.6	437.7	11.9	26.7	6.2
Queue Length 50th (m)	38.8	46.3	0.7	6.4	60.4	-39.3	7.5	20.6	5.5
Queue Length 95th (m)	m51.0	m50.0	m1.6	14.8	75.0	#58.2	18.1	34.0	31.8
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	644	1009	850	270	1088	76	773	561	1029
Starvation Cap Reductn	12	205	0	0	0	0	0	0	0
Spillback Cap Reductn	0	26	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.68	0.08	0.13	0.47	1.47	0.13	0.23	0.61

**Intersection Summary**

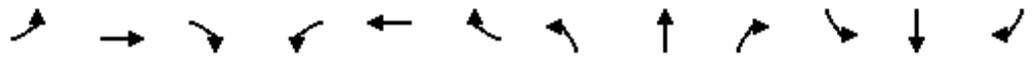
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	501	59	31	356	110	103	46	48	118	34	540
Future Volume (vph)	433	501	59	31	356	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1863	1543	1784	3416		1805	1717		1782	1607	
Flt Permitted	0.34	1.00	1.00	0.46	1.00		0.09	1.00		0.69	1.00	
Satd. Flow (perm)	639	1863	1543	865	3416		178	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	545	64	34	387	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	14	0	21	0	0	33	0	0	378	0
Lane Group Flow (vph)	471	545	50	34	486	0	112	69	0	128	246	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	65.0	65.0	65.0	37.5	37.5		42.8	42.8		42.8	42.8	
Effective Green, g (s)	65.0	65.0	65.0	37.5	37.5		42.8	42.8		42.8	42.8	
Actuated g/C Ratio	0.54	0.54	0.54	0.31	0.31		0.36	0.36		0.36	0.36	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	583	1009	835	270	1067		63	612		462	573	
v/s Ratio Prot	c0.16	0.29			0.14			0.04			0.15	
v/s Ratio Perm	c0.27		0.03	0.04			c0.63			0.10		
v/c Ratio	0.81	0.54	0.06	0.13	0.46		1.78	0.11		0.28	0.43	
Uniform Delay, d1	18.2	17.8	13.0	29.5	33.1		38.6	25.9		27.6	29.3	
Progression Factor	0.72	0.42	0.24	0.79	0.80		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.1	0.1	0.9	1.3		406.3	0.1		0.3	0.5	
Delay (s)	17.8	8.6	3.2	24.2	27.7		444.9	25.9		27.9	29.9	
Level of Service	B	A	A	C	C		F	C		C	C	
Approach Delay (s)		12.3			27.5			245.2			29.5	
Approach LOS		B			C			F			C	

Intersection Summary

HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	779	96	507	133	230	100	86
v/c Ratio	0.64	0.22	0.41	0.43	0.44	0.41	0.15
Control Delay	5.6	10.5	11.2	42.6	2.7	43.3	0.5
Queue Delay	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	10.5	11.2	42.6	2.7	43.3	0.5
Queue Length 50th (m)	16.4	10.4	60.8	27.7	0.0	20.5	0.0
Queue Length 95th (m)	22.3	m21.8	100.2	43.9	0.0	34.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1216	441	1244	449	607	442	676
Starvation Cap Reductn	184	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.22	0.41	0.30	0.38	0.23	0.13

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Future Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.96		1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1733	1773		1800	1551		1756	1583	
Flt Permitted		0.98		0.35	1.00		0.46	1.00		0.62	1.00	
Satd. Flow (perm)		1736		632	1773		877	1551		1155	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	523	234	96	337	170	133	0	230	100	0	86
RTOR Reduction (vph)	0	8	0	0	9	0	0	209	0	0	81	0
Lane Group Flow (vph)	0	771	0	96	498	0	133	21	0	100	5	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		82.4		82.4	82.4		25.4	11.1		17.4	6.4	
Effective Green, g (s)		82.4		82.4	82.4		25.4	11.1		17.4	6.4	
Actuated g/C Ratio		0.69		0.69	0.69		0.21	0.09		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1192		433	1217		306	143		222	84	
v/s Ratio Prot					0.28		c0.06	0.01		0.04	0.00	
v/s Ratio Perm		c0.44		0.15			c0.04			0.02		
v/c Ratio		0.65		0.22	0.41		0.43	0.15		0.45	0.05	
Uniform Delay, d1		10.6		6.9	8.2		40.3	50.1		46.5	53.9	
Progression Factor		0.30		1.23	1.30		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.5		1.2	1.0		1.0	0.5		1.5	0.3	
Delay (s)		5.7		9.7	11.7		41.3	50.6		48.0	54.2	
Level of Service		A		A	B		D	D		D	D	
Approach Delay (s)		5.7			11.3			47.2			50.9	
Approach LOS		A			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			87.9%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	543	240	102	480	28	77	0	246	25	0	1
Future Volume (Veh/h)	9	543	240	102	480	28	77	0	246	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	590	261	111	522	30	84	0	267	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	0.75
vC, conflicting volume	552			851			1502	1514	722	1768	1630	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			629			1503	1519	457	1860	1674	539
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			85			0	100	41	0	100	100
cM capacity (veh/h)	943			718			66	75	452	15	60	546
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	861	663	84	267	28							
Volume Left	10	111	84	0	27							
Volume Right	261	30	0	267	1							
cSH	943	718	66	452	16							
Volume to Capacity	0.01	0.15	1.28	0.59	1.79							
Queue Length 95th (m)	0.3	4.4	55.1	29.8	32.8							
Control Delay (s)	0.3	3.9	312.2	23.8	876.2							
Lane LOS	A	A	F	C	F							
Approach Delay (s)	0.3	3.9	92.8		876.2							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			31.5									
Intersection Capacity Utilization			107.4%		ICU Level of Service				G			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Future Volume (Veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	232	1	516	0	0	0	248	49	0	0	82	261
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	760	758	212	1274	888	52	343			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	758	212	1274	888	52	343			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	99	38	100	100	100	80			100		
cM capacity (veh/h)	270	194	833	47	227	1019	1227			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	749	0	297	343								
Volume Left	232	0	248	0								
Volume Right	516	0	0	261								
cSH	505	1700	1227	1571								
Volume to Capacity	1.48	0.06	0.20	0.00								
Queue Length 95th (m)	303.1	0.0	6.0	0.0								
Control Delay (s)	249.4	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	249.4	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			136.1									
Intersection Capacity Utilization			88.9%		ICU Level of Service					E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	420	1758	421	0	1957			
Future Volume (Veh/h)	0	420	1758	421	0	1957			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	457	1911	458	0	2127			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.90	0.83				0.83			
vC, conflicting volume	2623	640				2372			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1396	0				1933			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	49				100			
cM capacity (veh/h)	120	902				255			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	457	637	637	637	458	709	709	709	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	457	0	0	0	458	0	0	0	
cSH	902	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.51	0.37	0.37	0.37	0.27	0.42	0.42	0.42	
Queue Length 95th (m)	23.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	13.0	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			1.2						
Intersection Capacity Utilization			66.6%		ICU Level of Service		C		
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	523	312	1760	861
v/c Ratio	0.62	0.81	0.53	0.26
Control Delay	40.7	55.6	14.8	15.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.7	55.6	14.8	15.1
Queue Length 50th (m)	57.5	76.8	71.3	34.4
Queue Length 95th (m)	67.2	103.1	m66.9	m35.5
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1223	554	3305	3305
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.56	0.53	0.26

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	193	575	1619	0	0	792
Future Volume (vph)	193	575	1619	0	0	792
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3231	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3231	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	625	1760	0	0	861
RTOR Reduction (vph)	8	8	0	0	0	0
Lane Group Flow (vph)	515	304	1760	0	0	861
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.2	31.2	77.2			77.2
Effective Green, g (s)	31.2	31.2	77.2			77.2
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	840	378	3304			3304
v/s Ratio Prot			c0.34			0.17
v/s Ratio Perm	0.16	c0.21				
v/c Ratio	0.61	0.80	0.53			0.26
Uniform Delay, d1	39.1	41.5	11.6			9.2
Progression Factor	1.00	1.00	1.16			1.49
Incremental Delay, d2	1.3	11.7	0.1			0.1
Delay (s)	40.4	53.3	13.5			13.7
Level of Service	D	D	B			B
Approach Delay (s)	45.2		13.5			13.7
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			102.5%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	745	742	481	1255	561	540
v/c Ratio	1.09	1.09	0.64	1.06	1.12	0.30
Control Delay	96.1	92.7	16.5	84.2	120.1	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.1	92.7	16.5	84.2	120.1	17.0
Queue Length 50th (m)	~218.5	~217.6	43.1	~119.5	~146.8	33.1
Queue Length 95th (m)	#298.4	#301.8	84.0	#150.6	#218.7	51.3
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	684	683	749	1188	500	1787
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.09	0.64	1.06	1.12	0.30

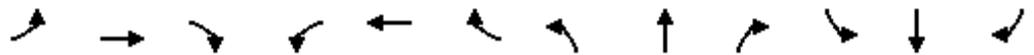
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1318	0	492	0	0	0	0	841	314	516	497	0	
Future Volume (vph)	1318	0	492	0	0	0	0	841	314	516	497	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Fr <sub>t</sub>	1.00	0.99	0.85					0.96		1.00	1.00		
Fl <sub>t</sub> Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1614	1461					4856		1787	3574		
Fl <sub>t</sub> Permitted	0.95	0.96	1.00					1.00		0.13	1.00		
Satd. Flow (perm)	1698	1614	1461					4856		243	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1433	0	535	0	0	0	0	914	341	561	540	0	
RTOR Reduction (vph)	0	33	160	0	0	0	0	56	0	0	0	0	
Lane Group Flow (vph)	745	709	321	0	0	0	0	1199	0	561	540	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	48.4	48.4	48.4					28.0		60.0	60.0		
Effective Green, g (s)	48.4	48.4	48.4					28.0		60.0	60.0		
Actuated g/C Ratio	0.40	0.40	0.40					0.23		0.50	0.50		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	684	650	589					1133		494	1787		
v/s Ratio Prot								0.25		c0.27	0.15		
v/s Ratio Perm	0.44	0.44	0.22							c0.29			
v/c Ratio	1.09	1.09	0.55					1.06		1.14	0.30		
Uniform Delay, d <sub>1</sub>	35.8	35.8	27.4					46.0		35.8	17.7		
Progression Factor	1.00	1.00	1.00					1.00		1.41	0.93		
Incremental Delay, d <sub>2</sub>	61.2	62.7	1.0					43.6		82.9	0.4		
Delay (s)	97.0	98.5	28.4					89.6		133.3	16.9		
Level of Service	F	F	C					F		F	B		
Approach Delay (s)		80.8			0.0			89.6			76.2		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			82.2									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			102.5%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Traffic Volume (veh/h)	338	0	0	188	82	64
Future Volume (Veh/h)	338	0	0	188	82	64
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	367	0	0	204	89	70
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			367		571	367
vC1, stage 1 conf vol	367					
vC2, stage 2 conf vol	204					
vCu, unblocked vol			367		571	367
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)	5.4					
tF (s)			2.2		3.5	3.3
p0 queue free %			100		86	90
cM capacity (veh/h)			1192		643	678
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	367	204	89	70		
Volume Left	0	0	89	0		
Volume Right	0	0	0	70		
cSH	1700	1700	643	678		
Volume to Capacity	0.22	0.12	0.14	0.10		
Queue Length 95th (m)	0.0	0.0	3.8	2.7		
Control Delay (s)	0.0	0.0	11.5	10.9		
Lane LOS			B	B		
Approach Delay (s)	0.0	0.0	11.2			
Approach LOS	B					
Intersection Summary						
Average Delay	2.4					
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2036) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	149	84	105	0	28	0	118	61	0	0	0
Future Volume (Veh/h)	0	149	84	105	0	28	0	118	61	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	162	91	114	0	30	0	128	66	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	30			253			390	420	162	520	481	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	30			253			390	420	162	520	481	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	73	93	100	100	100
cM capacity (veh/h)	1583			1312			531	479	883	321	442	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	162	91	114	30	194							
Volume Left	0	0	114	0	0							
Volume Right	0	91	0	30	66							
cSH	1700	1700	1312	1700	567							
Volume to Capacity	0.10	0.05	0.09	0.02	0.34							
Queue Length 95th (m)	0.0	0.0	2.3	0.0	12.1							
Control Delay (s)	0.0	0.0	8.0	0.0	14.6							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.3		14.6							
Approach LOS					B							
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization			33.6%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total Phase 3 (2036) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	30	155	0	223	30	64	128	264	2	37
Future Volume (Veh/h)	49	0	30	155	0	223	30	64	128	264	2	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	0	33	168	0	242	33	70	139	287	2	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	974	871	22	814	822	140	42			209		
vC1, stage 1 conf vol	596	596		206	206							
vC2, stage 2 conf vol	378	275		609	616							
vCu, unblocked vol	974	871	22	814	822	140	42			209		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	100	97	48	100	73	98			79		
cM capacity (veh/h)	171	323	1055	325	335	909	1567			1362		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	86	410	33	209	287	42						
Volume Left	53	168	33	0	287	0						
Volume Right	33	242	0	139	0	40						
cSH	251	524	1567	1700	1362	1700						
Volume to Capacity	0.34	0.78	0.02	0.12	0.21	0.02						
Queue Length 95th (m)	11.7	57.5	0.5	0.0	6.4	0.0						
Control Delay (s)	26.6	32.4	7.3	0.0	8.3	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	26.6	32.4	1.0		7.3							
Approach LOS	D	D										
Intersection Summary												
Average Delay			17.1									
Intersection Capacity Utilization			59.6%		ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	222	30	153	5	5	185
Future Volume (Veh/h)	222	30	153	5	5	185
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	33	166	5	5	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	171				684	168
vC1, stage 1 conf vol					168	
vC2, stage 2 conf vol					515	
vCu, unblocked vol	171				684	168
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	83				99	77
cM capacity (veh/h)	1406				476	876
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	241	33	171	5	201	
Volume Left	241	0	0	5	0	
Volume Right	0	0	5	0	201	
cSH	1406	1700	1700	476	876	
Volume to Capacity	0.17	0.02	0.10	0.01	0.23	
Queue Length 95th (m)	4.9	0.0	0.0	0.3	7.1	
Control Delay (s)	8.1	0.0	0.0	12.6	10.3	
Lane LOS	A			B	B	
Approach Delay (s)	7.1		0.0	10.4		
Approach LOS				B		
Intersection Summary						
Average Delay			6.3			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	114	88	105	105	0	159
Future Volume (Veh/h)	114	88	105	105	0	159
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	124	96	114	114	0	173
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			220		514	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			220		514	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		100	80
cM capacity (veh/h)			1349		477	872
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	220	228	173			
Volume Left	0	114	0			
Volume Right	96	0	173			
cSH	1700	1349	872			
Volume to Capacity	0.13	0.08	0.20			
Queue Length 95th (m)	0.0	2.2	5.9			
Control Delay (s)	0.0	4.3	10.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	4.3	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			42.6%	ICU Level of Service	A	
Analysis Period (min)			15			

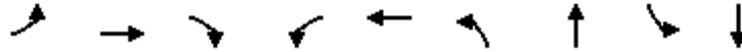
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	30	0	0	64	115	89	208	0	88	254	0
Future Volume (Veh/h)	2	30	0	0	64	115	89	208	0	88	254	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	33	0	0	70	125	97	226	0	96	276	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1048	888	276	904	888	226	276			226		
vC1, stage 1 conf vol	468	468		420	420							
vC2, stage 2 conf vol	580	420		484	468							
vCu, unblocked vol	1048	888	276	904	888	226	276			226		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	92	100	100	82	85	92			93		
cM capacity (veh/h)	233	390	763	358	382	813	1287			1342		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	2	33	0	195	97	226	96	276				
Volume Left	2	0	0	0	97	0	96	0				
Volume Right	0	0	0	125	0	0	0	0				
cSH	233	390	1700	578	1287	1700	1342	1700				
Volume to Capacity	0.01	0.08	0.00	0.34	0.08	0.13	0.07	0.16				
Queue Length 95th (m)	0.2	2.2	0.0	11.8	2.0	0.0	1.8	0.0				
Control Delay (s)	20.6	15.1	0.0	14.4	8.0	0.0	7.9	0.0				
Lane LOS	C	C	A	B	A		A					
Approach Delay (s)	15.4		14.4		2.4		2.0					
Approach LOS	C		B									
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			38.7%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	207	51	0	75	44	210
Future Volume (Veh/h)	207	51	0	75	44	210
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	55	0	82	48	228
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	244	162	276			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	162	276			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	94	100			
cM capacity (veh/h)	744	883	1287			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	280	82	276			
Volume Left	225	0	0			
Volume Right	55	0	228			
cSH	768	1287	1700			
Volume to Capacity	0.36	0.00	0.16			
Queue Length 95th (m)	13.4	0.0	0.0			
Control Delay (s)	12.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			36.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	106	0	14	165	0
Future Volume (Veh/h)	12	106	0	14	165	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	115	0	15	179	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			128		86	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		86	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1458		916	992
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	128	15	179			
Volume Left	0	0	179			
Volume Right	115	0	0			
cSH	1700	1458	916			
Volume to Capacity	0.08	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			23.0%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕		
Traffic Volume (veh/h)	188	233	0	420	0	0
Future Volume (Veh/h)	188	233	0	420	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	204	253	0	457	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			457		788	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		788	330
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1104		360	711
Direction, Lane #	EB 1	WB 1				
Volume Total	457	457				
Volume Left	0	0				
Volume Right	253	0				
cSH	1700	1700				
Volume to Capacity	0.27	0.27				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			48.6%	ICU Level of Service		A
Analysis Period (min)			15			



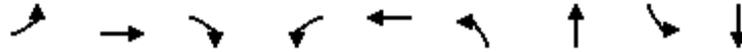
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	392	103	63	391	37	187	29	27
v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.17	0.30	0.13	0.04
Control Delay	5.2	6.4	2.3	5.4	6.2	30.6	1.2	30.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	6.4	2.3	5.4	6.2	30.6	1.2	30.5	0.1
Queue Length 50th (m)	1.0	16.3	0.9	2.1	15.8	6.2	0.0	5.1	0.0
Queue Length 95th (m)	4.9	47.0	7.1	8.9	46.2	12.9	0.0	10.9	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	711	1186	1190	712	1183	429	710	438	784
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.09	0.26	0.07	0.03
<b>Intersection Summary</b>									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Future Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1797	1638	1615	1805	1632		1768	1273		1803	1593	
Flt Permitted	0.52	1.00	1.00	0.52	1.00		0.54	1.00		0.62	1.00	
Satd. Flow (perm)	982	1638	1615	985	1632		1001	1273		1186	1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	392	103	63	354	37	37	0	187	29	0	27
RTOR Reduction (vph)	0	0	23	0	2	0	0	169	0	0	25	0
Lane Group Flow (vph)	29	392	80	63	389	0	37	18	0	29	2	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	62.6	62.6	62.6	62.6	62.6		14.3	8.8		9.5	6.4	
Effective Green, g (s)	62.6	62.6	62.6	62.6	62.6		14.3	8.8		9.5	6.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70		0.16	0.10		0.11	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	683	1139	1123	685	1135		205	124		146	113	
v/s Ratio Prot		c0.24			0.24		c0.01	0.01		0.01	0.00	
v/s Ratio Perm	0.03		0.05	0.06			c0.02			0.01		
v/c Ratio	0.04	0.34	0.07	0.09	0.34		0.18	0.15		0.20	0.02	
Uniform Delay, d1	4.3	5.5	4.4	4.5	5.5		32.5	37.2		36.6	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.1	0.3	0.8		0.4	0.6		0.7	0.1	
Delay (s)	4.4	6.3	4.5	4.7	6.3		33.0	37.7		37.3	38.9	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		5.9			6.1			36.9			38.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				15.5	
Intersection Capacity Utilization			69.6%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis  
 PM Peak Hour



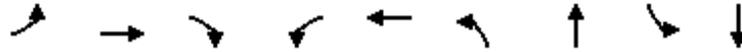
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	748	179	79	474	118	195	89	60
v/c Ratio	0.06	0.64	0.18	0.24	0.40	0.37	0.40	0.31	0.11
Control Delay	7.9	14.2	5.0	10.8	9.6	29.0	2.5	27.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	14.2	5.0	10.8	9.6	29.0	2.5	27.8	0.4
Queue Length 50th (m)	2.2	78.9	6.8	5.8	38.0	16.8	0.0	12.4	0.0
Queue Length 95th (m)	6.7	134.3	17.1	15.5	65.6	29.3	0.0	23.1	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	544	1170	998	326	1181	454	608	472	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.64	0.18	0.24	0.40	0.26	0.32	0.19	0.09
<b>Intersection Summary</b>									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Future Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1799	1810	1503	1801	1818		1770	1517		1795	1615	
Flt Permitted	0.44	1.00	1.00	0.27	1.00		0.47	1.00		0.62	1.00	
Satd. Flow (perm)	840	1810	1503	504	1818		882	1517		1181	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	748	179	79	379	95	118	0	195	89	0	60
RTOR Reduction (vph)	0	0	28	0	6	0	0	174	0	0	56	0
Lane Group Flow (vph)	34	748	151	79	468	0	118	21	0	89	4	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.0	57.0	57.0	57.0	57.0		20.8	9.8		14.1	6.4	
Effective Green, g (s)	57.0	57.0	57.0	57.0	57.0		20.8	9.8		14.1	6.4	
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.63		0.23	0.11		0.16	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	532	1146	951	319	1151		313	165		237	114	
v/s Ratio Prot		c0.41			0.26		c0.05	0.01		0.03	0.00	
v/s Ratio Perm	0.04		0.10	0.16			c0.04			0.03		
v/c Ratio	0.06	0.65	0.16	0.25	0.41		0.38	0.13		0.38	0.04	
Uniform Delay, d1	6.3	10.3	6.7	7.2	8.1		28.6	36.2		33.7	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.9	0.4	1.8	1.1		0.8	0.4		1.0	0.1	
Delay (s)	6.5	13.2	7.1	9.0	9.2		29.3	36.6		34.7	39.1	
Level of Service	A	B	A	A	A		C	D		C	D	
Approach Delay (s)		11.8			9.2			33.9			36.4	
Approach LOS		B			A			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.4				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			88.2%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis  
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	523	234	96	507	133	230	100	86
v/c Ratio	0.04	0.42	0.21	0.18	0.42	0.51	0.51	0.42	0.15
Control Delay	5.8	8.3	3.3	7.1	7.7	36.3	4.5	34.1	0.6
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	8.8	3.3	7.1	7.7	36.3	4.5	34.1	0.6
Queue Length 50th (m)	1.3	40.9	6.3	6.2	35.7	19.9	0.0	14.7	0.0
Queue Length 95th (m)	3.9	61.1	14.7	13.0	55.3	36.2	2.2	28.4	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	555	1250	1109	522	1215	261	621	241	721
Starvation Cap Reductn	0	331	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.57	0.21	0.18	0.42	0.51	0.37	0.41	0.12
<b>Intersection Summary</b>									

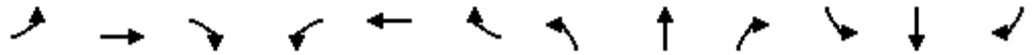
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Future Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1845	1575	1732	1773		1801	1559		1759	1586	
Flt Permitted	0.43	1.00	1.00	0.42	1.00		0.48	1.00		0.62	1.00	
Satd. Flow (perm)	820	1845	1575	769	1773		915	1559		1157	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	523	234	96	337	170	133	0	230	100	0	86
RTOR Reduction (vph)	0	0	44	0	14	0	0	206	0	0	80	0
Lane Group Flow (vph)	22	523	190	96	493	0	133	24	0	100	6	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.8	59.8	59.8	59.8	59.8		17.6	9.3		11.8	6.4	
Effective Green, g (s)	59.8	59.8	59.8	59.8	59.8		17.6	9.3		11.8	6.4	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66		0.20	0.10		0.13	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	544	1225	1046	510	1178		260	161		187	112	
v/s Ratio Prot		c0.28			0.28		c0.05	0.02		0.03	0.00	
v/s Ratio Perm	0.03		0.12	0.12			c0.05			0.04		
v/c Ratio	0.04	0.43	0.18	0.19	0.42		0.51	0.15		0.53	0.05	
Uniform Delay, d1	5.2	7.1	5.8	5.8	7.0		31.5	36.7		36.1	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.1	0.4	0.8	1.1		1.7	0.4		2.9	0.2	
Delay (s)	5.3	8.2	6.1	6.6	8.1		33.2	37.2		39.0	39.2	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		7.5			7.9			35.7			39.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			80.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

## **APPENDIX 17**

### **Future Total (2041 & 2046) Synchro HCM Outputs**





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	384	374	401	608	185	465	995	192	352	2036	203
v/c Ratio	0.66	0.36	0.60	2.13	0.51	0.29	2.15	0.71	0.32	1.25	1.28	0.34
Control Delay	75.0	32.9	19.2	551.6	35.7	13.3	554.5	23.6	3.6	162.1	165.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.0	32.9	19.2	551.6	35.7	13.3	554.5	23.6	3.6	162.1	165.1	5.7
Queue Length 50th (m)	23.0	38.5	33.5	~160.7	70.5	7.0	~173.1	35.0	3.2	-83.2	~234.0	0.0
Queue Length 95th (m)	#44.9	52.8	67.1	#224.6	91.4	33.8	m#187.9	m36.7	m4.2	#144.6	#264.7	17.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	156	1058	625	188	1182	633	216	1401	595	282	1594	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.36	0.60	2.13	0.51	0.29	2.15	0.71	0.32	1.25	1.28	0.34

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	353	344	369	559	170	428	915	177	324	1873	187	
Future Volume (vph)	87	353	344	369	559	170	428	915	177	324	1873	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1455	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	194	4673	1536	282	5036	1455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	384	374	401	608	185	465	995	192	352	2036	203	
RTOR Reduction (vph)	0	0	142	0	0	122	0	0	134	0	0	139	
Lane Group Flow (vph)	95	384	232	401	608	63	465	995	58	352	2036	64	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	8%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	10.1	38.0	38.0	13.0	40.9	40.9	47.0	36.0	36.0	51.0	38.0	38.0	
Effective Green, g (s)	10.1	38.0	38.0	13.0	40.9	40.9	47.0	36.0	36.0	51.0	38.0	38.0	
Actuated g/C Ratio	0.08	0.32	0.32	0.11	0.34	0.34	0.39	0.30	0.30	0.42	0.32	0.32	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	143	1058	482	188	1183	511	210	1401	460	273	1594	460	
v/s Ratio Prot	0.06	0.11		c0.23	c0.18		c0.20	0.21		c0.14	0.40		
v/s Ratio Perm			0.15			0.04	c0.67		0.04	0.41		0.04	
v/c Ratio	0.66	0.36	0.48	2.13	0.51	0.12	2.21	0.71	0.13	1.29	1.28	0.14	
Uniform Delay, d1	53.3	31.7	33.1	53.5	31.6	27.2	32.2	37.4	30.5	26.4	41.0	29.3	
Progression Factor	1.00	1.00	1.00	0.92	1.07	2.96	2.05	0.58	0.62	1.00	1.00	1.00	
Incremental Delay, d2	11.1	1.0	3.4	525.8	1.5	0.5	555.0	1.7	0.3	154.9	129.8	0.6	
Delay (s)	64.4	32.6	36.5	575.0	35.2	81.0	620.9	23.5	19.3	181.3	170.8	29.9	
Level of Service	E	C	D	F	D	F	F	C	B	F	F	C	
Approach Delay (s)		37.8			223.6			191.2			161.2		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			164.2		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.50										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			128.7%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	871	101	249	1186	252	3
v/c Ratio	0.01	0.38	0.11	0.50	0.43	0.80	0.01
Control Delay	12.0	11.2	6.9	6.9	5.7	39.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	11.2	6.9	6.9	5.7	39.3	0.0
Queue Length 50th (m)	0.0	45.4	3.1	10.7	41.0	21.1	0.0
Queue Length 95th (m)	m0.7	m67.0	m10.9	27.0	77.5	51.8	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	302	2302	899	631	2729	490	409
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.38	0.11	0.39	0.43	0.51	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	801	93	229	1091	0	45	0	187	1	0	2
Future Volume (vph)	3	801	93	229	1091	0	45	0	187	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1465			1685	
Flt Permitted	0.24	1.00	1.00	0.28	1.00			0.93			0.81	
Satd. Flow (perm)	451	3438	1316	504	3505			1377			1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	871	101	249	1186	0	49	0	203	1	0	2
RTOR Reduction (vph)	0	0	18	0	0	0	0	148	0	0	3	0
Lane Group Flow (vph)	3	871	83	249	1186	0	0	104	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	80.3	80.3	80.3	93.4	93.4			14.6			14.6	
Effective Green, g (s)	80.3	80.3	80.3	93.4	93.4			14.6			14.6	
Actuated g/C Ratio	0.67	0.67	0.67	0.78	0.78			0.12			0.12	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	301	2300	880	491	2728			167			168	
v/s Ratio Prot		0.25		c0.04	0.34							
v/s Ratio Perm	0.01		0.06	c0.35				c0.08			0.00	
v/c Ratio	0.01	0.38	0.09	0.51	0.43			0.62			0.00	
Uniform Delay, d1	6.6	8.8	7.0	4.3	4.5			50.1			46.3	
Progression Factor	1.13	1.07	1.31	1.00	1.00			1.22			1.00	
Incremental Delay, d2	0.0	0.4	0.2	0.8	0.5			6.9			0.0	
Delay (s)	7.5	9.7	9.4	5.1	5.0			67.8			46.3	
Level of Service	A	A	A	A	A			E			D	
Approach Delay (s)		9.7			5.0			67.8			46.3	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.7									B
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0								15.0	
Intersection Capacity Utilization			78.5%								D	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	358	802	100	45	189	1334	234	315	2054	210
v/c Ratio	0.37	0.88dr	1.42	0.15	0.08	0.54	0.99	0.45	0.68	1.20	0.33
Control Delay	53.1	43.9	236.2	27.7	3.4	31.7	66.1	15.2	31.2	139.2	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	43.9	236.2	27.7	3.4	31.7	66.1	15.2	31.2	139.2	22.6
Queue Length 50th (m)	14.0	32.2	~140.8	18.4	0.2	26.3	128.5	9.1	76.3	~227.1	24.3
Queue Length 95th (m)	27.0	46.8	#182.1	28.2	m2.5	55.1	#151.3	31.5	m61.6	m155.6	m16.1
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	334	895	565	888	765	352	1344	516	465	1716	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.40	1.42	0.11	0.06	0.54	0.99	0.45	0.68	1.20	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	92	237	738	92	41	174	1227	215	290	1890	193
Future Volume (vph)	56	92	237	738	92	41	174	1227	215	290	1890	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1750	3118		3155	1792	1459	1719	4759	1396	1770	5036	1491
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1276	3118		3155	1792	1459	214	4759	1396	202	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	100	258	802	100	45	189	1334	234	315	2054	210
RTOR Reduction (vph)	0	91	0	0	0	29	0	0	122	0	0	138
Lane Group Flow (vph)	61	267	0	802	100	16	189	1334	112	315	2054	72
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.5	15.5		21.5	43.5	43.5	53.9	33.9	33.9	63.9	40.9	40.9
Effective Green, g (s)	15.5	15.5		21.5	43.5	43.5	53.9	33.9	33.9	63.9	40.9	40.9
Actuated g/C Ratio	0.13	0.13		0.18	0.36	0.36	0.45	0.28	0.28	0.53	0.34	0.34
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	164	402		565	649	528	346	1344	394	460	1716	508
v/s Ratio Prot		c0.09		c0.25	0.06		0.09	0.28		c0.15	c0.41	
v/s Ratio Perm	0.05					0.01	0.15		0.08	0.21		0.05
v/c Ratio	0.37	0.88dr		1.42	0.15	0.03	0.55	0.99	0.28	0.68	1.20	0.14
Uniform Delay, d1	47.8	49.8		49.2	25.8	24.7	24.6	42.9	33.6	28.5	39.5	27.4
Progression Factor	1.00	1.00		1.02	1.09	3.69	1.17	1.03	1.18	1.16	1.52	5.65
Incremental Delay, d2	1.4	4.1		198.8	0.1	0.0	1.6	22.0	1.7	0.4	89.2	0.1
Delay (s)	49.2	53.9		249.1	28.2	91.0	30.3	66.0	41.1	33.4	149.1	154.7
Level of Service	D	D		F	C	F	C	E	D	C	F	F
Approach Delay (s)		53.2			218.2			58.9			135.5	
Approach LOS		D			F			E			F	

Intersection Summary

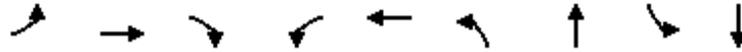
HCM 2000 Control Delay	119.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	462	34	3	415	29	18	49	387
v/c Ratio	0.25	0.35	0.03	0.00	0.19	0.48	0.10	0.37	0.78
Control Delay	1.4	1.7	0.1	7.3	6.3	73.7	25.8	56.4	16.9
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.4	1.9	0.1	7.3	6.3	73.7	25.8	56.4	16.9
Queue Length 50th (m)	2.2	6.5	0.0	0.2	13.7	7.0	1.2	11.7	1.8
Queue Length 95th (m)	4.2	11.8	m0.1	m0.8	25.2	16.4	7.9	22.7	32.5
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	843	1338	1257	659	2202	214	605	460	793
Starvation Cap Reductn	0	280	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.44	0.03	0.00	0.19	0.14	0.03	0.11	0.49

Intersection Summary

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

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	425	31	3	349	33	27	5	12	45	7	349
Future Volume (vph)	181	425	31	3	349	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1726	1681	1573	1799	3140		1750	1666		1636	1535	
Flt Permitted	0.49	1.00	1.00	0.50	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	893	1681	1573	942	3140		599	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	462	34	3	379	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	6	0	3	0	0	12	0	0	340	0
Lane Group Flow (vph)	197	462	28	3	412	0	29	6	0	49	47	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.5	95.5	95.5	84.0	84.0		12.3	12.3		12.3	12.3	
Effective Green, g (s)	95.5	95.5	95.5	84.0	84.0		12.3	12.3		12.3	12.3	
Actuated g/C Ratio	0.80	0.80	0.80	0.70	0.70		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	769	1337	1251	659	2198		61	170		131	157	
v/s Ratio Prot	0.02	c0.27			0.13			0.00				0.03
v/s Ratio Perm	0.19		0.02	0.00			c0.05			0.04		
v/c Ratio	0.26	0.35	0.02	0.00	0.19		0.48	0.04		0.37	0.30	
Uniform Delay, d1	2.9	3.4	2.5	5.4	6.2		50.8	48.5		50.3	49.9	
Progression Factor	0.29	0.26	0.01	0.94	0.89		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.0	0.0	0.2		5.7	0.1		1.8	1.1	
Delay (s)	1.0	1.5	0.1	5.1	5.7		56.5	48.6		52.1	50.9	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		1.3			5.7			53.5			51.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			76.8%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	524	63	391	37	187	29	27
v/c Ratio	0.42	0.09	0.31	0.19	0.33	0.17	0.04
Control Delay	3.6	4.4	5.1	44.6	1.5	44.5	0.1
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	4.4	5.1	44.6	1.5	44.5	0.1
Queue Length 50th (m)	27.8	3.8	27.9	7.9	0.0	6.1	0.0
Queue Length 95th (m)	36.4	7.9	41.0	m17.8	0.0	14.9	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1241	701	1269	200	662	176	748
Starvation Cap Reductn	236	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.09	0.31	0.18	0.28	0.16	0.04

Intersection Summary

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

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Future Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1647		1805	1631		1767	1272		1803	1592	
Flt Permitted		0.96		0.48	1.00		0.73	1.00		0.50	1.00	
Satd. Flow (perm)		1593		904	1631		1359	1272		949	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	392	103	63	354	37	37	0	187	29	0	27
RTOR Reduction (vph)	0	4	0	0	2	0	0	174	0	0	25	0
Lane Group Flow (vph)	0	520	0	63	389	0	37	13	0	29	2	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		91.9		91.9	91.9		12.7	8.1		12.5	8.0	
Effective Green, g (s)		91.9		91.9	91.9		12.7	8.1		12.5	8.0	
Actuated g/C Ratio		0.77		0.77	0.77		0.11	0.07		0.10	0.07	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1219		692	1249		159	85		130	106	
v/s Ratio Prot					0.24		c0.01	0.01		0.01	0.00	
v/s Ratio Perm		c0.33		0.07			c0.02			0.01		
v/c Ratio		0.43		0.09	0.31		0.23	0.15		0.22	0.02	
Uniform Delay, d1		4.9		3.5	4.3		49.0	52.7		49.0	52.3	
Progression Factor		0.53		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1		0.3	0.7		0.8	0.8		0.9	0.1	
Delay (s)		3.6		3.8	5.0		49.6	53.5		49.9	52.4	
Level of Service		A		A	A		D	D		D	D	
Approach Delay (s)		3.6			4.8			52.9			51.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			76.1%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	415	146	85	363	11	55	0	254	7	0	1
Future Volume (Veh/h)	0	415	146	85	363	11	55	0	254	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	451	159	92	395	12	60	0	276	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	0.92
vC, conflicting volume	409			611			1120	1124	532	1394	1198	405
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			537			1088	1093	452	1386	1173	405
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			90			62	100	51	85	100	100
cM capacity (veh/h)	1159			961			159	180	564	53	161	477
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	610	499	60	276	9							
Volume Left	0	92	60	0	8							
Volume Right	159	12	0	276	1							
cSH	1159	961	159	564	59							
Volume to Capacity	0.00	0.10	0.38	0.49	0.15							
Queue Length 95th (m)	0.0	2.5	12.8	21.4	4.0							
Control Delay (s)	0.0	2.6	40.7	17.4	77.1							
Lane LOS		A	E	C	F							
Approach Delay (s)	0.0	2.6	21.5		77.1							
Approach LOS			C		F							
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			81.1%		ICU Level of Service				D			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	11	445	0	9	6	94	45	0	6	95	203
Future Volume (Veh/h)	194	11	445	0	9	6	94	45	0	6	95	203
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	12	484	0	10	7	102	49	0	7	103	221
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			496			962	693	254	714	932	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			496			962	693	254	714	932	14
tC, single (s)	4.2			4.1			7.1	6.5	6.2	8.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	4.4	4.0	3.4
p0 queue free %	86			100			8	85	100	96	56	79
cM capacity (veh/h)	1562			1078			111	319	790	195	232	1041
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	707	17	151	331								
Volume Left	211	0	102	7								
Volume Right	484	7	0	221								
cSH	1562	1078	140	479								
Volume to Capacity	0.14	0.00	1.08	0.69								
Queue Length 95th (m)	3.7	0.0	65.8	41.9								
Control Delay (s)	3.3	0.0	160.4	27.7								
Lane LOS	A		F	D								
Approach Delay (s)	3.3	0.0	160.4	27.7								
Approach LOS			F	D								
Intersection Summary												
Average Delay			29.6									
Intersection Capacity Utilization			80.7%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	302	1366	225	0	3052			
Future Volume (Veh/h)	0	302	1366	225	0	3052			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	328	1485	245	0	3317			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.74	0.86				0.86			
vC, conflicting volume	2592	496				1731			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	657	0				1277			
tC, single (s)	6.9	7.0				4.1			
tC, 2 stage (s)									
tF (s)	3.5	3.4				2.2			
p0 queue free %	100	64				100			
cM capacity (veh/h)	294	917				473			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	328	495	495	495	245	1106	1106	1106	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	328	0	0	0	245	0	0	0	
cSH	917	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.36	0.29	0.29	0.29	0.14	0.65	0.65	0.65	
Queue Length 95th (m)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.1	0.0						0.0	
Approach LOS	B								
Intersection Summary									
Average Delay			0.7						
Intersection Capacity Utilization			62.3%			ICU Level of Service		B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	787	344	1318	1551
v/c Ratio	0.76	0.79	0.48	0.52
Control Delay	41.9	47.4	17.9	11.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.9	47.4	17.9	11.9
Queue Length 50th (m)	90.9	80.0	58.0	50.7
Queue Length 95th (m)	98.4	105.6	m51.4	m43.9
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1419	590	2768	3010
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	98
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.58	0.48	0.53

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	689	351	1213	0	0	1427
Future Volume (vph)	689	351	1213	0	0	1427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3385	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3385	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	382	1318	0	0	1551
RTOR Reduction (vph)	3	19	0	0	0	0
Lane Group Flow (vph)	784	325	1318	0	0	1551
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	36.7	36.7	71.7			71.7
Effective Green, g (s)	36.7	36.7	71.7			71.7
Actuated g/C Ratio	0.31	0.31	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1035	420	2767			3009
v/s Ratio Prot			0.28			c0.31
v/s Ratio Perm	0.23	c0.24				
v/c Ratio	0.76	0.77	0.48			0.52
Uniform Delay, d1	37.6	37.9	13.6			14.0
Progression Factor	1.00	1.00	1.21			0.78
Incremental Delay, d2	3.2	8.6	0.1			0.1
Delay (s)	40.8	46.5	16.5			11.0
Level of Service	D	D	B			B
Approach Delay (s)	42.6		16.5			11.0
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			104.4%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	610	595	569	1374	673	1634
v/c Ratio	1.18	1.19	1.19	1.10	1.27	0.80
Control Delay	136.6	138.7	137.6	95.6	167.8	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.6	138.7	137.6	95.6	167.8	27.7
Queue Length 50th (m)	~190.6	~185.6	~169.0	~135.8	~200.3	156.8
Queue Length 95th (m)	#266.6	#265.8	#244.7	#167.1	#274.3	179.2
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	517	499	479	1247	528	2044
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.19	1.19	1.10	1.27	0.80

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	851	0	781	0	0	0	0	882	382	619	1503	0
Future Volume (vph)	851	0	781	0	0	0	0	882	382	619	1503	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.93	0.85					0.95		1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1618	1445	1382					4052		1736	3505	
Flt Permitted	0.95	0.97	1.00					1.00		0.11	1.00	
Satd. Flow (perm)	1618	1445	1382					4052		192	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	925	0	849	0	0	0	0	959	415	673	1634	0
RTOR Reduction (vph)	0	37	37	0	0	0	0	65	0	0	0	0
Lane Group Flow (vph)	610	558	532	0	0	0	0	1309	0	673	1634	0
Confl. Peds. (#/hr)								7		1		7
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	38.4	38.4	38.4					35.0		70.0	70.0	
Effective Green, g (s)	38.4	38.4	38.4					35.0		70.0	70.0	
Actuated g/C Ratio	0.32	0.32	0.32					0.29		0.58	0.58	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	517	462	442					1181		523	2044	
v/s Ratio Prot								0.32		c0.34	0.47	
v/s Ratio Perm	0.38	0.39	0.38							c0.41		
v/c Ratio	1.18	1.21	1.20					1.11		1.29	0.80	
Uniform Delay, d1	40.8	40.8	40.8					42.5		35.8	19.5	
Progression Factor	1.00	1.00	1.00					1.00		1.05	1.24	
Incremental Delay, d2	99.5	112.0	111.1					61.1		141.2	2.9	
Delay (s)	140.3	152.8	151.9					103.6		178.9	27.2	
Level of Service	F	F	F					F		F	C	
Approach Delay (s)		148.2			0.0			103.6			71.4	
Approach LOS		F			A			F			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			104.5									F
HCM 2000 Volume to Capacity ratio			1.29									
Actuated Cycle Length (s)			120.0								14.6	
Intersection Capacity Utilization			104.4%								G	
Analysis Period (min)			15									

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	99	0	0	230	72	56
Future Volume (Veh/h)	99	0	0	230	72	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	0	0	250	78	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			108		358	108
vC1, stage 1 conf vol					108	
vC2, stage 2 conf vol					250	
vCu, unblocked vol			108		358	108
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	94
cM capacity (veh/h)			1483		749	946
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	108	250	78	61		
Volume Left	0	0	78	0		
Volume Right	0	0	0	61		
cSH	1700	1700	749	946		
Volume to Capacity	0.06	0.15	0.10	0.06		
Queue Length 95th (m)	0.0	0.0	2.8	1.7		
Control Delay (s)	0.0	0.0	10.4	9.1		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			39.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2041) Traffic Analysis  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	71	55	93	0	28	0	100	66	0	0	0
Future Volume (Veh/h)	0	71	55	93	0	28	0	100	66	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	60	101	0	30	0	109	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	30			137			279	309	77	406	339	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	30			137			279	309	77	406	339	0
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			100	81	93	100	100	100
cM capacity (veh/h)	1583			1447			637	563	984	416	542	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	77	60	101	30	181							
Volume Left	0	0	101	0	0							
Volume Right	0	60	0	30	72							
cSH	1700	1700	1447	1700	679							
Volume to Capacity	0.05	0.04	0.07	0.02	0.27							
Queue Length 95th (m)	0.0	0.0	1.8	0.0	8.6							
Control Delay (s)	0.0	0.0	7.7	0.0	12.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		5.9		12.2							
Approach LOS					B							
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			27.8%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total (2041) Traffic Analysis  
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	28	65	0	101	17	56	59	132	1	20
Future Volume (Veh/h)	49	0	28	65	0	101	17	56	59	132	1	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	0	30	71	0	110	18	61	64	143	1	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)												61
pX, platoon unblocked												
vC, conflicting volume	505	459	12	446	438	93	23			125		
vC1, stage 1 conf vol	298	298		129	129							
vC2, stage 2 conf vol	207	161		317	309							
vCu, unblocked vol	505	459	12	446	438	93	23			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	97	88	100	89	99			90		
cM capacity (veh/h)	507	540	1069	568	553	964	1592			1462		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	83	181	18	125	143	23						
Volume Left	53	71	18	0	143	0						
Volume Right	30	110	0	64	0	22						
cSH	626	757	1592	1700	1462	1700						
Volume to Capacity	0.13	0.24	0.01	0.07	0.10	0.01						
Queue Length 95th (m)	3.6	7.4	0.3	0.0	2.6	0.0						
Control Delay (s)	11.6	11.2	7.3	0.0	7.7	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	11.6	11.2	0.9		6.7							
Approach LOS	B	B										
Intersection Summary												
Average Delay			7.4									
Intersection Capacity Utilization			30.9%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	132	23	137	1	1	93
Future Volume (Veh/h)	132	23	137	1	1	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	143	25	149	1	1	101
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150				460	150
vC1, stage 1 conf vol					150	
vC2, stage 2 conf vol					311	
vCu, unblocked vol	150				460	150
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				100	89
cM capacity (veh/h)	1431				634	897
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	143	25	150	1	101	
Volume Left	143	0	0	1	0	
Volume Right	0	0	1	0	101	
cSH	1431	1700	1700	634	897	
Volume to Capacity	0.10	0.01	0.09	0.00	0.11	
Queue Length 95th (m)	2.7	0.0	0.0	0.0	3.0	
Control Delay (s)	7.8	0.0	0.0	10.7	9.5	
Lane LOS	A			B	A	
Approach Delay (s)	6.6		0.0	9.5		
Approach LOS				A		
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			27.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	95	38	59	93	0	126
Future Volume (Veh/h)	95	38	59	93	0	126
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	41	64	101	0	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			144		352	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			144		352	124
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	85
cM capacity (veh/h)			1438		616	927
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	144	165	137			
Volume Left	0	64	0			
Volume Right	41	0	137			
cSH	1700	1438	927			
Volume to Capacity	0.08	0.04	0.15			
Queue Length 95th (m)	0.0	1.1	4.1			
Control Delay (s)	0.0	3.2	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	3.2	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			33.3%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2041) Traffic Analysis  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	23	0	0	68	123	69	186	0	54	177	0
Future Volume (Veh/h)	1	23	0	0	68	123	69	186	0	54	177	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	25	0	0	74	134	75	202	0	59	192	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	833	662	192	674	662	202	192			202		
vC1, stage 1 conf vol	310	310		352	352							
vC2, stage 2 conf vol	523	352		322	310							
vCu, unblocked vol	833	662	192	674	662	202	192			202		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	95	100	100	85	84	95			96		
cM capacity (veh/h)	302	485	850	489	486	839	1381			1370		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	25	0	208	75	202	59	192				
Volume Left	1	0	0	0	75	0	59	0				
Volume Right	0	0	0	134	0	0	0	0				
cSH	302	485	1700	667	1381	1700	1370	1700				
Volume to Capacity	0.00	0.05	0.00	0.31	0.05	0.12	0.04	0.11				
Queue Length 95th (m)	0.1	1.3	0.0	10.6	1.4	0.0	1.1	0.0				
Control Delay (s)	17.0	12.8	0.0	12.8	7.8	0.0	7.7	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	13.0		12.8		2.1		1.8					
Approach LOS	B		B									
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			34.3%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2041) Traffic Analysis  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	27	0	61	25	152
Future Volume (Veh/h)	194	27	0	61	25	152
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	29	0	66	27	165
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176	110	192			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	110	192			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	97	100			
cM capacity (veh/h)	814	944	1381			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	240	66	192			
Volume Left	211	0	0			
Volume Right	29	0	165			
cSH	828	1381	1700			
Volume to Capacity	0.29	0.00	0.11			
Queue Length 95th (m)	9.6	0.0	0.0			
Control Delay (s)	11.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.1	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			29.8%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 18: Tower 5 & 7 Access & Street A/Tower 7 Access

Future Total (2041) Traffic Analysis  
 AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	70	0	16	175	0
Future Volume (Veh/h)	7	70	0	16	175	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	76	0	17	190	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			84		63	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			84		63	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1513		943	1023
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	84	17	190			
Volume Left	0	0	190			
Volume Right	76	0	0			
cSH	1700	1513	943			
Volume to Capacity	0.05	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	6.0			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			21.1%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	99	126	0	302	0	0
Future Volume (Veh/h)	99	126	0	302	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	137	0	328	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			245		504	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			245		504	176
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1321		527	867
Direction, Lane #	EB 1	WB 1				
Volume Total	245	328				
Volume Left	0	0				
Volume Right	137	0				
cSH	1700	1700				
Volume to Capacity	0.14	0.19				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.0%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	1203	553	284	840	298	616	1853	491	318	1534	214
v/c Ratio	1.70	1.06	0.85	1.75	0.73	0.49	1.99	1.03	0.74	1.60	1.06	0.37
Control Delay	375.5	85.1	34.7	388.6	43.2	25.0	470.4	34.9	8.3	315.6	80.8	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	375.5	85.1	34.7	388.6	43.2	25.0	470.4	34.9	8.3	315.6	80.8	7.8
Queue Length 50th (m)	-90.3	-172.9	76.1	-105.8	115.3	45.5	-213.1	-186.1	73.9	-95.4	-152.3	3.2
Queue Length 95th (m)	#143.4	#216.6	#143.0	m#161.0	m135.9	m77.5	m#136.5	m92.0	m20.4	#154.6	#183.3	22.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	146	1131	650	162	1150	614	310	1797	664	199	1454	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.70	1.06	0.85	1.75	0.73	0.49	1.99	1.03	0.74	1.60	1.06	0.37

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	228	1107	509	261	773	274	567	1705	452	293	1411	197		
Future Volume (vph)	228	1107	509	261	773	274	567	1705	452	293	1411	197		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00		
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00		
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	200	5136	1531	211	4988	1508		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	248	1203	553	284	840	298	616	1853	491	318	1534	214		
RTOR Reduction (vph)	0	0	169	0	0	117	0	0	129	0	0	139		
Lane Group Flow (vph)	248	1203	384	284	840	181	616	1853	362	318	1534	75		
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35		
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm		
Protected Phases	5	2		1	6		3	8		7	4			
Permitted Phases			2			6	8		8	4		4		
Actuated Green, G (s)	10.0	38.0	38.0	11.0	39.0	39.0	54.0	42.0	42.0	44.0	35.0	35.0		
Effective Green, g (s)	10.0	38.0	38.0	11.0	39.0	39.0	54.0	42.0	42.0	44.0	35.0	35.0		
Actuated g/C Ratio	0.08	0.32	0.32	0.09	0.32	0.32	0.45	0.35	0.35	0.37	0.29	0.29		
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	146	1131	481	162	1150	497	304	1797	535	192	1454	439		
v/s Ratio Prot	0.14	c0.34		c0.16	0.24		c0.27	0.36		0.12	0.31			
v/s Ratio Perm			0.25			0.12	c0.64		0.24	0.48		0.05		
v/c Ratio	1.70	1.06	0.80	1.75	0.73	0.36	2.03	1.03	0.68	1.66	1.06	0.17		
Uniform Delay, d1	55.0	41.0	37.5	54.5	35.8	31.0	36.2	39.0	33.2	32.3	42.5	31.7		
Progression Factor	1.00	1.00	1.00	0.79	1.09	1.71	1.27	0.42	0.37	1.00	1.00	1.00		
Incremental Delay, d2	341.9	45.4	13.0	359.9	3.6	1.8	462.9	16.6	0.6	317.3	39.6	0.8		
Delay (s)	396.9	86.4	50.5	402.9	42.8	54.9	508.7	32.9	13.0	349.7	82.1	32.5		
Level of Service	F	F	D	F	D	D	F	C	B	F	F	C		
Approach Delay (s)		114.9			117.3			128.6			118.1			
Approach LOS		F			F			F			F			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			120.9									HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio			1.67											
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	20.0	
Intersection Capacity Utilization			124.0%										ICU Level of Service	H
Analysis Period (min)			15											

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1884	72	196	1239	527	2
v/c Ratio	0.02	1.00	0.10	1.08	0.57	1.06	0.00
Control Delay	15.7	32.1	6.6	118.7	14.8	88.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	32.1	6.6	118.7	14.8	88.5	0.0
Queue Length 50th (m)	0.4	~147.7	1.7	~37.0	89.2	~118.8	0.0
Queue Length 95th (m)	m0.4	m132.8	m1.5	#86.3	108.4	#189.1	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	192	1876	730	181	2182	498	509
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.00	0.10	1.08	0.57	1.06	0.00

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1733	66	180	1140	0	34	0	451	0	0	2
Future Volume (vph)	3	1733	66	180	1140	0	34	0	451	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1802	3574	1342	1752	3539			1461			1615	
Flt Permitted	0.19	1.00	1.00	0.06	1.00			0.98			1.00	
Satd. Flow (perm)	366	3574	1342	112	3539			1436			1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1884	72	196	1239	0	37	0	490	0	0	2
RTOR Reduction (vph)	0	0	26	0	0	0	0	92	0	0	1	0
Lane Group Flow (vph)	3	1884	46	196	1239	0	0	435	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.0	63.0	63.0	74.0	74.0			34.0				34.0
Effective Green, g (s)	63.0	63.0	63.0	74.0	74.0			34.0				34.0
Actuated g/C Ratio	0.52	0.52	0.52	0.62	0.62			0.28				0.28
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	192	1876	704	178	2182			406				457
v/s Ratio Prot		0.53		c0.07	0.35							0.00
v/s Ratio Perm	0.01		0.03	c0.61				c0.30				
v/c Ratio	0.02	1.00	0.07	1.10	0.57			1.07				0.00
Uniform Delay, d1	13.6	28.5	14.0	38.0	13.6			43.0				30.8
Progression Factor	1.12	0.84	1.23	1.00	1.00			1.00				1.00
Incremental Delay, d2	0.0	7.3	0.0	97.1	1.1			64.7				0.0
Delay (s)	15.3	31.4	17.3	135.1	14.6			107.7				30.8
Level of Service	B	C	B	F	B			F				C
Approach Delay (s)		30.8			31.1			107.7				30.8
Approach LOS		C			C			F				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			41.2			HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			107.8%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	506	492	195	186	330	2557	435	497	1195	82
v/c Ratio	0.58	0.78	1.39	0.35	0.31	0.69	1.46	0.69	1.04	0.68	0.13
Control Delay	61.0	35.7	230.1	34.6	10.2	28.9	243.1	29.2	49.7	31.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	35.7	230.1	34.6	10.2	28.9	243.1	29.2	49.7	31.7	7.1
Queue Length 50th (m)	22.6	36.0	~85.1	41.2	6.4	56.8	~317.2	61.8	~117.9	103.4	3.1
Queue Length 95th (m)	38.8	52.4	#121.2	56.7	25.6	m74.4	#348.0	m71.4	m#138.1	m101.6	m2.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	312	1020	354	784	767	476	1750	634	477	1770	635
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.50	1.39	0.25	0.24	0.69	1.46	0.69	1.04	0.68	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

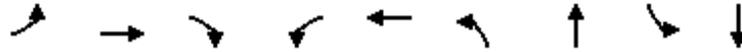
1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	222	244	453	179	171	304	2352	400	457	1099	75	
Future Volume (vph)	88	222	244	453	179	171	304	2352	400	457	1099	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1780	3257		3400	1863	1567	1787	5136	1514	1787	4988	1528	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.13	1.00	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	1190	3257		3400	1863	1567	245	5136	1514	177	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	241	265	492	195	186	330	2557	435	497	1195	82	
RTOR Reduction (vph)	0	194	0	0	0	131	0	0	119	0	0	53	
Lane Group Flow (vph)	96	313	0	492	195	55	330	2557	316	497	1195	29	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	16.8	16.8		12.5	35.8	35.8	66.9	40.9	40.9	70.3	42.6	42.6	
Effective Green, g (s)	16.8	16.8		12.5	35.8	35.8	66.9	40.9	40.9	70.3	42.6	42.6	
Actuated g/C Ratio	0.14	0.14		0.10	0.30	0.30	0.56	0.34	0.34	0.59	0.36	0.36	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	455		354	555	467	470	1750	516	475	1770	542	
v/s Ratio Prot		c0.10		c0.14	0.10		0.15	c0.50		c0.24	0.24		
v/s Ratio Perm	0.08					0.04	0.24		0.21	0.37		0.02	
v/c Ratio	0.58	0.69		1.39	0.35	0.12	0.70	1.46	0.61	1.05	0.68	0.05	
Uniform Delay, d1	48.3	49.1		53.8	33.0	30.6	24.2	39.5	33.0	37.5	32.8	25.4	
Progression Factor	1.00	1.00		0.95	1.02	2.24	1.03	1.12	1.29	0.58	0.93	99.52	
Incremental Delay, d2	4.8	4.3		191.5	0.4	0.1	3.0	209.5	3.4	26.8	0.2	0.0	
Delay (s)	53.1	53.4		242.6	34.1	68.7	27.9	253.6	45.9	48.5	30.7	2532.4	
Level of Service	D	D		F	C	E	C	F	D	D	C	F	
Approach Delay (s)		53.3			159.0			204.0			151.3		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			170.0		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.20										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			119.8%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	721	43	13	543	49	73	98	273
v/c Ratio	0.58	0.51	0.04	0.03	0.25	0.79	0.30	0.61	0.65
Control Delay	5.4	2.9	0.3	8.3	7.0	116.6	21.5	65.0	14.3
Queue Delay	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	3.5	0.3	8.3	7.0	116.6	21.5	65.0	14.3
Queue Length 50th (m)	6.8	16.4	0.1	0.7	16.7	12.0	5.2	23.5	3.1
Queue Length 95th (m)	m12.3	m23.7	m0.2	m2.6	32.0	#27.9	18.3	39.3	27.9
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	915	1417	1191	467	2208	118	427	304	568
Starvation Cap Reductn	62	341	0	0	0	0	0	0	0
Spillback Cap Reductn	0	172	0	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.67	0.04	0.03	0.25	0.42	0.17	0.32	0.48

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	663	40	12	429	71	45	21	46	90	13	238
Future Volume (vph)	396	663	40	12	429	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1783	1827	1528	1782	3456		1770	1666		1748	1587	
Flt Permitted	0.42	1.00	1.00	0.39	1.00		0.27	1.00		0.71	1.00	
Satd. Flow (perm)	790	1827	1528	734	3456		507	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	721	43	13	466	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	6	0	6	0	0	44	0	0	227	0
Lane Group Flow (vph)	430	721	37	13	537	0	49	29	0	98	46	0
Confl. Peds. (#/hr)	5		11	11		5			4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	93.1	93.1	93.1	76.5	76.5		14.7	14.7		14.7	14.7	
Effective Green, g (s)	93.1	93.1	93.1	76.5	76.5		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.78	0.78	0.78	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	725	1417	1185	467	2203		62	204		159	194	
v/s Ratio Prot	c0.07	0.39			0.16			0.02				0.03
v/s Ratio Perm	c0.39		0.02	0.02			c0.10			0.08		
v/c Ratio	0.59	0.51	0.03	0.03	0.24		0.79	0.14		0.62	0.24	
Uniform Delay, d1	4.2	5.0	3.1	8.0	9.3		51.2	47.0		50.0	47.6	
Progression Factor	0.94	0.36	0.14	0.71	0.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.8	0.0	0.1	0.2		48.2	0.3		6.9	0.6	
Delay (s)	4.7	2.6	0.5	5.8	6.3		99.4	47.3		56.9	48.2	
Level of Service	A	A	A	A	A		F	D		E	D	
Approach Delay (s)		3.3			6.3			68.2			50.5	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			94.3%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	961	79	474	118	195	89	60
v/c Ratio	0.75	0.19	0.35	0.59	0.55	0.50	0.10
Control Delay	14.7	7.8	8.2	57.2	7.1	55.0	0.4
Queue Delay	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	7.8	8.2	57.2	7.1	55.0	0.4
Queue Length 50th (m)	166.4	7.3	48.2	26.3	0.0	19.5	0.0
Queue Length 95th (m)	214.4	m13.6	m65.0	m#44.6	m2.7	35.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1288	427	1370	201	458	177	676
Starvation Cap Reductn	145	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.19	0.35	0.59	0.43	0.50	0.09

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Future Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.97		1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1755		1799	1817		1770	1511		1793	1615	
Flt Permitted		0.97		0.30	1.00		0.50	1.00		0.62	1.00	
Satd. Flow (perm)		1708		569	1817		935	1511		1162	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	748	179	79	379	95	118	0	195	89	0	60
RTOR Reduction (vph)	0	5	0	0	6	0	0	180	0	0	57	0
Lane Group Flow (vph)	0	956	0	79	468	0	118	15	0	89	3	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		88.9		88.9	88.9		18.4	9.3		12.8	6.5	
Effective Green, g (s)		88.9		88.9	88.9		18.4	9.3		12.8	6.5	
Actuated g/C Ratio		0.74		0.74	0.74		0.15	0.08		0.11	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1265		421	1346		206	117		157	87	
v/s Ratio Prot					0.26		c0.04	0.01		0.03	0.00	
v/s Ratio Perm		c0.56		0.14			c0.04			0.03		
v/c Ratio		0.76		0.19	0.35		0.57	0.13		0.57	0.04	
Uniform Delay, d1		9.2		4.7	5.4		46.1	51.6		50.4	53.8	
Progression Factor		1.24		1.51	1.55		0.98	0.71		1.00	1.00	
Incremental Delay, d2		3.9		1.0	0.7		3.8	0.5		4.6	0.2	
Delay (s)		15.2		8.0	9.1		49.0	36.9		55.0	54.0	
Level of Service		B		A	A		D	D		E	D	
Approach Delay (s)		15.2			9.0			41.5			54.6	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.6			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			102.3%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	731	210	96	446	8	64	0	189	11	0	0
Future Volume (Veh/h)	5	731	210	96	446	8	64	0	189	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	795	228	104	485	9	70	0	205	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.66			0.66	0.66	0.66	0.66	0.66	0.66
vC, conflicting volume	498			1024			1618	1626	910	1826	1736	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			775			1681	1692	601	1996	1859	494
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			0	100	38	0	100	100
cM capacity (veh/h)	1073			557			42	50	330	10	39	577
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1028	598	70	205	12							
Volume Left	5	104	70	0	12							
Volume Right	228	9	0	205	0							
cSH	1073	557	42	330	10							
Volume to Capacity	0.00	0.19	1.66	0.62	1.25							
Queue Length 95th (m)	0.1	5.4	57.3	31.4	18.2							
Control Delay (s)	0.1	5.1	533.4	32.1	897.2							
Lane LOS	A	A	F	D	F							
Approach Delay (s)	0.1	5.1	159.7		897.2							
Approach LOS			F		F							
Intersection Summary												
Average Delay			30.2									
Intersection Capacity Utilization			102.5%		ICU Level of Service				G			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Future Volume (Veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	3	397	2	8	3	179	104	0	2	38	221
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	622	614	150	1014	725	104	259			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	614	150	1014	725	104	259			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	56	98	97	100	86			100		
cM capacity (veh/h)	344	260	902	109	230	873	1317			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	750	13	283	261								
Volume Left	350	2	179	2								
Volume Right	397	3	0	221								
cSH	511	229	1317	1048								
Volume to Capacity	1.47	0.06	0.14	0.00								
Queue Length 95th (m)	299.3	1.4	3.8	0.0								
Control Delay (s)	243.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	243.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			140.9									
Intersection Capacity Utilization			85.8%		ICU Level of Service					E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	345	2839	375	0	1941			
Future Volume (Veh/h)	0	345	2839	375	0	1941			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	375	3086	408	0	2110			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.64	0.54			0.54				
vC, conflicting volume	3789	1029			3494				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1333	0			2654				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	37			100				
cM capacity (veh/h)	95	594			88				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	375	1029	1029	1029	408	703	703	703	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	375	0	0	0	408	0	0	0	
cSH	594	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.63	0.61	0.61	0.61	0.24	0.41	0.41	0.41	
Queue Length 95th (m)	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	20.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	C								
Approach Delay (s)	20.8	0.0				0.0			
Approach LOS	C								
Intersection Summary									
Average Delay			1.3						
Intersection Capacity Utilization			82.9%		ICU Level of Service			E	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	670	344	2824	965
v/c Ratio	0.83	0.90	0.87	0.30
Control Delay	51.4	69.3	18.1	6.5
Queue Delay	0.0	0.0	35.0	0.0
Total Delay	51.4	69.3	53.1	6.5
Queue Length 50th (m)	78.3	87.4	179.8	17.9
Queue Length 95th (m)	101.1	#143.9	m71.3	m19.8
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	867	412	3251	3219
Starvation Cap Reductn	0	0	622	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.83	1.07	0.30

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	300	633	2598	0	0	888
Future Volume (vph)	300	633	2598	0	0	888
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3039	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3039	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	688	2824	0	0	965
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	669	343	2824	0	0	965
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.7	31.7	76.7			76.7
Effective Green, g (s)	31.7	31.7	76.7			76.7
Actuated g/C Ratio	0.26	0.26	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	802	380	3250			3218
v/s Ratio Prot			c0.56			0.19
v/s Ratio Perm	0.22	c0.24				
v/c Ratio	0.83	0.90	0.87			0.30
Uniform Delay, d1	41.7	42.6	17.6			9.7
Progression Factor	1.00	1.00	0.96			0.63
Incremental Delay, d2	7.4	23.7	0.3			0.1
Delay (s)	49.1	66.3	17.1			6.3
Level of Service	D	E	B			A
Approach Delay (s)	55.0		17.1			6.3
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			22.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			134.6%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	977	968	576	2329	485	937
v/c Ratio	1.49	1.56	1.00	1.37	1.55	0.56
Control Delay	258.1	289.2	69.8	201.5	290.3	22.8
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	258.1	289.2	69.8	202.0	290.3	22.8
Queue Length 50th (m)	-352.2	-375.4	-132.0	-277.2	-152.9	81.7
Queue Length 95th (m)	#436.9	#464.8	#215.8	#307.8	#222.3	111.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	620	574	1702	313	1665
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	246	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.49	1.56	1.00	1.60	1.55	0.56

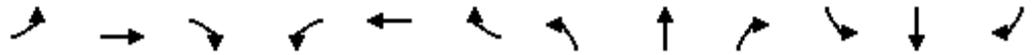
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1729	2	589	0	0	0	0	1689	454	446	862	0	
Future Volume (vph)	1729	2	589	0	0	0	0	1689	454	446	862	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1602	1334					4752		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00		
Satd. Flow (perm)	1698	1602	1334					4752		164	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1879	2	640	0	0	0	0	1836	493	485	937	0	
RTOR Reduction (vph)	0	2	59	0	0	0	0	40	0	0	0	0	
Lane Group Flow (vph)	977	966	517	0	0	0	0	2289	0	485	937	0	
Confl. Peds. (#/hr)								5		7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	46.4	46.4	46.4					42.0		62.0	62.0		
Effective Green, g (s)	46.4	46.4	46.4					42.0		62.0	62.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.35		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	656	619	515					1663		309	1665		
v/s Ratio Prot								0.48		c0.22	0.29		
v/s Ratio Perm	0.58	0.60	0.39							c0.59			
v/c Ratio	1.49	1.56	1.00					1.38		1.57	0.56		
Uniform Delay, d1	36.8	36.8	36.8					39.0		37.8	19.8		
Progression Factor	1.00	1.00	1.00					1.00		1.08	1.07		
Incremental Delay, d2	228.3	260.2	40.7					173.2		270.6	1.3		
Delay (s)	265.1	297.0	77.5					212.2		311.3	22.5		
Level of Service	F	F	E					F		F	C		
Approach Delay (s)		234.5			0.0			212.2			121.0		
Approach LOS		F			A			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			200.5									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.60										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			134.6%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	162	0	0	230	66	56
Future Volume (Veh/h)	162	0	0	230	66	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	0	0	250	72	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			176		426	176
vC1, stage 1 conf vol	176					
vC2, stage 2 conf vol	250					
vCu, unblocked vol			176		426	176
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)	5.4					
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	93
cM capacity (veh/h)			1400		723	867
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	176	250	72	61		
Volume Left	0	0	72	0		
Volume Right	0	0	0	61		
cSH	1700	1700	723	867		
Volume to Capacity	0.10	0.15	0.10	0.07		
Queue Length 95th (m)	0.0	0.0	2.6	1.8		
Control Delay (s)	0.0	0.0	10.5	9.5		
Lane LOS			B	A		
Approach Delay (s)	0.0	0.0	10.0			
Approach LOS	B					
Intersection Summary						
Average Delay	2.4					
Intersection Capacity Utilization			47.3%	ICU Level of Service		A
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2041) Traffic Analysis  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	137	76	91	0	21	0	101	46	0	0	0
Future Volume (Veh/h)	0	137	76	91	0	21	0	101	46	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	149	83	99	0	23	0	110	50	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	23			232			347	370	149	452	430	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			232			347	370	149	452	430	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			100	79	94	100	100	100
cM capacity (veh/h)	1592			1336			573	518	898	387	479	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	149	83	99	23	160							
Volume Left	0	0	99	0	0							
Volume Right	0	83	0	23	50							
cSH	1700	1700	1336	1700	597							
Volume to Capacity	0.09	0.05	0.07	0.01	0.27							
Queue Length 95th (m)	0.0	0.0	1.9	0.0	8.6							
Control Delay (s)	0.0	0.0	7.9	0.0	13.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.4		13.2							
Approach LOS					B							
Intersection Summary												
Average Delay			5.6									
Intersection Capacity Utilization			30.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	20	135	0	195	27	56	107	206	2	31
Future Volume (Veh/h)	38	0	20	135	0	195	27	56	107	206	2	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	0	22	147	0	212	29	61	116	224	2	34
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			TWLTL		
Median storage (veh)							2			2		
Upstream signal (m)												61
pX, platoon unblocked												
vC, conflicting volume	798	702	19	649	661	119	36			177		
vC1, stage 1 conf vol	467	467		177	177							
vC2, stage 2 conf vol	331	235		472	484							
vCu, unblocked vol	798	702	19	649	661	119	36			177		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	98	66	100	77	98			84		
cM capacity (veh/h)	280	405	1059	426	418	933	1575			1399		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	63	359	29	177	224	36						
Volume Left	41	147	29	0	224	0						
Volume Right	22	212	0	116	0	34						
cSH	377	627	1575	1700	1399	1700						
Volume to Capacity	0.17	0.57	0.02	0.10	0.16	0.02						
Queue Length 95th (m)	4.7	29.0	0.5	0.0	4.6	0.0						
Control Delay (s)	16.5	18.1	7.3	0.0	8.1	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	16.5	18.1	1.0		6.9							
Approach LOS	C	C										
Intersection Summary												
Average Delay			10.8									
Intersection Capacity Utilization			51.2%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	28	124	5	5	155
Future Volume (Veh/h)	190	28	124	5	5	155
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	207	30	135	5	5	168
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	140				582	138
vC1, stage 1 conf vol					138	
vC2, stage 2 conf vol					444	
vCu, unblocked vol	140				582	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				99	82
cM capacity (veh/h)	1443				531	911
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	207	30	140	5	168	
Volume Left	207	0	0	5	0	
Volume Right	0	0	5	0	168	
cSH	1443	1700	1700	531	911	
Volume to Capacity	0.14	0.02	0.08	0.01	0.18	
Queue Length 95th (m)	4.0	0.0	0.0	0.2	5.4	
Control Delay (s)	7.9	0.0	0.0	11.8	9.8	
Lane LOS	A			B	A	
Approach Delay (s)	6.9		0.0	9.9		
Approach LOS				A		
<b>Intersection Summary</b>						
Average Delay			6.1			
Intersection Capacity Utilization			30.7%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	96	79	94	91	0	129
Future Volume (Veh/h)	96	79	94	91	0	129
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	104	86	102	99	0	140
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			190		450	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			190		450	147
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	84
cM capacity (veh/h)			1384		525	900
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	190	201	140			
Volume Left	0	102	0			
Volume Right	86	0	140			
cSH	1700	1384	900			
Volume to Capacity	0.11	0.07	0.16			
Queue Length 95th (m)	0.0	1.9	4.4			
Control Delay (s)	0.0	4.3	9.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.3	9.7			
Approach LOS			A			
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			37.9%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2041) Traffic Analysis  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	28	0	0	50	88	74	165	0	82	224	0
Future Volume (Veh/h)	2	28	0	0	50	88	74	165	0	82	224	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	30	0	0	54	96	80	179	0	89	243	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	883	760	243	775	760	179	243			179		
vC1, stage 1 conf vol	421	421		339	339							
vC2, stage 2 conf vol	462	339		436	421							
vCu, unblocked vol	883	760	243	775	760	179	243			179		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	93	100	100	87	89	94			94		
cM capacity (veh/h)	327	441	796	415	430	864	1323			1397		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	2	30	0	150	80	179	89	243				
Volume Left	2	0	0	0	80	0	89	0				
Volume Right	0	0	0	96	0	0	0	0				
cSH	327	441	1700	634	1323	1700	1397	1700				
Volume to Capacity	0.01	0.07	0.00	0.24	0.06	0.11	0.06	0.14				
Queue Length 95th (m)	0.1	1.7	0.0	7.3	1.5	0.0	1.6	0.0				
Control Delay (s)	16.1	13.8	0.0	12.4	7.9	0.0	7.8	0.0				
Lane LOS	C	B	A	B	A		A					
Approach Delay (s)	13.9		12.4		2.4		2.1					
Approach LOS	B		B									
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization			33.9%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2041) Traffic Analysis  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	165	48	0	62	39	185
Future Volume (Veh/h)	165	48	0	62	39	185
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	179	52	0	67	42	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	210	142	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210	142	243			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	94	100			
cM capacity (veh/h)	779	905	1323			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	231	67	243			
Volume Left	179	0	0			
Volume Right	52	0	201			
cSH	804	1323	1700			
Volume to Capacity	0.29	0.00	0.14			
Queue Length 95th (m)	9.5	0.0	0.0			
Control Delay (s)	11.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.3	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			4.8			
Intersection Capacity Utilization			32.2%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	99	0	10	128	0
Future Volume (Veh/h)	11	99	0	10	128	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	108	0	11	139	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			120		77	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			120		77	66
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	100
cM capacity (veh/h)			1468		926	998
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	120	11	139			
Volume Left	0	0	139			
Volume Right	108	0	0			
cSH	1700	1468	926			
Volume to Capacity	0.07	0.00	0.15			
Queue Length 95th (m)	0.0	0.0	4.2			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	162	213	0	345	0	0
Future Volume (Veh/h)	162	213	0	345	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	232	0	375	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			408		667	292
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			408		667	292
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1151		424	747
Direction, Lane #	EB 1	WB 1				
Volume Total	408	375				
Volume Left	0	0				
Volume Right	232	0				
cSH	1700	1700				
Volume to Capacity	0.24	0.22				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			47.3%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	867	667	240	893	258	354	1286	386	253	1390	193
v/c Ratio	0.94	0.81	1.05	1.15	0.83	0.40	1.20	0.83	0.59	0.91	0.93	0.33
Control Delay	101.0	45.8	74.9	153.4	49.1	11.0	110.2	30.7	18.8	65.0	53.0	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.0	45.8	74.9	153.4	49.1	11.0	110.2	30.7	18.8	65.0	53.0	6.1
Queue Length 50th (m)	48.7	104.5	-132.0	-71.8	82.1	0.0	-81.3	121.3	74.7	43.9	122.6	0.0
Queue Length 95th (m)	#95.3	130.1	#207.0	#126.2	126.4	37.9	m#62.0	m104.7	m62.5	#94.1	#151.9	17.4
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	208	1072	636	208	1072	648	295	1541	652	278	1498	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.81	1.05	1.15	0.83	0.40	1.20	0.83	0.59	0.91	0.93	0.33

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	798	614	221	822	237	326	1183	355	233	1279	178
Future Volume (vph)	179	798	614	221	822	237	326	1183	355	233	1279	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	211	5136	1533	215	5136	1545
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	195	867	667	240	893	258	354	1286	386	253	1390	193
RTOR Reduction (vph)	0	0	181	0	0	181	0	0	193	0	0	137
Lane Group Flow (vph)	195	867	486	240	893	77	354	1286	194	253	1390	56
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	14.0	36.0	36.0	14.0	36.0	36.0	51.0	36.0	36.0	49.0	35.0	35.0
Effective Green, g (s)	14.0	36.0	36.0	14.0	36.0	36.0	51.0	36.0	36.0	49.0	35.0	35.0
Actuated g/C Ratio	0.12	0.30	0.30	0.12	0.30	0.30	0.42	0.30	0.30	0.41	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	1072	456	208	1072	467	288	1540	459	271	1498	450
v/s Ratio Prot	0.11	0.24		c0.13	0.25		c0.15	0.25		0.11	0.27	
v/s Ratio Perm			c0.32			0.05	c0.37		0.13	0.27		0.04
v/c Ratio	0.94	0.81	1.07	1.15	0.83	0.17	1.23	0.84	0.42	0.93	0.93	0.13
Uniform Delay, d1	52.6	38.8	42.0	53.0	39.2	30.9	34.7	39.2	33.7	31.6	41.3	31.2
Progression Factor	1.00	1.00	1.00	0.98	1.06	2.39	0.34	0.76	1.77	1.00	1.00	1.00
Incremental Delay, d2	44.6	6.6	61.0	107.2	6.9	0.7	106.1	0.5	0.3	37.0	11.4	0.6
Delay (s)	97.2	45.4	103.0	159.3	48.7	74.6	117.8	30.5	59.9	68.6	52.7	31.8
Level of Service	F	D	F	F	D	E	F	C	E	E	D	C
Approach Delay (s)		73.5			72.6			51.4			52.7	
Approach LOS		E			E			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			61.4									E
HCM 2000 Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			120.0							20.0		
Intersection Capacity Utilization			107.8%									G
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1440	123	277	1327	356	2
v/c Ratio	0.02	0.66	0.13	0.67	0.47	0.81	0.01
Control Delay	27.2	35.7	18.3	23.2	5.5	25.4	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	35.7	18.3	23.2	5.5	25.4	42.5
Queue Length 50th (m)	0.7	187.7	13.8	24.3	41.8	14.3	0.5
Queue Length 95th (m)	m1.3	m219.0	m24.8	59.0	86.6	45.5	2.9
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	201	2198	968	455	2824	596	308
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.66	0.13	0.61	0.47	0.60	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1325	113	255	1221	0	15	2	311	1	1	0
Future Volume (vph)	5	1325	113	255	1221	0	15	2	311	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1605			1850	
Flt Permitted	0.21	1.00	1.00	0.11	1.00			0.99			0.70	
Satd. Flow (perm)	327	3574	1541	211	3574			1584			1324	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1440	123	277	1327	0	16	2	338	1	1	0
RTOR Reduction (vph)	0	0	21	0	0	0	0	263	0	0	0	0
Lane Group Flow (vph)	5	1440	102	277	1327	0	0	93	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	73.8	73.8	73.8	94.8	94.8			13.2			13.2	
Effective Green, g (s)	73.8	73.8	73.8	94.8	94.8			13.2			13.2	
Actuated g/C Ratio	0.61	0.61	0.61	0.79	0.79			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	201	2198	947	405	2823			174			145	
v/s Ratio Prot		0.40		c0.10	0.37							
v/s Ratio Perm	0.02		0.07	c0.44				c0.06			0.00	
v/c Ratio	0.02	0.66	0.11	0.68	0.47			0.53			0.01	
Uniform Delay, d1	9.0	14.9	9.5	21.3	4.2			50.5			47.6	
Progression Factor	1.85	1.99	2.38	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.0	0.1	4.7	0.6			3.1			0.0	
Delay (s)	16.8	30.7	22.8	26.0	4.8			53.6			47.6	
Level of Service	B	C	C	C	A			D			D	
Approach Delay (s)		30.0			8.4			53.6			47.6	
Approach LOS		C			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			86.8%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 SAT Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	462	746	190	176	291	1732	226	613	972	99
v/c Ratio	0.57	0.76	1.57	0.31	0.29	0.64	1.23	0.43	1.10	0.50	0.15
Control Delay	62.0	37.1	296.1	27.5	5.7	24.0	148.2	20.3	76.8	22.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	37.1	296.1	27.5	5.7	24.0	148.2	20.3	76.8	22.3	3.7
Queue Length 50th (m)	21.0	34.2	~136.8	37.4	11.0	33.7	~199.7	18.5	~146.2	75.4	3.3
Queue Length 95th (m)	36.8	50.0	m#164.8	m47.0	m18.5	66.6	#223.1	44.2	m#183.6	m84.9	m6.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	311	1007	476	862	793	467	1408	521	558	1953	669
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.46	1.57	0.22	0.22	0.62	1.23	0.43	1.10	0.50	0.15

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

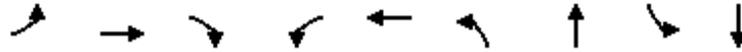
1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	219	206	686	175	162	268	1593	208	564	894	91	
Future Volume (vph)	82	219	206	686	175	162	268	1593	208	564	894	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1767	3293		3467	1900	1536	1786	5136	1571	1805	5136	1567	
Flt Permitted	0.64	1.00		0.95	1.00	1.00	0.28	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1186	3293		3467	1900	1536	531	5136	1571	212	5136	1567	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	238	224	746	190	176	291	1732	226	613	972	99	
RTOR Reduction (vph)	0	168	0	0	0	119	0	0	91	0	0	61	
Lane Group Flow (vph)	89	294	0	746	190	57	291	1732	135	613	972	38	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	15.9	15.9		16.5	38.9	38.9	52.8	32.9	32.9	68.5	45.6	45.6	
Effective Green, g (s)	15.9	15.9		16.5	38.9	38.9	52.8	32.9	32.9	68.5	45.6	45.6	
Actuated g/C Ratio	0.13	0.13		0.14	0.32	0.32	0.44	0.27	0.27	0.57	0.38	0.38	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	157	436		476	615	497	441	1408	430	553	1951	595	
v/s Ratio Prot		c0.09		c0.22	0.10		0.11	c0.34		c0.30	0.19		
v/s Ratio Perm	0.08					0.04	0.18		0.09	0.33		0.02	
v/c Ratio	0.57	0.67		1.57	0.31	0.11	0.66	1.23	0.31	1.11	0.50	0.06	
Uniform Delay, d1	48.8	49.6		51.8	30.5	28.5	22.5	43.5	34.6	35.7	28.5	23.6	
Progression Factor	1.00	1.00		0.91	0.89	1.27	1.22	1.03	1.12	0.63	0.73	0.90	
Incremental Delay, d2	4.6	4.1		263.1	0.2	0.1	3.3	109.5	1.8	56.1	0.2	0.1	
Delay (s)	53.5	53.7		310.0	27.4	36.1	30.7	154.2	40.5	78.7	21.0	21.4	
Level of Service	D	D		F	C	D	C	F	D	E	C	C	
Approach Delay (s)		53.6			218.4			126.8			42.0		
Approach LOS		D			F			F			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			112.3		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.16										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					22.1			
Intersection Capacity Utilization			117.4%		ICU Level of Service					H			
Analysis Period (min)			15										
c Critical Lane Group													

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	545	64	34	507	112	102	128	624
v/c Ratio	0.79	0.54	0.08	0.13	0.47	1.78	0.16	0.28	0.66
Control Delay	20.1	9.8	2.6	31.5	28.3	437.7	11.9	26.7	6.2
Queue Delay	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	10.6	2.6	31.5	28.3	437.7	11.9	26.7	6.2
Queue Length 50th (m)	40.7	46.4	0.7	6.2	46.7	-39.3	7.5	20.6	5.5
Queue Length 95th (m)	m53.7	m51.6	m1.5	m13.4	70.1	#58.2	18.1	34.0	31.8
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	644	1009	850	270	1088	76	773	561	1029
Starvation Cap Reductn	12	203	0	0	0	0	0	0	0
Spillback Cap Reductn	0	134	0	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.68	0.08	0.13	0.47	1.47	0.13	0.23	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

4: Canadian Tire Access/Walmart West Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	501	59	31	356	110	103	46	48	118	34	540
Future Volume (vph)	433	501	59	31	356	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1863	1543	1784	3416		1805	1717		1782	1607	
Flt Permitted	0.34	1.00	1.00	0.46	1.00		0.09	1.00		0.69	1.00	
Satd. Flow (perm)	639	1863	1543	865	3416		178	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	545	64	34	387	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	14	0	21	0	0	33	0	0	378	0
Lane Group Flow (vph)	471	545	50	34	486	0	112	69	0	128	246	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	65.0	65.0	65.0	37.5	37.5		42.8	42.8		42.8	42.8	
Effective Green, g (s)	65.0	65.0	65.0	37.5	37.5		42.8	42.8		42.8	42.8	
Actuated g/C Ratio	0.54	0.54	0.54	0.31	0.31		0.36	0.36		0.36	0.36	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	583	1009	835	270	1067		63	612		462	573	
v/s Ratio Prot	c0.16	0.29			0.14			0.04			0.15	
v/s Ratio Perm	c0.27		0.03	0.04			c0.63			0.10		
v/c Ratio	0.81	0.54	0.06	0.13	0.46		1.78	0.11		0.28	0.43	
Uniform Delay, d1	18.2	17.8	13.0	29.5	33.1		38.6	25.9		27.6	29.3	
Progression Factor	0.78	0.42	0.25	0.78	0.76		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.1	0.1	0.9	1.3		406.3	0.1		0.3	0.5	
Delay (s)	18.8	8.6	3.3	23.9	26.5		444.9	25.9		27.9	29.9	
Level of Service	B	A	A	C	C		F	C		C	C	
Approach Delay (s)		12.7			26.3			245.2			29.5	
Approach LOS		B			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			39.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.22									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			105.4%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	779	96	507	133	230	100	86
v/c Ratio	0.61	0.20	0.39	0.55	0.49	0.47	0.14
Control Delay	10.8	8.7	8.8	52.2	3.6	49.5	0.5
Queue Delay	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	8.7	8.8	52.2	3.6	49.5	0.5
Queue Length 50th (m)	135.1	7.7	44.0	28.8	0.0	21.3	0.0
Queue Length 95th (m)	182.1	m20.7	86.9	48.3	0.0	38.0	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1271	471	1301	243	567	223	700
Starvation Cap Reductn	338	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.20	0.39	0.55	0.41	0.45	0.12

Intersection Summary

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

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Future Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.96		1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1733	1773		1799	1551		1758	1583	
Flt Permitted		0.98		0.36	1.00		0.53	1.00		0.57	1.00	
Satd. Flow (perm)		1736		648	1773		1010	1551		1058	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	523	234	96	337	170	133	0	230	100	0	86
RTOR Reduction (vph)	0	10	0	0	12	0	0	212	0	0	81	0
Lane Group Flow (vph)	0	769	0	96	495	0	133	18	0	100	5	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		86.1		86.1	86.1		20.6	9.2		16.2	7.0	
Effective Green, g (s)		86.1		86.1	86.1		20.6	9.2		16.2	7.0	
Actuated g/C Ratio		0.72		0.72	0.72		0.17	0.08		0.13	0.06	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1245		464	1272		248	118		196	92	
v/s Ratio Prot					0.28		c0.05	0.01		0.04	0.00	
v/s Ratio Perm		c0.44		0.15			c0.04			0.03		
v/c Ratio		0.62		0.21	0.39		0.54	0.15		0.51	0.05	
Uniform Delay, d1		8.6		5.6	6.6		44.5	51.7		47.6	53.4	
Progression Factor		1.10		1.38	1.37		1.01	1.00		1.00	1.00	
Incremental Delay, d2		2.1		1.0	0.9		2.2	0.6		2.2	0.2	
Delay (s)		11.6		8.7	10.0		47.1	52.3		49.9	53.6	
Level of Service		B		A	A		D	D		D	D	
Approach Delay (s)		11.6			9.8			50.4			51.6	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.2			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.5	
Intersection Capacity Utilization			87.9%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	543	240	102	480	28	77	0	246	25	0	1
Future Volume (Veh/h)	9	543	240	102	480	28	77	0	246	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	590	261	111	522	30	84	0	267	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	552			851			1502	1514	722	1768	1630	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			653			1503	1519	485	1850	1670	539
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			85			0	100	40	0	100	100
cM capacity (veh/h)	943			723			67	77	448	16	62	546
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	861	663	84	267	28							
Volume Left	10	111	84	0	27							
Volume Right	261	30	0	267	1							
cSH	943	723	67	448	16							
Volume to Capacity	0.01	0.15	1.25	0.60	1.73							
Queue Length 95th (m)	0.3	4.3	53.9	30.3	32.5							
Control Delay (s)	0.3	3.9	295.2	24.2	840.3							
Lane LOS	A	A	F	C	F							
Approach Delay (s)	0.3	3.9	89.0		840.3							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			30.3									
Intersection Capacity Utilization			107.4%		ICU Level of Service				G			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Future Volume (Veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	232	1	516	0	0	0	248	49	0	0	82	261
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	760	758	212	1274	888	52	343			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	758	212	1274	888	52	343			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	99	38	100	100	100	80			100		
cM capacity (veh/h)	270	194	833	47	227	1019	1227			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	749	0	297	343								
Volume Left	232	0	248	0								
Volume Right	516	0	0	261								
cSH	505	1700	1227	1571								
Volume to Capacity	1.48	0.06	0.20	0.00								
Queue Length 95th (m)	303.1	0.0	6.0	0.0								
Control Delay (s)	249.4	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	249.4	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			136.1									
Intersection Capacity Utilization			88.9%		ICU Level of Service					E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	420	1787	421	0	1989			
Future Volume (Veh/h)	0	420	1787	421	0	1989			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	457	1942	458	0	2162			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.89	0.82				0.82			
vC, conflicting volume	2666	650				2403			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1396	0				1949			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	49				100			
cM capacity (veh/h)	120	894				249			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	457	647	647	647	458	721	721	721	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	457	0	0	0	458	0	0	0	
cSH	894	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.51	0.38	0.38	0.38	0.27	0.42	0.42	0.42	
Queue Length 95th (m)	23.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	13.2	0.0					0.0		
Approach LOS	B								
Intersection Summary									
Average Delay			1.2						
Intersection Capacity Utilization			67.2%		ICU Level of Service			C	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	532	318	1787	878
v/c Ratio	0.62	0.81	0.55	0.27
Control Delay	40.3	55.3	14.8	16.0
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	40.3	55.3	15.0	16.0
Queue Length 50th (m)	58.4	78.4	70.3	36.7
Queue Length 95th (m)	67.6	104.2	m64.2	m37.9
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1222	554	3278	3278
Starvation Cap Reductn	0	0	583	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.57	0.66	0.27

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	197	585	1644	0	0	808
Future Volume (vph)	197	585	1644	0	0	808
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3231	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3231	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	636	1787	0	0	878
RTOR Reduction (vph)	7	7	0	0	0	0
Lane Group Flow (vph)	525	311	1787	0	0	878
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.8	31.8	76.6			76.6
Effective Green, g (s)	31.8	31.8	76.6			76.6
Actuated g/C Ratio	0.27	0.27	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	856	385	3278			3278
v/s Ratio Prot			c0.35			0.17
v/s Ratio Perm	0.16	c0.21				
v/c Ratio	0.61	0.81	0.55			0.27
Uniform Delay, d1	38.7	41.2	12.0			9.5
Progression Factor	1.00	1.00	1.11			1.52
Incremental Delay, d2	1.3	11.7	0.1			0.1
Delay (s)	40.0	52.9	13.5			14.5
Level of Service	D	D	B			B
Approach Delay (s)	44.8		13.5			14.5
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			103.9%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

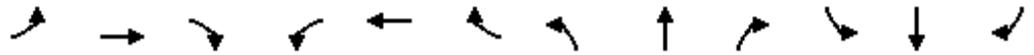


Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	755	752	490	1275	573	550
v/c Ratio	1.10	1.10	0.66	1.11	1.11	0.31
Control Delay	101.0	97.8	17.7	103.0	117.0	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.0	97.8	17.7	103.0	117.0	17.3
Queue Length 50th (m)	~224.0	~223.5	47.6	~127.2	~149.6	35.1
Queue Length 95th (m)	# 304.3	# 308.2	89.6	# 158.3	# 222.1	49.9
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	684	683	744	1148	515	1787
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.10	1.10	0.66	1.11	1.11	0.31

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1336	0	501	0	0	0	0	854	319	527	506	0	
Future Volume (vph)	1336	0	501	0	0	0	0	854	319	527	506	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1613	1461					4856		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.13	1.00		
Satd. Flow (perm)	1698	1613	1461					4856		251	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1452	0	545	0	0	0	0	928	347	573	550	0	
RTOR Reduction (vph)	0	33	155	0	0	0	0	57	0	0	0	0	
Lane Group Flow (vph)	755	719	335	0	0	0	0	1218	0	573	550	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	48.4	48.4	48.4					27.0		60.0	60.0		
Effective Green, g (s)	48.4	48.4	48.4					27.0		60.0	60.0		
Actuated g/C Ratio	0.40	0.40	0.40					0.22		0.50	0.50		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	684	650	589					1092		509	1787		
v/s Ratio Prot								0.25		c0.28	0.15		
v/s Ratio Perm	0.44	0.45	0.23							c0.28			
v/c Ratio	1.10	1.11	0.57					1.12		1.13	0.31		
Uniform Delay, d1	35.8	35.8	27.7					46.5		35.5	17.7		
Progression Factor	1.00	1.00	1.00					1.00		1.44	0.95		
Incremental Delay, d2	66.4	68.1	1.3					64.9		78.7	0.4		
Delay (s)	102.2	103.9	29.0					111.4		129.8	17.2		
Level of Service	F	F	C					F		F	B		
Approach Delay (s)		84.9			0.0			111.4			74.7		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			90.0									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.14										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			103.9%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	338	0	0	188	82	64
Future Volume (Veh/h)	338	0	0	188	82	64
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	367	0	0	204	89	70
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			367		571	367
vC1, stage 1 conf vol					367	
vC2, stage 2 conf vol					204	
vCu, unblocked vol			367		571	367
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		86	90
cM capacity (veh/h)			1192		643	678
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	367	204	89	70		
Volume Left	0	0	89	0		
Volume Right	0	0	0	70		
cSH	1700	1700	643	678		
Volume to Capacity	0.22	0.12	0.14	0.10		
Queue Length 95th (m)	0.0	0.0	3.8	2.7		
Control Delay (s)	0.0	0.0	11.5	10.9		
Lane LOS			B	B		
Approach Delay (s)	0.0	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

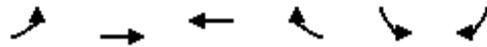
Future Total (2041) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	149	84	105	0	28	0	118	61	0	0	0
Future Volume (Veh/h)	0	149	84	105	0	28	0	118	61	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	162	91	114	0	30	0	128	66	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	30			253			390	420	162	520	481	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	30			253			390	420	162	520	481	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	73	93	100	100	100
cM capacity (veh/h)	1583			1312			531	479	883	321	442	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	162	91	114	30	194							
Volume Left	0	0	114	0	0							
Volume Right	0	91	0	30	66							
cSH	1700	1700	1312	1700	567							
Volume to Capacity	0.10	0.05	0.09	0.02	0.34							
Queue Length 95th (m)	0.0	0.0	2.3	0.0	12.1							
Control Delay (s)	0.0	0.0	8.0	0.0	14.6							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.3		14.6							
Approach LOS					B							
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization			33.6%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total (2041) Traffic Analysis  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	30	155	0	223	30	64	128	264	2	37
Future Volume (Veh/h)	49	0	30	155	0	223	30	64	128	264	2	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	0	33	168	0	242	33	70	139	287	2	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	974	871	22	814	822	140	42			209		
vC1, stage 1 conf vol	596	596		206	206							
vC2, stage 2 conf vol	378	275		609	616							
vCu, unblocked vol	974	871	22	814	822	140	42			209		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	100	97	48	100	73	98			79		
cM capacity (veh/h)	171	323	1055	325	335	909	1567			1362		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	86	410	33	209	287	42						
Volume Left	53	168	33	0	287	0						
Volume Right	33	242	0	139	0	40						
cSH	251	524	1567	1700	1362	1700						
Volume to Capacity	0.34	0.78	0.02	0.12	0.21	0.02						
Queue Length 95th (m)	11.7	57.5	0.5	0.0	6.4	0.0						
Control Delay (s)	26.6	32.4	7.3	0.0	8.3	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	26.6	32.4	1.0		7.3							
Approach LOS	D	D										
Intersection Summary												
Average Delay			17.1									
Intersection Capacity Utilization			59.6%		ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	222	30	153	5	5	185
Future Volume (Veh/h)	222	30	153	5	5	185
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	33	166	5	5	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	171				684	168
vC1, stage 1 conf vol					168	
vC2, stage 2 conf vol					515	
vCu, unblocked vol	171				684	168
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	83				99	77
cM capacity (veh/h)	1406				476	876
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	241	33	171	5	201	
Volume Left	241	0	0	5	0	
Volume Right	0	0	5	0	201	
cSH	1406	1700	1700	476	876	
Volume to Capacity	0.17	0.02	0.10	0.01	0.23	
Queue Length 95th (m)	4.9	0.0	0.0	0.3	7.1	
Control Delay (s)	8.1	0.0	0.0	12.6	10.3	
Lane LOS	A			B	B	
Approach Delay (s)	7.1		0.0	10.4		
Approach LOS				B		
Intersection Summary						
Average Delay			6.3			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	114	88	105	105	0	159
Future Volume (Veh/h)	114	88	105	105	0	159
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	124	96	114	114	0	173
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			220		514	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			220		514	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		100	80
cM capacity (veh/h)			1349		477	872
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	220	228	173			
Volume Left	0	114	0			
Volume Right	96	0	173			
cSH	1700	1349	872			
Volume to Capacity	0.13	0.08	0.20			
Queue Length 95th (m)	0.0	2.2	5.9			
Control Delay (s)	0.0	4.3	10.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	4.3	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			42.6%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2041) Traffic Analysis  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	30	0	0	64	115	89	208	0	88	254	0
Future Volume (Veh/h)	2	30	0	0	64	115	89	208	0	88	254	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	33	0	0	70	125	97	226	0	96	276	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1048	888	276	904	888	226	276			226		
vC1, stage 1 conf vol	468	468		420	420							
vC2, stage 2 conf vol	580	420		484	468							
vCu, unblocked vol	1048	888	276	904	888	226	276			226		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	92	100	100	82	85	92			93		
cM capacity (veh/h)	233	390	763	358	382	813	1287			1342		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	2	33	0	195	97	226	96	276				
Volume Left	2	0	0	0	97	0	96	0				
Volume Right	0	0	0	125	0	0	0	0				
cSH	233	390	1700	578	1287	1700	1342	1700				
Volume to Capacity	0.01	0.08	0.00	0.34	0.08	0.13	0.07	0.16				
Queue Length 95th (m)	0.2	2.2	0.0	11.8	2.0	0.0	1.8	0.0				
Control Delay (s)	20.6	15.1	0.0	14.4	8.0	0.0	7.9	0.0				
Lane LOS	C	C	A	B	A		A					
Approach Delay (s)	15.4		14.4		2.4		2.0					
Approach LOS	C		B									
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			38.7%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2041) Traffic Analysis  
 SAT Peak Hour



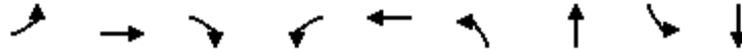
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	207	51	0	75	44	210
Future Volume (Veh/h)	207	51	0	75	44	210
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	225	55	0	82	48	228
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	244	162	276			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	162	276			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	94	100			
cM capacity (veh/h)	744	883	1287			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	280	82	276			
Volume Left	225	0	0			
Volume Right	55	0	228			
cSH	768	1287	1700			
Volume to Capacity	0.36	0.00	0.16			
Queue Length 95th (m)	13.4	0.0	0.0			
Control Delay (s)	12.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			36.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	106	0	14	165	0
Future Volume (Veh/h)	12	106	0	14	165	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	115	0	15	179	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			128		86	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		86	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1458		916	992
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	128	15	179			
Volume Left	0	0	179			
Volume Right	115	0	0			
cSH	1700	1458	916			
Volume to Capacity	0.08	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			23.0%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	188	233	0	420	0	0
Future Volume (Veh/h)	188	233	0	420	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	204	253	0	457	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			457		788	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		788	330
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1104		360	711
Direction, Lane #	EB 1	WB 1				
Volume Total	457	457				
Volume Left	0	0				
Volume Right	253	0				
cSH	1700	1700				
Volume to Capacity	0.27	0.27				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	392	103	63	391	37	187	29	27
v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.17	0.34	0.14	0.05
Control Delay	4.7	5.9	2.0	4.9	5.8	31.8	1.7	31.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	5.9	2.0	4.9	5.8	31.8	1.7	31.7	0.2
Queue Length 50th (m)	1.0	16.3	0.9	2.1	15.8	6.2	0.0	5.1	0.0
Queue Length 95th (m)	4.5	43.1	6.5	8.2	42.2	13.4	0.0	11.3	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	720	1197	1201	722	1195	214	667	212	764
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.17	0.28	0.14	0.04
Intersection Summary									

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Future Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1797	1638	1615	1805	1632		1768	1273		1803	1593	
Flt Permitted	0.52	1.00	1.00	0.52	1.00		0.56	1.00		0.62	1.00	
Satd. Flow (perm)	985	1638	1615	988	1632		1037	1273		1186	1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	392	103	63	354	37	37	0	187	29	0	27
RTOR Reduction (vph)	0	0	23	0	3	0	0	169	0	0	25	0
Lane Group Flow (vph)	29	392	80	63	388	0	37	18	0	29	2	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.3	63.3	63.3	63.3	63.3		13.3	8.5		9.1	6.4	
Effective Green, g (s)	63.3	63.3	63.3	63.3	63.3		13.3	8.5		9.1	6.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70		0.15	0.09		0.10	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	692	1152	1135	694	1147		192	120		138	113	
v/s Ratio Prot		c0.24			0.24		c0.01	0.01		0.01	0.00	
v/s Ratio Perm	0.03		0.05	0.06			c0.02			0.01		
v/c Ratio	0.04	0.34	0.07	0.09	0.34		0.19	0.15		0.21	0.02	
Uniform Delay, d1	4.1	5.2	4.2	4.2	5.2		33.4	37.4		37.0	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.1	0.3	0.8		0.5	0.6		0.8	0.1	
Delay (s)	4.2	6.0	4.3	4.5	6.0		33.9	38.0		37.7	38.9	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		5.6			5.8			37.3			38.3	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)					15.5	
Intersection Capacity Utilization			69.6%			ICU Level of Service					C	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 PM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	748	179	79	474	118	195	89	60
v/c Ratio	0.06	0.60	0.17	0.21	0.38	0.44	0.56	0.40	0.10
Control Delay	5.9	11.0	3.8	7.9	7.4	34.5	10.0	33.7	0.4
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	12.1	3.8	7.9	7.4	34.5	10.0	33.7	0.4
Queue Length 50th (m)	1.9	67.4	5.9	4.9	31.8	17.9	0.0	13.3	0.0
Queue Length 95th (m)	5.6	113.0	14.4	12.6	54.4	32.0	13.6	25.2	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	593	1238	1052	378	1251	271	487	224	695
Starvation Cap Reductn	0	259	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.76	0.17	0.21	0.38	0.44	0.40	0.40	0.09
<b>Intersection Summary</b>									

5: Street D/Walmart East Access & Pickering Pkwy

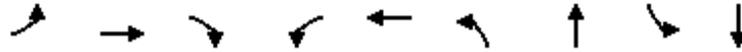
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Future Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1799	1810	1503	1800	1818		1770	1517		1798	1615	
Flt Permitted	0.46	1.00	1.00	0.29	1.00		0.72	1.00		0.47	1.00	
Satd. Flow (perm)	868	1810	1503	552	1818		1337	1517		891	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	748	179	79	379	95	118	0	195	89	0	60
RTOR Reduction (vph)	0	0	24	0	7	0	0	177	0	0	54	0
Lane Group Flow (vph)	34	748	155	79	467	0	118	18	0	89	6	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	61.0	61.0	61.0	61.0	61.0		13.5	8.5		13.5	8.5	
Effective Green, g (s)	61.0	61.0	61.0	61.0	61.0		13.5	8.5		13.5	8.5	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68		0.15	0.09		0.15	0.09	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	588	1226	1018	374	1232		224	143		184	152	
v/s Ratio Prot		c0.41			0.26		c0.03	0.01		0.03	0.00	
v/s Ratio Perm	0.04		0.10	0.14			c0.05			0.05		
v/c Ratio	0.06	0.61	0.15	0.21	0.38		0.53	0.13		0.48	0.04	
Uniform Delay, d1	4.9	8.0	5.2	5.5	6.3		34.8	37.4		34.3	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.3	0.3	1.3	0.9		2.2	0.4		2.0	0.1	
Delay (s)	5.1	10.2	5.5	6.7	7.2		37.1	37.8		36.3	37.1	
Level of Service	A	B	A	A	A		D	D		D	D	
Approach Delay (s)		9.2			7.1			37.5			36.6	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.2				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			88.2%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total (2041) Traffic Analysis  
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	523	234	96	507	133	230	100	86
v/c Ratio	0.04	0.42	0.21	0.18	0.42	0.51	0.51	0.39	0.15
Control Delay	5.8	8.3	3.3	7.1	7.7	36.4	4.4	33.0	0.5
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	8.8	3.3	7.1	7.7	36.4	4.4	33.0	0.5
Queue Length 50th (m)	1.3	40.9	6.3	6.2	35.7	19.9	0.0	14.7	0.0
Queue Length 95th (m)	3.9	61.1	14.7	13.0	55.3	36.2	1.0	28.4	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	555	1250	1109	522	1215	261	613	261	723
Starvation Cap Reductn	0	331	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.57	0.21	0.18	0.42	0.51	0.38	0.38	0.12
<b>Intersection Summary</b>									

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Future Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1845	1575	1732	1773		1800	1559		1759	1586	
Flt Permitted	0.43	1.00	1.00	0.42	1.00		0.53	1.00		0.62	1.00	
Satd. Flow (perm)	820	1845	1575	769	1773		1001	1559		1157	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	523	234	96	337	170	133	0	230	100	0	86
RTOR Reduction (vph)	0	0	44	0	14	0	0	208	0	0	80	0
Lane Group Flow (vph)	22	523	190	96	493	0	133	22	0	100	6	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.8	59.8	59.8	59.8	59.8		16.8	8.5		12.6	6.4	
Effective Green, g (s)	59.8	59.8	59.8	59.8	59.8		16.8	8.5		12.6	6.4	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66		0.19	0.09		0.14	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	544	1225	1046	510	1178		260	147		203	112	
v/s Ratio Prot		c0.28			0.28		c0.05	0.01		0.03	0.00	
v/s Ratio Perm	0.03		0.12	0.12			c0.05			0.03		
v/c Ratio	0.04	0.43	0.18	0.19	0.42		0.51	0.15		0.49	0.05	
Uniform Delay, d1	5.2	7.1	5.8	5.8	7.0		32.2	37.4		35.3	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.1	0.4	0.8	1.1		1.7	0.5		1.9	0.2	
Delay (s)	5.3	8.2	6.1	6.6	8.1		33.9	37.9		37.2	39.2	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		7.5			7.9			36.4			38.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			80.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total (2046) Traffic Analysis  
 AM Peak Hour

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	392	103	63	391	37	187	29	27
v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.17	0.34	0.14	0.05
Control Delay	4.7	5.9	2.0	4.9	5.8	31.8	1.7	31.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	5.9	2.0	4.9	5.8	31.8	1.7	31.7	0.2
Queue Length 50th (m)	1.0	16.3	0.9	2.1	15.8	6.2	0.0	5.1	0.0
Queue Length 95th (m)	4.5	43.1	6.5	8.2	42.2	13.4	0.0	11.3	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	720	1197	1201	722	1195	214	667	212	764
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.09	0.09	0.33	0.17	0.28	0.14	0.04
<b>Intersection Summary</b>									

5: Street D/Walmart East Access & Pickering Pkwy

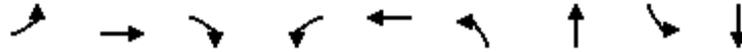
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Future Volume (vph)	27	361	95	58	326	34	34	0	172	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1797	1638	1615	1805	1632		1768	1273		1803	1593	
Flt Permitted	0.52	1.00	1.00	0.52	1.00		0.56	1.00		0.62	1.00	
Satd. Flow (perm)	985	1638	1615	988	1632		1037	1273		1186	1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	392	103	63	354	37	37	0	187	29	0	27
RTOR Reduction (vph)	0	0	23	0	3	0	0	169	0	0	25	0
Lane Group Flow (vph)	29	392	80	63	388	0	37	18	0	29	2	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.3	63.3	63.3	63.3	63.3		13.3	8.5		9.1	6.4	
Effective Green, g (s)	63.3	63.3	63.3	63.3	63.3		13.3	8.5		9.1	6.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70		0.15	0.09		0.10	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	692	1152	1135	694	1147		192	120		138	113	
v/s Ratio Prot		c0.24			0.24		c0.01	0.01		0.01	0.00	
v/s Ratio Perm	0.03		0.05	0.06			c0.02			0.01		
v/c Ratio	0.04	0.34	0.07	0.09	0.34		0.19	0.15		0.21	0.02	
Uniform Delay, d1	4.1	5.2	4.2	4.2	5.2		33.4	37.4		37.0	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8	0.1	0.3	0.8		0.5	0.6		0.8	0.1	
Delay (s)	4.2	6.0	4.3	4.5	6.0		33.9	38.0		37.7	38.9	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		5.6			5.8			37.3			38.3	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.8				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			69.6%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	748	179	79	474	118	195	89	60
v/c Ratio	0.06	0.60	0.17	0.21	0.38	0.44	0.56	0.40	0.10
Control Delay	5.9	11.0	3.8	7.9	7.4	34.5	10.0	33.7	0.4
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	12.1	3.8	7.9	7.4	34.5	10.0	33.7	0.4
Queue Length 50th (m)	1.9	67.4	5.9	4.9	31.8	17.9	0.0	13.3	0.0
Queue Length 95th (m)	5.6	113.0	14.4	12.6	54.4	32.0	13.6	25.2	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	593	1238	1052	378	1251	271	487	224	695
Starvation Cap Reductn	0	259	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.76	0.17	0.21	0.38	0.44	0.40	0.40	0.09
<b>Intersection Summary</b>									

5: Street D/Walmart East Access & Pickering Pkwy

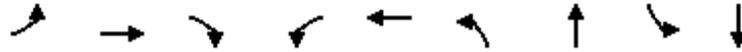
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Future Volume (vph)	31	688	165	73	349	87	109	0	179	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	0.97		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1799	1810	1503	1800	1818		1770	1517		1798	1615	
Flt Permitted	0.46	1.00	1.00	0.29	1.00		0.72	1.00		0.47	1.00	
Satd. Flow (perm)	868	1810	1503	552	1818		1337	1517		891	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	748	179	79	379	95	118	0	195	89	0	60
RTOR Reduction (vph)	0	0	24	0	7	0	0	177	0	0	54	0
Lane Group Flow (vph)	34	748	155	79	467	0	118	18	0	89	6	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	61.0	61.0	61.0	61.0	61.0		13.5	8.5		13.5	8.5	
Effective Green, g (s)	61.0	61.0	61.0	61.0	61.0		13.5	8.5		13.5	8.5	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68		0.15	0.09		0.15	0.09	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	588	1226	1018	374	1232		224	143		184	152	
v/s Ratio Prot		c0.41			0.26		c0.03	0.01		0.03	0.00	
v/s Ratio Perm	0.04		0.10	0.14			c0.05			0.05		
v/c Ratio	0.06	0.61	0.15	0.21	0.38		0.53	0.13		0.48	0.04	
Uniform Delay, d1	4.9	8.0	5.2	5.5	6.3		34.8	37.4		34.3	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.3	0.3	1.3	0.9		2.2	0.4		2.0	0.1	
Delay (s)	5.1	10.2	5.5	6.7	7.2		37.1	37.8		36.3	37.1	
Level of Service	A	B	A	A	A		D	D		D	D	
Approach Delay (s)		9.2			7.1			37.5			36.6	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			88.2%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total (2046) Traffic Analysis  
 SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	523	234	96	507	133	230	100	86
v/c Ratio	0.04	0.42	0.21	0.18	0.42	0.51	0.51	0.42	0.15
Control Delay	5.8	8.3	3.3	7.1	7.7	36.3	4.5	34.1	0.6
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	8.8	3.3	7.1	7.7	36.3	4.5	34.1	0.6
Queue Length 50th (m)	1.3	40.9	6.3	6.2	35.7	19.9	0.0	14.7	0.0
Queue Length 95th (m)	3.9	61.1	14.7	13.0	55.3	36.2	2.2	28.4	0.0
Internal Link Dist (m)		149.3			92.6		36.9		79.6
Turn Bay Length (m)	20.0		20.0	40.0		20.0			
Base Capacity (vph)	555	1250	1109	522	1215	261	621	241	721
Starvation Cap Reductn	0	331	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.57	0.21	0.18	0.42	0.51	0.37	0.41	0.12
<b>Intersection Summary</b>									

5: Street D/Walmart East Access & Pickering Pkwy

SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Future Volume (vph)	20	481	215	88	310	156	122	0	212	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1803	1845	1575	1732	1773		1801	1559		1759	1586	
Flt Permitted	0.43	1.00	1.00	0.42	1.00		0.48	1.00		0.62	1.00	
Satd. Flow (perm)	820	1845	1575	769	1773		915	1559		1157	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	523	234	96	337	170	133	0	230	100	0	86
RTOR Reduction (vph)	0	0	44	0	14	0	0	206	0	0	80	0
Lane Group Flow (vph)	22	523	190	96	493	0	133	24	0	100	6	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.8	59.8	59.8	59.8	59.8		17.6	9.3		11.8	6.4	
Effective Green, g (s)	59.8	59.8	59.8	59.8	59.8		17.6	9.3		11.8	6.4	
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66		0.20	0.10		0.13	0.07	
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	544	1225	1046	510	1178		260	161		187	112	
v/s Ratio Prot		c0.28			0.28		c0.05	0.02		0.03	0.00	
v/s Ratio Perm	0.03		0.12	0.12			c0.05			0.04		
v/c Ratio	0.04	0.43	0.18	0.19	0.42		0.51	0.15		0.53	0.05	
Uniform Delay, d1	5.2	7.1	5.8	5.8	7.0		31.5	36.7		36.1	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.1	0.4	0.8	1.1		1.7	0.4		2.9	0.2	
Delay (s)	5.3	8.2	6.1	6.6	8.1		33.2	37.2		39.0	39.2	
Level of Service	A	A	A	A	A		C	D		D	D	
Approach Delay (s)		7.5			7.9			35.7			39.1	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			80.3%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

## **APPENDIX 18**

### **Future Total Conditions Synchro HCM Outputs – No RIRO Scenario**



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	340	271	398	535	185	179	733	180	258	1702	203
v/c Ratio	0.86	0.32	0.46	3.06	0.46	0.30	1.05	0.49	0.29	0.68	0.91	0.30
Control Delay	110.9	31.8	16.7	966.9	33.3	5.4	109.3	34.5	5.7	27.7	44.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	31.8	16.7	966.9	33.3	5.4	109.3	34.5	5.7	27.7	44.2	4.7
Queue Length 50th (m)	23.7	33.3	22.2	~171.7	54.8	0.0	~31.5	54.2	0.0	36.9	145.1	0.0
Queue Length 95th (m)	#56.6	46.4	47.9	#234.6	71.9	16.2	#79.6	67.5	16.5	56.0	167.6	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	592	130	1151	621	171	1493	613	392	1871	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.32	0.46	3.06	0.46	0.30	1.05	0.49	0.29	0.66	0.91	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	313	249	366	492	170	165	674	166	237	1566	187
Future Volume (vph)	87	313	249	366	492	170	165	674	166	237	1566	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1701	5036	1468
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.27	1.00	1.00
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	182	4673	1536	486	5036	1468
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	340	271	398	535	185	179	733	180	258	1702	203
RTOR Reduction (vph)	0	0	102	0	0	124	0	0	122	0	0	128
Lane Group Flow (vph)	95	340	169	398	535	61	179	733	58	258	1702	75
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	46.2	38.4	38.4	55.4	44.6	44.6
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.39	0.32	0.32	0.46	0.37	0.37
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1495	491	366	1871	545
v/s Ratio Prot	0.06	0.10		c0.23	c0.15		c0.07	0.16		c0.08	0.34	
v/s Ratio Perm			0.11			0.04	c0.35		0.04	0.24		0.05
v/c Ratio	0.86	0.32	0.35	3.06	0.46	0.12	1.08	0.49	0.12	0.70	0.91	0.14
Uniform Delay, d1	55.6	30.7	31.1	55.5	31.7	27.9	30.4	32.9	28.8	21.2	35.8	25.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.0	0.8	1.9	947.8	1.4	0.5	94.5	1.2	0.5	6.1	8.1	0.5
Delay (s)	101.5	31.5	33.0	1003.3	33.0	28.5	124.9	34.1	29.3	27.3	43.9	25.5
Level of Service	F	C	C	F	C	C	F	C	C	C	D	C
Approach Delay (s)		41.5			377.7			48.2			40.2	
Approach LOS		D			F			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			116.4	HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)				20.0				
Intersection Capacity Utilization			110.9%	ICU Level of Service				H				
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	732	40	192	1078	180	3
v/c Ratio	0.01	0.32	0.04	0.34	0.40	0.66	0.01
Control Delay	8.0	8.4	1.2	4.2	4.5	24.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	8.4	1.2	4.2	4.5	24.2	0.0
Queue Length 50th (m)	0.2	27.5	0.0	5.6	26.6	7.8	0.0
Queue Length 95th (m)	1.5	52.4	2.3	15.8	52.7	28.2	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	331	2273	895	602	2710	495	462
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.32	0.04	0.32	0.40	0.36	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	673	37	177	992	0	37	0	129	1	0	2
Future Volume (vph)	3	673	37	177	992	0	37	0	129	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.90			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1799	3438	1320	1684	3505			1466			1685	
Flt Permitted	0.27	1.00	1.00	0.34	1.00			0.92			0.84	
Satd. Flow (perm)	502	3438	1320	603	3505			1367			1433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	732	40	192	1078	0	40	0	140	1	0	2
RTOR Reduction (vph)	0	0	14	0	0	0	0	125	0	0	3	0
Lane Group Flow (vph)	3	732	26	192	1078	0	0	55	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	66.1	66.1	66.1	77.3	77.3			10.7			10.7	
Effective Green, g (s)	66.1	66.1	66.1	77.3	77.3			10.7			10.7	
Actuated g/C Ratio	0.66	0.66	0.66	0.77	0.77			0.11			0.11	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	331	2272	872	554	2709			146			153	
v/s Ratio Prot		0.21		0.03	c0.31							
v/s Ratio Perm	0.01		0.02	0.24				c0.04			0.00	
v/c Ratio	0.01	0.32	0.03	0.35	0.40			0.38			0.00	
Uniform Delay, d1	5.8	7.3	5.9	3.2	3.7			41.5			39.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.4	0.4			1.6			0.0	
Delay (s)	5.8	7.7	5.9	3.6	4.2			43.2			39.9	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		7.6			4.1			43.2			39.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.5		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				15.0			
Intersection Capacity Utilization			71.7%		ICU Level of Service				C			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	335	577	100	108	159	849	335	103	1918	210
v/c Ratio	0.38	0.87dr	1.11	0.16	0.18	0.69	0.41	0.42	0.28	0.96	0.29
Control Delay	45.7	35.0	115.8	23.5	6.9	42.1	25.2	6.9	13.9	42.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	35.0	115.8	23.5	6.9	42.1	25.2	6.9	13.9	42.4	4.1
Queue Length 50th (m)	11.4	23.0	~71.9	13.0	0.0	20.3	46.3	7.9	9.5	~142.6	0.0
Queue Length 95th (m)	23.3	36.7	#106.6	26.5	13.7	m#53.2	55.0	19.5	19.5	#181.5	14.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	210	603	520	707	642	229	2071	797	363	2007	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.56	1.11	0.14	0.17	0.69	0.41	0.42	0.28	0.96	0.29

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 1 (2026) Traffic Analysis - No RIRO  
AM Peak Hour

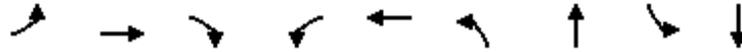
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	71	237	531	92	99	146	781	308	95	1765	193
Future Volume (vph)	55	71	237	531	92	99	146	781	308	95	1765	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3097		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.69	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	1278	3097		3155	1792	1462	169	4759	1397	555	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	77	258	577	100	108	159	849	335	103	1918	210
RTOR Reduction (vph)	0	97	0	0	0	70	0	0	191	0	0	126
Lane Group Flow (vph)	60	238	0	577	100	38	159	849	144	103	1918	84
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.6	12.6		16.5	35.6	35.6	51.8	42.9	42.9	45.8	39.9	39.9
Effective Green, g (s)	12.6	12.6		16.5	35.6	35.6	51.8	42.9	42.9	45.8	39.9	39.9
Actuated g/C Ratio	0.13	0.13		0.16	0.36	0.36	0.52	0.43	0.43	0.46	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	161	390		520	637	520	225	2041	599	325	2009	596
v/s Ratio Prot		c0.08		c0.18	0.06		c0.06	0.18		0.02	c0.38	
v/s Ratio Perm	0.05					0.03	0.30		0.10	0.13		0.06
v/c Ratio	0.37	0.87dr		1.11	0.16	0.07	0.71	0.42	0.24	0.32	0.95	0.14
Uniform Delay, d1	40.1	41.4		41.8	22.0	21.3	20.3	19.8	18.2	15.6	29.2	19.1
Progression Factor	1.00	1.00		1.11	1.08	1.53	1.59	1.20	2.16	1.00	1.00	1.00
Incremental Delay, d2	1.5	2.8		72.7	0.1	0.1	9.0	0.6	0.9	0.6	11.9	0.5
Delay (s)	41.5	44.2		118.9	23.9	32.6	41.3	24.3	40.2	16.2	41.1	19.6
Level of Service	D	D		F	C	C	D	C	D	B	D	B
Approach Delay (s)		43.8			94.9			30.3			37.9	
Approach LOS		D			F			C			D	

Intersection Summary

HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

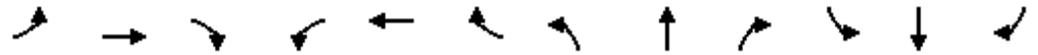
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	371	28	3	514	35	13	27	206
v/c Ratio	0.22	0.28	0.02	0.00	0.24	0.48	0.07	0.21	0.62
Control Delay	3.5	4.5	1.8	7.0	6.9	63.3	27.0	44.3	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	4.5	1.8	7.0	6.9	63.3	27.0	44.3	15.7
Queue Length 50th (m)	4.8	18.9	0.1	0.2	17.8	7.0	1.0	5.2	1.5
Queue Length 95th (m)	15.0	34.0	m1.4	m1.1	29.7	16.8	6.5	13.2	22.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	913	1309	1233	690	2121	208	482	361	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.28	0.02	0.00	0.24	0.17	0.03	0.07	0.36

**Intersection Summary**

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	341	26	3	440	33	32	5	7	25	7	182
Future Volume (vph)	147	341	26	3	440	33	32	5	7	25	7	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1730	1681	1574	1799	3146		1749	1701		1636	1543	
Flt Permitted	0.44	1.00	1.00	0.54	1.00		0.40	1.00		0.75	1.00	
Satd. Flow (perm)	806	1681	1574	1024	3146		744	1701		1290	1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	371	28	3	478	36	35	5	8	27	8	198
RTOR Reduction (vph)	0	0	6	0	3	0	0	7	0	0	178	0
Lane Group Flow (vph)	160	371	22	3	511	0	35	6	0	27	28	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Effective Green, g (s)	77.9	77.9	77.9	67.4	67.4		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.78	0.78	0.78	0.67	0.67		0.10	0.10		0.10	0.10	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	697	1309	1226	690	2120		73	168		127	152	
v/s Ratio Prot	0.02	c0.22			0.16			0.00				0.02
v/s Ratio Perm	0.16		0.01	0.00			c0.05			0.02		
v/c Ratio	0.23	0.28	0.02	0.00	0.24		0.48	0.03		0.21	0.18	
Uniform Delay, d1	2.7	3.1	2.5	5.3	6.3		42.6	40.7		41.5	41.3	
Progression Factor	1.25	1.14	1.74	1.04	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5	0.0	0.0	0.3		4.9	0.1		0.8	0.6	
Delay (s)	3.6	4.1	4.3	5.5	6.5		47.5	40.8		42.3	41.9	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		4.0			6.5			45.7			42.0	
Approach LOS		A			A			D			D	

Intersection Summary

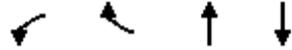
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	168	183	26	273	24	173	3	17	12	3	30
Future Volume (Veh/h)	22	168	183	26	273	24	173	3	17	12	3	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	183	199	28	297	26	188	3	18	13	3	33
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	0.96
vC, conflicting volume	326			382			719	712	284	720	799	314
vC1, stage 1 conf vol							330	330		369	369	
vC2, stage 2 conf vol							388	382		351	430	
vCu, unblocked vol	326			332			684	677	229	685	768	314
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	98			98			62	99	98	97	99	95
cM capacity (veh/h)	1242			1186			500	505	725	516	474	729
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	406	28	323	188	21	13	36					
Volume Left	24	28	0	188	0	13	0					
Volume Right	199	0	26	0	18	0	33					
cSH	1242	1186	1700	500	683	516	697					
Volume to Capacity	0.02	0.02	0.19	0.38	0.03	0.03	0.05					
Queue Length 95th (m)	0.5	0.6	0.0	13.8	0.8	0.6	1.3					
Control Delay (s)	0.7	8.1	0.0	16.5	10.4	12.2	10.4					
Lane LOS	A	A		C	B	B	B					
Approach Delay (s)	0.7	0.6		15.9		10.9						
Approach LOS				C		B						
<b>Intersection Summary</b>												
Average Delay			4.3									
Intersection Capacity Utilization			62.3%		ICU Level of Service					B		
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	190	8	17	312	6	11	0	10	2	1	1
Future Volume (Veh/h)	0	190	8	17	312	6	11	0	10	2	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	207	9	18	339	7	12	0	11	2	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	348			217			594	596	214	604	598	346
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348			217			594	596	214	604	598	346
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			99			97	100	99	100	100	100
cM capacity (veh/h)	1220			1364			399	413	830	402	412	519
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	216	364	23	4								
Volume Left	0	18	12	2								
Volume Right	9	7	11	1								
cSH	1220	1364	531	429								
Volume to Capacity	0.00	0.01	0.04	0.01								
Queue Length 95th (m)	0.0	0.3	1.1	0.2								
Control Delay (s)	0.0	0.5	12.1	13.5								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.5	12.1	13.5								
Approach LOS			B	B								
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			41.3%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	11	0	0	9	6	0	0	0	6	0	190
Future Volume (Veh/h)	173	11	0	0	9	6	0	0	0	6	0	190
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	188	12	0	0	10	7	0	0	0	7	0	207
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	130	118	104	124	221	0	207			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	130	118	104	124	221	0	207			0		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	77	98	100	100	98	99	100			99		
cM capacity (veh/h)	807	619	957	839	534	857	1376			1161		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	200	17	0	214								
Volume Left	188	0	0	7								
Volume Right	0	7	0	207								
cSH	793	632	1700	1161								
Volume to Capacity	0.25	0.03	0.00	0.01								
Queue Length 95th (m)	8.0	0.7	0.0	0.1								
Control Delay (s)	11.1	10.9	0.0	0.3								
Lane LOS	B	B		A								
Approach Delay (s)	11.1	10.9	0.0	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			35.6%		ICU Level of Service					A		
Analysis Period (min)			15									



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	733	294	1049	1515
v/c Ratio	0.78	0.67	0.37	0.50
Control Delay	39.1	29.9	10.9	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.1	29.9	10.9	10.3
Queue Length 50th (m)	70.5	41.9	28.4	49.4
Queue Length 95th (m)	84.1	68.7	m33.0	m51.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1160	524	2813	3058
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	6
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.56	0.37	0.50

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	644	301	965	0	0	1394
Future Volume (vph)	644	301	965	0	0	1394
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3387	1374	4631			5036
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3387	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	327	1049	0	0	1515
RTOR Reduction (vph)	4	60	0	0	0	0
Lane Group Flow (vph)	729	234	1049	0	0	1515
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.7	27.7	60.7			60.7
Effective Green, g (s)	27.7	27.7	60.7			60.7
Actuated g/C Ratio	0.28	0.28	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	938	380	2811			3056
v/s Ratio Prot			0.23			c0.30
v/s Ratio Perm	c0.22	0.17				
v/c Ratio	0.78	0.62	0.37			0.50
Uniform Delay, d1	33.3	31.5	10.0			11.0
Progression Factor	1.00	1.00	1.01			0.86
Incremental Delay, d2	4.1	3.0	0.1			0.2
Delay (s)	37.4	34.5	10.2			9.7
Level of Service	D	C	B			A
Approach Delay (s)	36.6		10.2			9.7
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			17.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			86.7%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	490	474	460	1025	602	1613
v/c Ratio	0.91	0.94	0.92	0.97	1.05	0.83
Control Delay	55.5	55.8	52.6	54.3	78.1	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	55.8	52.6	54.3	78.1	21.4
Queue Length 50th (m)	98.0	88.6	81.2	68.1	~125.9	133.8
Queue Length 95th (m)	#161.1	#158.4	#146.3	#98.6	#190.0	164.4
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	523	518	1062	571	1936
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.91	0.89	0.97	1.05	0.83

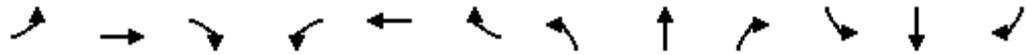
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	593	0	717	0	0	0	0	623	320	554	1484	0	
Future Volume (vph)	593	0	717	0	0	0	0	623	320	554	1484	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.90	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.98	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1398	1382					4040		1736	3505		
Flt Permitted	0.95	0.98	1.00					1.00		0.15	1.00		
Satd. Flow (perm)	1618	1398	1382					4040		271	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	645	0	779	0	0	0	0	677	348	602	1613	0	
RTOR Reduction (vph)	0	43	43	0	0	0	0	93	0	0	0	0	
Lane Group Flow (vph)	490	431	417	0	0	0	0	932	0	602	1613	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.1	33.1	33.1					24.0		55.3	55.3		
Effective Green, g (s)	33.1	33.1	33.1					24.0		55.3	55.3		
Actuated g/C Ratio	0.33	0.33	0.33					0.24		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	535	462	457					969		564	1938		
v/s Ratio Prot								0.23		c0.30	0.46		
v/s Ratio Perm	0.30	0.31	0.30							c0.29			
v/c Ratio	0.92	0.93	0.91					0.96		1.07	0.83		
Uniform Delay, d1	32.1	32.4	32.0					37.6		27.6	18.5		
Progression Factor	1.00	1.00	1.00					1.00		1.03	0.90		
Incremental Delay, d2	20.4	25.7	22.3					21.1		54.4	3.7		
Delay (s)	52.5	58.1	54.3					58.6		82.7	20.5		
Level of Service	D	E	D					E		F	C		
Approach Delay (s)		54.9			0.0			58.6			37.4		
Approach LOS		D			A			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			47.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			86.7%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	123	0	0	136	0	0
Future Volume (Veh/h)	123	0	0	136	0	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	134	0	0	148	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		268	0	416	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		268	0	416	268
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	92		100	86	100	100
cM capacity (veh/h)	1623		585	1085	443	585
Direction, Lane #						
	WB 1	WB 2	NB 1			
Volume Total	134	0	148			
Volume Left	134	0	0			
Volume Right	0	0	148			
cSH	1623	1700	1085			
Volume to Capacity	0.08	0.00	0.14			
Queue Length 95th (m)	2.2	0.0	3.8			
Control Delay (s)	7.4	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	7.4		8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.2			
Intersection Capacity Utilization			21.9%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	267	1122	367	303	729	270	338	1626	477	257	1198	234
v/c Ratio	1.22	1.02	0.61	1.28	0.65	0.44	1.35	1.03	0.72	1.20	0.82	0.39
Control Delay	176.9	73.2	20.6	197.9	38.6	11.5	209.4	70.8	21.8	153.8	45.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.9	73.2	20.6	197.9	38.6	11.5	209.4	70.8	21.8	153.8	45.3	6.0
Queue Length 50th (m)	-81.2	-155.0	35.2	-95.4	81.6	12.8	-92.0	-157.6	44.4	-59.5	101.3	0.0
Queue Length 95th (m)	#135.9	#198.4	69.1	#152.7	103.4	36.4	#152.8	#188.6	87.5	#114.0	120.1	19.0
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	219	1101	604	236	1120	620	250	1583	663	214	1454	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.02	0.61	1.28	0.65	0.44	1.35	1.03	0.72	1.20	0.82	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	246	1032	338	279	671	248	311	1496	439	236	1102	215	
Future Volume (vph)	246	1032	338	279	671	248	311	1496	439	236	1102	215	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1804	5136	1531	1752	4988	1508	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	205	5136	1531	211	4988	1508	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	267	1122	367	303	729	270	338	1626	477	257	1198	234	
RTOR Reduction (vph)	0	0	136	0	0	135	0	0	192	0	0	166	
Lane Group Flow (vph)	267	1122	231	303	729	135	338	1626	285	257	1198	68	
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35	
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	15.0	37.0	37.0	16.0	38.0	38.0	49.0	37.0	37.0	45.0	35.0	35.0	
Effective Green, g (s)	15.0	37.0	37.0	16.0	38.0	38.0	49.0	37.0	37.0	45.0	35.0	35.0	
Actuated g/C Ratio	0.12	0.31	0.31	0.13	0.32	0.32	0.41	0.31	0.31	0.38	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	219	1101	468	236	1120	484	243	1583	472	207	1454	439	
v/s Ratio Prot	0.15	c0.31		c0.17	0.21		c0.14	0.32		0.10	0.24		
v/s Ratio Perm			0.15			0.09	c0.43		0.19	0.36		0.05	
v/c Ratio	1.22	1.02	0.49	1.28	0.65	0.28	1.39	1.03	0.60	1.24	0.82	0.16	
Uniform Delay, d1	52.5	41.5	33.9	52.0	35.3	30.7	32.0	41.5	35.3	31.2	39.6	31.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	132.6	32.0	3.7	156.0	2.9	1.4	199.2	29.8	5.7	142.7	5.4	0.8	
Delay (s)	185.1	73.5	37.6	208.0	38.2	32.2	231.2	71.3	40.9	173.9	45.0	32.3	
Level of Service	F	E	D	F	D	C	F	E	D	F	D	C	
Approach Delay (s)		83.0			76.5			87.5			62.9		
Approach LOS		F			E			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			78.6		HCM 2000 Level of Service					E			
HCM 2000 Volume to Capacity ratio			1.26										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			110.2%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1697	68	191	1096	479	2
v/c Ratio	0.01	0.94	0.08	0.83	0.50	0.92	0.00
Control Delay	14.0	36.7	4.3	49.2	12.0	48.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	36.7	4.3	49.2	12.0	48.4	0.0
Queue Length 50th (m)	0.3	173.9	0.3	22.4	65.0	63.2	0.0
Queue Length 95th (m)	1.9	#232.8	7.4	#63.8	82.3	#122.2	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	247	1797	804	231	2197	561	528
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.94	0.08	0.83	0.50	0.85	0.00

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 1 (2026) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1561	63	176	1008	0	45	0	396	0	0	2
Future Volume (vph)	3	1561	63	176	1008	0	45	0	396	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1801	3574	1535	1752	3539			1581			1601	
Flt Permitted	0.26	1.00	1.00	0.08	1.00			0.97			1.00	
Satd. Flow (perm)	493	3574	1535	138	3539			1537			1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1697	68	191	1096	0	49	0	430	0	0	2
RTOR Reduction (vph)	0	0	32	0	0	0	0	121	0	0	1	0
Lane Group Flow (vph)	3	1697	36	191	1096	0	0	358	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	50.3	50.3	50.3	62.1	62.1			25.9			25.9	
Effective Green, g (s)	50.3	50.3	50.3	62.1	62.1			25.9			25.9	
Actuated g/C Ratio	0.50	0.50	0.50	0.62	0.62			0.26			0.26	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	247	1797	772	227	2197			398			414	
v/s Ratio Prot		c0.47		c0.07	0.31						0.00	
v/s Ratio Perm	0.01		0.02	0.45				c0.23				
v/c Ratio	0.01	0.94	0.05	0.84	0.50			0.90			0.00	
Uniform Delay, d1	12.4	23.5	12.6	27.2	10.4			35.8			27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	11.6	0.1	23.5	0.8			22.7			0.0	
Delay (s)	12.5	35.1	12.8	50.8	11.2			58.5			27.5	
Level of Service	B	D	B	D	B			E			C	
Approach Delay (s)		34.2			17.1			58.5			27.5	
Approach LOS		C			B			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.3			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			100.1%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	513	522	232	302	299	1891	814	225	1113	82
v/c Ratio	0.50	0.77	0.89	0.32	0.42	0.84	1.06	0.93	0.86	0.75	0.14
Control Delay	47.5	33.4	54.1	19.8	9.8	46.1	63.6	21.3	53.1	36.0	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.5	0.0	0.0
Total Delay	47.5	33.4	54.1	19.8	9.8	46.1	63.6	22.6	53.6	36.0	0.5
Queue Length 50th (m)	17.0	34.0	54.8	35.9	24.3	46.6	~153.1	27.5	27.3	75.9	0.0
Queue Length 95th (m)	32.1	50.5	#83.3	52.5	43.8	m#87.5	#184.5	#157.9	#86.4	93.0	0.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	225	786	595	810	781	357	1792	878	263	1477	577
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	1	0	0	0	0	0	14	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.65	0.88	0.29	0.39	0.84	1.06	0.94	0.86	0.75	0.14

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

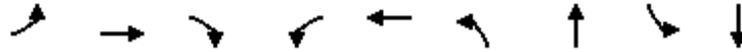
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 1 (2026) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	83	228	244	480	213	278	275	1740	749	207	1024	75	
Future Volume (vph)	83	228	244	480	213	278	275	1740	749	207	1024	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1785	3264		3400	1863	1572	1787	5136	1516	1787	4988	1534	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.14	1.00	1.00	
Satd. Flow (perm)	1154	3264		3400	1863	1572	231	5136	1516	254	4988	1534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	90	248	265	522	232	302	299	1891	814	225	1113	82	
RTOR Reduction (vph)	0	157	0	0	0	105	0	0	349	0	0	58	
Lane Group Flow (vph)	90	356	0	522	232	197	299	1891	465	225	1113	24	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	15.6	15.6		17.3	39.4	39.4	48.0	34.9	34.9	39.7	29.6	29.6	
Effective Green, g (s)	15.6	15.6		17.3	39.4	39.4	48.0	34.9	34.9	39.7	29.6	29.6	
Actuated g/C Ratio	0.16	0.16		0.17	0.39	0.39	0.48	0.35	0.35	0.40	0.30	0.30	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	180	509		588	734	619	350	1792	529	255	1476	454	
v/s Ratio Prot		c0.11		c0.15	0.12		c0.13	c0.37		0.09	0.22		
v/s Ratio Perm	0.08					0.13	0.28		0.31	0.26		0.02	
v/c Ratio	0.50	0.70		0.89	0.32	0.32	0.85	1.06	0.88	0.88	0.75	0.05	
Uniform Delay, d1	38.6	40.0		40.4	21.0	21.0	24.4	32.5	30.6	24.5	31.9	25.2	
Progression Factor	1.00	1.00		0.88	0.92	0.97	1.48	0.91	0.75	1.00	1.00	1.00	
Incremental Delay, d2	2.2	4.2		14.6	0.2	0.3	12.0	33.6	12.4	28.0	3.6	0.2	
Delay (s)	40.8	44.2		50.3	19.5	20.6	48.1	63.2	35.4	52.5	35.5	25.4	
Level of Service	D	D		D	B	C	D	E	D	D	D	C	
Approach Delay (s)		43.7			35.0			54.1			37.6		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			45.9		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.94										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			95.0%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	349	911	49	8	703	71	51	65	253
v/c Ratio	0.56	0.67	0.04	0.02	0.33	0.96	0.20	0.37	0.61
Control Delay	4.2	6.2	0.7	11.1	10.5	138.3	21.9	43.7	12.5
Queue Delay	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	8.0	0.7	11.1	10.5	138.3	21.9	43.7	12.5
Queue Length 50th (m)	8.3	57.3	0.0	0.5	29.7	14.7	4.2	12.3	2.5
Queue Length 95th (m)	m19.7	m106.5	m0.6	m2.7	m50.4	#35.7	14.0	24.0	23.8
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	682	1361	1153	339	2101	178	567	427	671
Starvation Cap Reductn	0	278	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.84	0.04	0.02	0.33	0.40	0.09	0.15	0.38

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

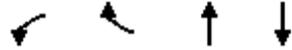
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	321	838	45	7	596	51	65	21	26	60	13	220
Future Volume (vph)	321	838	45	7	596	51	65	21	26	60	13	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1827	1537	1792	3494		1765	1714		1751	1590	
Flt Permitted	0.34	1.00	1.00	0.30	1.00		0.30	1.00		0.72	1.00	
Satd. Flow (perm)	640	1827	1537	562	3494		559	1714		1334	1590	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	349	911	49	8	648	55	71	23	28	65	14	239
RTOR Reduction (vph)	0	0	8	0	4	0	0	24	0	0	207	0
Lane Group Flow (vph)	349	911	41	8	699	0	71	27	0	65	46	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.5	74.5	74.5	60.0	60.0		13.3	13.3		13.3	13.3	
Effective Green, g (s)	74.5	74.5	74.5	60.0	60.0		13.3	13.3		13.3	13.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.60	0.60		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	608	1361	1145	337	2096		74	227		177	211	
v/s Ratio Prot	0.07	c0.50			0.20			0.02				0.03
v/s Ratio Perm	0.36		0.03	0.01			c0.13			0.05		
v/c Ratio	0.57	0.67	0.04	0.02	0.33		0.96	0.12		0.37	0.22	
Uniform Delay, d1	4.5	6.5	3.3	8.1	10.0		43.1	38.2		39.5	38.7	
Progression Factor	0.65	0.62	0.30	0.93	0.89		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.3	0.0	0.1	0.4		89.6	0.2		1.3	0.5	
Delay (s)	3.6	5.4	1.0	7.7	9.4		132.7	38.4		40.8	39.2	
Level of Service	A	A	A	A	A		F	D		D	D	
Approach Delay (s)		4.7			9.4			93.3			39.5	
Approach LOS		A			A			F			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			102.4%			ICU Level of Service				G		
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	398	484	34	281	57	305	34	43	52	9	75
Future Volume (Veh/h)	41	398	484	34	281	57	305	34	43	52	9	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	433	526	37	305	62	332	37	47	57	10	82
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.68			0.68	0.68	0.68	0.68	0.68	
vC, conflicting volume	370			964			1257	1235	706	1270	1467	339
vC1, stage 1 conf vol							791	791		413	413	
vC2, stage 2 conf vol							466	444		856	1054	
vCu, unblocked vol	370			717			1145	1113	340	1163	1452	339
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			0	88	90	74	95	88
cM capacity (veh/h)	1197			609			291	314	475	223	200	706
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	1004	37	367	332	84	57	92					
Volume Left	45	37	0	332	0	57	0					
Volume Right	526	0	62	0	47	0	82					
cSH	1197	609	1700	291	387	223	554					
Volume to Capacity	0.04	0.06	0.22	1.14	0.22	0.26	0.17					
Queue Length 95th (m)	0.9	1.5	0.0	112.0	6.5	7.9	4.7					
Control Delay (s)	1.0	11.3	0.0	134.7	16.8	26.6	12.8					
Lane LOS	A	B		F	C	D	B					
Approach Delay (s)	1.0	1.0		110.9		18.1						
Approach LOS				F		C						
<b>Intersection Summary</b>												
Average Delay			25.5									
Intersection Capacity Utilization			105.0%		ICU Level of Service				G			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	450	36	51	276	3	89	2	72	6	3	5
Future Volume (Veh/h)	5	450	36	51	276	3	89	2	72	6	3	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	489	39	55	300	3	97	2	78	7	3	5
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	307			529			938	936	510	1013	954	306
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307			529			938	936	510	1013	954	306
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			58	99	86	96	99	99
cM capacity (veh/h)	1261			1048			230	251	567	179	245	735
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	533	358	177	15								
Volume Left	5	55	97	7								
Volume Right	39	3	78	5								
cSH	1261	1048	312	258								
Volume to Capacity	0.00	0.05	0.57	0.06								
Queue Length 95th (m)	0.1	1.3	26.3	1.5								
Control Delay (s)	0.1	1.8	30.6	19.8								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.1	1.8	30.6	19.8								
Approach LOS			D	C								
Intersection Summary												
Average Delay			5.9									
Intersection Capacity Utilization			67.1%		ICU Level of Service				C			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	3	0	2	7	3	0	1	0	2	0	236
Future Volume (Veh/h)	373	3	0	2	7	3	0	1	0	2	0	236
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	405	3	0	2	8	3	0	1	0	2	0	257
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	140	134	130	136	262	1	257			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140	134	130	136	262	1	257			1		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	50	100	100	100	98	100	100			100		
cM capacity (veh/h)	812	607	925	835	522	1000	1320			1160		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	408	13	1	259								
Volume Left	405	2	0	2								
Volume Right	0	3	0	257								
cSH	810	627	1320	1160								
Volume to Capacity	0.50	0.02	0.00	0.00								
Queue Length 95th (m)	23.1	0.5	0.0	0.0								
Control Delay (s)	13.9	10.9	0.0	0.1								
Lane LOS	B	B		A								
Approach Delay (s)	13.9	10.9	0.0	0.1								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			8.5									
Intersection Capacity Utilization			50.6%	ICU Level of Service							A	
Analysis Period (min)			15									



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	617	299	2500	1102
v/c Ratio	0.84	0.85	0.76	0.34
Control Delay	46.9	58.7	13.2	13.2
Queue Delay	0.0	0.0	0.8	0.0
Total Delay	46.9	58.7	14.1	13.2
Queue Length 50th (m)	59.6	61.5	84.6	49.5
Queue Length 95th (m)	80.5	#108.9	m62.1	m64.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	798	380	3268	3237
Starvation Cap Reductn	0	0	429	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.79	0.88	0.34

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	292	551	2300	0	0	1014
Future Volume (vph)	292	551	2300	0	0	1014
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.93	0.85	1.00			1.00
Flt Protected	0.97	1.00	1.00			1.00
Satd. Flow (prot)	3037	1441	5085			5036
Flt Permitted	0.97	1.00	1.00			1.00
Satd. Flow (perm)	3037	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	599	2500	0	0	1102
RTOR Reduction (vph)	3	3	0	0	0	0
Lane Group Flow (vph)	614	296	2500	0	0	1102
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	24.1	24.1	64.3			64.3
Effective Green, g (s)	24.1	24.1	64.3			64.3
Actuated g/C Ratio	0.24	0.24	0.64			0.64
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	731	347	3269			3238
v/s Ratio Prot			c0.49			0.22
v/s Ratio Perm	0.20	c0.21				
v/c Ratio	0.84	0.85	0.76			0.34
Uniform Delay, d1	36.1	36.3	12.5			8.2
Progression Factor	1.00	1.00	0.99			1.53
Incremental Delay, d2	8.4	18.0	0.2			0.2
Delay (s)	44.5	54.2	12.6			12.7
Level of Service	D	D	B			B
Approach Delay (s)	47.7		12.6			12.7
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			114.1%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	743	744	517	2139	391	1032
v/c Ratio	1.31	1.39	1.03	1.37	0.91	0.58
Control Delay	182.3	215.1	75.8	197.7	58.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	182.3	215.1	75.8	197.8	58.5	8.9
Queue Length 50th (m)	~206.4	~224.6	~105.4	~218.3	68.2	45.5
Queue Length 95th (m)	#282.0	#305.0	#174.2	#249.7	m#108.9	41.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	536	504	1567	461	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	19	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.31	1.39	1.03	1.38	0.85	0.58

**Intersection Summary**

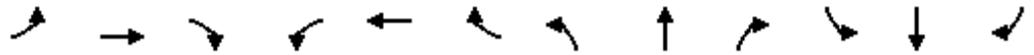
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1314	2	528	0	0	0	0	1588	380	360	949	0	
Future Volume (vph)	1314	2	528	0	0	0	0	1588	380	360	949	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1597	1334					4771		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00		
Satd. Flow (perm)	1698	1597	1334					4771		211	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1428	2	574	0	0	0	0	1726	413	391	1032	0	
RTOR Reduction (vph)	0	3	59	0	0	0	0	39	0	0	0	0	
Lane Group Flow (vph)	743	741	458	0	0	0	0	2100	0	391	1032	0	
Confl. Peds. (#/hr)								5		7	7	5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					32.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					32.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.32		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	533	445					1526		424	1772		
v/s Ratio Prot								c0.44		c0.18	0.32		
v/s Ratio Perm	0.44	0.46	0.34							0.32			
v/c Ratio	1.31	1.39	1.03					1.38		0.92	0.58		
Uniform Delay, d1	33.3	33.3	33.3					34.0		28.5	14.9		
Progression Factor	1.00	1.00	1.00					1.00		1.40	0.50		
Incremental Delay, d2	152.0	187.2	50.6					173.5		23.9	1.3		
Delay (s)	185.3	220.5	83.9					207.5		63.7	8.8		
Level of Service	F	F	F					F		E	A		
Approach Delay (s)		172.2			0.0			207.5			23.9		
Approach LOS		F			A			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			147.9									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.28										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			114.1%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	127	0	0	124	0	0
Future Volume (Veh/h)	127	0	0	124	0	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	138	0	0	135	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		276	0	411	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		276	0	411	276
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	91		100	88	100	100
cM capacity (veh/h)	1623		578	1085	451	578
<b>Direction, Lane #</b>						
	WB 1	WB 2	NB 1			
Volume Total	138	0	135			
Volume Left	138	0	0			
Volume Right	0	0	135			
cSH	1623	1700	1085			
Volume to Capacity	0.09	0.00	0.12			
Queue Length 95th (m)	2.2	0.0	3.4			
Control Delay (s)	7.4	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	7.4		8.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			8.1			
Intersection Capacity Utilization			21.4%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	801	473	279	866	290	342	1235	402	253	1135	220
v/c Ratio	1.97	0.65	0.74	2.49	0.70	0.44	1.48	0.72	0.63	1.22	0.66	0.35
Control Delay	496.6	33.3	27.5	716.2	48.7	27.3	260.1	34.7	21.8	156.7	33.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	496.6	33.3	27.5	716.2	48.7	27.3	260.1	34.7	21.8	156.7	33.3	9.1
Queue Length 50th (m)	-77.8	79.5	60.1	-106.7	107.8	39.5	-83.1	88.7	42.2	-51.1	79.4	7.9
Queue Length 95th (m)	#126.8	101.2	102.6	m#161.1	129.1	m69.1	#141.7	105.8	77.3	#103.9	95.7	26.3
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	641	112	1237	653	231	1727	634	208	1727	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.97	0.65	0.74	2.49	0.70	0.44	1.48	0.72	0.63	1.22	0.66	0.35

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	737	435	257	797	267	315	1136	370	233	1044	202
Future Volume (vph)	203	737	435	257	797	267	315	1136	370	233	1044	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1804	5136	1537	1787	5136	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.14	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	270	5136	1537	213	5136	1549
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	801	473	279	866	290	342	1235	402	253	1135	220
RTOR Reduction (vph)	0	0	114	0	0	113	0	0	117	0	0	112
Lane Group Flow (vph)	221	801	359	279	866	177	342	1235	285	253	1135	108
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	1237	528	112	1237	540	222	1727	516	201	1727	521
v/s Ratio Prot	0.12	0.22		c0.16	c0.24		c0.11	0.24		0.09	0.22	
v/s Ratio Perm			0.24			0.11	c0.52		0.19	0.42		0.07
v/c Ratio	1.97	0.65	0.68	2.49	0.70	0.33	1.54	0.72	0.55	1.26	0.66	0.21
Uniform Delay, d1	51.5	30.3	30.7	51.5	31.0	26.5	26.3	31.9	29.7	25.0	31.1	26.0
Progression Factor	1.00	1.00	1.00	0.87	1.46	2.30	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	468.4	2.6	6.9	694.6	3.0	1.5	264.5	2.6	4.2	150.2	2.0	0.9
Delay (s)	520.0	32.9	37.7	739.4	48.2	62.3	290.7	34.5	33.9	175.2	33.1	26.9
Level of Service	F	C	D	F	D	E	F	C	C	F	C	C
Approach Delay (s)		106.4			185.5			78.6			54.6	
Approach LOS		F			F			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			102.6				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.26									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			109.2%				ICU Level of Service				H	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1336	76	274	1227	391	2
v/c Ratio	0.03	0.71	0.09	0.77	0.50	0.88	0.01
Control Delay	22.2	34.1	12.6	35.3	9.7	45.7	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	34.1	12.6	35.3	9.7	45.7	31.0
Queue Length 50th (m)	0.8	143.2	3.3	31.8	63.6	51.8	0.4
Queue Length 95th (m)	m1.1	m163.2	m8.7	#98.2	94.9	85.4	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	190	1887	843	358	2468	534	427
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.71	0.09	0.77	0.50	0.73	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 1 (2026) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1229	70	252	1129	0	44	2	314	1	1	0
Future Volume (vph)	5	1229	70	252	1129	0	44	2	314	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1623			1851	
Flt Permitted	0.23	1.00	1.00	0.10	1.00			0.96			0.85	
Satd. Flow (perm)	361	3574	1544	196	3574			1565			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1336	76	274	1227	0	48	2	341	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	130	0	0	0	0
Lane Group Flow (vph)	5	1336	48	274	1227	0	0	261	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	58.1	58.1	58.1	76.0	76.0			22.0			22.0	
Effective Green, g (s)	58.1	58.1	58.1	76.0	76.0			22.0			22.0	
Actuated g/C Ratio	0.53	0.53	0.53	0.69	0.69			0.20			0.20	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	190	1887	815	353	2469			313			321	
v/s Ratio Prot		0.37		c0.11	0.34							
v/s Ratio Perm	0.01		0.03	c0.43				c0.17			0.00	
v/c Ratio	0.03	0.71	0.06	0.78	0.50			0.83			0.01	
Uniform Delay, d1	12.4	19.6	12.6	23.6	8.0			42.2			35.2	
Progression Factor	1.70	1.63	2.66	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.5	0.1	10.2	0.7			17.0			0.0	
Delay (s)	21.2	33.5	33.7	33.8	8.7			59.2			35.3	
Level of Service	C	C	C	C	A			E			D	
Approach Delay (s)		33.4			13.3			59.2			35.3	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.4			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			85.8%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	473	789	248	353	253	1180	783	279	1033	99
v/c Ratio	0.57	0.78	1.06	0.32	0.48	0.78	0.66	0.93	1.13	0.67	0.17
Control Delay	55.5	33.9	79.8	16.7	10.8	33.7	24.2	25.5	122.5	33.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.1	0.0	0.0
Total Delay	55.5	34.0	79.8	16.7	10.8	33.7	24.2	28.5	122.6	33.8	0.7
Queue Length 50th (m)	16.3	28.7	~92.6	39.0	37.5	26.7	69.7	53.8	~50.7	69.9	0.0
Queue Length 95th (m)	32.1	46.2	m#127.4	m54.9	m56.2	#63.4	85.8	#141.7	#111.1	86.9	0.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	175	676	745	826	774	344	1792	842	247	1551	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	4	0	0	0	0	0	25	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.70	1.06	0.30	0.46	0.74	0.66	0.96	1.14	0.67	0.17

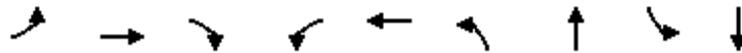
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	78	229	206	726	228	325	233	1086	720	257	950	91	
Future Volume (vph)	78	229	206	726	228	325	233	1086	720	257	950	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1775	3303		3467	1900	1544	1787	5136	1313	1805	5136	1570	
Flt Permitted	0.61	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.15	1.00	1.00	
Satd. Flow (perm)	1131	3303		3467	1900	1544	266	5136	1313	292	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	85	249	224	789	248	353	253	1180	783	279	1033	99	
RTOR Reduction (vph)	0	169	0	0	0	107	0	0	384	0	0	69	
Lane Group Flow (vph)	85	304	0	789	248	246	253	1180	399	279	1033	30	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	22%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	13.2	13.2		21.5	41.2	41.2	46.2	34.9	34.9	38.5	30.2	30.2	
Effective Green, g (s)	13.2	13.2		21.5	41.2	41.2	46.2	34.9	34.9	38.5	30.2	30.2	
Actuated g/C Ratio	0.13	0.13		0.22	0.41	0.41	0.46	0.35	0.35	0.38	0.30	0.30	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	149	435		745	782	636	320	1792	458	237	1551	474	
v/s Ratio Prot		c0.09		c0.23	0.13		c0.10	0.23		c0.10	0.20		
v/s Ratio Perm	0.08					0.16	0.26		0.30	c0.35		0.02	
v/c Ratio	0.57	0.70		1.06	0.32	0.39	0.79	0.66	0.87	1.18	0.67	0.06	
Uniform Delay, d1	40.7	41.5		39.2	19.9	20.6	19.3	27.5	30.4	24.5	30.5	24.8	
Progression Factor	1.00	1.00		0.87	0.81	0.96	0.99	0.81	1.06	1.00	1.00	1.00	
Incremental Delay, d2	5.2	4.8		45.1	0.2	0.3	10.8	1.6	17.4	114.8	2.3	0.3	
Delay (s)	45.9	46.3		79.4	16.3	20.0	29.9	24.0	49.6	139.3	32.8	25.1	
Level of Service	D	D		E	B	B	C	C	D	F	C	C	
Approach Delay (s)		46.3			53.0			33.7			53.3		
Approach LOS		D			D			C			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			44.8		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			91.9%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	411	827	75	23	916	128	80	84	453
v/c Ratio	0.90	0.75	0.08	0.11	0.67	1.24	0.15	0.22	0.67
Control Delay	36.8	13.5	3.8	21.6	27.8	198.8	16.4	26.4	14.4
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	15.8	3.8	21.6	27.8	198.8	16.4	26.4	14.4
Queue Length 50th (m)	-65.5	79.4	0.8	3.0	78.7	-29.2	7.0	12.1	22.8
Queue Length 95th (m)	m#84.2	m125.3	m1.7	8.8	101.3	#66.2	17.3	23.8	56.1
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	455	1099	928	203	1371	122	616	449	748
Starvation Cap Reductn	0	155	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.88	0.08	0.11	0.67	1.05	0.13	0.19	0.61

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	761	69	21	770	73	118	46	28	77	34	383
Future Volume (vph)	378	761	69	21	770	73	118	46	28	77	34	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1549	1796	3517		1803	1756		1783	1615	
Flt Permitted	0.17	1.00	1.00	0.28	1.00		0.19	1.00		0.70	1.00	
Satd. Flow (perm)	320	1863	1549	524	3517		359	1756		1323	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	411	827	75	23	837	79	128	50	30	84	37	416
RTOR Reduction (vph)	0	0	14	0	7	0	0	21	0	0	215	0
Lane Group Flow (vph)	411	827	61	23	909	0	128	59	0	84	238	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.0	59.0	59.0	38.8	38.8		28.8	28.8		28.8	28.8	
Effective Green, g (s)	59.0	59.0	59.0	38.8	38.8		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.59	0.59	0.59	0.39	0.39		0.29	0.29		0.29	0.29	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	444	1099	913	203	1364		103	505		381	465	
v/s Ratio Prot	c0.16	0.44			0.26			0.03				0.15
v/s Ratio Perm	c0.39		0.04	0.04			c0.36			0.06		
v/c Ratio	0.93	0.75	0.07	0.11	0.67		1.24	0.12		0.22	0.51	
Uniform Delay, d1	21.0	15.1	8.8	19.6	25.3		35.6	26.2		27.1	29.7	
Progression Factor	1.47	0.64	0.55	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	1.8	0.1	1.1	2.6		167.6	0.1		0.3	1.0	
Delay (s)	42.7	11.5	4.8	20.7	27.8		203.2	26.3		27.4	30.7	
Level of Service	D	B	A	C	C		F	C		C	C	
Approach Delay (s)		20.9			27.7			135.1			30.2	
Approach LOS		C			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			32.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			109.4%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	270	589	37	344	101	442	51	60	52	15	104
Future Volume (Veh/h)	35	270	589	37	344	101	442	51	60	52	15	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	293	640	40	374	110	480	55	65	57	16	113
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.63			0.63	0.63	0.63	0.63	0.63	
vC, conflicting volume	485			935			1270	1256	621	1298	1521	434
vC1, stage 1 conf vol							691	691		510	510	
vC2, stage 2 conf vol							579	565		788	1011	
vCu, unblocked vol	485			600			1134	1111	100	1178	1533	434
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			0	83	89	76	92	82
cM capacity (veh/h)	999			619			277	325	599	240	204	624
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	971	40	484	480	120	57	129					
Volume Left	38	40	0	480	0	57	0					
Volume Right	640	0	110	0	65	0	113					
cSH	999	619	1700	277	432	240	497					
Volume to Capacity	0.04	0.06	0.28	1.73	0.28	0.24	0.26					
Queue Length 95th (m)	0.9	1.7	0.0	248.8	9.0	7.2	8.2					
Control Delay (s)	1.1	11.2	0.0	374.8	16.5	24.6	14.8					
Lane LOS	A	B		F	C	C	B					
Approach Delay (s)	1.1	0.9		303.1		17.8						
Approach LOS				F		C						
<b>Intersection Summary</b>												
Average Delay			81.8									
Intersection Capacity Utilization			117.9%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	305	66	43	342	18	134	0	85	15	2	6
Future Volume (Veh/h)	11	305	66	43	342	18	134	0	85	15	2	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	332	72	47	372	20	146	0	92	16	2	7
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	392			404			878	878	370	962	904	384
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	392			404			878	878	370	962	904	384
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			43	100	86	92	99	99
cM capacity (veh/h)	1085			1166			256	274	679	197	265	667
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	416	439	238	25								
Volume Left	12	47	146	16								
Volume Right	72	20	92	7								
cSH	1085	1166	337	252								
Volume to Capacity	0.01	0.04	0.71	0.10								
Queue Length 95th (m)	0.3	1.0	40.9	2.6								
Control Delay (s)	0.4	1.3	37.8	20.9								
Lane LOS	A	A	E	C								
Approach Delay (s)	0.4	1.3	37.8	20.9								
Approach LOS			E	C								
<b>Intersection Summary</b>												
Average Delay			9.1									
Intersection Capacity Utilization			60.7%		ICU Level of Service				B			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	1	0	0	0	0	0	0	0	0	0	274
Future Volume (Veh/h)	290	1	0	0	0	0	0	0	0	0	0	274
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	315	1	0	0	0	0	0	0	0	0	0	298
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	152	149	149	150	298	3	298			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152	149	149	150	298	3	298			0		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	61	100	100	100	100	100	100			100		
cM capacity (veh/h)	811	595	903	822	617	1084	1275			1636		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	316	0	0	298								
Volume Left	315	0	0	0								
Volume Right	0	0	0	298								
cSH	810	1700	1700	1636								
Volume to Capacity	0.39	0.02	0.00	0.00								
Queue Length 95th (m)	14.9	0.0	0.0	0.0								
Control Delay (s)	12.3	0.0	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	12.3	0.0	0.0	0.0								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			46.4%	ICU Level of Service							A	
Analysis Period (min)			15									



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	520	298	1745	1171
v/c Ratio	0.62	0.79	0.54	0.36
Control Delay	34.8	47.2	14.9	17.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.8	47.2	14.9	17.2
Queue Length 50th (m)	47.0	59.3	77.6	62.4
Queue Length 95th (m)	56.8	83.6	m80.8	m93.5
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1115	506	3234	3234
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.59	0.54	0.36

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	203	549	1605	0	0	1077
Future Volume (vph)	203	549	1605	0	0	1077
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3238	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3238	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	597	1745	0	0	1171
RTOR Reduction (vph)	10	10	0	0	0	0
Lane Group Flow (vph)	510	288	1745	0	0	1171
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	25.4	25.4	63.0			63.0
Effective Green, g (s)	25.4	25.4	63.0			63.0
Actuated g/C Ratio	0.25	0.25	0.63			0.63
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	822	369	3235			3235
v/s Ratio Prot			c0.34			0.23
v/s Ratio Perm	0.16	c0.20				
v/c Ratio	0.62	0.78	0.54			0.36
Uniform Delay, d1	33.0	34.7	10.4			8.9
Progression Factor	1.00	1.00	1.28			1.74
Incremental Delay, d2	1.5	10.3	0.2			0.2
Delay (s)	34.5	45.0	13.5			15.6
Level of Service	C	D	B			B
Approach Delay (s)	38.3		13.5			15.6
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			96.6%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	587	592	450	1213	625	771
v/c Ratio	1.04	1.02	0.75	0.80	1.32	0.39
Control Delay	81.3	73.0	26.6	34.9	191.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	73.0	26.6	34.9	191.4	3.4
Queue Length 50th (m)	~136.3	~126.1	53.3	78.2	~146.3	10.4
Queue Length 95th (m)	#206.4	#206.1	96.2	96.2	#223.4	12.6
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	581	603	1518	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.04	1.02	0.75	0.80	1.32	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1039	0	460	0	0	0	0	859	257	575	709	0	
Future Volume (vph)	1039	0	460	0	0	0	0	859	257	575	709	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1611	1461					4884		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1611	1461					4884		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1129	0	500	0	0	0	0	934	279	625	771	0	
RTOR Reduction (vph)	0	43	115	0	0	0	0	54	0	0	0	0	
Lane Group Flow (vph)	587	549	335	0	0	0	0	1159	0	625	771	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	538	487					1465		468	1965		
v/s Ratio Prot								0.24		c0.29	0.22		
v/s Ratio Perm	c0.35	0.34	0.23							c0.44			
v/c Ratio	1.04	1.02	0.69					0.79		1.34	0.39		
Uniform Delay, d1	33.3	33.3	28.8					32.1		28.9	12.9		
Progression Factor	1.00	1.00	1.00					1.00		1.62	0.22		
Incremental Delay, d2	47.2	43.9	4.0					4.4		164.2	0.6		
Delay (s)	80.5	77.2	32.8					36.6		211.0	3.3		
Level of Service	F	E	C					D		F	A		
Approach Delay (s)		66.1			0.0			36.6			96.3		
Approach LOS		E			A			D			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			67.6									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.26										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			96.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	146	0	0	149	0	0
Future Volume (Veh/h)	146	0	0	149	0	0
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	159	0	0	162	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		318	0	480	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		318	0	480	318
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	90		100	85	100	100
cM capacity (veh/h)	1623		540	1085	390	540
Direction, Lane #						
	WB 1	WB 2	NB 1			
Volume Total	159	0	162			
Volume Left	159	0	0			
Volume Right	0	0	162			
cSH	1623	1700	1085			
Volume to Capacity	0.10	0.00	0.15			
Queue Length 95th (m)	2.6	0.0	4.2			
Control Delay (s)	7.5	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.5		8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			8.2			
Intersection Capacity Utilization			24.0%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	368	350	402	582	185	435	940	195	352	1939	203
v/c Ratio	0.70	0.35	0.55	2.14	0.49	0.29	1.89	0.69	0.33	1.16	1.25	0.34
Control Delay	81.0	32.6	14.7	553.8	34.6	13.4	444.9	21.0	2.7	125.8	153.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	32.6	14.7	553.8	34.6	13.4	444.9	21.0	2.7	125.8	153.9	5.8
Queue Length 50th (m)	23.3	36.7	22.1	~160.9	66.8	8.2	~152.7	26.3	0.3	-75.4	~219.6	0.0
Queue Length 95th (m)	#48.5	50.6	53.0	#226.1	87.0	34.7	#219.5	45.7	m4.6	#136.7	#250.4	17.4
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	141	1058	640	188	1198	639	230	1362	586	304	1552	593
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.35	0.55	2.14	0.49	0.29	1.89	0.69	0.33	1.16	1.25	0.34

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	339	322	370	535	170	400	865	179	324	1784	187	
Future Volume (vph)	87	339	322	370	535	170	400	865	179	324	1784	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1468	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.17	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	199	4673	1536	310	5036	1468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	368	350	402	582	185	435	940	195	352	1939	203	
RTOR Reduction (vph)	0	0	158	0	0	121	0	0	138	0	0	140	
Lane Group Flow (vph)	95	368	192	402	582	64	435	940	57	352	1939	63	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	7%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	9.5	38.0	38.0	13.0	41.5	41.5	47.0	35.0	35.0	51.0	37.0	37.0	
Effective Green, g (s)	9.5	38.0	38.0	13.0	41.5	41.5	47.0	35.0	35.0	51.0	37.0	37.0	
Actuated g/C Ratio	0.08	0.32	0.32	0.11	0.35	0.35	0.39	0.29	0.29	0.42	0.31	0.31	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	134	1058	482	188	1200	518	223	1362	448	294	1552	452	
v/s Ratio Prot	0.06	0.11		c0.23	c0.17		c0.19	0.20		c0.14	0.39		
v/s Ratio Perm			0.13			0.04	c0.57		0.04	0.37		0.04	
v/c Ratio	0.71	0.35	0.40	2.14	0.48	0.12	1.95	0.69	0.13	1.20	1.25	0.14	
Uniform Delay, d1	53.9	31.5	32.1	53.5	30.9	26.8	32.9	37.7	31.3	26.7	41.5	30.0	
Progression Factor	1.00	1.00	1.00	0.91	1.06	3.06	1.85	0.49	0.30	1.00	1.00	1.00	
Incremental Delay, d2	15.8	0.9	2.5	528.2	1.3	0.4	441.8	2.5	0.5	117.0	117.7	0.6	
Delay (s)	69.7	32.4	34.5	576.7	34.1	82.5	502.6	20.8	10.0	143.7	159.2	30.6	
Level of Service	E	C	C	F	C	F	F	C	A	F	F	C	
Approach Delay (s)		37.7			228.3			153.0			146.6		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			149.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.41										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			125.5%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	837	110	257	1134	270	3
v/c Ratio	0.01	0.38	0.13	0.51	0.43	0.82	0.01
Control Delay	14.7	13.3	8.3	7.9	6.7	40.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	13.3	8.3	7.9	6.7	40.6	0.0
Queue Length 50th (m)	0.3	54.3	4.2	13.3	44.7	28.9	0.0
Queue Length 95th (m)	m0.9	m68.1	m13.3	31.6	81.3	56.0	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	304	2206	864	617	2650	497	453
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.38	0.13	0.42	0.43	0.54	0.01

**Intersection Summary**

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	770	101	236	1043	0	53	0	195	1	0	2
Future Volume (vph)	3	770	101	236	1043	0	53	0	195	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1798	3438	1316	1685	3505			1465			1685	
Flt Permitted	0.25	1.00	1.00	0.29	1.00			0.92			0.85	
Satd. Flow (perm)	475	3438	1316	516	3505			1369			1462	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	837	110	257	1134	0	58	0	212	1	0	2
RTOR Reduction (vph)	0	0	20	0	0	0	0	131	0	0	3	0
Lane Group Flow (vph)	3	837	90	257	1134	0	0	139	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	77.0	77.0	77.0	90.7	90.7			17.3				17.3
Effective Green, g (s)	77.0	77.0	77.0	90.7	90.7			17.3				17.3
Actuated g/C Ratio	0.64	0.64	0.64	0.76	0.76			0.14				0.14
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	304	2206	844	494	2649			197				210
v/s Ratio Prot		0.24		c0.05	0.32							
v/s Ratio Perm	0.01		0.07	c0.35				c0.10				0.00
v/c Ratio	0.01	0.38	0.11	0.52	0.43			0.71				0.00
Uniform Delay, d1	7.8	10.2	8.3	5.1	5.3			48.9				44.0
Progression Factor	1.17	1.08	1.26	1.00	1.00			1.00				1.00
Incremental Delay, d2	0.0	0.4	0.2	1.0	0.5			10.9				0.0
Delay (s)	9.1	11.4	10.6	6.1	5.8			59.9				44.0
Level of Service	A	B	B	A	A			E				D
Approach Delay (s)		11.3			5.8			59.9				44.0
Approach LOS		B			A			E				D
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			78.4%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	355	813	128	287	159	1000	495	270	1973	210
v/c Ratio	0.39	0.88dr	1.38	0.19	0.42	0.55	0.69	0.66	0.61	1.06	0.31
Control Delay	53.8	43.9	216.5	29.3	14.4	34.8	39.6	10.5	28.9	79.9	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	43.9	216.5	29.3	14.4	34.8	39.6	10.5	28.9	79.9	22.1
Queue Length 50th (m)	14.1	31.8	-139.5	24.3	20.2	21.3	61.3	10.6	63.8	-198.4	24.7
Queue Length 95th (m)	27.1	46.6	#180.8	37.1	43.5	49.0	83.2	44.6	m54.1	m151.3	m17.1
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	326	894	591	903	844	287	1443	754	445	1869	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.40	1.38	0.14	0.34	0.55	0.69	0.66	0.61	1.06	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

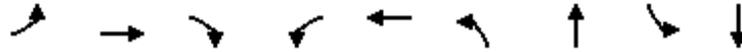
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	89	237	748	118	264	146	920	455	248	1815	193
Future Volume (vph)	56	89	237	748	118	264	146	920	455	248	1815	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1751	3115		3155	1792	1459	1719	4759	1396	1770	5036	1491
Flt Permitted	0.67	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	1244	3115		3155	1792	1459	199	4759	1396	274	5036	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	97	258	813	128	287	159	1000	495	270	1973	210
RTOR Reduction (vph)	0	91	0	0	0	138	0	0	331	0	0	132
Lane Group Flow (vph)	61	264	0	813	128	149	159	1000	164	270	1973	78
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	15.3	15.3		22.5	44.3	44.3	51.9	36.4	36.4	63.1	44.6	44.6
Effective Green, g (s)	15.3	15.3		22.5	44.3	44.3	51.9	36.4	36.4	63.1	44.6	44.6
Actuated g/C Ratio	0.13	0.13		0.19	0.37	0.37	0.43	0.30	0.30	0.53	0.37	0.37
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	158	397		591	661	538	282	1443	423	439	1871	554
v/s Ratio Prot		c0.08		c0.26	0.07		0.07	0.21		c0.12	c0.39	
v/s Ratio Perm	0.05					0.10	0.17		0.12	0.20		0.05
v/c Ratio	0.39	0.88dr		1.38	0.19	0.28	0.56	0.69	0.39	0.62	1.05	0.14
Uniform Delay, d1	48.0	49.9		48.8	25.7	26.6	26.1	36.9	33.0	18.9	37.7	25.0
Progression Factor	1.00	1.00		0.99	1.15	1.86	1.32	0.99	1.60	1.51	1.53	5.51
Incremental Delay, d2	1.6	4.2		179.1	0.1	0.3	2.3	2.5	2.4	0.2	26.1	0.0
Delay (s)	49.6	54.1		227.3	29.6	49.8	36.6	39.0	55.1	28.7	83.6	137.8
Level of Service	D	D		F	C	D	D	D	E	C	F	F
Approach Delay (s)		53.4			165.2			43.6			82.2	
Approach LOS		D			F			D			F	

**Intersection Summary**

HCM 2000 Control Delay	86.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

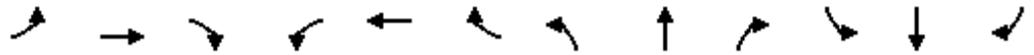
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	674	34	3	697	29	18	49	387
v/c Ratio	0.32	0.51	0.03	0.01	0.32	0.48	0.10	0.36	0.80
Control Delay	2.6	3.6	0.3	7.7	7.7	72.8	25.1	54.8	19.6
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.6	3.8	0.3	7.7	7.7	72.8	25.1	54.8	19.6
Queue Length 50th (m)	4.0	20.2	0.0	0.2	28.4	7.0	1.2	11.7	6.3
Queue Length 95th (m)	8.5	44.5	m0.0	m1.4	57.9	16.2	7.7	22.3	37.9
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	678	1330	1250	539	2192	196	577	438	761
Starvation Cap Reductn	0	171	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.58	0.03	0.01	0.32	0.15	0.03	0.11	0.51

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	620	31	3	608	33	27	5	12	45	7	349
Future Volume (vph)	181	620	31	3	608	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1681	1573	1801	3151		1750	1666		1636	1535	
Flt Permitted	0.36	1.00	1.00	0.41	1.00		0.31	1.00		0.75	1.00	
Satd. Flow (perm)	655	1681	1573	775	3151		576	1666		1284	1535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	674	34	3	661	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	6	0	2	0	0	12	0	0	322	0
Lane Group Flow (vph)	197	674	28	3	695	0	29	6	0	49	65	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	95.0	95.0	95.0	83.5	83.5		12.8	12.8		12.8	12.8	
Effective Green, g (s)	95.0	95.0	95.0	83.5	83.5		12.8	12.8		12.8	12.8	
Actuated g/C Ratio	0.79	0.79	0.79	0.70	0.70		0.11	0.11		0.11	0.11	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	594	1330	1245	539	2192		61	177		136	163	
v/s Ratio Prot	0.02	c0.40			0.22			0.00				0.04
v/s Ratio Perm	0.24		0.02	0.00			c0.05			0.04		
v/c Ratio	0.33	0.51	0.02	0.01	0.32		0.48	0.04		0.36	0.40	
Uniform Delay, d1	3.2	4.3	2.7	5.6	7.1		50.4	48.1		49.8	50.0	
Progression Factor	0.51	0.45	0.14	0.90	0.90		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.1	0.0	0.0	0.4		5.7	0.1		1.6	1.6	
Delay (s)	1.9	3.1	0.4	5.0	6.8		56.2	48.2		51.4	51.6	
Level of Service	A	A	A	A	A		E	D		D	D	
Approach Delay (s)		2.7			6.8			53.1			51.6	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	294	356	100	362	34	257	3	258	27	3	25
Future Volume (Veh/h)	27	294	356	100	362	34	257	3	258	27	3	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	320	387	109	393	37	279	3	280	29	3	27
Pedestrians		1			1							3
Lane Width (m)		3.6			3.6							3.6
Walking Speed (m/s)		1.2			1.2							1.2
Percent Blockage		0			0							0
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	0.85
vC, conflicting volume	433			707			1212	1222	514	1486	1398	416
vC1, stage 1 conf vol							572	572		632	632	
vC2, stage 2 conf vol							640	651		854	765	
vCu, unblocked vol	433			571			1163	1175	346	1484	1380	416
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.5	3.5	4.0	3.3
p0 queue free %	97			87			9	99	50	49	99	96
cM capacity (veh/h)	1135			864			306	320	554	57	248	639
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	736	109	430	279	283	29	30					
Volume Left	29	109	0	279	0	29	0					
Volume Right	387	0	37	0	280	0	27					
cSH	1135	864	1700	306	550	57	552					
Volume to Capacity	0.03	0.13	0.25	0.91	0.51	0.51	0.05					
Queue Length 95th (m)	0.6	3.5	0.0	69.5	23.4	15.8	1.4					
Control Delay (s)	0.7	9.8	0.0	69.3	18.3	120.2	11.9					
Lane LOS	A	A		F	C	F	B					
Approach Delay (s)	0.7	2.0		43.6		65.2						
Approach LOS				E		F						
<b>Intersection Summary</b>												
Average Delay			15.8									
Intersection Capacity Utilization			90.0%		ICU Level of Service				E			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	501	79	44	405	11	91	0	107	7	1	1
Future Volume (Veh/h)	0	501	79	44	405	11	91	0	107	7	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	545	86	48	440	12	99	0	116	8	1	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	454			632			1134	1139	590	1249	1176	450
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	454			632			1134	1139	590	1249	1176	450
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			95			40	100	77	93	99	100
cM capacity (veh/h)	1115			960			166	192	510	112	183	446
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	631	500	215	10								
Volume Left	0	48	99	8								
Volume Right	86	12	116	1								
cSH	1115	960	261	126								
Volume to Capacity	0.00	0.05	0.83	0.08								
Queue Length 95th (m)	0.0	1.3	52.6	2.0								
Control Delay (s)	0.0	1.4	61.2	35.9								
Lane LOS		A	F	E								
Approach Delay (s)	0.0	1.4	61.2	35.9								
Approach LOS			F	E								
Intersection Summary												
Average Delay			10.5									
Intersection Capacity Utilization			77.0%		ICU Level of Service				D			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	11	370	0	9	6	86	45	0	6	95	218
Future Volume (Veh/h)	210	11	370	0	9	6	86	45	0	6	95	218
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	228	12	402	0	10	7	93	49	0	7	103	237
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	482	470	222	878	589	49	340			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	482	470	222	878	589	49	340			49		
tC, single (s)	7.2	7.5	6.2	7.1	7.5	7.2	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.9	4.2	2.2			3.1		
p0 queue free %	48	97	51	100	97	99	92			99		
cM capacity (veh/h)	439	343	823	126	288	800	1230			1106		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	642	17	142	347								
Volume Left	228	0	93	7								
Volume Right	402	7	0	237								
cSH	615	391	1230	1106								
Volume to Capacity	1.04	0.04	0.08	0.01								
Queue Length 95th (m)	138.2	1.1	2.0	0.2								
Control Delay (s)	73.9	14.6	5.6	0.2								
Lane LOS	F	B	A	A								
Approach Delay (s)	73.9	14.6	5.6	0.2								
Approach LOS	F	B										
Intersection Summary												
Average Delay			42.3									
Intersection Capacity Utilization			77.5%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	1560	0	0	2955			
Future Volume (Veh/h)	0	0	1560	0	0	2955			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	1696	0	0	3212			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.72	0.85			0.85				
vC, conflicting volume	2768	566			1697				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	696	0			1214				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	272	930			496				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	565	565	565	0	1071	1071	1071	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.33	0.33	0.33	0.00	0.63	0.63	0.63	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			60.4%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	771	348	1289	1526
v/c Ratio	0.75	0.80	0.46	0.51
Control Delay	41.3	48.2	18.9	12.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.3	48.2	18.9	12.1
Queue Length 50th (m)	88.5	81.4	60.1	51.3
Queue Length 95th (m)	94.7	105.8	m56.2	m48.2
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1444	602	2777	3019
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.58	0.46	0.51

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	657	373	1186	0	0	1404
Future Volume (vph)	657	373	1186	0	0	1404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.96	1.00	1.00			1.00
Satd. Flow (prot)	3373	1374	4631			5036
Flt Permitted	0.96	1.00	1.00			1.00
Satd. Flow (perm)	3373	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	714	405	1289	0	0	1526
RTOR Reduction (vph)	6	20	0	0	0	0
Lane Group Flow (vph)	765	328	1289			1526
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	36.4	36.4	72.0			72.0
Effective Green, g (s)	36.4	36.4	72.0			72.0
Actuated g/C Ratio	0.30	0.30	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1023	416	2778			3021
v/s Ratio Prot			0.28			c0.30
v/s Ratio Perm	0.23	c0.24				
v/c Ratio	0.75	0.79	0.46			0.51
Uniform Delay, d1	37.7	38.3	13.3			13.8
Progression Factor	1.00	1.00	1.29			0.80
Incremental Delay, d2	3.0	9.6	0.1			0.1
Delay (s)	40.7	47.9	17.2			11.1
Level of Service	D	D	B			B
Approach Delay (s)	42.9		17.2			11.1
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			22.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			100.8%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	591	567	536	1291	660	1580
v/c Ratio	1.17	1.17	1.15	1.01	1.25	0.76
Control Delay	134.7	129.7	122.5	66.1	158.8	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.7	129.7	122.5	66.1	158.8	23.1
Queue Length 50th (m)	~184.0	~173.0	~153.7	~112.4	~193.4	140.4
Queue Length 95th (m)	#258.9	#251.9	#228.3	#147.9	#266.9	166.7
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	504	486	468	1281	528	2073
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	1.17	1.15	1.01	1.25	0.76

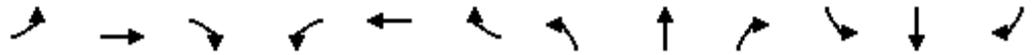
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	811	0	747	0	0	0	0	829	359	607	1454	0
Future Volume (vph)	811	0	747	0	0	0	0	829	359	607	1454	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.93	0.85					0.95		1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1618	1441	1382					4052		1736	3505	
Flt Permitted	0.95	0.97	1.00					1.00		0.10	1.00	
Satd. Flow (perm)	1618	1441	1382					4052		187	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	882	0	812	0	0	0	0	901	390	660	1580	0
RTOR Reduction (vph)	0	38	38	0	0	0	0	65	0	0	0	0
Lane Group Flow (vph)	591	529	498	0	0	0	0	1226	0	660	1580	0
Confl. Peds. (#/hr)								7		1		7
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Actuated Green, G (s)	37.4	37.4	37.4					36.0		71.0	71.0	
Effective Green, g (s)	37.4	37.4	37.4					36.0		71.0	71.0	
Actuated g/C Ratio	0.31	0.31	0.31					0.30		0.59	0.59	
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	504	449	430					1215		523	2073	
v/s Ratio Prot								0.30		c0.34	0.45	
v/s Ratio Perm	0.37	0.37	0.36							c0.41		
v/c Ratio	1.17	1.18	1.16					1.01		1.26	0.76	
Uniform Delay, d1	41.3	41.3	41.3					42.0		35.7	18.2	
Progression Factor	1.00	1.00	1.00					1.00		1.09	1.11	
Incremental Delay, d2	97.1	101.3	94.4					28.0		130.9	2.4	
Delay (s)	138.4	142.6	135.7					70.0		169.8	22.6	
Level of Service	F	F	F					E		F	C	
Approach Delay (s)		139.0			0.0			70.0			66.0	
Approach LOS		F			A			E			E	

Intersection Summary

HCM 2000 Control Delay	90.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.6
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	30
Future Volume (Veh/h)	0	0	0	0	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0			0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			0	0	0
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	97	
cM capacity (veh/h)	1623			1023	1085	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	33		
Volume Left	0	0	0	0		
Volume Right	0	0	0	33		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.03		
Queue Length 95th (m)	0.0	0.0	0.0	0.8		
Control Delay (s)	0.0	0.0	0.0	8.4		
Lane LOS	A			A		
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS	A					
Intersection Summary						
Average Delay	8.4					
Intersection Capacity Utilization	13.3%			ICU Level of Service		A
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	264	0	0	0	30	272	0	0	0
Future Volume (Veh/h)	0	0	0	264	0	0	0	30	272	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	287	0	0	0	33	296	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			574	574	0	886	574	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			574	574	0	886	574	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	91	73	100	100	100
cM capacity (veh/h)	1623			1623			371	353	1085	155	353	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	287	0	329							
Volume Left	0	0	287	0	0							
Volume Right	0	0	0	0	296							
cSH	1700	1700	1623	1700	898							
Volume to Capacity	0.00	0.00	0.18	0.00	0.37							
Queue Length 95th (m)	0.0	0.0	5.1	0.0	13.5							
Control Delay (s)	0.0	0.0	7.7	0.0	11.3							
Lane LOS			A		B							
Approach Delay (s)	0.0		7.7		11.3							
Approach LOS					B							
Intersection Summary												
Average Delay			9.6									
Intersection Capacity Utilization			39.7%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	30	0	0	0	0	0	0	429	0	0	374	0	
Future Volume (Veh/h)	30	0	0	0	0	0	0	429	0	0	374	0	
Sign Control	Free		Free		Free		Stop		Stop		Stop		
Grade	0%		0%		0%		0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	33	0	0	0	0	0	0	466	0	0	407	0	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None			None									
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	0			0			270	66	0	299	66	0	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	0			0			270	66	0	299	66	0	
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
iC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	98			100			100	42	100	100	50	100	
cM capacity (veh/h)	1623			1623			406	808	1085	349	808	1085	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	33	0	0	0	466	407							
Volume Left	33	0	0	0	0	0							
Volume Right	0	0	0	0	0	0							
cSH	1623	1700	1700	1700	808	808							
Volume to Capacity	0.02	0.00	0.00	0.00	0.58	0.50							
Queue Length 95th (m)	0.5	0.0	0.0	0.0	30.1	23.0							
Control Delay (s)	7.3	0.0	0.0	0.0	15.3	13.9							
Lane LOS	A					C	B						
Approach Delay (s)	7.3			0.0	15.3	13.9							
Approach LOS					C	B							
Intersection Summary													
Average Delay			14.4										
Intersection Capacity Utilization			32.6%		ICU Level of Service		A						
Analysis Period (min)			15										

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	0	0	0	0	0	0	127	0	10	82	282
Future Volume (Veh/h)	302	0	0	0	0	0	0	127	0	10	82	282
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	328	0	0	0	0	0	0	138	0	11	89	307
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			1008	656	0	725	656	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			1008	656	0	725	656	0
iC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
iC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	80			100			100	55	100	94	71	72
cM capacity (veh/h)	1623			1623			104	307	1085	189	307	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	328	0	138	407								
Volume Left	328	0	0	11								
Volume Right	0	0	0	307								
cSH	1623	1700	307	645								
Volume to Capacity	0.20	0.00	0.45	0.63								
Queue Length 95th (m)	6.1	0.0	17.7	35.7								
Control Delay (s)	7.8	0.0	25.9	19.6								
Lane LOS	A		D	C								
Approach Delay (s)	7.8	0.0	25.9	19.6								
Approach LOS			D	C								
Intersection Summary												
Average Delay			16.2									
Intersection Capacity Utilization			54.1%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	110	0	61	0	62	31	0
Future Volume (Veh/h)	0	0	0	0	0	110	0	61	0	62	31	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	120	0	66	0	67	34	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	354	234	34	234	234	66	34			66		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	354	234	34	234	234	66	34			66		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	88	100			96		
cM capacity (veh/h)	511	637	1039	697	637	998	1578			1536		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	0	0	120	0	66	67	34				
Volume Left	0	0	0	0	0	0	67	0				
Volume Right	0	0	0	120	0	0	0	0				
cSH	1700	1700	1700	998	1700	1700	1536	1700				
Volume to Capacity	0.00	0.00	0.00	0.12	0.00	0.04	0.04	0.02				
Queue Length 95th (m)	0.0	0.0	0.0	3.3	0.0	0.0	1.1	0.0				
Control Delay (s)	0.0	0.0	0.0	9.1	0.0	0.0	7.5	0.0				
Lane LOS	A	A	A	A			A					
Approach Delay (s)	0.0		9.1		0.0		4.9					
Approach LOS	A		A									
Intersection Summary												
Average Delay			5.5									
Intersection Capacity Utilization			23.6%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	10	0	61	31	0
Future Volume (Veh/h)	0	10	0	61	31	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	0	66	34	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	100	34	34			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	100	34	34			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	899	1039	1578			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	66	34			
Volume Left	0	0	0			
Volume Right	11	0	0			
cSH	1039	1578	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	62	0	0	110	0
Future Volume (Veh/h)	0	62	0	0	110	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	0	0	120	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			67		34	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			67		34	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		88	100
cM capacity (veh/h)			1535		980	1040
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	67	0	120			
Volume Left	0	0	120			
Volume Right	67	0	0			
cSH	1700	1700	980			
Volume to Capacity	0.04	0.00	0.12			
Queue Length 95th (m)	0.0	0.0	3.3			
Control Delay (s)	0.0	0.0	9.2			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.2			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			5.9			
Intersection Capacity Utilization			16.6%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				0	0	0
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	100
cM capacity (veh/h)				1623	1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay				0.0		
Intersection Capacity Utilization				13.3%	ICU Level of Service	A
Analysis Period (min)				15		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	263	1149	513	299	805	290	582	1780	490	318	1460	229
v/c Ratio	1.64	1.04	0.79	1.85	0.74	0.46	1.79	1.04	0.75	1.31	1.00	0.39
Control Delay	350.5	79.8	28.7	427.6	47.6	23.7	384.4	43.2	7.8	193.5	67.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	350.5	79.8	28.7	427.6	47.6	23.7	384.4	43.2	7.8	193.5	67.1	7.7
Queue Length 50th (m)	-94.2	-162.3	61.1	-113.9	109.4	37.4	-192.8	-177.3	62.3	-83.7	-133.5	3.2
Queue Length 95th (m)	#148.4	#205.7	109.5	m#168.4	m129.8	m68.4	m#164.0	m145.6	m37.7	#143.0	#169.3	22.9
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	160	1101	646	162	1091	625	325	1712	652	243	1454	589
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.64	1.04	0.79	1.85	0.74	0.46	1.79	1.04	0.75	1.31	1.00	0.39

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	1057	472	275	741	267	535	1638	451	293	1343	211
Future Volume (vph)	242	1057	472	275	741	267	535	1638	451	293	1343	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	200	5136	1531	211	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	1149	513	299	805	290	582	1780	490	318	1460	229
RTOR Reduction (vph)	0	0	178	0	0	154	0	0	142	0	0	149
Lane Group Flow (vph)	263	1149	335	299	805	136	582	1780	348	318	1460	80
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	11.0	37.0	37.0	11.0	37.0	37.0	55.0	40.0	40.0	47.0	35.0	35.0
Effective Green, g (s)	11.0	37.0	37.0	11.0	37.0	37.0	55.0	40.0	40.0	47.0	35.0	35.0
Actuated g/C Ratio	0.09	0.31	0.31	0.09	0.31	0.31	0.46	0.33	0.33	0.39	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	1101	468	162	1091	472	319	1712	510	236	1454	439
v/s Ratio Prot	0.15	c0.32		c0.17	0.23		c0.26	0.35		0.13	0.29	
v/s Ratio Perm			0.22			0.09	c0.58		0.23	0.39		0.05
v/c Ratio	1.64	1.04	0.72	1.85	0.74	0.29	1.82	1.04	0.68	1.35	1.00	0.18
Uniform Delay, d1	54.5	41.5	36.8	54.5	37.2	31.5	36.3	40.0	34.5	32.9	42.5	31.8
Progression Factor	1.00	1.00	1.00	0.78	1.17	2.49	1.26	0.54	0.35	1.00	1.00	1.00
Incremental Delay, d2	316.0	39.2	9.1	400.3	3.8	1.3	372.1	20.1	0.7	181.8	24.6	0.9
Delay (s)	370.5	80.7	45.9	442.7	47.2	79.8	417.8	41.7	12.8	214.7	67.1	32.7
Level of Service	F	F	D	F	D	E	F	D	B	F	E	C
Approach Delay (s)		111.0			138.8			113.5			86.6	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			110.6									F
HCM 2000 Volume to Capacity ratio			1.58									
Actuated Cycle Length (s)			120.0							20.0		
Intersection Capacity Utilization			122.4%									H
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1802	97	239	1187	606	2
v/c Ratio	0.02	1.06	0.15	1.06	0.57	1.08	0.00
Control Delay	22.7	60.1	12.4	108.0	16.4	89.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	60.1	12.4	108.0	16.4	89.3	0.0
Queue Length 50th (m)	0.4	~251.7	6.8	~47.8	89.8	~134.6	0.0
Queue Length 95th (m)	m0.4	m#159.8	m6.2	#100.8	109.5	#207.5	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	191	1697	666	225	2093	562	549
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.06	0.15	1.06	0.57	1.08	0.00

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1658	89	220	1092	0	61	0	497	0	0	2
Future Volume (vph)	3	1658	89	220	1092	0	61	0	497	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1801	3574	1342	1752	3539			1462			1615	
Flt Permitted	0.21	1.00	1.00	0.07	1.00			0.96			1.00	
Satd. Flow (perm)	403	3574	1342	123	3539			1416			1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1802	97	239	1187	0	66	0	540	0	0	2
RTOR Reduction (vph)	0	0	29	0	0	0	0	125	0	0	1	0
Lane Group Flow (vph)	3	1802	68	239	1187	0	0	481	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.0	57.0	57.0	71.0	71.0			37.0				37.0
Effective Green, g (s)	57.0	57.0	57.0	71.0	71.0			37.0				37.0
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59			0.31				0.31
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	191	1697	637	222	2093			436				497
v/s Ratio Prot		0.50		c0.10	0.34							0.00
v/s Ratio Perm	0.01		0.05	c0.54				c0.34				
v/c Ratio	0.02	1.06	0.11	1.08	0.57			1.10				0.00
Uniform Delay, d1	16.7	31.5	17.4	38.8	15.1			41.5				28.7
Progression Factor	1.33	0.98	1.43	1.00	1.00			1.00				1.00
Incremental Delay, d2	0.0	29.4	0.0	82.2	1.1			74.0				0.0
Delay (s)	22.1	60.2	25.0	121.1	16.2			115.5				28.7
Level of Service	C	E	C	F	B			F				C
Approach Delay (s)		58.4			33.8			115.5				28.7
Approach LOS		E			C			F				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay			58.2			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			112.3%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	524	551	250	455	299	2154	1029	403	1170	82
v/c Ratio	0.57	0.78	1.44	0.43	0.66	0.70	1.26	1.32	0.88	0.63	0.12
Control Delay	59.5	37.4	246.8	30.7	21.1	26.0	158.8	175.3	24.9	29.1	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	4.4	0.0	0.0
Total Delay	59.5	37.4	246.8	30.7	21.2	26.0	158.8	175.3	29.3	29.1	6.9
Queue Length 50th (m)	22.5	40.2	~96.8	53.8	60.5	49.0	~244.4	~289.6	68.3	101.2	3.0
Queue Length 95th (m)	38.6	56.4	#133.3	75.0	100.6	m62.0	#276.1	m#343.4	m#105.2	m102.4	m2.9
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	297	1013	382	799	834	431	1707	777	459	1861	660
Starvation Cap Reductn	0	0	0	0	49	0	0	0	0	0	0
Spillback Cap Reductn	0	3	0	0	0	0	0	5	25	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.52	1.44	0.31	0.58	0.69	1.26	1.33	0.93	0.63	0.12

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

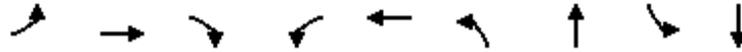
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	238	244	507	230	419	275	1982	947	371	1076	75	
Future Volume (vph)	88	238	244	507	230	419	275	1982	947	371	1076	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1782	3267		3400	1863	1567	1786	5136	1514	1787	4988	1528	
Flt Permitted	0.60	1.00		0.95	1.00	1.00	0.16	1.00	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	1133	3267		3400	1863	1567	297	5136	1514	175	4988	1528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	259	265	551	250	455	299	2154	1029	403	1170	82	
RTOR Reduction (vph)	0	180	0	0	0	194	0	0	274	0	0	51	
Lane Group Flow (vph)	96	344	0	551	250	261	299	2154	755	403	1170	31	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	17.9	17.9		13.5	37.9	37.9	61.6	39.9	39.9	69.5	44.8	44.8	
Effective Green, g (s)	17.9	17.9		13.5	37.9	37.9	61.6	39.9	39.9	69.5	44.8	44.8	
Actuated g/C Ratio	0.15	0.15		0.11	0.32	0.32	0.51	0.33	0.33	0.58	0.37	0.37	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	169	487		382	588	494	421	1707	503	458	1862	570	
v/s Ratio Prot		c0.11		c0.16	0.13		0.13	0.42		c0.19	0.23		
v/s Ratio Perm	0.08					0.17	0.24		c0.50	0.31		0.02	
v/c Ratio	0.57	0.71		1.44	0.43	0.53	0.71	1.26	1.50	0.88	0.63	0.05	
Uniform Delay, d1	47.5	48.6		53.2	32.4	33.7	19.4	40.0	40.0	35.0	30.8	24.0	
Progression Factor	1.00	1.00		0.85	0.90	1.37	1.14	1.15	1.31	0.58	0.89	97.10	
Incremental Delay, d2	4.3	4.7		212.3	0.5	0.9	2.6	120.1	229.9	2.0	0.1	0.0	
Delay (s)	51.8	53.2		257.6	29.8	47.3	24.7	166.0	282.5	22.1	27.6	2334.7	
Level of Service	D	D		F	C	D	C	F	F	C	C	F	
Approach Delay (s)		53.0			136.0			188.3			140.6		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			155.7		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.18										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			110.6%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	1239	43	13	928	49	73	98	273
v/c Ratio	0.75	0.88	0.04	0.09	0.45	0.80	0.28	0.58	0.64
Control Delay	12.0	6.7	0.4	18.5	16.0	116.5	20.7	61.7	13.6
Queue Delay	0.2	35.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	41.8	0.4	18.5	16.0	116.5	20.7	61.7	13.6
Queue Length 50th (m)	21.9	70.7	0.2	1.1	61.8	12.0	5.2	23.4	3.1
Queue Length 95th (m)	m23.1	m78.3	m0.3	m6.6	m112.7	#27.3	17.9	38.5	27.3
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	688	1405	1181	141	2054	99	386	271	535
Starvation Cap Reductn	22	248	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.07	0.04	0.09	0.45	0.49	0.19	0.36	0.51

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	1140	40	12	783	71	45	21	46	90	13	238
Future Volume (vph)	396	1140	40	12	783	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1786	1827	1528	1805	3491		1765	1666		1748	1587	
Flt Permitted	0.24	1.00	1.00	0.13	1.00		0.26	1.00		0.71	1.00	
Satd. Flow (perm)	458	1827	1528	242	3491		479	1666		1306	1587	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	1239	43	13	851	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	6	0	4	0	0	44	0	0	226	0
Lane Group Flow (vph)	430	1239	37	13	924	0	49	29	0	98	47	0
Confl. Peds. (#/hr)	5		11	11		5	3		4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	92.3	92.3	92.3	70.4	70.4		15.5	15.5		15.5	15.5	
Effective Green, g (s)	92.3	92.3	92.3	70.4	70.4		15.5	15.5		15.5	15.5	
Actuated g/C Ratio	0.77	0.77	0.77	0.59	0.59		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	561	1405	1175	141	2048		61	215		168	204	
v/s Ratio Prot	0.12	c0.68			0.26			0.02				0.03
v/s Ratio Perm	0.47		0.02	0.05			c0.10			0.08		
v/c Ratio	0.77	0.88	0.03	0.09	0.45		0.80	0.14		0.58	0.23	
Uniform Delay, d1	8.0	9.9	3.3	10.8	13.9		50.8	46.3		49.2	46.9	
Progression Factor	1.67	0.36	0.16	0.94	0.93		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.8	0.0	1.3	0.7		51.7	0.3		5.1	0.6	
Delay (s)	13.9	4.4	0.5	11.4	13.6		102.5	46.6		54.3	47.5	
Level of Service	B	A	A	B	B		F	D		D	D	
Approach Delay (s)		6.7			13.6			69.1			49.3	
Approach LOS		A			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			119.4%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group

5: Street D/Walmart East Access & Pickering Pkwy

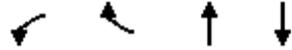
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	644	685	115	459	87	365	30	222	82	8	55
Future Volume (Veh/h)	31	644	685	115	459	87	365	30	222	82	8	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	700	745	125	499	95	397	33	241	89	9	60
Pedestrians					5			5			3	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.22			0.22	0.22	0.22	0.22	0.22	0.22
vC, conflicting volume	597			1450			1959	1992	1082	2202	2318	550
vC1, stage 1 conf vol							1146	1146		800	800	
vC2, stage 2 conf vol							814	847		1403	1518	
vCu, unblocked vol	597			1268			3629	3785	0	4759	5293	550
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			0			0	0	0	0	0	89
cM capacity (veh/h)	987			119			0	0	231	0	0	538
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	1479	125	594	397	274	89	69					
Volume Left	34	125	0	397	0	89	0					
Volume Right	745	0	95	0	241	0	60					
cSH	987	119	1700	0	0	0	0					
Volume to Capacity	0.03	1.05	0.35	Err	Err	Err	Err					
Queue Length 95th (m)	0.9	57.8	0.0	Err	Err	Err	Err					
Control Delay (s)	2.2	166.4	0.0	Err	Err	Err	Err					
Lane LOS	A	F		F	F	F	F					
Approach Delay (s)	2.2	28.9		Err		Err						
Approach LOS				F		F						
<b>Intersection Summary</b>												
Average Delay				Err								
Intersection Capacity Utilization			136.9%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	793	147	95	506	8	153	2	145	11	3	0
Future Volume (Veh/h)	5	793	147	95	506	8	153	2	145	11	3	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	862	160	103	550	9	166	2	158	12	3	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	563			1023			1716	1722	943	1876	1798	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	563			1023			1716	1722	943	1876	1798	560
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			0	97	51	50	96	100
cM capacity (veh/h)	1015			686			60	76	321	24	68	530
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	1027	662	326	15								
Volume Left	5	103	166	12								
Volume Right	160	9	158	0								
cSH	1015	686	100	28								
Volume to Capacity	0.00	0.15	3.26	0.54								
Queue Length 95th (m)	0.1	4.2	Err	13.7								
Control Delay (s)	0.1	3.8	Err	237.3								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.1	3.8	Err	237.3								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			1608.8									
Intersection Capacity Utilization			110.7%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	395	3	317	2	7	3	168	96	0	2	35	266
Future Volume (Veh/h)	395	3	317	2	7	3	168	96	0	2	35	266
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	429	3	345	2	8	3	183	104	0	2	38	289
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	664	656	184	1004	801	104	327			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	664	656	184	1004	801	104	327			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	60	98	96	100	85			100		
cM capacity (veh/h)	318	241	863	117	203	873	1244			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	777	13	287	329								
Volume Left	429	2	183	2								
Volume Right	345	3	0	289								
cSH	442	217	1244	1048								
Volume to Capacity	1.76	0.06	0.15	0.00								
Queue Length 95th (m)	383.9	1.5	4.1	0.0								
Control Delay (s)	372.7	22.7	5.8	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	372.7	22.7	5.8	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			207.4									
Intersection Capacity Utilization			90.9%	ICU Level of Service	E							
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	3304	0	0	1945			
Future Volume (Veh/h)	0	0	3304	0	0	1945			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	3591	0	0	2114			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.58	0.49			0.49				
vC, conflicting volume	4296	1197			3591				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	2005	0			2643				
tC, single (s)	7.1	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.7	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	25	531			80				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	1197	1197	1197	0	705	705	705	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.70	0.70	0.70	0.00	0.41	0.41	0.41	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			67.2%	ICU Level of Service	C				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	677	351	2896	1020
v/c Ratio	0.86	0.94	0.88	0.32
Control Delay	54.3	77.0	16.6	4.9
Queue Delay	0.0	0.0	45.9	0.0
Total Delay	54.3	77.0	62.6	4.9
Queue Length 50th (m)	81.4	92.1	165.5	14.8
Queue Length 95th (m)	#105.7	#155.6	m66.0	m16.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	816	388	3277	3184
Starvation Cap Reductn	0	0	659	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.90	1.11	0.32

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	300	646	2664	0	0	938
Future Volume (vph)	300	646	2664	0	0	938
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3039	1441	5085			4940
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3039	1441	5085			4940
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	702	2896	0	0	1020
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	676	350	2896	0	0	1020
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	5%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	31.0	31.0	77.4			77.4
Effective Green, g (s)	31.0	31.0	77.4			77.4
Actuated g/C Ratio	0.26	0.26	0.65			0.65
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	785	372	3279			3186
v/s Ratio Prot			c0.57			0.21
v/s Ratio Perm	0.22	c0.24				
v/c Ratio	0.86	0.94	0.88			0.32
Uniform Delay, d1	42.4	43.6	17.6			9.5
Progression Factor	1.00	1.00	0.88			0.48
Incremental Delay, d2	9.5	31.1	0.4			0.2
Delay (s)	52.0	74.7	15.9			4.7
Level of Service	D	E	B			A
Approach Delay (s)	59.7		15.9			4.7
Approach LOS	E		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			22.7		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.90			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			130.3%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	973	963	569	2296	422	927
v/c Ratio	1.48	1.55	0.99	1.38	1.29	0.56
Control Delay	255.5	285.8	66.1	207.9	180.5	22.1
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay	255.5	285.8	66.1	208.4	180.5	22.1
Queue Length 50th (m)	~350.0	~372.6	127.5	~275.4	~115.9	77.7
Queue Length 95th (m)	#434.7	#462.5	#211.2	#305.9	m#176.9	117.5
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	620	575	1661	328	1665
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	228	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.48	1.55	0.99	1.60	1.29	0.56

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1721	2	581	0	0	0	0	1696	417	388	853	0	
Future Volume (vph)	1721	2	581	0	0	0	0	1696	417	388	853	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1602	1334					4764		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.09	1.00		
Satd. Flow (perm)	1698	1602	1334					4764		168	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1871	2	632	0	0	0	0	1843	453	422	927	0	
RTOR Reduction (vph)	0	2	60	0	0	0	0	35	0	0	0	0	
Lane Group Flow (vph)	973	961	509	0	0	0	0	2261	0	422	927	0	
Confl. Peds. (#/hr)								5	7	7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	46.4	46.4	46.4					41.0		62.0	62.0		
Effective Green, g (s)	46.4	46.4	46.4					41.0		62.0	62.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.34		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	656	619	515					1627		324	1665		
v/s Ratio Prot								c0.47		c0.20	0.29		
v/s Ratio Perm	0.57	0.60	0.38							0.48			
v/c Ratio	1.48	1.55	0.99					1.39		1.30	0.56		
Uniform Delay, d1	36.8	36.8	36.5					39.5		37.9	19.7		
Progression Factor	1.00	1.00	1.00					1.00		1.08	1.05		
Incremental Delay, d2	225.6	256.7	36.2					179.2		155.3	1.2		
Delay (s)	262.4	293.5	72.7					218.7		196.0	21.8		
Level of Service	F	F	E					F		F	C		
Approach Delay (s)		231.2			0.0			218.7			76.3		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			192.6									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.45										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			130.3%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Traffic Volume (veh/h)	0	0	0	0	0	23
Future Volume (Veh/h)	0	0	0	0	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0			0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			0	0	0
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	98	
cM capacity (veh/h)	1623			1023	1085	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	25		
Volume Left	0	0	0	0		
Volume Right	0	0	0	25		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.02		
Queue Length 95th (m)	0.0	0.0	0.0	0.6		
Control Delay (s)	0.0	0.0	0.0	8.4		
Lane LOS	A			A		
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS	A					
Intersection Summary						
Average Delay	8.4					
Intersection Capacity Utilization	13.3%			ICU Level of Service		A
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	250	0	0	0	23	214	0	0	0
Future Volume (Veh/h)	0	0	0	250	0	0	0	23	214	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	272	0	0	0	25	233	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			544	544	0	790	544	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			544	544	0	790	544	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			83			100	93	79	100	100	100
cM capacity (veh/h)	1623			1623			392	371	1085	200	371	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	272	0	258							
Volume Left	0	0	272	0	0							
Volume Right	0	0	0	0	233							
cSH	1700	1700	1623	1700	915							
Volume to Capacity	0.00	0.00	0.17	0.00	0.28							
Queue Length 95th (m)	0.0	0.0	4.8	0.0	9.3							
Control Delay (s)	0.0	0.0	7.7	0.0	10.5							
Lane LOS			A		B							
Approach Delay (s)	0.0		7.7		10.5							
Approach LOS					B							
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization			34.9%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	0	0	0	0	0	0	364	0	0	439	0
Future Volume (Veh/h)	23	0	0	0	0	0	0	364	0	0	439	0
Sign Control	Free			Free				Stop			Stop	
Grade	0%			0%				0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	0	0	0	0	0	0	396	0	0	477	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			288	50	0	248	50	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			288	50	0	248	50	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	52	100	100	42	100
cM capacity (veh/h)	1623			1623			356	828	1085	436	828	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	25	0	0	0	396	477						
Volume Left	25	0	0	0	0	0						
Volume Right	0	0	0	0	0	0						
cSH	1623	1700	1700	1700	828	828						
Volume to Capacity	0.02	0.00	0.00	0.00	0.48	0.58						
Queue Length 95th (m)	0.4	0.0	0.0	0.0	21.0	30.0						
Control Delay (s)	7.3	0.0	0.0	0.0	13.3	15.1						
Lane LOS	A				B	C						
Approach Delay (s)	7.3		0.0		13.3	15.1						
Approach LOS					B	C						
Intersection Summary												
Average Delay			14.1									
Intersection Capacity Utilization			33.1%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	0	0	0	0	0	0	127	0	21	141	277
Future Volume (Veh/h)	237	0	0	0	0	0	0	127	0	21	141	277
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	0	0	0	0	0	0	138	0	23	153	301
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			894	516	0	585	516	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			894	516	0	585	516	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	84			100			100	65	100	92	61	72
cM capacity (veh/h)	1623			1623			116	389	1085	271	389	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	258	0	138	477								
Volume Left	258	0	0	23								
Volume Right	0	0	0	301								
cSH	1623	1700	389	632								
Volume to Capacity	0.16	0.00	0.35	0.76								
Queue Length 95th (m)	4.5	0.0	12.6	54.7								
Control Delay (s)	7.6	0.0	19.2	26.1								
Lane LOS	A		C	D								
Approach Delay (s)	7.6	0.0	19.2	26.1								
Approach LOS			C	D								
Intersection Summary												
Average Delay			19.6									
Intersection Capacity Utilization			55.4%	ICU Level of Service						B		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	86	0	63	0	102	47	0
Future Volume (Veh/h)	0	0	0	0	0	86	0	63	0	102	47	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	93	0	68	0	111	51	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	434	341	51	341	341	68	51			68		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	434	341	51	341	341	68	51			68		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	91	100			93		
cM capacity (veh/h)	456	539	1017	579	539	995	1555			1533		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	0	0	93	0	68	111	51				
Volume Left	0	0	0	0	0	0	111	0				
Volume Right	0	0	0	93	0	0	0	0				
cSH	1700	1700	1700	995	1700	1700	1533	1700				
Volume to Capacity	0.00	0.00	0.00	0.09	0.00	0.04	0.07	0.03				
Queue Length 95th (m)	0.0	0.0	0.0	2.5	0.0	0.0	1.9	0.0				
Control Delay (s)	0.0	0.0	0.0	9.0	0.0	0.0	7.5	0.0				
Lane LOS	A	A	A	A			A					
Approach Delay (s)	0.0		9.0		0.0		5.2					
Approach LOS	A		A									
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			24.3%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	21	0	63	47	0
Future Volume (Veh/h)	0	21	0	63	47	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	23	0	68	51	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119	51	51			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119	51	51			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	877	1017	1555			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	23	68	51			
Volume Left	0	0	0			
Volume Right	23	0	0			
cSH	1017	1555	1700			
Volume to Capacity	0.02	0.00	0.03			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	102	0	0	86	0
Future Volume (Veh/h)	0	102	0	0	86	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	111	0	0	93	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			111		56	56
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			111		56	56
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	100
cM capacity (veh/h)			1479		952	1011
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	111	0	93			
Volume Left	0	0	93			
Volume Right	111	0	0			
cSH	1700	1700	952			
Volume to Capacity	0.07	0.00	0.10			
Queue Length 95th (m)	0.0	0.0	2.6			
Control Delay (s)	0.0	0.0	9.2			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			17.7%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	215	828	615	297	888	285	485	1430	420	253	1313	214
v/c Ratio	1.21	0.75	0.98	1.54	0.79	0.44	1.64	0.88	0.64	1.02	0.88	0.36
Control Delay	180.1	42.5	58.4	300.5	51.2	19.1	320.9	36.1	16.0	93.0	48.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	180.1	42.5	58.4	300.5	51.2	19.1	320.9	36.1	16.0	93.0	48.2	6.0
Queue Length 50th (m)	-64.8	97.1	106.2	-106.4	93.5	15.0	-153.6	126.7	58.9	-48.0	113.4	0.0
Queue Length 95th (m)	#114.9	121.3	#186.4	m#165.2	130.4	m50.3	m#191.7	m142.1	m73.9	#102.0	133.1	18.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	178	1101	626	193	1131	653	295	1626	653	248	1498	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.75	0.98	1.54	0.79	0.44	1.64	0.88	0.64	1.02	0.88	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	198	762	566	273	817	262	446	1316	386	233	1208	197	
Future Volume (vph)	198	762	566	273	817	262	446	1316	386	233	1208	197	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1520	1787	3574	1558	1805	5136	1533	1787	5136	1545	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1520	1787	3574	1558	200	5136	1533	215	5136	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	215	828	615	297	888	285	485	1430	420	253	1313	214	
RTOR Reduction (vph)	0	0	158	0	0	161	0	0	168	0	0	152	
Lane Group Flow (vph)	215	828	457	297	888	124	485	1430	252	253	1313	62	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Effective Green, g (s)	12.0	37.0	37.0	13.0	38.0	38.0	53.0	38.0	38.0	47.0	35.0	35.0	
Actuated g/C Ratio	0.10	0.31	0.31	0.11	0.32	0.32	0.44	0.32	0.32	0.39	0.29	0.29	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	178	1101	468	193	1131	493	288	1626	485	241	1498	450	
v/s Ratio Prot	0.12	0.23		c0.17	0.25		c0.21	0.28		0.10	0.26		
v/s Ratio Perm			c0.30			0.08	c0.53		0.16	0.31		0.04	
v/c Ratio	1.21	0.75	0.98	1.54	0.79	0.25	1.68	0.88	0.52	1.05	0.88	0.14	
Uniform Delay, d1	54.0	37.4	41.1	53.5	37.3	30.5	34.9	38.8	33.5	32.0	40.4	31.4	
Progression Factor	1.00	1.00	1.00	0.98	1.22	2.46	0.49	0.78	0.87	1.00	1.00	1.00	
Incremental Delay, d2	134.4	4.8	36.3	264.7	5.0	1.1	319.0	5.5	3.0	71.7	7.5	0.6	
Delay (s)	188.4	42.1	77.4	317.1	50.7	76.2	336.0	35.7	32.2	103.6	48.0	32.0	
Level of Service	F	D	E	F	D	E	F	D	C	F	D	C	
Approach Delay (s)		74.2			109.4			97.5			54.0		
Approach LOS		E			F			F			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			83.9		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.43										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			117.3%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1375	148	322	1267	467	2
v/c Ratio	0.03	0.71	0.17	0.80	0.49	0.92	0.01
Control Delay	32.0	44.0	24.6	38.6	8.6	41.0	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	44.0	24.6	38.6	8.6	41.0	36.0
Queue Length 50th (m)	0.9	188.1	21.8	46.5	65.1	45.1	0.4
Queue Length 95th (m)	m0.0	m209.0	m31.6	#90.0	94.6	#90.5	2.7
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	187	1933	859	438	2604	589	349
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.71	0.17	0.74	0.49	0.79	0.01

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1265	136	296	1166	0	49	2	379	1	1	0
Future Volume (vph)	5	1265	136	296	1166	0	49	2	379	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.88			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1503	3574	1541	1805	3574			1619			1851	
Flt Permitted	0.22	1.00	1.00	0.10	1.00			0.96			0.79	
Satd. Flow (perm)	347	3574	1541	186	3574			1561			1499	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1375	148	322	1267	0	53	2	412	1	1	0
RTOR Reduction (vph)	0	0	25	0	0	0	0	243	0	0	0	0
Lane Group Flow (vph)	5	1375	123	322	1267	0	0	224	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	64.9	64.9	64.9	87.4	87.4			20.6			20.6	
Effective Green, g (s)	64.9	64.9	64.9	87.4	87.4			20.6			20.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.73	0.73			0.17			0.17	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	187	1932	833	398	2603			267			257	
v/s Ratio Prot		0.38		c0.13	0.35							
v/s Ratio Perm	0.01		0.08	c0.46				c0.14			0.00	
v/c Ratio	0.03	0.71	0.15	0.81	0.49			0.84			0.01	
Uniform Delay, d1	12.8	20.6	13.7	29.2	6.9			48.1			41.2	
Progression Factor	1.76	1.83	2.21	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.4	0.2	11.5	0.7			20.5			0.0	
Delay (s)	22.8	39.2	30.6	40.7	7.5			68.6			41.2	
Level of Service	C	D	C	D	A			E			D	
Approach Delay (s)		38.3			14.2			68.6			41.2	
Approach LOS		D			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			91.9%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 SAT Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	487	873	268	539	253	1279	948	498	954	99
v/c Ratio	0.64	0.76	1.71	0.41	0.67	0.62	0.93	1.31	0.94	0.48	0.15
Control Delay	67.1	38.6	348.9	21.5	12.2	25.1	54.9	169.3	34.8	20.6	3.1
Queue Delay	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.5	46.4	0.0	0.0
Total Delay	67.1	39.0	348.9	21.5	12.5	25.1	54.9	169.8	81.2	20.6	3.1
Queue Length 50th (m)	21.1	39.9	-165.6	58.8	81.0	29.3	93.2	-195.2	45.3	64.5	2.5
Queue Length 95th (m)	37.0	54.5	m#155.5	m55.1	m72.4	64.0	#138.9	#345.2	m#141.7	m81.6	m5.6
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	246	994	510	869	940	440	1378	725	528	1988	677
Starvation Cap Reductn	0	0	0	0	91	0	0	0	0	0	0
Spillback Cap Reductn	0	157	0	0	0	0	0	53	176	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.58	1.71	0.31	0.63	0.57	0.93	1.41	1.41	0.48	0.15

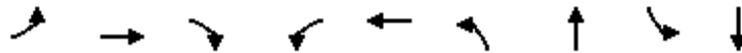
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	242	206	803	247	496	233	1177	872	458	878	91	
Future Volume (vph)	82	242	206	803	247	496	233	1177	872	458	878	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1501	3298		3502	1881	1591	1805	5187	1549	1805	5187	1579	
Flt Permitted	0.59	1.00		0.95	1.00	1.00	0.29	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	939	3298		3502	1881	1591	547	5187	1549	218	5187	1579	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	263	224	873	268	539	253	1279	948	498	954	99	
RTOR Reduction (vph)	0	149	0	0	0	247	0	0	314	0	0	61	
Lane Group Flow (vph)	89	338	0	873	268	292	253	1279	634	498	954	38	
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1	
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	17.9	17.9		17.5	41.9	41.9	48.4	31.9	31.9	65.5	46.0	46.0	
Effective Green, g (s)	17.9	17.9		17.5	41.9	41.9	48.4	31.9	31.9	65.5	46.0	46.0	
Actuated g/C Ratio	0.15	0.15		0.15	0.35	0.35	0.40	0.27	0.27	0.55	0.38	0.38	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	140	491		510	656	555	393	1378	411	523	1988	605	
v/s Ratio Prot		c0.10		c0.25	0.14		0.09	0.25		c0.24	0.18		
v/s Ratio Perm	0.09					0.18	0.17		c0.41	0.28		0.02	
v/c Ratio	0.64	0.69		1.71	0.41	0.53	0.64	0.93	1.54	0.95	0.48	0.06	
Uniform Delay, d1	48.0	48.4		51.2	29.6	31.1	24.8	42.9	44.0	34.7	28.0	23.4	
Progression Factor	1.00	1.00		0.69	0.73	1.30	1.22	1.03	1.14	0.68	0.68	0.76	
Incremental Delay, d2	9.1	4.0		322.2	0.1	0.2	2.9	10.3	253.6	10.2	0.2	0.0	
Delay (s)	57.1	52.4		357.6	21.7	40.6	33.2	54.6	303.8	33.6	19.3	17.8	
Level of Service	E	D		F	C	D	C	D	F	C	B	B	
Approach Delay (s)		53.1			202.3			147.7			23.8		
Approach LOS		D			F			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			123.0		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.23										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			109.6%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	1176	64	34	1078	112	102	128	624
v/c Ratio	0.99	1.27	0.08	0.54	1.23	1.06	0.14	0.25	0.66
Control Delay	47.2	145.9	8.2	71.6	151.6	141.9	14.2	25.2	8.8
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	146.7	8.2	71.6	151.6	141.9	14.2	25.2	8.8
Queue Length 50th (m)	-99.4	-370.2	3.5	7.5	-174.0	-29.8	9.1	20.5	17.6
Queue Length 95th (m)	m81.3	m#314.1	m2.6	m#23.1	#217.5	#67.9	20.8	35.6	56.8
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	476	929	782	63	876	108	725	529	958
Starvation Cap Reductn	0	130	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	1.47	0.08	0.54	1.23	1.04	0.14	0.24	0.65

**Intersection Summary**

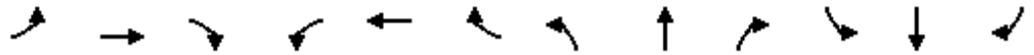
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	1082	59	31	881	110	103	46	48	118	34	540
Future Volume (vph)	433	1082	59	31	881	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1543	1805	3499		1805	1717		1782	1607	
Flt Permitted	0.12	1.00	1.00	0.13	1.00		0.14	1.00		0.69	1.00	
Satd. Flow (perm)	232	1863	1543	255	3499		266	1717		1296	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	1176	64	34	958	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	14	0	8	0	0	25	0	0	307	0
Lane Group Flow (vph)	471	1176	50	34	1070	0	112	77	0	128	317	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	59.9	59.9	59.9	29.8	29.8		47.9	47.9		47.9	47.9	
Effective Green, g (s)	59.9	59.9	59.9	29.8	29.8		47.9	47.9		47.9	47.9	
Actuated g/C Ratio	0.50	0.50	0.50	0.25	0.25		0.40	0.40		0.40	0.40	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	471	929	770	63	868		106	685		517	641	
v/s Ratio Prot	0.23	c0.63			0.31			0.05			0.20	
v/s Ratio Perm	0.27		0.03	0.13			c0.42			0.10		
v/c Ratio	1.00	1.27	0.07	0.54	1.23		1.06	0.11		0.25	0.49	
Uniform Delay, d1	36.3	30.1	15.6	39.1	45.1		36.0	22.7		24.0	27.0	
Progression Factor	1.11	0.81	0.79	0.98	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.4	120.5	0.0	29.3	114.6		103.5	0.1		0.3	0.6	
Delay (s)	52.6	144.7	12.3	67.5	158.6		139.5	22.8		24.3	27.6	
Level of Service	D	F	B	E	F		F	C		C	C	
Approach Delay (s)		114.4			155.8			83.9			27.0	
Approach LOS		F			F			F			C	

Intersection Summary

HCM 2000 Control Delay	107.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	136.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	453	823	123	467	156	508	44	291	92	13	79
Future Volume (Veh/h)	20	453	823	123	467	156	508	44	291	92	13	79
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	492	895	134	508	170	552	48	316	100	14	86
Pedestrians		4			6			2			1	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (m)		173										
pX, platoon unblocked				0.48			0.48	0.48	0.48	0.48	0.48	
vC, conflicting volume	679			1389			1858	1932	948	2192	2295	598
vC1, stage 1 conf vol							986	986		862	862	
vC2, stage 2 conf vol							873	947		1330	1433	
vCu, unblocked vol	679			1267			2253	2408	340	2952	3169	598
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			48			0	60	6	0	0	83
cM capacity (veh/h)	922			258			93	120	335	0	2	504
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	1409	134	678	552	364	100	100					
Volume Left	22	134	0	552	0	100	0					
Volume Right	895	0	170	0	316	0	86					
cSH	922	258	1700	93	271	0	16					
Volume to Capacity	0.02	0.52	0.40	5.91	1.35	1011.81	6.06					
Queue Length 95th (m)	0.6	22.1	0.0	Err	151.2	Err	Err					
Control Delay (s)	1.3	33.2	0.0	Err	214.7	Err	Err					
Lane LOS	A	D		F	F	F	F					
Approach Delay (s)	1.3	5.5		6110.9		Err						
Approach LOS				F		F						
<b>Intersection Summary</b>												
Average Delay			2278.6									
Intersection Capacity Utilization			137.0%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	646	187	94	539	28	205	0	176	25	2	1
Future Volume (Veh/h)	9	646	187	94	539	28	205	0	176	25	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	702	203	102	586	30	223	0	191	27	2	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		290										
pX, platoon unblocked												
vC, conflicting volume	616			905			1632	1644	806	1822	1730	603
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	616			905			1632	1644	806	1822	1730	603
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			87			0	100	50	0	97	100
cM capacity (veh/h)	891			760			71	86	385	27	76	502
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	915	718	414	30								
Volume Left	10	102	223	27								
Volume Right	203	30	191	1								
cSH	891	760	114	29								
Volume to Capacity	0.01	0.13	3.62	1.03								
Queue Length 95th (m)	0.3	3.7	Err	27.2								
Control Delay (s)	0.3	3.4	Err	373.2								
Lane LOS	A	A	F	F								
Approach Delay (s)	0.3	3.4	Err	373.2								
Approach LOS			F	F								
<b>Intersection Summary</b>												
Average Delay			1999.8									
Intersection Capacity Utilization			112.1%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	1	412	0	0	0	225	45	0	0	75	304
Future Volume (Veh/h)	315	1	412	0	0	0	225	45	0	0	75	304
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	342	1	448	0	0	0	245	49	0	0	82	330
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	789	786	247	1234	951	52	412			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	789	786	247	1234	951	52	412			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	99	44	100	100	100	79			100		
cM capacity (veh/h)	256	183	797	56	206	1019	1158			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	791	0	294	412								
Volume Left	342	0	245	0								
Volume Right	448	0	0	330								
cSH	416	1700	1158	1571								
Volume to Capacity	1.90	0.06	0.21	0.00								
Queue Length 95th (m)	420.2	0.0	6.4	0.0								
Control Delay (s)	436.7	0.0	7.8	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	436.7	0.0	7.8	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			232.3									
Intersection Capacity Utilization			97.0%	ICU Level of Service	F							
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	2415	0	0	2048			
Future Volume (Veh/h)	0	0	2415	0	0	2048			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	2625	0	0	2226			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.83	0.77			0.77				
vC, conflicting volume	3370	878			2628				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	2069	0			2060				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	40	835			211				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	875	875	875	0	742	742	742	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.51	0.51	0.51	0.00	0.44	0.44	0.44	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			50.0%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	559	334	1957	1007
v/c Ratio	0.63	0.82	0.61	0.31
Control Delay	40.0	56.1	16.2	15.7
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	40.0	56.1	16.5	15.7
Queue Length 50th (m)	61.4	83.0	78.3	39.3
Queue Length 95th (m)	70.9	110.2	m72.0	m37.8
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1167	528	3229	3229
Starvation Cap Reductn	0	0	537	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.63	0.73	0.31

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	207	615	1800	0	0	926
Future Volume (vph)	207	615	1800	0	0	926
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3231	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3231	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	668	1957	0	0	1007
RTOR Reduction (vph)	6	6	0	0	0	0
Lane Group Flow (vph)	553	328	1957	0	0	1007
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	32.9	32.9	75.5			75.5
Effective Green, g (s)	32.9	32.9	75.5			75.5
Actuated g/C Ratio	0.27	0.27	0.63			0.63
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	885	398	3231			3231
v/s Ratio Prot			c0.38			0.20
v/s Ratio Perm	0.17	c0.23				
v/c Ratio	0.63	0.82	0.61			0.31
Uniform Delay, d1	38.1	40.8	13.3			10.3
Progression Factor	1.00	1.00	1.10			1.38
Incremental Delay, d2	1.4	13.0	0.1			0.1
Delay (s)	39.5	53.8	14.7			14.3
Level of Service	D	D	B			B
Approach Delay (s)	44.9		14.7			14.3
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			107.5%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	769	763	487	1311	645	590
v/c Ratio	1.17	1.16	0.68	1.00	1.33	0.32
Control Delay	127.4	121.0	20.0	68.0	200.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.4	121.0	20.0	68.0	200.3	14.8
Queue Length 50th (m)	~239.2	~237.1	52.0	~115.3	~195.9	31.0
Queue Length 95th (m)	# 319.5	# 322.5	95.6	# 150.6	# 271.2	56.7
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	656	657	715	1307	485	1846
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	1.16	0.68	1.00	1.33	0.32

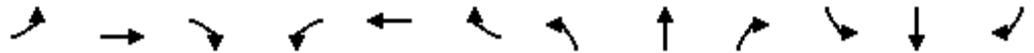
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1360	0	498	0	0	0	0	916	290	593	543	0	
Future Volume (vph)	1360	0	498	0	0	0	0	916	290	593	543	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1614	1461					4877		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1614	1461					4877		221	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1478	0	541	0	0	0	0	996	315	645	590	0	
RTOR Reduction (vph)	0	34	151	0	0	0	0	47	0	0	0	0	
Lane Group Flow (vph)	769	729	336	0	0	0	0	1264	0	645	590	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	46.4	46.4	46.4					31.0		62.0	62.0		
Effective Green, g (s)	46.4	46.4	46.4					31.0		62.0	62.0		
Actuated g/C Ratio	0.39	0.39	0.39					0.26		0.52	0.52		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	656	624	564					1259		479	1846		
v/s Ratio Prot								0.26		c0.31	0.17		
v/s Ratio Perm	c0.45	0.45	0.23							c0.38			
v/c Ratio	1.17	1.17	0.60					1.00		1.35	0.32		
Uniform Delay, d1	36.8	36.8	29.3					44.5		36.3	16.8		
Progression Factor	1.00	1.00	1.00					1.00		1.45	0.85		
Incremental Delay, d2	93.1	92.3	1.7					26.2		168.8	0.4		
Delay (s)	129.9	129.1	31.0					70.7		221.5	14.6		
Level of Service	F	F	C					E		F	B		
Approach Delay (s)		105.8			0.0			70.7			122.7		
Approach LOS		F			A			E			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			100.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.30										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			107.5%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	30
Future Volume (Veh/h)	0	0	0	0	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0			0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0			0	0	0
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	97	
cM capacity (veh/h)	1623			1023	1085	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	33		
Volume Left	0	0	0	0		
Volume Right	0	0	0	33		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.03		
Queue Length 95th (m)	0.0	0.0	0.0	0.8		
Control Delay (s)	0.0	0.0	0.0	8.4		
Lane LOS	A			A		
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS	A					
Intersection Summary						
Average Delay	8.4					
Intersection Capacity Utilization	13.3%			ICU Level of Service		A
Analysis Period (min)	15					

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	282	0	0	0	30	264	0	0	0
Future Volume (Veh/h)	0	0	0	282	0	0	0	30	264	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	307	0	0	0	33	287	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			614	614	0	918	614	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			614	614	0	918	614	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			100	90	74	100	100	100
cM capacity (veh/h)	1623			1623			345	330	1085	147	330	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	307	0	320							
Volume Left	0	0	307	0	0							
Volume Right	0	0	0	0	287							
cSH	1700	1700	1623	1700	878							
Volume to Capacity	0.00	0.00	0.19	0.00	0.36							
Queue Length 95th (m)	0.0	0.0	5.6	0.0	13.4							
Control Delay (s)	0.0	0.0	7.7	0.0	11.4							
Lane LOS			A		B							
Approach Delay (s)	0.0		7.7		11.4							
Approach LOS					B							
Intersection Summary												
Average Delay			9.6									
Intersection Capacity Utilization			40.2%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street D & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	0	0	0	0	0	453	0	0	491	0
Future Volume (Veh/h)	30	0	0	0	0	0	0	453	0	0	491	0
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	0	0	0	0	0	0	492	0	0	534	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			333	66	0	312	66	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			333	66	0	312	66	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	39	100	100	34	100
cM capacity (veh/h)	1623			1623			287	808	1085	325	808	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	33	0	0	0	492	534						
Volume Left	33	0	0	0	0	0						
Volume Right	0	0	0	0	0	0						
cSH	1623	1700	1700	1700	808	808						
Volume to Capacity	0.02	0.00	0.00	0.00	0.61	0.66						
Queue Length 95th (m)	0.5	0.0	0.0	0.0	33.8	40.7						
Control Delay (s)	7.3	0.0	0.0	0.0	16.1	17.7						
Lane LOS	A				C	C						
Approach Delay (s)	7.3		0.0		16.1	17.7						
Approach LOS					C	C						
Intersection Summary												
Average Delay	16.7											
Intersection Capacity Utilization	35.8%			ICU Level of Service			A					
Analysis Period (min)	15											

1755 Pickering Pkwy TIS  
 15: Tower 2 & 4/Street D & Street B

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	0	0	0	0	0	0	159	0	23	159	309
Future Volume (Veh/h)	294	0	0	0	0	0	0	159	0	23	159	309
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	320	0	0	0	0	0	0	173	0	25	173	336
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			1062	640	0	726	640	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			1062	640	0	726	640	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	80			100			100	45	100	85	45	69
cM capacity (veh/h)	1623			1623			68	316	1085	166	316	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	320	0	173	534								
Volume Left	320	0	0	25								
Volume Right	0	0	0	336								
cSH	1623	1700	316	530								
Volume to Capacity	0.20	0.00	0.55	1.01								
Queue Length 95th (m)	5.9	0.0	24.8	115.3								
Control Delay (s)	7.8	0.0	29.4	69.1								
Lane LOS	A		D	F								
Approach Delay (s)	7.8	0.0	29.4	69.1								
Approach LOS			D	F								
Intersection Summary												
Average Delay			43.3									
Intersection Capacity Utilization			63.3%	ICU Level of Service					B			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 2 (2031) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	109	0	73	0	105	61	0
Future Volume (Veh/h)	0	0	0	0	0	109	0	73	0	105	61	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	118	0	79	0	114	66	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	491	373	66	373	373	79	66			79		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	491	373	66	373	373	79	66			79		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	88	100			92		
cM capacity (veh/h)	405	516	998	550	516	981	1536			1519		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	0	0	118	0	79	114	66				
Volume Left	0	0	0	0	0	0	114	0				
Volume Right	0	0	0	118	0	0	0	0				
cSH	1700	1700	1700	981	1700	1700	1519	1700				
Volume to Capacity	0.00	0.00	0.00	0.12	0.00	0.05	0.08	0.04				
Queue Length 95th (m)	0.0	0.0	0.0	3.3	0.0	0.0	1.9	0.0				
Control Delay (s)	0.0	0.0	0.0	9.2	0.0	0.0	7.6	0.0				
Lane LOS	A	A	A	A			A					
Approach Delay (s)	0.0		9.2		0.0		4.8					
Approach LOS	A		A									
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			25.9%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	23	0	73	61	0
Future Volume (Veh/h)	0	23	0	73	61	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	25	0	79	66	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	145	66	66			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145	66	66			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	847	998	1536			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	25	79	66			
Volume Left	0	0	0			
Volume Right	25	0	0			
cSH	998	1536	1700			
Volume to Capacity	0.03	0.00	0.04			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay				1.3		
Intersection Capacity Utilization				13.8%	ICU Level of Service	A
Analysis Period (min)				15		

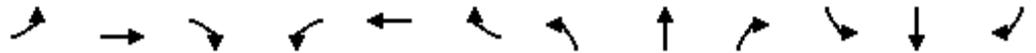
						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	105	0	0	109	0
Future Volume (Veh/h)	0	105	0	0	109	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	114	0	0	118	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			114		57	57
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			114		57	57
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		88	100
cM capacity (veh/h)			1475		950	1009
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	114	0	118			
Volume Left	0	0	118			
Volume Right	114	0	0			
cSH	1700	1700	950			
Volume to Capacity	0.07	0.00	0.12			
Queue Length 95th (m)	0.0	0.0	3.4			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			19.2%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	736	109	430	279	283	29	30
v/c Ratio	0.66	0.24	0.39	0.76	0.64	0.15	0.22
Control Delay	21.2	11.2	11.1	53.8	12.4	35.3	25.0
Queue Delay	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	11.2	11.1	53.8	12.4	35.3	25.0
Queue Length 50th (m)	119.2	11.7	48.8	57.6	0.6	5.1	0.7
Queue Length 95th (m)	184.6	21.1	67.4	85.4	27.9	12.6	10.6
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1112	459	1110	384	453	410	279
Starvation Cap Reductn	142	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.24	0.39	0.73	0.62	0.07	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	27	294	356	100	362	34	257	3	258	27	3	25
Future Volume (vph)	27	294	356	100	362	34	257	3	258	27	3	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.93		1.00	0.99		1.00	0.85		1.00	0.86	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1647		1805	1632		1768	1277		1802	1623	
Flt Permitted		0.97		0.36	1.00		0.49	1.00		0.82	1.00	
Satd. Flow (perm)		1604		676	1632		908	1277		1548	1623	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	320	387	109	393	37	279	3	280	29	3	27
RTOR Reduction (vph)	0	24	0	0	2	0	0	231	0	0	26	0
Lane Group Flow (vph)	0	712	0	109	428	0	279	52	0	29	4	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		79.1		79.1	79.1		28.7	20.8		9.5	4.9	
Effective Green, g (s)		79.1		79.1	79.1		28.7	20.8		9.5	4.9	
Actuated g/C Ratio		0.66		0.66	0.66		0.24	0.17		0.08	0.04	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1057		445	1075		364	221		132	66	
v/s Ratio Prot					0.26		c0.13	0.04		0.01	0.00	
v/s Ratio Perm		c0.44		0.16			c0.05			0.01		
v/c Ratio		0.67		0.24	0.40		0.77	0.23		0.22	0.06	
Uniform Delay, d1		12.5		8.3	9.4		41.3	42.7		51.7	55.3	
Progression Factor		1.51		1.05	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.1		1.3	1.1		9.3	0.5		0.8	0.4	
Delay (s)		22.1		10.0	10.8		50.6	43.3		52.6	55.7	
Level of Service		C		B	B		D	D		D	E	
Approach Delay (s)		22.1			10.7			46.9			54.2	
Approach LOS		C			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			93.5%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1479	125	594	397	274	89	69
v/c Ratio	1.38	0.67	0.50	0.98	0.63	0.39	0.40
Control Delay	198.1	43.2	19.1	79.7	15.9	37.8	23.4
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	198.5	43.2	19.1	79.7	15.9	37.8	23.4
Queue Length 50th (m)	~493.5	24.0	95.7	89.1	7.1	16.3	2.1
Queue Length 95th (m)	#589.7	m#49.8	m128.8	#121.2	34.9	29.0	16.8
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	1068	187	1180	407	456	408	312
Starvation Cap Reductn	89	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.51	0.67	0.50	0.98	0.60	0.22	0.22

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	644	685	115	459	87	365	30	222	82	8	55
Future Volume (vph)	31	644	685	115	459	87	365	30	222	82	8	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98		1.00	1.00		1.00	0.97		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.93		1.00	0.98		1.00	0.87		1.00	0.87	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1663		1805	1830		1770	1556		1794	1652	
Flt Permitted		0.98		0.15	1.00		0.48	1.00		0.58	1.00	
Satd. Flow (perm)		1627		291	1830		897	1556		1095	1652	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	700	745	125	499	95	397	33	241	89	9	60
RTOR Reduction (vph)	0	24	0	0	4	0	0	203	0	0	57	0
Lane Group Flow (vph)	0	1455	0	125	590	0	397	71	0	89	12	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		75.9		75.9	75.9		31.9	18.7		16.8	6.9	
Effective Green, g (s)		75.9		75.9	75.9		31.9	18.7		16.8	6.9	
Actuated g/C Ratio		0.63		0.63	0.63		0.27	0.16		0.14	0.06	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1029		184	1157		396	242		210	94	
v/s Ratio Prot					0.32		c0.18	0.05		0.03	0.01	
v/s Ratio Perm		c0.89		0.43			c0.09			0.02		
v/c Ratio		1.41		0.68	0.51		1.00	0.29		0.42	0.13	
Uniform Delay, d1		22.0		14.2	12.0		42.3	44.8		46.7	53.7	
Progression Factor		0.90		1.41	1.44		1.00	1.00		1.00	1.00	
Incremental Delay, d2		190.0		18.0	1.6		45.9	0.7		1.4	0.6	
Delay (s)		209.7		38.1	18.8		88.2	45.5		48.1	54.3	
Level of Service		F		D	B		F	D		D	D	
Approach Delay (s)		209.7			22.1			70.7			50.8	
Approach LOS		F			C			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			126.1			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.33									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			143.3%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1409	134	678	552	364	100	100
v/c Ratio	1.47	0.99	0.68	1.00	0.66	0.41	0.50
Control Delay	237.5	108.5	27.9	72.9	20.7	32.2	23.4
Queue Delay	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	238.6	108.5	27.9	72.9	20.7	32.2	23.4
Queue Length 50th (m)	~488.1	28.1	111.3	~124.5	28.0	16.6	3.3
Queue Length 95th (m)	m# 383.9	m# 72.3	179.3	#170.1	63.2	28.0	20.4
Internal Link Dist (m)	149.3		92.6		87.4		79.6
Turn Bay Length (m)		40.0					
Base Capacity (vph)	960	136	999	556	555	536	329
Starvation Cap Reductn	179	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.80	0.99	0.68	0.99	0.66	0.19	0.30

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	453	823	123	467	156	508	44	291	92	13	79
Future Volume (vph)	20	453	823	123	467	156	508	44	291	92	13	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98		1.00	0.99		1.00	0.97		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.91		1.00	0.96		1.00	0.87		1.00	0.87	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1689		1736	1800		1800	1596		1759	1627	
Flt Permitted		0.98		0.13	1.00		0.47	1.00		0.54	1.00	
Satd. Flow (perm)		1663		246	1800		899	1596		1007	1627	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	492	895	134	508	170	552	48	316	100	14	86
RTOR Reduction (vph)	0	44	0	0	9	0	0	180	0	0	80	0
Lane Group Flow (vph)	0	1365	0	134	669	0	552	184	0	100	20	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		66.1		66.1	66.1		41.7	28.3		19.0	8.9	
Effective Green, g (s)		66.1		66.1	66.1		41.7	28.3		19.0	8.9	
Actuated g/C Ratio		0.55		0.55	0.55		0.35	0.24		0.16	0.07	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		916		135	991		533	376		222	120	
v/s Ratio Prot					0.37		c0.25	0.12		0.04	0.01	
v/s Ratio Perm		c0.82		0.54			c0.11			0.03		
v/c Ratio		1.49		0.99	0.68		1.04	0.49		0.45	0.17	
Uniform Delay, d1		27.0		26.7	19.3		36.9	39.6		45.1	52.1	
Progression Factor		1.20		1.20	1.23		1.00	1.00		1.00	1.00	
Incremental Delay, d2		221.1		75.2	3.7		48.5	1.0		1.5	0.7	
Delay (s)		253.4		107.1	27.4		85.4	40.6		46.5	52.8	
Level of Service		F		F	C		F	D		D	D	
Approach Delay (s)		253.4			40.6			67.6			49.6	
Approach LOS		F			D			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			138.4				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.35									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			141.4%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	377	372	399	597	185	466	990	193	352	1995	203
v/c Ratio	0.86	0.35	0.63	3.07	0.52	0.30	2.71	0.68	0.32	1.10	1.07	0.30
Control Delay	110.9	32.3	25.6	970.3	34.3	5.4	802.7	38.9	5.7	105.8	77.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	32.3	25.6	970.3	34.3	5.4	802.7	38.9	5.7	105.8	77.8	4.7
Queue Length 50th (m)	23.7	37.5	46.8	~172.2	62.6	0.0	~181.3	78.3	0.0	~70.8	~200.1	0.0
Queue Length 95th (m)	#56.6	51.5	81.7	#235.1	80.9	16.2	#248.5	94.7	16.9	#132.2	#230.7	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	591	130	1151	621	172	1456	611	319	1871	668
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.35	0.63	3.07	0.52	0.30	2.71	0.68	0.32	1.10	1.07	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	347	342	367	549	170	429	911	178	324	1835	187	
Future Volume (vph)	87	347	342	367	549	170	429	911	178	324	1835	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1455	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	186	4673	1536	290	5036	1455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	377	372	399	597	185	466	990	193	352	1995	203	
RTOR Reduction (vph)	0	0	101	0	0	124	0	0	133	0	0	128	
Lane Group Flow (vph)	95	377	271	399	597	61	466	990	60	352	1995	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	8%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.38	0.31	0.31	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1456	478	310	1871	540	
v/s Ratio Prot	0.06	0.11		c0.23	0.17		c0.18	0.21		c0.14	0.40		
v/s Ratio Perm			c0.18			0.04	c0.87		0.04	0.38		0.05	
v/c Ratio	0.86	0.35	0.55	3.07	0.52	0.12	2.82	0.68	0.13	1.14	1.07	0.14	
Uniform Delay, d1	55.6	31.1	33.6	55.5	32.4	27.9	32.4	36.1	29.6	26.1	37.7	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.0	0.9	4.4	951.3	1.7	0.5	837.5	2.6	0.5	92.9	41.1	0.5	
Delay (s)	101.5	32.0	38.0	1006.8	34.0	28.5	869.8	38.7	30.1	119.0	78.8	25.5	
Level of Service	F	C	D	F	C	C	F	D	C	F	E	C	
Approach Delay (s)		42.5			361.8			272.5			80.1		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			179.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.82										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			127.9%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	857	101	249	1165	253	3
v/c Ratio	0.01	0.39	0.12	0.49	0.44	0.74	0.01
Control Delay	10.0	10.5	4.7	6.5	5.4	23.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	10.5	4.7	6.5	5.4	23.4	0.0
Queue Length 50th (m)	0.2	36.3	2.3	8.2	31.6	9.6	0.0
Queue Length 95th (m)	1.8	72.6	11.8	23.6	66.3	33.5	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	293	2194	866	535	2671	544	434
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.39	0.12	0.47	0.44	0.47	0.01
<b>Intersection Summary</b>							

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	788	93	229	1072	0	45	0	188	1	0	2
Future Volume (vph)	3	788	93	229	1072	0	45	0	188	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1799	3438	1320	1685	3505			1465			1685	
Flt Permitted	0.24	1.00	1.00	0.29	1.00			0.93			0.78	
Satd. Flow (perm)	460	3438	1320	506	3505			1378			1340	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	857	101	249	1165	0	49	0	204	1	0	2
RTOR Reduction (vph)	0	0	24	0	0	0	0	180	0	0	3	0
Lane Group Flow (vph)	3	857	77	249	1165	0	0	73	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.8	63.8	63.8	76.2	76.2			11.8			11.8	
Effective Green, g (s)	63.8	63.8	63.8	76.2	76.2			11.8			11.8	
Actuated g/C Ratio	0.64	0.64	0.64	0.76	0.76			0.12			0.12	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	293	2193	842	496	2670			162			158	
v/s Ratio Prot		0.25		c0.05	0.33							
v/s Ratio Perm	0.01		0.06	c0.34				c0.05			0.00	
v/c Ratio	0.01	0.39	0.09	0.50	0.44			0.45			0.00	
Uniform Delay, d1	6.6	8.7	7.0	4.0	4.2			41.1			38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.5	0.2	0.8	0.5			2.0			0.0	
Delay (s)	6.7	9.3	7.2	4.8	4.8			43.1			38.9	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		9.0			4.8			43.1			38.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			78.0%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
 AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	347	797	127	351	159	1021	505	299	2022	210
v/c Ratio	0.38	0.86dr	1.53	0.20	0.55	0.70	0.55	0.59	0.93	1.01	0.29
Control Delay	45.7	35.9	281.8	29.7	22.7	39.7	27.8	6.9	55.7	54.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	35.9	281.8	29.7	22.7	39.7	27.8	6.9	55.7	54.1	4.1
Queue Length 50th (m)	11.5	24.4	-121.5	20.0	31.9	19.4	56.1	12.1	31.7	-166.9	0.0
Queue Length 95th (m)	23.7	38.6	#157.9	36.7	72.6	m#46.9	63.1	24.4	#96.1	#197.7	14.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	205	603	520	707	683	228	1851	851	323	2000	720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.58	1.53	0.18	0.51	0.70	0.55	0.59	0.93	1.01	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
AM Peak Hour

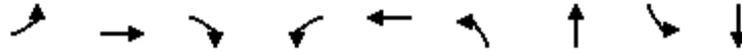
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	82	237	733	117	323	146	939	465	275	1860	193
Future Volume (vph)	56	82	237	733	117	323	146	939	465	275	1860	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3109		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.68	1.00		0.95	1.00	1.00	0.10	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	1247	3109		3155	1792	1462	186	4759	1397	365	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	89	258	797	127	351	159	1021	505	299	2022	210
RTOR Reduction (vph)	0	95	0	0	0	113	0	0	309	0	0	127
Lane Group Flow (vph)	61	252	0	797	127	238	159	1021	196	299	2022	83
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Effective Green, g (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Actuated g/C Ratio	0.13	0.13		0.16	0.36	0.36	0.48	0.39	0.39	0.49	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	401		520	643	524	223	1851	543	314	1999	593
v/s Ratio Prot		c0.08		c0.25	0.07		0.06	0.21		c0.09	c0.40	
v/s Ratio Perm	0.05					0.16	0.28		0.14	0.38		0.06
v/c Ratio	0.38	0.86dr		1.53	0.20	0.45	0.71	0.55	0.36	0.95	1.01	0.14
Uniform Delay, d1	39.9	41.3		41.8	22.1	24.6	21.7	23.8	21.7	17.9	30.1	19.3
Progression Factor	1.00	1.00		1.10	1.35	1.64	1.62	1.12	1.98	1.00	1.00	1.00
Incremental Delay, d2	1.5	3.1		248.8	0.1	0.6	8.8	1.0	1.6	38.0	23.0	0.5
Delay (s)	41.4	44.4		294.5	29.9	40.9	44.1	27.6	44.6	55.9	53.1	19.8
Level of Service	D	D		F	C	D	D	C	D	E	D	B
Approach Delay (s)		43.9			198.4			34.3			50.7	
Approach LOS		D			F			C			D	

Intersection Summary

HCM 2000 Control Delay	77.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	707	34	3	744	29	18	49	387
v/c Ratio	0.35	0.56	0.03	0.01	0.37	0.40	0.08	0.31	0.75
Control Delay	5.3	7.8	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	8.1	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Length 50th (m)	9.2	50.6	0.3	0.2	32.0	5.6	0.9	9.4	1.5
Queue Length 95th (m)	m19.4	m76.4	m1.5	1.7	59.7	14.0	7.0	19.2	28.7
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	793	1271	1198	481	2025	169	476	359	702
Starvation Cap Reductn	0	175	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.03	0.01	0.37	0.17	0.04	0.14	0.55

Intersection Summary

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

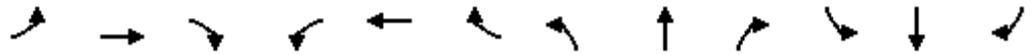
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Future Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	1681	1574	1801	3153		1750	1666		1636	1536	
Flt Permitted	0.33	1.00	1.00	0.40	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	606	1681	1574	752	3153		604	1666		1284	1536	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	707	34	3	708	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	8	0	2	0	0	11	0	0	333	0
Lane Group Flow (vph)	197	707	26	3	742	0	29	7	0	49	54	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Effective Green, g (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	552	1270	1189	482	2024		73	203		156	187	
v/s Ratio Prot	0.03	c0.42			0.24			0.00				0.04
v/s Ratio Perm	0.24		0.02	0.00			c0.05			0.04		
v/c Ratio	0.36	0.56	0.02	0.01	0.37		0.40	0.03		0.31	0.29	
Uniform Delay, d1	3.7	5.1	3.0	6.4	8.4		40.5	38.7		40.1	40.0	
Progression Factor	1.30	1.04	1.46	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.3	0.0	0.0	0.5		3.5	0.1		1.2	0.9	
Delay (s)	5.1	6.6	4.5	6.5	8.9		44.0	38.8		41.2	40.8	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		6.2			8.9			42.0			40.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			88.6%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	769	78	488	225	200	29	27
v/c Ratio	0.69	0.17	0.43	0.67	0.34	0.15	0.06
Control Delay	16.4	9.5	10.8	49.9	1.5	35.9	0.3
Queue Delay	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	9.5	10.8	49.9	1.5	35.9	0.3
Queue Length 50th (m)	114.0	7.1	55.1	46.7	0.0	5.3	0.0
Queue Length 95th (m)	181.5	15.8	85.8	69.0	0.0	12.7	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1121	460	1139	378	609	411	558
Starvation Cap Reductn	233	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.17	0.43	0.60	0.33	0.07	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Future Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1645		1805	1633		1768	1272		1801	1592	
Flt Permitted		0.97		0.35	1.00		0.49	1.00		0.83	1.00	
Satd. Flow (perm)		1599		661	1633		919	1272		1580	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	520	220	78	451	37	225	0	200	29	0	27
RTOR Reduction (vph)	0	8	0	0	2	0	0	169	0	0	26	0
Lane Group Flow (vph)	0	761	0	78	486	0	225	31	0	29	1	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Effective Green, g (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Actuated g/C Ratio		0.68		0.68	0.68		0.22	0.16		0.08	0.04	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1081		447	1104		334	198		132	63	
v/s Ratio Prot					0.30		c0.10	0.02		0.01	0.00	
v/s Ratio Perm		c0.48		0.12			c0.05			0.01		
v/c Ratio		0.70		0.17	0.44		0.67	0.16		0.22	0.02	
Uniform Delay, d1		12.0		7.1	8.9		41.7	43.8		51.8	55.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.8		0.8	1.3		5.3	0.4		0.8	0.1	
Delay (s)		15.8		8.0	10.2		47.0	44.2		52.6	55.4	
Level of Service		B		A	B		D	D		D	E	
Approach Delay (s)		15.8			9.9			45.7			54.0	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.1			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					15.5	
Intersection Capacity Utilization			92.2%			ICU Level of Service					F	
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Future Volume (Veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	464	286	76	410	12	199	0	266	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	424			751			1179	1184	609	1444	1321	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	424			522			1081	1087	336	1427	1266	420
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			91			0	100	51	81	100	100
cM capacity (veh/h)	1144			807			134	151	543	41	118	467
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	750	498	199	266	9							
Volume Left	0	76	199	0	8							
Volume Right	286	12	0	266	1							
cSH	1144	807	134	543	46							
Volume to Capacity	0.00	0.09	1.49	0.49	0.20							
Queue Length 95th (m)	0.0	2.5	109.0	21.4	5.2							
Control Delay (s)	0.0	2.6	315.0	17.8	101.9							
Lane LOS		A	F	C	F							
Approach Delay (s)	0.0	2.6	145.0		101.9							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			40.4									
Intersection Capacity Utilization			88.2%		ICU Level of Service				E			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Future Volume (Veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	212	12	485	0	10	7	102	49	0	7	103	221
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			497			964	696	254	716	934	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			497			964	696	254	716	934	14
tC, single (s)	4.2			4.1			7.1	6.5	6.2	8.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	4.4	4.0	3.4
p0 queue free %	86			100			7	85	100	96	55	79
cM capacity (veh/h)	1562			1077			110	318	789	194	231	1041
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	709	17	151	331								
Volume Left	212	0	102	7								
Volume Right	485	7	0	221								
cSH	1562	1077	139	477								
Volume to Capacity	0.14	0.00	1.08	0.69								
Queue Length 95th (m)	3.8	0.0	66.3	42.2								
Control Delay (s)	3.3	0.0	163.2	27.9								
Lane LOS	A		F	D								
Approach Delay (s)	3.3	0.0	163.2	27.9								
Approach LOS			F	D								
Intersection Summary												
Average Delay			30.0									
Intersection Capacity Utilization			80.9%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	1560	0	0	3004			
Future Volume (Veh/h)	0	0	1560	0	0	3004			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	1696	0	0	3265			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.70	0.85			0.85				
vC, conflicting volume	2785	566			1697				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	551	0			1187				
iC, single (s)	6.9	7.0			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.4			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	322	903			503				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	565	565	565	0	1088	1088	1088	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.33	0.33	0.33	0.00	0.64	0.64	0.64	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			61.4%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	793	359	1322	1527
v/c Ratio	0.79	0.82	0.49	0.52
Control Delay	37.8	44.8	12.0	12.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.8	44.8	12.0	12.3
Queue Length 50th (m)	74.2	65.8	37.9	55.0
Queue Length 95th (m)	91.4	101.4	m31.9	m51.5
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1159	496	2721	2959
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	4
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.72	0.49	0.52

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	676	384	1216	0	0	1405
Future Volume (vph)	676	384	1216	0	0	1405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.96	1.00	1.00			1.00
Satd. Flow (prot)	3373	1374	4631			5036
Flt Permitted	0.96	1.00	1.00			1.00
Satd. Flow (perm)	3373	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	735	417	1322	0	0	1527
RTOR Reduction (vph)	6	29	0	0	0	0
Lane Group Flow (vph)	787	330	1322	0	0	1527
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	29.6	29.6	58.8			58.8
Effective Green, g (s)	29.6	29.6	58.8			58.8
Actuated g/C Ratio	0.30	0.30	0.59			0.59
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	998	406	2723			2961
v/s Ratio Prot			0.29			c0.30
v/s Ratio Perm	0.23	c0.24				
v/c Ratio	0.79	0.81	0.49			0.52
Uniform Delay, d1	32.3	32.6	11.9			12.2
Progression Factor	1.00	1.00	0.94			0.94
Incremental Delay, d2	4.2	11.8	0.1			0.1
Delay (s)	36.5	44.4	11.3			11.5
Level of Service	D	D	B			B
Approach Delay (s)	39.0		11.3			11.5
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			103.5%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	610	590	559	1369	660	1602
v/c Ratio	1.10	1.09	1.08	1.31	1.20	0.85
Control Delay	100.2	96.0	92.2	175.1	132.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.2	96.0	92.2	175.1	132.5	22.2
Queue Length 50th (m)	~149.0	~140.2	~125.2	~126.8	~149.6	125.1
Queue Length 95th (m)	#220.5	#215.3	#195.7	#157.4	#217.8	165.8
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	540	518	1049	549	1892
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.10	1.09	1.08	1.31	1.20	0.85

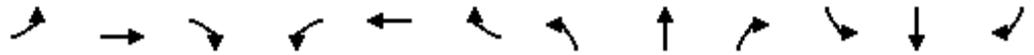
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	850	0	768	0	0	0	0	883	376	607	1474	0	
Future Volume (vph)	850	0	768	0	0	0	0	883	376	607	1474	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.93	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1445	1382					4053		1736	3505		
Flt Permitted	0.95	0.97	1.00					1.00		0.15	1.00		
Satd. Flow (perm)	1618	1445	1382					4053		271	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	924	0	835	0	0	0	0	960	409	660	1602	0	
RTOR Reduction (vph)	0	43	43	0	0	0	0	77	0	0	0	0	
Lane Group Flow (vph)	610	547	516	0	0	0	0	1292	0	660	1602	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Effective Green, g (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Actuated g/C Ratio	0.34	0.34	0.34					0.24		0.54	0.54		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	556	497	475					972		541	1892		
v/s Ratio Prot								0.32		c0.33	0.46		
v/s Ratio Perm	0.38	0.38	0.37							c0.33			
v/c Ratio	1.10	1.10	1.09					1.33		1.22	0.85		
Uniform Delay, d1	32.8	32.8	32.8					38.0		28.2	19.5		
Progression Factor	1.00	1.00	1.00					1.00		1.06	0.90		
Incremental Delay, d2	67.4	70.9	66.9					155.4		112.4	4.1		
Delay (s)	100.2	103.7	99.7					193.4		142.2	21.7		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		101.2			0.0			193.4			56.9		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			106.0									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.21										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			103.5%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	0	0	0	0	0	130
Future Volume (Veh/h)	0	0	0	0	0	130
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	141		
Volume Left	0	0	0	0		
Volume Right	0	0	0	141		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Future Volume (Veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	153	0	33	0	109	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			306	339	0	432	306	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			306	339	0	432	306	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	79	93	100	100	100
cM capacity (veh/h)	1579			1623			600	528	1085	390	550	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	153	33	181							
Volume Left	0	0	153	0	0							
Volume Right	0	0	0	33	72							
cSH	1700	1700	1623	1700	663							
Volume to Capacity	0.00	0.00	0.09	0.02	0.27							
Queue Length 95th (m)	0.0	0.0	2.5	0.0	8.8							
Control Delay (s)	0.0	0.0	7.4	0.0	12.5							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.1		12.5							
Approach LOS					B							
Intersection Summary												
Average Delay			9.2									
Intersection Capacity Utilization			23.8%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Future Volume (Veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	180	0	160	0	208	51	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	827	647	71	627	667	160	91			160		
vC1, stage 1 conf vol	487	487		160	160							
vC2, stage 2 conf vol	340	160		467	507							
vCu, unblocked vol	827	647	71	627	667	160	91			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	100	100	100	80	100			85		
cM capacity (veh/h)	307	433	991	472	440	885	1504			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	180	0	160	208	91						
Volume Left	85	0	0	0	208	0						
Volume Right	0	180	0	0	0	40						
cSH	307	885	1700	1700	1419	1700						
Volume to Capacity	0.28	0.20	0.00	0.09	0.15	0.05						
Queue Length 95th (m)	8.8	6.1	0.0	0.0	4.1	0.0						
Control Delay (s)	21.2	10.1	0.0	0.0	8.0	0.0						
Lane LOS	C	B			A							
Approach Delay (s)	21.2	10.1	0.0		5.5							
Approach LOS	C	B										
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			46.3%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	0	0	17	47	0
Future Volume (Veh/h)	130	0	0	17	47	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	0	0	18	51	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				291	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					282	
vCu, unblocked vol	18				291	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				93	100
cM capacity (veh/h)	1599				680	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	141	0	18	51	0	
Volume Left	141	0	0	51	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	680	1700	
Volume to Capacity	0.09	0.00	0.01	0.07	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	1.9	0.0	
Control Delay (s)	7.5	0.0	0.0	10.7	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.7		
Approach LOS				B		
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	66	0	89	152	0	126
Future Volume (Veh/h)	66	0	89	152	0	126
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	97	165	0	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			72			72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			72			72
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			94			86
cM capacity (veh/h)			1528			990
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	72	262	137			
Volume Left	0	97	0			
Volume Right	0	0	137			
cSH	1700	1528	990			
Volume to Capacity	0.04	0.06	0.14			
Queue Length 95th (m)	0.0	1.6	3.8			
Control Delay (s)	0.0	3.1	9.2			
Lane LOS	A		A			
Approach Delay (s)	0.0	3.1	9.2			
Approach LOS	A		A			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			34.1%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Future Volume (Veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	51	0	0	208	18	258	0	83	279	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	947	739	279	790	739	258	279			258		
vC1, stage 1 conf vol	445	445		294	294							
vC2, stage 2 conf vol	502	294		496	445							
vCu, unblocked vol	947	739	279	790	739	258	279			258		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	93	100	100	73	99			94		
cM capacity (veh/h)	294	465	760	432	472	781	1284			1307		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	51	0	208	18	258	83	279				
Volume Left	0	0	0	0	18	0	83	0				
Volume Right	0	51	0	208	0	0	0	0				
cSH	1700	760	1700	781	1284	1700	1307	1700				
Volume to Capacity	0.00	0.07	0.00	0.27	0.01	0.15	0.06	0.16				
Queue Length 95th (m)	0.0	1.7	0.0	8.6	0.3	0.0	1.6	0.0				
Control Delay (s)	0.0	10.1	0.0	11.3	7.8	0.0	7.9	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	10.1		11.3		0.5		1.8					
Approach LOS	B		B									
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			38.7%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	0	0	62	63	241
Future Volume (Veh/h)	192	0	0	62	63	241
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	0	0	67	68	262
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	266	199	330			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	199	330			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	71	100	100			
cM capacity (veh/h)	723	842	1229			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	209	67	330			
Volume Left	209	0	0			
Volume Right	0	0	262			
cSH	723	1229	1700			
Volume to Capacity	0.29	0.00	0.19			
Queue Length 95th (m)	9.6	0.0	0.0			
Control Delay (s)	12.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	4.1					
Intersection Capacity Utilization	35.5%			ICU Level of Service	A	
Analysis Period (min)	15					

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	69	0	16	175	0
Future Volume (Veh/h)	7	69	0	16	175	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	75	0	17	190	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			83		62	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			83		62	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1514		944	1024
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	83	17	190			
Volume Left	0	0	190			
Volume Right	75	0	0			
cSH	1700	1514	944			
Volume to Capacity	0.05	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	6.0			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			21.0%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.0%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	1182	546	284	826	285	626	1864	502	318	1470	214
v/c Ratio	1.68	1.00	0.83	1.89	0.70	0.43	2.26	1.17	0.82	1.27	0.98	0.36
Control Delay	365.7	65.8	32.5	456.3	38.9	8.5	599.1	119.2	35.7	176.2	60.1	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	365.7	65.8	32.5	456.3	38.9	8.5	599.1	119.2	35.7	176.2	60.1	7.5
Queue Length 50th (m)	-89.5	153.3	75.2	-107.7	93.5	8.2	-235.7	-200.9	74.5	-81.5	132.0	3.0
Queue Length 95th (m)	#142.6	#203.6	#139.0	#163.4	117.0	30.4	#309.1	#231.9	#134.5	#140.8	#166.5	21.6
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	148	1185	661	150	1173	666	277	1600	610	251	1504	592
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.68	1.00	0.83	1.89	0.70	0.43	2.26	1.17	0.82	1.27	0.98	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1087	502	261	760	262	576	1715	462	293	1352	197
Future Volume (vph)	228	1087	502	261	760	262	576	1715	462	293	1352	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	203	5136	1531	204	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1182	546	284	826	285	626	1864	502	318	1470	214
RTOR Reduction (vph)	0	0	157	0	0	158	0	0	133	0	0	138
Lane Group Flow (vph)	248	1182	389	284	826	127	626	1864	369	318	1470	76
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Effective Green, g (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Actuated g/C Ratio	0.08	0.33	0.33	0.08	0.33	0.33	0.43	0.31	0.31	0.41	0.30	0.30
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	1185	504	150	1173	507	270	1600	477	245	1504	454
v/s Ratio Prot	0.14	c0.33		c0.16	0.23		c0.27	0.36		0.14	0.29	
v/s Ratio Perm			0.26			0.08	c0.72		0.24	0.39		0.05
v/c Ratio	1.68	1.00	0.77	1.89	0.70	0.25	2.32	1.17	0.77	1.30	0.98	0.17
Uniform Delay, d1	54.9	40.0	36.0	54.9	35.0	29.2	34.5	41.3	37.5	33.7	41.5	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	331.7	25.5	10.9	426.0	3.6	1.2	604.8	81.5	11.6	160.8	18.4	0.8
Delay (s)	386.6	65.6	46.9	480.9	38.5	30.4	639.3	122.8	49.1	194.5	59.9	31.6
Level of Service	F	E	D	F	D	C	F	F	D	F	E	C
Approach Delay (s)		100.7			126.9			218.5			78.3	
Approach LOS		F			F			F			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			141.8									F
HCM 2000 Volume to Capacity ratio			1.77									
Actuated Cycle Length (s)			120.0							20.0		
Intersection Capacity Utilization			123.9%									H
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1851	72	196	1217	527	2
v/c Ratio	0.02	1.08	0.11	0.90	0.58	0.99	0.00
Control Delay	14.0	73.3	4.7	62.2	14.2	64.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	73.3	4.7	62.2	14.2	64.0	0.0
Queue Length 50th (m)	0.3	~223.1	0.7	22.7	75.9	80.5	0.0
Queue Length 95th (m)	1.9	#267.4	8.1	#65.4	95.4	#152.8	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	185	1715	680	217	2088	530	517
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.08	0.11	0.90	0.58	0.99	0.00

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1703	66	180	1120	0	34	0	451	0	0	2
Future Volume (vph)	3	1703	66	180	1120	0	34	0	451	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1802	3574	1348	1752	3539			1461			1617	
Flt Permitted	0.20	1.00	1.00	0.08	1.00			0.98			1.00	
Satd. Flow (perm)	386	3574	1348	145	3539			1437			1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1851	72	196	1217	0	37	0	490	0	0	2
RTOR Reduction (vph)	0	0	34	0	0	0	0	114	0	0	1	0
Lane Group Flow (vph)	3	1851	38	196	1217	0	0	413	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Effective Green, g (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59			0.29			0.29	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	185	1715	647	214	2088			416			468	
v/s Ratio Prot		c0.52		c0.07	0.34						0.00	
v/s Ratio Perm	0.01		0.03	0.47				c0.29				
v/c Ratio	0.02	1.08	0.06	0.92	0.58			0.99			0.00	
Uniform Delay, d1	13.6	26.0	13.9	28.0	12.8			35.4			25.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	46.6	0.2	38.7	1.2			42.3			0.0	
Delay (s)	13.8	72.6	14.1	66.7	14.0			77.7			25.2	
Level of Service	B	E	B	E	B			E			C	
Approach Delay (s)		70.3			21.3			77.7			25.2	
Approach LOS		E			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			53.4		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)					15.0		
Intersection Capacity Utilization			107.0%		ICU Level of Service					G		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	461	446	214	588	299	2179	954	430	1176	82
v/c Ratio	0.58	0.74	0.80	0.31	0.85	0.81	1.22	1.07	1.42	0.76	0.14
Control Delay	53.3	31.2	40.1	13.4	22.8	40.1	127.9	53.1	233.2	35.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	13.2	0.1	0.0	0.0
Total Delay	53.3	31.2	40.1	13.4	22.9	40.1	127.9	66.3	233.3	35.8	0.5
Queue Length 50th (m)	18.6	27.9	45.4	33.1	88.8	47.0	~199.0	~58.1	~107.6	81.6	0.0
Queue Length 95th (m)	33.9	42.9	52.2	21.7	126.8	m#64.8	m#230.7	m#135.9	#190.6	99.4	0.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	228	782	595	810	781	371	1792	894	303	1538	594
Starvation Cap Reductn	0	0	0	0	6	0	0	0	0	0	0
Spillback Cap Reductn	0	4	0	0	0	0	0	30	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.59	0.75	0.26	0.76	0.81	1.22	1.10	1.43	0.76	0.14

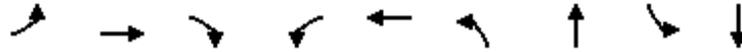
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

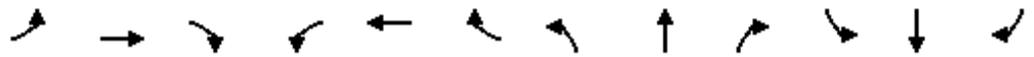
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	180	244	410	197	541	275	2005	878	396	1082	75
Future Volume (vph)	88	180	244	410	197	541	275	2005	878	396	1082	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1785	3229		3400	1863	1572	1787	5136	1516	1787	4988	1534
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1173	3229		3400	1863	1572	223	5136	1516	244	4988	1534
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	196	265	446	214	588	299	2179	954	430	1176	82
RTOR Reduction (vph)	0	163	0	0	0	109	0	0	366	0	0	57
Lane Group Flow (vph)	96	298	0	446	214	479	299	2179	588	430	1176	25
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8
Effective Green, g (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8
Actuated g/C Ratio	0.14	0.14		0.16	0.37	0.37	0.50	0.35	0.35	0.43	0.31	0.31
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	166	458		561	693	584	368	1792	529	294	1536	472
v/s Ratio Prot		0.09		0.13	0.11		c0.13	0.42		c0.18	0.24	
v/s Ratio Perm	0.08					c0.30	0.27		0.39	c0.45		0.02
v/c Ratio	0.58	0.65		0.80	0.31	0.82	0.81	1.22	1.11	1.46	0.77	0.05
Uniform Delay, d1	40.1	40.6		40.1	22.3	28.4	23.9	32.5	32.5	27.2	31.3	24.3
Progression Factor	1.00	1.00		0.74	0.58	0.59	1.48	0.90	0.77	1.00	1.00	1.00
Incremental Delay, d2	4.8	3.3		6.9	0.2	8.2	5.8	99.5	61.8	226.0	3.7	0.2
Delay (s)	44.9	43.9		36.8	13.1	24.9	41.2	128.6	86.8	253.2	35.0	24.6
Level of Service	D	D		D	B	C	D	F	F	F	D	C
Approach Delay (s)		44.0			27.1			109.4			90.1	
Approach LOS		D			C			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			84.6		HCM 2000 Level of Service					F		
HCM 2000 Volume to Capacity ratio			1.24									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)					22.1		
Intersection Capacity Utilization			107.7%		ICU Level of Service					G		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	1128	43	13	918	49	73	98	273
v/c Ratio	0.65	0.83	0.04	0.07	0.57	0.66	0.28	0.58	0.63
Control Delay	10.2	6.9	0.4	19.7	22.1	79.4	18.7	53.3	12.9
Queue Delay	0.0	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	31.0	0.4	19.7	22.1	79.4	18.7	53.3	12.9
Queue Length 50th (m)	20.7	53.2	0.3	1.4	66.6	9.7	4.2	19.1	2.6
Queue Length 95th (m)	m21.4	m56.9	m0.3	6.2	105.6	21.8	16.1	34.1	25.0
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	657	1365	1157	195	1623	181	567	418	684
Starvation Cap Reductn	0	278	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.04	0.04	0.07	0.57	0.27	0.13	0.23	0.40

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Future Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1827	1537	1796	3491		1770	1669		1752	1588	
Flt Permitted	0.21	1.00	1.00	0.22	1.00		0.31	1.00		0.71	1.00	
Satd. Flow (perm)	389	1827	1537	419	3491		569	1669		1308	1588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	1128	43	13	841	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	8	0	6	0	0	43	0	0	225	0
Lane Group Flow (vph)	430	1128	35	13	912	0	49	30	0	98	48	0
Confl. Peds. (#/hr)	5		11	11		5			4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Effective Green, g (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Actuated g/C Ratio	0.75	0.75	0.75	0.46	0.46		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	645	1364	1148	193	1616		74	218		171	208	
v/s Ratio Prot	0.17	c0.62			0.26			0.02				0.03
v/s Ratio Perm	0.33		0.02	0.03			c0.09			0.07		
v/c Ratio	0.67	0.83	0.03	0.07	0.56		0.66	0.14		0.57	0.23	
Uniform Delay, d1	10.7	8.4	3.3	14.9	19.5		41.3	38.4		40.8	38.9	
Progression Factor	1.14	0.54	0.18	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.0	0.7	1.4		20.0	0.3		4.6	0.6	
Delay (s)	12.4	5.1	0.6	15.6	21.0		61.4	38.7		45.4	39.5	
Level of Service	B	A	A	B	C		E	D		D	D	
Approach Delay (s)		6.9			20.9			47.8			41.1	
Approach LOS		A			C			D			D	

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	114.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

1755 Pickering Pkwy TIS  
 5: Street D/Walmart East Access & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
 PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1368	86	592	351	203	89	60
v/c Ratio	1.24	0.40	0.50	0.88	0.47	0.38	0.16
Control Delay	137.3	18.3	13.2	62.5	5.9	38.3	0.9
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.6	18.3	13.2	62.5	5.9	38.3	0.9
Queue Length 50th (m)	~431.3	10.1	74.5	76.2	0.0	16.3	0.0
Queue Length 95th (m)	#516.8	24.8	104.0	#125.9	9.6	29.9	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1106	214	1190	402	460	411	498
Starvation Cap Reductn	73	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.40	0.50	0.87	0.44	0.22	0.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

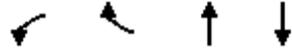
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55	
Future Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0		
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Frbp, ped/bikes		0.99		1.00	1.00		1.00	0.96		1.00	1.00		
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00		
Frt		0.97		1.00	0.98		1.00	0.85		1.00	0.85		
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1738		1805	1830		1770	1511		1791	1615		
Flt Permitted		0.98		0.17	1.00		0.47	1.00		0.63	1.00		
Satd. Flow (perm)		1697		331	1830		882	1511		1189	1615		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	34	1001	333	86	497	95	351	0	203	89	0	60	
RTOR Reduction (vph)	0	8	0	0	4	0	0	173	0	0	57	0	
Lane Group Flow (vph)	0	1360	0	86	588	0	351	30	0	89	3	0	
Confl. Peds. (#/hr)	3		5	5		3			5	5			
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		2			6		3	8		7	4		
Permitted Phases	2			6			8			4			
Actuated Green, G (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4		
Effective Green, g (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4		
Actuated g/C Ratio		0.64		0.64	0.64		0.26	0.15		0.14	0.05		
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0		
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		1083		211	1168		388	226		211	86		
v/s Ratio Prot					0.32		c0.16	0.02		0.03	0.00		
v/s Ratio Perm		c0.80		0.26			c0.07			0.02			
v/c Ratio		1.26		0.41	0.50		0.90	0.13		0.42	0.04		
Uniform Delay, d1		21.7		10.6	11.6		41.1	44.2		47.1	53.9		
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		122.9		5.7	1.5		23.8	0.3		1.4	0.2		
Delay (s)		144.6		16.4	13.1		64.9	44.5		48.5	54.1		
Level of Service		F		B	B		E	D		D	D		
Approach Delay (s)		144.6			13.5			57.4			50.7		
Approach LOS		F			B			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			89.6		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.19										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					15.5			
Intersection Capacity Utilization			131.1%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Future Volume (Veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	802	482	97	491	9	211	0	198	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.33			0.33	0.33	0.33	0.33	0.33	0.33
vC, conflicting volume	504			1285			1744	1752	1044	1944	1988	500
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			858			2230	2253	138	2828	2959	500
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			63			0	100	35	0	100	100
cM capacity (veh/h)	1067			265			7	9	306	1	3	572
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1289	597	211	198	12							
Volume Left	5	97	211	0	12							
Volume Right	482	9	0	198	0							
cSH	1067	265	7	306	1							
Volume to Capacity	0.00	0.37	28.91	0.65	12.52							
Queue Length 95th (m)	0.1	12.9	Err	33.5	Err							
Control Delay (s)	0.2	15.7	Err	35.9	Err							
Lane LOS	A	C	F	E	F							
Approach Delay (s)	0.2	15.7	5175.8		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			973.8									
Intersection Capacity Utilization			110.9%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Future Volume (Veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	3	397	2	8	3	179	104	0	2	38	221
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	622	614	150	1014	725	104	259			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	614	150	1014	725	104	259			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	56	98	97	100	86			100		
cM capacity (veh/h)	344	260	902	109	230	873	1317			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	750	13	283	261								
Volume Left	350	2	179	2								
Volume Right	397	3	0	221								
cSH	511	229	1317	1048								
Volume to Capacity	1.47	0.06	0.14	0.00								
Queue Length 95th (m)	299.3	1.4	3.8	0.0								
Control Delay (s)	243.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	243.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			140.9									
Intersection Capacity Utilization			85.8%	ICU Level of Service						E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	3262	0	0	1870			
Future Volume (Veh/h)	0	0	3262	0	0	1870			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	3546	0	0	2033			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.58	0.48			0.48				
vC, conflicting volume	4224	1182			3546				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1628	0			2492				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	55	518			89				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	1182	1182	1182	0	678	678	678	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.70	0.70	0.70	0.00	0.40	0.40	0.40	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			66.4%	ICU Level of Service	C				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	675	353	2872	902
v/c Ratio	0.86	0.95	0.90	0.29
Control Delay	48.0	73.1	19.0	13.3
Queue Delay	0.0	0.0	21.9	0.0
Total Delay	48.0	73.1	40.9	13.3
Queue Length 50th (m)	67.2	77.0	108.7	39.7
Queue Length 95th (m)	#96.6	#138.7	m68.7	52.2
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	797	379	3186	3156
Starvation Cap Reductn	0	0	433	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.93	1.04	0.29

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	295	650	2642	0	0	830
Future Volume (vph)	295	650	2642	0	0	830
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3040	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3040	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	321	707	2872	0	0	902
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	674	352	2872	0	0	902
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	25.7	25.7	62.7			62.7
Effective Green, g (s)	25.7	25.7	62.7			62.7
Actuated g/C Ratio	0.26	0.26	0.63			0.63
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	781	370	3188			3157
v/s Ratio Prot			c0.56			0.18
v/s Ratio Perm	0.22	c0.24				
v/c Ratio	0.86	0.95	0.90			0.29
Uniform Delay, d1	35.5	36.5	16.0			8.5
Progression Factor	1.00	1.00	1.12			1.52
Incremental Delay, d2	9.7	33.9	0.5			0.2
Delay (s)	45.2	70.4	18.3			13.1
Level of Service	D	E	B			B
Approach Delay (s)	53.8		18.3			13.1
Approach LOS	D		B			B

Intersection Summary			
HCM 2000 Control Delay		24.9	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio		0.91	
Actuated Cycle Length (s)		100.0	Sum of lost time (s) 11.6
Intersection Capacity Utilization		127.9%	ICU Level of Service H
Analysis Period (min)		15	

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	986	976	567	2333	347	893
v/c Ratio	1.74	1.82	1.07	1.41	0.87	0.50
Control Delay	365.5	400.0	87.3	218.7	51.2	8.5
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	365.5	400.0	87.3	219.0	51.2	8.5
Queue Length 50th (m)	~315.6	~335.3	~116.8	~240.5	54.0	36.2
Queue Length 95th (m)	#396.5	#421.5	#187.8	#279.7	m#81.8	m36.1
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	537	528	1649	457	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	166	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.74	1.82	1.07	1.57	0.76	0.50

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1745	2	580	0	0	0	0	1700	446	319	822	0	
Future Volume (vph)	1745	2	580	0	0	0	0	1700	446	319	822	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1602	1334					4758		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00		
Satd. Flow (perm)	1698	1602	1334					4758		201	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1897	2	630	0	0	0	0	1848	485	347	893	0	
RTOR Reduction (vph)	0	3	83	0	0	0	0	44	0	0	0	0	
Lane Group Flow (vph)	986	973	484	0	0	0	0	2289	0	347	893	0	
Confl. Peds. (#/hr)								5		7	7	5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					33.7		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					33.7		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.34		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	535	445					1603		394	1772		
v/s Ratio Prot								c0.48		c0.16	0.28		
v/s Ratio Perm	0.58	0.61	0.36							0.32			
v/c Ratio	1.74	1.82	1.09					1.43		0.88	0.50		
Uniform Delay, d1	33.3	33.3	33.3					33.1		27.9	14.0		
Progression Factor	1.00	1.00	1.00					1.00		1.33	0.53		
Incremental Delay, d2	339.8	376.0	68.2					196.1		18.6	0.9		
Delay (s)	373.1	409.3	101.5					229.3		55.8	8.4		
Level of Service	F	F	F					F		E	A		
Approach Delay (s)		326.2			0.0			229.3			21.7		
Approach LOS		F			A			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			227.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.46										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			127.9%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	0	0	0	0	0	105
Future Volume (Veh/h)	0	0	0	0	0	105
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	114
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	114		
Volume Left	0	0	0	0		
Volume Right	0	0	0	114		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.11		
Queue Length 95th (m)	0.0	0.0	0.0	2.8		
Control Delay (s)	0.0	0.0	0.0	8.7		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			16.5%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Future Volume (Veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	167	0	24	0	90	68	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	24			0			334	358	0	447	334	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24			0			334	358	0	447	334	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	82	94	100	100	100
cM capacity (veh/h)	1591			1623			571	510	1085	390	526	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	167	24	158							
Volume Left	0	0	167	0	0							
Volume Right	0	0	0	24	68							
cSH	1700	1700	1623	1700	661							
Volume to Capacity	0.00	0.00	0.10	0.01	0.24							
Queue Length 95th (m)	0.0	0.0	2.7	0.0	7.4							
Control Delay (s)	0.0	0.0	7.5	0.0	12.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.5		12.2							
Approach LOS					B							
Intersection Summary												
Average Delay			9.1									
Intersection Capacity Utilization			23.4%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Future Volume (Veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	0	0	0	0	359	0	133	0	338	17	63
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	1216	858	48	826	889	133	80			133		
vC1, stage 1 conf vol	724	724		133	133							
vC2, stage 2 conf vol	492	133		693	756							
vCu, unblocked vol	1216	858	48	826	889	133	80			133		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	19	100	100	100	100	61	100			77		
cM capacity (veh/h)	79	309	1020	323	309	916	1518			1452		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	64	359	0	133	338	80						
Volume Left	64	0	0	0	338	0						
Volume Right	0	359	0	0	0	63						
cSH	79	916	1700	1700	1452	1700						
Volume to Capacity	0.81	0.39	0.00	0.08	0.23	0.05						
Queue Length 95th (m)	32.5	15.1	0.0	0.0	7.2	0.0						
Control Delay (s)	144.7	11.4	0.0	0.0	8.2	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	144.7	11.4	0.0		6.7							
Approach LOS	F	B										
Intersection Summary												
Average Delay			16.6									
Intersection Capacity Utilization			60.8%		ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	0	0	17	16	0
Future Volume (Veh/h)	105	0	0	17	16	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	0	0	18	17	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				237	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					228	
vCu, unblocked vol	18				237	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				98	100
cM capacity (veh/h)	1599				733	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	114	0	18	17	0	
Volume Left	114	0	0	17	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	733	1700	
Volume to Capacity	0.07	0.00	0.01	0.02	0.00	
Queue Length 95th (m)	1.8	0.0	0.0	0.6	0.0	
Control Delay (s)	7.4	0.0	0.0	10.0	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.4		0.0	10.0		
Approach LOS				B		
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			22.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	63	0	152	166	0	131
Future Volume (Veh/h)	63	0	152	166	0	131
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	0	165	180	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			68		578	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		578	68
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		100	86
cM capacity (veh/h)			1533		426	995
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	345	142			
Volume Left	0	165	0			
Volume Right	0	0	142			
cSH	1700	1533	995			
Volume to Capacity	0.04	0.11	0.14			
Queue Length 95th (m)	0.0	2.9	4.0			
Control Delay (s)	0.0	4.1	9.2			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.1	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			38.6%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Future Volume (Veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	17	0	0	149	18	260	0	121	458	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1145	996	458	1013	996	260	458			260		
vC1, stage 1 conf vol	700	700		296	296							
vC2, stage 2 conf vol	445	296		717	700							
vCu, unblocked vol	1145	996	458	1013	996	260	458			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	81	98			91		
cM capacity (veh/h)	282	360	603	334	359	779	1103			1304		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	17	0	149	18	260	121	458				
Volume Left	0	0	0	0	18	0	121	0				
Volume Right	0	17	0	149	0	0	0	0				
cSH	1700	603	1700	779	1103	1700	1304	1700				
Volume to Capacity	0.00	0.03	0.00	0.19	0.02	0.15	0.09	0.27				
Queue Length 95th (m)	0.0	0.7	0.0	5.6	0.4	0.0	2.4	0.0				
Control Delay (s)	0.0	11.1	0.0	10.7	8.3	0.0	8.0	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.1		10.7		0.5		1.7					
Approach LOS	B		B									
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			44.0%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	0	0	62	119	318
Future Volume (Veh/h)	194	0	0	62	119	318
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	0	0	67	129	346
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	369	302	475			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	369	302	475			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	100	100			
cM capacity (veh/h)	631	738	1087			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	211	67	475			
Volume Left	211	0	0			
Volume Right	0	0	346			
cSH	631	1087	1700			
Volume to Capacity	0.33	0.00	0.28			
Queue Length 95th (m)	11.7	0.0	0.0			
Control Delay (s)	13.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.8			
Intersection Capacity Utilization			43.2%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	100	0	10	127	0
Future Volume (Veh/h)	11	100	0	10	127	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	109	0	11	138	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			121		78	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		78	66
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	100
cM capacity (veh/h)			1467		925	997
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	121	11	138			
Volume Left	0	0	138			
Volume Right	109	0	0			
cSH	1700	1467	925			
Volume to Capacity	0.07	0.00	0.15			
Queue Length 95th (m)	0.0	0.0	4.2			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.5%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			16.5%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	852	658	292	914	264	539	1504	432	253	1311	193
v/c Ratio	1.74	0.69	1.03	2.61	0.74	0.40	2.60	0.87	0.69	1.23	0.76	0.31
Control Delay	399.4	34.4	70.7	766.7	49.9	25.8	752.8	40.9	24.9	164.3	36.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	399.4	34.4	70.7	766.7	49.9	25.8	752.8	40.9	24.9	164.3	36.0	7.9
Queue Length 50th (m)	-65.5	86.2	-132.2	-112.6	115.4	33.2	-189.4	116.0	50.9	-52.7	96.1	5.0
Queue Length 95th (m)	#111.7	109.1	#204.7	#168.5	136.9	64.4	#257.5	136.4	89.2	#105.5	114.2	21.6
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	639	112	1237	652	207	1727	630	205	1727	627
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.74	0.69	1.03	2.61	0.74	0.40	2.60	0.87	0.69	1.23	0.76	0.31

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	784	605	269	841	243	496	1384	397	233	1206	178
Future Volume (vph)	179	784	605	269	841	243	496	1384	397	233	1206	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1805	5136	1537	1787	5136	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	205	5136	1537	203	5136	1549
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	195	852	658	292	914	264	539	1504	432	253	1311	193
RTOR Reduction (vph)	0	0	112	0	0	112	0	0	113	0	0	106
Lane Group Flow (vph)	195	852	546	292	914	152	539	1504	319	253	1311	87
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	1237	528	112	1237	540	200	1727	516	198	1727	521
v/s Ratio Prot	0.11	0.24		c0.16	0.26		c0.20	0.29		0.09	0.26	
v/s Ratio Perm			c0.36			0.10	c0.90		0.21	0.43		0.06
v/c Ratio	1.74	0.69	1.03	2.61	0.74	0.28	2.69	0.87	0.62	1.28	0.76	0.17
Uniform Delay, d1	51.5	30.9	36.0	51.5	31.6	26.0	25.1	34.3	30.6	26.1	32.5	25.7
Progression Factor	1.00	1.00	1.00	0.87	1.45	2.45	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	367.7	3.1	48.4	746.0	3.6	1.2	776.8	6.3	5.5	158.1	3.2	0.7
Delay (s)	419.3	34.0	84.3	790.7	49.4	65.0	801.9	40.6	36.0	184.1	35.7	26.4
Level of Service	F	C	F	F	D	E	F	D	D	F	D	C
Approach Delay (s)		97.5			199.4			205.6			56.1	
Approach LOS		F			F			F			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			144.0									F
HCM 2000 Volume to Capacity ratio			1.98									
Actuated Cycle Length (s)			110.0							20.0		
Intersection Capacity Utilization			119.9%									H
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1414	123	277	1303	356	2
v/c Ratio	0.03	0.75	0.15	0.74	0.52	0.85	0.01
Control Delay	22.2	35.5	15.7	37.2	9.2	42.0	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	35.5	15.7	37.2	9.2	42.0	31.5
Queue Length 50th (m)	0.8	155.3	10.1	36.7	63.6	44.9	0.4
Queue Length 95th (m)	m1.1	m175.6	m15.7	#110.3	103.8	74.2	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	176	1877	839	373	2530	537	411
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.75	0.15	0.74	0.52	0.66	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1301	113	255	1199	0	15	2	311	1	1	0
Future Volume (vph)	5	1301	113	255	1199	0	15	2	311	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1606			1851	
Flt Permitted	0.21	1.00	1.00	0.08	1.00			0.99			0.82	
Satd. Flow (perm)	335	3574	1544	160	3574			1590			1550	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1414	123	277	1303	0	16	2	338	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	128	0	0	0	0
Lane Group Flow (vph)	5	1414	95	277	1303	0	0	228	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.8	57.8	57.8	77.9	77.9			20.1			20.1	
Effective Green, g (s)	57.8	57.8	57.8	77.9	77.9			20.1			20.1	
Actuated g/C Ratio	0.53	0.53	0.53	0.71	0.71			0.18			0.18	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	176	1877	811	369	2531			290			283	
v/s Ratio Prot		0.40		c0.12	0.36							
v/s Ratio Perm	0.01		0.06	c0.42				c0.14			0.00	
v/c Ratio	0.03	0.75	0.12	0.75	0.51			0.79			0.01	
Uniform Delay, d1	12.6	20.5	13.2	27.5	7.4			42.9			36.8	
Progression Factor	1.69	1.62	2.14	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.8	0.2	8.3	0.8			13.0			0.0	
Delay (s)	21.4	34.9	28.5	35.8	8.1			55.9			36.8	
Level of Service	C	C	C	D	A			E			D	
Approach Delay (s)		34.4			13.0			55.9			36.8	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			26.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			86.2%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
 SAT Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	403	672	211	684	253	1282	827	528	954	99
v/c Ratio	0.58	0.66	0.91	0.27	0.93	0.74	0.72	0.87	2.22	0.60	0.16
Control Delay	55.5	24.5	49.5	16.1	30.7	27.6	24.9	16.0	582.5	32.3	0.6
Queue Delay	0.0	0.1	0.0	0.0	1.1	0.0	0.0	3.5	0.5	0.0	0.0
Total Delay	55.5	24.5	49.5	16.1	31.9	27.6	24.9	19.6	583.0	32.3	0.6
Queue Length 50th (m)	16.8	18.7	73.9	29.1	88.4	20.4	81.5	65.6	~173.3	63.9	0.0
Queue Length 95th (m)	33.3	34.5	m#95.1	m38.5	m#158.8	#50.8	91.0	#135.5	#239.5	79.3	0.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	181	682	745	826	772	363	1792	951	238	1583	605
Starvation Cap Reductn	0	0	0	0	18	0	0	0	0	0	0
Spillback Cap Reductn	0	10	0	0	0	0	0	67	9	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.60	0.90	0.26	0.91	0.70	0.72	0.94	2.31	0.60	0.16

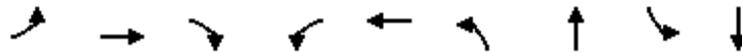
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	165	206	618	194	629	233	1179	761	486	878	91
Future Volume (vph)	82	165	206	618	194	629	233	1179	761	486	878	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1774	3251		3467	1900	1544	1787	5136	1571	1805	5136	1570
Flt Permitted	0.63	1.00		0.95	1.00	1.00	0.17	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	1169	3251		3467	1900	1544	325	5136	1571	246	5136	1570
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	179	224	672	211	684	253	1282	827	528	954	99
RTOR Reduction (vph)	0	183	0	0	0	105	0	0	403	0	0	68
Lane Group Flow (vph)	89	220	0	672	211	579	253	1282	424	528	954	31
Confl. Peds. (#/hr)	20		10	10		20	4					4
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	13.1	13.1		21.2	40.8	40.8	46.6	34.9	34.9	39.6	30.9	30.9
Effective Green, g (s)	13.1	13.1		21.2	40.8	40.8	46.6	34.9	34.9	39.6	30.9	30.9
Actuated g/C Ratio	0.13	0.13		0.21	0.41	0.41	0.47	0.35	0.35	0.40	0.31	0.31
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	153	425		735	775	629	337	1792	548	233	1587	485
v/s Ratio Prot		0.07		0.19	0.11		c0.10	0.25		c0.20	0.19	
v/s Ratio Perm	0.08					c0.37	0.25		0.27	c0.70		0.02
v/c Ratio	0.58	0.52		0.91	0.27	0.92	0.75	0.72	0.77	2.27	0.60	0.06
Uniform Delay, d1	40.9	40.5		38.5	19.7	28.1	18.3	28.2	29.0	23.3	29.3	24.3
Progression Factor	1.00	1.00		0.96	0.81	0.80	0.95	0.80	0.83	1.00	1.00	1.00
Incremental Delay, d2	5.5	1.1		10.3	0.1	12.2	7.5	2.0	8.4	583.2	1.7	0.2
Delay (s)	46.4	41.6		47.3	16.1	34.7	24.9	24.7	32.6	606.6	31.0	24.6
Level of Service	D	D		D	B	C	C	C	C	F	C	C
Approach Delay (s)		42.4			37.6			27.5			222.8	
Approach LOS		D			D			C			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			82.8		HCM 2000 Level of Service						F	
HCM 2000 Volume to Capacity ratio			1.67									
Actuated Cycle Length (s)		100.0			Sum of lost time (s)					22.1		
Intersection Capacity Utilization		103.4%			ICU Level of Service					G		
Analysis Period (min)		15										
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	1002	64	34	958	112	102	128	624
v/c Ratio	1.37	1.00	0.08	0.45	0.70	1.47	0.17	0.29	0.84
Control Delay	193.8	24.1	3.0	45.1	28.6	300.5	13.1	26.5	26.9
Queue Delay	0.0	35.4	0.0	0.0	0.0	1.5	0.0	0.0	1.5
Total Delay	193.8	59.5	3.0	45.1	28.6	302.1	13.1	26.5	28.4
Queue Length 50th (m)	~102.3	~149.3	0.3	5.1	83.5	~31.6	6.9	18.9	63.5
Queue Length 95th (m)	m#87.4	m129.6	m0.4	#19.2	106.8	#66.6	18.7	34.5	#131.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	345	1002	848	76	1365	76	618	440	746
Starvation Cap Reductn	0	119	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	4	0	0	35
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	1.13	0.08	0.45	0.70	1.56	0.17	0.29	0.88

**Intersection Summary**

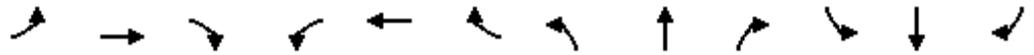
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Future Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1549	1805	3492		1805	1718		1783	1608	
Flt Permitted	0.15	1.00	1.00	0.10	1.00		0.12	1.00		0.69	1.00	
Satd. Flow (perm)	288	1863	1549	196	3492		224	1718		1297	1608	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	1002	64	34	838	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	15	0	11	0	0	34	0	0	199	0
Lane Group Flow (vph)	471	1002	49	34	947	0	112	68	0	128	425	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Effective Green, g (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.39	0.39		0.34	0.34		0.34	0.34	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	1002	833	76	1354		76	584		440	546	
v/s Ratio Prot	c0.17	0.54			0.27			0.04				0.26
v/s Ratio Perm	c0.58		0.03	0.17			c0.50			0.10		
v/c Ratio	1.40	1.00	0.06	0.45	0.70		1.47	0.12		0.29	0.78	
Uniform Delay, d1	21.5	23.1	11.0	22.7	25.7		33.0	22.7		24.2	29.6	
Progression Factor	1.77	0.57	0.46	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	182.5	8.5	0.0	17.9	3.0		271.1	0.1		0.4	6.9	
Delay (s)	220.5	21.6	5.1	40.5	28.7		304.1	22.8		24.5	36.5	
Level of Service	F	C	A	D	C		F	C		C	D	
Approach Delay (s)		81.8			29.1			170.0			34.5	
Approach LOS		F			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	62.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	127.6%	ICU Level of Service	H
Analysis Period (min)	15		

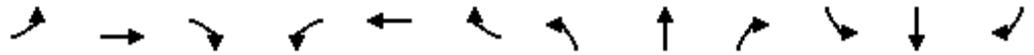
c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1235	101	647	411	239	100	86
v/c Ratio	1.18	0.51	0.60	0.83	0.42	0.43	0.25
Control Delay	115.9	27.9	18.9	49.9	2.5	35.8	1.7
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.4	27.9	18.9	49.9	2.5	35.8	1.7
Queue Length 50th (m)	~382.8	15.1	101.8	83.5	0.0	16.6	0.0
Queue Length 95th (m)	#468.9	37.9	143.1	118.8	0.0	29.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1047	198	1082	522	587	519	472
Starvation Cap Reductn	102	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.51	0.60	0.79	0.41	0.19	0.18

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Future Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.95		1.00	0.96		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761		1736	1796		1800	1551		1754	1583	
Flt Permitted		0.98		0.18	1.00		0.46	1.00		0.62	1.00	
Satd. Flow (perm)		1732		332	1796		877	1551		1154	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	793	420	101	477	170	411	0	239	100	0	86
RTOR Reduction (vph)	0	12	0	0	8	0	0	192	0	0	81	0
Lane Group Flow (vph)	0	1223	0	101	639	0	411	47	0	100	5	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Effective Green, g (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Actuated g/C Ratio		0.59		0.59	0.59		0.31	0.20		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1018		195	1056		483	306		210	84	
v/s Ratio Prot					0.36		c0.19	0.03		0.04	0.00	
v/s Ratio Perm		c0.71		0.30			c0.07			0.03		
v/c Ratio		1.20		0.52	0.60		0.85	0.15		0.48	0.05	
Uniform Delay, d1		24.7		14.6	15.8		37.1	39.9		47.2	53.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		100.2		9.5	2.6		13.5	0.2		1.7	0.3	
Delay (s)		124.9		24.1	18.4		50.5	40.1		48.9	54.2	
Level of Service		F		C	B		D	D		D	D	
Approach Delay (s)		124.9			19.1			46.7			51.4	
Approach LOS		F			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			73.9				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			121.0%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Future Volume (Veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	598	532	103	527	30	255	0	260	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.39			0.39	0.39	0.39	0.39	0.39	
vC, conflicting volume	557			1130			1635	1647	866	1894	1898	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	557			558			1844	1874	0	2504	2514	544
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			74			0	100	39	0	100	100
cM capacity (veh/h)	938			402			18	21	428	2	8	542
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1140	660	255	260	28							
Volume Left	10	103	255	0	27							
Volume Right	532	30	0	260	1							
cSH	938	402	18	428	2							
Volume to Capacity	0.01	0.26	14.05	0.61	11.23							
Queue Length 95th (m)	0.3	8.1	Err	31.4	Err							
Control Delay (s)	0.4	8.1	Err	25.6	Err							
Lane LOS	A	A	F	D	F							
Approach Delay (s)	0.4	8.1	4963.9		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			1213.0									
Intersection Capacity Utilization			121.7%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Future Volume (Veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	232	1	516	0	0	0	248	49	0	0	82	261
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	760	758	212	1274	888	52	343			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	758	212	1274	888	52	343			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	99	38	100	100	100	80			100		
cM capacity (veh/h)	270	194	833	47	227	1019	1227			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	749	0	297	343								
Volume Left	232	0	248	0								
Volume Right	516	0	0	261								
cSH	505	1700	1227	1571								
Volume to Capacity	1.48	0.06	0.20	0.00								
Queue Length 95th (m)	303.1	0.0	6.0	0.0								
Control Delay (s)	249.4	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	249.4	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			136.1									
Intersection Capacity Utilization			88.9%		ICU Level of Service					E		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	2294	0	0	1889			
Future Volume (Veh/h)	0	0	2294	0	0	1889			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	2493	0	0	2053			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.85	0.77			0.77				
vC, conflicting volume	3180	834			2496				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1763	0			1913				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	65	843			243				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	831	831	831	0	684	684	684	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.49	0.49	0.49	0.00	0.40	0.40	0.40	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0					0.0		
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			47.7%	ICU Level of Service	A				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	541	330	1873	787
v/c Ratio	0.61	0.82	0.60	0.25
Control Delay	33.6	49.4	17.9	15.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.6	49.4	17.9	15.8
Queue Length 50th (m)	48.0	66.4	92.5	38.0
Queue Length 95th (m)	59.7	95.6	m82.0	m57.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1109	503	3142	3142
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.66	0.60	0.25

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  		  			  
Traffic Volume (vph)	193	608	1723	0	0	724
Future Volume (vph)	193	608	1723	0	0	724
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3227	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3227	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	661	1873	0	0	787
RTOR Reduction (vph)	7	7	0	0	0	0
Lane Group Flow (vph)	534	323	1873	0	0	787
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.2	27.2	61.2			61.2
Effective Green, g (s)	27.2	27.2	61.2			61.2
Actuated g/C Ratio	0.27	0.27	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	877	395	3143			3143
v/s Ratio Prot			c0.36			0.15
v/s Ratio Perm	0.17	c0.22				
v/c Ratio	0.61	0.82	0.60			0.25
Uniform Delay, d1	31.8	34.1	11.8			8.9
Progression Factor	1.00	1.00	1.38			1.61
Incremental Delay, d2	1.2	12.4	0.1			0.1
Delay (s)	33.0	46.5	16.4			14.5
Level of Service	C	D	B			B
Approach Delay (s)	38.1		16.4			14.5
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			106.2%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	773	768	481	1308	525	497
v/c Ratio	1.36	1.32	0.67	0.86	1.11	0.25
Control Delay	204.3	183.7	13.7	37.6	113.7	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	204.3	183.7	13.7	37.6	113.7	3.9
Queue Length 50th (m)	-219.8	-214.9	23.2	86.1	-109.8	8.4
Queue Length 95th (m)	#295.8	#296.2	63.5	105.4	#176.1	11.0
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	582	713	1522	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.36	1.32	0.67	0.86	1.11	0.25

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1368	0	492	0	0	0	0	890	314	483	457	0	
Future Volume (vph)	1368	0	492	0	0	0	0	890	314	483	457	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1614	1461					4864		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1614	1461					4864		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1487	0	535	0	0	0	0	967	341	525	497	0	
RTOR Reduction (vph)	0	43	225	0	0	0	0	64	0	0	0	0	
Lane Group Flow (vph)	773	725	256	0	0	0	0	1244	0	525	497	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	539	487					1459		468	1965		
v/s Ratio Prot								0.26		c0.25	0.14		
v/s Ratio Perm	c0.46	0.45	0.18							c0.37			
v/c Ratio	1.36	1.34	0.53					0.85		1.12	0.25		
Uniform Delay, d1	33.3	33.3	26.9					32.9		29.1	11.8		
Progression Factor	1.00	1.00	1.00					1.00		1.69	0.31		
Incremental Delay, d2	174.6	167.1	1.0					6.5		78.7	0.3		
Delay (s)	207.9	200.4	27.9					39.4		127.8	3.9		
Level of Service	F	F	C					D		F	A		
Approach Delay (s)		162.3			0.0			39.4			67.6		
Approach LOS		F			A			D			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			103.1									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.25										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			106.2%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	0	0	0	0	0	131
Future Volume (Veh/h)	0	0	0	0	0	131
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	142		
Volume Left	0	0	0	0		
Volume Right	0	0	0	142		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.1%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2036) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Future Volume (Veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	190	0	33	0	110	85	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			380	413	0	520	380	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			380	413	0	520	380	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			100	76	92	100	100	100
cM capacity (veh/h)	1579			1623			526	467	1085	322	488	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	190	33	195							
Volume Left	0	0	190	0	0							
Volume Right	0	0	0	33	85							
cSH	1700	1700	1623	1700	622							
Volume to Capacity	0.00	0.00	0.12	0.02	0.31							
Queue Length 95th (m)	0.0	0.0	3.2	0.0	10.7							
Control Delay (s)	0.0	0.0	7.5	0.0	13.4							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.4		13.4							
Approach LOS					B							
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			26.4%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Future Volume (Veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	411	0	160	0	387	22	72
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	1403	992	58	956	1028	160	94			160		
vC1, stage 1 conf vol	832	832		160	160							
vC2, stage 2 conf vol	571	160		796	868							
vCu, unblocked vol	1403	992	58	956	1028	160	94			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	100	100	54	100			73		
cM capacity (veh/h)	50	259	1008	269	260	885	1500			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	411	0	160	387	94						
Volume Left	85	0	0	0	387	0						
Volume Right	0	411	0	0	0	72						
cSH	50	885	1700	1700	1419	1700						
Volume to Capacity	1.71	0.46	0.00	0.09	0.27	0.06						
Queue Length 95th (m)	66.2	20.0	0.0	0.0	8.9	0.0						
Control Delay (s)	524.5	12.5	0.0	0.0	8.5	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	524.5	12.5	0.0		6.8							
Approach LOS	F	B										
Intersection Summary												
Average Delay			46.6									
Intersection Capacity Utilization			68.5%		ICU Level of Service					C		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	0	0	16	20	0
Future Volume (Veh/h)	131	0	0	16	20	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	142	0	0	17	22	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	17				292	8
vC1, stage 1 conf vol					8	
vC2, stage 2 conf vol					284	
vCu, unblocked vol	17				292	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				97	100
cM capacity (veh/h)	1600				679	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	142	0	17	22	0	
Volume Left	142	0	0	22	0	
Volume Right	0	0	17	0	0	
cSH	1600	1700	1700	679	1700	
Volume to Capacity	0.09	0.00	0.01	0.03	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	0.8	0.0	
Control Delay (s)	7.5	0.0	0.0	10.5	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.5		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			7.1			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	78	0	0	187	0	159
Future Volume (Veh/h)	78	0	0	187	0	159
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	203	0	173
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		288	85
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		288	85
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			1512		702	974
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	85	203	173			
Volume Left	0	0	0			
Volume Right	0	0	173			
cSH	1700	1512	974			
Volume to Capacity	0.05	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	5.2			
Control Delay (s)	0.0	0.0	9.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			26.4%	ICU Level of Service		A
Analysis Period (min)	15					

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Future Volume (Veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	22	0	0	196	17	320	0	126	509	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1311	1115	509	1137	1115	320	509			320		
vC1, stage 1 conf vol	761	761		354	354							
vC2, stage 2 conf vol	550	354		783	761							
vCu, unblocked vol	1311	1115	509	1137	1115	320	509			320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	73	98			90		
cM capacity (veh/h)	213	329	564	298	330	721	1056			1240		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	22	0	196	17	320	126	509				
Volume Left	0	0	0	0	17	0	126	0				
Volume Right	0	22	0	196	0	0	0	0				
cSH	1700	564	1700	721	1056	1700	1240	1700				
Volume to Capacity	0.00	0.04	0.00	0.27	0.02	0.19	0.10	0.30				
Queue Length 95th (m)	0.0	1.0	0.0	8.8	0.4	0.0	2.7	0.0				
Control Delay (s)	0.0	11.6	0.0	11.8	8.5	0.0	8.2	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.6		11.8		0.4		1.6					
Approach LOS	B		B									
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			49.1%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	237	0	0	73	132	356
Future Volume (Veh/h)	237	0	0	73	132	356
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	0	0	79	143	387
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	416	336	530			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	336	530			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	100	100			
cM capacity (veh/h)	593	706	1037			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	258	79	530			
Volume Left	258	0	0			
Volume Right	0	0	387			
cSH	593	1037	1700			
Volume to Capacity	0.43	0.00	0.31			
Queue Length 95th (m)	17.5	0.0	0.0			
Control Delay (s)	15.6	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.6	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			48.6%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	104	0	14	166	0
Future Volume (Veh/h)	12	104	0	14	166	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	113	0	15	180	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			126		84	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		84	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1460		917	993
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	126	15	180			
Volume Left	0	0	180			
Volume Right	113	0	0			
cSH	1700	1460	917			
Volume to Capacity	0.07	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			22.9%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.1%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	384	372	399	608	185	466	1001	193	352	2024	203
v/c Ratio	0.86	0.36	0.63	3.07	0.53	0.30	2.71	0.69	0.32	1.11	1.08	0.30
Control Delay	110.9	32.4	25.6	970.3	34.5	5.4	802.7	39.1	5.7	108.7	83.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	32.4	25.6	970.3	34.5	5.4	802.7	39.1	5.7	108.7	83.2	4.7
Queue Length 50th (m)	23.7	38.2	46.8	~172.2	63.9	0.0	~181.3	79.4	0.0	-72.2	~205.6	0.0
Queue Length 95th (m)	#56.6	52.4	81.7	#235.1	82.6	16.2	#248.5	95.9	16.9	#133.6	#236.1	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	591	130	1151	621	172	1456	611	317	1871	668
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.36	0.63	3.07	0.53	0.30	2.71	0.69	0.32	1.11	1.08	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	353	342	367	559	170	429	921	178	324	1862	187	
Future Volume (vph)	87	353	342	367	559	170	429	921	178	324	1862	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1455	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	186	4673	1536	283	5036	1455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	384	372	399	608	185	466	1001	193	352	2024	203	
RTOR Reduction (vph)	0	0	101	0	0	124	0	0	133	0	0	128	
Lane Group Flow (vph)	95	384	271	399	608	61	466	1001	60	352	2024	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	8%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.38	0.31	0.31	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1456	478	308	1871	540	
v/s Ratio Prot	0.06	0.11		c0.23	0.18		c0.18	0.21		c0.14	0.40		
v/s Ratio Perm			c0.18			0.04	c0.87		0.04	0.38		0.05	
v/c Ratio	0.86	0.36	0.55	3.07	0.53	0.12	2.82	0.69	0.13	1.14	1.08	0.14	
Uniform Delay, d1	55.6	31.2	33.6	55.5	32.5	27.9	32.4	36.2	29.6	26.6	37.7	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.0	0.9	4.4	951.3	1.7	0.5	837.5	2.7	0.5	95.7	46.8	0.5	
Delay (s)	101.5	32.1	38.0	1006.8	34.2	28.5	869.8	38.8	30.1	122.3	84.5	25.5	
Level of Service	F	C	D	F	C	C	F	D	C	F	F	C	
Approach Delay (s)		42.5			358.9			271.1			85.0		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			180.4									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.82										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			128.4%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	871	101	249	1186	253	3
v/c Ratio	0.01	0.40	0.12	0.49	0.44	0.74	0.01
Control Delay	10.0	10.5	4.7	6.6	5.4	23.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	10.5	4.7	6.6	5.4	23.4	0.0
Queue Length 50th (m)	0.2	37.1	2.3	8.2	32.5	9.6	0.0
Queue Length 95th (m)	1.8	74.2	11.8	23.6	68.0	33.5	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	287	2194	866	529	2671	544	434
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.40	0.12	0.47	0.44	0.47	0.01
<b>Intersection Summary</b>							

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2041) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	801	93	229	1091	0	45	0	188	1	0	2
Future Volume (vph)	3	801	93	229	1091	0	45	0	188	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1799	3438	1320	1685	3505			1465			1685	
Flt Permitted	0.24	1.00	1.00	0.28	1.00			0.93			0.78	
Satd. Flow (perm)	451	3438	1320	497	3505			1378			1340	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	871	101	249	1186	0	49	0	204	1	0	2
RTOR Reduction (vph)	0	0	24	0	0	0	0	180	0	0	3	0
Lane Group Flow (vph)	3	871	77	249	1186	0	0	73	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.8	63.8	63.8	76.2	76.2			11.8				11.8
Effective Green, g (s)	63.8	63.8	63.8	76.2	76.2			11.8				11.8
Actuated g/C Ratio	0.64	0.64	0.64	0.76	0.76			0.12				0.12
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0				6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0				3.0
Lane Grp Cap (vph)	287	2193	842	490	2670			162				158
v/s Ratio Prot		0.25		c0.05	0.34							
v/s Ratio Perm	0.01		0.06	c0.34				c0.05				0.00
v/c Ratio	0.01	0.40	0.09	0.51	0.44			0.45				0.00
Uniform Delay, d1	6.6	8.8	7.0	4.1	4.3			41.1				38.9
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00				1.00
Incremental Delay, d2	0.1	0.5	0.2	0.8	0.5			2.0				0.0
Delay (s)	6.7	9.3	7.2	4.9	4.8			43.1				38.9
Level of Service	A	A	A	A	A			D				D
Approach Delay (s)		9.1			4.8			43.1				38.9
Approach LOS		A			A			D				D
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			78.5%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	347	797	127	351	159	1035	505	299	2054	210
v/c Ratio	0.38	0.86dr	1.53	0.20	0.55	0.70	0.56	0.59	0.93	1.03	0.29
Control Delay	45.7	35.9	281.8	29.7	22.9	39.5	27.8	6.8	58.1	58.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	35.9	281.8	29.7	22.9	39.5	27.8	6.8	58.1	58.5	4.1
Queue Length 50th (m)	11.5	24.4	-121.5	20.0	32.3	19.6	56.8	11.8	31.7	-171.9	0.0
Queue Length 95th (m)	23.7	38.6	#157.9	36.7	73.0	m#46.9	64.0	24.3	#97.0	#202.7	14.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	205	603	520	707	682	228	1851	851	320	2000	720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.58	1.53	0.18	0.51	0.70	0.56	0.59	0.93	1.03	0.29

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

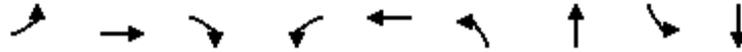
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	82	237	733	117	323	146	952	465	275	1890	193
Future Volume (vph)	56	82	237	733	117	323	146	952	465	275	1890	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3109		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.68	1.00		0.95	1.00	1.00	0.10	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1247	3109		3155	1792	1462	186	4759	1397	356	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	89	258	797	127	351	159	1035	505	299	2054	210
RTOR Reduction (vph)	0	95	0	0	0	112	0	0	309	0	0	127
Lane Group Flow (vph)	61	252	0	797	127	239	159	1035	196	299	2054	83
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Effective Green, g (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Actuated g/C Ratio	0.13	0.13		0.16	0.36	0.36	0.48	0.39	0.39	0.49	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	401		520	643	524	223	1851	543	311	1999	593
v/s Ratio Prot		c0.08		c0.25	0.07		0.06	0.22		c0.09	c0.41	
v/s Ratio Perm	0.05					0.16	0.28		0.14	0.38		0.06
v/c Ratio	0.38	0.86dr		1.53	0.20	0.46	0.71	0.56	0.36	0.96	1.03	0.14
Uniform Delay, d1	39.9	41.3		41.8	22.1	24.6	21.7	23.9	21.7	18.1	30.1	19.3
Progression Factor	1.00	1.00		1.10	1.35	1.64	1.62	1.11	1.95	1.00	1.00	1.00
Incremental Delay, d2	1.5	3.1		248.8	0.1	0.6	8.8	1.0	1.6	40.5	27.5	0.5
Delay (s)	41.4	44.4		294.5	29.9	40.8	43.9	27.6	43.9	58.6	57.7	19.8
Level of Service	D	D		F	C	D	D	C	D	E	E	B
Approach Delay (s)		43.9			198.3			34.0			54.7	
Approach LOS		D			F			C			D	

**Intersection Summary**

HCM 2000 Control Delay	78.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	707	34	3	744	29	18	49	387
v/c Ratio	0.35	0.56	0.03	0.01	0.37	0.40	0.08	0.31	0.75
Control Delay	5.3	7.9	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	8.2	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Length 50th (m)	9.6	50.9	0.3	0.2	32.0	5.6	0.9	9.4	1.5
Queue Length 95th (m)	m19.3	m75.9	m1.5	1.7	59.7	14.0	7.0	19.2	28.7
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	793	1271	1198	481	2025	169	476	359	702
Starvation Cap Reductn	0	176	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.03	0.01	0.37	0.17	0.04	0.14	0.55

Intersection Summary

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

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Future Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	1681	1574	1801	3153		1750	1666		1636	1536	
Flt Permitted	0.33	1.00	1.00	0.40	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	606	1681	1574	752	3153		604	1666		1284	1536	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	707	34	3	708	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	8	0	2	0	0	11	0	0	333	0
Lane Group Flow (vph)	197	707	26	3	742	0	29	7	0	49	54	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Effective Green, g (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	552	1270	1189	482	2024		73	203		156	187	
v/s Ratio Prot	0.03	c0.42			0.24			0.00				0.04
v/s Ratio Perm	0.24		0.02	0.00			c0.05			0.04		
v/c Ratio	0.36	0.56	0.02	0.01	0.37		0.40	0.03		0.31	0.29	
Uniform Delay, d1	3.7	5.1	3.0	6.4	8.4		40.5	38.7		40.1	40.0	
Progression Factor	1.31	1.05	1.45	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.3	0.0	0.0	0.5		3.5	0.1		1.2	0.9	
Delay (s)	5.1	6.7	4.4	6.5	8.9		44.0	38.8		41.2	40.8	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		6.3			8.9			42.0			40.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			88.6%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	769	78	488	225	200	29	27
v/c Ratio	0.69	0.17	0.43	0.67	0.34	0.15	0.06
Control Delay	16.4	9.5	10.8	49.9	1.5	35.9	0.3
Queue Delay	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	9.5	10.8	49.9	1.5	35.9	0.3
Queue Length 50th (m)	114.0	7.1	55.1	46.7	0.0	5.3	0.0
Queue Length 95th (m)	181.5	15.8	85.8	69.0	0.0	12.7	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1121	460	1139	378	609	411	558
Starvation Cap Reductn	233	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.17	0.43	0.60	0.33	0.07	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Future Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1645		1805	1633		1768	1272		1801	1592	
Flt Permitted		0.97		0.35	1.00		0.49	1.00		0.83	1.00	
Satd. Flow (perm)		1599		661	1633		919	1272		1580	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	520	220	78	451	37	225	0	200	29	0	27
RTOR Reduction (vph)	0	8	0	0	2	0	0	169	0	0	26	0
Lane Group Flow (vph)	0	761	0	78	486	0	225	31	0	29	1	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Effective Green, g (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Actuated g/C Ratio		0.68		0.68	0.68		0.22	0.16		0.08	0.04	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1081		447	1104		334	198		132	63	
v/s Ratio Prot					0.30		c0.10	0.02		0.01	0.00	
v/s Ratio Perm		c0.48		0.12			c0.05			0.01		
v/c Ratio		0.70		0.17	0.44		0.67	0.16		0.22	0.02	
Uniform Delay, d1		12.0		7.1	8.9		41.7	43.8		51.8	55.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.8		0.8	1.3		5.3	0.4		0.8	0.1	
Delay (s)		15.8		8.0	10.2		47.0	44.2		52.6	55.4	
Level of Service		B		A	B		D	D		D	E	
Approach Delay (s)		15.8			9.9			45.7			54.0	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			92.2%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Future Volume (Veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	464	286	76	410	12	199	0	266	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	424			751			1179	1184	609	1444	1321	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	424			522			1081	1087	336	1427	1266	420
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			91			0	100	51	81	100	100
cM capacity (veh/h)	1144			807			134	151	543	41	118	467
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	750	498	199	266	9							
Volume Left	0	76	199	0	8							
Volume Right	286	12	0	266	1							
cSH	1144	807	134	543	46							
Volume to Capacity	0.00	0.09	1.49	0.49	0.20							
Queue Length 95th (m)	0.0	2.5	109.0	21.4	5.2							
Control Delay (s)	0.0	2.6	315.0	17.8	101.9							
Lane LOS		A	F	C	F							
Approach Delay (s)	0.0	2.6	145.0		101.9							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			40.4									
Intersection Capacity Utilization			88.2%		ICU Level of Service				E			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Future Volume (Veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	212	12	485	0	10	7	102	49	0	7	103	221
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			497			964	696	254	716	934	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			497			964	696	254	716	934	14
tC, single (s)	4.2			4.1			7.1	6.5	6.2	8.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	4.4	4.0	3.4
p0 queue free %	86			100			7	85	100	96	55	79
cM capacity (veh/h)	1562			1077			110	318	789	194	231	1041
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	709	17	151	331								
Volume Left	212	0	102	7								
Volume Right	485	7	0	221								
cSH	1562	1077	139	477								
Volume to Capacity	0.14	0.00	1.08	0.69								
Queue Length 95th (m)	3.8	0.0	66.3	42.2								
Control Delay (s)	3.3	0.0	163.2	27.9								
Lane LOS	A		F	D								
Approach Delay (s)	3.3	0.0	163.2	27.9								
Approach LOS			F	D								
Intersection Summary												
Average Delay			30.0									
Intersection Capacity Utilization			80.9%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	1581	0	0	3047			
Future Volume (Veh/h)	0	0	1581	0	0	3047			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	1718	0	0	3312			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.70	0.84			0.84				
vC, conflicting volume	2823	574			1719				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	571	0			1194				
iC, single (s)	6.9	7.0			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.4			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	314	898			497				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	573	573	573	0	1104	1104	1104	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.34	0.34	0.34	0.00	0.65	0.65	0.65	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			62.2%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	808	364	1338	1551
v/c Ratio	0.79	0.83	0.50	0.53
Control Delay	37.7	45.1	12.2	12.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.7	45.1	12.2	12.5
Queue Length 50th (m)	75.5	67.1	38.4	55.6
Queue Length 95th (m)	93.6	#104.6	m31.9	m51.6
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1159	495	2701	2938
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	14
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.74	0.50	0.53

**Intersection Summary**

- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	689	389	1231	0	0	1427
Future Volume (vph)	689	389	1231	0	0	1427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.96	1.00	1.00			1.00
Satd. Flow (prot)	3373	1374	4631			5036
Flt Permitted	0.96	1.00	1.00			1.00
Satd. Flow (perm)	3373	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	423	1338	0	0	1551
RTOR Reduction (vph)	6	27	0	0	0	0
Lane Group Flow (vph)	802	337	1338	0	0	1551
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	30.1	30.1	58.3			58.3
Effective Green, g (s)	30.1	30.1	58.3			58.3
Actuated g/C Ratio	0.30	0.30	0.58			0.58
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1015	413	2699			2935
v/s Ratio Prot			0.29			c0.31
v/s Ratio Perm	0.24	c0.25				
v/c Ratio	0.79	0.82	0.50			0.53
Uniform Delay, d1	32.0	32.4	12.2			12.6
Progression Factor	1.00	1.00	0.94			0.94
Incremental Delay, d2	4.2	11.7	0.1			0.1
Delay (s)	36.2	44.1	11.5			11.8
Level of Service	D	D	B			B
Approach Delay (s)	38.7		11.5			11.8
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			104.7%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	617	598	569	1385	670	1630
v/c Ratio	1.11	1.11	1.10	1.32	1.22	0.86
Control Delay	104.5	101.0	98.6	181.6	139.7	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	101.0	98.6	181.6	139.7	23.0
Queue Length 50th (m)	~152.2	~143.9	~129.7	~129.3	~153.2	128.4
Queue Length 95th (m)	#223.6	#219.1	#200.8	#160.0	#222.3	169.8
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	540	518	1049	549	1892
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	1.11	1.10	1.32	1.22	0.86

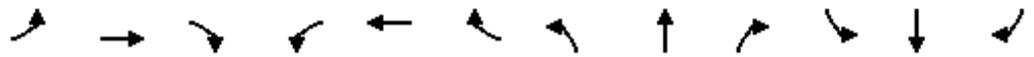
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	860	0	781	0	0	0	0	892	382	616	1500	0	
Future Volume (vph)	860	0	781	0	0	0	0	892	382	616	1500	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.93	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1445	1382					4053		1736	3505		
Flt Permitted	0.95	0.97	1.00					1.00		0.15	1.00		
Satd. Flow (perm)	1618	1445	1382					4053		271	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	935	0	849	0	0	0	0	970	415	670	1630	0	
RTOR Reduction (vph)	0	43	43	0	0	0	0	77	0	0	0	0	
Lane Group Flow (vph)	617	555	526	0	0	0	0	1308	0	670	1630	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Effective Green, g (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Actuated g/C Ratio	0.34	0.34	0.34					0.24		0.54	0.54		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	556	497	475					972		541	1892		
v/s Ratio Prot								0.32		c0.33	0.47		
v/s Ratio Perm	0.38	0.38	0.38							c0.33			
v/c Ratio	1.11	1.12	1.11					1.35		1.24	0.86		
Uniform Delay, d1	32.8	32.8	32.8					38.0		28.2	19.8		
Progression Factor	1.00	1.00	1.00					1.00		1.05	0.90		
Incremental Delay, d2	71.9	76.6	74.1					162.6		119.9	4.5		
Delay (s)	104.7	109.4	106.9					200.6		149.7	22.4		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		107.0			0.0			200.6			59.5		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			110.7									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.23										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			104.7%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	130
Future Volume (Veh/h)	0	0	0	0	0	130
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	141		
Volume Left	0	0	0	0		
Volume Right	0	0	0	141		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.0%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2041) Traffic Analysis - No RIRO  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Future Volume (Veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	153	0	33	0	109	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			306	339	0	432	306	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			306	339	0	432	306	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	79	93	100	100	100
cM capacity (veh/h)	1579			1623			600	528	1085	390	550	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	153	33	181							
Volume Left	0	0	153	0	0							
Volume Right	0	0	0	33	72							
cSH	1700	1700	1623	1700	663							
Volume to Capacity	0.00	0.00	0.09	0.02	0.27							
Queue Length 95th (m)	0.0	0.0	2.5	0.0	8.8							
Control Delay (s)	0.0	0.0	7.4	0.0	12.5							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.1		12.5							
Approach LOS					B							
Intersection Summary												
Average Delay			9.2									
Intersection Capacity Utilization			23.8%		ICU Level of Service				A			
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 13: Street D & Tower 3 Access/Tower 6 Access

Future Total Phase 3 (2041) Traffic Analysis - No RIRO  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Future Volume (Veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	180	0	160	0	208	51	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	827	647	71	627	667	160	91			160		
vC1, stage 1 conf vol	487	487		160	160							
vC2, stage 2 conf vol	340	160		467	507							
vCu, unblocked vol	827	647	71	627	667	160	91			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	100	100	100	80	100			85		
cM capacity (veh/h)	307	433	991	472	440	885	1504			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	180	0	160	208	91						
Volume Left	85	0	0	0	208	0						
Volume Right	0	180	0	0	0	40						
cSH	307	885	1700	1700	1419	1700						
Volume to Capacity	0.28	0.20	0.00	0.09	0.15	0.05						
Queue Length 95th (m)	8.8	6.1	0.0	0.0	4.1	0.0						
Control Delay (s)	21.2	10.1	0.0	0.0	8.0	0.0						
Lane LOS	C	B			A							
Approach Delay (s)	21.2	10.1	0.0		5.5							
Approach LOS	C	B										
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			46.3%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	0	0	17	47	0
Future Volume (Veh/h)	130	0	0	17	47	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	0	0	18	51	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				291	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					282	
vCu, unblocked vol	18				291	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				93	100
cM capacity (veh/h)	1599				680	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	141	0	18	51	0	
Volume Left	141	0	0	51	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	680	1700	
Volume to Capacity	0.09	0.00	0.01	0.07	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	1.9	0.0	
Control Delay (s)	7.5	0.0	0.0	10.7	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.7		
Approach LOS				B		
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	66	0	89	152	0	126
Future Volume (Veh/h)	66	0	89	152	0	126
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	97	165	0	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			72		431	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			72		431	72
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	86
cM capacity (veh/h)			1528		544	990
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	72	262	137			
Volume Left	0	97	0			
Volume Right	0	0	137			
cSH	1700	1528	990			
Volume to Capacity	0.04	0.06	0.14			
Queue Length 95th (m)	0.0	1.6	3.8			
Control Delay (s)	0.0	3.1	9.2			
Lane LOS	A		A			
Approach Delay (s)	0.0	3.1	9.2			
Approach LOS	A		A			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			34.1%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2041) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Future Volume (Veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	51	0	0	208	18	258	0	83	279	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	947	739	279	790	739	258	279			258		
vC1, stage 1 conf vol	445	445		294	294							
vC2, stage 2 conf vol	502	294		496	445							
vCu, unblocked vol	947	739	279	790	739	258	279			258		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	93	100	100	73	99			94		
cM capacity (veh/h)	294	465	760	432	472	781	1284			1307		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	51	0	208	18	258	83	279				
Volume Left	0	0	0	0	18	0	83	0				
Volume Right	0	51	0	208	0	0	0	0				
cSH	1700	760	1700	781	1284	1700	1307	1700				
Volume to Capacity	0.00	0.07	0.00	0.27	0.01	0.15	0.06	0.16				
Queue Length 95th (m)	0.0	1.7	0.0	8.6	0.3	0.0	1.6	0.0				
Control Delay (s)	0.0	10.1	0.0	11.3	7.8	0.0	7.9	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	10.1		11.3		0.5		1.8					
Approach LOS	B		B									
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			38.7%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	0	0	62	63	241
Future Volume (Veh/h)	192	0	0	62	63	241
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	0	0	67	68	262
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	266	199	330			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	199	330			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	71	100	100			
cM capacity (veh/h)	723	842	1229			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	209	67	330			
Volume Left	209	0	0			
Volume Right	0	0	262			
cSH	723	1229	1700			
Volume to Capacity	0.29	0.00	0.19			
Queue Length 95th (m)	9.6	0.0	0.0			
Control Delay (s)	12.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			4.1			
Intersection Capacity Utilization			35.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	69	0	16	175	0
Future Volume (Veh/h)	7	69	0	16	175	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	75	0	17	190	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			83		62	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			83		62	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1514		944	1024
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	83	17	190			
Volume Left	0	0	190			
Volume Right	75	0	0			
cSH	1700	1514	944			
Volume to Capacity	0.05	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	6.0			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			21.0%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.0%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	1203	546	284	840	285	626	1891	502	318	1488	214
v/c Ratio	1.68	1.02	0.83	1.89	0.72	0.43	2.26	1.18	0.82	1.27	0.99	0.36
Control Delay	365.7	70.0	32.5	456.3	39.3	8.5	599.1	126.0	35.9	176.2	62.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	365.7	70.0	32.5	456.3	39.3	8.5	599.1	126.0	35.9	176.2	62.7	7.6
Queue Length 50th (m)	-89.5	~161.0	75.2	~107.7	95.6	8.2	~235.7	~206.0	74.7	-81.5	134.3	3.2
Queue Length 95th (m)	#142.6	#209.3	#139.0	#163.4	119.4	30.4	#309.1	#237.0	#134.8	#140.8	#169.9	21.8
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	148	1185	661	150	1173	666	277	1600	609	251	1504	591
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.68	1.02	0.83	1.89	0.72	0.43	2.26	1.18	0.82	1.27	0.99	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1107	502	261	773	262	576	1740	462	293	1369	197
Future Volume (vph)	228	1107	502	261	773	262	576	1740	462	293	1369	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	203	5136	1531	204	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1203	546	284	840	285	626	1891	502	318	1488	214
RTOR Reduction (vph)	0	0	157	0	0	158	0	0	132	0	0	137
Lane Group Flow (vph)	248	1203	389	284	840	127	626	1891	370	318	1488	77
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Effective Green, g (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Actuated g/C Ratio	0.08	0.33	0.33	0.08	0.33	0.33	0.43	0.31	0.31	0.41	0.30	0.30
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	1185	504	150	1173	507	270	1600	477	245	1504	454
v/s Ratio Prot	0.14	c0.34		c0.16	0.24		c0.27	0.37		0.14	0.30	
v/s Ratio Perm			0.26			0.08	c0.72		0.24	0.39		0.05
v/c Ratio	1.68	1.02	0.77	1.89	0.72	0.25	2.32	1.18	0.78	1.30	0.99	0.17
Uniform Delay, d1	54.9	40.1	36.0	54.9	35.1	29.2	34.5	41.3	37.5	33.7	41.7	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	331.7	30.0	10.9	426.0	3.8	1.2	604.8	88.6	11.7	160.8	20.8	0.8
Delay (s)	386.6	70.1	46.9	480.9	38.9	30.4	639.4	129.9	49.2	194.5	62.5	31.7
Level of Service	F	E	D	F	D	C	F	F	D	F	E	C
Approach Delay (s)		103.1			126.3			222.1			80.0	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			144.0				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.78									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			124.5%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1884	72	196	1239	527	2
v/c Ratio	0.02	1.10	0.11	0.90	0.59	0.99	0.00
Control Delay	14.0	80.6	4.7	62.2	14.4	64.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	80.6	4.7	62.2	14.4	64.0	0.0
Queue Length 50th (m)	0.3	~230.5	0.7	22.7	78.0	80.5	0.0
Queue Length 95th (m)	1.9	#274.8	8.1	#65.4	98.0	#152.8	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	178	1715	680	217	2088	530	515
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.10	0.11	0.90	0.59	0.99	0.00

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1733	66	180	1140	0	34	0	451	0	0	2
Future Volume (vph)	3	1733	66	180	1140	0	34	0	451	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1802	3574	1348	1752	3539			1461			1617	
Flt Permitted	0.20	1.00	1.00	0.08	1.00			0.98			1.00	
Satd. Flow (perm)	372	3574	1348	145	3539			1437			1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1884	72	196	1239	0	37	0	490	0	0	2
RTOR Reduction (vph)	0	0	34	0	0	0	0	114	0	0	1	0
Lane Group Flow (vph)	3	1884	38	196	1239	0	0	413	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Effective Green, g (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59			0.29			0.29	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	178	1715	647	214	2088			416			468	
v/s Ratio Prot		c0.53		c0.07	0.35						0.00	
v/s Ratio Perm	0.01		0.03	0.47				c0.29				
v/c Ratio	0.02	1.10	0.06	0.92	0.59			0.99			0.00	
Uniform Delay, d1	13.6	26.0	13.9	28.0	12.9			35.4			25.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	54.0	0.2	38.7	1.2			42.3			0.0	
Delay (s)	13.8	80.0	14.1	66.7	14.2			77.7			25.2	
Level of Service	B	E	B	E	B			E			C	
Approach Delay (s)		77.4			21.4			77.7			25.2	
Approach LOS		E			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			56.9			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			107.8%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis - No RIRO  
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	461	446	214	588	299	2211	954	430	1195	82
v/c Ratio	0.58	0.74	0.80	0.31	0.85	0.81	1.23	1.07	1.42	0.78	0.14
Control Delay	53.3	31.2	40.1	13.4	22.8	39.4	135.7	55.3	233.2	36.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	10.9	0.1	0.0	0.0
Total Delay	53.3	31.2	40.1	13.4	22.9	39.4	135.7	66.2	233.3	36.2	0.5
Queue Length 50th (m)	18.6	27.9	45.4	33.1	88.8	46.9	~204.2	~77.8	~107.6	83.2	0.0
Queue Length 95th (m)	33.9	42.9	52.2	21.7	126.8	m#61.9	m#235.1	m#130.9	#190.6	101.3	0.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	228	782	595	810	781	371	1792	889	303	1538	594
Starvation Cap Reductn	0	0	0	0	6	0	0	0	0	0	0
Spillback Cap Reductn	0	4	0	0	0	0	0	30	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.59	0.75	0.26	0.76	0.81	1.23	1.11	1.43	0.78	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

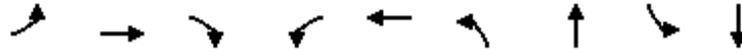
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	180	244	410	197	541	275	2034	878	396	1099	75	
Future Volume (vph)	88	180	244	410	197	541	275	2034	878	396	1099	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1785	3229		3400	1863	1572	1787	5136	1516	1787	4988	1534	
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1173	3229		3400	1863	1572	223	5136	1516	244	4988	1534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	196	265	446	214	588	299	2211	954	430	1195	82	
RTOR Reduction (vph)	0	163	0	0	0	109	0	0	361	0	0	57	
Lane Group Flow (vph)	96	298	0	446	214	479	299	2211	593	430	1195	25	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8	
Effective Green, g (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8	
Actuated g/C Ratio	0.14	0.14		0.16	0.37	0.37	0.50	0.35	0.35	0.43	0.31	0.31	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	458		561	693	584	368	1792	529	294	1536	472	
v/s Ratio Prot		0.09		0.13	0.11		c0.13	0.43		c0.18	0.24		
v/s Ratio Perm	0.08					c0.30	0.27		0.39	c0.45		0.02	
v/c Ratio	0.58	0.65		0.80	0.31	0.82	0.81	1.23	1.12	1.46	0.78	0.05	
Uniform Delay, d1	40.1	40.6		40.1	22.3	28.4	24.0	32.5	32.5	27.2	31.5	24.3	
Progression Factor	1.00	1.00		0.74	0.58	0.59	1.47	0.90	0.79	1.00	1.00	1.00	
Incremental Delay, d2	4.8	3.3		6.9	0.2	8.2	5.4	107.2	65.0	226.0	4.0	0.2	
Delay (s)	44.9	43.9		36.8	13.1	24.9	40.6	136.6	90.7	253.2	35.4	24.6	
Level of Service	D	D		D	B	C	D	F	F	F	D	C	
Approach Delay (s)		44.0			27.1			115.7			89.8		
Approach LOS		D			C			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			87.8		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			108.2%		ICU Level of Service						G		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	1128	43	13	918	49	73	98	273
v/c Ratio	0.65	0.83	0.04	0.07	0.57	0.66	0.28	0.58	0.63
Control Delay	10.2	6.8	0.4	19.7	22.1	79.4	18.7	53.3	12.9
Queue Delay	0.0	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	30.9	0.4	19.7	22.1	79.4	18.7	53.3	12.9
Queue Length 50th (m)	20.8	52.6	0.3	1.4	66.6	9.7	4.2	19.1	2.6
Queue Length 95th (m)	m21.1	m56.1	m0.3	6.2	105.6	21.8	16.1	34.1	25.0
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	657	1365	1157	195	1623	181	567	418	684
Starvation Cap Reductn	0	278	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.04	0.04	0.07	0.57	0.27	0.13	0.23	0.40

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Future Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1827	1537	1796	3491		1770	1669		1752	1588	
Flt Permitted	0.21	1.00	1.00	0.22	1.00		0.31	1.00		0.71	1.00	
Satd. Flow (perm)	389	1827	1537	419	3491		569	1669		1308	1588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	1128	43	13	841	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	8	0	6	0	0	43	0	0	225	0
Lane Group Flow (vph)	430	1128	35	13	912	0	49	30	0	98	48	0
Confl. Peds. (#/hr)	5		11	11		5			4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Effective Green, g (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Actuated g/C Ratio	0.75	0.75	0.75	0.46	0.46		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	645	1364	1148	193	1616		74	218		171	208	
v/s Ratio Prot	0.17	c0.62			0.26			0.02				0.03
v/s Ratio Perm	0.33		0.02	0.03			c0.09			0.07		
v/c Ratio	0.67	0.83	0.03	0.07	0.56		0.66	0.14		0.57	0.23	
Uniform Delay, d1	10.7	8.4	3.3	14.9	19.5		41.3	38.4		40.8	38.9	
Progression Factor	1.15	0.53	0.18	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.0	0.7	1.4		20.0	0.3		4.6	0.6	
Delay (s)	12.5	5.0	0.6	15.6	21.0		61.4	38.7		45.4	39.5	
Level of Service	B	A	A	B	C		E	D		D	D	
Approach Delay (s)		6.9			20.9			47.8			41.1	
Approach LOS		A			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			114.0%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1368	86	592	351	203	89	60
v/c Ratio	1.24	0.40	0.50	0.88	0.47	0.38	0.16
Control Delay	137.3	18.3	13.2	62.5	5.9	38.3	0.9
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.6	18.3	13.2	62.5	5.9	38.3	0.9
Queue Length 50th (m)	~431.3	10.1	74.5	76.2	0.0	16.3	0.0
Queue Length 95th (m)	#516.8	24.8	104.0	#125.9	9.6	29.9	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1106	214	1190	402	460	411	498
Starvation Cap Reductn	73	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.40	0.50	0.87	0.44	0.22	0.12

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55
Future Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.97		1.00	0.98		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738		1805	1830		1770	1511		1791	1615	
Flt Permitted		0.98		0.17	1.00		0.47	1.00		0.63	1.00	
Satd. Flow (perm)		1697		331	1830		882	1511		1189	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	1001	333	86	497	95	351	0	203	89	0	60
RTOR Reduction (vph)	0	8	0	0	4	0	0	173	0	0	57	0
Lane Group Flow (vph)	0	1360	0	86	588	0	351	30	0	89	3	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4	
Effective Green, g (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4	
Actuated g/C Ratio		0.64		0.64	0.64		0.26	0.15		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1083		211	1168		388	226		211	86	
v/s Ratio Prot					0.32		c0.16	0.02		0.03	0.00	
v/s Ratio Perm		c0.80		0.26			c0.07			0.02		
v/c Ratio		1.26		0.41	0.50		0.90	0.13		0.42	0.04	
Uniform Delay, d1		21.7		10.6	11.6		41.1	44.2		47.1	53.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		122.9		5.7	1.5		23.8	0.3		1.4	0.2	
Delay (s)		144.6		16.4	13.1		64.9	44.5		48.5	54.1	
Level of Service		F		B	B		E	D		D	D	
Approach Delay (s)		144.6			13.5			57.4			50.7	
Approach LOS		F			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			89.6				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.19									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			131.1%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

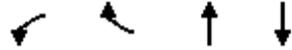
6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Future Volume (Veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	802	482	97	491	9	211	0	198	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.33			0.33	0.33	0.33	0.33	0.33	0.33
vC, conflicting volume	504			1285			1744	1752	1044	1944	1988	500
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			858			2230	2253	138	2828	2959	500
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			63			0	100	35	0	100	100
cM capacity (veh/h)	1067			265			7	9	306	1	3	572
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1289	597	211	198	12							
Volume Left	5	97	211	0	12							
Volume Right	482	9	0	198	0							
cSH	1067	265	7	306	1							
Volume to Capacity	0.00	0.37	28.91	0.65	12.52							
Queue Length 95th (m)	0.1	12.9	Err	33.5	Err							
Control Delay (s)	0.2	15.7	Err	35.9	Err							
Lane LOS	A	C	F	E	F							
Approach Delay (s)	0.2	15.7	5175.8		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			973.8									
Intersection Capacity Utilization			110.9%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Future Volume (Veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	3	397	2	8	3	179	104	0	2	38	221
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	622	614	150	1014	725	104	259			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	614	150	1014	725	104	259			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	56	98	97	100	86			100		
cM capacity (veh/h)	344	260	902	109	230	873	1317			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	750	13	283	261								
Volume Left	350	2	179	2								
Volume Right	397	3	0	221								
cSH	511	229	1317	1048								
Volume to Capacity	1.47	0.06	0.14	0.00								
Queue Length 95th (m)	299.3	1.4	3.8	0.0								
Control Delay (s)	243.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	243.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			140.9									
Intersection Capacity Utilization			85.8%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	3309	0	0	1898			
Future Volume (Veh/h)	0	0	3309	0	0	1898			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	3597	0	0	2063			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.55	0.45			0.45				
vC, conflicting volume	4285	1199			3597				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1561	0			2493				
tC, single (s)	6.8	6.9			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	58	491			84				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	1199	1199	1199	0	688	688	688	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.71	0.71	0.71	0.00	0.40	0.40	0.40	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0					0.0		
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			67.3%	ICU Level of Service	C				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	684	358	2912	918
v/c Ratio	0.87	0.96	0.92	0.29
Control Delay	48.4	74.8	19.5	13.5
Queue Delay	0.0	0.0	29.0	0.0
Total Delay	48.4	74.8	48.5	13.5
Queue Length 50th (m)	68.5	78.6	110.2	40.7
Queue Length 95th (m)	#99.0	#142.5	m68.3	53.0
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	796	378	3176	3146
Starvation Cap Reductn	0	0	433	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.95	1.06	0.29

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	300	659	2679	0	0	845
Future Volume (vph)	300	659	2679	0	0	845
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3039	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3039	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	716	2912	0	0	918
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	683	357	2912	0	0	918
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	25.9	25.9	62.5			62.5
Effective Green, g (s)	25.9	25.9	62.5			62.5
Actuated g/C Ratio	0.26	0.26	0.62			0.62
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	787	373	3178			3147
v/s Ratio Prot			c0.57			0.18
v/s Ratio Perm	0.22	c0.25				
v/c Ratio	0.87	0.96	0.92			0.29
Uniform Delay, d1	35.4	36.5	16.5			8.6
Progression Factor	1.00	1.00	1.11			1.53
Incremental Delay, d2	10.0	35.3	0.6			0.2
Delay (s)	45.4	71.8	18.9			13.3
Level of Service	D	E	B			B
Approach Delay (s)	54.5		18.9			13.3
Approach LOS	D		B			B

Intersection Summary			
HCM 2000 Control Delay		25.4	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio		0.93	
Actuated Cycle Length (s)		100.0	Sum of lost time (s) 11.6
Intersection Capacity Utilization		129.6%	ICU Level of Service H
Analysis Period (min)		15	

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	999	988	576	2370	353	910
v/c Ratio	1.76	1.84	1.10	1.45	0.87	0.51
Control Delay	375.5	409.8	95.4	232.4	51.8	8.6
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	375.5	409.8	95.4	232.9	51.8	8.6
Queue Length 50th (m)	~321.4	~341.0	~122.5	~248.2	55.0	36.6
Queue Length 95th (m)	#402.8	#427.3	#194.1	#285.3	m#84.0	m37.0
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	537	525	1638	458	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	198	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.76	1.84	1.10	1.65	0.77	0.51

**Intersection Summary**

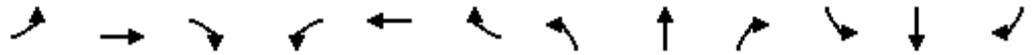
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1767	2	589	0	0	0	0	1727	454	325	837	0	
Future Volume (vph)	1767	2	589	0	0	0	0	1727	454	325	837	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1602	1334					4758		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00		
Satd. Flow (perm)	1698	1602	1334					4758		202	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1921	2	640	0	0	0	0	1877	493	353	910	0	
RTOR Reduction (vph)	0	3	80	0	0	0	0	45	0	0	0	0	
Lane Group Flow (vph)	999	985	496	0	0	0	0	2325	0	353	910	0	
Confl. Peds. (#/hr)							5		7	7		5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					33.5		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					33.5		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.34		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	535	445					1593		397	1772		
v/s Ratio Prot								c0.49		c0.16	0.28		
v/s Ratio Perm	0.59	0.62	0.37							0.32			
v/c Ratio	1.76	1.84	1.11					1.46		0.89	0.51		
Uniform Delay, d1	33.3	33.3	33.3					33.2		28.0	14.1		
Progression Factor	1.00	1.00	1.00					1.00		1.34	0.53		
Incremental Delay, d2	350.0	386.0	77.8					210.2		19.4	1.0		
Delay (s)	383.3	419.3	111.1					243.5		56.9	8.5		
Level of Service	F	F	F					F		E	A		
Approach Delay (s)		336.0			0.0			243.5			22.0		
Approach LOS		F			A			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			236.6									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.49										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			129.6%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	105
Future Volume (Veh/h)	0	0	0	0	0	105
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	114
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	114		
Volume Left	0	0	0	0		
Volume Right	0	0	0	114		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.11		
Queue Length 95th (m)	0.0	0.0	0.0	2.8		
Control Delay (s)	0.0	0.0	0.0	8.7		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			16.5%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2041) Traffic Analysis - No RIRO  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Future Volume (Veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	167	0	24	0	90	68	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	24			0			334	358	0	447	334	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24			0			334	358	0	447	334	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	82	94	100	100	100
cM capacity (veh/h)	1591			1623			571	510	1085	390	526	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	167	24	158							
Volume Left	0	0	167	0	0							
Volume Right	0	0	0	24	68							
cSH	1700	1700	1623	1700	661							
Volume to Capacity	0.00	0.00	0.10	0.01	0.24							
Queue Length 95th (m)	0.0	0.0	2.7	0.0	7.4							
Control Delay (s)	0.0	0.0	7.5	0.0	12.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.5		12.2							
Approach LOS					B							
Intersection Summary												
Average Delay			9.1									
Intersection Capacity Utilization			23.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Future Volume (Veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	0	0	0	0	359	0	133	0	338	17	63
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	1216	858	48	826	889	133	80			133		
vC1, stage 1 conf vol	724	724		133	133							
vC2, stage 2 conf vol	492	133		693	756							
vCu, unblocked vol	1216	858	48	826	889	133	80			133		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	19	100	100	100	100	61	100			77		
cM capacity (veh/h)	79	309	1020	323	309	916	1518			1452		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	64	359	0	133	338	80						
Volume Left	64	0	0	0	338	0						
Volume Right	0	359	0	0	0	63						
cSH	79	916	1700	1700	1452	1700						
Volume to Capacity	0.81	0.39	0.00	0.08	0.23	0.05						
Queue Length 95th (m)	32.5	15.1	0.0	0.0	7.2	0.0						
Control Delay (s)	144.7	11.4	0.0	0.0	8.2	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	144.7	11.4	0.0		6.7							
Approach LOS	F	B										
Intersection Summary												
Average Delay			16.6									
Intersection Capacity Utilization			60.8%		ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	0	0	17	16	0
Future Volume (Veh/h)	105	0	0	17	16	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	0	0	18	17	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				237	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					228	
vCu, unblocked vol	18				237	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				98	100
cM capacity (veh/h)	1599				733	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	114	0	18	17	0	
Volume Left	114	0	0	17	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	733	1700	
Volume to Capacity	0.07	0.00	0.01	0.02	0.00	
Queue Length 95th (m)	1.8	0.0	0.0	0.6	0.0	
Control Delay (s)	7.4	0.0	0.0	10.0	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.4		0.0	10.0		
Approach LOS				B		
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			22.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	63	0	152	166	0	131
Future Volume (Veh/h)	63	0	152	166	0	131
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	0	165	180	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			68		578	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		578	68
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		100	86
cM capacity (veh/h)			1533		426	995
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	345	142			
Volume Left	0	165	0			
Volume Right	0	0	142			
cSH	1700	1533	995			
Volume to Capacity	0.04	0.11	0.14			
Queue Length 95th (m)	0.0	2.9	4.0			
Control Delay (s)	0.0	4.1	9.2			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.1	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			38.6%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2041) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Future Volume (Veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	17	0	0	149	18	260	0	121	458	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1145	996	458	1013	996	260	458			260		
vC1, stage 1 conf vol	700	700		296	296							
vC2, stage 2 conf vol	445	296		717	700							
vCu, unblocked vol	1145	996	458	1013	996	260	458			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	81	98			91		
cM capacity (veh/h)	282	360	603	334	359	779	1103			1304		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	17	0	149	18	260	121	458				
Volume Left	0	0	0	0	18	0	121	0				
Volume Right	0	17	0	149	0	0	0	0				
cSH	1700	603	1700	779	1103	1700	1304	1700				
Volume to Capacity	0.00	0.03	0.00	0.19	0.02	0.15	0.09	0.27				
Queue Length 95th (m)	0.0	0.7	0.0	5.6	0.4	0.0	2.4	0.0				
Control Delay (s)	0.0	11.1	0.0	10.7	8.3	0.0	8.0	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.1		10.7		0.5		1.7					
Approach LOS	B		B									
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			44.0%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	0	0	62	119	318
Future Volume (Veh/h)	194	0	0	62	119	318
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	0	0	67	129	346
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	369	302	475			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	369	302	475			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	100	100			
cM capacity (veh/h)	631	738	1087			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	211	67	475			
Volume Left	211	0	0			
Volume Right	0	0	346			
cSH	631	1087	1700			
Volume to Capacity	0.33	0.00	0.28			
Queue Length 95th (m)	11.7	0.0	0.0			
Control Delay (s)	13.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			43.2%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	100	0	10	127	0
Future Volume (Veh/h)	11	100	0	10	127	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	109	0	11	138	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			121		78	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		78	66
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	100
cM capacity (veh/h)			1467		925	997
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	121	11	138			
Volume Left	0	0	138			
Volume Right	109	0	0			
cSH	1700	1467	925			
Volume to Capacity	0.07	0.00	0.15			
Queue Length 95th (m)	0.0	0.0	4.2			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.5%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume				0	0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				0	0	0
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				100	100	100
cM capacity (veh/h)				1623	1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay				0.0		
Intersection Capacity Utilization				16.5%	ICU Level of Service	A
Analysis Period (min)				15		

1755 Pickering Pkwy TIS  
 1: Brock Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis - No RIRO  
 SAT Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	867	658	292	930	264	539	1526	432	253	1330	193
v/c Ratio	1.74	0.70	1.03	2.61	0.75	0.40	2.60	0.88	0.69	1.23	0.77	0.31
Control Delay	399.4	34.7	70.7	766.5	50.5	25.9	752.8	41.8	25.0	164.3	36.3	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	399.4	34.7	70.7	766.5	50.5	25.9	752.8	41.8	25.0	164.3	36.3	7.9
Queue Length 50th (m)	-65.5	88.2	-132.2	-112.6	117.6	33.5	-189.4	118.4	51.2	-52.7	97.9	5.2
Queue Length 95th (m)	#111.7	111.6	#204.7	#167.9	139.1	64.5	#257.5	139.1	89.5	#105.5	116.2	21.8
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	639	112	1237	652	207	1727	629	205	1727	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.74	0.70	1.03	2.61	0.75	0.40	2.60	0.88	0.69	1.23	0.77	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	179	798	605	269	856	243	496	1404	397	233	1224	178	
Future Volume (vph)	179	798	605	269	856	243	496	1404	397	233	1224	178	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1805	5136	1537	1787	5136	1549	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	205	5136	1537	203	5136	1549	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	195	867	658	292	930	264	539	1526	432	253	1330	193	
RTOR Reduction (vph)	0	0	112	0	0	112	0	0	113	0	0	106	
Lane Group Flow (vph)	195	867	546	292	930	152	539	1526	319	253	1330	87	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0	
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0	
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	112	1237	528	112	1237	540	200	1727	516	198	1727	521	
v/s Ratio Prot	0.11	0.24		c0.16	0.26		c0.20	0.30		0.09	0.26		
v/s Ratio Perm			c0.36			0.10	c0.90		0.21	0.43		0.06	
v/c Ratio	1.74	0.70	1.03	2.61	0.75	0.28	2.69	0.88	0.62	1.28	0.77	0.17	
Uniform Delay, d1	51.5	31.0	36.0	51.5	31.8	26.0	25.2	34.5	30.6	26.2	32.7	25.7	
Progression Factor	1.00	1.00	1.00	0.87	1.45	2.46	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	367.7	3.3	48.4	745.8	3.8	1.2	776.8	7.0	5.5	158.1	3.4	0.7	
Delay (s)	419.3	34.4	84.3	790.4	50.0	65.2	802.0	41.4	36.1	184.2	36.1	26.4	
Level of Service	F	C	F	F	D	E	F	D	D	F	D	C	
Approach Delay (s)		97.1			198.2			204.7			56.1		
Approach LOS		F			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			143.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.98										
Actuated Cycle Length (s)			110.0		Sum of lost time (s)						20.0		
Intersection Capacity Utilization			119.9%		ICU Level of Service						H		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1440	123	277	1327	356	2
v/c Ratio	0.03	0.77	0.15	0.76	0.53	0.85	0.01
Control Delay	22.6	36.1	15.8	40.3	9.4	42.2	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	36.1	15.8	40.3	9.4	42.2	31.5
Queue Length 50th (m)	0.8	158.8	10.2	38.8	65.7	45.4	0.4
Queue Length 95th (m)	m1.1	m179.0	m15.6	#113.7	106.9	74.7	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	172	1877	839	364	2526	536	413
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.77	0.15	0.76	0.53	0.66	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2041) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1325	113	255	1221	0	15	2	311	1	1	0
Future Volume (vph)	5	1325	113	255	1221	0	15	2	311	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1606			1851	
Flt Permitted	0.21	1.00	1.00	0.08	1.00			0.99			0.82	
Satd. Flow (perm)	327	3574	1544	149	3574			1590			1557	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1440	123	277	1327	0	16	2	338	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	127	0	0	0	0
Lane Group Flow (vph)	5	1440	95	277	1327	0	0	229	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.8	57.8	57.8	77.8	77.8			20.2			20.2	
Effective Green, g (s)	57.8	57.8	57.8	77.8	77.8			20.2			20.2	
Actuated g/C Ratio	0.53	0.53	0.53	0.71	0.71			0.18			0.18	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	171	1877	811	361	2527			291			285	
v/s Ratio Prot		0.40		c0.12	0.37							
v/s Ratio Perm	0.02		0.06	c0.42				c0.14			0.00	
v/c Ratio	0.03	0.77	0.12	0.77	0.53			0.79			0.01	
Uniform Delay, d1	12.6	20.8	13.2	28.9	7.5			42.9			36.7	
Progression Factor	1.72	1.62	2.15	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.9	0.2	9.4	0.8			13.2			0.0	
Delay (s)	21.8	35.4	28.6	38.3	8.3			56.1			36.7	
Level of Service	C	D	C	D	A			E			D	
Approach Delay (s)		34.9			13.5			56.1			36.7	
Approach LOS		C			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.3			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			86.8%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis - No RIRO  
 SAT Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	403	672	211	684	253	1301	827	528	972	99
v/c Ratio	0.58	0.66	0.91	0.27	0.93	0.75	0.73	0.87	2.22	0.61	0.16
Control Delay	55.5	24.5	49.5	16.1	30.7	28.8	25.0	15.7	579.1	32.5	0.6
Queue Delay	0.0	0.1	0.0	0.0	1.1	0.0	0.0	3.6	0.5	0.0	0.0
Total Delay	55.5	24.5	49.5	16.1	31.9	28.8	25.0	19.3	579.7	32.5	0.6
Queue Length 50th (m)	16.8	18.7	73.9	29.1	88.4	20.1	83.0	65.6	~173.0	65.4	0.0
Queue Length 95th (m)	33.3	34.5	m#95.1	m38.5	m#158.8	#57.3	92.1	#135.8	#239.3	81.1	0.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	181	682	745	826	772	359	1792	951	238	1581	604
Starvation Cap Reductn	0	0	0	0	18	0	0	0	0	0	0
Spillback Cap Reductn	0	10	0	0	0	0	0	68	9	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.60	0.90	0.26	0.91	0.70	0.73	0.94	2.31	0.61	0.16

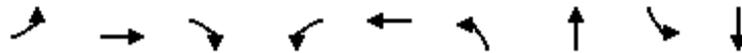
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2041) Traffic Analysis - No RIRO  
SAT Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	165	206	618	194	629	233	1197	761	486	894	91	
Future Volume (vph)	82	165	206	618	194	629	233	1197	761	486	894	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1774	3251		3467	1900	1544	1787	5136	1571	1805	5136	1570	
Flt Permitted	0.63	1.00		0.95	1.00	1.00	0.17	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1169	3251		3467	1900	1544	312	5136	1571	247	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	179	224	672	211	684	253	1301	827	528	972	99	
RTOR Reduction (vph)	0	183	0	0	0	105	0	0	403	0	0	69	
Lane Group Flow (vph)	89	220	0	672	211	579	253	1301	424	528	972	30	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	13.1	13.1		21.2	40.8	40.8	46.6	34.9	34.9	39.5	30.8	30.8	
Effective Green, g (s)	13.1	13.1		21.2	40.8	40.8	46.6	34.9	34.9	39.5	30.8	30.8	
Actuated g/C Ratio	0.13	0.13		0.21	0.41	0.41	0.47	0.35	0.35	0.40	0.31	0.31	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	153	425		735	775	629	334	1792	548	233	1581	483	
v/s Ratio Prot		0.07		0.19	0.11		c0.10	0.25		c0.20	0.19		
v/s Ratio Perm	0.08					c0.37	0.26		0.27	c0.70		0.02	
v/c Ratio	0.58	0.52		0.91	0.27	0.92	0.76	0.73	0.77	2.27	0.61	0.06	
Uniform Delay, d1	40.9	40.5		38.5	19.7	28.1	18.5	28.4	29.0	23.4	29.5	24.4	
Progression Factor	1.00	1.00		0.96	0.81	0.80	0.98	0.80	0.79	1.00	1.00	1.00	
Incremental Delay, d2	5.5	1.1		10.3	0.1	12.2	7.7	2.1	8.3	583.2	1.8	0.3	
Delay (s)	46.4	41.6		47.3	16.1	34.7	25.8	24.8	31.4	606.7	31.3	24.7	
Level of Service	D	D		D	B	C	C	C	C	F	C	C	
Approach Delay (s)		42.4			37.6			27.2			220.9		
Approach LOS		D			D			C			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			82.4		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.67										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			103.4%		ICU Level of Service						G		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	1002	64	34	958	112	102	128	624
v/c Ratio	1.37	1.00	0.08	0.45	0.70	1.47	0.17	0.29	0.84
Control Delay	193.8	24.2	3.0	45.1	28.6	300.5	13.1	26.5	26.9
Queue Delay	0.0	35.4	0.0	0.0	0.0	1.5	0.0	0.0	1.5
Total Delay	193.8	59.6	3.0	45.1	28.6	302.1	13.1	26.5	28.4
Queue Length 50th (m)	~102.4	~149.5	0.3	5.1	83.5	~31.6	6.9	18.9	63.5
Queue Length 95th (m)	m#87.4	m129.2	m0.4	#19.2	106.8	#66.6	18.7	34.5	#131.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	345	1002	848	76	1365	76	618	440	746
Starvation Cap Reductn	0	118	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	4	0	0	35
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	1.13	0.08	0.45	0.70	1.56	0.17	0.29	0.88

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Future Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1549	1805	3492		1805	1718		1783	1608	
Flt Permitted	0.15	1.00	1.00	0.10	1.00		0.12	1.00		0.69	1.00	
Satd. Flow (perm)	288	1863	1549	196	3492		224	1718		1297	1608	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	1002	64	34	838	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	15	0	11	0	0	34	0	0	199	0
Lane Group Flow (vph)	471	1002	49	34	947	0	112	68	0	128	425	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Effective Green, g (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.39	0.39		0.34	0.34		0.34	0.34	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	1002	833	76	1354		76	584		440	546	
v/s Ratio Prot	c0.17	0.54			0.27			0.04			0.26	
v/s Ratio Perm	c0.58		0.03	0.17			c0.50			0.10		
v/c Ratio	1.40	1.00	0.06	0.45	0.70		1.47	0.12		0.29	0.78	
Uniform Delay, d1	21.5	23.1	11.0	22.7	25.7		33.0	22.7		24.2	29.6	
Progression Factor	1.76	0.57	0.46	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	182.5	8.5	0.0	17.9	3.0		271.1	0.1		0.4	6.9	
Delay (s)	220.4	21.7	5.1	40.5	28.7		304.1	22.8		24.5	36.5	
Level of Service	F	C	A	D	C		F	C		C	D	
Approach Delay (s)		81.9			29.1			170.0			34.5	
Approach LOS		F			C			F			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			62.1			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			1.47									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			127.6%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1235	101	647	411	239	100	86
v/c Ratio	1.18	0.51	0.60	0.83	0.42	0.43	0.25
Control Delay	115.9	27.9	18.9	49.9	2.5	35.8	1.7
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.4	27.9	18.9	49.9	2.5	35.8	1.7
Queue Length 50th (m)	~382.8	15.1	101.8	83.5	0.0	16.6	0.0
Queue Length 95th (m)	#468.9	37.9	143.1	118.8	0.0	29.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1047	198	1082	522	587	519	472
Starvation Cap Reductn	102	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.51	0.60	0.79	0.41	0.19	0.18

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Future Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.95		1.00	0.96		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761		1736	1796		1800	1551		1754	1583	
Flt Permitted		0.98		0.18	1.00		0.46	1.00		0.62	1.00	
Satd. Flow (perm)		1732		332	1796		877	1551		1154	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	793	420	101	477	170	411	0	239	100	0	86
RTOR Reduction (vph)	0	12	0	0	8	0	0	192	0	0	81	0
Lane Group Flow (vph)	0	1223	0	101	639	0	411	47	0	100	5	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Effective Green, g (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Actuated g/C Ratio		0.59		0.59	0.59		0.31	0.20		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1018		195	1056		483	306		210	84	
v/s Ratio Prot					0.36		c0.19	0.03		0.04	0.00	
v/s Ratio Perm		c0.71		0.30			c0.07			0.03		
v/c Ratio		1.20		0.52	0.60		0.85	0.15		0.48	0.05	
Uniform Delay, d1		24.7		14.6	15.8		37.1	39.9		47.2	53.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		100.2		9.5	2.6		13.5	0.2		1.7	0.3	
Delay (s)		124.9		24.1	18.4		50.5	40.1		48.9	54.2	
Level of Service		F		C	B		D	D		D	D	
Approach Delay (s)		124.9			19.1			46.7			51.4	
Approach LOS		F			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			73.9				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			121.0%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

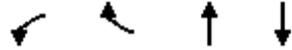
6: Street E/Walmart East Access & Pickering Pkwy

SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Future Volume (Veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	598	532	103	527	30	255	0	260	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.39			0.39	0.39	0.39	0.39	0.39	
vC, conflicting volume	557			1130			1635	1647	866	1894	1898	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	557			558			1844	1874	0	2504	2514	544
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			74			0	100	39	0	100	100
cM capacity (veh/h)	938			402			18	21	428	2	8	542
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1140	660	255	260	28							
Volume Left	10	103	255	0	27							
Volume Right	532	30	0	260	1							
cSH	938	402	18	428	2							
Volume to Capacity	0.01	0.26	14.05	0.61	11.23							
Queue Length 95th (m)	0.3	8.1	Err	31.4	Err							
Control Delay (s)	0.4	8.1	Err	25.6	Err							
Lane LOS	A	A	F	D	F							
Approach Delay (s)	0.4	8.1	4963.9		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			1213.0									
Intersection Capacity Utilization			121.7%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Future Volume (Veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	232	1	516	0	0	0	248	49	0	0	82	261
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	760	758	212	1274	888	52	343			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	758	212	1274	888	52	343			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	99	38	100	100	100	80			100		
cM capacity (veh/h)	270	194	833	47	227	1019	1227			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	749	0	297	343								
Volume Left	232	0	248	0								
Volume Right	516	0	0	261								
cSH	505	1700	1227	1571								
Volume to Capacity	1.48	0.06	0.20	0.00								
Queue Length 95th (m)	303.1	0.0	6.0	0.0								
Control Delay (s)	249.4	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	249.4	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			136.1									
Intersection Capacity Utilization			88.9%	ICU Level of Service	E							
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	2329	0	0	1921			
Future Volume (Veh/h)	0	0	2329	0	0	1921			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	2532	0	0	2088			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.84	0.77			0.77				
vC, conflicting volume	3231	847			2535				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1772	0			1939				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	64	835			235				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	844	844	844	0	696	696	696	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.50	0.50	0.50	0.00	0.41	0.41	0.41	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			48.3%		ICU Level of Service			A	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	550	336	1900	804
v/c Ratio	0.62	0.83	0.61	0.26
Control Delay	33.5	49.6	18.1	16.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.5	49.6	18.1	16.1
Queue Length 50th (m)	48.7	67.6	93.8	40.0
Queue Length 95th (m)	60.6	97.8	m82.5	m58.9
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1109	503	3126	3126
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.67	0.61	0.26

**Intersection Summary**

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	  	 	  			  
Traffic Volume (vph)	197	618	1748	0	0	740
Future Volume (vph)	197	618	1748	0	0	740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3227	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3227	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	672	1900	0	0	804
RTOR Reduction (vph)	7	7	0	0	0	0
Lane Group Flow (vph)	543	329	1900	0	0	804
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	27.5	27.5	60.9			60.9
Effective Green, g (s)	27.5	27.5	60.9			60.9
Actuated g/C Ratio	0.28	0.28	0.61			0.61
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	887	400	3127			3127
v/s Ratio Prot			c0.37			0.16
v/s Ratio Perm	0.17	c0.23				
v/c Ratio	0.61	0.82	0.61			0.26
Uniform Delay, d1	31.6	34.0	12.1			9.1
Progression Factor	1.00	1.00	1.37			1.62
Incremental Delay, d2	1.3	12.9	0.1			0.2
Delay (s)	32.9	46.9	16.7			14.8
Level of Service	C	D	B			B
Approach Delay (s)	38.2		16.7			14.8
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			107.6%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	784	778	490	1329	537	507
v/c Ratio	1.38	1.34	0.69	0.87	1.13	0.26
Control Delay	212.4	190.8	14.9	38.5	122.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	212.4	190.8	14.9	38.5	122.1	4.0
Queue Length 50th (m)	~224.8	~219.6	27.1	88.2	~114.8	8.6
Queue Length 95th (m)	#301.2	#301.0	69.0	107.7	#181.2	11.1
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	582	707	1522	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.38	1.34	0.69	0.87	1.13	0.26

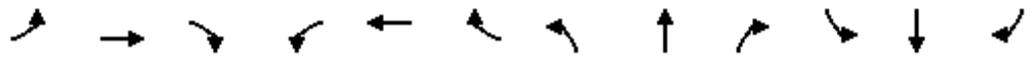
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1386	0	501	0	0	0	0	903	319	494	466	0	
Future Volume (vph)	1386	0	501	0	0	0	0	903	319	494	466	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1614	1461					4863		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1614	1461					4863		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1507	0	545	0	0	0	0	982	347	537	507	0	
RTOR Reduction (vph)	0	43	220	0	0	0	0	64	0	0	0	0	
Lane Group Flow (vph)	784	735	270	0	0	0	0	1265	0	537	507	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	539	487					1458		468	1965		
v/s Ratio Prot								0.26		c0.25	0.14		
v/s Ratio Perm	c0.46	0.46	0.18							c0.38			
v/c Ratio	1.38	1.36	0.55					0.87		1.15	0.26		
Uniform Delay, d1	33.3	33.3	27.2					33.1		29.2	11.8		
Progression Factor	1.00	1.00	1.00					1.00		1.68	0.31		
Incremental Delay, d2	183.0	175.1	1.4					7.2		88.2	0.3		
Delay (s)	216.3	208.4	28.6					40.4		137.2	3.9		
Level of Service	F	F	C					D		F	A		
Approach Delay (s)		168.5			0.0			40.4			72.5		
Approach LOS		F			A			D			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			107.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.27										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			107.6%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Volume (veh/h)	0	0	0	0	0	131
Future Volume (Veh/h)	0	0	0	0	0	131
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	142		
Volume Left	0	0	0	0		
Volume Right	0	0	0	142		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.1%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2041) Traffic Analysis - No RIRO  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Future Volume (Veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	190	0	33	0	110	85	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			380	413	0	520	380	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			380	413	0	520	380	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			100	76	92	100	100	100
cM capacity (veh/h)	1579			1623			526	467	1085	322	488	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	190	33	195							
Volume Left	0	0	190	0	0							
Volume Right	0	0	0	33	85							
cSH	1700	1700	1623	1700	622							
Volume to Capacity	0.00	0.00	0.12	0.02	0.31							
Queue Length 95th (m)	0.0	0.0	3.2	0.0	10.7							
Control Delay (s)	0.0	0.0	7.5	0.0	13.4							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.4		13.4							
Approach LOS					B							
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			26.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Future Volume (Veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	411	0	160	0	387	22	72
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)												61
pX, platoon unblocked												
vC, conflicting volume	1403	992	58	956	1028	160	94			160		
vC1, stage 1 conf vol	832	832		160	160							
vC2, stage 2 conf vol	571	160		796	868							
vCu, unblocked vol	1403	992	58	956	1028	160	94			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	100	100	54	100			73		
cM capacity (veh/h)	50	259	1008	269	260	885	1500			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	411	0	160	387	94						
Volume Left	85	0	0	0	387	0						
Volume Right	0	411	0	0	0	72						
cSH	50	885	1700	1700	1419	1700						
Volume to Capacity	1.71	0.46	0.00	0.09	0.27	0.06						
Queue Length 95th (m)	66.2	20.0	0.0	0.0	8.9	0.0						
Control Delay (s)	524.5	12.5	0.0	0.0	8.5	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	524.5	12.5	0.0		6.8							
Approach LOS	F	B										
Intersection Summary												
Average Delay			46.6									
Intersection Capacity Utilization			68.5%		ICU Level of Service					C		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
14: Street A & Street D

Future Total (2041) Traffic Analysis - No RIRO  
SAT Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	0	0	16	20	0
Future Volume (Veh/h)	131	0	0	16	20	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	142	0	0	17	22	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	17				292	8
vC1, stage 1 conf vol					8	
vC2, stage 2 conf vol					284	
vCu, unblocked vol	17				292	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				97	100
cM capacity (veh/h)	1600				679	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	142	0	17	22	0	
Volume Left	142	0	0	22	0	
Volume Right	0	0	17	0	0	
cSH	1600	1700	1700	679	1700	
Volume to Capacity	0.09	0.00	0.01	0.03	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	0.8	0.0	
Control Delay (s)	7.5	0.0	0.0	10.5	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.5		
Approach LOS				B		
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	78	0	0	187	0	159
Future Volume (Veh/h)	78	0	0	187	0	159
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	203	0	173
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		288	85
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		288	85
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			1512		702	974
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	85	203	173			
Volume Left	0	0	0			
Volume Right	0	0	173			
cSH	1700	1512	974			
Volume to Capacity	0.05	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	5.2			
Control Delay (s)	0.0	0.0	9.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			26.4%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2041) Traffic Analysis - No RIRO  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Future Volume (Veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	22	0	0	196	17	320	0	126	509	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1311	1115	509	1137	1115	320	509			320		
vC1, stage 1 conf vol	761	761		354	354							
vC2, stage 2 conf vol	550	354		783	761							
vCu, unblocked vol	1311	1115	509	1137	1115	320	509			320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	73	98			90		
cM capacity (veh/h)	213	329	564	298	330	721	1056			1240		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	22	0	196	17	320	126	509				
Volume Left	0	0	0	0	17	0	126	0				
Volume Right	0	22	0	196	0	0	0	0				
cSH	1700	564	1700	721	1056	1700	1240	1700				
Volume to Capacity	0.00	0.04	0.00	0.27	0.02	0.19	0.10	0.30				
Queue Length 95th (m)	0.0	1.0	0.0	8.8	0.4	0.0	2.7	0.0				
Control Delay (s)	0.0	11.6	0.0	11.8	8.5	0.0	8.2	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.6		11.8		0.4		1.6					
Approach LOS	B		B									
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			49.1%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2041) Traffic Analysis - No RIRO  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	237	0	0	73	132	356
Future Volume (Veh/h)	237	0	0	73	132	356
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	0	0	79	143	387
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	416	336	530			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	336	530			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	100	100			
cM capacity (veh/h)	593	706	1037			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	258	79	530			
Volume Left	258	0	0			
Volume Right	0	0	387			
cSH	593	1037	1700			
Volume to Capacity	0.43	0.00	0.31			
Queue Length 95th (m)	17.5	0.0	0.0			
Control Delay (s)	15.6	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.6	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	4.7					
Intersection Capacity Utilization	48.6%			ICU Level of Service	A	
Analysis Period (min)	15					

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	104	0	14	166	0
Future Volume (Veh/h)	12	104	0	14	166	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	113	0	15	180	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			126		84	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		84	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1460		917	993
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	126	15	180			
Volume Left	0	0	180			
Volume Right	113	0	0			
cSH	1700	1460	917			
Volume to Capacity	0.07	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			22.9%	ICU Level of Service	A	
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.1%	ICU Level of Service		A
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	393	372	399	623	185	466	1018	193	352	2068	203
v/c Ratio	0.86	0.37	0.63	3.07	0.54	0.30	2.71	0.70	0.32	1.12	1.11	0.30
Control Delay	110.9	32.5	25.6	970.3	34.8	5.4	802.7	39.5	5.7	114.3	92.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.9	32.5	25.6	970.3	34.8	5.4	802.7	39.5	5.7	114.3	92.0	4.7
Queue Length 50th (m)	23.7	39.2	46.8	~172.2	65.8	0.0	~181.3	81.2	0.0	-74.2	~213.8	0.0
Queue Length 95th (m)	#56.6	53.6	81.7	#235.1	84.8	16.2	#248.5	97.8	16.9	#135.6	#244.5	15.7
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	110	1075	591	130	1151	621	172	1456	611	313	1871	668
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.37	0.63	3.07	0.54	0.30	2.71	0.70	0.32	1.12	1.11	0.30

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	87	362	342	367	573	170	429	937	178	324	1903	187	
Future Volume (vph)	87	362	342	367	573	170	429	937	178	324	1903	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3343	1525	1736	3471	1500	1656	4673	1536	1702	5036	1455	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.15	1.00	1.00	
Satd. Flow (perm)	1703	3343	1525	1736	3471	1500	186	4673	1536	272	5036	1455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	95	393	372	399	623	185	466	1018	193	352	2068	203	
RTOR Reduction (vph)	0	0	101	0	0	124	0	0	133	0	0	128	
Lane Group Flow (vph)	95	393	271	399	623	61	466	1018	60	352	2068	75	
Confl. Peds. (#/hr)	13		16	16		13	15		18	18		15	
Heavy Vehicles (%)	6%	8%	3%	4%	4%	5%	9%	11%	2%	6%	3%	8%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Effective Green, g (s)	7.8	38.6	38.6	9.0	39.8	39.8	45.2	37.4	37.4	55.4	44.6	44.6	
Actuated g/C Ratio	0.06	0.32	0.32	0.08	0.33	0.33	0.38	0.31	0.31	0.46	0.37	0.37	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	1075	490	130	1151	497	165	1456	478	304	1871	540	
v/s Ratio Prot	0.06	0.12		c0.23	c0.18		c0.18	0.22		c0.14	0.41		
v/s Ratio Perm			0.18			0.04	c0.87		0.04	0.39		0.05	
v/c Ratio	0.86	0.37	0.55	3.07	0.54	0.12	2.82	0.70	0.13	1.16	1.11	0.14	
Uniform Delay, d1	55.6	31.3	33.6	55.5	32.7	27.9	32.4	36.3	29.6	27.3	37.7	25.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.0	1.0	4.4	951.3	1.8	0.5	837.5	2.8	0.5	101.5	55.9	0.5	
Delay (s)	101.5	32.2	38.0	1006.8	34.5	28.5	869.8	39.2	30.1	128.7	93.6	25.5	
Level of Service	F	C	D	F	C	C	F	D	C	F	F	C	
Approach Delay (s)		42.4			355.0			268.9			93.1		
Approach LOS		D			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			182.2		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.82										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			129.2%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	890	101	249	1217	253	3
v/c Ratio	0.01	0.41	0.12	0.50	0.46	0.74	0.01
Control Delay	10.0	10.6	4.7	6.8	5.5	23.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	10.6	4.7	6.8	5.5	23.4	0.0
Queue Length 50th (m)	0.2	38.1	2.3	8.2	33.9	9.6	0.0
Queue Length 95th (m)	1.8	76.2	11.8	23.6	70.5	33.5	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	279	2194	866	521	2671	544	434
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.41	0.12	0.48	0.46	0.47	0.01

Intersection Summary

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total Phase 3 (2046) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	819	93	229	1120	0	45	0	188	1	0	2
Future Volume (vph)	3	819	93	229	1120	0	45	0	188	1	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1800	3438	1320	1685	3505			1465			1685	
Flt Permitted	0.23	1.00	1.00	0.27	1.00			0.93			0.78	
Satd. Flow (perm)	437	3438	1320	484	3505			1378			1340	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	890	101	249	1217	0	49	0	204	1	0	2
RTOR Reduction (vph)	0	0	24	0	0	0	0	180	0	0	3	0
Lane Group Flow (vph)	3	890	77	249	1217	0	0	73	0	0	0	0
Confl. Peds. (#/hr)	7		7	7		7	1		2	2		1
Heavy Vehicles (%)	0%	5%	18%	7%	3%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	63.8	63.8	63.8	76.2	76.2			11.8			11.8	
Effective Green, g (s)	63.8	63.8	63.8	76.2	76.2			11.8			11.8	
Actuated g/C Ratio	0.64	0.64	0.64	0.76	0.76			0.12			0.12	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	278	2193	842	481	2670			162			158	
v/s Ratio Prot		0.26		c0.05	0.35							
v/s Ratio Perm	0.01		0.06	c0.34				c0.05			0.00	
v/c Ratio	0.01	0.41	0.09	0.52	0.46			0.45			0.00	
Uniform Delay, d1	6.6	8.8	7.0	4.2	4.3			41.1			38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.6	0.2	0.9	0.6			2.0			0.0	
Delay (s)	6.7	9.4	7.2	5.1	4.9			43.1			38.9	
Level of Service	A	A	A	A	A			D			D	
Approach Delay (s)		9.2			4.9			43.1			38.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			79.3%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	61	347	797	127	351	159	1055	505	299	2103	210
v/c Ratio	0.38	0.86dr	1.53	0.20	0.55	0.70	0.57	0.59	0.95	1.05	0.29
Control Delay	45.7	35.9	281.8	29.7	23.0	39.4	27.8	6.6	61.5	66.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	35.9	281.8	29.7	23.0	39.4	27.8	6.6	61.5	66.1	4.1
Queue Length 50th (m)	11.5	24.4	-121.5	20.0	32.4	19.8	57.9	11.8	31.7	-179.6	0.0
Queue Length 95th (m)	23.7	38.6	#157.9	36.7	73.1	m#46.1	65.2	24.3	#98.3	#210.4	14.5
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	205	603	520	707	682	228	1851	851	315	2000	720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.58	1.53	0.18	0.51	0.70	0.57	0.59	0.95	1.05	0.29

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

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

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total Phase 3 (2046) Traffic Analysis - No RIRO  
AM Peak Hour

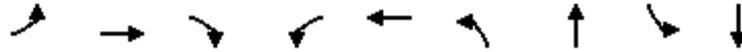
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	82	237	733	117	323	146	971	465	275	1935	193
Future Volume (vph)	56	82	237	733	117	323	146	971	465	275	1935	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	3109		3155	1792	1462	1719	4759	1397	1769	5036	1496
Flt Permitted	0.68	1.00		0.95	1.00	1.00	0.10	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	1247	3109		3155	1792	1462	186	4759	1397	344	5036	1496
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	89	258	797	127	351	159	1055	505	299	2103	210
RTOR Reduction (vph)	0	95	0	0	0	111	0	0	309	0	0	127
Lane Group Flow (vph)	61	252	0	797	127	240	159	1055	196	299	2103	83
Confl. Peds. (#/hr)	9		3	3		9	8		2	2		8
Heavy Vehicles (%)	2%	5%	1%	11%	6%	8%	5%	9%	13%	2%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					8	2		2	6		6
Actuated Green, G (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Effective Green, g (s)	12.9	12.9		16.5	35.9	35.9	47.7	38.9	38.9	49.3	39.7	39.7
Actuated g/C Ratio	0.13	0.13		0.16	0.36	0.36	0.48	0.39	0.39	0.49	0.40	0.40
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	401		520	643	524	223	1851	543	306	1999	593
v/s Ratio Prot		c0.08		c0.25	0.07		0.06	0.22		c0.09	c0.42	
v/s Ratio Perm	0.05					0.16	0.28		0.14	0.39		0.06
v/c Ratio	0.38	0.86dr		1.53	0.20	0.46	0.71	0.57	0.36	0.98	1.05	0.14
Uniform Delay, d1	39.9	41.3		41.8	22.1	24.6	21.7	24.0	21.7	18.3	30.1	19.3
Progression Factor	1.00	1.00		1.10	1.35	1.63	1.62	1.11	1.91	1.00	1.00	1.00
Incremental Delay, d2	1.5	3.1		248.8	0.1	0.6	8.7	1.1	1.6	44.7	35.4	0.5
Delay (s)	41.4	44.4		294.5	29.9	40.7	44.0	27.6	43.0	63.0	65.6	19.8
Level of Service	D	D		F	C	D	D	C	D	E	E	B
Approach Delay (s)		43.9			198.3			33.6			61.6	
Approach LOS		D			F			C			E	

Intersection Summary

HCM 2000 Control Delay	81.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.1
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	707	34	3	744	29	18	49	387
v/c Ratio	0.35	0.56	0.03	0.01	0.37	0.40	0.08	0.31	0.75
Control Delay	5.3	7.9	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	8.3	2.5	9.3	9.9	54.2	21.1	43.5	14.0
Queue Length 50th (m)	9.7	51.3	0.3	0.2	32.0	5.6	0.9	9.4	1.5
Queue Length 95th (m)	m19.1	m74.8	m1.5	1.7	59.7	14.0	7.0	19.2	28.7
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	793	1271	1198	481	2025	169	476	359	702
Starvation Cap Reductn	0	178	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.65	0.03	0.01	0.37	0.17	0.04	0.14	0.55

Intersection Summary

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

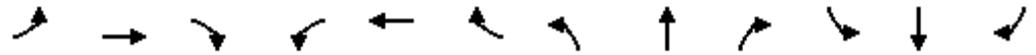
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Future Volume (vph)	181	650	31	3	651	33	27	5	12	45	7	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1733	1681	1574	1801	3153		1750	1666		1636	1536	
Flt Permitted	0.33	1.00	1.00	0.40	1.00		0.33	1.00		0.75	1.00	
Satd. Flow (perm)	606	1681	1574	752	3153		604	1666		1284	1536	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	707	34	3	708	36	29	5	13	49	8	379
RTOR Reduction (vph)	0	0	8	0	2	0	0	11	0	0	333	0
Lane Group Flow (vph)	197	707	26	3	742	0	29	7	0	49	54	0
Confl. Peds. (#/hr)	7		2	2		7	2		1	1		2
Heavy Vehicles (%)	4%	13%	0%	0%	14%	3%	3%	0%	0%	10%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Effective Green, g (s)	75.6	75.6	75.6	64.2	64.2		12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.76	0.76	0.76	0.64	0.64		0.12	0.12		0.12	0.12	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	552	1270	1189	482	2024		73	203		156	187	
v/s Ratio Prot	0.03	c0.42			0.24			0.00				0.04
v/s Ratio Perm	0.24		0.02	0.00			c0.05			0.04		
v/c Ratio	0.36	0.56	0.02	0.01	0.37		0.40	0.03		0.31	0.29	
Uniform Delay, d1	3.7	5.1	3.0	6.4	8.4		40.5	38.7		40.1	40.0	
Progression Factor	1.31	1.06	1.44	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.3	0.0	0.0	0.5		3.5	0.1		1.2	0.9	
Delay (s)	5.1	6.7	4.4	6.5	8.9		44.0	38.8		41.2	40.8	
Level of Service	A	A	A	A	A		D	D		D	D	
Approach Delay (s)		6.3			8.9			42.0			40.9	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			88.6%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	769	78	488	225	200	29	27
v/c Ratio	0.69	0.17	0.43	0.67	0.34	0.15	0.06
Control Delay	16.4	9.5	10.8	49.9	1.5	35.9	0.3
Queue Delay	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	9.5	10.8	49.9	1.5	35.9	0.3
Queue Length 50th (m)	114.0	7.1	55.1	46.7	0.0	5.3	0.0
Queue Length 95th (m)	181.5	15.8	85.8	69.0	0.0	12.7	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1121	460	1139	378	609	411	558
Starvation Cap Reductn	233	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.17	0.43	0.60	0.33	0.07	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Traffic Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Future Volume (vph)	27	478	202	72	415	34	207	0	184	27	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1645		1805	1633		1768	1272		1801	1592	
Flt Permitted		0.97		0.35	1.00		0.49	1.00		0.83	1.00	
Satd. Flow (perm)		1599		661	1633		919	1272		1580	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	520	220	78	451	37	225	0	200	29	0	27
RTOR Reduction (vph)	0	8	0	0	2	0	0	169	0	0	26	0
Lane Group Flow (vph)	0	761	0	78	486	0	225	31	0	29	1	0
Confl. Peds. (#/hr)	3					3	1		1	1		1
Heavy Vehicles (%)	0%	16%	0%	0%	16%	0%	2%	0%	24%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Effective Green, g (s)		81.2		81.2	81.2		26.6	18.7		9.4	4.8	
Actuated g/C Ratio		0.68		0.68	0.68		0.22	0.16		0.08	0.04	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1081		447	1104		334	198		132	63	
v/s Ratio Prot					0.30		c0.10	0.02		0.01	0.00	
v/s Ratio Perm		c0.48		0.12			c0.05			0.01		
v/c Ratio		0.70		0.17	0.44		0.67	0.16		0.22	0.02	
Uniform Delay, d1		12.0		7.1	8.9		41.7	43.8		51.8	55.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.8		0.8	1.3		5.3	0.4		0.8	0.1	
Delay (s)		15.8		8.0	10.2		47.0	44.2		52.6	55.4	
Level of Service		B		A	B		D	D		D	E	
Approach Delay (s)		15.8			9.9			45.7			54.0	
Approach LOS		B			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				15.5		
Intersection Capacity Utilization			92.2%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Future Volume (Veh/h)	0	427	263	70	377	11	183	0	245	7	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	464	286	76	410	12	199	0	266	8	0	1
Pedestrians		2			1			1			2	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	424			751			1179	1184	609	1444	1321	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	424			522			1081	1087	336	1427	1266	420
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	4.2
p0 queue free %	100			91			0	100	51	81	100	100
cM capacity (veh/h)	1144			807			134	151	543	41	118	467
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	750	498	199	266	9							
Volume Left	0	76	199	0	8							
Volume Right	286	12	0	266	1							
cSH	1144	807	134	543	46							
Volume to Capacity	0.00	0.09	1.49	0.49	0.20							
Queue Length 95th (m)	0.0	2.5	109.0	21.4	5.2							
Control Delay (s)	0.0	2.6	315.0	17.8	101.9							
Lane LOS		A	F	C	F							
Approach Delay (s)	0.0	2.6	145.0		101.9							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			40.4									
Intersection Capacity Utilization			88.2%		ICU Level of Service				E			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Future Volume (Veh/h)	195	11	446	0	9	6	94	45	0	6	95	203
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	212	12	485	0	10	7	102	49	0	7	103	221
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			497			964	696	254	716	934	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			497			964	696	254	716	934	14
tC, single (s)	4.2			4.1			7.1	6.5	6.2	8.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	4.4	4.0	3.4
p0 queue free %	86			100			7	85	100	96	55	79
cM capacity (veh/h)	1562			1077			110	318	789	194	231	1041
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	709	17	151	331								
Volume Left	212	0	102	7								
Volume Right	485	7	0	221								
cSH	1562	1077	139	477								
Volume to Capacity	0.14	0.00	1.08	0.69								
Queue Length 95th (m)	3.8	0.0	66.3	42.2								
Control Delay (s)	3.3	0.0	163.2	27.9								
Lane LOS	A		F	D								
Approach Delay (s)	3.3	0.0	163.2	27.9								
Approach LOS			F	D								
Intersection Summary												
Average Delay			30.0									
Intersection Capacity Utilization			80.9%		ICU Level of Service					D		
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	1611	0	0	3112			
Future Volume (Veh/h)	0	0	1611	0	0	3112			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	1751	0	0	3383			
Pedestrians	1								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type			None			None			
Median storage (veh)									
Upstream signal (m)			119			257			
pX, platoon unblocked	0.70	0.83			0.83				
vC, conflicting volume	2880	585			1752				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	609	0			1208				
iC, single (s)	6.9	7.0			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.4			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	298	891			488				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	584	584	584	0	1128	1128	1128	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.34	0.34	0.34	0.00	0.66	0.66	0.66	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			63.5%		ICU Level of Service			B	
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	830	372	1363	1587
v/c Ratio	0.80	0.84	0.51	0.54
Control Delay	38.0	46.2	12.4	12.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.0	46.2	12.4	12.7
Queue Length 50th (m)	77.3	68.9	39.3	56.5
Queue Length 95th (m)	96.8	#115.6	m31.9	m51.7
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1159	494	2683	2917
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	27
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.75	0.51	0.55

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	708	397	1254	0	0	1460
Future Volume (vph)	708	397	1254	0	0	1460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.99	0.85	1.00			1.00
Flt Protected	0.96	1.00	1.00			1.00
Satd. Flow (prot)	3373	1374	4631			5036
Flt Permitted	0.96	1.00	1.00			1.00
Satd. Flow (perm)	3373	1374	4631			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	770	432	1363	0	0	1587
RTOR Reduction (vph)	6	26	0	0	0	0
Lane Group Flow (vph)	824	346	1363	0	0	1587
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	7%	12%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	30.5	30.5	57.9			57.9
Effective Green, g (s)	30.5	30.5	57.9			57.9
Actuated g/C Ratio	0.30	0.30	0.58			0.58
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1028	419	2681			2915
v/s Ratio Prot			0.29			c0.32
v/s Ratio Perm	0.24	c0.25				
v/c Ratio	0.80	0.83	0.51			0.54
Uniform Delay, d1	32.0	32.3	12.6			12.9
Progression Factor	1.00	1.00	0.93			0.93
Incremental Delay, d2	4.6	12.5	0.1			0.1
Delay (s)	36.5	44.8	11.8			12.1
Level of Service	D	D	B			B
Approach Delay (s)	39.1		11.8			12.1
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			106.7%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	628	611	584	1412	686	1671
v/c Ratio	1.13	1.13	1.13	1.34	1.25	0.88
Control Delay	111.4	110.3	108.7	192.0	151.3	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.4	110.3	108.7	192.0	151.3	24.4
Queue Length 50th (m)	~157.1	~150.4	~136.6	~133.5	~159.5	137.2
Queue Length 95th (m)	#229.0	#226.4	#208.6	#164.3	#230.2	175.6
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	556	539	518	1050	549	1892
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.13	1.13	1.13	1.34	1.25	0.88

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	875	0	802	0	0	0	0	907	392	631	1537	0	
Future Volume (vph)	875	0	802	0	0	0	0	907	392	631	1537	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.93	0.85					0.95		1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1618	1445	1382					4052		1736	3505		
Flt Permitted	0.95	0.97	1.00					1.00		0.15	1.00		
Satd. Flow (perm)	1618	1445	1382					4052		271	3505		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	951	0	872	0	0	0	0	986	426	686	1671	0	
RTOR Reduction (vph)	0	43	43	0	0	0	0	78	0	0	0	0	
Lane Group Flow (vph)	628	568	541	0	0	0	0	1334	0	686	1671	0	
Confl. Peds. (#/hr)								7		1		7	
Heavy Vehicles (%)	6%	0%	11%	0%	0%	0%	0%	25%	13%	4%	3%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Effective Green, g (s)	34.4	34.4	34.4					24.0		54.0	54.0		
Actuated g/C Ratio	0.34	0.34	0.34					0.24		0.54	0.54		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	556	497	475					972		541	1892		
v/s Ratio Prot								0.33		c0.34	0.48		
v/s Ratio Perm	0.39	0.39	0.39							c0.34			
v/c Ratio	1.13	1.14	1.14					1.37		1.27	0.88		
Uniform Delay, d1	32.8	32.8	32.8					38.0		28.2	20.2		
Progression Factor	1.00	1.00	1.00					1.00		1.05	0.92		
Incremental Delay, d2	79.1	86.2	85.6					174.4		132.1	5.2		
Delay (s)	111.9	119.0	118.4					212.4		161.7	23.8		
Level of Service	F	F	F					F		F	C		
Approach Delay (s)		116.4			0.0			212.4			63.9		
Approach LOS		F			A			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			118.5									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.25										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			106.7%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	0	0	0	0	0	130
Future Volume (Veh/h)	0	0	0	0	0	130
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	141		
Volume Left	0	0	0	0		
Volume Right	0	0	0	141		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.0%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
12: Tower 1 & 2 Access/Street C & Street B

Future Total Phase 3 (2046) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Future Volume (Veh/h)	0	0	0	141	0	30	0	100	66	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	153	0	33	0	109	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			306	339	0	432	306	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			306	339	0	432	306	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	79	93	100	100	100
cM capacity (veh/h)	1579			1623			600	528	1085	390	550	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	153	33	181							
Volume Left	0	0	153	0	0							
Volume Right	0	0	0	33	72							
cSH	1700	1700	1623	1700	663							
Volume to Capacity	0.00	0.00	0.09	0.02	0.27							
Queue Length 95th (m)	0.0	0.0	2.5	0.0	8.8							
Control Delay (s)	0.0	0.0	7.4	0.0	12.5							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.1		12.5							
Approach LOS					B							
Intersection Summary												
Average Delay			9.2									
Intersection Capacity Utilization			23.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Future Volume (Veh/h)	78	0	0	0	0	166	0	147	0	191	47	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	180	0	160	0	208	51	40
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	827	647	71	627	667	160	91			160		
vC1, stage 1 conf vol	487	487		160	160							
vC2, stage 2 conf vol	340	160		467	507							
vCu, unblocked vol	827	647	71	627	667	160	91			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	100	100	100	80	100			85		
cM capacity (veh/h)	307	433	991	472	440	885	1504			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	180	0	160	208	91						
Volume Left	85	0	0	0	208	0						
Volume Right	0	180	0	0	0	40						
cSH	307	885	1700	1700	1419	1700						
Volume to Capacity	0.28	0.20	0.00	0.09	0.15	0.05						
Queue Length 95th (m)	8.8	6.1	0.0	0.0	4.1	0.0						
Control Delay (s)	21.2	10.1	0.0	0.0	8.0	0.0						
Lane LOS	C	B			A							
Approach Delay (s)	21.2	10.1	0.0		5.5							
Approach LOS	C	B										
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			46.3%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	0	0	17	47	0
Future Volume (Veh/h)	130	0	0	17	47	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	0	0	18	51	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				291	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					282	
vCu, unblocked vol	18				291	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				93	100
cM capacity (veh/h)	1599				680	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	141	0	18	51	0	
Volume Left	141	0	0	51	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	680	1700	
Volume to Capacity	0.09	0.00	0.01	0.07	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	1.9	0.0	
Control Delay (s)	7.5	0.0	0.0	10.7	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.7		
Approach LOS				B		
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Traffic Volume (veh/h)	66	0	89	152	0	126
Future Volume (Veh/h)	66	0	89	152	0	126
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	97	165	0	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			72		431	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			72		431	72
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	86
cM capacity (veh/h)			1528		544	990
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	72	262	137			
Volume Left	0	97	0			
Volume Right	0	0	137			
cSH	1700	1528	990			
Volume to Capacity	0.04	0.06	0.14			
Queue Length 95th (m)	0.0	1.6	3.8			
Control Delay (s)	0.0	3.1	9.2			
Lane LOS		A	A			
Approach Delay (s)	0.0	3.1	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			34.1%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total Phase 3 (2046) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Future Volume (Veh/h)	0	0	47	0	0	191	17	237	0	76	257	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	51	0	0	208	18	258	0	83	279	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	947	739	279	790	739	258	279			258		
vC1, stage 1 conf vol	445	445		294	294							
vC2, stage 2 conf vol	502	294		496	445							
vCu, unblocked vol	947	739	279	790	739	258	279			258		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	93	100	100	73	99			94		
cM capacity (veh/h)	294	465	760	432	472	781	1284			1307		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	51	0	208	18	258	83	279				
Volume Left	0	0	0	0	18	0	83	0				
Volume Right	0	51	0	208	0	0	0	0				
cSH	1700	760	1700	781	1284	1700	1307	1700				
Volume to Capacity	0.00	0.07	0.00	0.27	0.01	0.15	0.06	0.16				
Queue Length 95th (m)	0.0	1.7	0.0	8.6	0.3	0.0	1.6	0.0				
Control Delay (s)	0.0	10.1	0.0	11.3	7.8	0.0	7.9	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	10.1		11.3		0.5		1.8					
Approach LOS	B		B									
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			38.7%		ICU Level of Service					A		
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	0	0	62	63	241
Future Volume (Veh/h)	192	0	0	62	63	241
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	0	0	67	68	262
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	266	199	330			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	199	330			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	71	100	100			
cM capacity (veh/h)	723	842	1229			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	209	67	330			
Volume Left	209	0	0			
Volume Right	0	0	262			
cSH	723	1229	1700			
Volume to Capacity	0.29	0.00	0.19			
Queue Length 95th (m)	9.6	0.0	0.0			
Control Delay (s)	12.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.0	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			35.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	7	69	0	16	175	0
Future Volume (Veh/h)	7	69	0	16	175	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	75	0	17	190	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			83		62	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			83		62	46
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1514		944	1024
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	83	17	190			
Volume Left	0	0	190			
Volume Right	75	0	0			
cSH	1700	1514	944			
Volume to Capacity	0.05	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	6.0			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			21.0%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.0%	ICU Level of Service	A	
Analysis Period (min)			15			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	248	1236	546	284	861	285	626	1933	502	318	1517	214
v/c Ratio	1.68	1.04	0.83	1.89	0.73	0.43	2.26	1.21	0.82	1.27	1.01	0.36
Control Delay	365.7	77.4	32.5	456.3	39.9	8.5	599.1	136.6	35.9	176.2	67.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	365.7	77.4	32.5	456.3	39.9	8.5	599.1	136.6	35.9	176.2	67.2	7.8
Queue Length 50th (m)	-89.5	-174.6	75.2	-107.7	98.7	8.2	-235.7	-213.9	74.7	-81.5	-139.7	3.5
Queue Length 95th (m)	#142.6	#218.6	#139.0	#163.4	123.1	30.4	#309.1	#244.7	#134.8	#140.8	#175.4	22.3
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	148	1185	661	150	1173	666	277	1600	609	251	1504	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.68	1.04	0.83	1.89	0.73	0.43	2.26	1.21	0.82	1.27	1.01	0.36

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Total (2046) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	1137	502	261	792	262	576	1778	462	293	1396	197
Future Volume (vph)	228	1137	502	261	792	262	576	1778	462	293	1396	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3574	1520	1770	3539	1531	1805	5136	1531	1752	4988	1508
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1752	3574	1520	1770	3539	1531	203	5136	1531	204	4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1236	546	284	861	285	626	1933	502	318	1517	214
RTOR Reduction (vph)	0	0	157	0	0	158	0	0	132	0	0	135
Lane Group Flow (vph)	248	1236	389	284	861	127	626	1933	370	318	1517	79
Confl. Peds. (#/hr)	31		38	38		31	35		30	30		35
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%	0%	1%	1%	3%	4%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Effective Green, g (s)	10.2	39.8	39.8	10.2	39.8	39.8	51.2	37.4	37.4	48.8	36.2	36.2
Actuated g/C Ratio	0.08	0.33	0.33	0.08	0.33	0.33	0.43	0.31	0.31	0.41	0.30	0.30
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	1185	504	150	1173	507	270	1600	477	245	1504	454
v/s Ratio Prot	0.14	c0.35		c0.16	0.24		c0.27	0.38		0.14	0.30	
v/s Ratio Perm			0.26			0.08	c0.72		0.24	0.39		0.05
v/c Ratio	1.68	1.04	0.77	1.89	0.73	0.25	2.32	1.21	0.78	1.30	1.01	0.17
Uniform Delay, d1	54.9	40.1	36.0	54.9	35.4	29.2	34.6	41.3	37.5	33.7	41.9	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	331.7	38.1	10.9	426.0	4.1	1.2	604.8	99.8	11.7	160.8	25.3	0.8
Delay (s)	386.6	78.2	46.9	480.9	39.5	30.4	639.5	141.1	49.2	194.5	67.2	31.7
Level of Service	F	E	D	F	D	C	F	F	D	F	E	C
Approach Delay (s)		107.5			125.4			227.9			83.3	
Approach LOS		F			F			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			147.7									F
HCM 2000 Volume to Capacity ratio			1.79									
Actuated Cycle Length (s)			120.0							20.0		
Intersection Capacity Utilization			125.3%									H
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	3	1934	72	196	1271	527	2
v/c Ratio	0.02	1.13	0.11	0.90	0.61	1.00	0.00
Control Delay	14.3	92.2	4.7	62.2	14.7	64.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	92.2	4.7	62.2	14.7	64.5	0.0
Queue Length 50th (m)	0.3	~241.7	0.7	22.7	81.2	80.7	0.0
Queue Length 95th (m)	1.9	#286.1	8.1	#65.4	101.9	#153.1	0.0
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	169	1715	680	217	2088	529	515
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.13	0.11	0.90	0.61	1.00	0.00

**Intersection Summary**

- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2046) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1779	66	180	1169	0	34	0	451	0	0	2
Future Volume (vph)	3	1779	66	180	1169	0	34	0	451	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1802	3574	1348	1752	3539			1461			1617	
Flt Permitted	0.19	1.00	1.00	0.08	1.00			0.98			1.00	
Satd. Flow (perm)	352	3574	1348	145	3539			1437			1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1934	72	196	1271	0	37	0	490	0	0	2
RTOR Reduction (vph)	0	0	34	0	0	0	0	113	0	0	1	0
Lane Group Flow (vph)	3	1934	38	196	1271	0	0	414	0	0	1	0
Confl. Peds. (#/hr)	5		9	9		5	4		2	2		4
Heavy Vehicles (%)	0%	1%	15%	3%	2%	0%	22%	0%	11%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Effective Green, g (s)	48.0	48.0	48.0	59.0	59.0			29.0			29.0	
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59			0.29			0.29	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	168	1715	647	214	2088			416			468	
v/s Ratio Prot		c0.54		c0.07	0.36						0.00	
v/s Ratio Perm	0.01		0.03	0.47				c0.29				
v/c Ratio	0.02	1.13	0.06	0.92	0.61			1.00			0.00	
Uniform Delay, d1	13.6	26.0	13.9	28.0	13.1			35.4			25.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	65.6	0.2	38.7	1.3			42.7			0.0	
Delay (s)	13.8	91.6	14.1	66.7	14.4			78.1			25.2	
Level of Service	B	F	B	E	B			E			C	
Approach Delay (s)		88.7			21.4			78.1			25.2	
Approach LOS		F			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			62.6			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			109.1%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2046) Traffic Analysis - No RIRO  
 PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	96	461	446	214	588	299	2257	954	430	1221	82
v/c Ratio	0.58	0.74	0.80	0.31	0.85	0.81	1.26	1.08	1.42	0.79	0.14
Control Delay	53.3	31.2	40.1	13.4	22.8	38.4	147.2	59.1	233.2	36.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	7.1	0.1	0.0	0.0
Total Delay	53.3	31.2	40.1	13.4	22.9	38.4	147.2	66.1	233.3	36.9	0.5
Queue Length 50th (m)	18.6	27.9	45.4	33.1	88.8	46.8	-211.6	-148.1	-107.6	85.7	0.0
Queue Length 95th (m)	33.9	42.9	52.2	21.7	126.8	m#58.6	m#234.8	m#121.9	#190.6	104.1	0.0
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	228	782	595	810	781	371	1792	881	303	1538	594
Starvation Cap Reductn	0	0	0	0	6	0	0	0	0	0	0
Spillback Cap Reductn	0	3	0	0	0	0	0	29	2	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.59	0.75	0.26	0.76	0.81	1.26	1.12	1.43	0.79	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

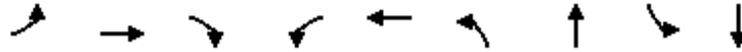
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2046) Traffic Analysis - No RIRO  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	88	180	244	410	197	541	275	2076	878	396	1123	75	
Future Volume (vph)	88	180	244	410	197	541	275	2076	878	396	1123	75	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1785	3229		3400	1863	1572	1787	5136	1516	1787	4988	1534	
Flt Permitted	0.62	1.00		0.95	1.00	1.00	0.12	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1173	3229		3400	1863	1572	223	5136	1516	244	4988	1534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	96	196	265	446	214	588	299	2257	954	430	1221	82	
RTOR Reduction (vph)	0	163	0	0	0	109	0	0	353	0	0	57	
Lane Group Flow (vph)	96	298	0	446	214	479	299	2257	601	430	1221	25	
Confl. Peds. (#/hr)	13		8	8		13	10		3	3		10	
Heavy Vehicles (%)	0%	1%	1%	3%	2%	0%	1%	1%	4%	1%	4%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8	
Effective Green, g (s)	14.2	14.2		16.5	37.2	37.2	50.2	34.9	34.9	43.1	30.8	30.8	
Actuated g/C Ratio	0.14	0.14		0.16	0.37	0.37	0.50	0.35	0.35	0.43	0.31	0.31	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	458		561	693	584	368	1792	529	294	1536	472	
v/s Ratio Prot		0.09		0.13	0.11		c0.13	0.44		c0.18	0.24		
v/s Ratio Perm	0.08					c0.30	0.27		0.40	c0.45		0.02	
v/c Ratio	0.58	0.65		0.80	0.31	0.82	0.81	1.26	1.14	1.46	0.79	0.05	
Uniform Delay, d1	40.1	40.6		40.1	22.3	28.4	24.1	32.5	32.5	27.2	31.7	24.3	
Progression Factor	1.00	1.00		0.74	0.58	0.59	1.45	0.92	0.83	1.00	1.00	1.00	
Incremental Delay, d2	4.8	3.3		6.9	0.2	8.2	4.9	118.4	70.0	226.0	4.3	0.2	
Delay (s)	44.9	43.9		36.8	13.1	24.9	39.9	148.5	97.2	253.2	36.0	24.6	
Level of Service	D	D		D	B	C	D	F	F	F	D	C	
Approach Delay (s)		44.0			27.1			125.3			89.4		
Approach LOS		D			C			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			92.7		HCM 2000 Level of Service					F			
HCM 2000 Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)		100.0		Sum of lost time (s)					22.1				
Intersection Capacity Utilization		109.0%		ICU Level of Service					H				
Analysis Period (min)		15											
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	1128	43	13	918	49	73	98	273
v/c Ratio	0.65	0.83	0.04	0.07	0.57	0.66	0.28	0.58	0.63
Control Delay	10.4	6.8	0.3	19.7	22.1	79.4	18.7	53.3	12.9
Queue Delay	0.0	24.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	31.2	0.3	19.7	22.1	79.4	18.7	53.3	12.9
Queue Length 50th (m)	21.0	52.2	0.3	1.4	66.6	9.7	4.2	19.1	2.6
Queue Length 95th (m)	m21.1	m55.2	m0.2	6.2	105.6	21.8	16.1	34.1	25.0
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	657	1365	1157	195	1623	181	567	418	684
Starvation Cap Reductn	0	279	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.04	0.04	0.07	0.57	0.27	0.13	0.23	0.40

**Intersection Summary**

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Future Volume (vph)	396	1038	40	12	774	71	45	21	46	90	13	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1827	1537	1796	3491		1770	1669		1752	1588	
Flt Permitted	0.21	1.00	1.00	0.22	1.00		0.31	1.00		0.71	1.00	
Satd. Flow (perm)	389	1827	1537	419	3491		569	1669		1308	1588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	430	1128	43	13	841	77	49	23	50	98	14	259
RTOR Reduction (vph)	0	0	8	0	6	0	0	43	0	0	225	0
Lane Group Flow (vph)	430	1128	35	13	912	0	49	30	0	98	48	0
Confl. Peds. (#/hr)	5		11	11		5			4	4		3
Heavy Vehicles (%)	1%	4%	0%	0%	2%	0%	2%	0%	0%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Effective Green, g (s)	74.7	74.7	74.7	46.3	46.3		13.1	13.1		13.1	13.1	
Actuated g/C Ratio	0.75	0.75	0.75	0.46	0.46		0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	645	1364	1148	193	1616		74	218		171	208	
v/s Ratio Prot	0.17	c0.62			0.26			0.02				0.03
v/s Ratio Perm	0.33		0.02	0.03			c0.09			0.07		
v/c Ratio	0.67	0.83	0.03	0.07	0.56		0.66	0.14		0.57	0.23	
Uniform Delay, d1	10.7	8.4	3.3	14.9	19.5		41.3	38.4		40.8	38.9	
Progression Factor	1.17	0.53	0.17	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.0	0.7	1.4		20.0	0.3		4.6	0.6	
Delay (s)	12.7	5.0	0.6	15.6	21.0		61.4	38.7		45.4	39.5	
Level of Service	B	A	A	B	C		E	D		D	D	
Approach Delay (s)		6.9			20.9			47.8			41.1	
Approach LOS		A			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			114.0%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1368	86	592	351	203	89	60
v/c Ratio	1.24	0.40	0.50	0.88	0.47	0.38	0.16
Control Delay	137.3	18.3	13.2	62.5	5.9	38.3	0.9
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.6	18.3	13.2	62.5	5.9	38.3	0.9
Queue Length 50th (m)	~431.3	10.1	74.5	76.2	0.0	16.3	0.0
Queue Length 95th (m)	#516.8	24.8	104.0	#125.9	9.6	29.9	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1106	214	1190	402	460	411	498
Starvation Cap Reductn	73	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.40	0.50	0.87	0.44	0.22	0.12

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

5: Street D/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55
Future Volume (vph)	31	921	306	79	457	87	323	0	187	82	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	0.96		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.97		1.00	0.98		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738		1805	1830		1770	1511		1791	1615	
Flt Permitted		0.98		0.17	1.00		0.47	1.00		0.63	1.00	
Satd. Flow (perm)		1697		331	1830		882	1511		1189	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	1001	333	86	497	95	351	0	203	89	0	60
RTOR Reduction (vph)	0	8	0	0	4	0	0	173	0	0	57	0
Lane Group Flow (vph)	0	1360	0	86	588	0	351	30	0	89	3	0
Confl. Peds. (#/hr)	3		5	5		3			5	5		
Heavy Vehicles (%)	0%	5%	4%	0%	1%	0%	2%	0%	3%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4	
Effective Green, g (s)		76.6		76.6	76.6		31.2	18.0		16.3	6.4	
Actuated g/C Ratio		0.64		0.64	0.64		0.26	0.15		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1083		211	1168		388	226		211	86	
v/s Ratio Prot					0.32		c0.16	0.02		0.03	0.00	
v/s Ratio Perm		c0.80		0.26			c0.07			0.02		
v/c Ratio		1.26		0.41	0.50		0.90	0.13		0.42	0.04	
Uniform Delay, d1		21.7		10.6	11.6		41.1	44.2		47.1	53.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		122.9		5.7	1.5		23.8	0.3		1.4	0.2	
Delay (s)		144.6		16.4	13.1		64.9	44.5		48.5	54.1	
Level of Service		F		B	B		E	D		D	D	
Approach Delay (s)		144.6			13.5			57.4			50.7	
Approach LOS		F			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			89.6				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.19									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			131.1%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

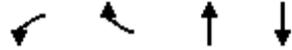
6: Street E/Walmart East Access & Pickering Pkwy

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Future Volume (Veh/h)	5	738	443	89	452	8	194	0	182	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	802	482	97	491	9	211	0	198	12	0	0
Pedestrians		1						1			4	
Lane Width (m)		3.6						3.6			3.6	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.33			0.33	0.33	0.33	0.33	0.33	0.33
vC, conflicting volume	504			1285			1744	1752	1044	1944	1988	500
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			858			2230	2253	138	2828	2959	500
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			63			0	100	35	0	100	100
cM capacity (veh/h)	1067			265			7	9	306	1	3	572
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1289	597	211	198	12							
Volume Left	5	97	211	0	12							
Volume Right	482	9	0	198	0							
cSH	1067	265	7	306	1							
Volume to Capacity	0.00	0.37	28.91	0.65	12.52							
Queue Length 95th (m)	0.1	12.9	Err	33.5	Err							
Control Delay (s)	0.2	15.7	Err	35.9	Err							
Lane LOS	A	C	F	E	F							
Approach Delay (s)	0.2	15.7	5175.8		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			973.8									
Intersection Capacity Utilization			110.9%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Future Volume (Veh/h)	322	3	365	2	7	3	165	96	0	2	35	203
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	3	397	2	8	3	179	104	0	2	38	221
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	622	614	150	1014	725	104	259			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	614	150	1014	725	104	259			104		
tC, single (s)	7.1	7.5	6.2	7.1	7.4	6.5	4.1			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.8	3.6	2.2			3.1		
p0 queue free %	0	99	56	98	97	100	86			100		
cM capacity (veh/h)	344	260	902	109	230	873	1317			1048		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	750	13	283	261								
Volume Left	350	2	179	2								
Volume Right	397	3	0	221								
cSH	511	229	1317	1048								
Volume to Capacity	1.47	0.06	0.14	0.00								
Queue Length 95th (m)	299.3	1.4	3.8	0.0								
Control Delay (s)	243.0	21.6	5.6	0.1								
Lane LOS	F	C	A	A								
Approach Delay (s)	243.0	21.6	5.6	0.1								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			140.9									
Intersection Capacity Utilization			85.8%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	3378	0	0	1940			
Future Volume (Veh/h)	0	0	3378	0	0	1940			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	3672	0	0	2109			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None				None				
Median storage (veh)									
Upstream signal (m)	119				257				
pX, platoon unblocked	0.51	0.40			0.40				
vC, conflicting volume	4375	1224			3672				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1405	0			2450				
iC, single (s)	6.8	6.9			4.1				
iC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	100	100			100				
cM capacity (veh/h)	68	441			78				
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	1224	1224	1224	0	703	703	703	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.72	0.72	0.72	0.00	0.41	0.41	0.41	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0					0.0		
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			68.6%	ICU Level of Service	C				
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	701	366	2972	941
v/c Ratio	0.88	0.97	0.94	0.30
Control Delay	49.3	77.0	20.3	13.8
Queue Delay	0.0	0.0	39.9	0.0
Total Delay	49.3	77.0	60.2	13.8
Queue Length 50th (m)	70.6	80.9	112.3	42.0
Queue Length 95th (m)	#103.0	#146.8	m67.6	54.1
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	797	378	3162	3132
Starvation Cap Reductn	0	0	433	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.97	1.09	0.30

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	308	673	2734	0	0	866
Future Volume (vph)	308	673	2734	0	0	866
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Frbp, ped/bikes	1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	0.92	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3039	1441	5085			5036
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3039	1441	5085			5036
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	335	732	2972	0	0	941
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	700	365	2972	0	0	941
Confl. Peds. (#/hr)				4	4	
Heavy Vehicles (%)	17%	2%	2%	0%	0%	3%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	26.2	26.2	62.2			62.2
Effective Green, g (s)	26.2	26.2	62.2			62.2
Actuated g/C Ratio	0.26	0.26	0.62			0.62
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	796	377	3162			3132
v/s Ratio Prot			c0.58			0.19
v/s Ratio Perm	0.23	c0.25				
v/c Ratio	0.88	0.97	0.94			0.30
Uniform Delay, d1	35.4	36.5	17.2			8.8
Progression Factor	1.00	1.00	1.10			1.53
Incremental Delay, d2	10.9	37.7	0.8			0.2
Delay (s)	46.3	74.2	19.7			13.7
Level of Service	D	E	B			B
Approach Delay (s)	55.9		19.7			13.7
Approach LOS	E		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			26.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			132.2%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	1018	1007	591	2426	363	933
v/c Ratio	1.80	1.88	1.14	1.50	0.88	0.53
Control Delay	390.1	425.2	109.9	255.3	52.8	8.7
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	390.1	425.2	109.9	255.9	52.8	8.7
Queue Length 50th (m)	~330.0	~350.2	~131.5	~260.1	57.3	37.3
Queue Length 95th (m)	#411.7	#436.9	#203.5	#294.3	m#88.4	m38.2
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	537	520	1618	459	1772
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	244	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.80	1.88	1.14	1.77	0.79	0.53

**Intersection Summary**

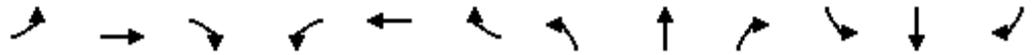
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1800	2	604	0	0	0	0	1767	465	334	858	0	
Future Volume (vph)	1800	2	604	0	0	0	0	1767	465	334	858	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Frbp, ped/bikes	1.00	1.00	1.00					0.99		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00					1.00		1.00	1.00		
Frt	1.00	0.99	0.85					0.97		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1602	1334					4758		1752	3223		
Flt Permitted	0.95	0.96	1.00					1.00		0.11	1.00		
Satd. Flow (perm)	1698	1602	1334					4758		204	3223		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1957	2	657	0	0	0	0	1921	505	363	933	0	
RTOR Reduction (vph)	0	3	75	0	0	0	0	45	0	0	0	0	
Lane Group Flow (vph)	1018	1004	516	0	0	0	0	2381	0	363	933	0	
Confl. Peds. (#/hr)								5		7	7	5	
Heavy Vehicles (%)	1%	100%	15%	0%	0%	0%	0%	5%	4%	3%	12%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					33.1		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					33.1		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.33		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	535	445					1574		404	1772		
v/s Ratio Prot								c0.50		c0.17	0.29		
v/s Ratio Perm	0.60	0.63	0.39							0.32			
v/c Ratio	1.80	1.88	1.16					1.51		0.90	0.53		
Uniform Delay, d1	33.3	33.3	33.3					33.5		28.2	14.3		
Progression Factor	1.00	1.00	1.00					1.00		1.34	0.53		
Incremental Delay, d2	365.0	401.8	94.0					233.9		20.5	1.0		
Delay (s)	398.3	435.1	127.3					267.4		58.1	8.6		
Level of Service	F	F	F					F		E	A		
Approach Delay (s)		351.2			0.0			267.4			22.4		
Approach LOS		F			A			F			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			251.9									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.52										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			132.2%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	105
Future Volume (Veh/h)	0	0	0	0	0	105
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	114
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	114		
Volume Left	0	0	0	0		
Volume Right	0	0	0	114		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.11		
Queue Length 95th (m)	0.0	0.0	0.0	2.8		
Control Delay (s)	0.0	0.0	0.0	8.7		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			16.5%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2046) Traffic Analysis - No RIRO  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Future Volume (Veh/h)	0	0	0	154	0	22	0	83	63	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	167	0	24	0	90	68	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	24			0			334	358	0	447	334	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24			0			334	358	0	447	334	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	82	94	100	100	100
cM capacity (veh/h)	1591			1623			571	510	1085	390	526	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	167	24	158							
Volume Left	0	0	167	0	0							
Volume Right	0	0	0	24	68							
cSH	1700	1700	1623	1700	661							
Volume to Capacity	0.00	0.00	0.10	0.01	0.24							
Queue Length 95th (m)	0.0	0.0	2.7	0.0	7.4							
Control Delay (s)	0.0	0.0	7.5	0.0	12.2							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.5		12.2							
Approach LOS					B							
Intersection Summary												
Average Delay			9.1									
Intersection Capacity Utilization			23.4%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Future Volume (Veh/h)	59	0	0	0	0	330	0	122	0	311	16	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	0	0	0	0	359	0	133	0	338	17	63
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	1216	858	48	826	889	133	80			133		
vC1, stage 1 conf vol	724	724		133	133							
vC2, stage 2 conf vol	492	133		693	756							
vCu, unblocked vol	1216	858	48	826	889	133	80			133		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	19	100	100	100	100	61	100			77		
cM capacity (veh/h)	79	309	1020	323	309	916	1518			1452		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	64	359	0	133	338	80						
Volume Left	64	0	0	0	338	0						
Volume Right	0	359	0	0	0	63						
cSH	79	916	1700	1700	1452	1700						
Volume to Capacity	0.81	0.39	0.00	0.08	0.23	0.05						
Queue Length 95th (m)	32.5	15.1	0.0	0.0	7.2	0.0						
Control Delay (s)	144.7	11.4	0.0	0.0	8.2	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	144.7	11.4	0.0		6.7							
Approach LOS	F	B										
Intersection Summary												
Average Delay			16.6									
Intersection Capacity Utilization			60.8%		ICU Level of Service					B		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	0	0	17	16	0
Future Volume (Veh/h)	105	0	0	17	16	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	0	0	18	17	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18				237	9
vC1, stage 1 conf vol					9	
vC2, stage 2 conf vol					228	
vCu, unblocked vol	18				237	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				98	100
cM capacity (veh/h)	1599				733	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	114	0	18	17	0	
Volume Left	114	0	0	17	0	
Volume Right	0	0	18	0	0	
cSH	1599	1700	1700	733	1700	
Volume to Capacity	0.07	0.00	0.01	0.02	0.00	
Queue Length 95th (m)	1.8	0.0	0.0	0.6	0.0	
Control Delay (s)	7.4	0.0	0.0	10.0	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.4		0.0	10.0		
Approach LOS				B		
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			22.5%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	63	0	152	166	0	131
Future Volume (Veh/h)	63	0	152	166	0	131
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	0	165	180	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			68		578	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		578	68
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		100	86
cM capacity (veh/h)			1533		426	995
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	345	142			
Volume Left	0	165	0			
Volume Right	0	0	142			
cSH	1700	1533	995			
Volume to Capacity	0.04	0.11	0.14			
Queue Length 95th (m)	0.0	2.9	4.0			
Control Delay (s)	0.0	4.1	9.2			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.1	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			38.6%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2046) Traffic Analysis - No RIRO  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Future Volume (Veh/h)	0	0	16	0	0	137	17	239	0	111	421	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	17	0	0	149	18	260	0	121	458	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1145	996	458	1013	996	260	458			260		
vC1, stage 1 conf vol	700	700		296	296							
vC2, stage 2 conf vol	445	296		717	700							
vCu, unblocked vol	1145	996	458	1013	996	260	458			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	81	98			91		
cM capacity (veh/h)	282	360	603	334	359	779	1103			1304		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	17	0	149	18	260	121	458				
Volume Left	0	0	0	0	18	0	121	0				
Volume Right	0	17	0	149	0	0	0	0				
cSH	1700	603	1700	779	1103	1700	1304	1700				
Volume to Capacity	0.00	0.03	0.00	0.19	0.02	0.15	0.09	0.27				
Queue Length 95th (m)	0.0	0.7	0.0	5.6	0.4	0.0	2.4	0.0				
Control Delay (s)	0.0	11.1	0.0	10.7	8.3	0.0	8.0	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.1		10.7		0.5		1.7					
Approach LOS	B		B									
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			44.0%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2046) Traffic Analysis - No RIRO  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	194	0	0	62	119	318
Future Volume (Veh/h)	194	0	0	62	119	318
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	211	0	0	67	129	346
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	369	302	475			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	369	302	475			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	100	100			
cM capacity (veh/h)	631	738	1087			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	211	67	475			
Volume Left	211	0	0			
Volume Right	0	0	346			
cSH	631	1087	1700			
Volume to Capacity	0.33	0.00	0.28			
Queue Length 95th (m)	11.7	0.0	0.0			
Control Delay (s)	13.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			43.2%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	11	100	0	10	127	0
Future Volume (Veh/h)	11	100	0	10	127	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	109	0	11	138	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			121		78	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		78	66
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		85	100
cM capacity (veh/h)			1467		925	997
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	121	11	138			
Volume Left	0	0	138			
Volume Right	109	0	0			
cSH	1700	1467	925			
Volume to Capacity	0.07	0.00	0.15			
Queue Length 95th (m)	0.0	0.0	4.2			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			20.5%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			16.5%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
1: Brock Rd. & Kingston Rd.

Future Total (2046) Traffic Analysis - No RIRO  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	891	658	292	957	264	539	1559	432	253	1361	193
v/c Ratio	1.74	0.72	1.03	2.61	0.77	0.40	2.60	0.90	0.69	1.23	0.79	0.31
Control Delay	399.4	35.3	70.8	766.2	51.5	26.0	752.8	43.3	25.2	164.3	37.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	399.4	35.3	70.8	766.2	51.5	26.0	752.8	43.3	25.2	164.3	37.0	8.1
Queue Length 50th (m)	-65.5	91.4	-132.5	-112.7	121.3	33.7	-189.4	122.1	51.6	-52.7	101.0	5.5
Queue Length 95th (m)	#111.7	115.4	#205.0	#168.4	142.9	64.7	#257.5	#144.6	90.1	#105.5	119.6	22.2
Internal Link Dist (m)		290.2			361.6			458.4			236.0	
Turn Bay Length (m)	115.0		105.0	180.0		115.0	110.0		70.0	145.0		135.0
Base Capacity (vph)	112	1237	639	112	1237	652	207	1727	628	205	1727	625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.74	0.72	1.03	2.61	0.77	0.40	2.60	0.90	0.69	1.23	0.79	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	179	820	605	269	880	243	496	1434	397	233	1252	178	
Future Volume (vph)	179	820	605	269	880	243	496	1434	397	233	1252	178	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1525	1787	3574	1561	1805	5136	1537	1787	5136	1549	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1787	3574	1525	1787	3574	1561	205	5136	1537	203	5136	1549	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	195	891	658	292	957	264	539	1559	432	253	1361	193	
RTOR Reduction (vph)	0	0	111	0	0	112	0	0	111	0	0	104	
Lane Group Flow (vph)	195	891	547	292	957	152	539	1559	321	253	1361	89	
Confl. Peds. (#/hr)	24		38	38		24	31		29	29		31	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases			2			6	8		8	4		4	
Actuated Green, G (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0	
Effective Green, g (s)	6.9	38.1	38.1	6.9	38.1	38.1	45.0	37.0	37.0	45.0	37.0	37.0	
Actuated g/C Ratio	0.06	0.35	0.35	0.06	0.35	0.35	0.41	0.34	0.34	0.41	0.34	0.34	
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	112	1237	528	112	1237	540	200	1727	516	198	1727	521	
v/s Ratio Prot	0.11	0.25		c0.16	0.27		c0.20	0.30		0.09	0.27		
v/s Ratio Perm			c0.36			0.10	c0.90		0.21	0.43		0.06	
v/c Ratio	1.74	0.72	1.04	2.61	0.77	0.28	2.69	0.90	0.62	1.28	0.79	0.17	
Uniform Delay, d1	51.5	31.3	36.0	51.5	32.1	26.0	25.3	34.8	30.6	26.3	33.0	25.7	
Progression Factor	1.00	1.00	1.00	0.86	1.45	2.47	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	367.7	3.6	48.7	745.5	4.2	1.2	776.8	8.2	5.5	158.1	3.7	0.7	
Delay (s)	419.3	35.0	84.7	789.9	50.9	65.4	802.1	42.9	36.2	184.4	36.7	26.4	
Level of Service	F	C	F	F	D	E	F	D	D	F	D	C	
Approach Delay (s)		96.7			196.1			203.5			56.3		
Approach LOS		F			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			142.5									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.98										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			119.9%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	5	1479	123	277	1363	356	2
v/c Ratio	0.03	0.79	0.15	0.78	0.54	0.85	0.01
Control Delay	22.8	36.9	15.8	44.6	9.7	42.6	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	36.9	15.8	44.6	9.7	42.6	31.5
Queue Length 50th (m)	0.8	164.4	10.3	41.4	69.2	45.7	0.4
Queue Length 95th (m)	m1.1	m184.5	m15.7	#117.9	111.3	75.2	2.4
Internal Link Dist (m)		440.3			358.4	862.1	50.9
Turn Bay Length (m)	20.0		20.0	55.0			
Base Capacity (vph)	165	1877	839	353	2522	534	416
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.79	0.15	0.78	0.54	0.67	0.00

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
2: Notion Rd. & Kingston Rd.

Future Total (2046) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1361	113	255	1254	0	15	2	311	1	1	0
Future Volume (vph)	5	1361	113	255	1254	0	15	2	311	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00			1.00	
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.98			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00			0.87			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1503	3574	1544	1805	3574			1606			1851	
Flt Permitted	0.20	1.00	1.00	0.07	1.00			0.99			0.83	
Satd. Flow (perm)	315	3574	1544	133	3574			1590			1571	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1479	123	277	1363	0	16	2	338	1	1	0
RTOR Reduction (vph)	0	0	28	0	0	0	0	125	0	0	0	0
Lane Group Flow (vph)	5	1479	95	277	1363	0	0	231	0	0	2	0
Confl. Peds. (#/hr)	2		6	6		2	1		7	7		1
Heavy Vehicles (%)	20%	1%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	57.8	57.8	57.8	77.6	77.6			20.4			20.4	
Effective Green, g (s)	57.8	57.8	57.8	77.6	77.6			20.4			20.4	
Actuated g/C Ratio	0.53	0.53	0.53	0.71	0.71			0.19			0.19	
Clearance Time (s)	6.0	6.0	6.0	3.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	165	1877	811	349	2521			294			291	
v/s Ratio Prot		0.41		c0.12	0.38							
v/s Ratio Perm	0.02		0.06	c0.44				c0.15			0.00	
v/c Ratio	0.03	0.79	0.12	0.79	0.54			0.79			0.01	
Uniform Delay, d1	12.6	21.1	13.2	31.1	7.7			42.7			36.5	
Progression Factor	1.73	1.61	2.16	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	2.1	0.2	11.7	0.8			13.0			0.0	
Delay (s)	22.0	36.2	28.7	42.8	8.6			55.7			36.5	
Level of Service	C	D	C	D	A			E			D	
Approach Delay (s)		35.6			14.3			55.7			36.5	
Approach LOS		D			B			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			87.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

1755 Pickering Pkwy TIS  
 3: Brock Rd. & Pickering Pkwy

Future Total (2046) Traffic Analysis - No RIRO  
 AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	403	672	211	684	253	1329	827	528	998	99
v/c Ratio	0.58	0.66	0.91	0.27	0.93	0.77	0.74	0.87	2.22	0.63	0.16
Control Delay	55.3	24.5	49.5	16.1	30.8	30.7	25.2	15.2	582.5	32.9	0.6
Queue Delay	0.0	0.1	0.0	0.0	1.2	0.0	0.0	3.6	0.5	0.0	0.0
Total Delay	55.3	24.6	49.5	16.1	32.1	30.7	25.2	18.9	583.0	32.9	0.6
Queue Length 50th (m)	16.8	18.8	73.9	29.1	88.7	19.3	85.3	66.4	~173.0	67.7	0.0
Queue Length 95th (m)	33.3	34.7	m#95.1	m38.5	m#159.0	#59.7	93.7	#135.2	#239.3	83.5	0.3
Internal Link Dist (m)		222.3		150.3			233.1			458.4	
Turn Bay Length (m)	40.0		60.0		45.0	135.0		60.0	110.0		160.0
Base Capacity (vph)	181	681	745	826	771	351	1792	951	238	1577	603
Starvation Cap Reductn	0	0	0	0	19	0	0	0	0	0	0
Spillback Cap Reductn	0	10	0	0	0	0	0	68	9	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.60	0.90	0.26	0.91	0.72	0.74	0.94	2.31	0.63	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

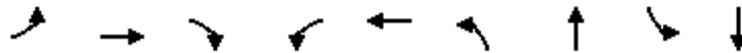
# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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

1755 Pickering Pkwy TIS  
3: Brock Rd. & Pickering Pkwy

Future Total (2046) Traffic Analysis - No RIRO  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	82	165	206	618	194	629	233	1223	761	486	918	91	
Future Volume (vph)	82	165	206	618	194	629	233	1223	761	486	918	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1774	3251		3467	1900	1544	1787	5136	1571	1805	5136	1570	
Flt Permitted	0.63	1.00		0.95	1.00	1.00	0.16	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1169	3251		3467	1900	1544	294	5136	1571	248	5136	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	89	179	224	672	211	684	253	1329	827	528	998	99	
RTOR Reduction (vph)	0	182	0	0	0	105	0	0	403	0	0	69	
Lane Group Flow (vph)	89	221	0	672	211	579	253	1329	424	528	998	30	
Confl. Peds. (#/hr)	20		10	10		20	4					4	
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	1%	2%	0%	1%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0	
Turn Type	Perm	NA		Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases	4					8	2		2	6		6	
Actuated Green, G (s)	13.2	13.2		21.2	40.9	40.9	46.5	34.9	34.9	39.3	30.7	30.7	
Effective Green, g (s)	13.2	13.2		21.2	40.9	40.9	46.5	34.9	34.9	39.3	30.7	30.7	
Actuated g/C Ratio	0.13	0.13		0.21	0.41	0.41	0.46	0.35	0.35	0.39	0.31	0.31	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	3.0	6.1	6.1	3.0	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	154	429		735	777	631	327	1792	548	231	1576	481	
v/s Ratio Prot		0.07		0.19	0.11		c0.10	0.26		c0.20	0.19		
v/s Ratio Perm	0.08					c0.38	0.26		0.27	c0.70		0.02	
v/c Ratio	0.58	0.51		0.91	0.27	0.92	0.77	0.74	0.77	2.29	0.63	0.06	
Uniform Delay, d1	40.8	40.4		38.5	19.6	28.0	18.7	28.6	29.0	23.7	29.8	24.5	
Progression Factor	1.00	1.00		0.96	0.81	0.80	1.00	0.80	0.75	1.00	1.00	1.00	
Incremental Delay, d2	5.2	1.0		10.3	0.1	12.0	8.7	2.2	8.2	592.1	1.9	0.3	
Delay (s)	46.0	41.5		47.3	16.0	34.5	27.5	25.0	29.9	615.8	31.8	24.7	
Level of Service	D	D		D	B	C	C	C	C	F	C	C	
Approach Delay (s)		42.3			37.5			27.0			221.1		
Approach LOS		D			D			C			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			82.7		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.67										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						22.1		
Intersection Capacity Utilization			103.4%		ICU Level of Service						G		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	471	1002	64	34	958	112	102	128	624
v/c Ratio	1.37	1.00	0.08	0.45	0.70	1.47	0.17	0.29	0.84
Control Delay	193.8	24.3	3.0	45.1	28.6	300.5	13.1	26.5	26.9
Queue Delay	0.0	35.4	0.0	0.0	0.0	1.9	0.0	0.0	1.5
Total Delay	193.8	59.6	3.0	45.1	28.6	302.5	13.1	26.5	28.4
Queue Length 50th (m)	~102.6	~148.5	0.2	5.1	83.5	~31.6	6.9	18.9	63.5
Queue Length 95th (m)	m#87.4	m128.8	m0.4	#19.2	106.8	#66.6	18.7	34.5	#131.4
Internal Link Dist (m)		150.3			149.3		53.5		52.7
Turn Bay Length (m)			30.0	30.0		15.0			
Base Capacity (vph)	345	1002	848	76	1365	76	618	440	746
Starvation Cap Reductn	0	118	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	5	0	0	35
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	1.13	0.08	0.45	0.70	1.58	0.17	0.29	0.88

**Intersection Summary**

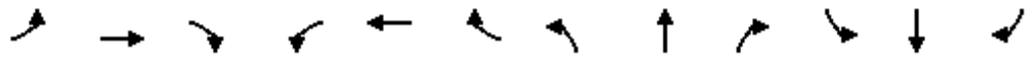
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Future Volume (vph)	433	922	59	31	771	110	103	46	48	118	34	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1549	1805	3492		1805	1718		1783	1608	
Flt Permitted	0.15	1.00	1.00	0.10	1.00		0.12	1.00		0.69	1.00	
Satd. Flow (perm)	288	1863	1549	196	3492		224	1718		1297	1608	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	1002	64	34	838	120	112	50	52	128	37	587
RTOR Reduction (vph)	0	0	15	0	11	0	0	34	0	0	199	0
Lane Group Flow (vph)	471	1002	49	34	947	0	112	68	0	128	425	0
Confl. Peds. (#/hr)	6		8	8		6	2		1	1		2
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	0%	2%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8				4
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Effective Green, g (s)	53.8	53.8	53.8	38.8	38.8		34.0	34.0		34.0	34.0	
Actuated g/C Ratio	0.54	0.54	0.54	0.39	0.39		0.34	0.34		0.34	0.34	
Clearance Time (s)	3.0	6.2	6.2	6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	1002	833	76	1354		76	584		440	546	
v/s Ratio Prot	c0.17	0.54			0.27			0.04				0.26
v/s Ratio Perm	c0.58		0.03	0.17			c0.50			0.10		
v/c Ratio	1.40	1.00	0.06	0.45	0.70		1.47	0.12		0.29	0.78	
Uniform Delay, d1	21.5	23.1	11.0	22.7	25.7		33.0	22.7		24.2	29.6	
Progression Factor	1.77	0.57	0.46	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	182.5	8.5	0.0	17.9	3.0		271.1	0.1		0.4	6.9	
Delay (s)	220.4	21.7	5.1	40.5	28.7		304.1	22.8		24.5	36.5	
Level of Service	F	C	A	D	C		F	C		C	D	
Approach Delay (s)		81.9			29.1			170.0			34.5	
Approach LOS		F			C			F			C	

Intersection Summary

HCM 2000 Control Delay	62.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.2
Intersection Capacity Utilization	127.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1235	101	647	411	239	100	86
v/c Ratio	1.18	0.51	0.60	0.83	0.42	0.43	0.25
Control Delay	115.9	27.9	18.9	49.9	2.5	35.8	1.7
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.4	27.9	18.9	49.9	2.5	35.8	1.7
Queue Length 50th (m)	~382.8	15.1	101.8	83.5	0.0	16.6	0.0
Queue Length 95th (m)	#468.9	37.9	143.1	118.8	0.0	29.6	0.0
Internal Link Dist (m)	149.3		92.6		36.9		79.6
Turn Bay Length (m)		40.0		20.0			
Base Capacity (vph)	1047	198	1082	522	587	519	472
Starvation Cap Reductn	102	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.51	0.60	0.79	0.41	0.19	0.18

**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.

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

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Future Volume (vph)	20	730	386	93	439	156	378	0	220	92	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.99		1.00	0.99		1.00	0.96		1.00	0.98	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt		0.95		1.00	0.96		1.00	0.85		1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1761		1736	1796		1800	1551		1754	1583	
Flt Permitted		0.98		0.18	1.00		0.46	1.00		0.62	1.00	
Satd. Flow (perm)		1732		332	1796		877	1551		1154	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	793	420	101	477	170	411	0	239	100	0	86
RTOR Reduction (vph)	0	12	0	0	8	0	0	192	0	0	81	0
Lane Group Flow (vph)	0	1223	0	101	639	0	411	47	0	100	5	0
Confl. Peds. (#/hr)	1		2	2		1	4		6	6		4
Heavy Vehicles (%)	0%	3%	0%	4%	1%	1%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Effective Green, g (s)		70.6		70.6	70.6		37.2	23.7		16.6	6.4	
Actuated g/C Ratio		0.59		0.59	0.59		0.31	0.20		0.14	0.05	
Clearance Time (s)		6.2		6.2	6.2		3.3	6.0		3.3	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1018		195	1056		483	306		210	84	
v/s Ratio Prot					0.36		c0.19	0.03		0.04	0.00	
v/s Ratio Perm		c0.71		0.30			c0.07			0.03		
v/c Ratio		1.20		0.52	0.60		0.85	0.15		0.48	0.05	
Uniform Delay, d1		24.7		14.6	15.8		37.1	39.9		47.2	53.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		100.2		9.5	2.6		13.5	0.2		1.7	0.3	
Delay (s)		124.9		24.1	18.4		50.5	40.1		48.9	54.2	
Level of Service		F		C	B		D	D		D	D	
Approach Delay (s)		124.9			19.1			46.7			51.4	
Approach LOS		F			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			73.9				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			121.0%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

6: Street E/Walmart East Access & Pickering Pkwy

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Future Volume (Veh/h)	9	550	489	95	485	28	235	0	239	25	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	598	532	103	527	30	255	0	260	27	0	1
Pedestrians		2			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		117										
pX, platoon unblocked				0.39			0.39	0.39	0.39	0.39	0.39	
vC, conflicting volume	557			1130			1635	1647	866	1894	1898	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	557			558			1844	1874	0	2504	2514	544
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			74			0	100	39	0	100	100
cM capacity (veh/h)	938			402			18	21	428	2	8	542
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	1140	660	255	260	28							
Volume Left	10	103	255	0	27							
Volume Right	532	30	0	260	1							
cSH	938	402	18	428	2							
Volume to Capacity	0.01	0.26	14.05	0.61	11.23							
Queue Length 95th (m)	0.3	8.1	Err	31.4	Err							
Control Delay (s)	0.4	8.1	Err	25.6	Err							
Lane LOS	A	A	F	D	F							
Approach Delay (s)	0.4	8.1	4963.9		Err							
Approach LOS			F		F							
<b>Intersection Summary</b>												
Average Delay			1213.0									
Intersection Capacity Utilization			121.7%		ICU Level of Service				H			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Future Volume (Veh/h)	213	1	475	0	0	0	228	45	0	0	75	240
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	232	1	516	0	0	0	248	49	0	0	82	261
Pedestrians												3
Lane Width (m)												3.6
Walking Speed (m/s)												1.2
Percent Blockage												0
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	760	758	212	1274	888	52	343			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	758	212	1274	888	52	343			49		
tC, single (s)	7.1	7.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	14	99	38	100	100	100	80			100		
cM capacity (veh/h)	270	194	833	47	227	1019	1227			1571		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	749	0	297	343								
Volume Left	232	0	248	0								
Volume Right	516	0	0	261								
cSH	505	1700	1227	1571								
Volume to Capacity	1.48	0.06	0.20	0.00								
Queue Length 95th (m)	303.1	0.0	6.0	0.0								
Control Delay (s)	249.4	0.0	7.5	0.0								
Lane LOS	F	A	A									
Approach Delay (s)	249.4	0.0	7.5	0.0								
Approach LOS	F	A										
<b>Intersection Summary</b>												
Average Delay			136.1									
Intersection Capacity Utilization			88.9%	ICU Level of Service							E	
Analysis Period (min)			15									

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			  			  			
Traffic Volume (veh/h)	0	0	2381	0	0	1969			
Future Volume (Veh/h)	0	0	2381	0	0	1969			
Sign Control	Yield		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	0	2588	0	0	2140			
Pedestrians	3								
Lane Width (m)	3.6								
Walking Speed (m/s)	1.2								
Percent Blockage	0								
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	119			257					
pX, platoon unblocked	0.84	0.76				0.76			
vC, conflicting volume	3304	866				2591			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	1784	0				1974			
iC, single (s)	6.8	6.9				4.1			
iC, 2 stage (s)									
tF (s)	3.5	3.3				2.2			
p0 queue free %	100	100				100			
cM capacity (veh/h)	62	823				224			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	
Volume Total	0	863	863	863	0	713	713	713	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.51	0.51	0.51	0.00	0.42	0.42	0.42	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A								
Approach Delay (s)	0.0	0.0				0.0			
Approach LOS	A								
Intersection Summary									
Average Delay			0.0						
Intersection Capacity Utilization			49.3%	ICU Level of Service		A			
Analysis Period (min)			15						



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	565	344	1940	830
v/c Ratio	0.62	0.83	0.62	0.27
Control Delay	33.4	50.2	18.5	16.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.4	50.2	18.5	16.6
Queue Length 50th (m)	50.0	69.3	95.8	43.1
Queue Length 95th (m)	62.6	100.8	m83.5	m61.2
Internal Link Dist (m)	334.6		196.8	95.3
Turn Bay Length (m)		95.0		
Base Capacity (vph)	1109	502	3104	3104
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.69	0.63	0.27

**Intersection Summary**

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	633	1785	0	0	764
Future Volume (vph)	203	633	1785	0	0	764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8			5.8
Lane Util. Factor	0.97	0.91	0.91			0.91
Fr't	0.91	0.85	1.00			1.00
Flt Protected	0.98	1.00	1.00			1.00
Satd. Flow (prot)	3228	1455	5136			5136
Flt Permitted	0.98	1.00	1.00			1.00
Satd. Flow (perm)	3228	1455	5136			5136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	688	1940	0	0	830
RTOR Reduction (vph)	6	6	0	0	0	0
Lane Group Flow (vph)	559	338	1940	0	0	830
Heavy Vehicles (%)	3%	1%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA			NA
Protected Phases			2			6
Permitted Phases	8	8				
Actuated Green, G (s)	28.0	28.0	60.4			60.4
Effective Green, g (s)	28.0	28.0	60.4			60.4
Actuated g/C Ratio	0.28	0.28	0.60			0.60
Clearance Time (s)	5.8	5.8	5.8			5.8
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	903	407	3102			3102
v/s Ratio Prot			c0.38			0.16
v/s Ratio Perm	0.17	c0.23				
v/c Ratio	0.62	0.83	0.63			0.27
Uniform Delay, d1	31.4	33.8	12.6			9.4
Progression Factor	1.00	1.00	1.35			1.62
Incremental Delay, d2	1.3	13.5	0.1			0.2
Delay (s)	32.6	47.2	17.1			15.3
Level of Service	C	D	B			B
Approach Delay (s)	38.2		17.1			15.3
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			21.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	11.6
Intersection Capacity Utilization			109.6%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	799	793	502	1355	554	521
v/c Ratio	1.41	1.36	0.72	0.89	1.17	0.27
Control Delay	223.6	201.7	16.8	39.8	134.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	223.6	201.7	16.8	39.8	134.7	4.0
Queue Length 50th (m)	~231.5	~226.9	32.8	90.7	~122.4	8.8
Queue Length 95th (m)	#308.4	#308.7	76.9	#113.2	#189.3	11.3
Internal Link Dist (m)		378.7		390.2		196.8
Turn Bay Length (m)			245.0			
Base Capacity (vph)	567	582	700	1522	475	1965
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.41	1.36	0.72	0.89	1.17	0.27

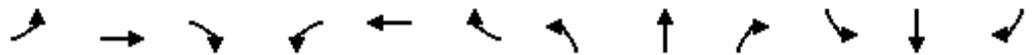
**Intersection Summary**

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1413	0	513	0	0	0	0	921	326	510	479	0	
Future Volume (vph)	1413	0	513	0	0	0	0	921	326	510	479	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.91		1.00	0.95		
Flt	1.00	0.99	0.85					0.96		1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00		0.95	1.00		
Satd. Flow (prot)	1698	1614	1461					4863		1787	3574		
Flt Permitted	0.95	0.96	1.00					1.00		0.12	1.00		
Satd. Flow (perm)	1698	1614	1461					4863		228	3574		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1536	0	558	0	0	0	0	1001	354	554	521	0	
RTOR Reduction (vph)	0	43	212	0	0	0	0	64	0	0	0	0	
Lane Group Flow (vph)	799	750	290	0	0	0	0	1291	0	554	521	0	
Heavy Vehicles (%)	1%	0%	5%	0%	0%	0%	0%	3%	1%	1%	1%	0%	
Turn Type	Perm	NA	Perm					NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4		4							6			
Actuated Green, G (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Effective Green, g (s)	33.4	33.4	33.4					30.0		55.0	55.0		
Actuated g/C Ratio	0.33	0.33	0.33					0.30		0.55	0.55		
Clearance Time (s)	5.6	5.6	5.6					6.0		3.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0		
Lane Grp Cap (vph)	567	539	487					1458		468	1965		
v/s Ratio Prot								0.27		c0.26	0.15		
v/s Ratio Perm	c0.47	0.46	0.20							c0.39			
v/c Ratio	1.41	1.39	0.59					0.89		1.18	0.27		
Uniform Delay, d1	33.3	33.3	27.7					33.4		29.2	11.9		
Progression Factor	1.00	1.00	1.00					1.00		1.68	0.30		
Incremental Delay, d2	194.5	187.1	2.0					8.2		102.1	0.3		
Delay (s)	227.8	220.4	29.6					41.6		151.1	3.9		
Level of Service	F	F	C					D		F	A		
Approach Delay (s)		177.5			0.0			41.6			79.7		
Approach LOS		F			A			D			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			113.6									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.31										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	14.6
Intersection Capacity Utilization			109.6%									ICU Level of Service	H
Analysis Period (min)			15										
c Critical Lane Group													

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Traffic Volume (veh/h)	0	0	0	0	0	131
Future Volume (Veh/h)	0	0	0	0	0	131
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage (veh)	2					
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol					0	
vC2, stage 2 conf vol					0	
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	0	0	0	142		
Volume Left	0	0	0	0		
Volume Right	0	0	0	142		
cSH	1700	1700	1700	1085		
Volume to Capacity	0.00	0.00	0.00	0.13		
Queue Length 95th (m)	0.0	0.0	0.0	3.6		
Control Delay (s)	0.0	0.0	0.0	8.8		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.1%	ICU Level of Service	A	
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
 12: Tower 1 & 2 Access/Street C & Street B

Future Total (2046) Traffic Analysis - No RISO  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Future Volume (Veh/h)	0	0	0	175	0	30	0	101	78	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	190	0	33	0	110	85	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	33			0			380	413	0	520	380	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	33			0			380	413	0	520	380	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			100	76	92	100	100	100
cM capacity (veh/h)	1579			1623			526	467	1085	322	488	1085
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	0	0	190	33	195							
Volume Left	0	0	190	0	0							
Volume Right	0	0	0	33	85							
cSH	1700	1700	1623	1700	622							
Volume to Capacity	0.00	0.00	0.12	0.02	0.31							
Queue Length 95th (m)	0.0	0.0	3.2	0.0	10.7							
Control Delay (s)	0.0	0.0	7.5	0.0	13.4							
Lane LOS			A		B							
Approach Delay (s)	0.0		6.4		13.4							
Approach LOS					B							
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			26.4%		ICU Level of Service				A			
Analysis Period (min)			15									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Future Volume (Veh/h)	78	0	0	0	0	378	0	147	0	356	20	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	0	0	411	0	160	0	387	22	72
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (m)											61	
pX, platoon unblocked												
vC, conflicting volume	1403	992	58	956	1028	160	94			160		
vC1, stage 1 conf vol	832	832		160	160							
vC2, stage 2 conf vol	571	160		796	868							
vCu, unblocked vol	1403	992	58	956	1028	160	94			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	100	100	54	100			73		
cM capacity (veh/h)	50	259	1008	269	260	885	1500			1419		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	85	411	0	160	387	94						
Volume Left	85	0	0	0	387	0						
Volume Right	0	411	0	0	0	72						
cSH	50	885	1700	1700	1419	1700						
Volume to Capacity	1.71	0.46	0.00	0.09	0.27	0.06						
Queue Length 95th (m)	66.2	20.0	0.0	0.0	8.9	0.0						
Control Delay (s)	524.5	12.5	0.0	0.0	8.5	0.0						
Lane LOS	F	B			A							
Approach Delay (s)	524.5	12.5	0.0		6.8							
Approach LOS	F	B										
Intersection Summary												
Average Delay			46.6									
Intersection Capacity Utilization			68.5%		ICU Level of Service					C		
Analysis Period (min)			15									



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	0	0	16	20	0
Future Volume (Veh/h)	131	0	0	16	20	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	142	0	0	17	22	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	17				292	8
vC1, stage 1 conf vol					8	
vC2, stage 2 conf vol					284	
vCu, unblocked vol	17				292	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				97	100
cM capacity (veh/h)	1600				679	1073
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	142	0	17	22	0	
Volume Left	142	0	0	22	0	
Volume Right	0	0	17	0	0	
cSH	1600	1700	1700	679	1700	
Volume to Capacity	0.09	0.00	0.01	0.03	0.00	
Queue Length 95th (m)	2.3	0.0	0.0	0.8	0.0	
Control Delay (s)	7.5	0.0	0.0	10.5	0.0	
Lane LOS	A			B	A	
Approach Delay (s)	7.5		0.0	10.5		
Approach LOS				B		
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization			23.9%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	78	0	0	187	0	159
Future Volume (Veh/h)	78	0	0	187	0	159
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	0	0	203	0	173
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		288	85
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		288	85
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	82
cM capacity (veh/h)			1512		702	974
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	85	203	173			
Volume Left	0	0	0			
Volume Right	0	0	173			
cSH	1700	1512	974			
Volume to Capacity	0.05	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	5.2			
Control Delay (s)	0.0	0.0	9.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			26.4%	ICU Level of Service		A
Analysis Period (min)			15			

1755 Pickering Pkwy TIS  
16: Street E & Street A

Future Total (2046) Traffic Analysis - No RIRO  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Future Volume (Veh/h)	0	0	20	0	0	180	16	294	0	116	468	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	22	0	0	196	17	320	0	126	509	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)											2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1311	1115	509	1137	1115	320	509			320		
vC1, stage 1 conf vol	761	761		354	354							
vC2, stage 2 conf vol	550	354		783	761							
vCu, unblocked vol	1311	1115	509	1137	1115	320	509			320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	73	98			90		
cM capacity (veh/h)	213	329	564	298	330	721	1056			1240		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	22	0	196	17	320	126	509				
Volume Left	0	0	0	0	17	0	126	0				
Volume Right	0	22	0	196	0	0	0	0				
cSH	1700	564	1700	721	1056	1700	1240	1700				
Volume to Capacity	0.00	0.04	0.00	0.27	0.02	0.19	0.10	0.30				
Queue Length 95th (m)	0.0	1.0	0.0	8.8	0.4	0.0	2.7	0.0				
Control Delay (s)	0.0	11.6	0.0	11.8	8.5	0.0	8.2	0.0				
Lane LOS	A	B	A	B	A		A					
Approach Delay (s)	11.6		11.8		0.4		1.6					
Approach LOS	B		B									
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			49.1%		ICU Level of Service					A		
Analysis Period (min)			15									

1755 Pickering Pkwy TIS  
 17: Tower 4 & 5 Access/Street E & Street B

Future Total (2046) Traffic Analysis - No RIRO  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	237	0	0	73	132	356
Future Volume (Veh/h)	237	0	0	73	132	356
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	0	0	79	143	387
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	416	336	530			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	336	530			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	100	100			
cM capacity (veh/h)	593	706	1037			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	258	79	530			
Volume Left	258	0	0			
Volume Right	0	0	387			
cSH	593	1037	1700			
Volume to Capacity	0.43	0.00	0.31			
Queue Length 95th (m)	17.5	0.0	0.0			
Control Delay (s)	15.6	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.6	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			48.6%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	12	104	0	14	166	0
Future Volume (Veh/h)	12	104	0	14	166	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	113	0	15	180	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			126		84	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		84	70
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1460		917	993
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	126	15	180			
Volume Left	0	0	180			
Volume Right	113	0	0			
cSH	1700	1460	917			
Volume to Capacity	0.07	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.8			
Control Delay (s)	0.0	0.0	9.9			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			22.9%	ICU Level of Service	A	
Analysis Period (min)			15			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗		
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1				
Volume Total	0	0				
Volume Left	0	0				
Volume Right	0	0				
cSH	1700	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.1%	ICU Level of Service	A	
Analysis Period (min)			15			

**APPENDIX 19**

**Brock Road & Street 'A' Conceptual Design**



