2809 Townline Road Industrial/Commercial Development

Traffic Impact Study

Fieldgate Properties

24 August 2026

→ The Power of Commitment

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Executive Summary

GHD Limited prepared an updated Traffic Study in response to comments made by the Region of Waterloo in August 2026 in support of the proposed development at 2809 Townline Road in Puslinch, with two potential options: one for an industrial development and the other for a mixed industrial and commercial development.

As per the agreed Terms of Reference the following intersections were included in the study area:

- Highway 401 EB off-ramp and Townline Road
- Highway 401 WB off-ramp and Townline Road
- Townline Road and Site Access 1
- Townline Road and Jamieson Parkway/Site Access 2
- Townline Road and Ellis Road/Sideroad 10N

A site plan prepared by Ware Malcomb presents two conceptual site plans for the development, referred to as Site Plan A and Site Plan B.

Both conceptual site plans feature six industrial buildings on the northern portion of the site, located to the north of the intersection of Jamieson Parkway and Townline Road. The Gross Floor Area (GFA) breakdown of each building is:

- Building 1: 174,375 ft^2
- Building 2: 174,375 ft^2
- Building 3: 174,375 ft^2
- Building 4: 112,236 ft^2
- Building 5: 112,236 ft^2
- Building 6: 105,636 ft^2

Site Plan A consists of six industrial buildings located on the northern portion of the site along with a big box retail component on the southern portion of the lot. The retail space has a GFA of 162,428 ft², as well as a gas station featuring 24 fueling stations. The total GFA for Site Plan A is 1,015,662 ft².

In contrast, Site Plan B retains the six industrial buildings on the northern portion of the lot but replaces the box retail component and gas station with two additional industrial buildings, labeled Building 7 and Building 8, on the southern portion of the lot. Each of these buildings has a GFA of 210,000 ft², bringing the total GFA for Site Plan B to 1,273,234 ft².

The difference between the two Site Plans is limited to the southern portion of the site: Site Plan A includes retail and gas station facilities, while Site Plan B features additional industrial buildings.

Accesses to the subject site are proposed via a two full-moves driveway. Site Access 1 is the north most access, Site Access 2 is located opposite Jamieson Parkway.

The proposed Site Plan A development is expected to generate a total of 577 two-way site trips during the a.m. peak hour consisting of 383 inbound and 194 outbound trips. During the p.m. peak hour, it is expected to generate 912 new two-way site trips consisting of 392 inbound and 520 outbound trips. During the Saturday peak hour, it is expected to generate 1237 new two-way site trips consisting of 598 inbound and 639 outbound trips.

Additionally, the development is expected to generate a total of 172 two-way pass-by trips during the a.m. peak hour consisting of 86 inbound and 86 outbound trips. During the p.m. peak hour, it is expected to generate 408 pass-by

trips consisting of 204 inbound and 204 outbound trips. During the Saturday peak hour, it is expected to generate 144 pass-by trips consisting of 72 inbound and 72 outbound trips.

The proposed Site Plan B development is expected to generate a total of 304 two-way site trips during the a.m. peak hour consisting of 234 inbound and 70 outbound trips. During the p.m. peak hour, it is expected to generate 318 new two-way site trips consisting of 89 inbound and 229 outbound trips. During the Saturday peak hour, it is expected to generate 190 new two-way site trips consisting of 53 inbound and 137 outbound trips.

Under existing traffic conditions, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound Right with a v/c of 0.86 during the a.m. peak hour
- Eastbound Right with a v/c of 0.85 during the p.m. peak hour

Under the 2028 future total scenario for Site Plan A, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline Road all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 0.91 LOS D during the a.m. peak hour
- Eastbound Right with a v/c of 0.93 LOS E during the a.m. peak hour
- Eastbound left with a v/c of 0.88 LOS D during the p.m. peak hour
- Eastbound Right with a v/c of 0.86 LOS D during the p.m. peak hour
- Eastbound left with a v/c of 0.84 LOS C during the Saturday peak hour
- Eastbound Right with a v/c of 0.77 LOS C during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound Right with a v/c of 0.84 LOS D during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Northbound through-right with a V/C of 0.86 LOS B during the p.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.08 LOS E during the a.m. peak hour
- Westbound left with a v/c of 0.41 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.08 LOS E during the p.m. peak hour

Under the 2028 future total scenario for Site Plan B, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline Road all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 0.85 LOS D during the a.m. peak hour
- Eastbound Right with a v/c of 0.93 LOS D during the a.m. peak hour
- Eastbound Right with a v/c of 0.87 LOS D during the p.m. peak hour
- Eastbound Right with a v/c of 0.80 LOS D during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound Right with a v/c of 0.78 LOS D during the p.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.96 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.21 LOS E during the p.m. peak hour

Under the 2033 future total scenario for Site Plan A, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline Road all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 0.94 LOS E during the a.m. peak hour
- Eastbound Right with a v/c of 1.01 LOS E during the a.m. peak hour
- Eastbound left with a v/c of 0.89 LOS D during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 LOS D during the p.m. peak hour
- Eastbound left with a v/c of 0.86 LOS D during the Saturday peak hour
- Eastbound Right with a v/c of 0.85 LOS D during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.75 LOS C during the a.m. peak hour
- Westbound right with a v/c of 0.86 LOS C during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Northbound through-right with a v/c of 0.96 LOS C during the p.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.11 LOS E during the a.m. peak hour
- Westbound left with a v/c of 0.51 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.13 LOS F during the p.m. peak hour

Under the 2033 future total scenario for Site Plan B, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline Road all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 0.87 LOS E during the a.m. peak hour
- Eastbound Right with a v/c of 1.01 LOS E during the a.m. peak hour
- Eastbound Right with a v/c of 0.91 LOS D during the p.m. peak hour
- Eastbound Right with a v/c of 0.85 LOS D during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.75 LOS C during the a.m. peak hour
- Westbound right with a v/c of 0.80 LOS D during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Northbound through-right with a v/c of 0.90 LOS C during the p.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.13 LOS E during the a.m. peak hour
- Westbound left with a v/c of 1.14 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.36 LOS F during the p.m. peak hour

Under the 2038 future total scenario for Site Plan A, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline Road all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 1.01 LOS E during the a.m. peak hour
- Eastbound Right with a v/c of 1.12 LOS F during the a.m. peak hour
- Southbound through with a v/c of 0.86 LOS C during the a.m. peak hour
- Eastbound left with a v/c of 0.91 LOS D during the p.m. peak hour
- Eastbound Right with a v/c of 0.96 LOS E during the p.m. peak hour
- Southbound through with a v/c of 0.87 LOS D during the p.m. peak hour
- Eastbound left with a v/c of 0.92 LOS D during the Saturday peak hour
- Eastbound Right with a v/c of 1.02 LOS E during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.78 LOS C during the a.m. peak hour
- Westbound right with a v/c of 0.89 LOS D during the p.m. peak hour
- Northbound through with a V/C of 0.92 LOS D during the p.m. peak hour

Townline Road and Jamieson Parkway/Site Access 2

- Southbound through right with a v/c of 0.87 LOS E during the p.m. peak hour
- Southbound left with a v/c 0.95 LOS F during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 0.95 LOS D during the a.m. peak hour
- Northbound left with a V/C of 1.06 LOS E during the p.m. peak hour
- Northbound through-right with a V/C of 1.06 LOS E during the p.m. peak hour
- Southbound through-right with a V/C of 0.87 LOS C during the a.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.15 LOS F during the a.m. peak hour
- Westbound left with a v/c of 0.58 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.20 LOS F during the p.m. peak hour

Under the 2038 future total scenario for Site Plan B, with the addition of corridor growth, site traffic and intersection improvements to Jamieson Parkway and Townline line all intersections operate at acceptable v/c ratios delays and queues with exception to the following:

Highway 401 Eastbound Off-Ramp

- Eastbound left with a v/c of 0.94 LOS D during the a.m. peak hour
- Eastbound Right with a v/c of 1.12 LOS F during the a.m. peak hour
- Eastbound left with a v/c of 0.76 LOS C during the p.m. peak hour
- Eastbound Right with a v/c of 0.96 LOS E during the p.m. peak hour
- Eastbound Right with a v/c of 1.00 LOS E during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.78 LOS C during the a.m. peak hour
- Northbound through with a V/C of 0.84 LOS C during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 0.93 LOS D during the a.m. peak hour
- Northbound left with a V/C of 0.95 LOS D during the p.m. peak hour
- Northbound through-right with a V/C of 1.00 LOS D during the p.m. peak hour

Townline Road and Site Access 1

- Westbound left with a v/c of 0.16 LOS E during the a.m. peak hour
- Westbound left with a v/c of 1.38 LOS F during the p.m. peak hour
- Westbound right with a v/c of 0.69 LOS F during the p.m. peak hour
- Southbound left with a v/c of 0.11 LOS E during the p.m. peak hour

The assessment determined that both development concepts can be accommodated by the surrounding transportation network subject to implementation of the recommended transportation improvements.

A review of loading and parking requirements was undertaken and confirmed that the proposed concept plans for both Site Plans satisfy the Zoning By-law requirements.

The proposed site accesses will meet OPSD 350.010 design standard.

The proposed site driveways meet the minimum intersection sight distance requirements for a 70 km/h design speed on Townline Road based on the TAC manual.

To support future traffic operations, the following transportation improvements are recommended:

Townline Road and Jamieson Parkway/Site Access 2 – Site Plan A

- Conversion of the eastbound right-turn lane to a shared through-right lane.
- Construction of dual westbound left-turn lanes, a westbound through lane and westbound right lane.
- Addition of an exclusive northbound right-turn lane.
- Restriping to provide a southbound left-turn lane.

- Implementation of protected westbound left-turn phasing and protected-permitted eastbound and southbound left-turn phasing.
- Signal timing optimization.

Townline Road and Jamieson Parkway/Site Access 2 – Site Plan B

- Conversion of the eastbound right-turn lane to a shared through-right lane.
- Addition of a westbound left-turn lane and shared westbound through-right lane.
- Restriping to provide a southbound left-turn lane.
- Implementation of protected-permitted eastbound, westbound and southbound left-turn phasing.
- Signal timing optimization.

Townline Road and Site Access 1 – Both Site Plan A and B

- Addition of exclusive westbound left-turn and right-turn lanes exiting the site.
- Addition of a northbound through-right lane on Townline Road.
- Addition of a southbound through-left lane on Townline Road.

Highway 401 Eastbound Off-Ramp and Townline Road - Both Site Plan A and B

- Addition of an eastbound shared left/right-turn lane to increase ramp terminal capacity.

Townline Road and Ellis Road/Sideroad 10 North - Both Site Plan A and B

- Addition of a northbound through lane.
- Addition of a southbound through lane.

The assessment determined that both development concepts Site Plan A and B can generally be accommodated by the surrounding transportation network subject to implementation of the recommended transportation improvements.

Sincerely,

GHD





Vincenzo Costantino

Transportation Engineer

William Maria, P. Eng.

Transportation Engineering Lead

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1. Introduction

1.1 Retainer and Objective

GHD Limited prepared an updated Traffic Study in response to comments made by the Region of Waterloo in August 2026 for a proposed industrial/commercial development located on land with municipal address of 2809 Townline Road in the Township of Puslinch.

The site location is illustrated in **Figure 1**.

The purpose of this study is to:

- Establish baseline traffic conditions for the study area in 2025 and determine future background operating conditions for a future planning horizon in 2028 and 2033.
- Estimate the site trips generated by the proposed development and distribute the traffic to the adjacent road network.
- Determine future operating traffic conditions during the weekday peak periods through intersection capacity analysis.
- Review sightlines for the proposed site access.

1.2 Study Team

The GHD team involved in the preparation of the study are:

- William Maria, P. Eng., Transportation Planning Lead
- Vincenzo Costantino, P.Eng., Transportation Planner

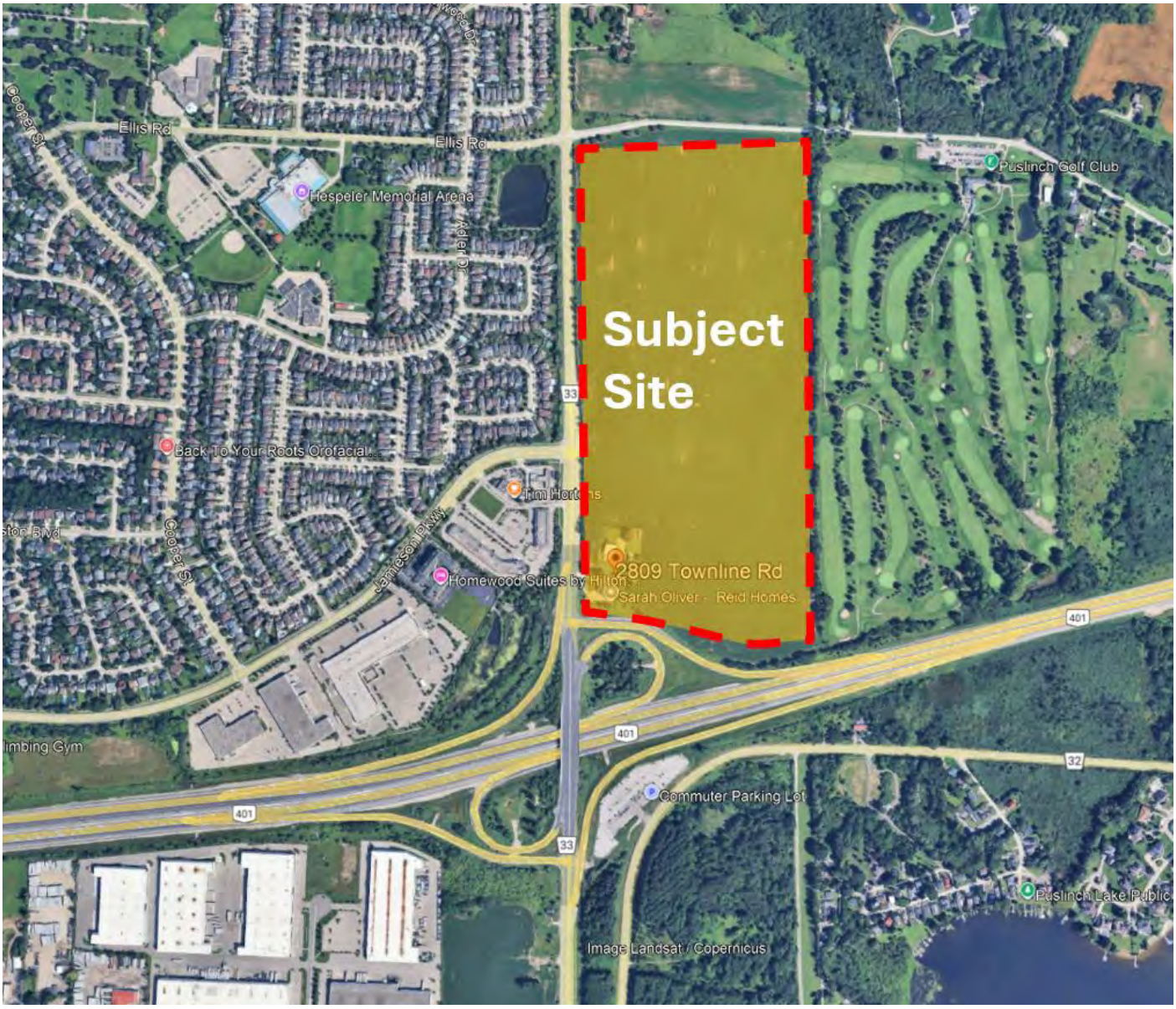


Figure 1 Site Location

2. Site Characteristics

2.1 Study Area

As per the agreed Terms of Reference for the study attached in **Appendix A**, the following intersections were included in the study area:

- Hwy 401 EB off-ramp and Townline Road
- Hwy 401 WB off-ramp and Townline Road
- Townline Road and Site Access 1
- Townline Road and Jamieson Parkway/Site Access 2

- Townline Road and Ellis Road/Sideroad 10N

3. Existing Conditions

3.1 Existing Road Network

Highway 401 is an east/west provincial highway under the jurisdiction of the MTO. Its intersection with Townline road has two off-ramps. The eastbound off-ramp has a two-lane cross-section with exclusive left-turn and right-turn lanes. The westbound off-ramp has a three-lane cross-section with a dual left-turn lane and an exclusive right-turn lane.

Townline Road is a north/south regional road under the jurisdiction of the Region of Waterloo. Within the study area it has a four-lane cross-section at the signalized intersections of the Highway 401 westbound and eastbound off-ramps. Its intersection with Jamieson Parkway is also signalized with a 6-lane cross-section on the south approach which includes a dual left-turn lane. At the signalized intersection with Ellis Road, Townline Road becomes a 3-lane cross-section which includes a two-way left-turn lane in both the North and South direction. The posted speed limit along Townline Road is 60 km/h.

Jamieson Parkway operates as east/west collector road under the jurisdiction of the City of Cambridge. Within the study area it has a four-lane cross-section including an exclusive left-turn and right-turn lane in the eastbound direction. Its intersection with Townline Road is signalized. The posted speed limit along Jamieson Parkway is 50 km/h.

Ellis Road is an east/west collector road under the jurisdiction of the City of Cambridge. Within the study area it has a two-lane cross-section. Its intersection with Townline Road is a signalized intersection including an auxiliary left turn. The assumed speed limit is 50 km/h.

Sideroad 10N is an east/west collector road under the jurisdiction of the Township of Puslinch. Within the study area it has a two-lane cross-section. Its intersection with Townline Road is signalized including an auxiliary left turn. The assumed speed limit is 50 km/h.

The existing lane configurations and intersection control are shown in the figure below.

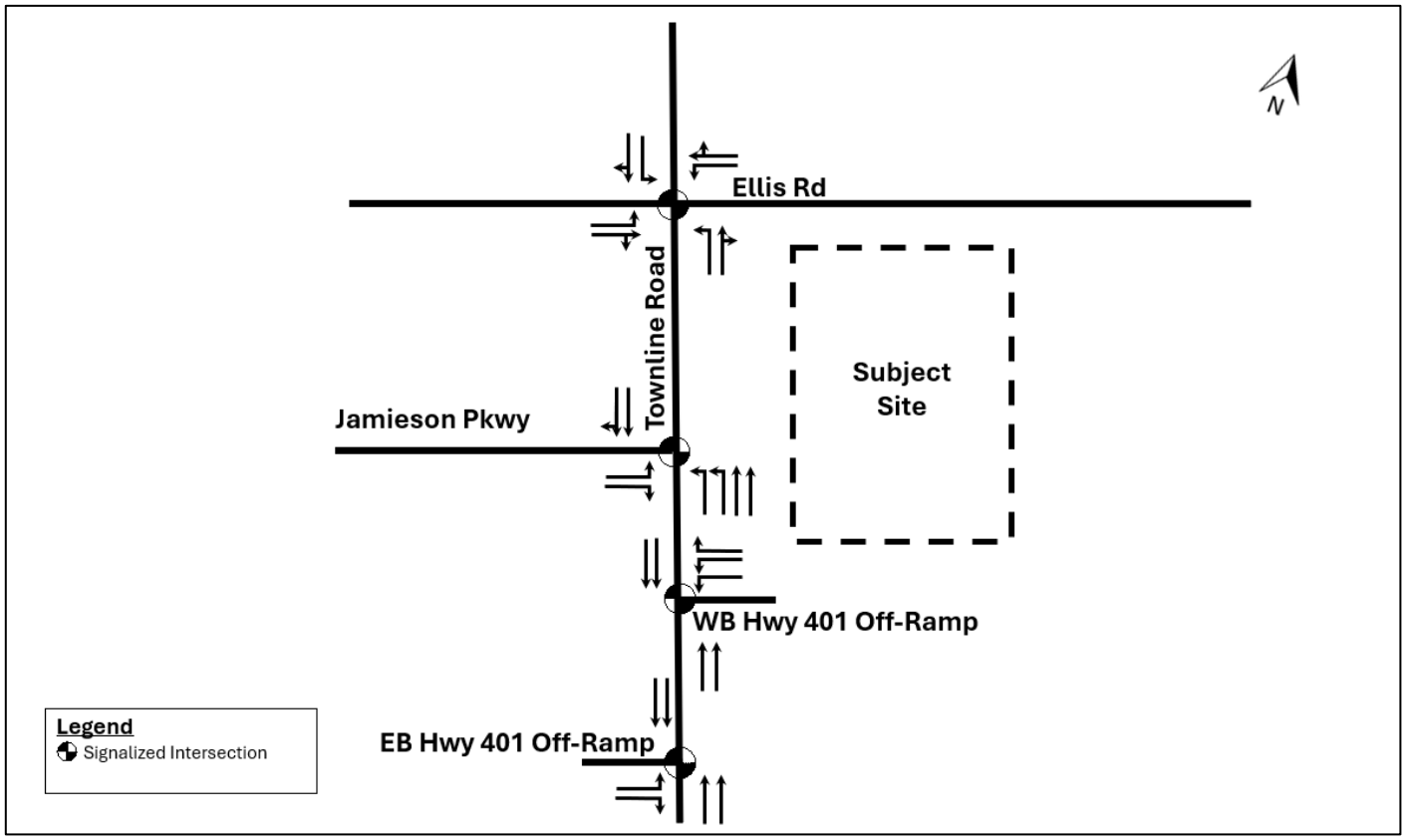


Figure 2 Existing Lane Configuration and Traffic Controls

3.2 Pedestrian and Bicycle Facilities

Within the study area, pedestrian infrastructures such as sidewalks or multi-use paths are provided along at least one side of all study area roads as summarized in the following table.

Table 1 Existing Pedestrian and Bicycle Facilities

Road Name	Pedestrian Sidewalk	Bicycle Lane	Multi-Use Pathway (MUP)
Townline Road	West side only (South of Jamieson Parkway)	Both Sides (South of Jamieson Parkway)	Not present
Jamieson Pkwy	Both sides	Both sides	Not present
Ellis Road	Both sides (West of Townline Road)	Both Sides (West of Townline Road)	Not present
Side Road 10N	Not present	Not present	Not present
Hwy401 off-ramps	Not present	Not present	Not present

The pedestrian and bicycle routes are illustrated in **Figure 3** below.



Figure 3 Existing Active Transportation Facilities

3.3 Transit Services

Grand River Transit (GRT) operates the following transit route within the study area.

GRT Route 51 (**Hespeler**) operates in a general east/west and north/south direction along Jamieson Pkwy, Townline Road, Ellis Street within the study area from Monday to Sunday. From Monday to Saturday, Route 51 operates with headways of 30 minutes during peak hours. On Sundays, Route 51 operates with headways of 1 hour during peak hours.

There are in total 5 transit stations nearby the study intersections.

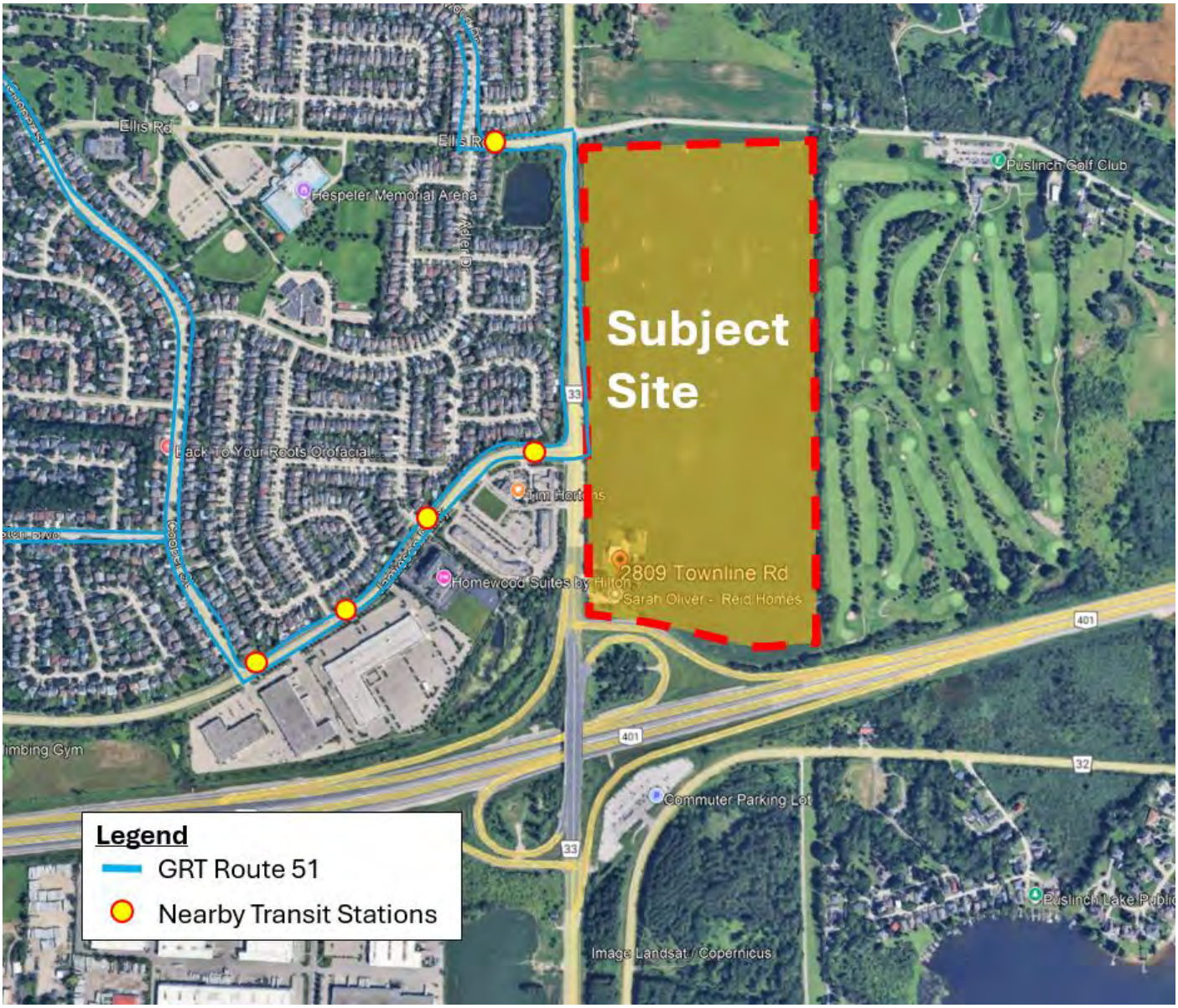


Figure 4 Existing Transit Routes and Transit Stops

3.4 Existing Traffic Data

GHD contracted Spectrum Inc. to conduct updated turning movement counts at all the study intersections in October and November 2025 for the a.m., p.m. and Saturday peak hour volumes. The baseline 2025 traffic volumes for the a.m., p.m. and weekend peak hours are summarized in **Figure 5** below with the full turning movement counts provided in **Appendix C.**

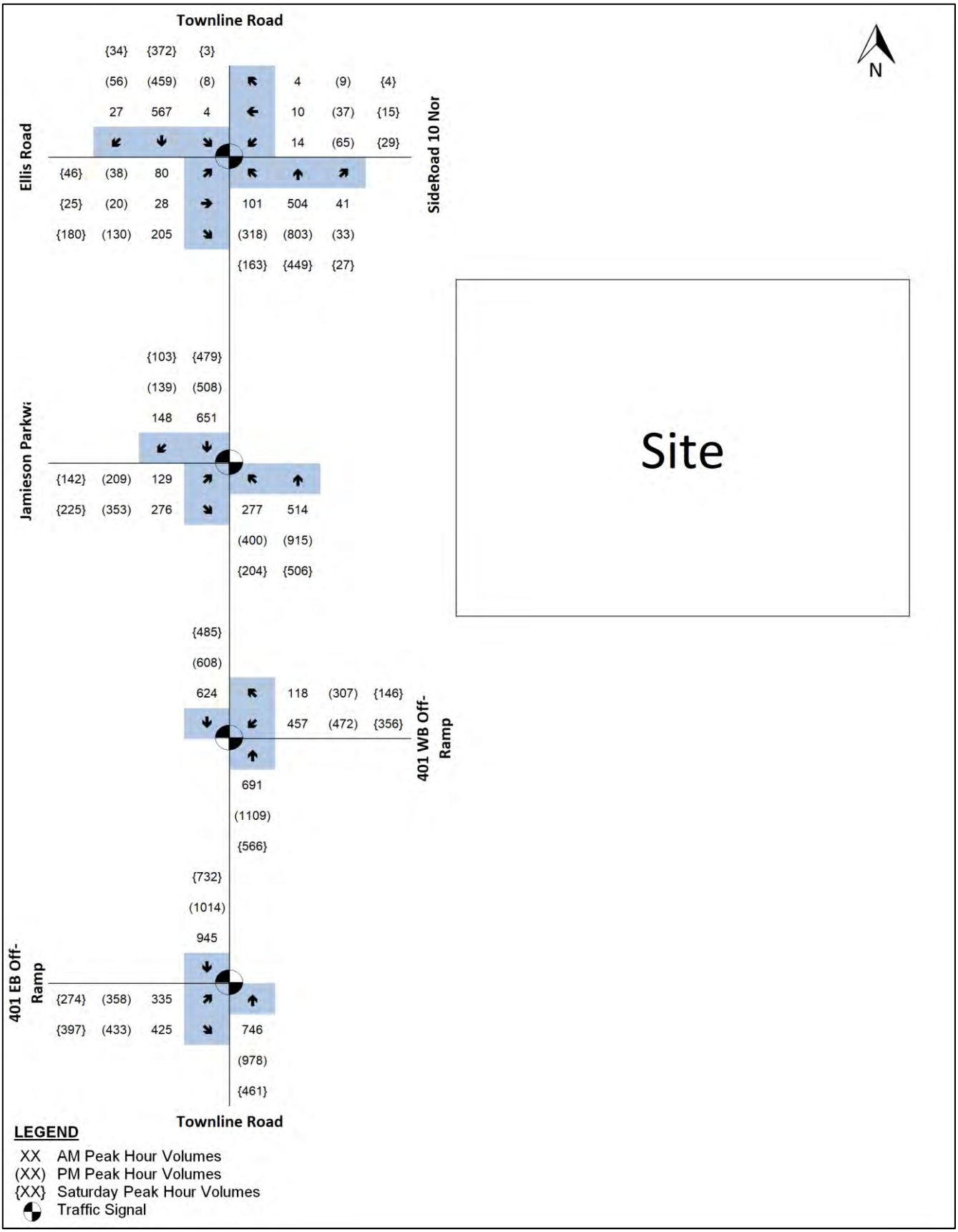


Figure 5 Baseline 2025 Traffic Volumes

4. Future Conditions

4.1 Future Road Improvements

As identified in Exhibit 5.4 of the 2018 Region of Waterloo Transportation Master Plan, Townline Road is planned to be widened between Jamieson Parkway and Blackbridge Road within the 2031 to 2041 planning horizon. As the timing and completion date of the widening remain uncertain, the improvement has not been included in the baseline analysis assumptions. Instead, the planned widening has been considered as a potential future transportation improvement to be implemented, if warranted, based on the results of the intersection capacity analysis. **Figure 6** illustrates the extent of the planned Townline Road widening.

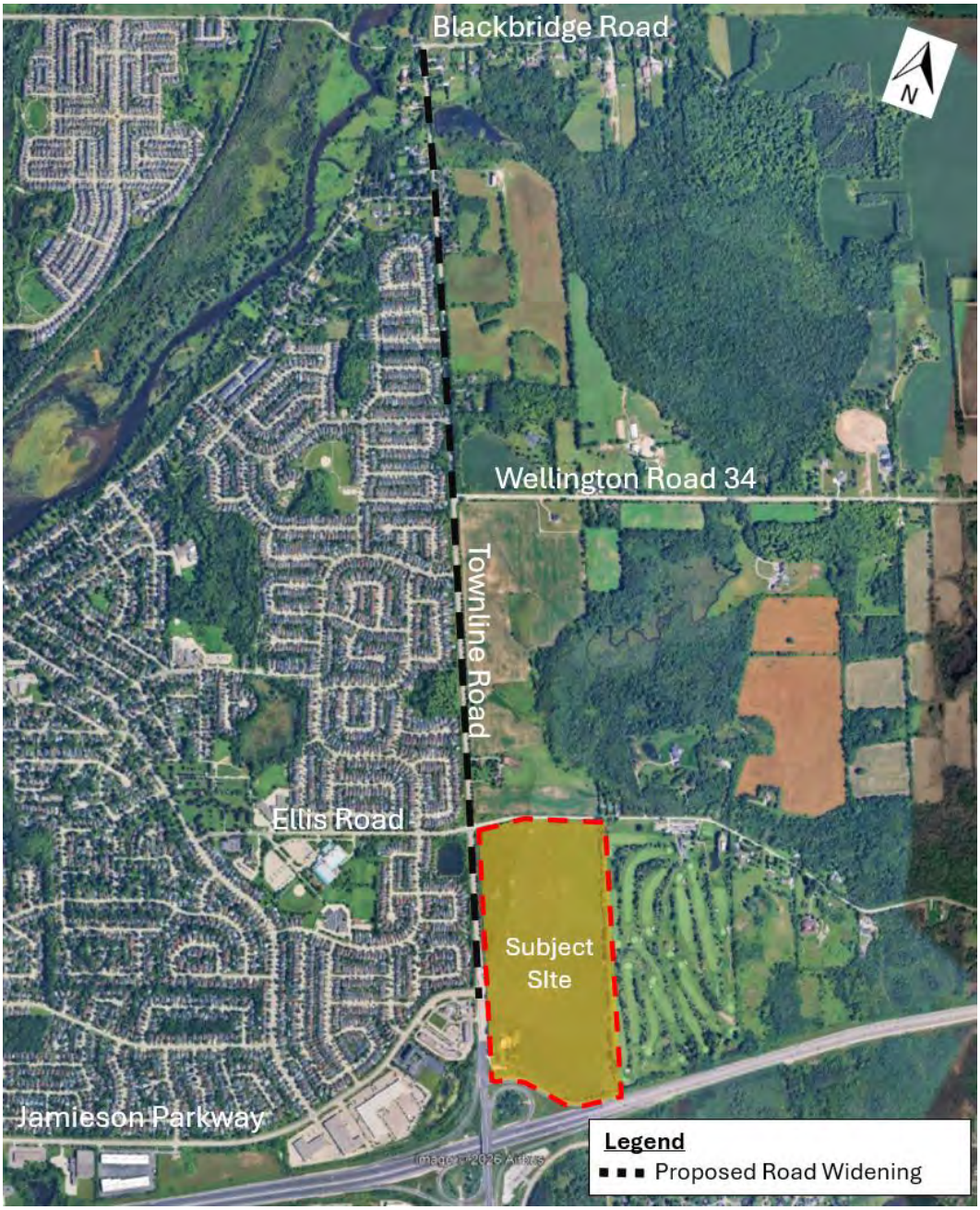


Figure 6 Proposed Extent of Townline Road Widening

4.2 Future Pedestrian and Bicycle Improvements

As shown in Exhibit 5.6 of the Region of Waterloo's 2041 Active Transportation Network, a planned bicycle facility is identified along Townline Road, extending between Jamieson Parkway and Wellington Road 34. This planned infrastructure is intended to enhance active transportation connectivity within the study area. The extent of the proposed active transportation network along the study roads is illustrated in the following figure.



Figure 7 Future Active Transportation Network

4.3 Study Horizon Year

As per the terms of reference future horizon years of 2028 build-out, 2033 representing five years post build-out, and 2038 representing ten years post build-out was selected as per the MTO and Town guidelines.

4.4 Corridor Growth

As per the approved terms of reference, a 2% rate was applied to the Highway 401 ramps, a 2% growth rate was applied to Ellis Road and Jamieson Parkway and a rate of 2% was calculated for Townline Road. As per the MTO request the MTO ramps projected volumes were calculated using simple growth rate.

4.5 Background Development Traffic

The terms of reference for this traffic impact study identified one background development at 2310 - 2420 Townline Road. This development consists of a two-phase industrial development of two buildings: Building A (GFA of 146,622 sq.ft.) and Building B (GFA of 159,905 sq.ft.) that will be completed by a 2026 horizon year. **Figure 8** below summarizes the background volumes on the study intersections.

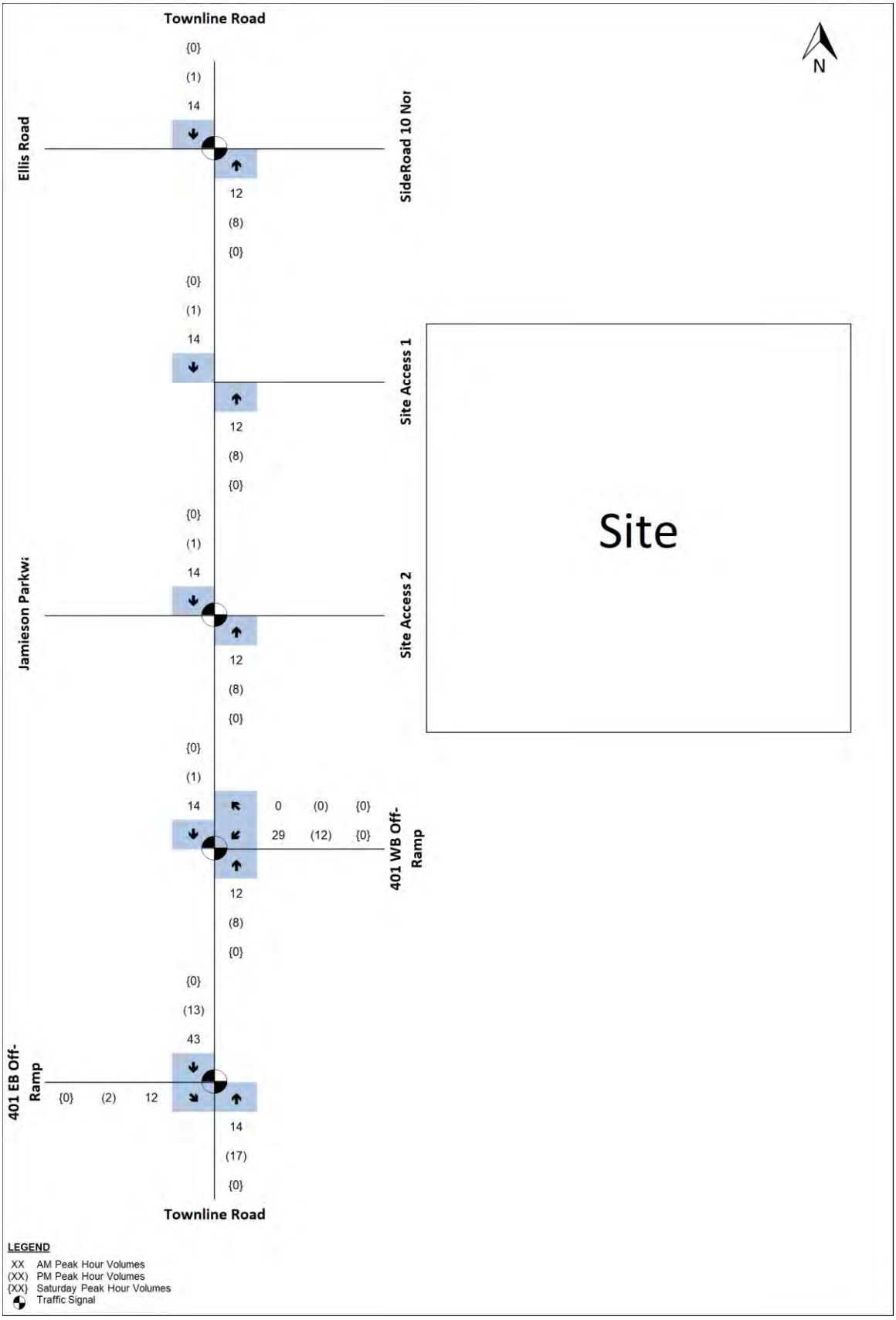


Figure 8 Background Development Volumes

4.6 Future Background Traffic Volumes

The background traffic volumes for the 2028 and 2038 horizon year were derived by applying the aforementioned growth rates to the study area roads. The resulting 2028 and 2038 future background traffic volumes are summarized in **Figure 9** to **Figure 11**.

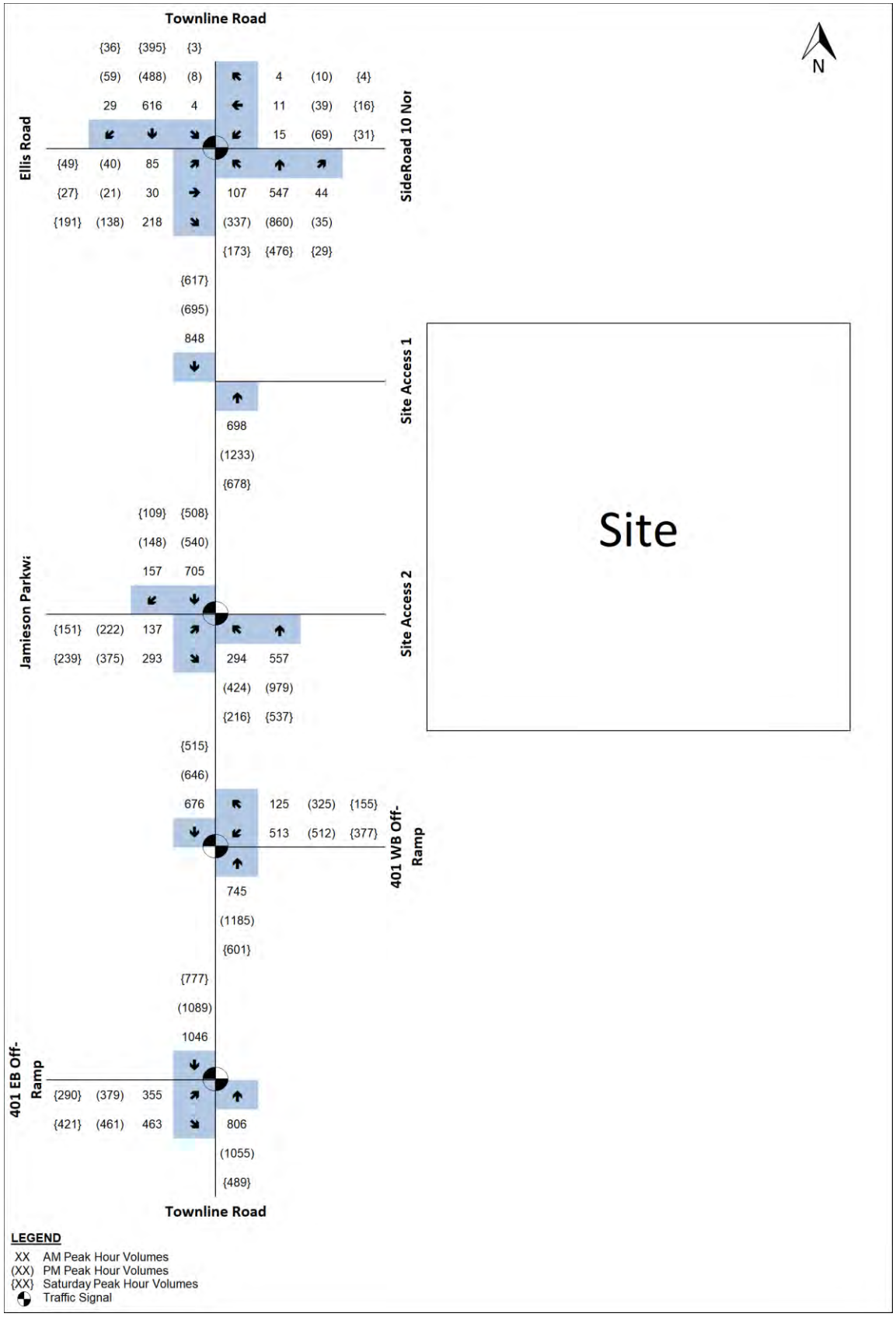


Figure 9 2028 Future Background Traffic Volumes

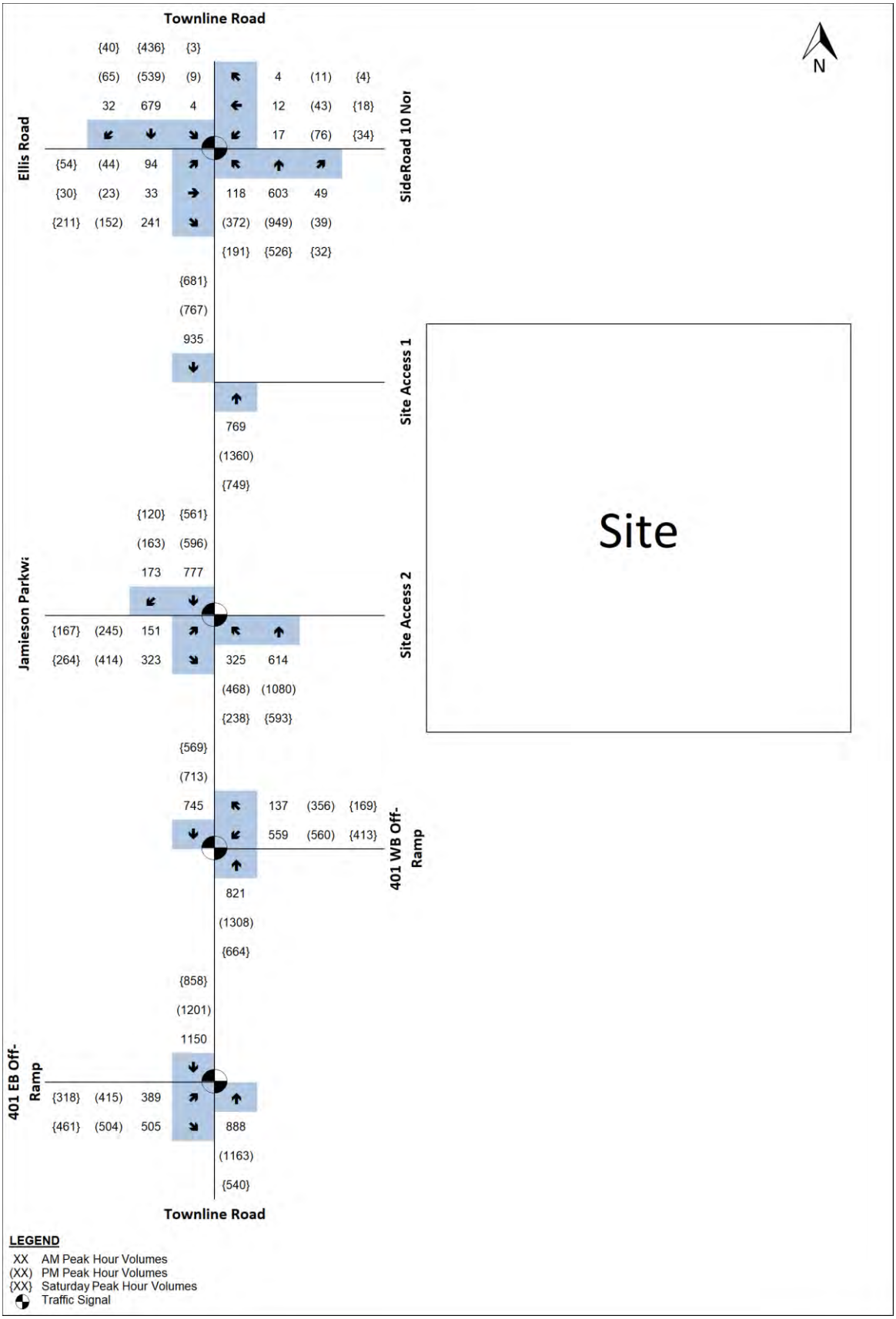


Figure 10 2033 Future Background Traffic Volumes

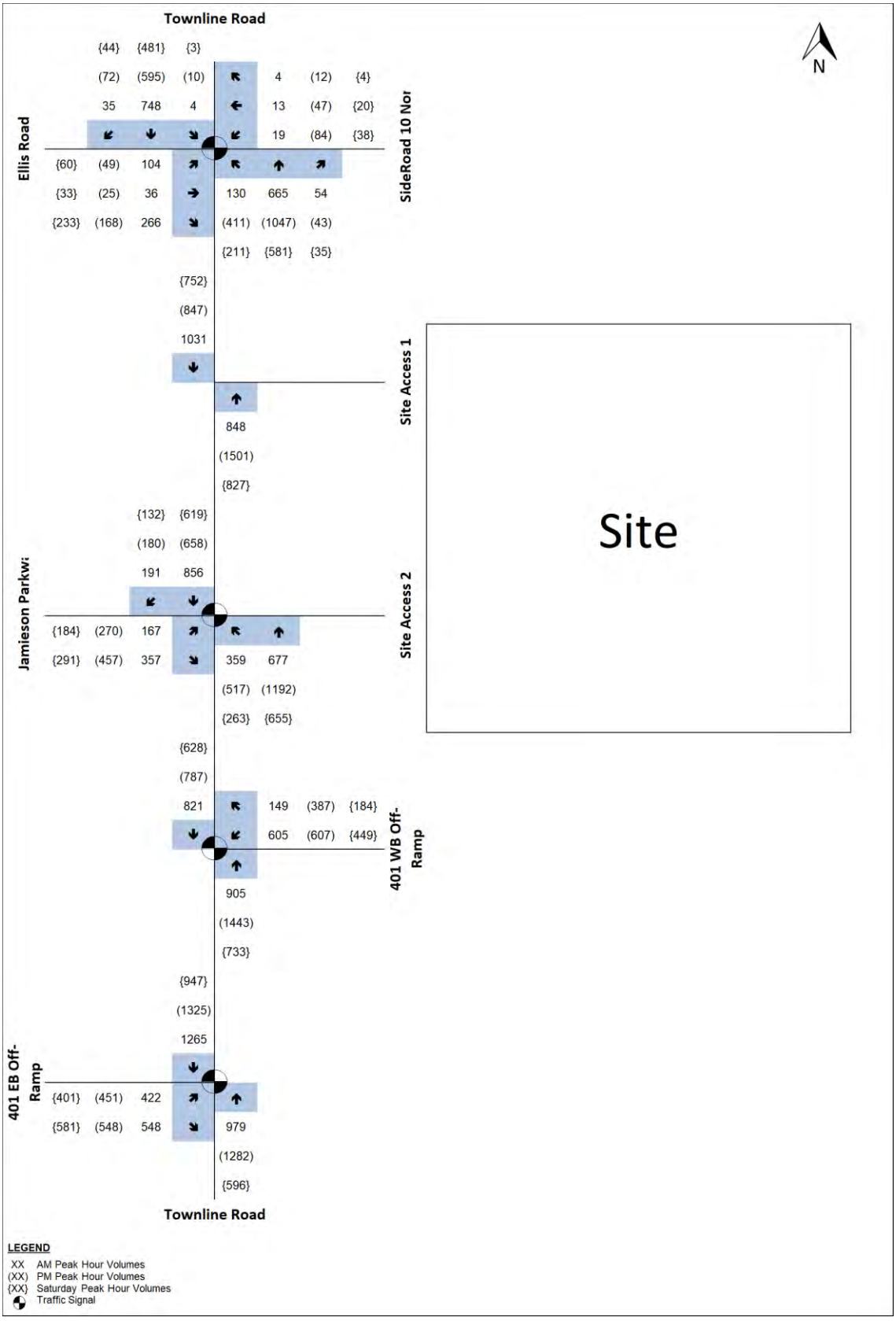


Figure 11 Future Background 2038 Volumes

5. Proposed Development Content

A site plan prepared by Ware Malcomb is provided in **Figure 12** and **Appendix B**., presenting two conceptual site plans for the development, labeled as Site Plan A and Site Plan B.

Both conceptual site plans feature six industrial buildings situated on the northern portion of the site, near the intersection of Site Access 2, Jamieson Parkway, and Townline Road. The gross floor area (GFA) breakdown for the six buildings is as follows:

- Building 1: 174,375 ft²
- Building 2: 174,375 ft²
- Building 3: 174,375 ft²
- Building 4: 112,236 ft²
- Building 5: 112,236 ft²
- Building 6: 105,636 ft²

Site Plan A includes the six industrial buildings listed above, as well as a big box retail component with a GFA of 162,428 ft² and a gas station featuring 12 pumps (24 fueling stations), located on the southern portion of the lot. The total GFA for Site Plan A is 1,015,662 ft² (94,358 m²). The site plan for Site Plan A is shown in **Figure 12** below.



Figure 12 Proposed Site Plan – Site Plan A

Similar to Site Plan A, Site Plan B consists of the 6 industrial buildings on the northern portion of the lot mentioned above where instead of a box retail component and gas station, two industrial buildings are proposed on the southern portion of the lot noted as building 7 and 8. Both buildings 7 and 8 have a GFA of 210,000 ft^2 which equate to a total GFA of 1,273,234 ft^2 (118,287m^2) for Site Plan B. The site plan for Site Plan B is shown in **Figure 13** below.



Figure 13 Proposed Site Plan – Site Plan B

Accesses to the subject site are proposed via a two full-moves driveway on Townline Road. Site Access 1 is the north most access, Site Access 2 is located opposite Jamieson Parkway.

5.1 Assessment of Direct Access to Sideroad 10N (Ellis Road)

As part of the Project Scoping Committee (PSC) and TOR process, Township staff advised that direct access to Sideroad 10N (Ellis Road) would not be permitted. Specifically, Township staff noted that Sideroad 10N is a narrow roadway subject to truck restrictions and is not suited to accommodate industrial traffic. Consistent with this direction, both Concept A and Concept B were developed without a direct vehicular connection to Sideroad 10N.

Regional Official Plan Policy 5.A.32 states that development along Regional Roads should obtain access from area municipal roads where feasible. While the subject lands also abut Sideroad 10N, a direct access connection to this roadway is not considered feasible or appropriate from a transportation planning, operational and site design perspective. As discussed below, the proposed development can be adequately and efficiently served through the planned access configuration, whereas a connection to Sideroad 10N would provide limited transportation benefit and introduce operational, safety, and policy concerns.

Townline Road represents the logical and functional roadway for site access. In both Concept A and Concept B, the proposed buildings, loading areas, internal roadway network, and truck circulation patterns have been intentionally organized around a north-south internal circulation spine that provides efficient connections between the various development blocks and the proposed Townline Road access points. This configuration allows loading areas to operate efficiently, minimizes internal truck travel distances, and supports the orderly movement of goods and vehicles throughout the site. A connection to Sideroad 10N would not align with this internal circulation framework and would instead function as a peripheral access point located at the northern extremity of the development.

In addition to Township direction, the existing characteristics and function of Sideroad 10N further support the exclusion of a direct access connection. Sideroad 10N is a constrained roadway characterized by a relatively narrow cross-section and existing truck restrictions. These restrictions reflect the roadway's intended function and recognize that this corridor is not intended to accommodate significant industrial or commercial traffic volumes. Introducing a direct access connection serving a development anticipated to generate service vehicle and truck activity would be inconsistent with both the operating characteristics of the roadway.

The location of a potential Sideroad 10N access relative to anticipated site-generated travel patterns also reduces its practicality and effectiveness. Based on the proposed land uses and the site's proximity to Highway 401, a significant portion of site-generated traffic, particularly truck traffic, is expected to be oriented to and from the south, with Highway 401 serving as the principal connection to the broader regional transportation network. A direct access to Sideroad 10N would be located at the northern limit of the site and would require a large number of inbound and outbound vehicles to travel north and away from their ultimate destination before returning south toward Highway 401 and other key destinations.

This out-of-direction travel is inconsistent with expected driver behaviour and would significantly diminish the operational value of a Sideroad 10N connection. It is anticipated that a substantial proportion of drivers, particularly truck operators, would instead utilize Site Access 2 opposite the signalized intersection of Townline Road and Jamieson Parkway, as it provides the most direct route to Highway 401 and the broader regional transportation network. Consequently, outbound traffic originating from the northern portions of the site would likely circulate internally through the development to reach Site Access 2 prior to departure. Similarly, inbound traffic approaching from the south would have little incentive to continue north to access the site via Sideroad 10N and would instead be expected to utilize Site Access 2.

Based on the direction provided by Township staff, the truck restrictions and constrained characteristics of Sideroad 10N, the limited operational benefit associated with a northern access, the site's internal circulation design, the predominately south-oriented travel demand associated with the proposed development, and the availability of efficient access via Townline Road, a direct access connection to Sideroad 10N has not been contemplated and is not considered practical, appropriate or necessary from a transportation planning and operational perspective.

5.2 Site Trip Generation

As there are two conceptual site plans for the development, site trip generation was calculated separately for each case. For each Site Plan, traffic generation for the proposed buildings during the a.m., p.m., and weekend peak hours was derived from the 12th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Specifically, Land Use Code (LUC) 130 – Industrial Park was used for the industrial component for both Site Plans, and (LUC) 820 - Shopping Center and (LUC) 944 - Gas Service Station exclusive to Site Plan A.

To ensure the most conservative approach, a comparison was made between the fitted curve equations and average trip generation rates for each Land Use Code. The higher of the two calculated trip generation values whether from the fitted curve or the average rate was selected for each land use and applied to the analysis.

As confirmed with by the Township’s Peer Reviewer, the ITE Trip Generation for the Saturday peak hour of the industrial park (LUC 130) consists of 1 study and overestimates the traffic generation for this period. As a result, the

Saturday peak hour generation will consist of 60% of the p.m. peak hour trip generation which has been approved for similar traffic studies in the County.

Additionally, as per the pass-by rates published by ITE, pass by rates were applied where applicable to the site traffic that is redistributed among the site accesses. The pass-by rates were applied to the generated trips for big box retailer and the gas station uses based on the ITE published document.

Table 2 summarizes the estimated trip generation for Site Plan A.

Table 2 Total Site Trip Generation for Site Plan A

Land Use Code	GFA	Parameters	Peak Hour Trip Generation								
			Weekday AM			Weekday PM			Saturday Midday		
			In	Out	Total	In	Out	Total	In	Out	Total
Industrial Park (LUC 130) Buildings 1 - 6	853, 233.65 ft^2 GFA	Trip Rate	0.222	0.065	0.287	0.082	0.212	0.294	0.082	0.212	0.294
		Trip Ratio	77%	23%	100%	28%	72%	100%	28%	72%	100%
		Passenger Vehicle Trips	175	44	219	54	169	223	42	109	151
		Truck Trips	14	12	26	16	12	28	0	0	0
		New Trips	**189**	**56**	**245**	**70**	**181**	**251**	**42**	**109**	**151**
Retail Component (LUC 820 Shopping Centre)	162, 427.40 ft^2 GFA	Trip Rate	0.887	0.542	1.428	2.192	2.284	4.476	2.943	2.826	5.769
		Trip Ratio	62%	38%	100%	49%	51%	100%	51%	49%	100%
		Gross Trips	144	88	232	356	371	727	478	459	937
		Pass-by Trips	0	0	0	-106	-106	-212	0	0	0
		Adjusted Trips	**144**	**88**	**232**	**250**	**265**	**515**	**478**	**459**	**937**
Gas Station (LUC 944)	24 Vehicle Fueling Stations	Trip Rate	5.667	5.667	11.333	7.083	7.167	14.250	6.250	5.917	12.167
		Trip Ratio	50%	50%	100%	50%	50%	100%	51%	49%	100%
		Gross Trips	136	136	272	170	172	342	150	143	293
		Pass-by Trips	-86	-86	-172	-98	-98	-196	-72	-72	-144
		Adjusted Trips	**50**	**50**	**100**	**72**	**74**	**146**	**78**	**71**	**149**
Total Passenger Vehicle Trips			**455**	**268**	**723**	**580**	**712**	**1292**	**670**	**711**	**1381**
Total Truck Trips			**14**	**12**	**26**	**16**	**12**	**28**	**0**	**0**	**0**
Total Trips			**469**	**280**	**749**	**596**	**724**	**1320**	**670**	**711**	**1381**
Total Pass-by Trips			**-86**	**-86**	**-172**	**-204**	**-204**	**-408**	**-72**	**-72**	**-144**
Total Trips (Pass-By Adjusted)			**383**	**194**	**577**	**392**	**520**	**912**	**598**	**639**	**1,237**

The proposed Site Plan A development is expected to generate a total of 577 two-way site trips during the a.m. peak hour consisting of 383 inbound and 194 outbound trips. During the p.m. peak hour, it is expected to generate 912 new two-way site trips consisting of 392 inbound and 520 outbound trips. During the Saturday peak hour, it is expected to generate 1,237 new two-way site trips consisting of 598 inbound and 639 outbound trips.

Additionally, the development is expected to generate a total of 172 two-way pass-by trips during the a.m. peak hour consisting of 86 inbound and 86 outbound trips. During the p.m. peak hour, it is expected to generate 408 pass-by trips consisting of 204 inbound and 204 outbound trips. During the Saturday peak hour, it is expected to generate 144 pass-by trips consisting of 72 inbound and 72 outbound trips. The pass by trips for the retail and the gas station component are shown below.

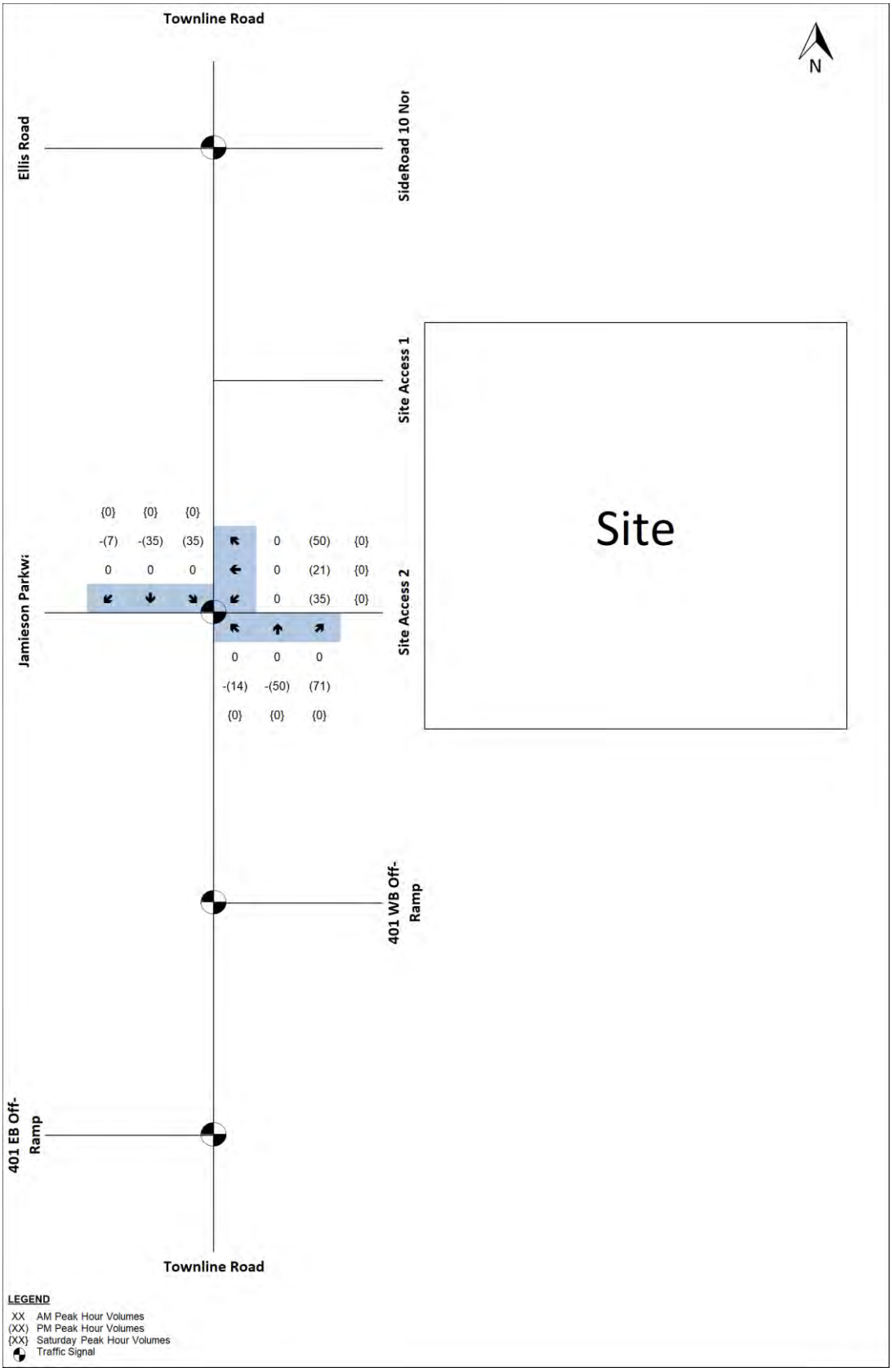


Figure 14 Retail Pass-By Trips

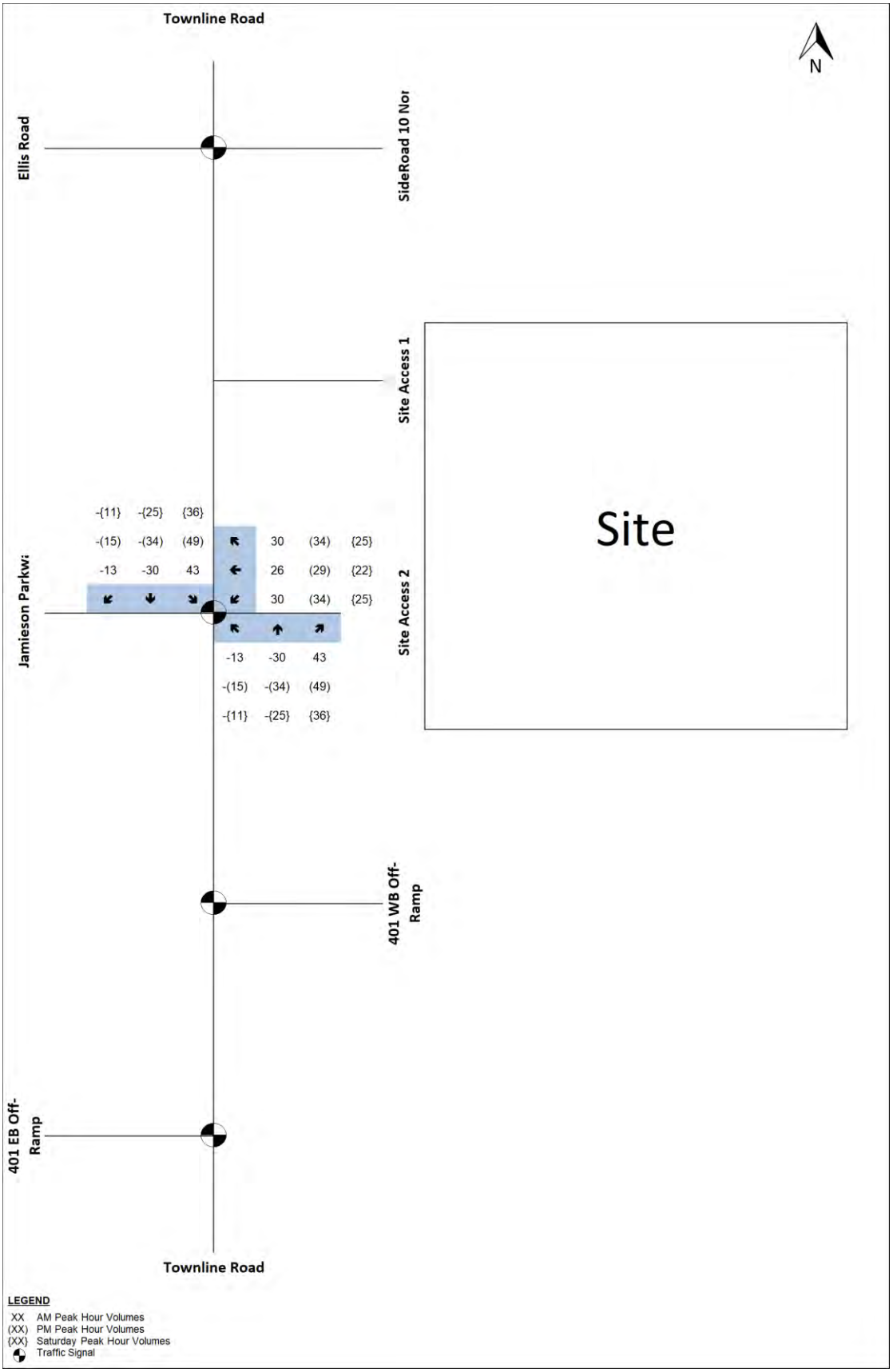


Figure 15 Gas Station Pass-By Trips

The **Table 3** below summarizes the estimated trip generation for site plan B.

Table 3 Site Trip Generation - Site Plan B

Land Use Code	GFA	Parameters	Peak Hour Trip Generation								
			Weekday AM			Weekday PM			Saturday Midday		
			In	Out	Total	In	Out	Total	In	Out	Total
Industrial Park (LUC 130) Buildings 1 -8	1,273,241.44 ft² GFA	Trip Rate	0.222	0.065	0.287	0.082	0.212	0.294	0.082	0.212	0.294
		Trip Ratio	77%	23%	100%	28%	72%	100%	28%	72%	100%
		Passenger Vehicle Trips	214	52	266	68	213	279	53	137	190
		Truck Trips	20	18	38	21	16	37	0	0	0
		New Trips	234	70	304	89	229	318	53	137	190
Total Site Trips			**234**	**70**	**304**	**89**	**229**	**318**	**53**	**137**	**190**

The proposed Site Plan B development is expected to generate a total of 304 two-way site trips during the a.m. peak hour consisting of 234 inbound and 70 outbound trips. During the p.m. peak hour, it is expected to generate 318 new two-way site trips consisting of 89 inbound and 229 outbound trips. During the Saturday peak hour, it is expected to generate 190 new two-way site trips consisting of 53 inbound and 137 outbound trips.

5.3 Site Traffic Distribution and Assignment

The site generated traffic for the subject site was distributed based on the existing travel patterns at the study intersections and a review of the 2022 Transportation Tomorrow Survey (TTS) data. The TTS derived data can be found in **Appendix G**

The directional distribution used for site generated traffic for Site Plan A is summarized in **Table 4** and **Table 5.** The distribution for Site Plan B is summarized in **Table 6.**

Table 4 Site Traffic Distribution Industrial– Site Plan A

Peak Period	Direction	North (Townline Road)	South (Townline Road)	East (Ellis Road)	West (Ellis Road)	West (Jamieson Parkway)	West (401 EB Off Ramp)	East (401 WB Off ramp)	West (401 WB On Ramp)	West (401 EB On Ramp)
AM	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%
PM	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%
Sat	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%

Table 5 Site Traffic Distribution Commercial - Site Plan A

Peak Period	Direction	North (Townline Road)	South (Townline Road)	East (Ellis Road)	West (Ellis Road)	West (Jamieson Parkway)	West (401 EB Off Ramp)	East (401 WB Off ramp)	West (401 WB On Ramp)	West (401 EB On Ramp)
AM	Inbound	10%	20%	5%	5%	10%	25%	25%	0%	0%
	Outbound	10%	20%	5%	5%	10%	0%	0%	25%	25%
PM	Inbound	10%	20%	5%	5%	10%	30%	20%	0%	0%
	Outbound	10%	20%	5%	5%	10%	0%	0%	30%	20%
Sat	Inbound	10%	20%	5%	5%	10%	25%	25%	0%	0%
	Outbound	10%	20%	5%	5%	10%	0%	0%	25%	25%

Table 6 Site Traffic Distribution Industrial – Site Plan B

Peak Period	Direction	North (Townline Road)	South (Townline Road)	East (Ellis Road)	West (Ellis Road)	West (Jamieson Parkway)	West (401 EB Off Ramp)	East (401 WB Off ramp)	West (401 WB On Ramp)	West (401 EB On Ramp)
AM	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%
PM	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%
Sat	Inbound	10%	20%	10%	5%	0%	30%	25%	0%	0%
	Outbound	10%	20%	10%	5%	5%	0%	0%	25%	25%

The percentage distributions for the conceptual site plans are shown below:

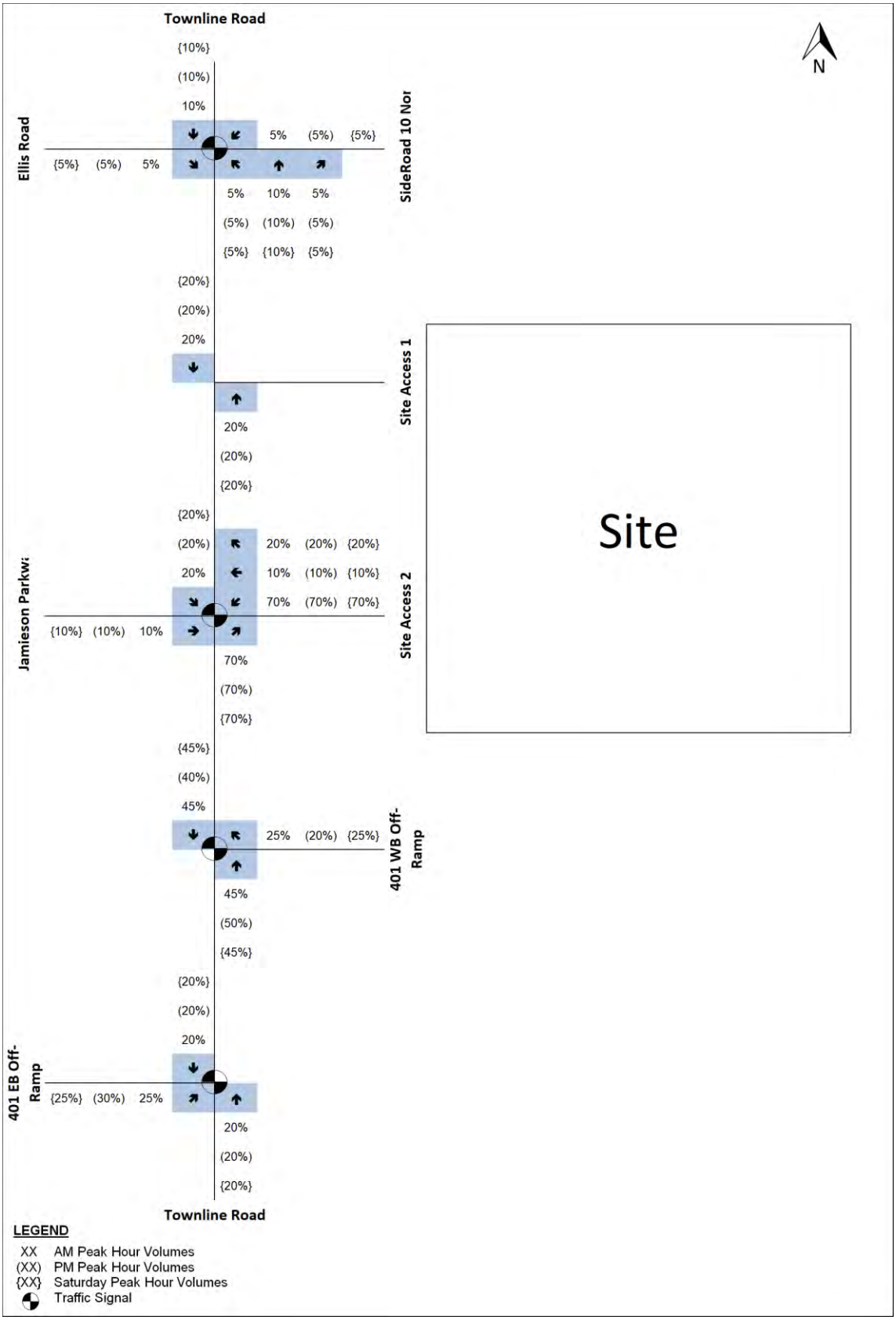


Figure 16 Site Trip Distribution Commercial – Site Plan A

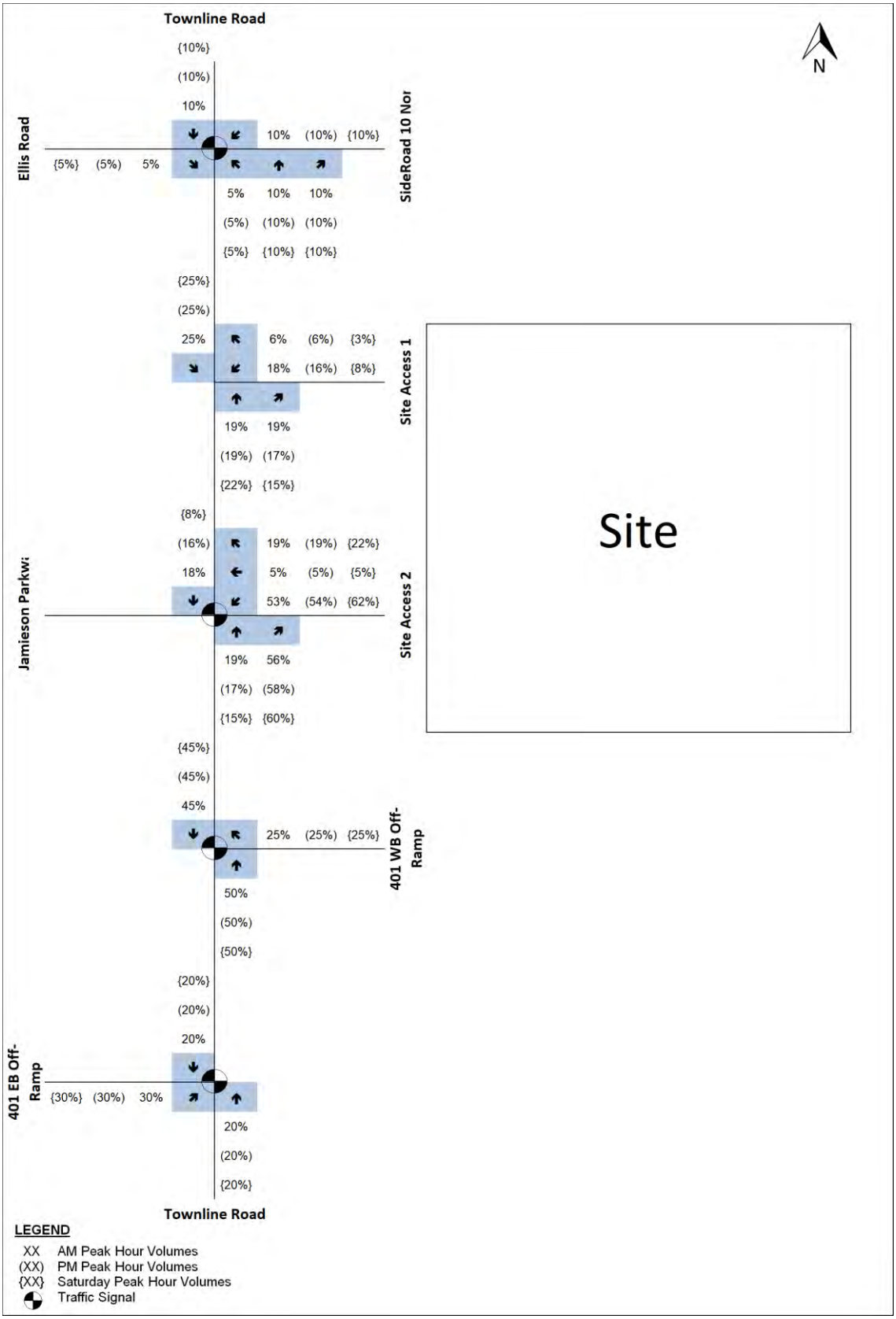


Figure 17 Site Trip Distribution Industrial – Site Plan A

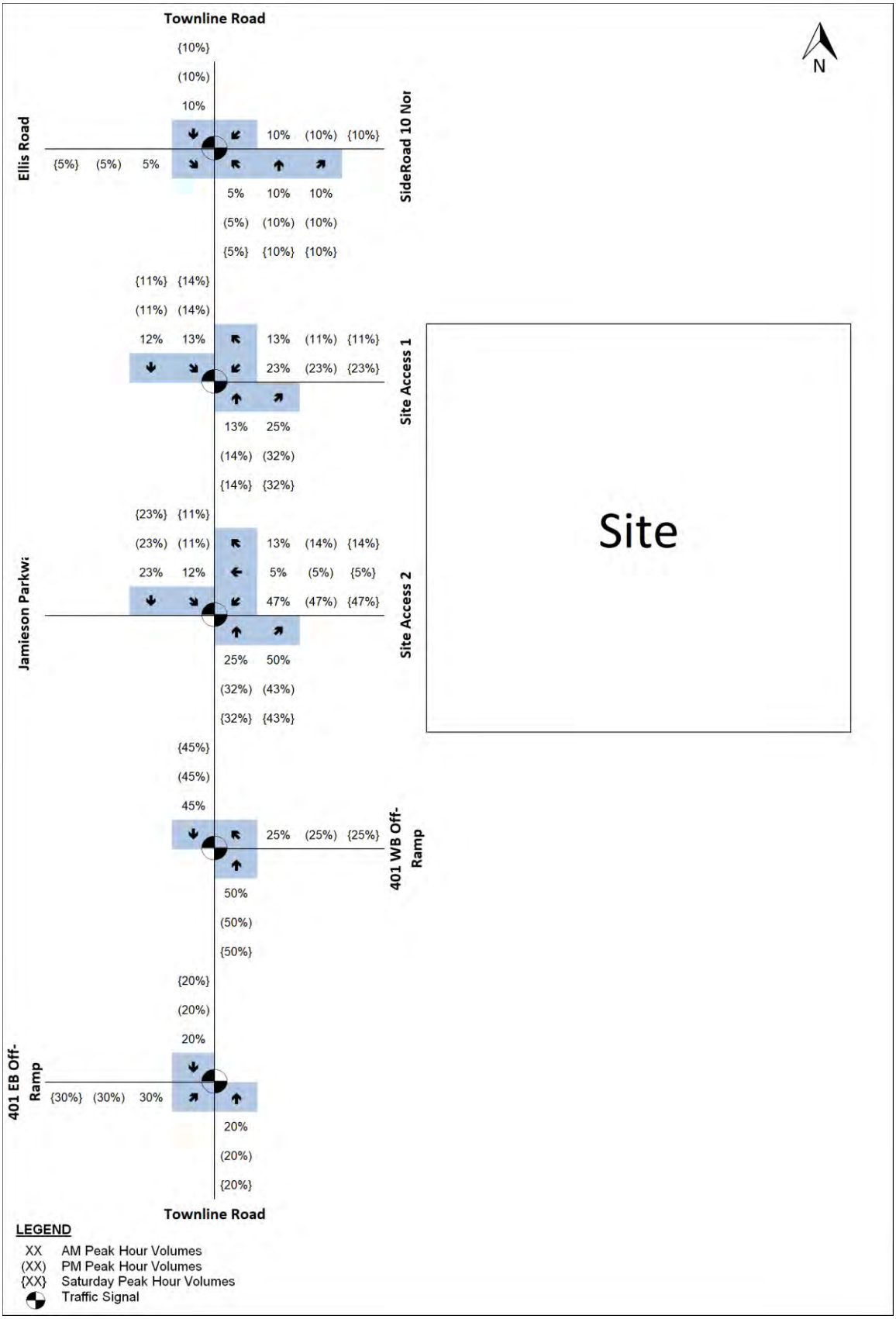


Figure 18 Site Trip Distribution Industrial – Site Plan B

The total site trips for each Site Plan are shown in **Figure 19** and **Figure 20.**

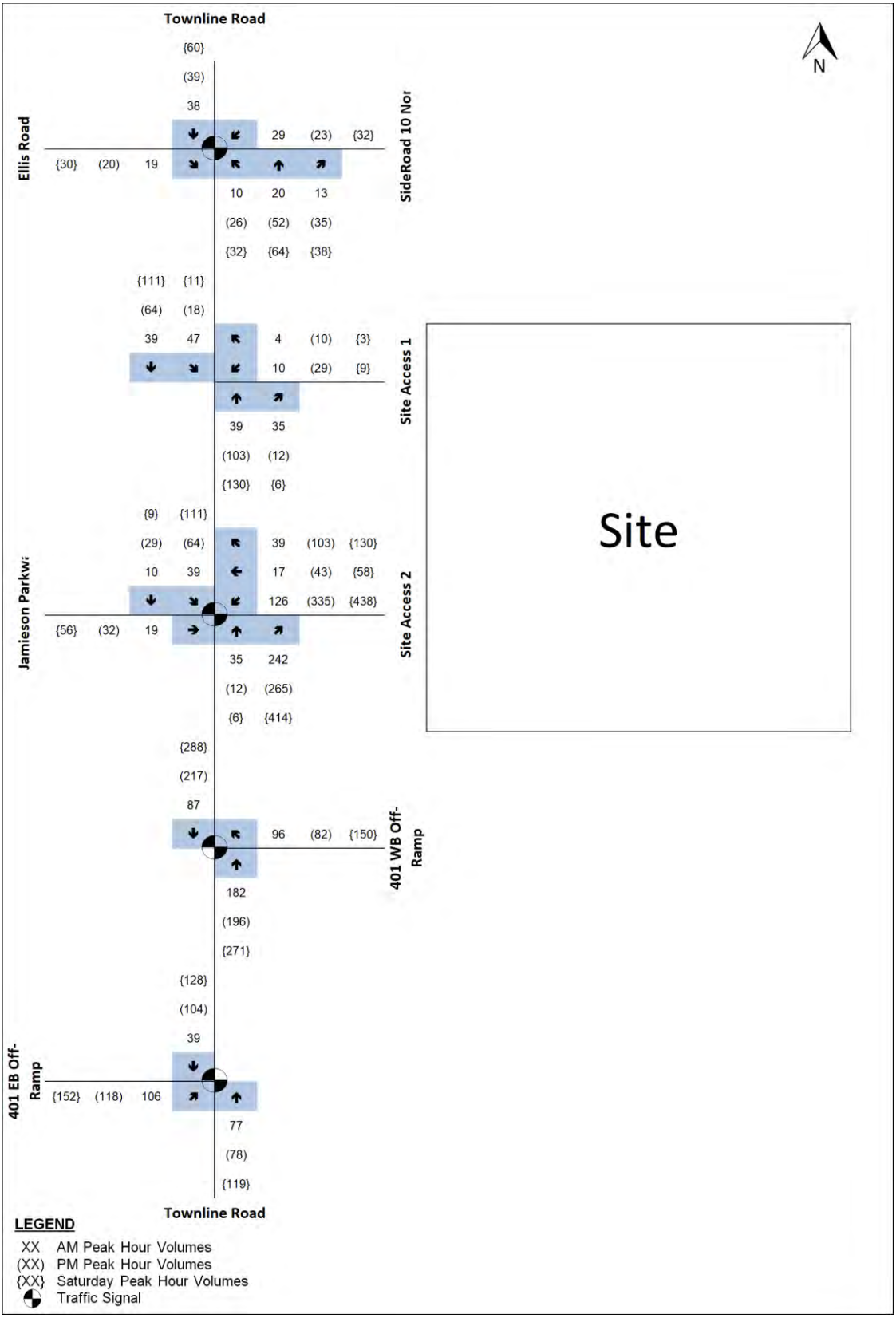


Figure 19 Total Site Trips – Site Plan A

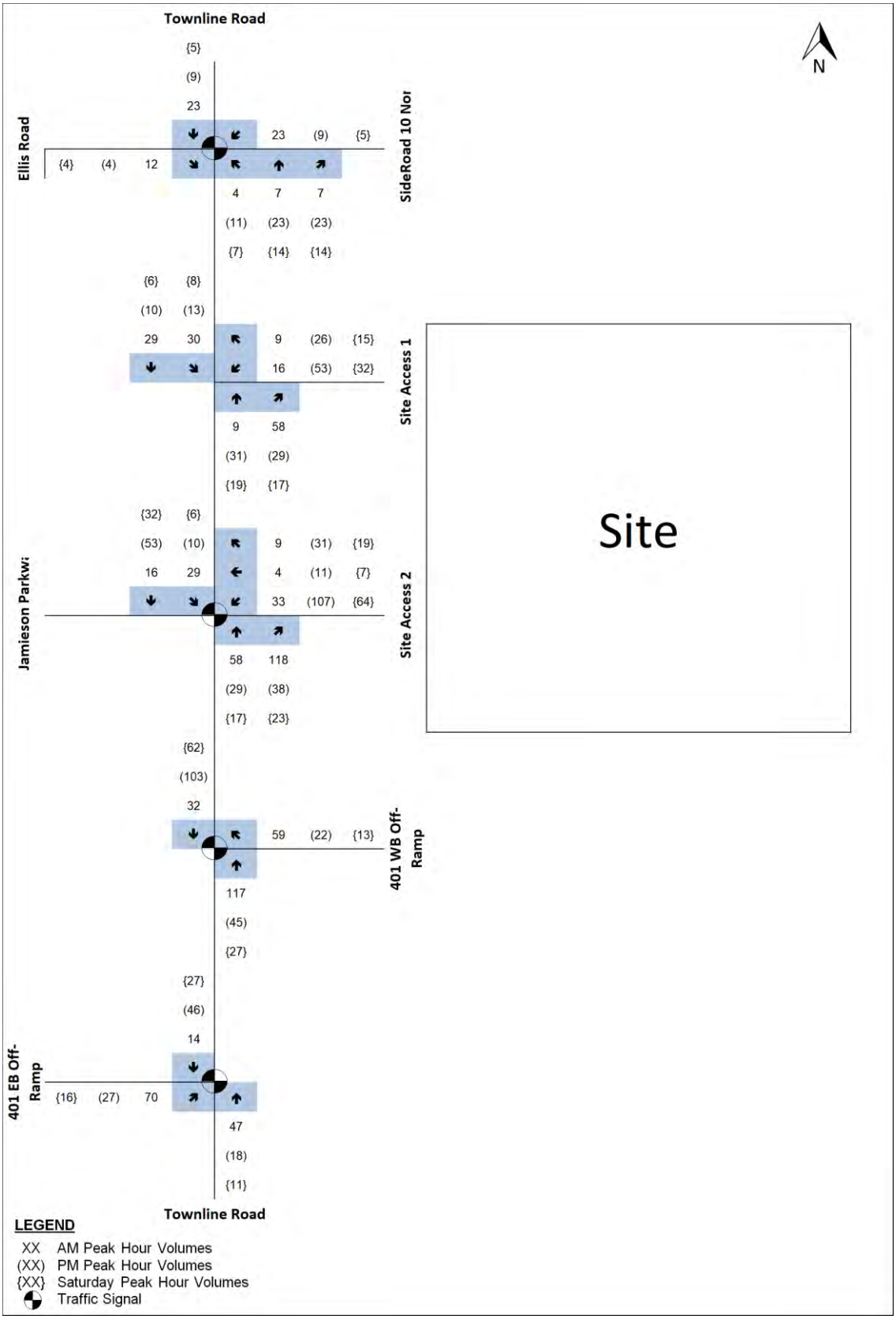


Figure 20 Total Site Trips – Site Plan B

6. Future Total Traffic

The future total traffic conditions in the weekday a.m. and p.m. and Saturday peak hours for the 2028 and 2038 planning horizon were derived by combining the projected future background traffic with the corresponding estimated site generated traffic and pass-by trips. The resulting traffic volumes are presented in **Figure 21** to **Figure 23** for Site Plan A and **Figure 24** and **Figure 26** for Site Plan B.

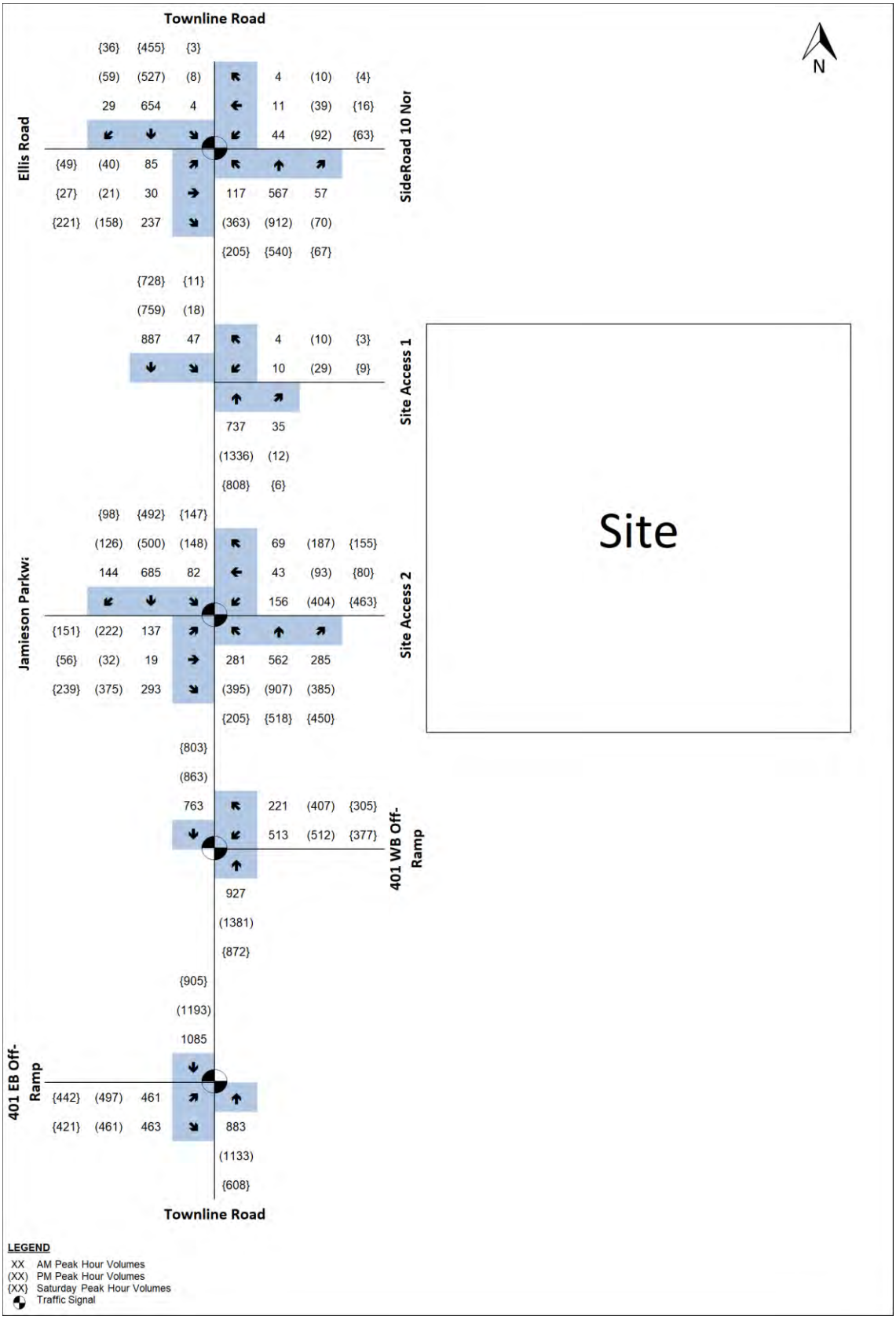


Figure 21 2028 Future Total Traffic Volumes – Site Plan A

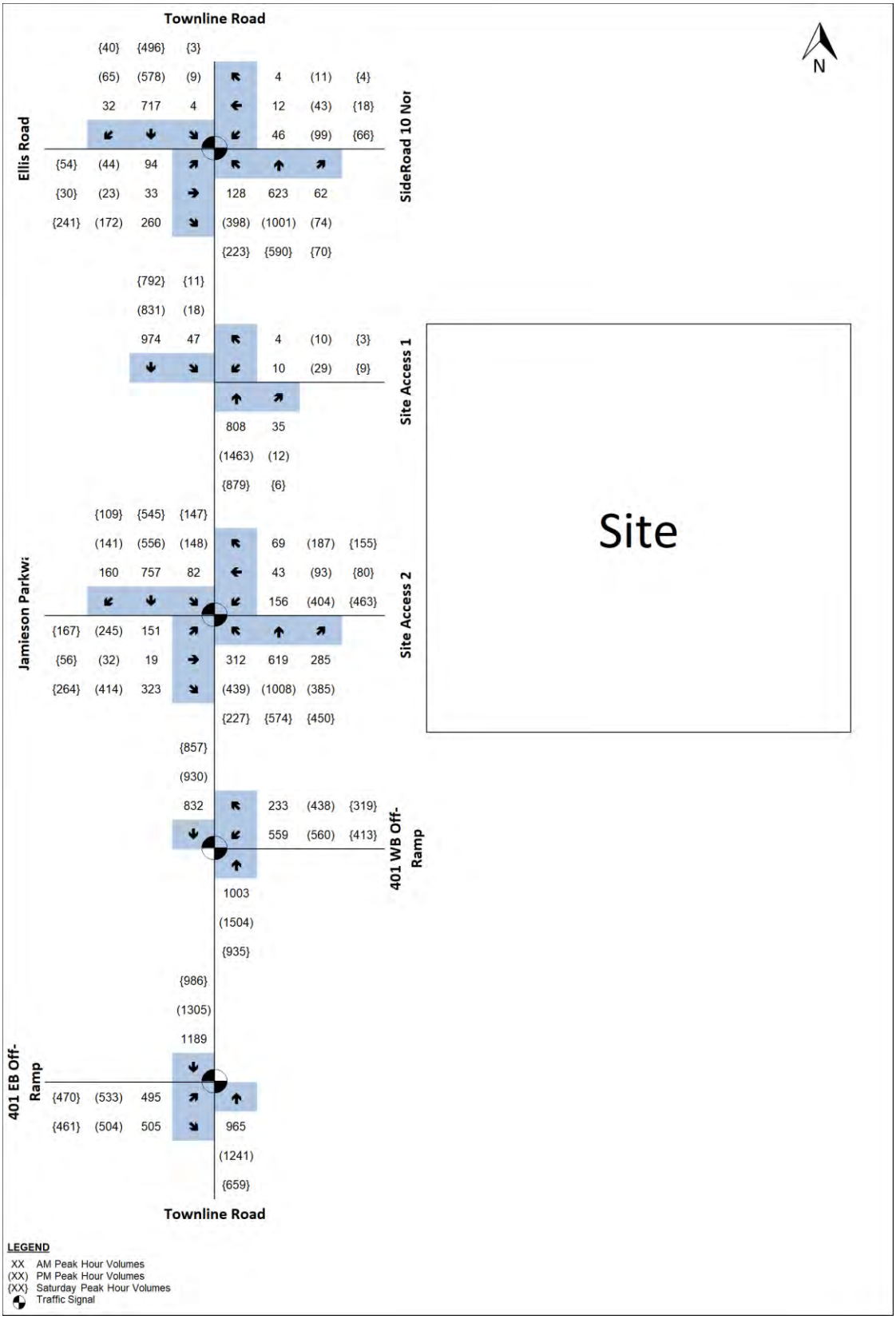


Figure 22 2033 Future Total Traffic Volumes – Site Plan A

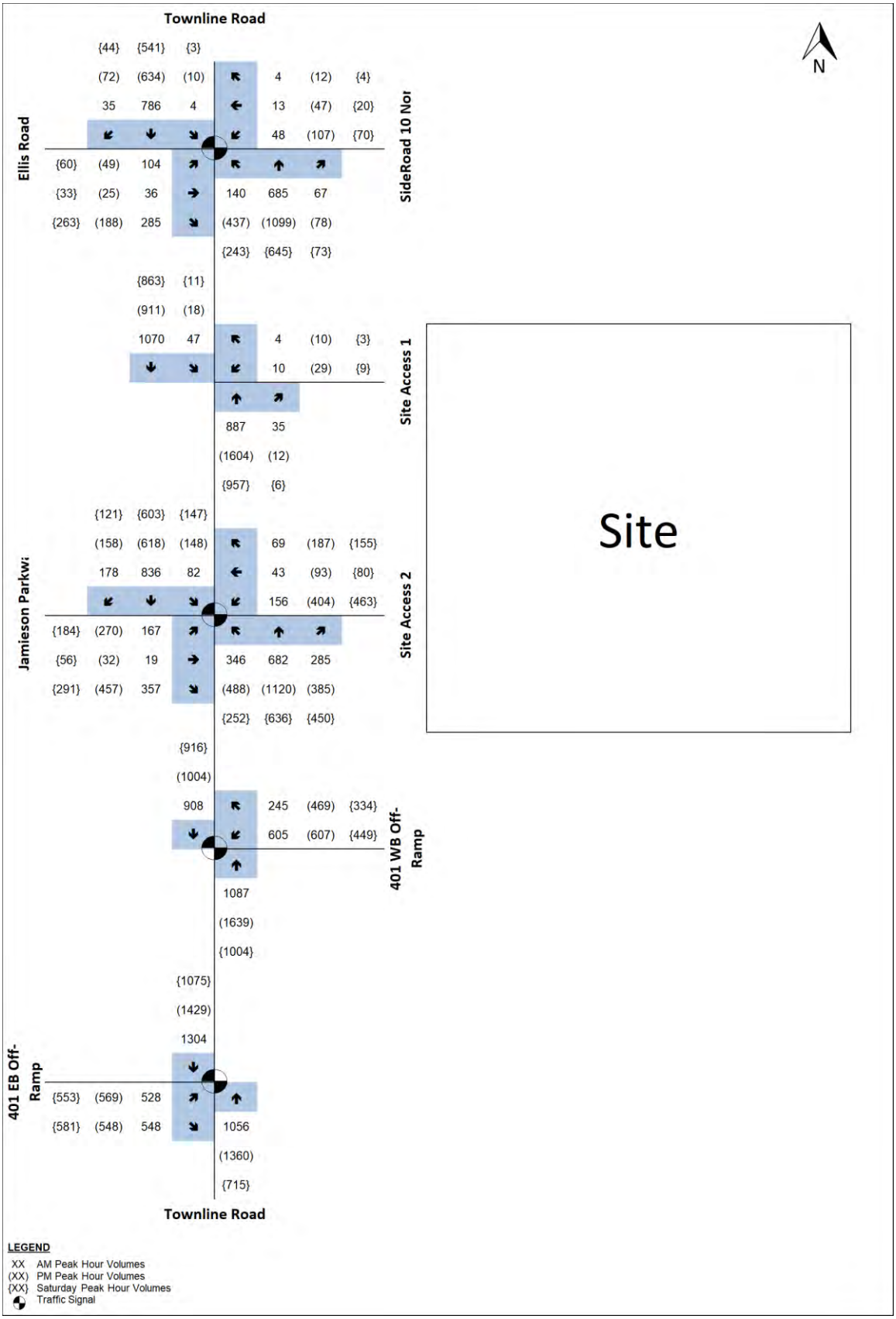


Figure 23 Future Total 2038 Traffic Volumes - Site Plan A

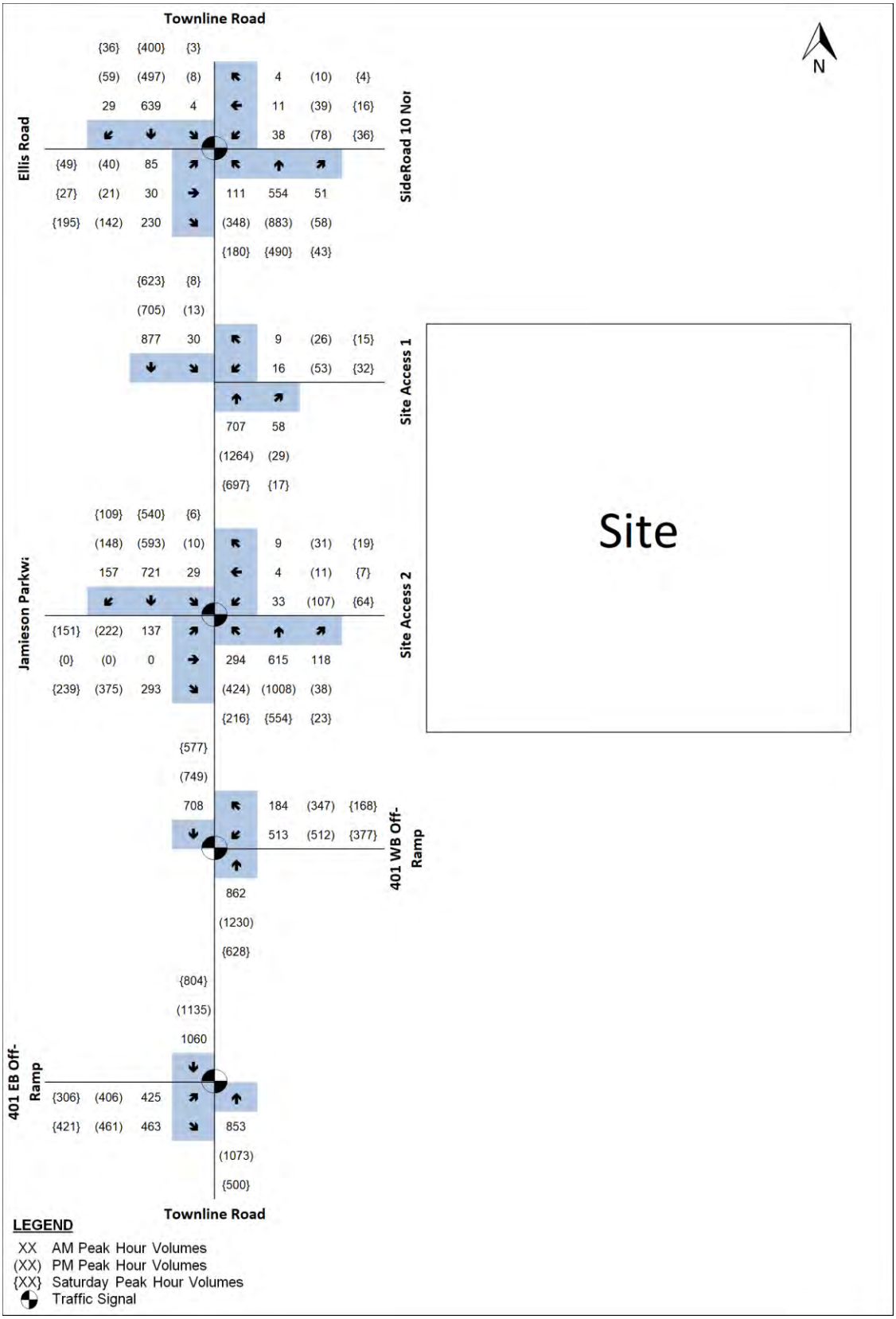


Figure 24 2028 Future Total Traffic Volumes – Site Plan B

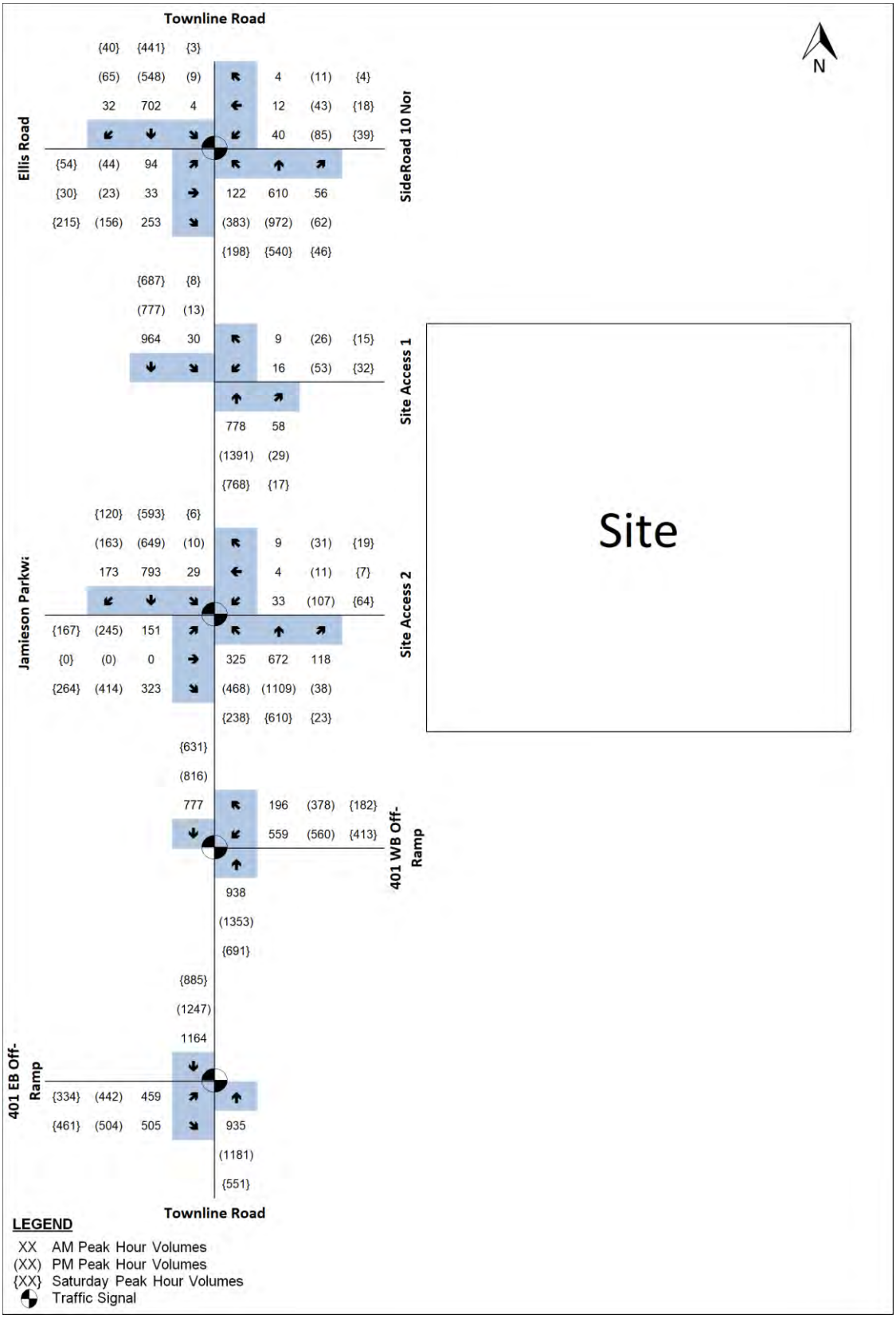


Figure 25 Future Total 2033 Volumes - Site Plan B

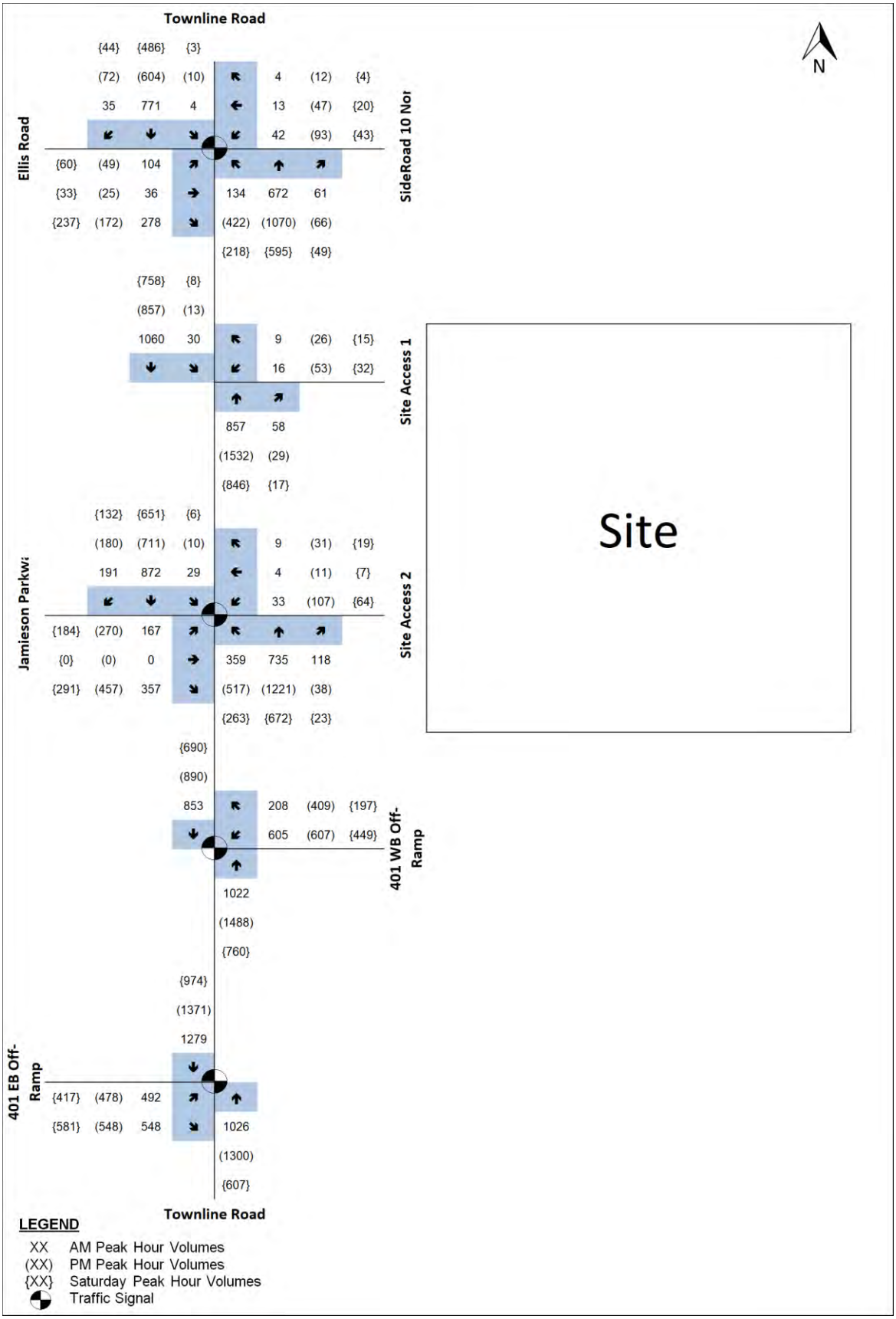


Figure 26 2038 Future Total Traffic Volumes – Site Plan B

7. Capacity Analysis

The capacity analysis identifies how well the intersections and driveways are operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 procedure within the Synchro Version 12 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement. Both pedestrian crossing volumes and heavy vehicle proportions are included in the analyses. The peak hour factors from existing counts were used to analyze existing traffic conditions and for future traffic conditions.

The analysis includes identification and required mitigation measures (if any) at intersections where the addition of background growth or background growth plus site-generated traffic volumes causes the following:

Intersections within the County of Wellington and Township of Puslinch jurisdiction:

'Critical' intersections and movements for a signalized intersection include:

- V/C ratios for overall intersections operations, through movements, or shared through/turning movements increase to 0.85 or above;
- V/C ratios for exclusive movements increase to 0.90 or above; or
- 95th percentile queue length for individual movements that are projected to, or exceed, the storage length.

'Critical' intersections and movements for an unsignalized intersection include:

- Level of Services (LOS), based on average delay per vehicle, on individual movements exceeds LOS "D"; or
- Queue length for individual movements that exceeds the available queue storage.

Intersections within the MTO jurisdiction:

- At signalized intersections, movements with a volume/capacity (v/c) ratio greater than 0.85 are deemed to be "critical" in terms of operations. Movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements.
- For ramps, a v/c ratio for terminal ramp approaches with a value greater than 0.75 would be deemed critical and shall be evaluated for possible operational improvements.

The following tables summarize the HCM capacity results for the study intersections during the weekday a.m. and p.m. peak hours under existing (2025), future background (2028, and 2038), and future total (2028, and 2038) traffic conditions. Although the 2033 future horizon year was considered as the background volume contribution is via corridor growth only the 2028 and 2038 years were analyzed as they represent the year of buildout and the most constrained future horizon case. The detailed calculation sheets are provided in **Appendix E**.

7.1 Hwy 401 EB off-ramp and Townline Road

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours and Saturday peak hour for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 7 Capacity analysis of Hwy 401 EB off-ramp and Townline Road

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Existing 2025	Overall: 0.62 (C) 20 EBL = 0.73 (C) 33 **EBR = 0.86 (D) 46** NBT = 0.38 (B) 11 SBT = 0.5 (B) 12	EBL = 80 m EBR = 100 m NBT = 50 m SBT = 70 m	Overall: 0.66 (C) 21 EBL = 0.7 (C) 31 **EBR = 0.85 (D) 42** NBT = 0.51 (B) 14 SBT = 0.55 (B) 14	EBL = 85 m EBR = 100 m NBT = 90 m SBT = 95 m	Overall: 0.5 (B) 16 EBL = 0.61 (C) 25 EBR = 0.74 (C) 30 NBT = 0.24 (A) 8 SBT = 0.38 (A) 10	EBL = 55 m EBR = 60 m NBT = 30 m SBT = 50 m
Future Background 2028	Overall: 0.7 (C) 23 EBL = 0.71 (C) 31 **EBR = 0.93 (D) 54** NBT = 0.43 (B) 13 SBT = 0.57 (B) 15	EBL = 85 m EBR = 125 m NBT = 55 m SBT = 80 m	Overall: 0.71 (C) 22 EBL = 0.69 (C) 30 **EBR = 0.87 (D) 44** NBT = 0.57 (B) 16 SBT = 0.61 (B) 17	EBL = 90 m EBR = 110 m NBT = 100 m SBT = 105 m	Overall: 0.55 (B) 17 EBL = 0.62 (C) 24 **EBR = 0.79 (C) 33** NBT = 0.26 (A) 9 SBT = 0.41 (B) 10	EBL = 55 m EBR = 70 m NBT = 35 m SBT = 55 m
Future Total 2028 (Site Plan A)	Overall: 0.72 (C) 26 **EBL = 0.91 (D) 50** **EBR = 0.93 (E) 55** NBT = 0.47 (B) 13 SBT = 0.6 (B) 15	EBL = 130 m EBR = 125 m NBT = 65 m SBT = 85 m	Overall: 0.76 (C) 26 **EBL = 0.88 (D) 43** **EBR = 0.86 (D) 43** NBT = 0.62 (B) 18 SBT = 0.68 (B) 19	EBL = 125 m EBR = 120 m NBT = 110 m SBT = 120 m	Overall: 0.63 (B) 20 **EBL = 0.84 (C) 35** **EBR = 0.77 (C) 30** NBT = 0.34 (B) 11 SBT = 0.51 (B) 13	EBL = 95 m EBR = 75 m NBT = 40 m SBT = 65 m
Future Total 2028 (Site Plan B)	Overall: 0.71 (C) 25 **EBL = 0.85 (D) 41** **EBR = 0.93 (D) 54** NBT = 0.46 (B) 13 SBT = 0.58 (B) 15	EBL = 115 m EBR = 125 m NBT = 60 m SBT = 80 m	Overall: 0.73 (C) 23 EBL = 0.73 (C) 32 **EBR = 0.87 (D) 44** NBT = 0.58 (B) 17 SBT = 0.64 (B) 18	EBL = 95 m EBR = 115 m NBT = 100 m SBT = 110 m	Overall: 0.56 (B) 17 EBL = 0.64 (C) 25 **EBR = 0.8 (C) 34** NBT = 0.27 (A) 9 SBT = 0.43 (B) 11	EBL = 60 m EBR = 70 m NBT = 35 m SBT = 60 m
Future Background 2033	Overall: 0.78 (C) 28 EBL = 0.74 (C) 32 **EBR = 1.00 (E) 73** NBT = 0.49 (B) 14 SBT = 0.65 (B) 17	EBL = 95 m EBR = 145 m NBT = 65 m SBT = 95 m	Overall: 0.79 (C) 26 EBL = 0.7 (C) 30 **EBR = 0.91 (D) 49** NBT = 0.65 (B) 20 SBT = 0.7 (C) 21	EBL = 100 m EBR = 140 m NBT = 115 m SBT = 120 m	Overall: 0.62 (B) 19 EBL = 0.61 (C) 24 **EBR = 0.85 (D) 37** NBT = 0.3 (B) 11 SBT = 0.48 (B) 13	EBL = 60 m EBR = 95 m NBT = 40 m SBT = 65 m
Future Total 2033 (Site Plan A)	Overall: 0.8 (C) 32 **EBL = 0.94 (E) 55** **EBR = 1.01 (E) 75** NBT = 0.53 (B) 15 SBT = 0.67 (B) 17	EBL = 145 m EBR = 145 m NBT = 70 m SBT = 95 m	Overall: 0.83 (C) 29 **EBL = 0.89 (D) 44** **EBR = 0.92 (D) 50** NBT = 0.7 (C) 21 SBT = 0.77 (C) 23	EBL = 150 m EBR = 145 m NBT = 125 m SBT = 140 m	Overall: 0.68 (C) 22 **EBL = 0.86 (D) 36** **EBR = 0.85 (D) 37** NBT = 0.38 (B) 12 SBT = 0.56 (B) 15	EBL = 110 m EBR = 105 m NBT = 45 m SBT = 75 m
Future Total 2033 (Site Plan B)	Overall: 0.79 (C) 30 **EBL = 0.87 (D) 43** **EBR = 1.01 (E) 73** NBT = 0.51 (B) 14 SBT = 0.65 (B) 17	EBL = 130 m EBR = 145 m NBT = 70 m SBT = 95 m	Overall: 0.81 (C) 26 EBL = 0.74 (C) 32 **EBR = 0.91 (D) 49** NBT = 0.66 (B) 20 SBT = 0.73 (C) 22	EBL = 105 m EBR = 145 m NBT = 115 m SBT = 130 m	Overall: 0.63 (B) 19 EBL = 0.64 (C) 24 **EBR = 0.85 (D) 38** NBT = 0.31 (B) 11 SBT = 0.49 (B) 13	EBL = 65 m EBR = 100 m NBT = 40 m SBT = 65 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Background 2038	**Overall: 0.87 (C) 35**		**Overall: 0.87 (C) 30**		Overall: 0.75 (C) 28	
	EBL = 0.8 (D) 36	EBL = 115 m	EBL = 0.72 (C) 30	EBL = 110 m	EBL = 0.67 (C) 24	EBL = 80 m
	EBR = 1.12 (F) 108	EBR = 165 m	**EBR = 0.96 (E) 57**	EBR = 165 m	**EBR = 0.99 (E) 62**	EBR = 145 m
	NBT = 0.53 (B) 15	NBT = 75 m	NBT = 0.74 (C) 23	NBT = 130 m	NBT = 0.36 (B) 14	NBT = 40 m
	SBT = 0.71 (B) 18	SBT = 105 m	SBT = 0.8 (C) 25	SBT = 140 m	SBT = 0.57 (B) 16	SBT = 70 m
Future Total 2038 (Site Plan A)	**Overall: 0.88 (D) 40**		**Overall: 0.91 (C) 34**		Overall: 0.81 (C) 32	
	EBL = 1.01 (E) 71	EBL = 155 m	**EBL = 0.91 (D) 45**	EBL = 165 m	**EBL = 0.92 (D) 43**	EBL = 140 m
	EBR = 1.12 (F) 111	EBR = 170 m	**EBR = 0.96 (E) 57**	EBR = 165 m	**EBR = 1.02 (E) 70**	EBR = 150 m
	NBT = 0.58 (B) 16	NBT = 80 m	NBT = 0.79 (C) 25	NBT = 145 m	NBT = 0.43 (B) 15	NBT = 50 m
	SBT = 0.73 (B) 19	SBT = 110 m	**SBT = 0.87 (C) 29**	SBT = 160 m	SBT = 0.65 (B) 18	SBT = 85 m
Future Total 2038 (Site Plan B)	**Overall: 0.87 (D) 38**		**Overall: 0.89 (C) 31**		Overall: 0.77 (C) 28	
	EBL = 0.94 (D) 54	EBL = 145 m	**EBL = 0.76 (C) 32**	EBL = 120 m	EBL = 0.69 (C) 25	EBL = 85 m
	EBR = 1.12 (F) 110	EBR = 170 m	**EBR = 0.96 (E) 57**	EBR = 165 m	**EBR = 1.00 (E) 64**	EBR = 145 m
	NBT = 0.56 (B) 15	NBT = 80 m	NBT = 0.76 (C) 24	NBT = 135 m	NBT = 0.37 (B) 14	NBT = 40 m
	SBT = 0.72 (B) 18	SBT = 110 m	SBT = 0.83 (C) 27	SBT = 150 m	SBT = 0.59 (B) 17	SBT = 75 m

Under existing traffic conditions, the intersection operates at satisfactory levels with an overall V/C ratio of 0.62 LOS C during the a.m. peak hour, 0.66 LOS C during the p.m. peak hour and an overall V/C of 0.50 LOS B during the Saturday peak hour. During the a.m. and p.m. peak hour the eastbound right turns report critical.

With the addition of corridor growth for the 2028 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.75 LOS0C during the a.m. peak hour, an overall V/C of 0.71 LOS C during the p.m. peak hour and an overall V/C ratio of 0.55 LOS B during the Saturday Peak hour. During all peak hours, the eastbound right turn lane reports critical with a V/C of 0.93 LOS D, 0.87 LOS D and 0.79 LOS C for the a.m. p.m., and Saturday peak hour respectively.

Future Total 2028 Site Plan A

Under the 2028 future total traffic scenario for Site Plan A, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.72 LOS C during the a.m. peak hour, 0.76 LOS C during the p.m. peak hour and an overall V/C of 0.63 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.91 LOS D as well as the eastbound right lane which reports a V/C of 0.93 LOS E during the a.m. peak hour. During the p.m. peak hour, the eastbound left reports a critical V/C of 0.88 LOS D and the eastbound right reports critical with a V/C of 0.86 LOS D. During the Saturday peak hour, the eastbound left reports critical with a V/C of 0.84 LOS C and the eastbound right-turn reports critical with a V/C of 0.77 LOS C. For the reported critical movement, the site trips contribute the following percentage of volume per movement:

A.M. Peak Hour

- Eastbound left movement: 23% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound left movement: 24% of left turning volume
- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound left movement: 34% of left turning volume
- Eastbound right movement: 0% of right-turning volume

Future Total 2028 Site Plan B

Under the 2028 future total traffic scenario for Site Plan B, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.71 LOS C during the a.m. peak hour, 073 LOS C during the p.m. peak hour and an overall V/C of 0.56 LOS B during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.85 LOS D as well as the eastbound right lane which reports a V/C of 0.93 LOS D during the a.m. peak hour. During the p.m. peak hour, the eastbound right reports critical with a V/C of 0.87 LOS D. During the Saturday peak hour, the eastbound right-turn reports critical with a V/C of 0.80 LOS C. For the reported critical movement, the site trips contribute the following percentage of volume per movement:

A.M. Peak Hour

- Eastbound left movement: 16% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound right movement: 0% of right-turning volume

With the addition of corridor growth for the 2033 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.78 LOS C during the a.m. peak hour, an overall V/C of 0.79 LOS C during the p.m. peak hour and an overall V/C ratio of 0.62 LOS B during the Saturday Peak hour. During all peak hours, the eastbound right turn lane reports critical with a V/C of 1.00 LOS E, 0.91 LOS E and 0.85 LOS D for the a.m. p.m., and Saturday peak hour respectively.

Future Total 2033 Site Plan A

Under the 2033 future total traffic scenario for Site Plan A, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.80 LOS C during the a.m. peak hour, 0.83 LOS C during the p.m. peak hour and an overall V/C of 0.68 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.94 LOS D as well as the eastbound right lane which reports a V/C of 1.01 LOS E during the a.m. peak hour. During the p.m. peak hour, the eastbound left reports a critical V/C of 0.89 LOS D, and the eastbound right reports critical with a V/C of 0.92 LOS D. During the Saturday peak hour, the eastbound left reports critical with a V/C of 0.86 LOS D and the eastbound right-turn reports critical with a V/C of 0.85 LOS D. For the reported critical movement, the site trips contribute the following percentage of volume per movement:

A.M. Peak Hour

- Eastbound left movement: 21% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound left movement: 22% of left turning volume
- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound left movement: 32% of left turning volume

- Eastbound right movement: 0% of right-turning volume

Future Total 2033 Site Plan B

Under the 2033 future total traffic scenario for Site Plan B, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.79 LOS C during the a.m. peak hour, 0.81 LOS C during the p.m. peak hour and an overall V/C of 0.63 LOS B during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.87 LOS D as well as the eastbound right lane which reports a V/C of 1.01 LOS E during the a.m. peak hour. During the p.m. peak hour, the eastbound right reports critical with a V/C of 0.91 LOS D. During the Saturday peak hour, the eastbound right-turn reports critical with a V/C of 0.85 LOS C. For the reported critical movement, the site trips contribute the following percentage of volume per movement:

A.M. Peak Hour

- Eastbound left movement: 15% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound right movement: 0% of right-turning volume

With the addition of corridor growth for the 2038 future background traffic scenario, the intersection is reported to operate with an overall V/C ratio of 0.87 LOS C during the a.m. peak hour, an overall V/C of 0.87 LOS C during the p.m. peak hour and an overall V/C ratio of 0.75 LOS C during the Saturday Peak hour. The a.m. peak hour reports critical in the eastbound left and right direction. The p.m. peak hour reports a critical movement n the eastbound right movement and southbound through movement and the Saturday peak hour reports critical in the eastbound right direction.

Future Total 2038 Site Plan A

Under the 2038 future total traffic scenario Site Plan A, with the addition of site generated traffic, the intersection operates with an overall critical V/C ratio of 0.88 LOS D during the a.m. peak hour, critical V/C of 0.91 LOS C during the p.m. peak hour and a critical V/C of 0.81 LOS C during the Saturday peak hour. During the a.m. peak hour, the eastbound left, and right movements report critical. The p.m. peak hour also reports critical movements in the eastbound left, eastbound right, and southbound through. The Saturday reports a critical movement in the eastbound left and right direction. For the reported critical movements, the site trips contribute the following percentage of volume:

A.M. Peak Hour

- Eastbound left movement: 20% of left turning volume
- Eastbound right movement: 0% of right turning volume

P.M. Peak Hour

- Eastbound left movement: 21% of left turning volume
- Eastbound right movement: 0% of right turning volume
- Southbound through movement: 7% of through volume

Saturday Peak Hour

- Eastbound left movement: 27% of left turning volume

- Eastbound right movement: 0% of right turning volume

Future Total 2038 Site Plan B

Under the 2038 future total traffic scenario, with the addition of site generated traffic operates with an overall critical V/C ratio of 0.87 LOS D during the a.m. peak hour, critical V/C of 0.89 LOS C during the p.m. peak hour and an overall V/C of 0.77 LOS C during the Saturday peak hour. During the a.m. peak hour, the eastbound left, and eastbound right report critical movements. The p.m. peak hour also reports critical movements in the eastbound left, and eastbound right. The Saturday peak hour reports a critical movement in the eastbound right direction. For the reported critical movement, the site trips contribute the following percentage of volumes:

A.M. Peak Hour

- Eastbound left movement: 14% of left turning volume
- Eastbound right movement: 0% of right turning volume

P.M. Peak Hour

- Eastbound left movement: 6% of left turning volume
- Eastbound right movement: 0% of right turning volume

Saturday Peak Hour

- Eastbound right movement: 0% of right turning volume

Although critical in the eastbound left and southbound through movements, the site traffic volume for both Site Plan A and B contribute a maximum of 32% of left-turning volume during the Saturday peak however for the remaining movements during the a.m. peak, p.m. peak and Saturday peak the site traffic contributes a nominal percentage in comparison to the projected corridor growth along Townline Road. Additionally, the existing analysis show that the eastbound right turn lane is currently operating above capacity, and the left-turn is close to critical levels indicating that the intersection requires potential improvement prior to the implementation of the subject site.

7.1.1 Intersection Improvements – Eastbound Highway 401 Off-Ramp

To mitigate the reported queue lengths and V/C ratios for this intersection, an additional shared left-right lane was added to assess potential improvements for the operation of the eastbound off-ramp. As indicated by the background and existing condition, the eastbound right-turn lane is currently operating above capacity and as such the shared right/left lane is made to address the reported critical movements. The below capacity table shows the result of the improvement in the future total 2038 condition. Additionally, the functional design for the widening of the off-ramp is attached in **Appendix H**.

Table 8 Eastbound Highway 401 Off-Ramp and Townline Road Intersection Improvements Capacity Analysis

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2038 (Site Plan A)	Overall: 0.74 (C) 21 **EBLR = 0.8 (C) 33** **EBR = 0.83 (D) 42** NBT = 0.55 (B) 13 SBT = 0.7 (B) 16	 EBLR = 75 m EBR = 100 m NBT = 80 m SBT = 110 m	Overall: 0.79 (C) 23 **EBLR = 0.76 (C) 30** **EBR = 0.8 (D) 38** NBT = 0.72 (B) 18 SBT = 0.78 (C) 20	 EBLR = 80 m EBR = 95 m NBT = 145 m SBT = 160 m	Overall: 0.66 (B) 19 **EBLR = 0.75 (C) 26** **EBR = 0.77 (C) 31** NBT = 0.4 (B) 12 SBT = 0.6 (B) 14	 EBLR = 65 m EBR = 80 m NBT = 50 m SBT = 85 m

Future Total 2038 (Site Plan B)	Overall: 0.72 (C) 20 **EBLR = 0.78 (C) 32** **EBR = 0.8 (D) 40** NBT = 0.53 (B) 12 SBT = 0.68 (B) 15	EBLR = 70 m EBR = 90 m NBT = 80 m SBT = 110 m	Overall: 0.74 (C) 21 EBLR = 0.73 (C) 30 **EBR = 0.77 (D) 36** NBT = 0.67 (B) 16 SBT = 0.73 (B) 17	EBLR = 70 m EBR = 85 m NBT = 135 m SBT = 200 m	Overall: 0.59 (B) 17 EBLR = 0.71 (C) 25 EBR = 0.7 (C) 28 NBT = 0.32 (A) 10 SBT = 0.52 (B) 12	EBLR = 55 m EBR = 65 m NBT = 40 m SBT = 75 m

With the addition of an additional shared left/right lane in the eastbound approach, the future total 2038 for Site A reports a V/C of 0.74 LOS C during the a.m. peak hour, an overall V/C of 0.79 LOS C during the p.m. peak and an overall V/C of 0.66 LOS B Saturday peak hour. The eastbound left and right reports critical during the a.m. peak. The eastbound left, eastbound right and southbound lane report critical in p.m. peak and the eastbound left and right turn lane reports critical in the Saturday peak hour.

Under the future total 2038 for Site B reports a V/C of 0.72 LOS C during the a.m. peak hour, an overall V/C of 0.74 LOS C during the p.m. peak and an overall V/C of 0.59 LOS B during the Saturday peak hour. The eastbound left and right reports critical during the a.m. peak. The eastbound right turn lane, report critical in p.m. peak and no critical movements during the Saturday peak.

Although there are critical movements reported, the addition of the shared lane adds additional capacity which allows the intersection movements on the ramp to operate with improved delays and queues and below the theoretical V/C of 1.00.

7.1.2 MTO Eastbound Off-Ramp Queuing Analysis – Left-turn and Through Lanes

A queueing analysis was completed for the left-turn and through lanes at the intersection based on the MTO's Protocol using the MTO's Geometric Design Standards and Signal Timing Policy. The calculations are summarized in the table below and are based on the volumes from the 2038 future total scenarios. The recommended storage length (in vehicles) has been extracted from the MTO's Geometric Design Standards for Ontario Highways, Chapter B, Table B7-5 for urban/commuter intersections.

Table 9 MTO Queuing Protocol - MTO Eastbound Ramp and Townline Road

Scenario	Lane	Volumes	Heavy Vehicle%	PCU	Cycle Length (in seconds)	Arrival Rate (vehicles/ cycle)	Recommended Storage, MTO Table B7-5 (vehicles)	Recommended Storage (in metres, 7.5 m/vehicle)	Available Storage (metres)
Future Total 2038-AM (ALT A)	EBL	528	4%	549	90	13.7	20	150	390
	NBT	1056	4%	1098	90	13.7	20	150	N/A
	SBT	1304	7%	1395	90	17.4	24	180	N/A
Future Total 2038-PM (ALT A)	EBL	569	3%	586	100	16.3	23	172.5	390
	NBT	1360	1%	1374	100	19.1	27	202.5	N/A
	SBT	1429	5%	1500	100	20.8	29	217.5	N/A
	EBL	553	2%	564	80	12.5	19	142.5	390

Future Total 2038- SAT (ALT A)	NBT	715	2%	729	80	8.1	13	97.5	N/A
	SBT	1075	2%	1097	80	12.2	18	135	N/A
Future Total 2038- AM (ALT B)	EBL	492	4%	512	90	12.8	19	142.5	390
	NBT	1026	4%	1067	90	13.3	20	150	N/A
	SBT	1279	7%	1369	90	17.1	24	180	N/A
Future Total 2038- PM (ALT B)	EBL	478	3%	492	100	13.7	20	150	390
	NBT	1300	1%	1313	100	18.2	25	187.5	N/A
	SBT	1371	5%	1440	100	20.0	28	210	N/A
Future Total 2038- SAT (ALT B)	EBL	417	2%	425	80	9.5	15	112.5	390
	NBT	607	2%	619	80	6.9	11	82.5	N/A
	SBT	974	2%	993	80	11.0	17	127.5	N/A

As summarized in the left-turn and through lane queueing analysis, the recommended storage length for the left-turn lane can sufficiently be accommodated by the available storage length for Highway 401 eastbound off-ramp.

7.1.3 MTO Eastbound Off-Ramp Queuing Analysis – Right Turn Lanes

As directed by MTO staff, the right-turn lane queuing assessment was completed for the ultimate condition based on the methodology in Chapter 9 of TAC's Geometric Design Guide for Canadian Roads section 9.14.4. The queueing assessment was completed as follows:

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

The right turn lane queueing analysis is summarized in the table below:

Table 10 TAC Manual Chapter 9 Eastbound 401 Off-Ramp Right-Turn Storage Assessment

Scenario	Lane	Volumes	Design Speed (km/hr)	Cycle Length (in seconds)	Arrival Rate (vehicles/ cycle)	Recommended Storage (2x arrival rate, 7.5 metre/vehicle)	Available Storage (metres)
Future Total 2038- AM (ALT A)	EBR	548	60	90	13.7	206	87
Future Total 2038- PM (ALT A)	EBR	548	60	100	15.2	228	87
Future Total 2038- SAT (ALT A)	EBR	581	60	80	12.9	194	87

Future Total 2038- AM (ALT B)	EBR	548	60	90	13.7	206	87
Future Total 2038- PM (ALT B)	EBR	548	60	100	15.2	228	87
Future Total 2038- SAT (ALT B)	EBR	581	60	80	12.9	194	87

The MTO queueing analysis report a max recommended queue of 228 metres compared to an available storage length of 87 metres. Although the existing storage length does not satisfy the recommended storage, as summarized below in **Section 7.1.4**, the reported Sim Traffic queue lengths can be sufficiently stored within the eastbound approach lanes with the addition of the shared eastbound left/right turning lane.

7.1.4 MTO Eastbound Off-Ramp Queuing Analysis – Sim Traffic

A Sim Traffic simulation was conducted to closely resemble "real-world" road operations and analyze queueing for the Eastbound off-ramp with the addition of the network improvements as summarized in **Section 7.6.** The SimTraffic analysis uses a 15-minute seed time, 60-minute run time, and an average of 5 runs. The below table summarizes the reported Sim Traffic queueing for the MTO off-ramp under the future total 2038 horizon year to analyze the most constrained case. The detailed SimTraffic reports are attached in **Appendix E-3**.

Table 11 Eastbound Off-Ramp Sim Traffic Analysis

Scenario	Lane	AM Peak 95th Percentile Queue	PM Peak 95th Percentile Queue	Saturday Peak 95th Percentile Queue
Future Total 2038 (ALT A)	EBL	80	74	68
	EBLR	94	87	79
	EBR	83	80	72
	NBT	81	141	55
	SBT	96	122	69
Future Total 2038 (ALT B)	EBL	65	64	53
	EBLR	74	74	65
	EBR	68	69	60
	NBT	85	125	54
	SBT	93	117	63

As indicated by the sim traffic queueing analysis with the addition of the shared left-right turning lane, the max queuing reported for the left and right turns is 94 metres between both scenarios. As such, the addition of the shared lane will sufficiently store the reported maximum queue lengths for the turning movements. Furthermore, the reported northbound and southbound queues can be sufficiently stored in the road network.

7.2 Hwy 401 WB off-ramp and Townline Road

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours and Saturday peak hour for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 12 Capacity analysis of Hwy 401 WB off-ramp and Townline Road

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Existing 2025	Overall: 0.42 (B) 14 WBL = 0.71 (C) 32 WBR = 0.09 (C) 24 NBT = 0.32 (A) 8 SBT = 0.29 (A) 7	 WBL = 50 m WBR = 15 m NBT = 40 m SBT = 35 m	Overall: 0.59 (B) 17 WBL = 0.63 (C) 29 WBR = 0.73 (C) 35 NBT = 0.54 (B) 11 SBT = 0.29 (A) 9	 WBL = 50 m WBR = 65 m NBT = 90 m SBT = 45 m	Overall: 0.34 (B) 12 WBL = 0.57 (C) 24 WBR = 0.1 (C) 21 NBT = 0.27 (A) 6 SBT = 0.23 (A) 6	 WBL = 30 m WBR = 15 m NBT = 25 m SBT = 25 m
Future Background 2028	Overall: 0.46 (B) 15 WBL = 0.73 (C) 32 WBR = 0.09 (C) 24 NBT = 0.35 (A) 9 SBT = 0.32 (A) 8	 WBL = 55 m WBR = 15 m NBT = 50 m SBT = 45 m	Overall: 0.64 (B) 18 WBL = 0.65 (C) 29 **WBR = 0.76 (D) 36** NBT = 0.58 (B) 12 SBT = 0.32 (A) 9	 WBL = 55 m WBR = 70 m NBT = 105 m SBT = 50 m	Overall: 0.36 (B) 12 WBL = 0.59 (C) 24 WBR = 0.11 (C) 21 NBT = 0.28 (A) 7 SBT = 0.25 (A) 6	 WBL = 35 m WBR = 15 m NBT = 30 m SBT = 25 m
Future Total 2028 (Site Plan A)	Overall: 0.53 (B) 16 WBL = 0.72 (C) 32 WBR = 0.41 (C) 26 NBT = 0.44 (A) 10 SBT = 0.37 (A) 9	 WBL = 55 m WBR = 35 m NBT = 65 m SBT = 50 m	Overall: 0.77 (C) 21 WBL = 0.54 (C) 26 **WBR = 0.84 (D) 40** NBT = 0.73 (B) 18 SBT = 0.46 (B) 14	 WBL = 50 m WBR = 95 m NBT = 150 m SBT = 75 m	Overall: 0.5 (B) 13 WBL = 0.51 (C) 22 WBR = 0.67 (C) 28 NBT = 0.43 (A) 9 SBT = 0.4 (A) 8	 WBL = 35 m WBR = 50 m NBT = 55 m SBT = 50 m
Future Total 2028 (Site Plan B)	Overall: 0.5 (B) 15 WBL = 0.73 (C) 32 WBR = 0.26 (C) 25 NBT = 0.41 (A) 9 SBT = 0.34 (A) 8	 WBL = 55 m WBR = 25 m NBT = 55 m SBT = 45 m	Overall: 0.67 (B) 18 WBL = 0.61 (C) 28 **WBR = 0.78 (D) 37** NBT = 0.62 (B) 14 SBT = 0.38 (B) 11	 WBL = 50 m WBR = 80 m NBT = 120 m SBT = 60 m	Overall: 0.37 (B) 12 WBL = 0.59 (C) 24 WBR = 0.12 (C) 21 NBT = 0.3 (A) 7 SBT = 0.28 (A) 6	 WBL = 35 m WBR = 15 m NBT = 30 m SBT = 30 m
Future Background 2033	Overall: 0.51 (B) 16 **WBL = 0.75 (C) 32** WBR = 0.1 (C) 23 NBT = 0.4 (A) 10 SBT = 0.36 (A) 9	 WBL = 60 m WBR = 15 m NBT = 55 m SBT = 50 m	Overall: 0.71 (B) 19 WBL = 0.64 (C) 28 **WBR = 0.78 (D) 37** NBT = 0.67 (B) 15 SBT = 0.36 (B) 11	 WBL = 60 m WBR = 80 m NBT = 135 m SBT = 60 m	Overall: 0.4 (B) 12 WBL = 0.62 (C) 25 WBR = 0.12 (C) 20 NBT = 0.32 (A) 7 SBT = 0.28 (A) 7	 WBL = 35 m WBR = 15 m NBT = 35 m SBT = 30 m
Future Total 2033 (Site Plan A)	Overall: 0.57 (B) 16 **WBL = 0.75 (C) 32** WBR = 0.46 (C) 26 NBT = 0.49 (B) 11 SBT = 0.41 (A) 10	 WBL = 60 m WBR = 40 m NBT = 75 m SBT = 60 m	Overall: 0.84 (C) 24 WBL = 0.56 (C) 25 **WBR = 0.86 (D) 43** NBT = 0.82 (C) 23 SBT = 0.51 (B) 15	 WBL = 60 m WBR = 110 m NBT = 175 m SBT = 85 m	Overall: 0.54 (B) 14 WBL = 0.52 (C) 22 WBR = 0.69 (C) 28 NBT = 0.47 (A) 10 SBT = 0.44 (A) 10	 WBL = 35 m WBR = 55 m NBT = 70 m SBT = 60 m
Future Total 2033 (Site Plan B)	Overall: 0.55 (B) 16 **WBL = 0.75 (C) 32** WBR = 0.33 (C) 25 NBT = 0.46 (B) 10 SBT = 0.38 (A) 10	 WBL = 60 m WBR = 30 m NBT = 70 m SBT = 55 m	Overall: 0.74 (C) 20 WBL = 0.62 (C) 27 **WBR = 0.8 (D) 38** NBT = 0.7 (B) 17 SBT = 0.42 (B) 12	 WBL = 60 m WBR = 90 m NBT = 145 m SBT = 70 m	Overall: 0.41 (B) 12 WBL = 0.62 (C) 25 WBR = 0.18 (C) 21 NBT = 0.33 (A) 7 SBT = 0.31 (A) 7	 WBL = 35 m WBR = 15 m NBT = 35 m SBT = 35 m
Future Background 2038	Overall: 0.55 (B) 17 **WBL = 0.78 (C) 33** WBR = 0.17 (C) 23	 WBL = 65 m WBR = 20 m	Overall: 0.78 (C) 21 WBL = 0.66 (C) 28 **WBR = 0.82 (D) 39**	 WBL = 65 m WBR = 90 m	Overall: 0.44 (B) 13 WBL = 0.64 (C) 25 WBR = 0.22 (C) 21	 WBL = 40 m WBR = 20 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
	NBT = 0.45 (B) 11 SBT = 0.41 (B) 10	NBT = 65 m SBT = 60 m	NBT = 0.76 (B) 19 SBT = 0.41 (B) 13	NBT = 160 m SBT = 70 m	NBT = 0.36 (A) 8 SBT = 0.31 (A) 7	NBT = 40 m SBT = 35 m
Future Total 2038 (Site Plan A)	Overall: 0.61 (B) 17 **WBL = 0.78 (C) 33** WBR = 0.51 (C) 27 NBT = 0.54 (B) 12 SBT = 0.45 (B) 11	 WBL = 65 m WBR = 45 m NBT = 85 m SBT = 65 m	**Overall: 0.91 (C) 28** WBL = 0.58 (C) 25 **WBR = 0.89 (D) 45** **NBT = 0.92 (C) 30** SBT = 0.56 (B) 17	 WBL = 65 m WBR = 130 m NBT = 215 m SBT = 95 m	Overall: 0.59 (B) 15 WBL = 0.54 (C) 22 WBR = 0.73 (C) 30 NBT = 0.52 (B) 11 SBT = 0.48 (B) 10	 WBL = 40 m WBR = 60 m NBT = 75 m SBT = 70 m
Future Total 2038 (Site Plan B)	Overall: 0.59 (B) 17 **WBL = 0.78 (C) 33** WBR = 0.39 (C) 25 NBT = 0.51 (B) 11 SBT = 0.42 (B) 10	 WBL = 65 m WBR = 35 m NBT = 75 m SBT = 60 m	Overall: 0.81 (C) 22 WBL = 0.63 (C) 27 **WBR = 0.84 (D) 40** NBT = 0.8 (C) 21 SBT = 0.48 (B) 14	 WBL = 65 m WBR = 100 m NBT = 170 m SBT = 80 m	Overall: 0.45 (B) 13 WBL = 0.64 (C) 25 WBR = 0.29 (C) 21 NBT = 0.37 (A) 8 SBT = 0.34 (A) 8	 WBL = 40 m WBR = 25 m NBT = 40 m SBT = 35 m

Under existing traffic conditions, the intersection operates at satisfactory levels with an overall v/c ratio of 0.42 LOS B during the a.m. peak hour, 0.59 LOS B during the p.m. peak hour and an overall V/C of 0.34 LOS B during the Saturday peak hour.

With the addition of corridor growth for the 2028 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.46 LOS B during the a.m. peak hour, an overall V/C of 0.64 LOS C during the p.m. peak hour and an overall V/C ratio of 0.36 LOS B during the Saturday Peak hour. The westbound right turn reports a critical V/C of 0.76 LOS D during the p.m. peak hour.

Future Total 2028 Site Plan A

Under the 2028 future total traffic scenario for Site Plan A, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.53 LOS B during the a.m. peak hour, 0.77 LOS C during the p.m. peak hour and an overall V/C of 0.50 LOS B during the Saturday peak hour. The westbound right turn reports a critical V/C of 0.84 LOS D during the p.m. peak hour.

For the reported critical movements, the site trips contribute the following percentage of volume:

P.M. Peak Hour

- Westbound right-turn movement: 20% of right turning volume

Future Total 2028 Site Plan B

Under the 2028 future total traffic scenario for Site Plan B, with the addition of site generated traffic the intersection operates with an overall V/C ratio of 0.50 LOS B during the a.m. peak hour, 0.67 LOS B during the p.m. peak hour and an overall V/C of 0.37 LOS B during the Saturday peak hour. The westbound right turn reports a critical V/C of 0.78 LOS D during the p.m. peak hour.

For the reported critical movements, the site trips contribute the following percentage of volume:

P.M. Peak Hour

- Westbound right-turn movement: 6% of right turning volume

With the addition of corridor growth for the 2033 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.51 LOS B during the a.m. peak hour, an overall V/C of 0.71 LOS B during the p.m. peak hour and an overall V/C ratio of 0.40 LOS B during the Saturday Peak hour. The

westbound left direction reports critical during the a.m. peak hour and the westbound right-turn reports critical during the p.m. peak hour.

Future Total 2033 Site Plan A

Under the 2033 future total traffic scenario Site Plan A, with the addition of site generated traffic, the intersection operates with an overall V/C ratio of 0.57 LOS B during the a.m. peak hour, V/C of 0.84 LOS C during the p.m. peak hour and a V/C of 0.54 LOS B during the Saturday peak hour. The a.m. peak reports a critical westbound left turn, and the p.m. peak hour reports a critical westbound right movement. For the reported critical movements, the site trips contribute the following percentage of volume:

A.M. Peak Hour

- Westbound left-turn movement: 0% of turning volume

P.M. Peak Hour

- Westbound right-turn movement: 19% of right turning volume

Although critical, the westbound right contributes 19% of the right turning volume where the reported V/C is at the critical threshold already from the background corridor growth and from a review of the available storage including the taper the reported queueing and delays is acceptable.

Future Total 2033 Site Plan B

Under the 2033 future total traffic scenario, with the addition of site generated traffic operates with an overall V/C ratio of 0.55 LOS B during the a.m. peak hour, a V/C ratio of 0.74 LOS C during the p.m. peak hour and an overall V/C of 0.41 LOS B during the Saturday peak hour. The a.m. peak hour reports critical movements in the westbound left direction, and the p.m. peak reports critical in the westbound right direction. For the reported critical movement, the site trips contribute the following percentage of volume:

A.M. Peak Hour

- Westbound left movement: 0% of left-turning volume

P.M. Peak Hour

- Westbound right-turn movement: 5% of right turning volume

Although critical, the site traffic in the westbound right-turn contribute a nominal volume to the movement which indicates that corridor growth is the driving factor for the critical movement.

With the addition of corridor growth for the 2038 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.55 LOS B during the a.m. peak hour, an overall V/C of 0.79 LOS C during the p.m. peak hour and an overall V/C ratio of 0.44 LOS B during the Saturday Peak hour. The westbound left reports critical during the a.m. peak hour and the westbound right direction reports critical during the p.m. peak hour.

Future Total 2038 Site Plan A

Under the 2038 future total traffic scenario Site Plan A, with the addition of site generated traffic, the intersection operates with an overall V/C ratio of 0.61 LOS B during the a.m. peak hour, critical V/C of 0.91 LOS C during the p.m. peak hour and a V/C of 0.59 LOS B during the Saturday peak hour. The a.m. peak reports a critical movement in the westbound left, and the p.m. peak hour reports critical movements in the northbound through movement and westbound right direction. For the reported critical movements, the site trips contribute the following percentage of volume:

A.M. Peak Hour

- Westbound left movement: 0% of left-turning volume

P.M. Peak Hour

- Westbound right movement: 17% of right turning volume
- Northbound through movement: 12% of through volume

Although critical, the westbound right contributes 17% of the right turning volume there the reported V/C is at the critical threshold and from a review of the available storage including the taper the reported queueing and delays is acceptable. As the through volume also reports critical, the site contributes to 12% of the total northbound through volume where the queueing and delay are acceptable.

Future Total 2038 Site Plan B

Under the 2038 future total traffic scenario, with the addition of site generated traffic operates with an overall V/C ratio of 0.59 LOS B during the a.m. peak hour, a V/C ratio of 0.81 LOS C during the p.m. peak hour and an overall V/C of 0.45 LOS B during the Saturday peak hour. The a.m. peak reports a critical westbound left and the p.m. peak hour reports critical movements in the westbound right movement. For the reported critical movement, the site trips contribute the following percentage of volume:

A.M. Peak Hour

- Westbound left movement: 0% of left-turning volume

P.M. Peak Hour

- Westbound right turn movement: 5% of right-turning volume

Although critical in the westbound left direction for the proposed site A and site B, both site contributes 0% of the total left-turn volume which indicates that the corridor growth is the driving factor for causing the movement to become critical.

Additionally, the site contributes to a maximum of 20% of the westbound right turning volumes only under the Site A scenario, which operates with acceptable delays and queueing which can be stored within the turning lane.

Therefore, though critical in the westbound right, the critical movement reports acceptable delays and queue lengths that can be stored within the existing storage length. Additionally, the existing scenario reports the westbound right-turn just at critical thresholds which continue to become critical with corridor growth without the influence of the subject site. The maximum delay of 39 seconds under the future background 2038 scenario compared to a maximum delay of 45 seconds in the future total 2038 scenario represents a difference of 6 seconds and a minor increase in delays. Furthermore, the V/C ratios remain below the theoretical threshold of 1.0. As a result, no geometric improvements are recommended for the intersection.

7.2.1 MTO Westbound Off-Ramp Queuing Analysis – Left-turn and Through Lanes

A queueing analysis was completed for the left-turn and through lanes at the intersection based on the MTO's Protocol using the MTO's Geometric Design Standards and Signal Timing Policy. The calculations are summarized in the table below and are based on the volumes from the 2038 future total scenarios. The recommended storage length (in vehicles) has been extracted from the MTO's Geometric Design Standards for Ontario Highways, Chapter B, Table B7-5 for urban/commuter intersections.

Table 13 MTO Queuing Protocol - MTO Westbound Ramp and Townline Road

Scenario	Lane	Volumes	Heavy Vehicle%	PCU	Cycle Length (in seconds)	Arrival Rate (vehicles/ cycle)	Recommended Storage, MTO Table B7-5 (vehicles)	Recommended Storage (in metres, 7.5 m/vehicle)	Available Storage (metres)
Future Total 2038- AM (ALT A)	WBL	605	13%	684	90	8.5	14	105	204*
	NBT	1056	4%	1098	90	13.7	20	150	N/A
	SBT	908	2%	926	90	11.6	17	127.5	N/A
Future Total 2038- PM (ALT A)	WBL	607	9%	662	100	9.2	14	105	204*
	NBT	1639	2%	1672	100	23.2	31	232.5	N/A
	SBT	1004	2%	1024	100	14.2	21	157.5	N/A
Future Total 2038- SAT (ALT A)	WBL	449	5%	471	80	5.2	9	67.5	204*
	NBT	1004	2%	1024	80	11.4	17	127.5	N/A
	SBT	916	1%	925	80	10.3	16	120	N/A
Future Total 2038- AM (ALT B)	WBL	605	13%	684	90	8.5	14	105	204*
	NBT	1022	4%	1063	90	13.3	20	150	N/A
	SBT	853	2%	870	90	10.9	17	127.5	N/A
Future Total 2038- PM (ALT B)	WBL	607	9%	662	100	9.2	14	105	204*
	NBT	1488	2%	1518	100	21.1	29	217.5	N/A
	SBT	890	2%	908	100	12.6	19	142.5	N/A
Future Total 2038- SAT (ALT B)	WBL	449	5%	471	80	5.2	9	67.5	204*
	NBT	760	2%	775	80	8.6	14	105	N/A
	SBT	690	1%	697	80	7.7	12	90	N/A

*Note the available storage is based on 2 left turn lanes

As per the queueing analysis the available storage of 204 m corresponding to two left-turn lanes of 102 metres satisfies the recommended storage length for all scenarios.

7.2.2 MTO Westbound Off-Ramp Queuing Analysis – Right Turn Lanes

As directed by MTO staff, the right-turn lane queuing assessment was completed for the ultimate condition based on the methodology in Chapter 9 of TAC's Geometric Design Guide for Canadian Roads section 9.14.4. The queueing assessment was completed as follows:

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

The right turn lane queueing analysis is summarized in the table below:

Table 14 TAC Manual Chapter 9 Westbound 401 Off-Ramp Right-Turn Storage Assessment

Scenario	Lane	Volumes	Design Speed (km/hr)	Cycle Length (in seconds)	Arrival Rate (vehicles/ cycle)	Recommended Storage (2x arrival rate, 7.5 metres/vehicle)	Available Storage (metres)
Future Total 2038- AM (ALT A)	EBR	245	60	90	6.1	92	130
Future Total 2038- PM (ALT A)	EBR	469	60	100	13.0	195	130
Future Total 2038- SAT (ALT A)	EBR	334	60	80	7.4	111	130
Future Total 2038- AM (ALT B)	EBR	208	60	90	5.2	78	130
Future Total 2038- PM (ALT B)	EBR	409	60	100	11.4	170	130
Future Total 2038- SAT (ALT B)	EBR	197	60	80	4.4	66	130

As per the queueing analysis the recommended storage exceeds the available for the right turn lane under the p.m. peak scenario, however operationally, the delay, and the sim traffic results presented in **Section 7.2.3** indicate that the westbound right-turn operates under acceptable parameters.

7.2.3 MTO Westbound Off-Ramp Queuing Analysis – Sim Traffic

A Sim Traffic simulation was conducted to closely resemble “real-world” road operations and analyze queueing for the Westbound off-ramp with the addition of the network improvements as summarized in **Section 7.6.** The SimTraffic analysis uses a 15-minute seed time, 60-minute run time, and an average of 5 runs. The below table summarizes the reported Sim Traffic queueing for the MTO off-ramp under the future total 2038 horizon year to analyze the most constrained case. The detailed SimTraffic reports are attached in **Appendix E-3**.

Table 15 MTO Westbound Off-ramp Queueing

Scenario	Lane	AM Peak 95th Percentile Queue	PM Peak 95th Percentile Queue	Saturday Peak 95th Percentile Queue
Future Total 2038 (ALT A)	WBL WBR NBT SBT	81 48 72 67	89 104 326 77	55 47 66 57
Future Total 2038 (ALT B)	WBL WBR NBT SBT	78 40 70 62	74 85 140 76	52 27 47 45

As indicated by the sim traffic queueing analysis, Site Plan A reports a maximum left-turn 95th percentile queue of 89 metres and a maximum right-turn 95th percentile queue of 104 metres. Similarly, Site Plan B reports a maximum left-turn 95th percentile queue of 78 metres and a maximum right-turn 95th percentile queue of 85 metres. Under both scenarios, the turning queue lengths are sufficiently accommodated by the existing available storage lengths. Additionally, there are no reported queue spillbacks with the northbound and southbound through movements.

7.3 Townline Road and Jamieson Parkway/Site Access 2

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours and Saturday peak hour for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 16 Capacity analysis of Townline Road and Jamieson Parkway

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Existing 2025	Overall: 0.52 (C) 21 EBL = 0.56 (D) 37 EBR = 0.21 (C) 33 NBL = 0.37 (C) 29 NBT = 0.22 (A) 4 SBT = 0.6 (C) 22	 EBL = 40 m EBR = 20 m NBL = 35 m NBT = 25 m SBT = 75 m	Overall: 0.54 (C) 25 EBL = 0.75 (E) 56 EBR = 0.25 (D) 42 NBL = 0.73 (D) 50 NBT = 0.38 (A) 6 SBT = 0.4 (B) 18	 EBL = 70 m EBR = 30 m NBL = 60 m NBT = 55 m SBT = 70 m	Overall: 0.41 (B) 18 EBL = 0.58 (D) 37 EBR = 0.16 (C) 32 NBL = 0.51 (D) 36 NBT = 0.22 (A) 4 SBT = 0.34 (B) 13	 EBL = 40 m EBR = 20 m NBL = 30 m NBT = 25 m SBT = 45 m
Future Background 2028	Overall: 0.6 (B) 20 EBL = 0.59 (C) 34 EBTR = 0.22 (C) 28 NBL = 0.6 (C) 34 NBTR = 0.25 (A) 6 SBTR = 0.6 (B) 19	 EBL = 40 m EBTR = 5 m NBL = 40 m NBTR = 30 m SBTR = 85 m	Overall: 0.62 (C) 25 EBL = 0.79 (D) 53 EBTR = 0.27 (C) 35 NBL = 0.72 (D) 44 NBTR = 0.44 (A) 8 SBTR = 0.5 (C) 22	EBL = 80 m EBTR = 0 m WBTR = 0 m NBL = 60 m NBTR = 60 m SBTR = 75 m	Overall: 0.48 (B) 18 EBL = 0.62 (C) 34 EBTR = 0.17 (C) 27 NBL = 0.5 (C) 32 NBTR = 0.25 (A) 6 SBTR = 0.41 (B) 15	 EBL = 40 m EBTR = 0 m NBL = 30 m NBTR = 30 m SBTR = 55 m
Future Total 2028 (Site Plan A)	Overall: 0.58 (C) 26 EBL = 0.44 (C) 32 EBTR = 0.33 (D) 40 WBL = 0.37 (C) 33	 EBL = 35 m EBTR = 30 m WBL = 20 m	Overall: 0.75 (D) 40 EBL = 0.47 (C) 33 EBTR = 0.36 (D) 43 WBL = 0.73 (C) 35	 EBL = 60 m EBTR = 40 m WBL = 50 m	Overall: 0.62 (C) 32 EBL = 0.45 (D) 38 EBTR = 0.74 (E) 59 WBL = 0.79 (D) 38	 EBL = 40 m EBTR = 65 m WBL = 55 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
	WBT = 0.24 (D) 40 WBR = 0.05 (D) 38 NBL = 0.7 (D) 46 NBT = 0.33 (B) 15 NBR = 0.19 (B) 14 SBL = 0.19 (B) 14 SBTR = 0.61 (C) 24	WBT = 20 m WBR = 0 m NBL = 45 m NBT = 55 m NBR = 15 m SBL = 15 m SBTR = 95 m	WBT = 0.19 (D) 36 WBR = 0.14 (D) 36 NBL = 0.79 (E) 63 NBT = 0.65 (C) 33 NBR = 0.26 (C) 26 SBL = 0.69 (D) 43 SBTR = 0.66 (D) 45	WBT = 35 m WBR = 20 m NBL = 70 m NBT = 125 m NBR = 20 m SBL = 40 m SBTR = 100 m	WBT = 0.23 (D) 38 WBR = 0.11 (D) 36 NBL = 0.59 (D) 52 NBT = 0.33 (B) 19 NBR = 0.3 (B) 20 SBL = 0.36 (B) 19 SBTR = 0.45 (C) 26	WBT = 30 m WBR = 15 m NBL = 40 m NBT = 60 m NBR = 20 m SBL = 35 m SBTR = 80 m
Future Total 2028 (Site Plan B)	Overall: 0.6 (C) 24 EBL = 0.43 (C) 32 EBTR = 0.22 (D) 38 WBL = 0.34 (D) 43 WBTR = 0.14 (D) 47 NBL = 0.71 (D) 45 NBTR = 0.39 (B) 11 SBL = 0.08 (B) 13 SBTR = 0.6 (C) 20	EBL = 40 m EBTR = 5 m WBL = 15 m WBTR = 10 m NBL = 40 m NBTR = 55 m SBL = 5 m SBTR = 85 m	Overall: 0.67 (C) 31 EBL = 0.69 (D) 44 EBTR = 0.27 (D) 48 WBL = 0.51 (D) 45 WBTR = 0.13 (D) 51 NBL = 0.8 (D) 55 NBTR = 0.54 (B) 14 SBL = 0.05 (B) 18 SBTR = 0.54 (C) 26	EBL = 80 m EBTR = 15 m WBL = 35 m WBTR = 15 m NBL = 70 m NBTR = 115 m SBL = 5 m SBTR = 100 m	Overall: 0.47 (C) 23 EBL = 0.51 (D) 36 EBTR = 0.17 (D) 42 WBL = 0.38 (D) 43 WBTR = 0.19 (D) 49 NBL = 0.58 (D) 44 NBTR = 0.28 (A) 9 SBL = 0.01 (B) 12 SBTR = 0.4 (B) 16	EBL = 50 m EBTR = 0 m WBL = 20 m WBTR = 10 m NBL = 35 m NBTR = 40 m SBL = 5 m SBTR = 60 m
Future Background 2033	Overall: 0.66 (C) 21 EBL = 0.62 (D) 35 EBTR = 0.24 (C) 29 NBL = 0.64 (C) 35 NBTR = 0.28 (A) 6 SBTR = 0.68 (C) 21	EBL = 40 m EBTR = 15 m NBL = 45 m NBTR = 35 m SBTR = 100 m	Overall: 0.68 (C) 27 EBL = 0.84 (E) 59 EBTR = 0.3 (D) 35 NBL = 0.75 (D) 46 NBTR = 0.49 (A) 10 SBTR = 0.57 (C) 26	EBL = 95 m EBTR = 5 m NBL = 65 m NBTR = 70 m SBTR = 90 m	Overall: 0.52 (B) 19 EBL = 0.64 (D) 35 EBTR = 0.19 (C) 27 NBL = 0.53 (C) 33 NBTR = 0.28 (A) 6 SBTR = 0.47 (B) 17	EBL = 45 m EBTR = 0 m NBL = 35 m NBTR = 35 m SBTR = 65 m
Future Total 2033 (Site Plan A)	Overall: 0.64 (C) 27 EBL = 0.48 (C) 33 EBTR = 0.34 (D) 40 WBL = 0.38 (C) 33 WBT = 0.23 (D) 40 WBR = 0.05 (D) 39 NBL = 0.76 (D) 49 NBT = 0.37 (B) 15 NBR = 0.19 (B) 14 SBL = 0.2 (B) 14 SBTR = 0.68 (C) 26	EBL = 40 m EBTR = 30 m WBL = 20 m WBT = 20 m WBR = 0 m NBL = 55 m NBT = 65 m NBR = 15 m SBL = 15 m SBTR = 110 m	Overall: 0.83 (D) 43 EBL = 0.52 (C) 34 EBTR = 0.5 (D) 47 WBL = 0.81 (D) 42 WBT = 0.19 (D) 36 WBR = 0.14 (D) 36 NBL = 0.83 (E) 66 NBT = 0.72 (D) 36 NBR = 0.28 (C) 27 SBL = 0.8 (E) 58 SBTR = 0.76 (D) 50	EBL = 65 m EBTR = 65 m WBL = 55 m WBT = 35 m WBR = 20 m NBL = 80 m NBT = 145 m NBR = 25 m SBL = 45 m SBTR = 115 m	Overall: 0.67 (C) 34 EBL = 0.46 (D) 37 EBTR = 0.76 (E) 61 WBL = 0.85 (D) 45 WBT = 0.25 (D) 40 WBR = 0.11 (D) 39 NBL = 0.65 (D) 55 NBT = 0.36 (B) 20 NBR = 0.3 (B) 19 SBL = 0.37 (B) 19 SBTR = 0.49 (C) 27	EBL = 45 m EBTR = 70 m WBL = 60 m WBT = 30 m WBR = 20 m NBL = 45 m NBT = 70 m NBR = 20 m SBL = 35 m SBTR = 90 m
Future Total 2033 (Site Plan B)	Overall: 0.67 (C) 25 EBL = 0.48 (C) 33 EBTR = 0.24 (D) 38 WBL = 0.31 (D) 43 WBTR = 0.1 (D) 46 NBL = 0.76 (D) 48 NBTR = 0.43 (B) 12 SBL = 0.09 (B) 13 SBTR = 0.67 (C) 23	EBL = 40 m EBTR = 10 m WBL = 15 m WBTR = 5 m NBL = 50 m NBTR = 70 m SBL = 5 m SBTR = 105 m	Overall: 0.72 (C) 34 EBL = 0.76 (D) 51 EBTR = 0.36 (D) 49 WBL = 0.52 (D) 43 WBTR = 0.09 (D) 48 NBL = 0.84 (E) 59 NBTR = 0.59 (B) 16 SBL = 0.05 (B) 20 SBTR = 0.61 (C) 29	EBL = 75 m EBTR = 35 m WBL = 35 m WBTR = 15 m NBL = 90 m NBTR = 155 m SBL = 5 m SBTR = 120 m	Overall: 0.52 (C) 24 EBL = 0.57 (D) 38 EBTR = 0.19 (D) 43 WBL = 0.37 (D) 43 WBTR = 0.19 (D) 50 NBL = 0.62 (D) 45 NBTR = 0.31 (A) 9 SBL = 0.01 (B) 12 SBTR = 0.44 (B) 17	EBL = 55 m EBTR = 0 m WBL = 20 m WBTR = 10 m NBL = 35 m NBTR = 45 m SBL = 5 m SBTR = 65 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Background 2038	Overall: 0.72 (C) 23 EBL = 0.65 (D) 36 EBTR = 0.27 (C) 29 NBL = 0.7 (D) 37 NBTR = 0.31 (A) 6 SBTR = 0.76 (C) 24	EBL = 45 m EBTR = 20 m NBL = 50 m NBTR = 40 m SBTR = 125 m	Overall: 0.75 (C) 30 **EBL = 0.9 (E) 68** EBTR = 0.33 (D) 36 NBL = 0.78 (D) 47 NBTR = 0.54 (B) 11 SBTR = 0.65 (C) 29	EBL = 115 m EBTR = 15 m NBL = 75 m NBTR = 80 m SBTR = 105 m	Overall: 0.58 (B) 20 EBL = 0.68 (D) 37 EBTR = 0.21 (C) 28 NBL = 0.57 (C) 34 NBTR = 0.31 (A) 7 SBTR = 0.53 (B) 18	EBL = 50 m EBTR = 5 m NBL = 35 m NBTR = 40 m SBTR = 75 m
Future Total 2038 (Site Plan A)	Overall: 0.72 (C) 30 EBL = 0.5 (C) 32 EBTR = 0.54 (D) 42 WBL = 0.39 (C) 33 WBT = 0.19 (D) 39 WBR = 0.05 (D) 38 NBL = 0.84 (E) 56 NBT = 0.42 (B) 17 NBR = 0.23 (B) 15 SBL = 0.21 (B) 15 SBTR = 0.77 (C) 30	EBL = 45 m EBTR = 45 m WBL = 20 m WBT = 20 m WBR = 0 m NBL = 65 m NBT = 75 m NBR = 25 m SBL = 15 m SBTR = 135 m	Overall: 0.9 (D) 49 EBL = 0.57 (D) 36 EBTR = 0.64 (D) 52 WBL = 0.83 (D) 48 WBT = 0.19 (D) 36 WBR = 0.16 (D) 36 NBL = 0.89 (E) 70 NBT = 0.8 (D) 39 NBR = 0.46 (C) 30 **SBL = 0.95 (F) 96** **SBTR = 0.87 (E) 58**	EBL = 75 m EBTR = 90 m WBL = 60 m WBT = 35 m WBR = 25 m NBL = 95 m NBT = 165 m NBR = 75 m SBL = 55 m SBTR = 140 m	Overall: 0.69 (D) 37 EBL = 0.54 (D) 40 EBTR = 0.83 (E) 68 WBL = 0.77 (D) 38 WBT = 0.2 (D) 36 WBR = 0.11 (D) 35 NBL = 0.71 (E) 58 NBT = 0.46 (C) 26 NBR = 0.43 (C) 27 SBL = 0.37 (B) 19 SBTR = 0.58 (C) 32	EBL = 50 m EBTR = 95 m WBL = 60 m WBT = 30 m WBR = 15 m NBL = 50 m NBT = 90 m NBR = 65 m SBL = 35 m SBTR = 105 m
Future Total 2038 (Site Plan B)	Overall: 0.73 (C) 28 EBL = 0.53 (C) 34 EBTR = 0.27 (D) 38 WBL = 0.28 (D) 43 WBTR = 0.08 (D) 46 NBL = 0.83 (D) 53 NBTR = 0.47 (B) 13 SBL = 0.1 (B) 14 SBTR = 0.75 (C) 26	EBL = 45 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 65 m NBTR = 85 m SBL = 10 m SBTR = 135 m	Overall: 0.78 (D) 38 EBL = 0.79 (D) 54 EBTR = 0.64 (E) 57 WBL = 0.54 (D) 44 WBTR = 0.08 (D) 48 NBL = 0.89 (E) 66 NBTR = 0.66 (B) 19 SBL = 0.06 (C) 22 SBTR = 0.7 (C) 34	EBL = 80 m EBTR = 60 m WBL = 35 m WBTR = 15 m NBL = 105 m NBTR = 180 m SBL = 5 m SBTR = 140 m	Overall: 0.57 (C) 25 EBL = 0.63 (D) 40 EBTR = 0.21 (D) 43 WBL = 0.38 (D) 44 WBTR = 0.19 (D) 50 NBL = 0.65 (D) 46 NBTR = 0.34 (A) 9 SBL = 0.01 (B) 12 SBTR = 0.49 (B) 18	EBL = 55 m EBTR = 0 m WBL = 20 m WBTR = 10 m NBL = 40 m NBTR = 50 m SBL = 5 m SBTR = 70 m

Under existing traffic conditions, the intersection operates at satisfactory levels with an overall V/C ratio of 0.52 LOS C during the a.m. peak hour, 0.54 LOS C during the p.m. peak hour and an overall V/C of 0.41 LOS B during the Saturday peak hour.

To ensure the V/C and delays are reduced with the implementation of the site access at Jamieson Parkway and Townline road the following was added to the intersection and into the model for Site A based on spacing constraints:

- Protected phase for the westbound left and permitted protected for the eastbound left and southbound left.
- Eastbound right lane converted to a through-right
- A double left-turn lane and an exclusive through and right lane on the westbound approach.
- Exclusive right turn lane added in the northbound direction
- Restriping to provide a southbound left-turn lane.
- Optimized signal timings and increase in cycle length to 135 seconds for the p.m. and Saturday peak

For Site B the following was added to the intersection and into the model:

- Permitted protected for the eastbound left, westbound left and southbound left.
- Eastbound right lane converted to a through-right
- A left-turn lane and a shared through-right lane on the westbound approach.
- Restriping to provide a southbound left-turn lane.
- Optimized signal timings and increase in cycle length to 135 seconds for the p.m. and Saturday peak

With the addition of corridor growth for the 2028 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.60 LOS C during the a.m. peak hour, an overall V/C of 0.62 LOS C during the p.m. peak hour and an overall V/C ratio of 0.48 LOS B during the Saturday Peak hour.

Future total 2028 Site Plan A

Under the 2028 future total traffic Site Plan A scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.58 LOS C during the a.m. peak hour, a V/C of 0.75 LOS D during the p.m. peak hour and an overall V/C of 0.62 LOS C during the Saturday peak hour. No critical movements are reported.

Future total 2028 Site Plan B

Under the 2028 future total traffic Site Plan B scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.60 LOS C during the a.m. peak hour, a V/C of 0.67 LOS C during the p.m. peak hour and an overall V/C of 0.47 LOS C during the Saturday peak hour.

With the addition of corridor growth for the 2033 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.66 LOS C during the a.m. peak hour, an overall V/C of 0.68 LOS C during the p.m. peak hour and an overall V/C ratio of 0.52 LOS B during the Saturday Peak hour.

Future total 2033 Site Plan A

Under the 2033 future total traffic Site Plan A scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.64 LOS C during the a.m. peak hour, a V/C of 0.83 LOS D during the p.m. peak hour and an overall V/C of 0.67 LOS C during the Saturday peak hour. No critical movements are reported.

Future total 2033 Site Plan B

Under the 2033 future total traffic Site Plan B scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.66 LOS C during the a.m. peak hour, a V/C of 0.72 LOS D during the p.m. peak hour and an overall V/C of 0.52 LOS C during the Saturday peak hour.

With the addition of corridor growth for the 2038 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.72 LOS C during the a.m. peak hour, an overall V/C of 0.75 LOS C during the p.m. peak hour and an overall V/C ratio of 0.48 LOS B during the Saturday Peak hour. The eastbound left reports critical in the p.m. peak hour.

Future total 2038 Site Plan A

Under the 2038 future total traffic Site Plan A scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.72 LOS C during the a.m. peak hour, a critical V/C of 0.90 LOS D during the p.m. peak hour and an overall V/C of 0.69 LOS D during the Saturday peak hour. The p.m. peak hour reports a critical movement in the southbound through right movement and southbound left movement. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Southbound through-right movement: 4% of the through right volume

- Southbound left movement: 43% of the left-turning volume.

Future total 2038 Site Plan B

Under the 2038 future total traffic Site Plan B scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.73 LOS C during the a.m. peak hour, a critical V/C of 0.78 LOS D during the p.m. peak hour and an overall V/C of 0.57 LOS D during the Saturday peak hour. No critical movements are reported.

Under the Site Plan A and B scenario, the p.m. peak hour reports above capacity only under the Future Total 2038 Site Plan A scenario indicating that there are no critical movements under the 2028 and 2033 horizon year. Additionally, the v/c is reported below 1.00. Therefore, although there is a critical movement, Site Plan A and B can be accommodated at this intersection.

Thus, the recommended improvements to implement for the introduction of the site plan A include:

- Protected phase for the westbound left and permitted protected for the eastbound left and southbound left.
- Eastbound right lane converted to a through-right
- A double left-turn lane and a exclusive through and right lane on the westbound approach.
- Exclusive right turn lane added in the northbound direction
- A left-turn lane added on the southbound approach.
- Optimized signal timings and increase in cycle length to 135 seconds for the p.m. and Saturday peak

For Site Plan B the recommended improvements include:

- Permitted protected for the eastbound left, westbound left and southbound left.
- Eastbound right lane converted to a through-right
- A left-turn lane and a shared through-right lane on the westbound approach.
- A left-turn lane added on the southbound approach.
- Optimized signal timings

Site Access Queue Review

For site A, the reported maximum queue of 60 metres is in the westbound left-turn movement. Similarly, the reported maximum queue for the outbound of Site Plan B is 35 metres. As measured on the site-plan from the property site to the first point of conflict with an internal access there is approximately 52 metres of storage length. For the purpose of site plan A, the recommended two left-turn lanes will sufficiently store the expected queue lengths as the queue will be spilt between both left-turn lanes and aid in mitigating capacity conflicts. Alternatively, for site plan B the single left-turn lane is sufficient as the 35-metre queue is not expected to encroach with the internal parking accesses.

7.4 Townline Road and Ellis Road/Sideroad 10N

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours and Saturday peak hour for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 17 Capacity analysis of Townline Road and Ellis Road/Sideroad 10N

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Existing 2025	Overall: 0.61 (B) 15 EBL = 0.47 (C) 33 EBTR = 0.3 (C) 31 WBL = 0.16 (C) 31 WBTR = 0.05 (C) 30 NBL = 0.22 (A) 5 NBTR = 0.49 (A) 7 SBL = 0.01 (A) 7 SBTR = 0.64 (B) 14	EBL = 25 m EBTR = 25 m WBL = 10 m WBTR = 10 m NBL = 10 m NBTR = 65 m SBL = 5 m SBTR = 110 m	Overall: 0.72 (B) 15 EBL = 0.24 (C) 35 EBTR = 0.21 (C) 34 WBL = 0.49 (D) 38 WBTR = 0.19 (C) 34 NBL = 0.54 (A) 6 NBTR = 0.71 (B) 10 SBL = 0.02 (A) 9 SBTR = 0.6 (B) 16	EBL = 15 m EBTR = 20 m WBL = 25 m WBTR = 15 m NBL = 25 m NBTR = 130 m SBL = 5 m SBTR = 95 m	Overall: 0.44 (B) 10 EBL = 0.21 (B) 19 EBTR = 0.23 (B) 20 WBL = 0.16 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.3 (A) 7 NBTR = 0.5 (A) 8 SBL = 0.01 (A) 4 SBTR = 0.42 (A) 7	EBL = 10 m EBTR = 15 m WBL = 10 m WBTR = 5 m NBL = 20 m NBTR = 50 m SBL = 5 m SBTR = 40 m
Future Background 2028	Overall: 0.66 (B) 16 EBL = 0.48 (C) 33 EBTR = 0.32 (C) 31 WBL = 0.17 (C) 31 WBTR = 0.05 (C) 29 NBL = 0.26 (A) 6 NBTR = 0.54 (A) 7 SBL = 0.01 (A) 7 SBTR = 0.7 (B) 16	EBL = 25 m EBTR = 25 m WBL = 10 m WBTR = 10 m NBL = 10 m NBTR = 75 m SBL = 5 m SBTR = 130 m	Overall: 0.77 (B) 16 EBL = 0.24 (C) 35 EBTR = 0.22 (C) 35 WBL = 0.53 (D) 40 WBTR = 0.2 (C) 34 NBL = 0.6 (A) 8 NBTR = 0.76 (B) 12 SBL = 0.03 (A) 9 SBTR = 0.62 (B) 16	EBL = 15 m EBTR = 20 m WBL = 25 m WBTR = 15 m NBL = 30 m NBTR = 160 m SBL = 5 m SBTR = 110 m	Overall: 0.47 (B) 10 EBL = 0.21 (B) 19 EBTR = 0.24 (B) 19 WBL = 0.16 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.34 (A) 7 NBTR = 0.54 (A) 9 SBL = 0.01 (A) 4 SBTR = 0.45 (A) 8	EBL = 10 m EBTR = 15 m WBL = 10 m WBTR = 5 m NBL = 20 m NBTR = 55 m SBL = 5 m SBTR = 45 m
Future Total 2028 (Site Plan A)	Overall: 0.69 (B) 17 EBL = 0.48 (C) 33 EBTR = 0.33 (C) 31 WBL = 0.49 (D) 35 WBTR = 0.05 (C) 29 NBL = 0.3 (A) 6 NBTR = 0.57 (A) 8 SBL = 0.01 (A) 7 SBTR = 0.74 (B) 17	EBL = 25 m EBTR = 25 m WBL = 15 m WBTR = 10 m NBL = 15 m NBTR = 85 m SBL = 5 m SBTR = 160 m	**Overall: 0.87 (C) 21** EBL = 0.21 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.66 (D) 47 WBTR = 0.17 (C) 34 NBL = 0.71 (B) 12 **NBTR = 0.86 (B) 18** SBL = 0.03 (A) 10 SBTR = 0.7 (C) 20	EBL = 15 m EBTR = 20 m WBL = 30 m WBTR = 15 m NBL = 40 m NBTR = 255 m SBL = 5 m SBTR = 130 m	Overall: 0.58 (B) 12 EBL = 0.2 (B) 18 EBTR = 0.26 (B) 19 WBL = 0.35 (B) 20 WBTR = 0.06 (B) 18 NBL = 0.45 (A) 10 NBTR = 0.66 (B) 11 SBL = 0.01 (A) 5 SBTR = 0.53 (A) 9	EBL = 10 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 30 m NBTR = 80 m SBL = 5 m SBTR = 55 m
Future Total 2028 (Site Plan B)	Overall: 0.68 (B) 16 EBL = 0.48 (C) 33 EBTR = 0.32 (C) 31 WBL = 0.43 (C) 34 WBTR = 0.05 (C) 29 NBL = 0.28 (A) 6 NBTR = 0.55 (A) 8 SBL = 0.01 (A) 7 SBTR = 0.72 (B) 16	EBL = 25 m EBTR = 25 m WBL = 15 m WBTR = 10 m NBL = 10 m NBTR = 80 m SBL = 5 m SBTR = 150 m	Overall: 0.82 (B) 18 EBL = 0.23 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.58 (D) 42 WBTR = 0.19 (C) 34 NBL = 0.64 (A) 9 NBTR = 0.81 (B) 14 SBL = 0.03 (A) 9 SBTR = 0.65 (B) 17	EBL = 15 m EBTR = 20 m WBL = 30 m WBTR = 15 m NBL = 35 m NBTR = 225 m SBL = 5 m SBTR = 115 m	Overall: 0.49 (B) 11 EBL = 0.21 (B) 19 EBTR = 0.24 (B) 19 WBL = 0.19 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.35 (A) 8 NBTR = 0.57 (A) 9 SBL = 0.01 (A) 4 SBTR = 0.46 (A) 8	EBL = 10 m EBTR = 15 m WBL = 10 m WBTR = 5 m NBL = 25 m NBTR = 60 m SBL = 5 m SBTR = 45 m
Future Background 2033	Overall: 0.72 (B) 17 EBL = 0.51 (C) 33 EBTR = 0.34 (C) 31 WBL = 0.19 (C) 31 WBTR = 0.06 (C) 29	EBL = 30 m EBTR = 25 m WBL = 10 m WBTR = 10 m	**Overall: 0.86 (B) 20** EBL = 0.25 (C) 35 EBTR = 0.23 (C) 34 WBL = 0.6 (D) 44 WBTR = 0.2 (C) 34	EBL = 20 m EBTR = 20 m WBL = 30 m WBTR = 20 m	Overall: 0.52 (B) 11 EBL = 0.23 (B) 19 EBTR = 0.27 (B) 19 WBL = 0.19 (B) 18 WBTR = 0.07 (B) 18	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 5 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
	NBL = 0.32 (A) 7 NBTR = 0.6 (A) 8 SBL = 0.01 (A) 7 SBTR = 0.77 (B) 19	NBL = 15 m NBTR = 95 m SBL = 5 m SBTR = 170 m	NBL = 0.72 (B) 13 **NBTR = 0.85 (B) 17** SBL = 0.04 (A) 10 SBTR = 0.71 (C) 20	NBL = 40 m NBTR = 245 m SBL = 5 m SBTR = 130 m	NBL = 0.41 (A) 8 NBTR = 0.6 (A) 10 SBL = 0.01 (A) 5 SBTR = 0.51 (A) 8	NBL = 25 m NBTR = 70 m SBL = 5 m SBTR = 55 m
Future Total 2033 (Site Plan A)	Overall: 0.76 (B) 19 EBL = 0.51 (C) 33 EBTR = 0.35 (C) 31 WBL = 0.52 (D) 36 WBTR = 0.06 (C) 29 NBL = 0.37 (A) 8 NBTR = 0.63 (A) 9 SBL = 0.01 (A) 7 SBTR = 0.82 (C) 21	EBL = 30 m EBTR = 30 m WBL = 20 m WBTR = 10 m NBL = 15 m NBTR = 105 m SBL = 5 m SBTR = 185 m	Overall: 0.96 (C) 29 EBL = 0.21 (C) 34 EBTR = 0.23 (C) 34 WBL = 0.72 (D) 52 WBTR = 0.17 (C) 33 NBL = 0.86 (C) 25 **NBTR = 0.96 (C) 30** SBL = 0.06 (B) 11 SBTR = 0.79 (C) 25	EBL = 15 m EBTR = 25 m WBL = 35 m WBTR = 20 m NBL = 75 m NBTR = 305 m SBL = 5 m SBTR = 175 m	Overall: 0.64 (B) 13 EBL = 0.22 (B) 18 EBTR = 0.28 (B) 19 WBL = 0.39 (C) 20 WBTR = 0.06 (B) 17 NBL = 0.54 (B) 12 NBTR = 0.72 (B) 13 SBL = 0.01 (A) 5 SBTR = 0.58 (A) 10	EBL = 15 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 35 m NBTR = 110 m SBL = 5 m SBTR = 65 m
Future Total 2033 (Site Plan B)	Overall: 0.74 (B) 18 EBL = 0.51 (C) 33 EBTR = 0.35 (C) 31 WBL = 0.45 (C) 34 WBTR = 0.06 (C) 29 NBL = 0.35 (A) 8 NBTR = 0.61 (A) 9 SBL = 0.01 (A) 7 SBTR = 0.8 (C) 20	EBL = 30 m EBTR = 25 m WBL = 15 m WBTR = 10 m NBL = 15 m NBTR = 100 m SBL = 5 m SBTR = 180 m	**Overall: 0.9 (C) 23** EBL = 0.24 (C) 34 EBTR = 0.23 (C) 34 WBL = 0.64 (D) 46 WBTR = 0.19 (C) 34 NBL = 0.76 (B) 16 **NBTR = 0.9 (C) 22** SBL = 0.04 (B) 10 SBTR = 0.74 (C) 22	EBL = 20 m EBTR = 25 m WBL = 30 m WBTR = 20 m NBL = 50 m NBTR = 270 m SBL = 5 m SBTR = 140 m	Overall: 0.55 (B) 12 EBL = 0.23 (B) 19 EBTR = 0.27 (B) 19 WBL = 0.21 (B) 19 WBTR = 0.07 (B) 18 NBL = 0.42 (A) 9 NBTR = 0.63 (B) 10 SBL = 0.01 (A) 5 SBTR = 0.51 (A) 8	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 5 m NBL = 30 m NBTR = 75 m SBL = 5 m SBTR = 55 m
Future Background 2038	Overall: 0.81 (C) 22 EBL = 0.52 (C) 33 EBTR = 0.36 (C) 31 WBL = 0.21 (C) 30 WBTR = 0.06 (C) 28 NBL = 0.41 (A) 10 NBTR = 0.67 (B) 10 SBL = 0.01 (A) 8 **SBTR = 0.89 (C) 29**	EBL = 30 m EBTR = 30 m WBL = 10 m WBTR = 10 m NBL = 15 m NBTR = 120 m SBL = 5 m SBTR = 200 m	**Overall: 0.95 (C) 29** EBL = 0.26 (C) 34 EBTR = 0.24 (C) 34 WBL = 0.67 (D) 49 WBTR = 0.21 (C) 34 NBL = 0.89 (C) 30 **NBTR = 0.95 (C) 28** SBL = 0.06 (B) 11 SBTR = 0.8 (C) 25	EBL = 20 m EBTR = 25 m WBL = 30 m WBTR = 20 m NBL = 75 m NBTR = 295 m SBL = 5 m SBTR = 175 m	Overall: 0.58 (B) 12 EBL = 0.25 (B) 19 EBTR = 0.29 (B) 19 WBL = 0.23 (B) 19 WBTR = 0.07 (B) 18 NBL = 0.49 (B) 10 NBTR = 0.67 (B) 11 SBL = 0.01 (A) 5 SBTR = 0.56 (A) 9	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 10 m NBL = 35 m NBTR = 85 m SBL = 5 m SBTR = 65 m
Future Total 2038 (Site Plan A)	**Overall: 0.86 (C) 26** EBL = 0.5 (C) 32 EBTR = 0.47 (C) 32 WBL = 0.55 (D) 37 WBTR = 0.05 (C) 28 NBL = 0.49 (B) 12 NBTR = 0.71 (B) 12 SBL = 0.01 (A) 8 **SBTR = 0.95 (D) 38**	EBL = 30 m EBTR = 35 m WBL = 20 m WBTR = 10 m NBL = 20 m NBTR = 145 m SBL = 5 m SBTR = 230 m	**Overall: 1.06 (D) 52** EBL = 0.23 (C) 33 EBTR = 0.24 (C) 33 WBL = 0.79 (E) 62 WBTR = 0.18 (C) 33 **NBL = 1.06 (E) 80** **NBTR = 1.06 (E) 58** SBL = 0.12 (B) 14 **SBTR = 0.87 (C) 32**	EBL = 20 m EBTR = 25 m WBL = 40 m WBTR = 20 m NBL = 105 m NBTR = 350 m SBL = 5 m SBTR = 205 m	Overall: 0.7 (B) 15 EBL = 0.24 (B) 18 EBTR = 0.34 (B) 19 WBL = 0.45 (C) 21 WBTR = 0.07 (B) 17 NBL = 0.65 (B) 16 NBTR = 0.79 (B) 16 SBL = 0.01 (A) 5 SBTR = 0.64 (B) 11	EBL = 15 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 55 m NBTR = 130 m SBL = 5 m SBTR = 80 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2038 (Site Plan B)	Overall: 0.83 (C) 24		**Overall: 1 (D) 37**		Overall: 0.6 (B) 13	
	EBL = 0.51 (C) 33	EBL = 30 m	EBL = 0.24 (C) 34	EBL = 20 m	EBL = 0.25 (B) 19	EBL = 15 m
	EBTR = 0.43 (C) 31	EBTR = 30 m	EBTR = 0.24 (C) 34	EBTR = 25 m	EBTR = 0.29 (B) 19	EBTR = 20 m
	WBL = 0.48 (C) 34	WBL = 15 m	WBL = 0.7 (D) 52	WBL = 35 m	WBL = 0.26 (B) 19	WBL = 10 m
	WBTR = 0.06 (C) 28	WBTR = 10 m	WBTR = 0.19 (C) 33	WBTR = 20 m	WBTR = 0.07 (B) 18	WBTR = 10 m
	NBL = 0.45 (B) 11	NBL = 15 m	**NBL = 0.95 (D) 43**	NBL = 85 m	NBL = 0.51 (B) 11	NBL = 35 m
	NBTR = 0.69 (B) 11	NBTR = 130 m	**NBTR = 1.00 (D) 41**	NBTR = 325 m	NBTR = 0.7 (B) 12	NBTR = 105 m
	SBL = 0.01 (A) 8	SBL = 5 m	SBL = 0.08 (B) 12	SBL = 5 m	SBL = 0.01 (A) 5	SBL = 5 m
	SBTR = 0.93 (C) 34	SBTR = 215 m	SBTR = 0.82 (C) 27	SBTR = 185 m	SBTR = 0.57 (A) 9	SBTR = 65 m

Under existing traffic conditions, the intersection operates at satisfactory levels with an overall V/C ratio of 0.61 LOS B during the a.m. peak hour, 0.72 LOS B during the p.m. peak hour and an overall V/C of 0.44 LOS B during the Saturday peak hour.

With the addition of corridor growth for the 2028 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.66 LOS B during the a.m. peak hour, an overall V/C of 0.77 LOS B during the p.m. peak hour and an overall V/C ratio of 0.47 LOS B during the Saturday Peak hour.

Future total 2028 Site Plan A

Under the 2028 future total traffic Site Plan A scenario, with the addition of site generated traffic, the intersection operates with an overall V/C ratio of 0.69 LOS B during the a.m. peak hour, an overall V/C of 0.87 LOS C during the p.m. peak hour and an overall V/C of 0.58 LOS B during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through right direction with a V/C of 0.86 LOS C. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through right movement: 9% of through-right volume

Future total 2028 Site Plan B

Under the 2028 future total traffic Site Plan B scenario, with the addition of site generated traffic and signal and intersection improvements the intersection operates with a V/C ratio of 0.68 LOS B during the a.m. peak hour, a V/C of 0.82 LOS B during the p.m. peak hour and an overall V/C of 0.49 LOS B during the Saturday peak hour. No Critical movements are reported.

With the addition of corridor growth for the 2033 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.72 LOS B during the a.m. peak hour, an overall V/C of 0.86 LOS B during the p.m. peak hour and an overall V/C ratio of 0.52 LOS B during the Saturday Peak hour. The p.m. peak hour reports critical in the and northbound through-right direction.

Future total 2033 Site Plan A

Under the 2033 future total traffic Site Plan A scenario, with the addition of site generated traffic the intersection operates with a V/C ratio of 0.76 LOS B during the a.m. peak hour, a critical V/C of 0.96 LOS C during the p.m. peak hour and an overall V/C of 0.64 LOS B during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through right direction. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through right: 8% of through-right volume

Future total 2033 Site Plan B

Under the 2033 future total traffic Site Plan B scenario, with the addition of site generated traffic the intersection operates with a critical V/C ratio of 0.74 LOS B during the a.m. peak hour, a critical V/C of 0.90 LOS C during the p.m. peak hour and an overall V/C of 0.55 LOS B during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through-right direction. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through right: 4% of through-right volume

With the addition of corridor growth for the 2038 future background traffic scenario, the intersection is reported to operate at a satisfactory level with an overall V/C ratio of 0.81 LOS C during the a.m. peak hour, an overall V/C of 0.95 LOS C during the p.m. peak hour and an overall V/C ratio of 0.58 LOS B during the Saturday Peak hour. The a.m. peak hour reports critical in the southbound through-right direction. The p.m. peak hour reports critical in the northbound through-right direction.

Future total 2038 Site Plan A

Under the 2038 future total traffic Site Plan A scenario, with the addition of site generated traffic the intersection operates with a critical V/C ratio of 0.86 LOS C during the a.m. peak hour, a critical V/C of 1.06 LOS F during the p.m. peak hour and an overall V/C of 0.70 LOS C during the Saturday peak hour. The a.m. peak hour reports a critical movement in the southbound through right movement and the p.m. peak hour reports a critical movement in the northbound left, northbound through right direction and southbound through-right direction. The site traffic volumes contribute the following percentage of volume to its respective movement:

A.M. Peak Hour

- Southbound through-right: 5% of through-right volume

P.M. Peak Hour

- Southbound through-right: 6% of through-right volume
- Northbound through right: 7% of through-right volume
- Northbound left movement: 6% of left turning volume

Future total 2038 Site Plan B

Under the 2038 future total traffic Site Plan B scenario, with the addition of site generated traffic the intersection operates with a critical V/C ratio of 0.83 LOS C during the a.m. peak hour, a critical V/C of 1.00 LOS D during the p.m. peak hour and an overall V/C of 0.60 LOS B during the Saturday peak hour. The a.m. peak hour reports a critical movement in the southbound through right direction and the p.m. peak hour reports a critical movement in the northbound left movement, and northbound through-right. The site traffic volumes contribute the following percentage of volume to its respective movement:

A.M. Peak Hour

- Southbound through-right: 3% of through-right volume

P.M. Peak Hour

- Northbound through right: 4% of through-right volume
- Northbound left movement: 3% of left turning volume

As a result, comparing the Site Plan A to the Site Plan B scenario both operate similarly where the highest reported site volume is 9% of the northbound through-right at this intersection. Although the northbound through-right is critical with minor impacts from the site traffic for the remaining movements, the site traffic contributes a nominal amount which indicate that the corridor growth contributes the intersection operating with critical movements in namely the northbound through-right and northbound left movement during the p.m. peak. The township may opt to optimize signal timings but based on our review the same movements remain critical.

7.4.1 Intersection Improvements - Townline Road and Ellis Road/Sideroad 10N

Based on the capacity analysis, significant operational constraints are forecast at this intersection under future traffic conditions, with several movements operating over capacity. These deficiencies are attributable to a combination of background traffic growth, traffic generated by planned development within the corridor and traffic from the subject site.

The Region of Waterloo's planned widening of Townline Road between Jamieson Parkway and Blackbridge Road, identified within the 2031 to 2041 planning horizon, is expected to substantially improve intersection operations and address the forecast capacity constraints. To assess the effectiveness of the planned corridor improvement, a sensitivity analysis was undertaken assuming the ultimate widened roadway configuration, including the addition of a northbound through lane and a southbound through lane on Townline Road. As shown in the following table, the additional corridor capacity significantly improves traffic operations and reduces the forecast deficiencies identified under the future total traffic scenario.

Table 18 Townline Road and Ellis Road Intersection Improvements Capacity Analysis

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2038 (Site Plan A)	Overall: 0.5 (B) 14		**Overall: 0.85 (B) 16**		Overall: 0.54 (B) 10	
	EBL = 0.5 (C) 32	EBL = 30 m	EBL = 0.23 (C) 33	EBL = 20 m	EBL = 0.24 (B) 18	EBL = 15 m
	EBTR = 0.47 (C) 32	EBTR = 35 m	EBTR = 0.24 (C) 33	EBTR = 25 m	EBTR = 0.34 (B) 19	EBTR = 20 m
	WBL = 0.55 (D) 37	WBL = 20 m	WBL = 0.79 (E) 62	WBL = 40 m	WBL = 0.45 (C) 21	WBL = 15 m
	WBTR = 0.05 (C) 28	WBTR = 10 m	WBTR = 0.18 (C) 33	WBTR = 20 m	WBTR = 0.07 (B) 17	WBTR = 5 m
	NBL = 0.34 (A) 6	NBL = 20 m	NBL = 0.83 (B) 18	NBL = 75 m	NBL = 0.57 (B) 13	NBL = 50 m
	NBTR = 0.37 (A) 6	NBTR = 45 m	NBTR = 0.56 (A) 8	NBTR = 85 m	NBTR = 0.41 (A) 7	NBTR = 35 m
	SBL = 0.01 (A) 8	SBL = 5 m	SBL = 0.05 (B) 11	SBL = 5 m	SBL = 0.01 (A) 5	SBL = 5 m
	SBTR = 0.5 (B) 12	SBTR = 70 m	SBTR = 0.46 (B) 15	SBTR = 65 m	SBTR = 0.33 (A) 6	SBTR = 30 m
Future Total 2038 (Site Plan B)	Overall: 0.49 (B) 14		Overall: 0.78 (B) 14		Overall: 0.43 (A) 9	
	EBL = 0.51 (C) 33	EBL = 30 m	EBL = 0.24 (C) 34	EBL = 20 m	EBL = 0.25 (B) 19	EBL = 15 m
	EBTR = 0.43 (C) 31	EBTR = 30 m	EBTR = 0.24 (C) 34	EBTR = 25 m	EBTR = 0.29 (B) 19	EBTR = 20 m
	WBL = 0.48 (C) 34	WBL = 15 m	WBL = 0.7 (D) 52	WBL = 35 m	WBL = 0.26 (B) 19	WBL = 10 m
	WBTR = 0.06 (C) 28	WBTR = 10 m	WBTR = 0.19 (C) 33	WBTR = 20 m	WBTR = 0.07 (B) 18	WBTR = 10 m
	NBL = 0.32 (A) 5	NBL = 15 m	NBL = 0.76 (B) 12	NBL = 60 m	NBL = 0.48 (A) 10	NBL = 35 m
	NBTR = 0.36 (A) 6	NBTR = 40 m	NBTR = 0.53 (A) 7	NBTR = 75 m	NBTR = 0.37 (A) 6	NBTR = 30 m
	SBL = 0.01 (A) 8	SBL = 5 m	SBL = 0.04 (B) 10	SBL = 5 m	SBL = 0.01 (A) 5	SBL = 5 m
	SBTR = 0.49 (B) 12	SBTR = 65 m	SBTR = 0.43 (B) 14	SBTR = 60 m	SBTR = 0.3 (A) 6	SBTR = 25 m

With the addition of the additional through lane under both Site Plan A and B scenarios there are no critical movements in the northbound and southbound movements under all peak hours. No critical movements are reported.

Given the operational benefits associated with the planned widening, it is recommended that the Region review the timing of the Townline Road improvement program to determine whether implementation should be advanced to coincide with the proposed development and anticipated traffic growth within the area. Coordinating the timing of the roadway improvements with development build-out would assist in mitigating future capacity constraints and maintaining acceptable traffic operations along the corridor.

7.5 Townline Road and Site Access 1

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours and Saturday peak hour for the future total traffic conditions are summarized in the following table.

GHD also reviewed a left-turn lane warrant for the intersection which is attached in **Appendix E-2.** In summary, as per the volumes in the future total 2028 scenario for both site plans, a south-bound left-turn is warranted for the intersection. No exclusive right-turn lane was added as the volume does not meet the threshold to consider a right-turn lane. Therefore, as part of the model a southbound left-turn lane was added, in addition to a separate westbound left and right turn lane to mitigate delays out of the site access.

Table 19 Townline Road and Site Access 1 Capacity Analysis

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2028 (Site Plan A)	**WBL = 0.08 (E) 42** WBR = 0.01 (B) 14 NBTR = 0.45 (A) 0 SBL = 0.06 (A) 10 SBT = 0.52 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 0.41 (F) 89** **WBR = 0.08 (E) 37** NBTR = 0.79 (A) 0 SBL = 0.06 (C) 17 SBT = 0.45 (A) 0	WBL = 15 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.05 (C) 27 WBR = 0.01 (B) 14 NBTR = 0.48 (A) 0 SBL = 0.01 (A) 10 SBT = 0.43 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m
Future Total 2028 (Site Plan B)	WBL = 0.11 (D) 34 WBR = 0.02 (B) 13 NBTR = 0.45 (A) 0 SBL = 0.03 (A) 10 SBT = 0.52 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 0.96 (F) 228** **WBR = 0.21 (E) 42** NBTR = 0.76 (A) 0 SBL = 0.05 (C) 20 SBT = 0.41 (A) 0	WBL = 35 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.15 (C) 25 WBR = 0.03 (B) 13 NBTR = 0.42 (A) 0 SBL = 0.01 (A) 9 SBT = 0.37 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m
Future Total 2033 (Site Plan A)	**WBL = 0.11 (F) 51** WBR = 0.01 (B) 15 NBTR = 0.5 (A) 0 SBL = 0.06 (B) 10 SBT = 0.57 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 0.51 (F) 122** **WBR = 0.13 (F) 57** NBTR = 0.87 (A) 0 SBL = 0.08 (C) 22 SBT = 0.49 (A) 0	WBL = 15 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.06 (D) 30 WBR = 0.01 (C) 16 NBTR = 0.52 (A) 0 SBL = 0.02 (B) 10 SBT = 0.47 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m
Future Total 2033 (Site Plan B)	**WBL = 0.13 (E) 39** WBR = 0.02 (B) 14 NBTR = 0.49 (A) 0 SBL = 0.04 (B) 10 SBT = 0.57 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 1.14 (F) 313** **WBR = 0.36 (F) 79** NBTR = 0.84 (A) 0 SBL = 0.06 (D) 26 SBT = 0.46 (A) 0	WBL = 40 m WBR = 15 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.16 (C) 27 WBR = 0.04 (B) 14 NBTR = 0.46 (A) 0 SBL = 0.01 (A) 10 SBT = 0.4 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m
Future Total 2038 (Site Plan A)	**WBL = 0.15 (F) 69** WBR = 0.01 (C) 16 NBTR = 0.54 (A) 0 SBL = 0.07 (A) 11 SBT = 0.63 (B) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 0.58 (F) 149** **WBR = 0.20 (F) 95** NBTR = 0.95 (A) 0 SBL = 0.11 (D) 30 SBT = 0.54 (A) 0	WBL = 20 m WBR = 10 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.07 (D) 33 WBR = 0.01 (C) 17 NBTR = 0.57 (A) 0 SBL = 0.02 (B) 11 SBT = 0.51 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2038 (Site Plan B)	**WBL = 0.16 (E) 48** WBR = 0.03 (C) 16 NBTR = 0.54 (A) 0 SBL = 0.04 (B) 11 SBT = 0.62 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m	**WBL = 1.38 (F) 441** **WBR = 0.69 (F) 218** NBTR = 0.92 (A) 0 **SBL = 0.11 (E) 40** SBT = 0.5 (A) 0	WBL = 45 m WBR = 20 m NBTR = 0 m SBL = 5 m SBT = 0 m	WBL = 0.18 (D) 30 WBR = 0.04 (C) 16 NBTR = 0.51 (A) 0 SBL = 0.01 (B) 10 SBT = 0.45 (A) 0	WBL = 5 m WBR = 5 m NBTR = 0 m SBL = 5 m SBT = 0 m

Future total 2028 Site Plan A

Under the 2028 future total traffic Site Plan A scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 33 seconds in the westbound left direction during the a.m. peak, 89 seconds in the westbound left during the p.m. peak hour and 27 seconds in the westbound left during the Saturday peak hour. The a.m. peak hour reports a critical with an (LOS E) 42 second delay. The p.m. peak hour reports a critical westbound left with an (LOS F) 89 second delay and a critical westbound right with an (LOS E) 37 second delay. The remaining movements report non-critical.

Future total 2028 Site Plan B

Under the 2028 future total traffic Site Plan B scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 34 seconds in the westbound left direction during the a.m. peak, 228 seconds in the westbound left during the p.m. peak hour and 25 seconds in the westbound left during the Saturday peak hour. The p.m. peak hour reports a critical westbound left with an (LOS F) 228 second delay and a critical westbound right with an (LOS E) 42 second delay. The remaining movements report non-critical.

Future total 2033 Site Plan A

Under the 2033 future total traffic Site Plan A scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 51 seconds in the westbound left direction during the a.m. peak, 122 seconds in the westbound left during the p.m. peak hour and 57 seconds in the westbound left during the Saturday peak hour. The a.m. peak reports a critical westbound left with an (LOS F) 51 second delay, while the p.m. peak hour reports critical a westbound left with an (LOS F) 122 second delay and a critical westbound right with an (LOS F) 57 second delay. The remaining movements report non-critical.

Future total 2033 Site Plan B

Under the 2033 future total traffic Site Plan B scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 39 seconds in the westbound left direction during the a.m. peak, 313 seconds in the westbound left during the p.m. peak hour and 27 seconds in the westbound left during the Saturday peak hour. The a.m. peak reports a critical westbound left with a v/c of 0.11 (LOS F) and a 51 second delay. The p.m. peak hour reports a critical westbound left with a v/c of 1.14 (LOS F) and a 313 second delay and a critical westbound right with a v/c of 0.20 (LOS F) and an 95 second delay. The remaining movements report non-critical.

Future total 2038 Site Plan A

Under the 2038 future total traffic Site Plan A scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 69 seconds in the westbound left direction during the a.m. peak, 149 seconds in the westbound left during the p.m. peak hour and 33 seconds in the westbound left during the Saturday peak hour. The a.m. peak reports a critical westbound left with an (LOS F) 69 second delay, while the p.m. peak hour reports critical a westbound left with an (LOS F) 149 second delay and a critical westbound right with an (LOS F) 95 second delay. The remaining movements report non-critical.

Future total 2038 Site Plan B

Under the 2038 future total traffic Site Plan B scenario, with the addition of site generated traffic, the unsignalized intersection reports the highest delays of 48 seconds in the westbound left direction during the a.m. peak, 441 seconds in the westbound left during the p.m. peak hour and 30 seconds in the westbound left during the Saturday peak hour. The a.m. peak reports a critical westbound left with a v/c of 0.16 (LOS E) and a 48 second delay. The p.m. peak hour reports critical a westbound left with a v/c of 1.38 (LOS F) and a 441 second delay, a critical westbound right with a v/c of 0.69 (LOS F) and a 218 second delay and a critical southbound left turn with a v/c of 0.11 (LOS E) and a 40 second delay. The remaining movements report non-critical.

Site Access Queue Review

Site Plan B reports a maximum 45 metre queue length for the outbound left movement of the access. The access measures approximately 64 metres between the property line and the first internal conflict point. A queue of 40 metres will sufficiently be stored in the access and is not anticipated to encroach into internal access points.

7.5.1 Intersection Improvements Townline Road and Site Access 1

With the high delays projected for the westbound left- and right-turn movements exiting Site Access 1, additional capacity was considered along Townline Road to improve overall intersection operations. The proposed improvements provide additional capacity for the northbound and southbound through movements, reducing delays and increasing the availability of acceptable gaps for vehicles entering and exiting the site. These improvements are also consistent with the Region of Waterloo's planned widening of Townline Road identified within the 2031 to 2041 planning horizon.

To improve future intersection operations and reduce volume-to-capacity ratios, delays, and queues, the following improvements were incorporated into the analysis:

- Addition of a northbound through lane on Townline Road.
- Addition of a southbound through lane on Townline Road.

Given that these improvements are required to accommodate future traffic demands associated with both background growth and the proposed development, it is recommended that the Region of Waterloo review the timing of the planned Townline Road widening program to determine whether portions of the improvement should be advanced to coincide with development within the study area. Advancing the widening program, or implementing interim lane additions at this location, would help maintain acceptable traffic operations, improve access to the site, and support the efficient movement of traffic along this corridor as development proceeds.

The capacity analysis below reviews the capacity analysis from the 2038 horizon year as the most constrained case.

Table 20 Townline Road and Site Access 1 Capacity Analysis Intersection Improvements

Scenario	Am Peak Hour		PM Peak Hour		Saturday Peak Hour	
	V/C (LOS) seconds	95th % Que.	V/C (LOS) seconds	95th % Que	V/C (LOS) seconds	95th % Que
Future Total 2038 (Site Plan A)	WBL = 0.06 (D) 29 WBR = 0.01 (A) 10 NBT = 0.35 (A) 0 NBTR = 0.19 (A) 0 SBTL = 0.06 (A) 2 SBT = 0.42 (A) 0	WBL = 5 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m	**WBL = 0.27 (E) 41** WBR = 0.01 (A) 10 NBT = 0.63 (A) 0 NBTR = 0.32 (A) 0 SBTL = 0.04 (A) 1 SBT = 0.36 (A) 0	WBL = 10 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m	WBL = 0.05 (C) 25 WBR = 0 (A) 10 NBT = 0.38 (A) 0 NBTR = 0.19 (A) 0 SBTL = 0.01 (A) 0 SBT = 0.34 (A) 0	WBL = 5 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m

Future Total 2038 (Site Plan B)	WBL = 0.09 (D) 27 WBR = 0.01 (A) 10 NBT = 0.34 (A) 0 NBTR = 0.20 (A) 0 SBTL = 0.04 (A) 1 SBT = 0.42 (A) 0	WBL = 5 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m	**WBL = 0.40 (E) 50** WBR = 0.03 (A) 10 NBT = 0.6 (A) 0 NBTR = 0.32 (A) 0 SBTL = 0.03 (A) 1 SBT = 0.34 (A) 0	WBL = 15 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m	WBL = 0.16 (D) 27 WBR = 0.02 (B) 10 NBT = 0.33 (A) 0 NBTR = 0.18 (A) 0 SBTL = 0.01 (A) 0 SBT = 0.3 (A) 0	WBL = 5 m WBR = 5 m NBT = 0 m NBTR = 0 m SBTL = 5 m SBT = 0 m

Future total 2038 Site Plan A

Under the 2038 future total traffic Site Plan A scenario, with the addition of site generated traffic, and the additional northbound and southbound through lane, the unsignalized intersection reports improvements where the highest delay of 29 seconds is reported in the westbound left direction during the a.m. peak hour, 41 seconds is reported for the westbound left during the p.m. peak hour and 25 seconds is reported in the westbound left during the Saturday peak hour. The only critical movement is reported in the westbound left direction during the p.m. peak hour with a v/c of 0.23 (LOS E) and a 41 second delay. This is an improvement from the previous westbound left with a 149 second delay to now 41 seconds of delay and a reduced v/c and queue which is acceptable. Additionally, the westbound right reports non critical and the delay reduces from 95 seconds to 10 seconds.

Future total 2038 Site Plan B

Under the 2038 future total traffic Site Plan B scenario, with the addition of site generated traffic, and the additional northbound and southbound through lane, the unsignalized intersection reports improvements where the highest delay of 27 seconds is reported in the westbound left direction during the a.m. peak hour, 50 seconds is reported for the westbound left during the p.m. peak hour and 27 seconds is reported in the westbound left during the Saturday peak hour. The only critical movement is reported in the westbound left direction during the p.m. peak hour with a v/c of 0.40 (LOS E) and a 50 second delay. This is an improvement from the previous westbound left with a 441 second delay to now 50 seconds of delay and a reduced v/c and queue which is acceptable. Additionally, the westbound right reports non critical and the delay reduces from 218 seconds to 10 seconds.

With the addition of northbound and southbound through lanes on Townline Road, additional capacity is provided for the through traffic movements, which in turn creates more acceptable gaps for vehicles entering and exiting Site Access 1. As a result, delays and queuing associated with the westbound site access movements are reduced.

Although the westbound left-turn movement is forecast to operate at LOS E during the p.m. peak hour, the associated delay of approximately 50 seconds and low queue lengths are considered acceptable given the function of Site Access 1. This access is intended primarily to serve the industrial buildings located on the northern portion of the site and acts as a secondary access to the primary signalized access proposed at the Townline Road and Jamieson Parkway/Site Access 2 intersection.

Furthermore, a traffic signal warrant assessment was completed for both Site Plan A and Site Plan B under the 2028 Future Total traffic scenario, which represents the anticipated build-out condition of the proposed development. The analysis determined that both development concepts satisfy Warrant Case 2 – Might Be Warranted. This classification indicates that while the warrant criteria are not fully met, traffic signal control may be considered if supported by operational considerations and approved by the Region.

Based on the warrant assessment, traffic signal installation is not recommended at this time. The analysis indicates that the intersection should continue to operate under unsignalized control while maintaining acceptable traffic operations. As traffic volumes increase and development within the area progresses, the Region should monitor intersection performance to determine whether future signalization may become warranted. Should operational conditions deteriorate beyond acceptable levels, a future review of traffic control measures can be undertaken.

Detailed traffic signal warrant calculations are provided in **Appendix E-1.**

7.6 Proposed Lane Configurations

As per the capacity analysis, the **Figure 27** and **Figure 28** below depicts the study intersections and the corresponding lane configurations as analyzed through the sensitivity analysis to better mitigate delays and improve operations of the intersections. All Synchro reports for proposed improvements are attached in **Appendix F.**

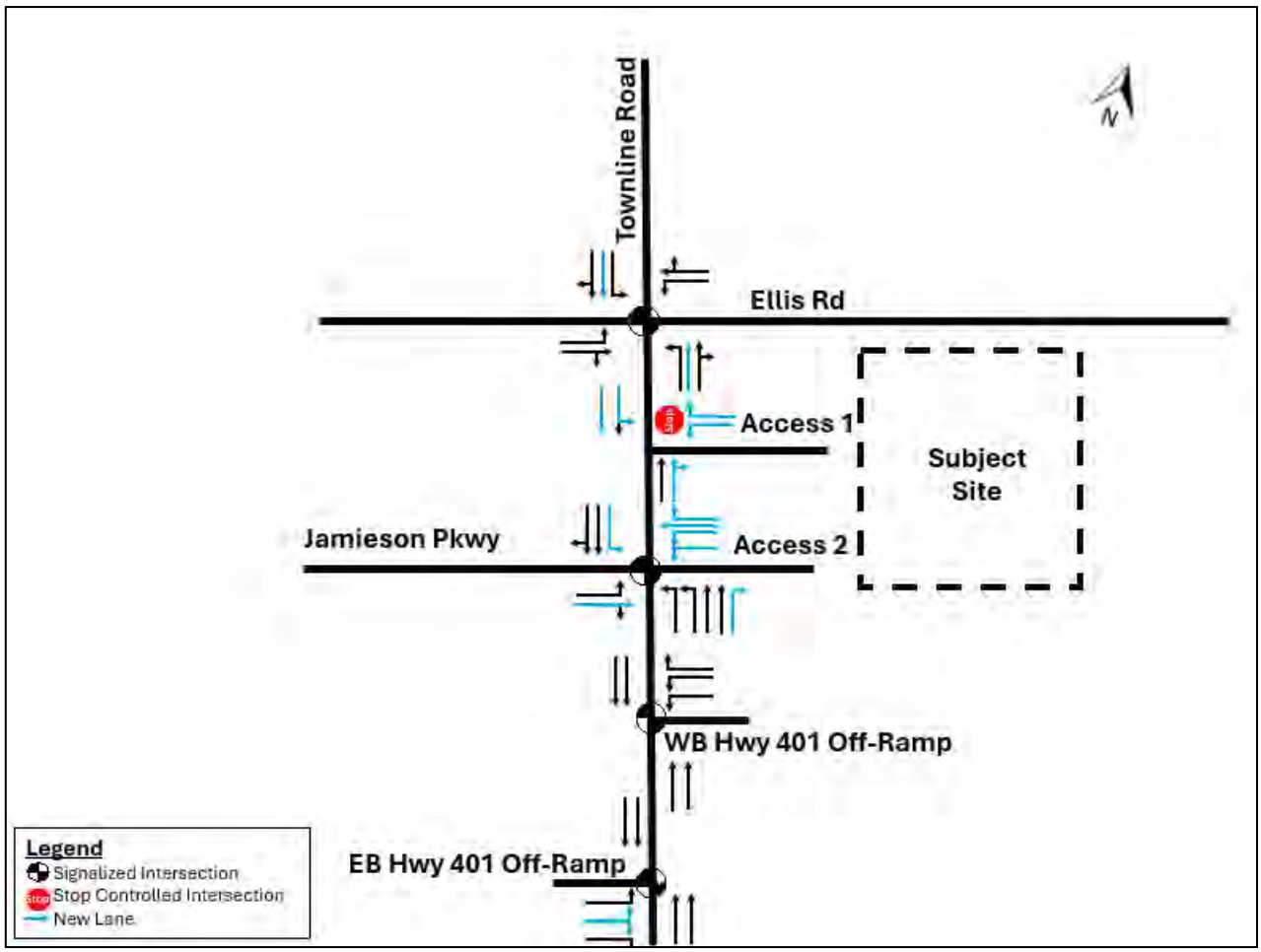


Figure 27 Site Plan A Lane Improvements

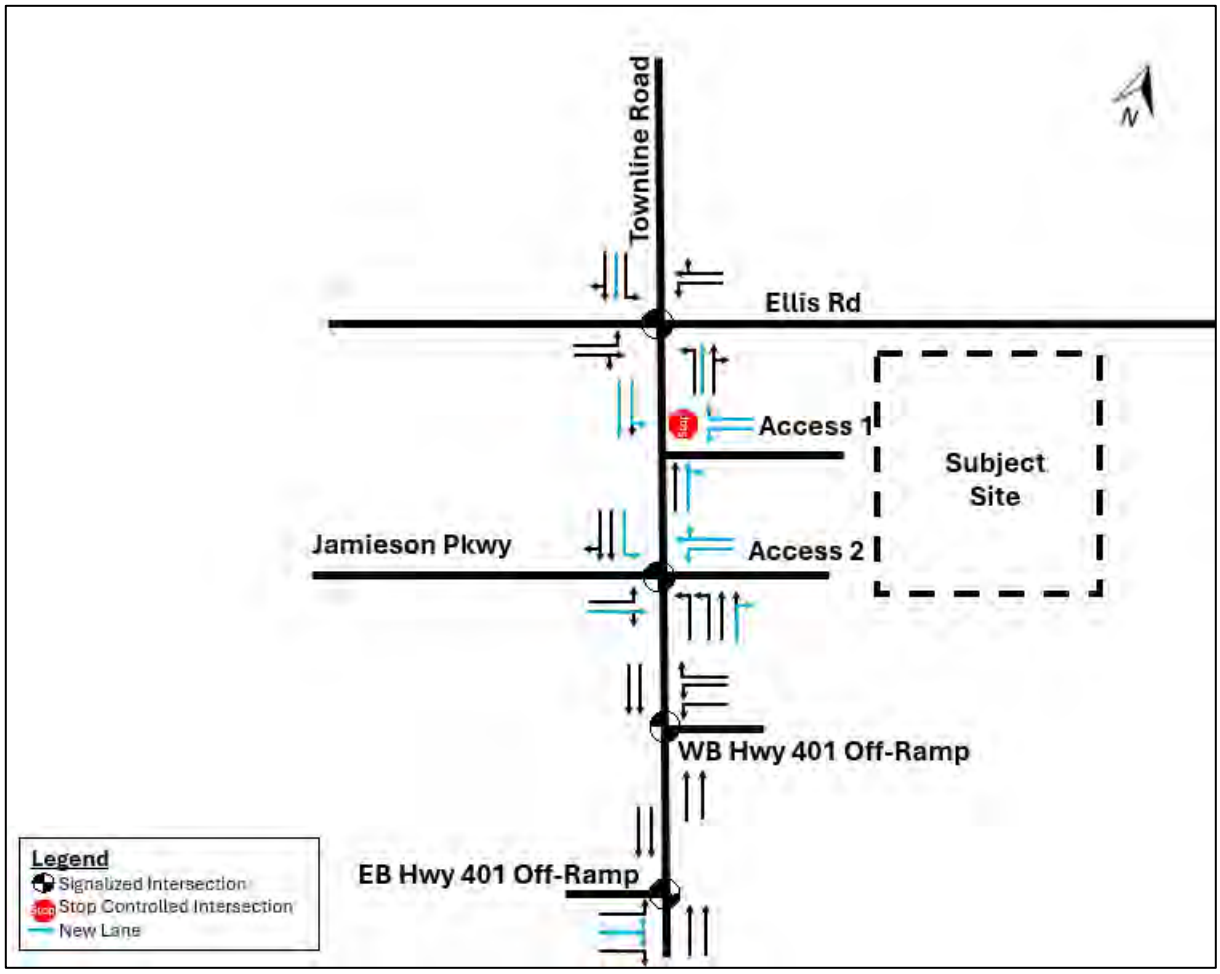


Figure 28 Site Plan B Lane Improvements

8. Parking Review

8.1 Township of Puslinch Zoning By-Law 023-18

8.1.1 Vehicular Parking

The current Township of Puslinch Comprehensive Zoning By-Law 023-18, the minimum parking requirements are found in Table 5.3. The minimum By-Law requirements for the subject site is as follows:

- Retail Store:
  - 1 per 20 m²
- Office
  - 1 per 40 m²
- Industrial Use

- 1 per 100 m^2 for the first 10,000 m^2 of floor area and 1/200 m^2 for any floor area after the first 10,000 m^2

- Gas Bar
  - 1 per gas bar pump

For the buildings 1 to 6 the parking provision follows the industrial land-use. The required parking for each building is as follows.

- Building 1: 16,200 m^2
  - Industrial
    - 10,000/100 + 5,390/200 = 127 required parking spaces
  - Office
    - 810/40 = 20 required parking spaces
  - **Total: 147 required parking spaces**
- Building 2: 16,200 m^2
  - Industrial
    - 10,000/100 + 5,390/200 = 127 required parking spaces
  - Office
    - 810/40 = 20 required parking spaces
  - **Total: 147 required parking spaces**
- Building 3: 16,200 m^2
  - Industrial
    - 10,000/100 + 5,390/200 = 127 required parking spaces
  - Office
    - 810/40 = 20 required parking spaces
  - **Total: 147 required parking spaces**
- Building 4: 10,427 m^2
  - Industrial
    - 9,384/100 = 94 required parking spaces
  - Office
    - 1,043/40 = 26 required parking spaces
  - **Total: 120 required parking spaces**
- Building 5: 10,427 m^2
  - Industrial
    - 9,384/100 = 94 required parking spaces
  - Office
    - 1,043/40 = 26 required parking spaces

- **Total: 120 required parking spaces**

- Building 6: 9,814 m^2
  - Industrial
    - 8,833/100 = 88 required parking spaces
  - Office
    - 981/40 = 25 required parking spaces
  - **Total: 113 required parking spaces**

In total 794 parking spaces are required for buildings 1 to 6 in both the Site Plan A and B scenarios.

Site Plan A

With the inclusion of the retail box store and gas station for this Site Plan the required parking is as follows:

- Retail Store: 15,090m^2
  - 1 per 20 m^2 = 15,090/20 = 755 required parking spaces
- Gas Bar: 12 pumps
  - 1 per gas bar pump = 12 required parking spaces

In total for Site Plan A, the site requires 1561 parking spaces for the proposed development under the Town of Puslinch Zoning

Site Plan B

With the inclusion of the two industrial buildings noted as Buildings 7 and 8 for this Site Plan the required parking is as follows:

- Building 7: 19,510 m^2
  - Industrial
    - 10,000/100 + 8,534/200 = 143 required parking spaces
  - Office
    - 975.50/40 = 24 required parking spaces
  - **Total: 167 required parking spaces**
- Building 8: 19,510 m^2
  - Industrial
    - 10,000/100 + 8,534/200 = 143 required parking spaces
  - Office
    - 975.50/40 = 24 required parking spaces
  - **Total: 167 required parking spaces**

In total for Site Plan B, the site requires 1128 parking spaces for the proposed development under the Township of Puslinch Zoning by-law.

8.1.2 Accessible Parking

The minimum requirement for accessible parking spaces can also be found in the Township of Puslinch Zoning By-Law. The minimum By-Law requirement accessible parking for the subject site is based on the required number of parking spaces as follows:

- Required number of parking spaces:
    - 3-25: a minimum of 1 space
    - 26-100: 1 + 3% of total number of parking spaces on lot
    - 101 to 200: 4 + 2% of total number of parking spaces on lot
    - 201 or greater: 8 + 2% of total number of parking spaces on lot

The minimum number of accessible parking spaces required for the subject site is as follow:

Buildings 1 to 6:

- Building 1: 147 required parking spaces
    - 4 + 2% x 147 = 7 required accessible parking spaces
- Building 2: 147 required parking spaces
    - 4 + 2% x 147 = 7 required accessible parking spaces
- Building 3: 147 required parking spaces
    - 4 + 2% x 147 = 7 required accessible parking spaces
- Building 4: 120 required parking spaces
    - 4 + 2% x 120 = 7 required accessible parking spaces
- Building 5: 120 required parking spaces
    - 4 + 2% x 120 = 7 required accessible parking spaces
- Building 6: 113 required parking spaces
    - 4 + 2% x 113 = 7 required accessible parking spaces

Required number of accessible parking spaces for Buildings 1 to 6 = 42 required accessible spaces

Site Plan A

- Retail Store: 755 required parking spaces
    - 8 + 2% x 755 = 24 required accessible parking spaces

In total for Site Plan A the proposed development requires 66 accessible parking spaces

Site Plan B

- Building 7: 167 required parking spaces
    - 4 + 2% x 167 = 8 required accessible parking spaces
- Building 8: 157 required parking spaces
    - 4 + 2% x 167 = 8 required accessible parking spaces

In total for Site Plan B the proposed development requires 58 accessible parking spaces

8.1.3 Bicycle Parking

Under the Town's Zoning By-Law, the minimum bicycle parking requirement can be found in Table 5.6. The minimum By-Law requirement for the subject site is as follows:

- Retail
    - The greater of 2 spaces or 1 space /1000 m²
- Industrial
    - 2 / 1,000 m²

The minimum number of bicycle parking spaces required for the subject site is as follows:

- Building 1: 16,200 m^2
    - 16,200 m^2 / 1000 x 2 = 32 required bicycle parking spaces
- Building 2: 16,200 m^2
    - 16,200 m^2 / 1000 x 2 = 32 required bicycle parking spaces
- Building 3: 16,200 m^2
    - 16,200 m^2 / 1000 x 2 = 32 required bicycle parking spaces
- Building 4: 10,427 m^2
    - 10,427 m^2 / 1000 x 2 = 21 required bicycle parking spaces
- Building 5: 10,427 m^2
    - 10,427 m^2 / 1000 x 2 = 21 required bicycle parking spaces
- Building 6: 9,814 m^2
    - 9,814 m^2 / 1000 x 2 = 20 required bicycle parking spaces

In total, 158 bicycle parking spaces are required for Buildings 1 to 6 to satisfy the Town's By-law.

Site Plan A

- Retail Store: 15,090m^2
    - 15,090 m^2 / 1000 = 15 required bicycle parking spaces

In total 173 bicycle parking spaces are required for Site Plan A

Site Plan B

- Building 7: 19,510 m^2
    - 19,510 m^2 / 1000 x 2 = 39 required bicycle parking spaces
- Building 8: 19,510 m^2
    - 19,510 m^2 / 1000 x 2 = 39 required bicycle parking spaces

In total 236 bicycle parking spaces are required for Site Plan B

8.1.4 Loading Spaces

The minimum requirement for loading spaces is also found in the Zoning By-Law, Section 2.3.1. The minimum By-Law requirement for loading spaces for the subject site is as follows:

- Less than 500 m^2 gross floor area: none
- 500 m^2 to 2,000 m^2 gross floor area: 1 space
- Greater than 2,500 m^2 and less than 5,000 m^2: 2
- Greater than 5,000 m^2: 3 + 1 additional space for each 10,000 m^2 in excess of 5,000 m^2

The minimum By-law requirement for loading spaces for the subject site is as follows:

Site Plan A:

- Building 1: 16,200 m^2 = 4 spaces
- Building 2: 16,200 m^2 = 4 spaces
- Building 3: 16,200 m^2 = 4 spaces
- Building 4: 10,427 m^2 = 4 spaces
- Building 5: 10,427 m^2 = 4 spaces
- Building 6: 9,814 m^2 = 4 spaces
- Retail: 15,090 m^2 = 4 spaces

Site Plan B:

- Building 1: 16,200 m^2 = 4 spaces
- Building 2: 16,200 m^2 = 4 spaces
- Building 3: 16,200 m^2 = 4 spaces
- Building 4: 10,427 m^2 = 4 spaces
- Building 5: 10,427 m^2 = 4 spaces
- Building 6: 9,814 m^2 = 4 spaces
- Building 7: 19,510 m^2 = 4 spaces
- Building 8: 19,510 m^2 = 4 spaces

In total, Site Plan A is required to provide a total of 28 loading spaces under the Town's By-Law.

In total, Site Plan B is required to provide a total of 32 loading spaces under the Town's By-Law.

8.2 Proposed Site Parking

The following table summarizes the minimum By-law requirements and the proposed parking/loading supply for the subject site.

Table 21 Site Plan A Parking Requirements

Type	GFA	By-Law Requirement	Provided
Vehicle Parking	94,358 m^2 Total GFA	1,561 vehicle parking spaces	2354 vehicle parking spaces
Accessible Parking		66 accessible parking spaces	80 accessible parking spaces
Bicycle Parking		173 Bicycle Parking spaces	178 Bicycle Parking spaces
Loading Spaces		28 loading spaces	175 loading spaces

Table 22 Site Plan B Parking Requirements

Type	GFA	By-Law Requirement	Provided
Vehicle Parking	118,287 m^2 Total GFA	1128 vehicle parking spaces	1,240 vehicle parking spaces
Barrier Free Parking		58 accessible parking spaces	58 accessible parking spaces
Bicycle Parking		236 Bicycle Parking spaces	240 Bicycle Parking spaces
Loading Spaces		32 loading spaces	237 loading spaces

The subject site satisfies the Township's Zoning By-Law requirement for vehicle parking, barrier free spaces and loading spaces in both Site Plans.

9. Site Plan Review

9.1 Access Width and Radii

As the Town of Puslinch does not have a standard for the curb radii of driveway entrance the OPSD 350 (Ontario Provincial Standard Drawing) for Urban Industrial, Commercial, and Apartment Entrances was used as it provides the minimum and maximum access width requirement ranging from 7.2 to 12.0 metres with the radius required to be between 4.5 and 12 metres for two-way driveways and residential apartment land uses.

Additionally, the Town of Puslinch Zoning By-law provides the minimum unobstructed width of six (6) meter when two-way traffic is permitted.

The proposed site access along Townline Road has a driveway width of approximately 9 metres with an inbound and outbound radius of 9 metres. Therefore, the driveway width, and the curb radius satisfies both the Town of Puslinch curb detail and the OPSD 350 standards.

Additionally, per the MTO spacing requirements of 250 metres outlined in section 4.6.2 of the Highway Corridor Manual dated April 2025, the site access 2 which is aligned with Jamieson Parkway measures at a spacing of 257 metres which satisfies the spacing requirement from the nearest Highway 401 off-ramp.



Figure 29 Intersection spacing for Site Plan A

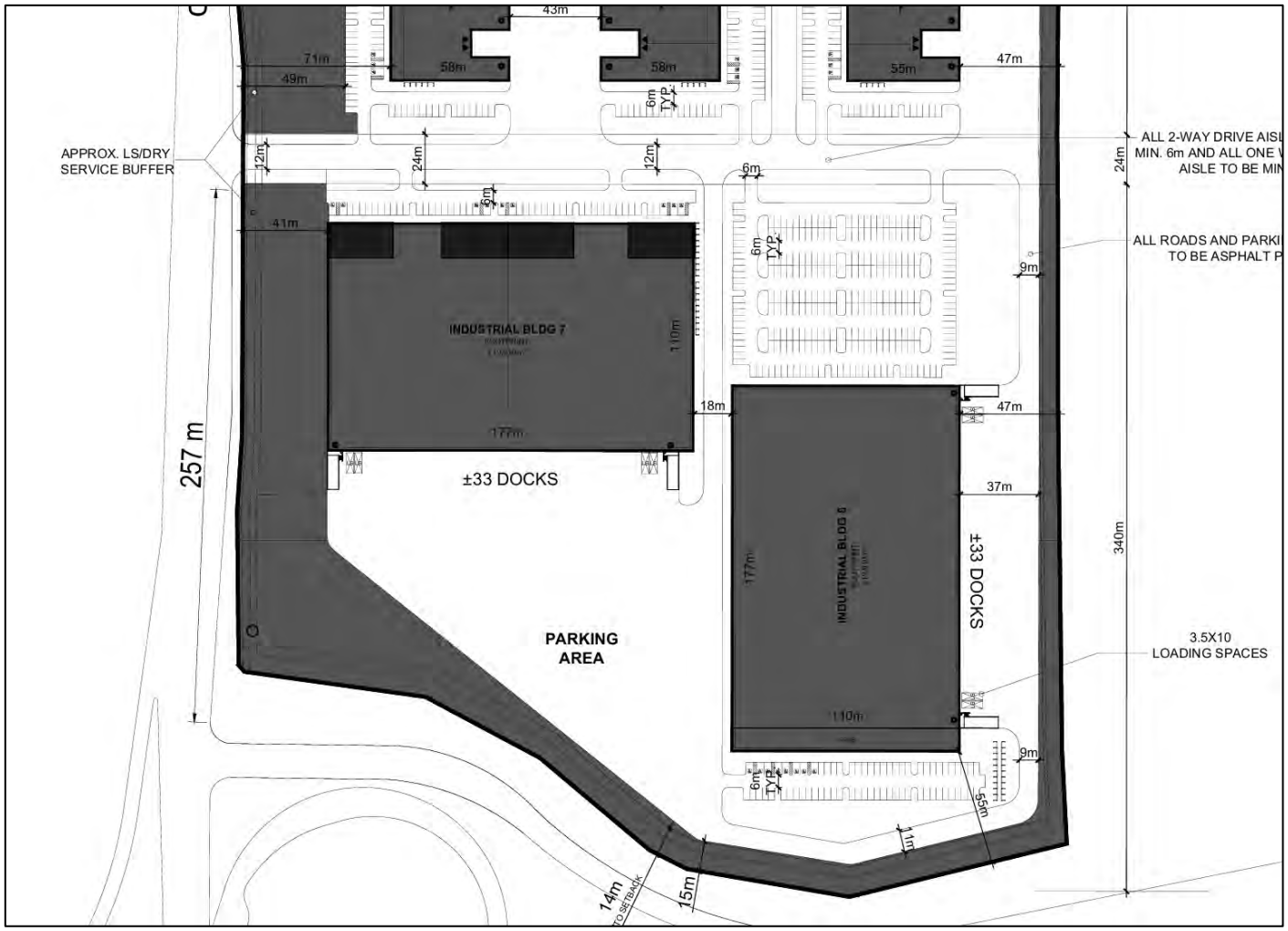


Figure 30 Intersection spacing for Site Plan B

9.2 Sightline Assessment

As requested by Town staff, GHD completed a sightline assessment for the site driveway along Townline Road. For the purpose of the Sight Distance assessment, a design speed of 70 km/h along Townline Road was used for the assessment.

Section 9.9 of the Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC GDGCR) recommends intersection sight distances for different scenarios, with the following scenarios used to complete the intersection sight distance analysis:

- Case B1 – Left turn from the minor road
- Case B2 – Right turn from the minor road

For the purpose of the assessment, the minor road is assumed to be the site driveway.

A vehicle entering the major road from the site driveways is assumed to stop a distance of approximately 4.5 metres to the pavement edge of the major road as recommended by TAC. In this stopped position, the driver will be required to look left and right in order to perceive and react to approaching vehicles prior to initiating a turning movement onto the intersecting drive aisle.

The recommended intersection sight distances are provided in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for passenger vehicles rucks turning left from stop, turning right from stop, or turning left from the major road.

The intersection sight distance is calculated from the equation.

$$ISD = 0.278\, V_{major}\, t_g$$

Where:

$$ISD = intersection\ sight\ distance$$

$$V_{major} = design\ speed\ of\ the\ major\ road\ \left(\frac{km}{h}\right)$$

$$t_g = time\ gap\ for\ the\ minor\ road\ vehicle\ to\ enter\ the\ major\ road\ (s)$$

The intersection sight distance requirement for passenger cars was determined by the equation above, where the time gap for the minor road vehicle to enter the major road for passenger vehicles is 7.5 seconds for turning left from stop, 6.5 seconds for vehicles turning right from a stop.

The intersection sight distance requirement for combination trucks was determined by the equation above, where the time gap for the minor road vehicle to enter the major road for combination trucks is 11.5 seconds for vehicles turning left from stop, 10.5 seconds for vehicles turning right from a stop.

The intersection sight distance requirement for single-unit trucks was determined by the equation above, where the time gap for the minor road vehicle to enter the major road for single-unit trucks is 9.5 seconds for vehicles turning left from stop, 8.5 seconds for vehicles turning right from a stop.

9.2.1 Townline Road and Site Accesses

The recommended intersection sight distances for the proposed driveways are summarized in the table below based on a 70 km/h design speed along Townline Road.

Table 23 Intersection Sight Distance Requirement for the Proposed Driveway

Case (Design Speed of 60 km/h)	Suggested Intersection Sight Distance for Passenger Vehicles (TAC 2017)	Suggested Intersection Sight Distance for WB-20 Trucks (TAC 2017)	Suggested Intersection Sight Distance for Single-unit Trucks (TAC 2017)	Available Intersection Sight Distance	TAC Reference
B1: Vehicles turning left from stop	150 m	225 m	185 m	>225 m	Table 9.9.4
B2: Vehicles turning right from stop	130 m	205 m	165 m	>205 m	Table 9.9.6

The available sight distances along Townline Road at the proposed driveways satisfy the minimum required intersection sight distance for a 70 km/h design speed for a WB-20 truck and a passenger vehicle. The available sightlines and how they are measured are illustrated in figures below for both passenger vehicles and WB-20 trucks.



Figure 31 Intersection Sight Distance Passenger Vehicle (Site Access 1)



Figure 32 Intersection Sight Distance Passenger Vehicle (Site Access 2)



Figure 33 Intersection Site Distance WB-20 (Site Access 1)



Figure 34 Intersection Sight Distance WB-20 (Site Access 2)

The location of the proposed site accesses provides sufficient intersection sight distances to satisfy the TAC GDGCR minimum recommendations for both vehicles and trucks based on the applicable design speed of the adjacent roads.

10. Travel Demand Management

10.1 Travel Demand Management

Travel Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality;

- Decreased traffic congestion to reduce travel time;
- Increased travel options for businesses and commuters;
- Reduced personal transportation costs and energy consumptions; and
- Support Provincial smart growth objectives.

The combined benefits listed above will assist in creating a more active and livable community through improvements to overall active transportation standards for the local businesses and surrounding community.

10.2 Existing TDM Opportunities

10.2.1 Walking/Cycling

Sidewalks are currently provided along the west side of Townline Road south of Jamieson Parkway, both side of Jamieson Parkway and both side of Ellis Road until Side Road 10N.

Cycling lanes are provided on Townline Road, Jamieson Parkway, and Ellis Road.

10.2.2 Transit

As previously discussed in **Section 3.3**, the subject site is serviced by route GRT Route 51 which services the nearest transit stop at Townline Road and Jamieson Parkway west of the subject site.

10.3 Recommended TDM Measures

Table 24 Recommended TDM Strategies

TDM Measure	Responsibility	Cost	Note
Hard Measures			
Bicycle Parking	Applicant	Integrated into the overall development cost. Short term bike parking costs are estimated at $300 per rack that can accommodate 2 bikes. Values to be confirmed through detailed design.	Bicycle parking will be provided matching the requirements of the Township of Puslinch Zoning By-law.
Carpool Parking	Applicant	Integrated into the overall development cost	Dedicated carpool space is provided in a prime location to encourage and support ride-sharing among employees and visitors.
Soft Measures			

Provide Individualized Marketing Programs & Travel Plans	Applicant	$500 to $1000	Information packages (transit maps and schedules, cycling maps) distributed directly to employees or available on the internet.

11. Conclusion

A Transportation Impact Study was completed for the proposed development concepts under Site Plan A and Site Plan B. The analysis assessed existing conditions, future background traffic growth, site-generated traffic, and forecast operations under 2028, 2033 and 2038 future horizon year conditions.

The assessment determined that both development concepts can be accommodated by the surrounding transportation network subject to implementation of the recommended transportation improvements.

The analysis confirmed that:

- The proposed site access configuration satisfies applicable Township of Puslinch, OPSD and TAC design requirements.
- The proposed site driveways meet TAC intersection sight distance requirements for a 70 km/h design speed on Townline Road.
- The proposed parking and loading supply satisfy municipal Zoning By-law requirements.
- Transportation Demand Management (TDM) measures are recommended to encourage the use of alternative travel modes and reduce reliance on single-occupant vehicle travel.

To support future traffic operations, the following transportation improvements are recommended:

Townline Road and Jamieson Parkway/Site Access 2 – Site Plan A

- Conversion of the eastbound right-turn lane to a shared through-right lane.
- Construction of dual westbound left-turn lanes, a westbound through lane and westbound right lane.
- Addition of an exclusive northbound right-turn lane.
- Restriping to provide a southbound left-turn lane.
- Implementation of protected westbound left-turn phasing and protected-permitted eastbound and southbound left-turn phasing.
- Signal timing optimization.

Townline Road and Jamieson Parkway/Site Access 2 – Site Plan B

- Conversion of the eastbound right-turn lane to a shared through-right lane.
- Addition of a westbound left-turn lane and shared westbound through-right lane.
- Restriping to provide a southbound left-turn lane.
- Implementation of protected-permitted eastbound, westbound and southbound left-turn phasing.

- Signal timing optimization.

Townline Road and Site Access 1 – Both Site Plan A and B

- Addition of exclusive westbound left-turn and right-turn lanes exiting the site.
- Addition of a northbound through-right lane on Townline Road.
- Addition of a southbound through-left lane on Townline Road.

Highway 401 Eastbound Off-Ramp and Townline Road - Both Site Plan A and B

- Addition of an eastbound shared left/right-turn lane to increase ramp terminal capacity.

Townline Road and Ellis Road/Sideroad 10 North - Both Site Plan A and B

- Addition of a northbound through lane.
- Addition of a southbound through lane.

Appendix A

Terms of Reference

DRAFT

APPENDIX A:
PRE-STUDY CONFERENCE FORM
2809 Townline Road, Puslinch (Wellington County)

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	o Nature of the retail is important…impacts trip generation o Cross-jurisdictional nature of application o Service Station / Big Box retail access in proximity to ramp terminals o Northern most proposed access to Townline violates Regional Road Access Policy. o Access will not be permitted onto the Township Road (Ellis/SR10) because it is a narrow road with a truck restriction not suited to industrial traffic o GHD Response: Revised site plan for both alternative A and B show only two access along Townline Road with the Access south of Jamieson Parkway Removed. Alternative A proposes a use of 6 industrial buildings and a retail store where Alternative B proposes 8 industrial buildings on the site.
INTRODUCTION		
2	Nature of application (Attach a drawing)	X Official Plan Amendment X Zoning Amendment o Site Plan Control Application o Plan of Subdivision o Community Plan o Other
3	TIS process, and relevant policies, procedures and approvals	X Region of Waterloo Transportation Impact Study Guidelines X Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes X MTO TIS Guidelines o Policy and Procedures for Access onto Regional Roads o Twp Eng. Design and Infrastructure Manual (EDIM)
4	Public Meeting	o Required X Not Required (for the TIS)
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	X All new/proposed development accesses X HWY 401 / Townline Road Ramp Terminals X Townline Road / Jamieson Parkway X Townline Road / Ellis Road o o o
6	Size and number of phases of Development	o One Phase of development o Two Alternatives to consider: Alternative A or Alternative B

Item	Description	Details
7	Approved and pending approval development applications	o
8	Planned transportation system improvements	o TCP 5943 (Year 2034): Rural Rehab (HWY 401 – Country Rd 34) o 2018 TMP projects
TRAVEL DEMAND		
9	Horizon years	o 5 years from date of TIS X 5 years after full occupancy o Transportation Plan horizon for large scale projects o Interim years X 10 years after full occupancy (for MTO) o Other…
10	Peak hour determination	X AM weekday peak hour of adjacent roadway X PM weekday peak hour of adjacent roadway X Saturday peak of adjacent roadway o AM weekday peak hour of development o PM weekday peak hour of development o Saturday peak of development o Other…
11	Background	X Historical traffic/transit counts X ROW travel demand forecasts X Approved and pending approval development applications GHD to include 2310-2420 Townline Road southwest of the interchange o Other…
12	Trip generation	X ITE average rates X ITE fitted equation o Rates published elsewhere o Observed rates for similar areas o Observed rates for similar developments in the local area o Other…
13	Trip reductions (TDM, internal, pass-by)	X Transportation Demand Management Checklist o Published Travel Demand Management reductions o Observed Travel Demand Management reductions o ITE internal capture reductions for mixed-use developments o Observed internal capture reductions for mixed-use developments o ITE pass-by reductions o Observed pass-by reductions for similar developments o Other…
14	Trip distribution	X ITE trip distribution IN/OUT split o Regional travel demand o Population and employment distribution o Market analysis of catchment area X Transportation Tomorrow Survey (TTS) o Other…

Item	Description	Details
15	Trip assignment	x Local traffic pattern x Site layout and access design o Existing turning movements o Other…
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	x Unsignalized intersections x left turn warrant analysis x signal warrant analysis x Signalized intersections x LOS, v/c, delay, queuing o ROW saturation flow rates x Existing signal timings for existing conditions x Optimize signal timings for future conditions o Use existing cycle length to respect coordinated corridor x Queuing analysis (MTO methods at ramp terminals) x Roundabouts o Other…
17	Roundabout feasibility (Use approved software)	x Initial screening o Intersection control study (10 year horizon)
18	Transit assessment	x Frequency and hours of service x Presence of bus stops o Reliability of service o Passenger loads o Travel time o Other
19	Pedestrian assessment	x Presence, connectivity, and width of sidewalks o Barriers and buffers from traffic x Crossing opportunities at intersections o Delay at intersections o Number of driveways and traffic volumes at the driveways o Presence of illumination x Future needs (desire lines / policy / accessibility / demand) o Other
20	Cycling assessment	x Presence of a dedicated facility x Network connectivity o Number and width of travel lanes adjacent to the route o Volume and speed of traffic o Percentage of trucks and buses encountered o Pavement condition o Presence of parking /showers/change rooms x Future needs (desire lines / policy / demand) o Other
21	Safety analysis	o Road safety review o Collision risk analysis o Access conflict evaluation o Other

Item	Description	Details
22	Site access and circulation	X Review sight distances at all new access points o Internal traffic controls X Loading facilities and access X Service/maintenance vehicle access X Emergency vehicle access
23	Submission format	o Three hard copies of main report including appendices (other than analysis results/output e.g. Synchro reports) o Minimum one original hard copy must be sealed by a professional engineer X Electronic copy of complete report and all appendices X Electronic copy of operational analysis files (e.g. Synchro, Arcady X Electronic copy of all signal warrant calculation files o Other

Additional Notes:

- The development should include access onto Ellis Road/Sideroad 10N as it is already a signalized intersection along Townline Road.
- GHD response: As per Township comments an Access along Ellis Road and Sideroad 10 N is not proposed
- New/proposed accesses onto Townline Road will be considered only if existing accesses are shown to fail operationally once the Development is in place and if new accesses are able to demonstrate improved operations along the corridor.
- GHD Response: Noted
- This pre-study form in no way implies support or approval for the application.
- GHD Response: Noted
- MTO will require resolution of access spacings between HWY 401 and Jamieson Parkway prior to initiating a TIS for the subject site.
- GHD Response: As attached to this Terms of Reference the new site plans have removed the access to the south of Jamieson Parkway.





Township comments on December 10, 2025 - (Julia Salvini <julia@salviniconsulting.com)

1. My recollection from our discussion is that access will not be permitted onto the Township Road

(Ellis/SR10) because it is a narrow road with a truck restriction not suited to industrial traffic.
GHD Response: This access has not been proposed for either site plan.

2. Both the Region and the MTO expressed in the meeting that they would not support access to Townline south of Jamieson. After the meeting, MTO provided correspondence to GHD that they would not even comment on the Terms of Reference until a revised TOR is submitted with a plan that addresses their minimum requirements (i.e. removal of the existing driveway).
GHD Response: As attached to this Terms of Reference the new site plans have removed the access to the south of Jamieson Parkway.
3. The background traffic development that was identified was the one at 2310-2420 Townline Road southwest of the interchange. I'm attaching a copy of the TIS for that site from July 2025 that the City provided. It appears from the study that they are planning for full build-out of that site by end of 2026, so full build-out should be included in all future scenarios for this TIS.
GHD Response: The Background development report is received and will be included in the updated TIS.
4. I don't have in my notes what background growth rates were agreed to by MTO, the Region and the City for their respective roads in the area. I would like that specifically included in this form. Could someone from MTO, the Region and the City please comment back on this with their preference for the background growth rates on their roads? Thank you.

From the City of Cambridge on December 11, 2025, Christine Kinahan (kinahanc@cambridge.ca) commented that the City will prefer a 2% background growth rate for all City Roads

Outlook

RE: PSC Form - 2809 Townline Rd

From Nembhard, O'Neil (MTO) <O'neil.Nembhard@ontario.ca>

Date Wed 2/11/2026 2:47 PM

To Vincenzo Costantino <Vincenzo.Costantino@ghd.com>; Christine Kinahan <kinahanc@cambridge.ca>; Julia Salvini <julia@salviniconsulting.com>; Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; 'pasqualec@wellington.ca' <pasqualec@wellington.ca>

Cc Will Maria <William.Maria@ghd.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Mike Fowler <mfowler@puslinch.ca>; Justine Brotherston <jbrotherston@puslinch.ca>; Monika Farncombe <mfarncombe@puslinch.ca>; Cheryl Marcy <cmarcy@regionofwaterloo.ca>

5 attachments (2 MB)

HWY 401 @ HWY 401_TOWNLINE RD - RAMP 51.pdf; HWY 401 @ HWY 401_TOWNLINE RD - RAMP 61.pdf; DRIVE THRU report.pdf; MTO Prequalified Engineering Service Providers–January 2026.pdf; MTO TIS Guidelines_Final 2023.pdf;

Good day, Vincenzo,

MTO has completed its review of the TOR for the proposed development at 2809 Townline, the following outline MTO:

- MTO require the submission of a full TIS (following MTO TIS guidelines and by a RAQS qualified consultant) to assess the future impact of the proposed development to identify if there are any warranted highway/road improvements. Digital Synchro version 12 files are required at the time of submission. Both editable/printable and locked/stamped and signed by P.Eng, version of the TIS is required. MTO will not review a TIS/TIB completed by a company that is not RAQS qualified, or that includes counts/data that is collected by a non RAQS qualified company. ITE 12th edition is the latest version and must be used. Arcady is the proper tool to review roundabouts and must be included. The files are required at submission time as well.
- The consultant is responsible for thoroughly reading and adhering to the MTO TIS guidelines. If any reasonable requirements are missed, it is the consultant's obligation to provide them. The absence of a specific instruction in the TOR does not negate the necessity of fulfilling the reasonable requirement.
- Any data collected for the TIS must be by a RAQS qualified company/consultant. It is the responsibility of the RAQS qualified consultant to ensure the proper data is used (ex. season or non MTO) and seasonal factors applied as appropriate. Winter counts are typically not accepted. It is the consultant's responsibility to update and use proper data. MTO data is attached.
- Please refer to MTO TIS guidelines/policy, page 16 for Trip Distribution/Assignment.
- A summary of the key findings on the transportation impact of the proposed development on the highway corridor shall be presented, along with a summary of the recommended improvements. Any improvements identified in the TIS as warranted within the first five years of the development's operation shall be constructed prior to opening day. Please note that 'monitoring' is not an acceptable recommendation.
- Use simple growth rate for volume projections.
- Use a 2.0% growth rate for MTO ramps.

- A site circulation plan is required to ensure that internal blockage does not occur or cause vehicle backups on the roadway. It appears the first internal roadway at the access at Jamieson signals should be set back farther but a detailed site plan and site circulation plan will provide more information. Please include distances on the site plan from Townline and internally.
- AM, PM and a Saturday analysis must be included.
- As part of the TIS, sightlines must be reviewed and a field measured distance provided and compared to TAC with mitigation measures if the minimum is not met. This includes stopping sight distance and intersection sight distance. We will not accept estimates of sight distance.
- As part of the TIS/, a LT warrant analysis and right turn auxiliary lane analysis must be included to determine if mitigation measures are required at study intersections (if there are current LT/RT lanes – they should analyze the lanes to ensure they are appropriate) using TAC and MTO TAC supplemental. For the LTL, if the value of the left turning volume % falls between two charts, the designer should check storage lengths produced using the two warrant charts that it falls between and then select the more conservative value after considering other project-specific factors (for example, if the LTL volume % is 16%, the designer should be using both the 15% and 20% warrant charts and then select the most conservative storage length of the two. Similarly, for a 28% left turning volume %, the 25% and 30% warrant charts should be looked at and the conservative storage length should be selected). If the left turning volume % is less than 5%, the 5% warrant chart must be used. In a constrained environment (other than cost) where the installation of conservative left turn storage length creates challenges, the designer should review the pros and cons of all elements and document such. If the intersection is being newly proposed, the designer should compare the safety of other similar (traffic volume and geometry) intersections in the corridor or vicinity with the proposed intersection. 20 over posted is design speed.
- Capacity analysis shall be performed at all proposed site access points and intersections in the study network in accordance with the methodology described in the latest edition of the Highway Capacity Manual (HCM). At signalized intersections, movements with a volume/capacity (v/c) ratio greater than 0.85 are deemed to be “critical” in terms of operations. Movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, a v/c ratio for terminal ramp approaches with a value greater than 0.75 would be deemed critical and shall be evaluated for possible operational improvements.
- All intersection capacity analysis on impacted intersections or interchanges within MTO facilities must follow MTO/TAC protocols. When evaluating impacts at intersections please refer to the TAC’s Geometric Design Guide for Canadian Roads, MTO Design Supplement for TAC’s Geometric Design Guide for Canadian Roads (http://www.mto.gov.on.ca/phmpmbp/Reference%20Materials/HwyDes-MTO_DS_TAC_GDG-April2020-Final.pdf) and the OTM Books.)
- Unique traffic generators like (but not limited to) a Tim Horton’s or a McDonald's have higher trip generation rates than those provided by the ITE manual. If unique traffic generators are proposed to be located at the site in the future, MTO will require further analysis utilizing the attached Drive-Thru report.
- Use the guiding principles included in the ITE’s 12th edition Trip Generation Handbook for the selection between rates and equations**.**
- The need for geometric improvements shall be reviewed at all locations in the study area and for each proposed development stage. The TIS shall clearly identify transportation impacts by movement, the transportation system improvements that are needed to mitigate these impacts, and the timing of any recommended improvements. A schematic representation of all geometric improvements shall be included as part of the TIS, identifying lane arrangements and intersection improvements for each horizon year.

- The need for traffic signals and/or underground traffic signal utility provisions shall be reviewed at all locations affected by the proposed development and for each proposed development stage. Determination of whether traffic signals or provisions for signals are warranted shall be made according to the process described in OTM Book 12. Eight (8) hours of data as a minimum are required to assess signal warrants for existing and background conditions. We do not use Average Hour Volume.
- Queue and storage lengths for left turn and through movements for signalized intersections under MTO jurisdiction need to be calculated using the arrival rate method explained on MTO's Signal Timing Policy. For queues/storage lengths for right turn movements please refer to Chapter 9 of TAC's Geometric Design Guide for Canadian Roads. Queue assessment shall include a review to determine if the thru queues impede access to auxiliary lanes or if they reach the adjacent intersection. For LT and thru, must convert trucks to passenger vehicles, use factor of 2.0. Provide the results in tabular form. For thru and left turn queues include: peak period, movement, volume, cycle length, %trucks, pcph, m value, number of vehicles and total length. For right turn storage length include: peak period, volume, cycle length, design speed, total length.
- Signal timing optimization can improve operations however, the resulting settings should still be consistent with our Signal Timing Policy. For example: the timing settings cannot be adjusted to favour the sideroad over the highway.
- **MTO's comments may change depending on which development option is selected. We can review a Traffic Impact Study (TIS), but if the developer has not confirmed the final land-use or tenants, any significant change—such as adding a high-traffic generator like a Costco—would trigger the need for a new TIS**.

If you have any question or require any other clarification please contact me.

Regards,

O'Neil Nembhard
Corridor Management Planner | Operation West | Operations Division
Ministry of Transportation Ontario | Ontario Public Service
548-388-2571 | o'neil.nembhard @ontario.ca

Ontario

Taking pride in strengthening Ontario, its places and its people

Please note the Ministry no longer accepts Land Development review requests though its email system. All Land Development Review requests to the Ministry must be submitted to the Ministry of Transportation through the Highway Corridor Management Online portal at: https://www.hcms.mto.gov.on.ca/landdev/en/land-development

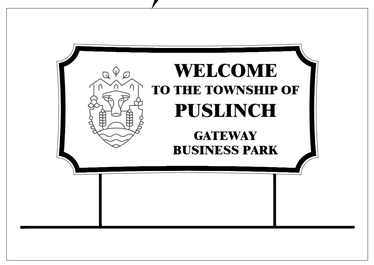
The Land Development Review module is designed to better serve stakeholders through streamlining all land development planning approvals by the Ministry.

From: Vincenzo Costantino <Vincenzo.Costantino@ghd.com>
Sent: Monday, February 2, 2026 4:21 PM
To: Christine Kinahan <kinahanc@cambridge.ca>; Julia Salvini <julia@salviniconsulting.com>; Joshua Beech Falshaw <jbeechfalshaw@regionofwaterloo.ca>; 'pasqualec@wellington.ca' <pasqualec@wellington.ca>; Nembhard, O'Neil (MTO) <O'neil.Nembhard@ontario.ca>
Cc: Will Maria <William.Maria@ghd.com>; Chris Clary-Lemon <cclarylemon@regionofwaterloo.ca>; Mike Fowler <mfowler@puslinch.ca>; Justine Brotherston <jbrotherston@puslinch.ca>; Monika Farncombe <mfarncombe@puslinch.ca>; Cheryl Marcy <cmarcy@regionofwaterloo.ca>
Subject: Re: PSC Form - 2809 Townline Rd

Appendix B

Site Plan

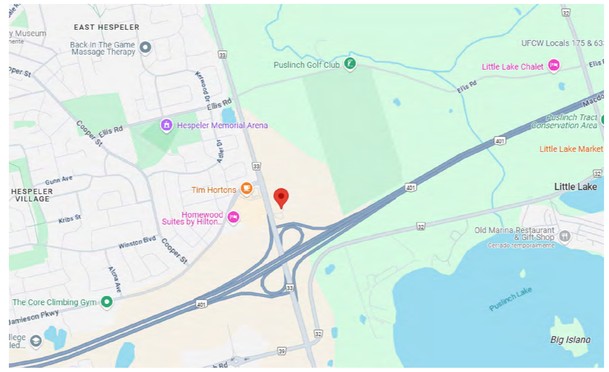




ZONING MATRIX		
LEGAL NAME: PART LOT 1, CONCESSION 2, PUSLINCH, PARTS 1, 2 & 3 61R2992 AND AS IN ROS257095 SOUTH OF MS47320; EXCEPT PART 2 61R642, PART 1 61R6501, PARTS 1 & 2 61R2843, PARTS 1, 2, 3, 5, 6, 7 & 8 61R9198, PART 1 61R9263, PART 1 61R9689 AND PART 1 EXPROPRIATION PLAN WC505537; T/W RO693735; TOWNSHIP OF PUSLINCH		
ITEM	PROPOSAL	EXISTING
ZONING CATEGORY	INDUSTRIAL (IND)	AGRICULTURAL (A)
GROSS SITE AREA (m²)	337,346 m2 (33.7ha)	
TOTAL GROSS FLOOR AREA (m²)	94358.00	N/A
	PROPOSED	REQUIRED
MINIMUM REQUIRED LOT AREA (HA)	33.7	0.4
MINIMUM REQUIRED LOT FRONTAGE (m)	752	30
MINIMUM REQUIRED FRONT YARD (m)	46	6
MINIMUM REQUIRED INTERIOR SIDEYARD (m)	36	5
INTERIOR SIDE YARD ADJACENT TO RESIDENTIAL ZONE (m)	N/A	15
MINIMUM REQUIRED EXTERIOR SIDEYARD (m)	141	15
MINIMUM REQUIRED REAR YARD SETBACK (m)	21	7.5
REAR YARD ADJACENT TO RESIDENTIAL ZONE (m)	N/A	15
MAXIMUM PERMITTED LOT COVERAGE (%)	28%	75%
MINIMUM REQUIRED LANDSCAPED OPEN SPACE	17%	15%
MAXIMUM PERMITTED BUILDING HEIGHT (m)	25	25
BUFFER IF ADJACENT TO RESIDENTIAL ZONE BOUNDARY (m)	N/A	1.5
MTO SETBACK (m)	14	14
BUILDING FLOOR AREA		
BUILDING 1	**m2**	
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 2		
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 3		
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 4		
INDUSTRIAL	9,384.00	
(10%) OFFICE	1,043.00	
TOTAL	10,427.00	
BUILDING 5		
INDUSTRIAL	9,384.00	
(10%) OFFICE	1,043.00	
TOTAL	10,427.00	
BUILDING 6		
INDUSTRIAL	8,833.00	
(10%) OFFICE	981.00	
TOTAL	9,814.00	
RETAIL STORE	15,090.00	
TOTAL AREA	94,358.00	

PARKING REQUIREMENT
Building 1-6: Parking stall ratio: 1/100 m² for the first 10,000 m² of floor area and 1/200 m² for any floor area after the first 10,000 m² Business/Professional Office: 1/40 m² Bicycle space (0.6X1.8m) ratio: 2/1000 m2 for industrial uses and 2 or 1/1000 m2 for retail uses, whichever is greater
Retail Store: 1/20 m²
Gas Pump: 1/Pump
Barrier-free stalls: 1 stall if the total number of parking stalls is between 3 and 25 stalls. 1 stall + 3% if the total number of parking stalls is between 26 and 100 stalls. 4 stalls + 2% if the total number of parking stalls is between 101 and 200 stalls. 8 stalls + 2% if the total number of parking stalls is equal to or greater than 201 stalls
Loading Spaces: 0 spaces for buildings less than 250 m² 1 spaces for buildings between 250 m² and 2,500 m² 2 spaces for buildings greater than 2,500 m² and less than 5,000 m² 3 + 1 additional space for each 10,000 m² in excess of 5,000 m² for buildings greater than 5,000 m²

PARKING STALL DIMENSIONS	STANDARD: 3.0 m x 6.0 m BARRIER-FREE : 3.6 m x 6.0 m LOADING SPACE: 3.5 x 10m	
	PROPOSED	REQUIRED
BUILDING 1	147	147
BUILDING 2	149	147
BUILDING 3	149	147
BUILDING 4	140	120
BUILDING 5	140	120
BUILDING 6	138	113
RETAIL STORE	1478	755
GAS PUMP	13	12
TOTAL NO. OF PARKING SPACES	2354	1561
REQ. BARRIER-FREE PARKING SPACES (BUILDING 1)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 2)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 3)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 4)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 5)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 6)	7	7
REQ. BARRIER-FREE PARKING SPACES (RETAIL STORE)	38	38
REQ. LOADING SPACES (BUILDING 1)	46	4
REQ. LOADING SPACES (BUILDING 2)	46	4
REQ. LOADING SPACES (BUILDING 3)	46	4
REQ. LOADING SPACES (BUILDING 4)	11	4
REQ. LOADING SPACES (BUILDING 5)	11	4
REQ. LOADING SPACES (BUILDING 6)	11	4
REQ. LOADING SPACES (RETAIL STORE)	4	4
REQ. BICYCLE SPACES (BUILDING 1)	32	32
REQ. BICYCLE SPACES (BUILDING 2)	32	32
REQ. BICYCLE SPACES (BUILDING 3)	32	32
REQ. BICYCLE SPACES (BUILDING 4)	22	21
REQ. BICYCLE SPACES (BUILDING 5)	22	21
REQ. BICYCLE SPACES (BUILDING 6)	20	20
REQ. BICYCLE SPACES (RETAIL STORE)	18	15



1:2000
0 20m 50m 100m 200m

NORTH

TOWNSHIP OF PUSLINCH est. 1850

scheme: 06 (Plan A)

Conceptual Site Plan A

Townline
2809 Townline Road, Puslinch, Ontario

WARE MALCOMB

TOR25-0087-00
01.28.2026

SHEET
1





ZONING MATRIX		
LEGAL NAME: PART LOT 1, CONCESSION 2, PUSLINCH, PARTS 1, 2 & 3 61R2992 AND AS IN ROS257095 SOUTH OF MS47320; EXCEPT PART 2 61R642, PART 1 61R6501, PARTS 1 & 2 61R2843, PARTS 1, 2, 3, 5, 6, 7 & 8 61R9198, PART 1 61R9263, PART 1 61R9689 AND PART 1 EXPROPRIATION PLAN WC505537; T/W RO693735; TOWNSHIP OF PUSLINCH		
ITEM	**PROPOSAL**	**EXISTING**
ZONING CATEGORY	INDUSTRIAL (IND)	AGRICULTURAL (A)
GROSS SITE AREA (m²)	337,346 m2 (33.7ha)	
TOTAL GROSS FLOOR AREA (m²)	118288.00	N/A
	PROPOSED	**REQUIRED**
MINIMUM REQUIRED LOT AREA (HA)	33.7	0.4
MINIMUM REQUIREDLOT FRONTAGE (m)	752	30
MINIMUM REQUIRED FRONT YARD (m)	41	6
MINIMUM REQUIRED INTERIOR SIDE YARD SETBACK (m)	36	5
INTERIOR SIDE YARD ADAJCENT TO RESIDENTIAL ZONE (m)	N/A	15
MINIMUM REQUIRED EXTERIOR SIDEYARD (m)	55	15
MINIMUM REQUIRED REAR YARD (m)	47	7.5
REAR YARD ADAJCENT TO RESIDENTIAL ZONE (m)	N/A	15
MAXIMUM PERMITTED LOT COVERAGE (%)	35%	75%
MINIMUM REQUIRED LANDSCAPED OPEN SPACE	17%	15%
MAXIMUM PERMITTED BUILDING HEIGHT (m)	25	25
BUFFER IF ADJACENT TO RESIDENTIAL ZONE (m)	N/A	1.5
MTO SETBACK (m)	14	14
BUILDING FLOOR AREA		
BUILDING 1	**m2**	
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 2		
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 3		
INDUSTRIAL	15,390.00	
(5%) OFFICE	810.00	
TOTAL	16,200.00	
BUILDING 4		
INDUSTRIAL	9,384.00	
(10%) OFFICE	1,043.00	
TOTAL	10,427.00	
BUILDING 5		
INDUSTRIAL	9,384.00	
(10%) OFFICE	1,043.00	
TOTAL	10,427.00	
BUILDING 6		
INDUSTRIAL	8,833.00	
(10%) OFFICE	981.00	
TOTAL	9,814.00	
BUILDING 7		
INDUSTRIAL	18,534.50	
(5%) OFFICE	975.50	
TOTAL	19,510.00	
BUILDING 8		
INDUSTRIAL	18,534.50	
(5%) OFFICE	975.50	
TOTAL	19,510.00	
TOTAL AREA	118,288.00	

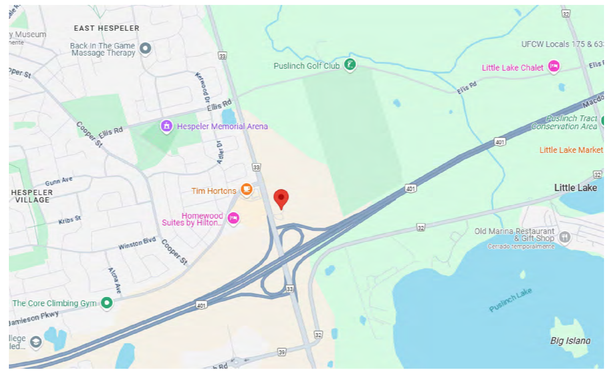
PARKING REQUIREMENT

Building 1-6:
Parking stall ratio: 1/100 m² for the first 10,000 m² of floor area and 1/200 m² for any floor area after the first 10,000 m²
Business/Professional Office: 1/40 m²
Bicycle space (0.6X1.8m) ratio: 2/1000 m2 for industrial uses

Barrier-free stalls:
1 stall if the total number of parking stalls is between 3 and 25 stalls.
1 stall + 3% if the total number of parking stalls is between 26 and 100 stalls.
4 stalls + 2% if the total number of parking stalls is between 101 and 200 stalls.
8 stalls + 2% if the total number of parking stalls is equal to or greater than 201 stalls

Loading Spaces:
0 spaces for buildings less than 250 m²
1 spaces for buildings between 250 m² and 2,500 m²
2 spaces for buildings greater than 2,500 m² and less than 5,000 m²
3 + 1 additional space for each 10,000 m² in excess of 5,000 m² for buildings greater than 5,000 m²

PARKING STALL DIMENSIONS	STANDARD: 3.0 m x 6.0 m BARRIER-FREE : 3.6 m x 6.0 m LOADING SPACE: 3.5 x 10m	
	PROPOSED	**REQUIRED**
BUILDING 1	147	147
BUILDING 2	149	147
BUILDING 3	149	147
BUILDING 4	140	120
BUILDING 5	140	120
BUILDING 6	138	113
BUILDING 7	188	167
BUILDING 8	189	167
TOTAL NO. OF PARKING SPACES	1240	1128
REQ. BARRIER-FREE PARKING SPACES (BUILDING 1)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 2)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 3)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 4)	6	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 5)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 6)	7	7
REQ. BARRIER-FREE PARKING SPACES (BUILDING 7)	9	8
REQ. BARRIER-FREE PARKING SPACES (BUILDING 8)	8	8
REQ. LOADING SPACES (BUILDING 1)	46	4
REQ. LOADING SPACES (BUILDING 2)	46	4
REQ. LOADING SPACES (BUILDING 3)	46	4
REQ. LOADING SPACES (BUILDING 4)	11	4
REQ. LOADING SPACES (BUILDING 5)	11	4
REQ. LOADING SPACES (BUILDING 6)	11	4
REQ. LOADING SPACES (BUILDING 7)	33	4
REQ. LOADING SPACES (BUILDING 8)	33	4
REQ. BICYCLE SPACES (BUILDING 1)	32	32
REQ. BICYCLE SPACES (BUILDING 2)	32	32
REQ. BICYCLE SPACES (BUILDING 3)	32	32
REQ. BICYCLE SPACES (BUILDING 4)	22	21
REQ. BICYCLE SPACES (BUILDING 5)	22	21
REQ. BICYCLE SPACES (BUILDING 6)	20	20
REQ. BICYCLE SPACES (BUILDING 7)	40	39
REQ. BICYCLE SPACES (BUILDING 8	40	39



1:2000
0 20m 50m 100m 200m

NORTH

TOWNSHIP OF PUSLINCH
est. 1850

scheme: 07 (Plan B)

Conceptual Site Plan B

Townline
2809 Townline Road, Puslinch, Ontario

WARE MALCOMB

TOR25-0087-00
01-28-2026

SHEET
1

Appendix C

Traffic Data

Spectrum

Turning Movement Count
Location Name: HWY 401 EB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

Turning Movement Count (1 . HWY 401 EB OFF-RAMP & TOWNLINE ROAD)

Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)	Int. Total (1 hr)
	Hard Right N:NW	Thru N:S	UTurn N:N	Peds N:	Approach Total	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total	UTurn NW:NW	Peds NW:	Approach Total		
2025-09-30 07:00:00	85	143	0	0	228	0	0	0	176	102	0	0	278	47	39	0	0	86	0	0	0	592	
2025-09-30 07:15:00	71	155	0	0	226	0	0	0	120	129	0	0	249	57	36	0	0	93	0	0	0	568	
2025-09-30 07:30:00	40	203	0	0	243	0	0	0	81	197	0	0	278	100	87	0	0	187	0	0	0	708	
2025-09-30 07:45:00	24	259	0	0	283	0	0	0	53	227	0	0	280	147	109	0	0	256	0	0	0	819	2687
2025-09-30 08:00:00	32	256	0	0	288	0	0	0	87	157	0	0	244	96	81	0	0	177	0	0	0	709	2804
2025-09-30 08:15:00	35	227	0	0	262	0	0	0	78	165	0	0	243	82	58	0	0	140	0	0	0	645	2881
2025-09-30 08:30:00	32	240	1	0	273	0	0	0	79	155	0	0	234	59	73	0	0	132	0	0	0	639	2812
2025-09-30 08:45:00	34	224	0	0	258	0	0	0	89	163	0	0	252	73	61	0	0	134	0	0	0	644	2637
BREAK																							
2025-09-30 16:00:00	16	242	0	0	258	0	0	0	82	187	0	0	269	118	72	0	0	190	0	0	0	717	
2025-09-30 16:15:00	21	222	0	0	243	0	0	0	86	236	0	0	322	110	98	0	1	208	0	1	0	773	
2025-09-30 16:30:00	15	259	0	1	274	0	1	0	79	283	0	0	362	98	103	0	0	201	0	1	0	837	
2025-09-30 16:45:00	26	257	0	0	283	0	0	0	78	229	0	0	307	109	83	0	0	192	0	0	0	782	3109
2025-09-30 17:00:00	35	249	0	0	284	0	0	0	68	216	0	0	284	115	88	0	0	203	0	0	0	771	3163
2025-09-30 17:15:00	24	249	0	0	273	0	0	0	73	250	0	0	323	111	84	0	0	195	0	0	0	791	3181
2025-09-30 17:30:00	18	226	1	0	245	0	0	0	67	179	0	0	246	103	94	0	1	197	0	1	0	688	3032
2025-09-30 17:45:00	19	243	0	0	262	0	0	0	73	186	0	0	259	78	96	0	1	174	0	1	0	695	2945
Grand Total	527	3654	2	1	4183	0	1	0	1369	3061	0	0	4430	1503	1262	0	3	2765	0	4	0	**11378**	-
Approach%	12.6%	87.4%	0%		-	0%		-	30.9%	69.1%	0%		-	54.4%	45.6%	0%		-	0%		-	**-**	-
Totals %	4.6%	32.1%	0%		36.8%	0%		0%	12%	26.9%	0%		38.9%	13.2%	11.1%	0%		24.3%	0%		0%	**-**	-
Heavy	26	231	0		-	0		-	200	79	0		-	52	41	0		-	0		-	**-**	-
Heavy %	4.9%	6.3%	0%		-	0%		-	14.6%	2.6%	0%		-	3.5%	3.2%	0%		-	0%		-	**-**	-
Bicycles	-	-	-		-	-		-	-	-	-		-	-	-	-		-	-		-	**-**	-
Bicycle %	-	-	-		-	-		-	-	-	-		-	-	-	-		-	-		-	**-**	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)

Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)
	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-09-30 07:30:00	40	203	0	0	243	0	0	0	81	197	0	0	278	100	87	0	0	187	0	0	0	708
2025-09-30 07:45:00	24	259	0	0	283	0	0	0	53	227	0	0	280	147	109	0	0	256	0	0	0	819
2025-09-30 08:00:00	32	256	0	0	288	0	0	0	87	157	0	0	244	96	81	0	0	177	0	0	0	709
2025-09-30 08:15:00	35	227	0	0	262	0	0	0	78	165	0	0	243	82	58	0	0	140	0	0	0	645
Grand Total	131	945	0	0	1076	0	0	0	299	746	0	0	1045	425	335	0	0	760	0	0	0	**2881**
Approach%	12.2%	87.8%	0%		-	0%		-	28.6%	71.4%	0%		-	55.9%	44.1%	0%		-	0%		-	**-**
Totals %	4.5%	32.8%	0%		37.3%	0%		0%	10.4%	25.9%	0%		36.3%	14.8%	11.6%	0%		26.4%	0%		0%	**-**
PHF	0.82	0.91	0		0.93	0		0	0.86	0.82	0		0.93	0.72	0.77	0		0.74	0		0	0.88
Heavy	6	64	0		70	0		0	54	26	0		80	18	13	0		31	0		0	181
Heavy %	4.6%	6.8%	0%		6.5%	0%		0%	18.1%	3.5%	0%		7.7%	4.2%	3.9%	0%		4.1%	0%		0%	6.3%
Lights	125	881	0		1006	0		0	245	720	0		965	407	322	0		729	0		0	2700
Lights %	95.4%	93.2%	0%		93.5%	0%		0%	81.9%	96.5%	0%		92.3%	95.8%	96.1%	0%		95.9%	0%		0%	93.7%
Single-Unit Trucks	5	12	0		17	0		0	21	12	0		33	6	5	0		11	0		0	61
Single-Unit Trucks %	3.8%	1.3%	0%		1.6%	0%		0%	7%	1.6%	0%		3.2%	1.4%	1.5%	0%		1.4%	0%		0%	2.1%
Buses	0	3	0		3	0		0	1	8	0		9	5	1	0		6	0		0	18
Buses %	0%	0.3%	0%		0.3%	0%		0%	0.3%	1.1%	0%		0.9%	1.2%	0.3%	0%		0.8%	0%		0%	0.6%
Articulated Trucks	1	49	0		50	0		0	32	6	0		38	7	7	0		14	0		0	102
Articulated Trucks %	0.8%	5.2%	0%		4.6%	0%		0%	10.7%	0.8%	0%		3.6%	1.6%	2.1%	0%		1.8%	0%		0%	3.5%
Bicycles on Road	0	0	0		0	0		0	0	0	0		0	0	0	0		0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	0%		-	-	-	0%		-	-	-	0%		-	0%		**-**

Spectrum

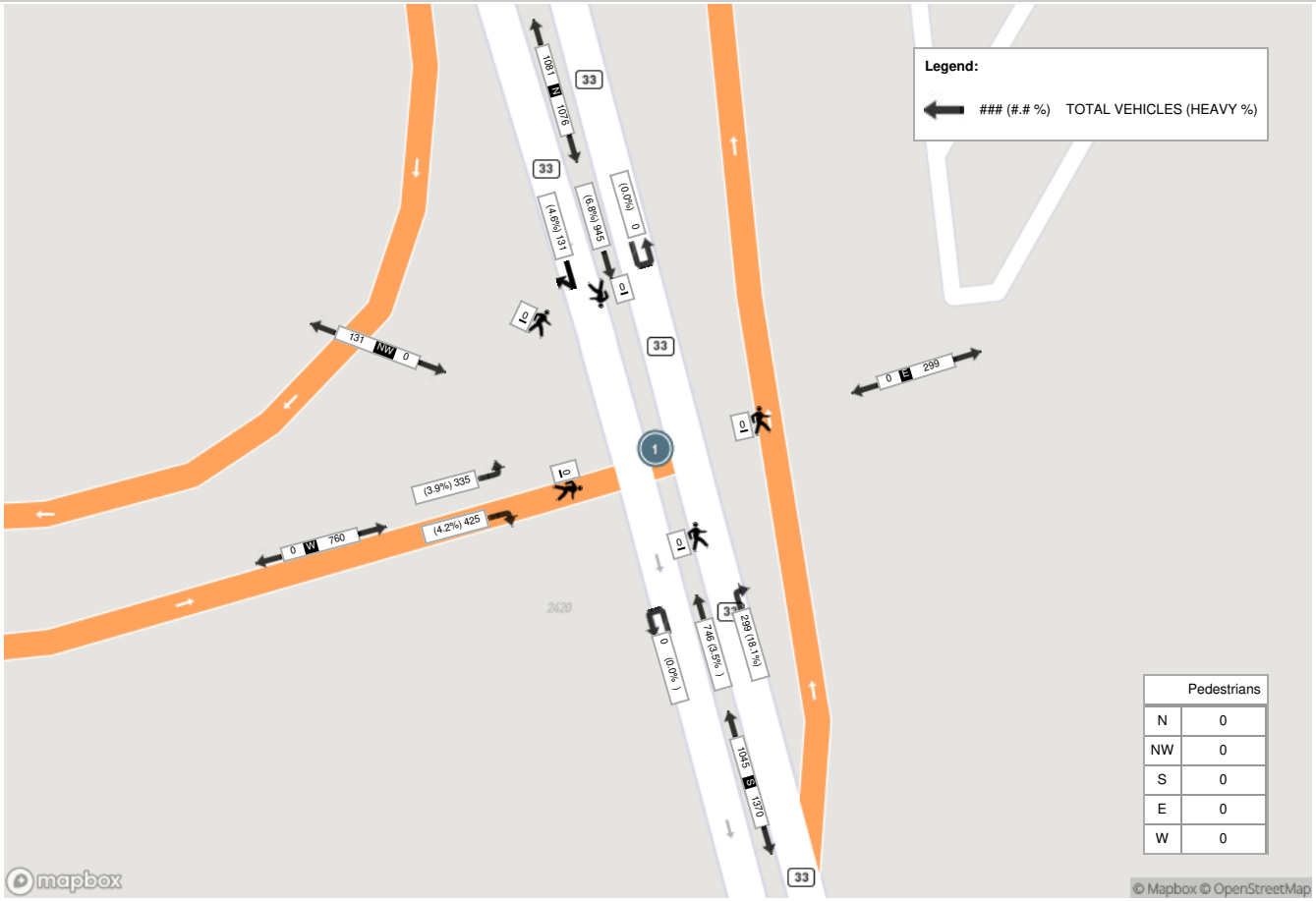
Turning Movement Count
Location Name: HWY 401 EB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
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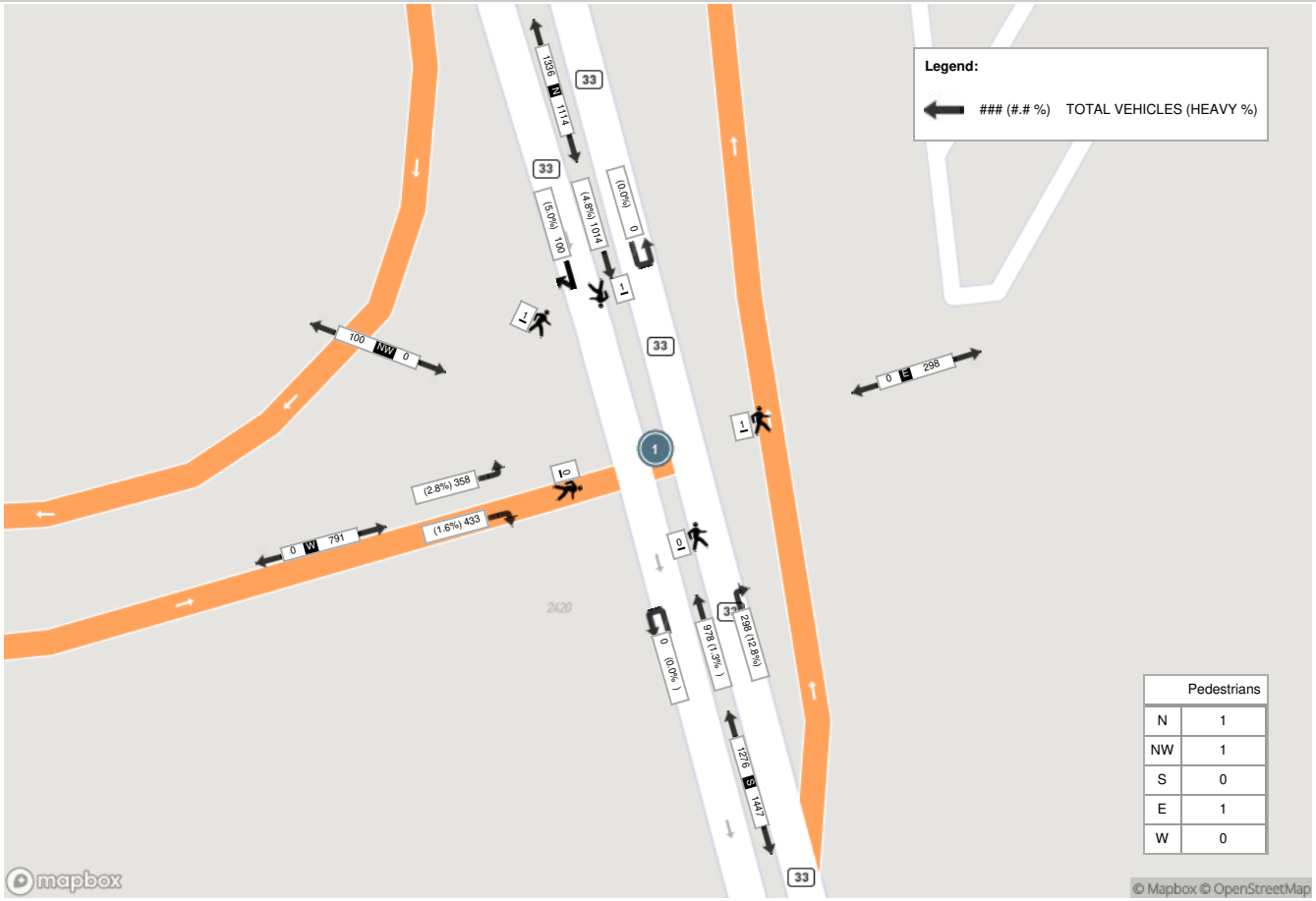
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)

Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)
	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-09-30 16:30:00	15	259	0	1	274	0	1	0	79	283	0	0	362	98	103	0	0	201	0	1	0	837
2025-09-30 16:45:00	26	257	0	0	283	0	0	0	78	229	0	0	307	109	83	0	0	192	0	0	0	782
2025-09-30 17:00:00	35	249	0	0	284	0	0	0	68	216	0	0	284	115	88	0	0	203	0	0	0	771
2025-09-30 17:15:00	24	249	0	0	273	0	0	0	73	250	0	0	323	111	84	0	0	195	0	0	0	791
Grand Total	100	1014	0	1	1114	0	1	0	298	978	0	0	1276	433	358	0	0	791	0	1	0	**3181**
Approach%	9%	91%	0%		-	0%		-	23.4%	76.6%	0%		-	54.7%	45.3%	0%		-	0%		-	**-**
Totals %	3.1%	31.9%	0%		35%	0%		0%	9.4%	30.7%	0%		40.1%	13.6%	11.3%	0%		24.9%	0%		0%	**-**
PHF	0.71	0.98	0		0.98	0		0	0.94	0.86	0		0.88	0.94	0.87	0		0.97	0		0	0.95
Heavy	5	49	0		54	0		0	38	13	0		51	7	10	0		17	0		0	122
Heavy %	5%	4.8%	0%		4.8%	0%		0%	12.8%	1.3%	0%		4%	1.6%	2.8%	0%		2.1%	0%		0%	3.8%
Lights	95	965	0		1060	0		0	260	962	0		1222	426	348	0		774	0		0	3056
Lights %	95%	95.2%	0%		95.2%	0%		0%	87.2%	98.4%	0%		95.8%	98.4%	97.2%	0%		97.9%	0%		0%	96.1%
Single-Unit Trucks	2	18	0		20	0		0	12	6	0		18	2	8	0		10	0		0	48
Single-Unit Trucks %	2%	1.8%	0%		1.8%	0%		0%	4%	0.6%	0%		1.4%	0.5%	2.2%	0%		1.3%	0%		0%	1.5%
Buses	1	0	0		1	0		0	0	2	0		2	0	0	0		0	0		0	3
Buses %	1%	0%	0%		0.1%	0%		0%	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0%		0%	0.1%
Articulated Trucks	2	31	0		33	0		0	26	5	0		31	5	2	0		7	0		0	71
Articulated Trucks %	2%	3.1%	0%		3%	0%		0%	8.7%	0.5%	0%		2.4%	1.2%	0.6%	0%		0.9%	0%		0%	2.2%
Bicycles on Road	0	0	0		0	0		0	0	3	0		3	0	0	0		0	0		0	3
Bicycles on Road %	0%	0%	0%		0%	0%		0%	0%	0.3%	0%		0.2%	0%	0%	0%		0%	0%		0%	0.1%
Pedestrians	-	-	-	1	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-	1	-	**-**
Pedestrians%	-	-	-	33.3%		-	33.3%		-	-	-	0%		-	-	-	0%		-	33.3%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Clear Sky (11 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Clear Sky (23 °C)**



Spectrum

Turning Movement Count
Location Name: HWY 401 WB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

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Turning Movement Count (2 . HWY 401 WB OFF-RAMP & TOWNLINE ROAD)

Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Hard Right S:SE	Thru S:N	UTurn S:S	Peds S:	Approach Total	UTurn W:W	Peds W:	Approach Total	UTurn SE:SE	Peds SE:	Approach Total		
2025-09-30 07:00:00	53	160	0	0	213	12	64	0	0	76	59	79	0	0	138	0	0	0	0	0	0	427	
2025-09-30 07:15:00	82	136	0	0	218	16	85	0	0	101	68	85	0	0	153	0	0	0	0	0	0	472	
2025-09-30 07:30:00	111	145	0	0	256	20	95	0	0	115	120	163	0	0	283	0	0	0	0	0	0	654	
2025-09-30 07:45:00	107	151	0	0	258	30	125	0	0	155	124	219	0	0	343	0	0	0	0	0	0	756	2309
2025-09-30 08:00:00	81	172	0	0	253	36	116	0	0	152	79	156	0	0	235	0	0	0	0	0	0	640	2522
2025-09-30 08:15:00	66	156	0	0	222	32	121	0	0	153	79	153	0	0	232	0	0	0	0	0	0	607	2657
2025-09-30 08:30:00	67	130	0	0	197	27	133	0	0	160	73	154	0	0	227	0	0	0	0	0	0	584	2587
2025-09-30 08:45:00	62	165	0	0	227	28	86	0	0	114	59	169	0	0	228	0	0	0	0	0	0	569	2400
BREAK																							
2025-09-30 16:00:00	71	125	0	0	196	56	133	0	0	189	68	190	0	0	258	0	0	0	0	0	0	643	
2025-09-30 16:15:00	70	127	0	0	197	67	126	0	0	193	76	261	0	0	337	0	1	0	0	0	0	727	
2025-09-30 16:30:00	74	159	0	0	233	76	124	0	0	200	93	281	0	0	374	0	1	0	0	0	0	807	
2025-09-30 16:45:00	92	148	0	0	240	71	109	0	0	180	65	273	0	0	338	0	0	0	0	0	0	758	2935
2025-09-30 17:00:00	95	166	0	0	261	83	116	0	0	199	81	218	0	0	299	0	0	0	0	0	0	759	3051
2025-09-30 17:15:00	75	135	0	0	210	77	123	0	0	200	83	247	0	0	330	0	0	0	0	0	0	740	3064
2025-09-30 17:30:00	51	120	0	0	171	59	130	0	0	189	58	223	0	0	281	0	0	0	0	0	0	641	2898
2025-09-30 17:45:00	65	126	0	0	191	75	135	0	0	210	49	241	0	0	290	0	1	0	0	0	0	691	2831
Grand Total	1222	2321	0	0	3543	765	1821	0	0	2586	1234	3112	0	0	4346	0	3	0	0	0	0	**10475**	-
Approach%	34.5%	65.5%	0%		-	29.6%	70.4%	0%		-	28.4%	71.6%	0%		-	0%		-	0%		-	**-**	-
Totals %	11.7%	22.2%	0%		33.8%	7.3%	17.4%	0%		24.7%	11.8%	29.7%	0%		41.5%	0%		0%	0%		0%	**-**	-
Heavy	38	53	0		-	18	217	0		-	44	85	0		-	0		-	0		-	**-**	-
Heavy %	3.1%	2.3%	0%		-	2.4%	11.9%	0%		-	3.6%	2.7%	0%		-	0%		-	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: HWY 401 WB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
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CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)

Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-09-30 07:30:00	111	145	0	0	256	20	95	0	0	115	120	163	0	0	283	0	0	0	0	0	0	654
2025-09-30 07:45:00	107	151	0	0	258	30	125	0	0	155	124	219	0	0	343	0	0	0	0	0	0	756
2025-09-30 08:00:00	81	172	0	0	253	36	116	0	0	152	79	156	0	0	235	0	0	0	0	0	0	640
2025-09-30 08:15:00	66	156	0	0	222	32	121	0	0	153	79	153	0	0	232	0	0	0	0	0	0	607
Grand Total	365	624	0	0	989	118	457	0	0	575	402	691	0	0	1093	0	0	0	0	0	0	**2657**
Approach%	36.9%	63.1%	0%		-	20.5%	79.5%	0%		-	36.8%	63.2%	0%		-	0%		-	0%		-	**-**
Totals %	13.7%	23.5%	0%		37.2%	4.4%	17.2%	0%		21.6%	15.1%	26%	0%		41.1%	0%		0%	0%		0%	**-**
PHF	0.82	0.91	0		0.96	0.82	0.91	0		0.93	0.81	0.79	0		0.8	0		0	0		0	0.88
Heavy	13	15	0		28	8	58	0		66	20	26	0		46	0		0	0		0	140
Heavy %	3.6%	2.4%	0%		2.8%	6.8%	12.7%	0%		11.5%	5%	3.8%	0%		4.2%	0%		0%	0%		0%	5.3%
Lights	352	609	0		961	110	399	0		509	382	665	0		1047	0		0	0		0	2517
Lights %	96.4%	97.6%	0%		97.2%	93.2%	87.3%	0%		88.5%	95%	96.2%	0%		95.8%	0%		0%	0%		0%	94.7%
Single-Unit Trucks	9	9	0		18	2	11	0		13	12	12	0		24	0		0	0		0	55
Single-Unit Trucks %	2.5%	1.4%	0%		1.8%	1.7%	2.4%	0%		2.3%	3%	1.7%	0%		2.2%	0%		0%	0%		0%	2.1%
Buses	0	3	0		3	0	0	0		0	2	7	0		9	0		0	0		0	12
Buses %	0%	0.5%	0%		0.3%	0%	0%	0%		0%	0.5%	1%	0%		0.8%	0%		0%	0%		0%	0.5%
Articulated Trucks	4	3	0		7	6	47	0		53	6	7	0		13	0		0	0		0	73
Articulated Trucks %	1.1%	0.5%	0%		0.7%	5.1%	10.3%	0%		9.2%	1.5%	1%	0%		1.2%	0%		0%	0%		0%	2.7%
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0		0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	0%		-	0%		**-**

Spectrum

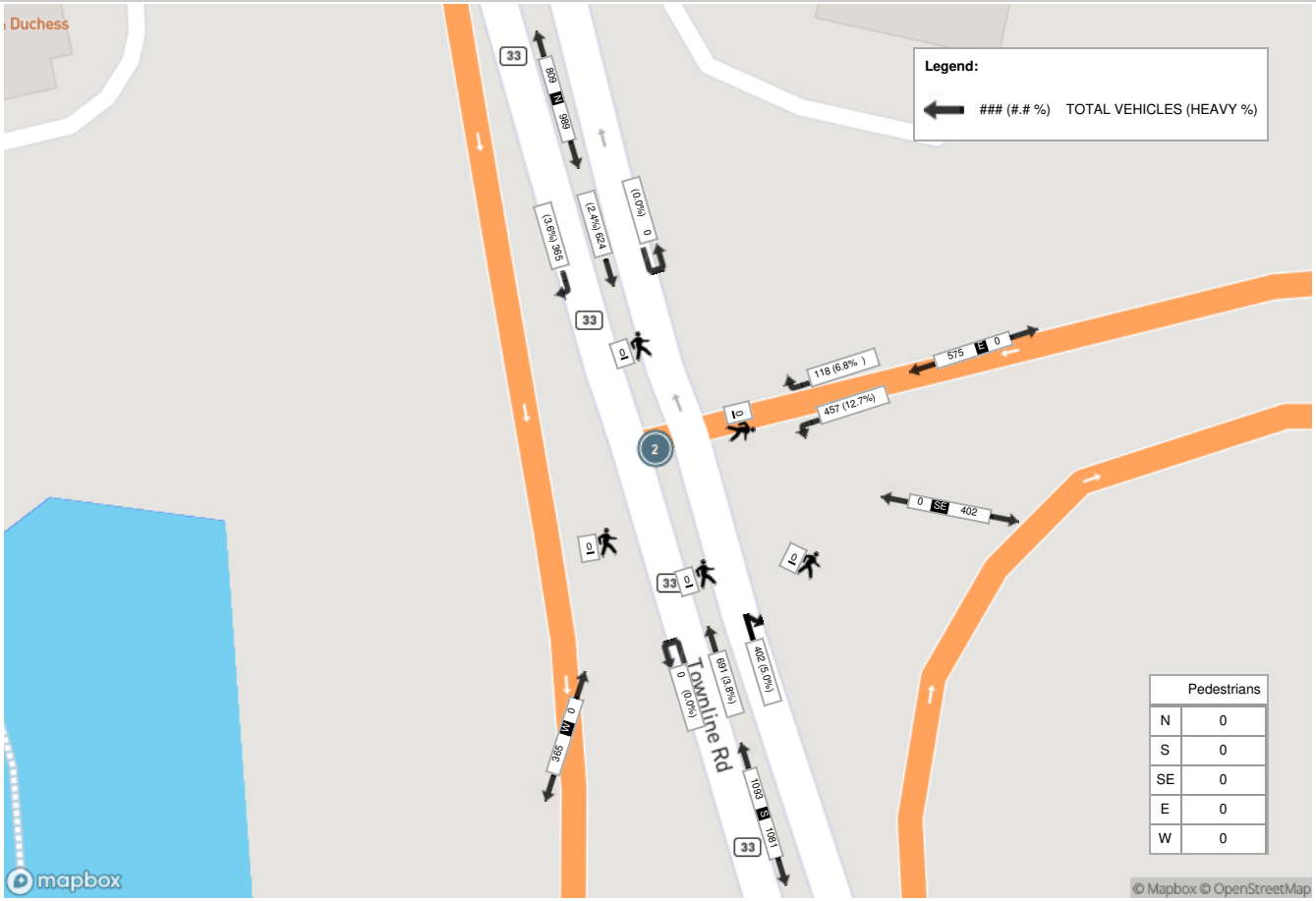
Turning Movement Count
Location Name: HWY 401 WB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)

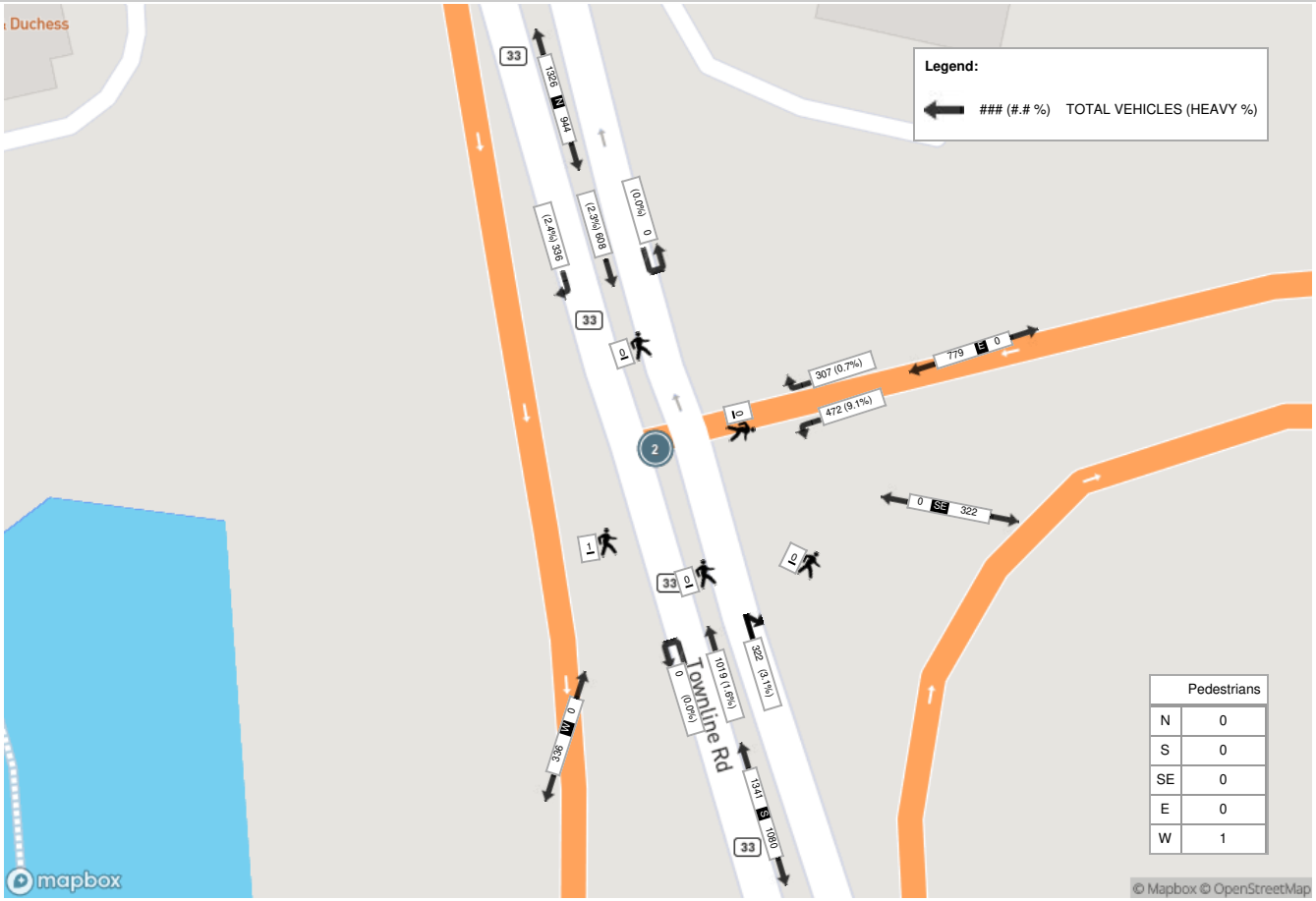
Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-09-30 16:30:00	74	159	0	0	233	76	124	0	0	200	93	281	0	0	374	0	1	0	0	0	0	807
2025-09-30 16:45:00	92	148	0	0	240	71	109	0	0	180	65	273	0	0	338	0	0	0	0	0	0	758
2025-09-30 17:00:00	95	166	0	0	261	83	116	0	0	199	81	218	0	0	299	0	0	0	0	0	0	759
2025-09-30 17:15:00	75	135	0	0	210	77	123	0	0	200	83	247	0	0	330	0	0	0	0	0	0	740
Grand Total	336	608	0	0	944	307	472	0	0	779	322	1019	0	0	1341	0	1	0	0	0	0	**3064**
Approach%	35.6%	64.4%	0%		-	39.4%	60.6%	0%		-	24%	76%	0%		-	0%		-	0%		-	**-**
Totals %	11%	19.8%	0%		30.8%	10%	15.4%	0%		25.4%	10.5%	33.3%	0%		43.8%	0%		0%	0%		0%	**-**
PHF	0.88	0.92	0		0.9	0.92	0.95	0		0.97	0.87	0.91	0		0.9	0		0	0		0	0.95
Heavy	8	14	0		22	2	43	0		45	10	16	0		26	0		0	0		0	93
Heavy %	2.4%	2.3%	0%		2.3%	0.7%	9.1%	0%		5.8%	3.1%	1.6%	0%		1.9%	0%		0%	0%		0%	3%
Lights	328	594	0		922	305	429	0		734	312	1002	0		1314	0		0	0		0	2970
Lights %	97.6%	97.7%	0%		97.7%	99.3%	90.9%	0%		94.2%	96.9%	98.3%	0%		98%	0%		0%	0%		0%	96.9%
Single-Unit Trucks	6	6	0		12	0	18	0		18	6	10	0		16	0		0	0		0	46
Single-Unit Trucks %	1.8%	1%	0%		1.3%	0%	3.8%	0%		2.3%	1.9%	1%	0%		1.2%	0%		0%	0%		0%	1.5%
Buses	1	1	0		2	0	0	0		0	0	2	0		2	0		0	0		0	4
Buses %	0.3%	0.2%	0%		0.2%	0%	0%	0%		0%	0%	0.2%	0%		0.1%	0%		0%	0%		0%	0.1%
Articulated Trucks	1	7	0		8	2	25	0		27	4	4	0		8	0		0	0		0	43
Articulated Trucks %	0.3%	1.2%	0%		0.8%	0.7%	5.3%	0%		3.5%	1.2%	0.4%	0%		0.6%	0%		0%	0%		0%	1.4%
Bicycles on Road	0	0	0		0	0	0	0		0	0	1	0		1	0		0	0		0	1
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	0%		0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	1	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	100%		-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Clear Sky (11 °C)**



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Peak Hour: 04:30 PM - 05:30 PM **Weather: Clear Sky (23 °C)**



	Pedestrians
N	0
S	0
SE	0
E	0
W	1

Spectrum

Turning Movement Count
Location Name: TOWNLINE RD & ELLIS RD/SIDEROAD 10N
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

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Turning Movement Count (4 . TOWNLINE RD & ELLIS RD/SIDEROAD 10N)

Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-09-30 07:00:00	3	106	0	0	0	109	0	0	3	0	0	3	4	60	7	0	0	71	52	0	5	0	0	57	240	
2025-09-30 07:15:00	6	124	2	0	0	132	1	1	1	0	0	3	4	72	15	0	0	91	47	2	18	0	0	67	293	
2025-09-30 07:30:00	4	128	1	0	0	133	1	2	2	0	0	5	6	124	19	0	0	149	56	9	19	0	0	84	371	
2025-09-30 07:45:00	6	150	1	0	0	157	2	4	8	0	0	14	13	153	19	0	0	185	60	6	29	0	0	95	451	1355
2025-09-30 08:00:00	6	145	1	0	0	152	0	3	2	0	0	5	9	136	32	0	0	177	53	6	17	0	0	76	410	1525
2025-09-30 08:15:00	11	144	1	0	0	156	1	1	2	0	0	4	13	91	31	0	0	135	36	7	15	0	0	58	353	1585
2025-09-30 08:30:00	12	96	0	0	0	108	0	2	7	0	0	9	6	98	29	0	0	133	60	5	13	0	0	78	328	1542
2025-09-30 08:45:00	11	114	1	0	0	126	0	5	9	0	0	14	10	103	35	0	0	148	46	5	15	0	0	66	354	1445
BREAK																										
2025-09-30 16:00:00	16	92	1	0	0	109	2	6	12	0	0	20	5	146	58	0	0	209	28	5	6	0	0	39	377	
2025-09-30 16:15:00	15	101	5	0	0	121	2	10	14	0	0	26	6	185	57	0	0	248	31	4	15	0	0	50	445	
2025-09-30 16:30:00	10	115	0	0	0	125	1	9	18	0	0	28	9	213	80	0	0	302	26	4	18	0	1	48	503	
2025-09-30 16:45:00	15	145	4	0	0	164	2	11	16	0	0	29	4	213	74	0	1	291	32	6	9	0	0	47	531	1856
2025-09-30 17:00:00	17	112	1	0	0	130	5	6	22	0	0	33	13	186	69	0	0	268	35	6	6	0	0	47	478	1957
2025-09-30 17:15:00	14	87	3	0	0	104	1	11	9	0	0	21	7	191	95	0	0	293	37	4	5	0	0	46	464	1976
2025-09-30 17:30:00	11	86	0	0	0	97	2	7	7	0	0	16	3	171	69	0	2	243	30	4	12	0	0	46	402	1875
2025-09-30 17:45:00	13	107	0	0	0	120	2	13	7	0	0	22	5	145	101	0	0	251	26	2	4	0	0	32	425	1769
Grand Total	170	1852	21	0	0	2043	22	91	139	0	0	252	117	2287	790	0	3	3194	655	75	206	0	1	936	**6425**	-
Approach%	8.3%	90.7%	1%	0%		-	8.7%	36.1%	55.2%	0%		-	3.7%	71.6%	24.7%	0%		-	70%	8%	22%	0%		-	-	-
Totals %	2.6%	28.8%	0.3%	0%		31.8%	0.3%	1.4%	2.2%	0%		3.9%	1.8%	35.6%	12.3%	0%		49.7%	10.2%	1.2%	3.2%	0%		14.6%	-	-
Heavy	1	55	2	0		-	1	0	2	0		-	2	65	11	0		-	14	0	1	0		-	-	-
Heavy %	0.6%	3%	9.5%	0%		-	4.5%	0%	1.4%	0%		-	1.7%	2.8%	1.4%	0%		-	2.1%	0%	0.5%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: TOWNLINE RD & ELLIS RD/SIDEROAD 10N
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

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210 140 ALLSTATE PARKWAY
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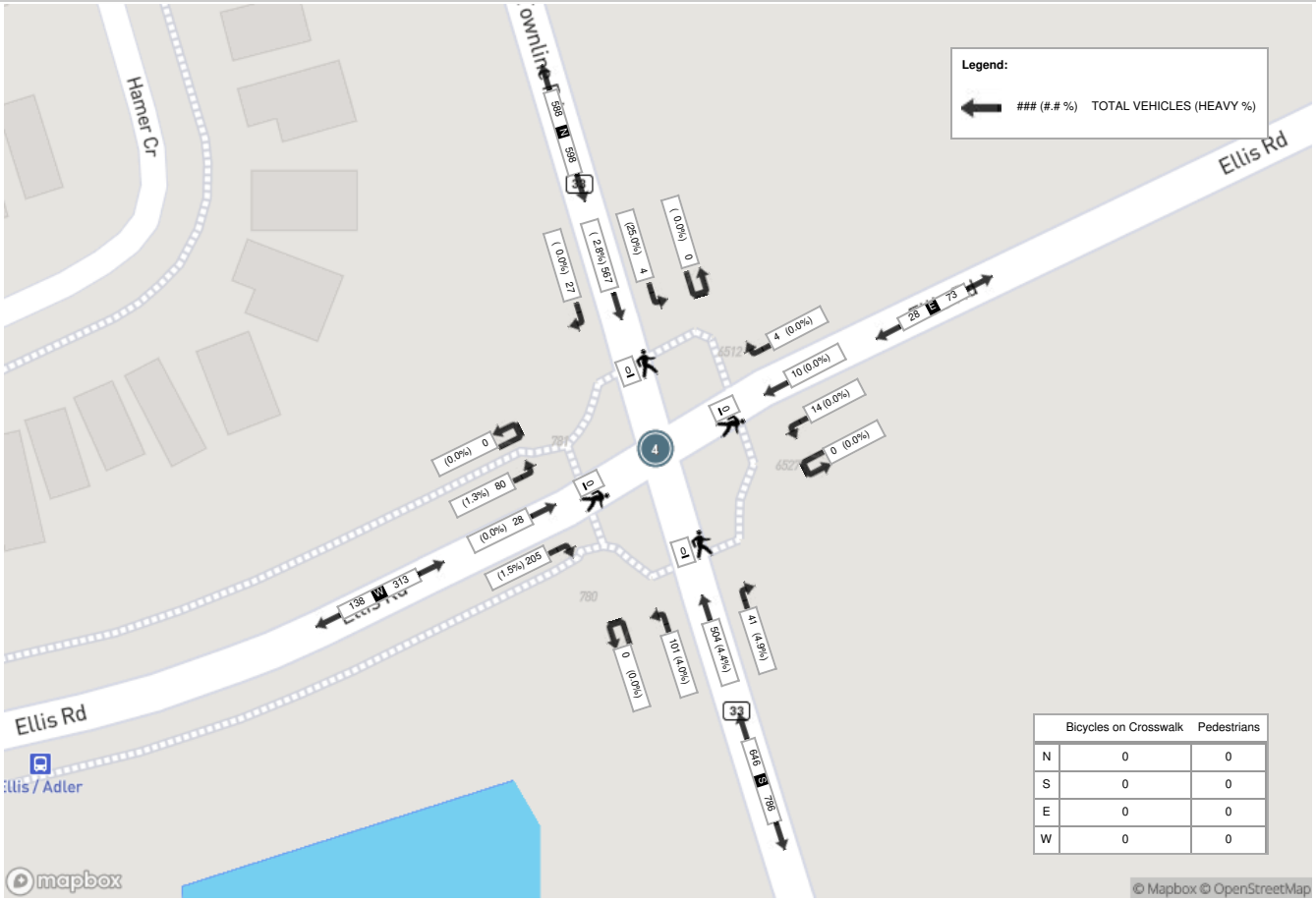
Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)

Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-09-30 07:30:00	4	128	1	0	0	133	1	2	2	0	0	5	6	124	19	0	0	149	56	9	19	0	0	84	371
2025-09-30 07:45:00	6	150	1	0	0	157	2	4	8	0	0	14	13	153	19	0	0	185	60	6	29	0	0	95	451
2025-09-30 08:00:00	6	145	1	0	0	152	0	3	2	0	0	5	9	136	32	0	0	177	53	6	17	0	0	76	410
2025-09-30 08:15:00	11	144	1	0	0	156	1	1	2	0	0	4	13	91	31	0	0	135	36	7	15	0	0	58	353
Grand Total	27	567	4	0	0	598	4	10	14	0	0	28	41	504	101	0	0	646	205	28	80	0	0	313	**1585**
Approach%	4.5%	94.8%	0.7%	0%		-	14.3%	35.7%	50%	0%		-	6.3%	78%	15.6%	0%		-	65.5%	8.9%	25.6%	0%		-	**-**
Totals %	1.7%	35.8%	0.3%	0%		37.7%	0.3%	0.6%	0.9%	0%		1.8%	2.6%	31.8%	6.4%	0%		40.8%	12.9%	1.8%	5%	0%		19.7%	**-**
PHF	0.61	0.95	1	0		0.95	0.5	0.63	0.44	0		0.5	0.79	0.82	0.79	0		0.87	0.85	0.78	0.69	0		0.82	0.88
Heavy	0	16	1	0		17	0	0	0	0		0	2	22	4	0		28	3	0	1	0		4	49
Heavy %	0%	2.8%	25%	0%		2.8%	0%	0%	0%	0%		0%	4.9%	4.4%	4%	0%		4.3%	1.5%	0%	1.3%	0%		1.3%	3.1%
Lights	27	551	3	0		581	4	9	13	0		26	39	482	97	0		618	202	28	79	0		309	1534
Lights %	100%	97.2%	75%	0%		97.2%	100%	90%	92.9%	0%		92.9%	95.1%	95.6%	96%	0%		95.7%	98.5%	100%	98.8%	0%		98.7%	96.8%
Single-Unit Trucks	0	9	0	0		9	0	0	0	0		0	1	5	1	0		7	0	0	0	0		0	16
Single-Unit Trucks %	0%	1.6%	0%	0%		1.5%	0%	0%	0%	0%		0%	2.4%	1%	1%	0%		1.1%	0%	0%	0%	0%		0%	1%
Buses	0	2	1	0		3	0	0	0	0		0	1	5	3	0		9	3	0	1	0		4	16
Buses %	0%	0.4%	25%	0%		0.5%	0%	0%	0%	0%		0%	2.4%	1%	3%	0%		1.4%	1.5%	0%	1.3%	0%		1.3%	1%
Articulated Trucks	0	5	0	0		5	0	0	0	0		0	0	12	0	0		12	0	0	0	0		0	17
Articulated Trucks %	0%	0.9%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	2.4%	0%	0%		1.9%	0%	0%	0%	0%		0%	1.1%
Bicycles on Road	0	0	0	0		0	0	1	1	0		2	0	0	0	0		0	0	0	0	0		0	2
Bicycles on Road %	0%	0%	0%	0%		0%	0%	10%	7.1%	0%		7.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

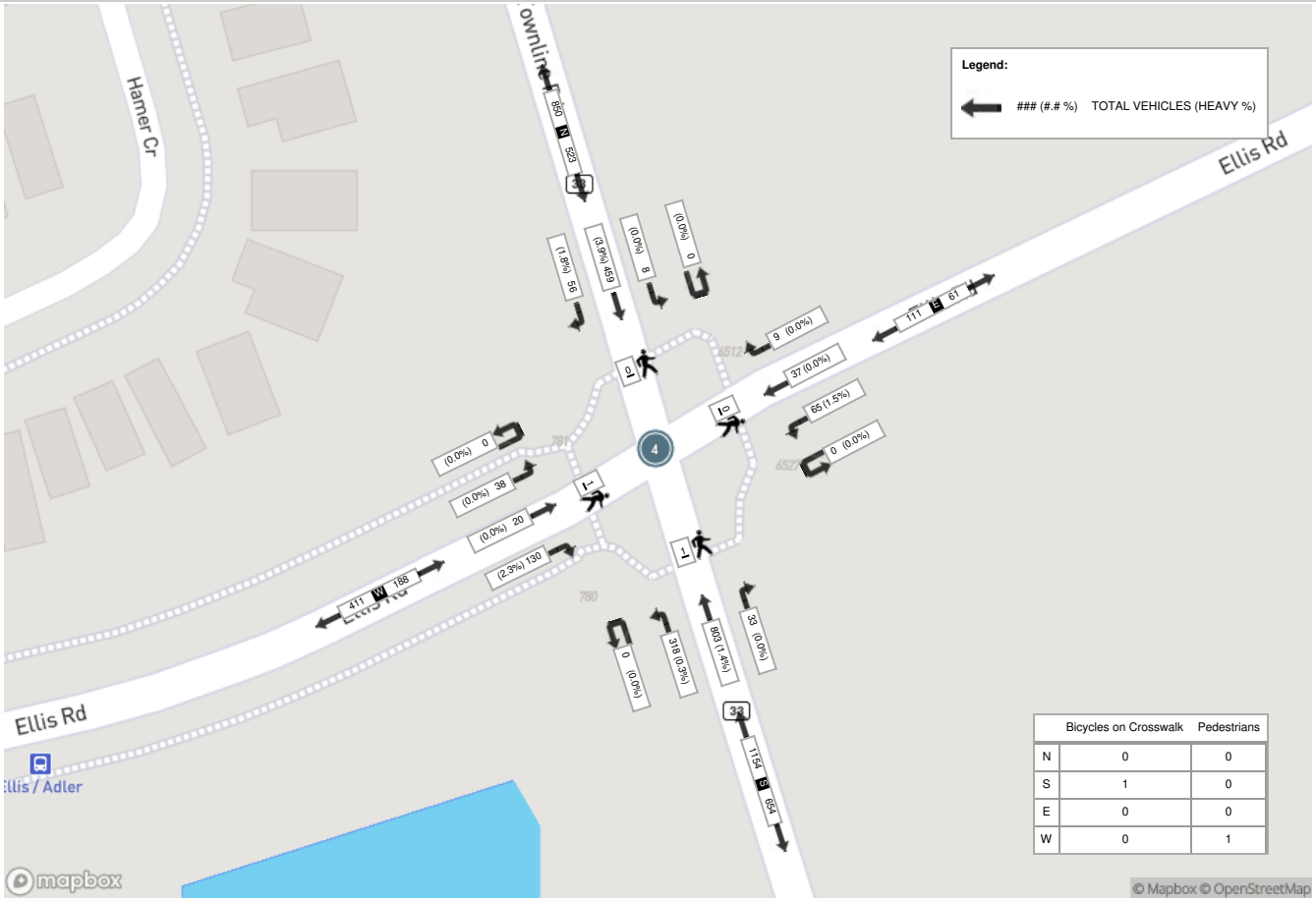
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)

Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-09-30 16:30:00	10	115	0	0	0	125	1	9	18	0	0	28	9	213	80	0	0	302	26	4	18	0	1	48	503
2025-09-30 16:45:00	15	145	4	0	0	164	2	11	16	0	0	29	4	213	74	0	1	291	32	6	9	0	0	47	531
2025-09-30 17:00:00	17	112	1	0	0	130	5	6	22	0	0	33	13	186	69	0	0	268	35	6	6	0	0	47	478
2025-09-30 17:15:00	14	87	3	0	0	104	1	11	9	0	0	21	7	191	95	0	0	293	37	4	5	0	0	46	464
Grand Total	56	459	8	0	0	523	9	37	65	0	0	111	33	803	318	0	1	1154	130	20	38	0	1	188	**1976**
Approach%	10.7%	87.8%	1.5%	0%		-	8.1%	33.3%	58.6%	0%		-	2.9%	69.6%	27.6%	0%		-	69.1%	10.6%	20.2%	0%		-	**-**
Totals %	2.8%	23.2%	0.4%	0%		26.5%	0.5%	1.9%	3.3%	0%		5.6%	1.7%	40.6%	16.1%	0%		58.4%	6.6%	1%	1.9%	0%		9.5%	**-**
PHF	0.82	0.79	0.5	0		0.8	0.45	0.84	0.74	0		0.84	0.63	0.94	0.84	0		0.96	0.88	0.83	0.53	0		0.98	0.93
Heavy	1	18	0	0		19	0	0	1	0		1	0	11	1	0		12	3	0	0	0		3	35
Heavy %	1.8%	3.9%	0%	0%		3.6%	0%	0%	1.5%	0%		0.9%	0%	1.4%	0.3%	0%		1%	2.3%	0%	0%	0%		1.6%	1.8%
Lights	55	441	6	0		502	9	37	64	0		110	32	790	317	0		1139	127	18	38	0		183	1934
Lights %	98.2%	96.1%	75%	0%		96%	100%	100%	98.5%	0%		99.1%	97%	98.4%	99.7%	0%		98.7%	97.7%	90%	100%	0%		97.3%	97.9%
Single-Unit Trucks	1	9	0	0		10	0	0	0	0		0	0	7	0	0		7	1	0	0	0		1	18
Single-Unit Trucks %	1.8%	2%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.6%	0.8%	0%	0%	0%		0.5%	0.9%
Buses	0	1	0	0		1	0	0	1	0		1	0	0	1	0		1	2	0	0	0		2	5
Buses %	0%	0.2%	0%	0%		0.2%	0%	0%	1.5%	0%		0.9%	0%	0%	0.3%	0%		0.1%	1.5%	0%	0%	0%		1.1%	0.3%
Articulated Trucks	0	8	0	0		8	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	12
Articulated Trucks %	0%	1.7%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.3%	0%	0%	0%	0%		0%	0.6%
Bicycles on Road	0	0	2	0		2	0	0	0	0		0	1	2	0	0		3	0	2	0	0		2	7
Bicycles on Road %	0%	0%	25%	0%		0.4%	0%	0%	0%	0%		0%	3%	0.2%	0%	0%		0.3%	0%	10%	0%	0%		1.1%	0.4%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	50%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Clear Sky (11 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Clear Sky (23 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	1	0
E	0	0
W	0	1

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Turning Movement Count (3 . TOWNLINE RD & JAMIESON PKWY)

Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-09-30 07:00:00	13	153	0	0	166	54	28	0	0	82	65	14	0	0	79	327	
2025-09-30 07:15:00	18	131	0	0	149	60	48	0	0	108	53	30	0	0	83	340	
2025-09-30 07:30:00	22	181	1	0	204	126	46	0	0	172	64	26	0	1	90	466	
2025-09-30 07:45:00	45	164	0	0	209	144	101	0	0	245	79	38	0	0	117	571	1704
2025-09-30 08:00:00	40	151	0	0	191	133	68	0	0	201	78	35	0	0	113	505	1882
2025-09-30 08:15:00	41	154	0	0	195	111	61	1	0	173	55	30	0	0	85	453	1995
2025-09-30 08:30:00	28	131	0	0	159	100	77	0	0	177	56	33	0	0	89	425	1954
2025-09-30 08:45:00	26	146	0	0	172	115	72	3	0	190	69	32	0	0	101	463	1846
BREAK																	
2025-09-30 16:00:00	23	95	0	0	118	156	73	3	0	232	79	40	0	0	119	469	
2025-09-30 16:15:00	32	122	0	0	154	218	95	1	0	314	67	47	0	0	114	582	
2025-09-30 16:30:00	36	111	0	0	147	225	108	1	0	334	87	57	0	0	144	625	
2025-09-30 16:45:00	54	143	0	0	197	255	101	3	0	359	85	45	0	0	130	686	2362
2025-09-30 17:00:00	24	136	0	0	160	191	103	0	0	294	98	61	0	0	159	613	2506
2025-09-30 17:15:00	25	118	0	0	143	244	83	1	0	328	83	46	0	0	129	600	2524
2025-09-30 17:30:00	22	99	0	0	121	187	95	1	0	283	52	44	0	1	96	500	2399
2025-09-30 17:45:00	19	123	0	0	142	227	73	4	0	304	57	27	0	0	84	530	2243
Grand Total	468	2158	1	0	2627	2546	1232	18	0	3796	1127	605	0	2	1732	**8155**	-
Approach%	17.8%	82.1%	0%		-	67.1%	32.5%	0.5%		-	65.1%	34.9%	0%		-	**-**	-
Totals %	5.7%	26.5%	0%		32.2%	31.2%	15.1%	0.2%		46.5%	13.8%	7.4%	0%		21.2%	**-**	-
Heavy	12	63	0		-	70	27	0		-	21	8	0		-	**-**	-
Heavy %	2.6%	2.9%	0%		-	2.7%	2.2%	0%		-	1.9%	1.3%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

GHD
210 140 ALLSTATE PARKWAY
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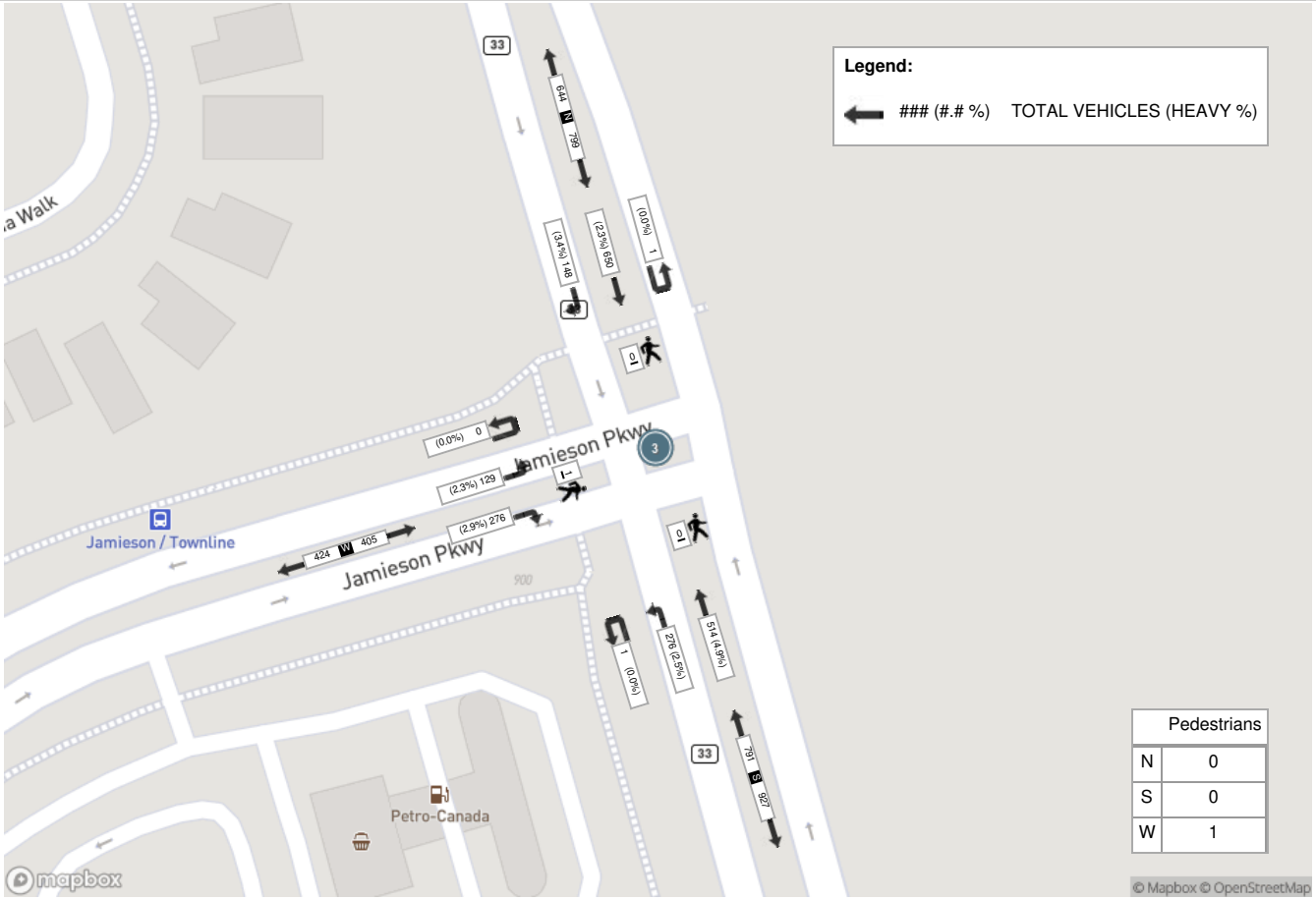
Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)

Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2025-09-30 07:30:00	22	181	1	0	204	126	46	0	0	172	64	26	0	1	90	466
2025-09-30 07:45:00	45	164	0	0	209	144	101	0	0	245	79	38	0	0	117	571
2025-09-30 08:00:00	40	151	0	0	191	133	68	0	0	201	78	35	0	0	113	505
2025-09-30 08:15:00	41	154	0	0	195	111	61	1	0	173	55	30	0	0	85	453
Grand Total	148	650	1	0	799	514	276	1	0	791	276	129	0	1	405	**1995**
Approach%	18.5%	81.4%	0.1%		-	65%	34.9%	0.1%		-	68.1%	31.9%	0%		-	**-**
Totals %	7.4%	32.6%	0.1%		40.1%	25.8%	13.8%	0.1%		39.6%	13.8%	6.5%	0%		20.3%	**-**
PHF	0.82	0.9	0.25		0.96	0.89	0.68	0.25		0.81	0.87	0.85	0		0.87	0.87
Heavy	5	15	0		20	25	7	0		32	8	3	0		11	63
Heavy %	3.4%	2.3%	0%		2.5%	4.9%	2.5%	0%		4%	2.9%	2.3%	0%		2.7%	3.2%
Lights	143	635	1		779	489	269	1		759	268	126	0		394	1932
Lights %	96.6%	97.7%	100%		97.5%	95.1%	97.5%	100%		96%	97.1%	97.7%	0%		97.3%	96.8%
Single-Unit Trucks	1	8	0		9	7	4	0		11	5	0	0		5	25
Single-Unit Trucks %	0.7%	1.2%	0%		1.1%	1.4%	1.4%	0%		1.4%	1.8%	0%	0%		1.2%	1.3%
Buses	4	2	0		6	7	1	0		8	1	2	0		3	17
Buses %	2.7%	0.3%	0%		0.8%	1.4%	0.4%	0%		1%	0.4%	1.6%	0%		0.7%	0.9%
Articulated Trucks	0	5	0		5	11	2	0		13	2	1	0		3	21
Articulated Trucks %	0%	0.8%	0%		0.6%	2.1%	0.7%	0%		1.6%	0.7%	0.8%	0%		0.7%	1.1%
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)

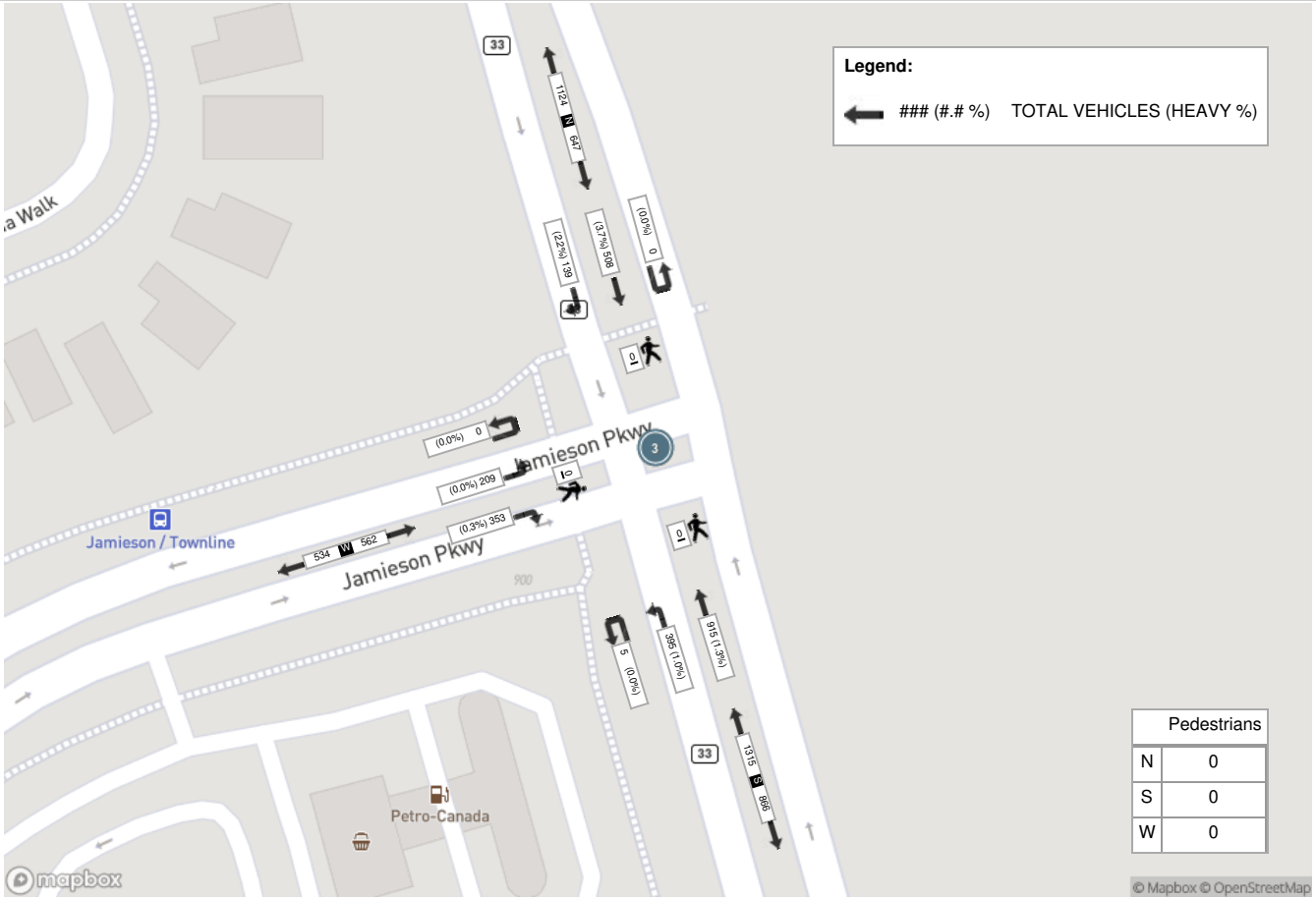
Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2025-09-30 16:30:00	36	111	0	0	147	225	108	1	0	334	87	57	0	0	144	625
2025-09-30 16:45:00	54	143	0	0	197	255	101	3	0	359	85	45	0	0	130	686
2025-09-30 17:00:00	24	136	0	0	160	191	103	0	0	294	98	61	0	0	159	613
2025-09-30 17:15:00	25	118	0	0	143	244	83	1	0	328	83	46	0	0	129	600
Grand Total	139	508	0	0	647	915	395	5	0	1315	353	209	0	0	562	**2524**
Approach%	21.5%	78.5%	0%		-	69.6%	30%	0.4%		-	62.8%	37.2%	0%		-	**-**
Totals %	5.5%	20.1%	0%		25.6%	36.3%	15.6%	0.2%		52.1%	14%	8.3%	0%		22.3%	**-**
PHF	0.64	0.89	0		0.82	0.9	0.91	0.42		0.92	0.9	0.86	0		0.88	0.92
Heavy	3	19	0		22	12	4	0		16	1	0	0		1	39
Heavy %	2.2%	3.7%	0%		3.4%	1.3%	1%	0%		1.2%	0.3%	0%	0%		0.2%	1.5%
Lights	136	489	0		625	901	391	5		1297	352	209	0		561	2483
Lights %	97.8%	96.3%	0%		96.6%	98.5%	99%	100%		98.6%	99.7%	100%	0%		99.8%	98.4%
Single-Unit Trucks	0	10	0		10	7	2	0		9	0	0	0		0	19
Single-Unit Trucks %	0%	2%	0%		1.5%	0.8%	0.5%	0%		0.7%	0%	0%	0%		0%	0.8%
Buses	3	1	0		4	1	1	0		2	0	0	0		0	6
Buses %	2.2%	0.2%	0%		0.6%	0.1%	0.3%	0%		0.2%	0%	0%	0%		0%	0.2%
Articulated Trucks	0	8	0		8	4	1	0		5	1	0	0		1	14
Articulated Trucks %	0%	1.6%	0%		1.2%	0.4%	0.3%	0%		0.4%	0.3%	0%	0%		0.2%	0.6%
Bicycles on Road	0	0	0		0	2	0	0		2	0	0	0		0	2
Bicycles on Road %	0%	0%	0%		0%	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)



	Pedestrians
N	0
S	0
W	1

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)



	Pedestrians
N	0
S	0
W	0

Spectrum

Turning Movement Count
Location Name: HWY 401 EB OFF-RAMP & TOWNLINE ROAD
Date: Sat, Nov 01, 2025 Deployment Lead: Constantinos Kotassidis

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

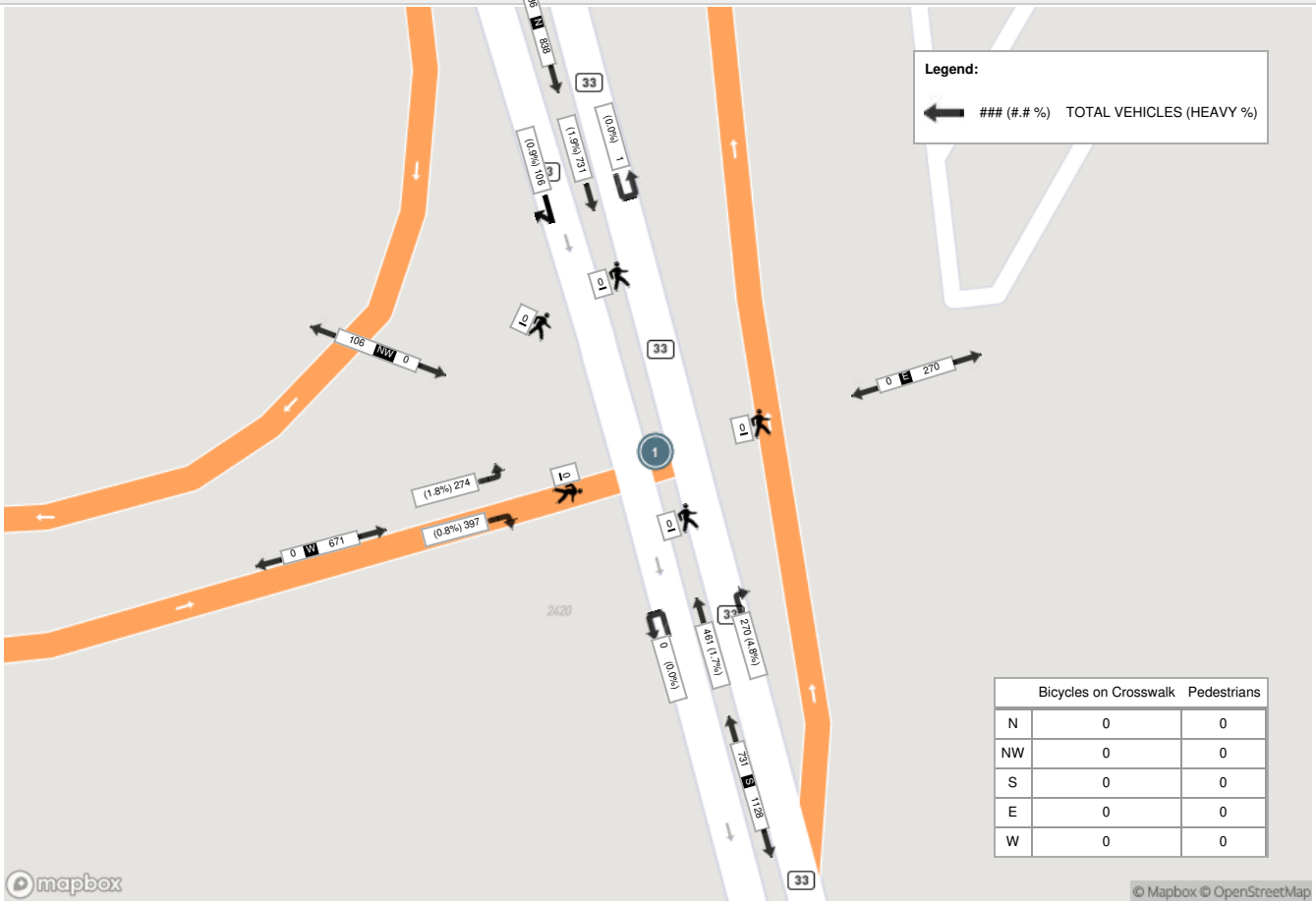
Turning Movement Count (1 . HWY 401 EB OFF-RAMP & TOWNLINE ROAD)

Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)	Int. Total (1 hr)
	Hard Right N:NW	Thru N:S	UTurn N:N	Peds N:	Approach Total	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total	UTurn NW:NW	Peds NW:	Approach Total		
2025-11-01 11:00:00	40	150	0	0	190	0	0	0	84	105	0	0	189	37	42	0	0	79	0	0	0	458	
2025-11-01 11:15:00	46	173	0	0	219	0	0	0	102	132	0	0	234	47	47	0	0	94	0	0	0	547	
2025-11-01 11:30:00	62	166	0	0	228	0	0	0	90	115	0	0	205	30	38	0	0	68	0	0	0	501	
2025-11-01 11:45:00	32	150	0	0	182	0	0	0	97	108	0	0	205	39	34	0	1	73	0	0	0	460	1966
2025-11-01 12:00:00	42	158	0	0	200	0	0	0	103	122	0	0	225	42	32	0	0	74	0	0	0	499	2007
2025-11-01 12:15:00	49	153	0	0	202	0	0	0	95	111	1	0	207	48	53	0	0	101	0	0	0	510	1970
2025-11-01 12:30:00	24	186	0	0	210	0	1	0	64	107	0	0	171	78	44	0	0	122	0	0	0	503	1972
2025-11-01 12:45:00	31	206	0	1	237	0	2	0	96	117	1	0	214	66	52	0	0	118	0	0	0	569	2081
2025-11-01 13:00:00	35	172	0	0	207	0	0	0	84	127	0	0	211	78	68	0	0	146	0	0	0	564	2146
2025-11-01 13:15:00	30	186	0	0	216	0	0	0	61	101	0	0	162	82	55	0	0	137	0	0	0	515	2151
2025-11-01 13:30:00	20	182	1	0	203	0	0	0	72	119	0	0	191	112	73	0	0	185	0	0	0	579	2227
2025-11-01 13:45:00	21	191	0	0	212	0	0	0	53	114	0	0	167	125	78	0	0	203	0	0	0	582	2240
2025-11-01 14:00:00	18	189	0	0	207	0	0	0	66	111	0	0	177	83	58	0	0	141	0	0	0	525	2201
2025-11-01 14:15:00	15	172	0	0	187	0	0	0	64	139	0	0	203	65	78	0	1	143	0	0	0	533	2219
2025-11-01 14:30:00	28	177	0	0	205	0	0	0	51	104	0	0	155	130	74	0	0	204	0	0	0	564	2204
2025-11-01 14:45:00	23	173	0	0	196	0	0	0	55	104	0	0	159	84	74	0	0	158	0	0	0	513	2135
Grand Total	516	2784	1	1	3301	0	3	0	1237	1836	2	0	3075	1146	900	0	2	2046	0	0	0	**8422**	-
Approach%	15.6%	84.3%	0%		-	0%		-	40.2%	59.7%	0.1%		-	56%	44%	0%		-	0%		-	**-**	-
Totals %	6.1%	33.1%	0%		39.2%	0%		0%	14.7%	21.8%	0%		36.5%	13.6%	10.7%	0%		24.3%	0%		0%	**-**	-
Heavy	10	62	0		-	0		-	58	18	0		-	11	12	0		-	0		-	**-**	-
Heavy %	1.9%	2.2%	0%		-	0%		-	4.7%	1%	0%		-	1%	1.3%	0%		-	0%		-	**-**	-
Bicycles	-	-	-		-	-		-	-	-	-		-	-	-	-		-	-		-	**-**	-
Bicycle %	-	-	-		-	-		-	-	-	-		-	-	-	-		-	-		-	**-**	-

Peak Hour: 01:00 PM - 02:00 PM **Weather: Broken Clouds (6 °C)**

Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)
	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-11-01 13:00:00	35	172	0	0	207	0	0	0	84	127	0	0	211	78	68	0	0	146	0	0	0	564
2025-11-01 13:15:00	30	186	0	0	216	0	0	0	61	101	0	0	162	82	55	0	0	137	0	0	0	515
2025-11-01 13:30:00	20	182	1	0	203	0	0	0	72	119	0	0	191	112	73	0	0	185	0	0	0	579
2025-11-01 13:45:00	21	191	0	0	212	0	0	0	53	114	0	0	167	125	78	0	0	203	0	0	0	582
Grand Total	106	731	1	0	838	0	0	0	270	461	0	0	731	397	274	0	0	671	0	0	0	**2240**
Approach%	12.6%	87.2%	0.1%		-	0%		-	36.9%	63.1%	0%		-	59.2%	40.8%	0%		-	0%		-	**-**
Totals %	4.7%	32.6%	0%		37.4%	0%		0%	12.1%	20.6%	0%		32.6%	17.7%	12.2%	0%		30%	0%		0%	**-**
PHF	0.76	0.96	0.25		0.97	0		0	0.8	0.91	0		0.87	0.79	0.88	0		0.83	0		0	0.96
Heavy	1	14	0		15	0		0	13	8	0		21	3	5	0		8	0		0	44
Heavy %	0.9%	1.9%	0%		1.8%	0%		0%	4.8%	1.7%	0%		2.9%	0.8%	1.8%	0%		1.2%	0%		0%	2%
Lights	105	716	1		822	0		0	257	453	0		710	394	269	0		663	0		0	2195
Lights %	99.1%	97.9%	100%		98.1%	0%		0%	95.2%	98.3%	0%		97.1%	99.2%	98.2%	0%		98.8%	0%		0%	98%
Single-Unit Trucks	0	8	0		8	0		0	7	3	0		10	2	3	0		5	0		0	23
Single-Unit Trucks %	0%	1.1%	0%		1%	0%		0%	2.6%	0.7%	0%		1.4%	0.5%	1.1%	0%		0.7%	0%		0%	1%
Buses	0	0	0		0	0		0	0	2	0		2	1	1	0		2	0		0	4
Buses %	0%	0%	0%		0%	0%		0%	0%	0.4%	0%		0.3%	0.3%	0.4%	0%		0.3%	0%		0%	0.2%
Articulated Trucks	1	6	0		7	0		0	6	3	0		9	0	1	0		1	0		0	17
Articulated Trucks %	0.9%	0.8%	0%		0.8%	0%		0%	2.2%	0.7%	0%		1.2%	0%	0.4%	0%		0.1%	0%		0%	0.8%
Bicycles on Road	0	1	0		1	0		0	0	0	0		0	0	0	0		0	0		0	1
Bicycles on Road %	0%	0.1%	0%		0.1%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	0%		-	-	-	0%		-	-	-	0%		-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	0%		-	-	-	0%		-	-	-	0%		-	0%		**-**

Peak Hour: 01:00 PM - 02:00 PM **Weather: Broken Clouds (6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
NW	0	0
S	0	0
E	0	0
W	0	0

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Turning Movement Count (2 . HWY 401 WB OFF-RAMP & TOWNLINE ROAD)

Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Hard Right S:SE	Thru S:N	UTurn S:S	Peds S:	Approach Total	UTurn W:W	Peds W:	Approach Total	UTurn SE:SE	Peds SE:	Approach Total		
2025-11-01 11:00:00	68	111	0	0	179	29	89	0	0	118	35	110	0	0	145	0	0	0	0	0	0	442	
2025-11-01 11:15:00	53	138	0	0	191	32	83	0	0	115	51	131	0	0	182	0	0	0	0	0	0	488	
2025-11-01 11:30:00	58	143	0	0	201	30	79	0	0	109	47	106	0	0	153	0	0	0	0	0	0	463	
2025-11-01 11:45:00	59	100	0	0	159	33	74	0	0	107	40	104	0	0	144	0	0	0	0	0	0	410	1803
2025-11-01 12:00:00	63	128	0	0	191	28	73	0	0	101	40	108	1	0	149	0	0	0	0	0	0	441	1802
2025-11-01 12:15:00	50	131	0	0	181	37	74	0	1	111	48	120	0	0	168	0	0	0	0	0	0	460	1774
2025-11-01 12:30:00	44	125	0	1	169	35	79	0	1	114	35	122	0	0	157	0	1	0	0	2	0	440	1751
2025-11-01 12:45:00	68	122	0	0	190	33	95	0	0	128	38	131	0	0	169	0	1	0	0	0	0	487	1828
2025-11-01 13:00:00	73	109	0	0	182	40	90	0	0	130	40	165	1	0	206	0	0	0	0	0	0	518	1905
2025-11-01 13:15:00	57	135	0	0	192	35	85	0	0	120	35	122	0	0	157	0	0	0	0	0	0	469	1914
2025-11-01 13:30:00	62	119	0	0	181	38	86	0	0	124	54	147	0	0	201	0	0	0	0	0	0	506	1980
2025-11-01 13:45:00	58	89	0	0	147	31	97	0	0	128	40	148	0	0	188	0	0	0	0	0	0	463	1956
2025-11-01 14:00:00	63	105	0	0	168	39	98	0	0	137	49	122	0	0	171	0	0	0	0	0	0	476	1914
2025-11-01 14:15:00	52	114	0	0	166	47	79	0	0	126	53	158	0	0	211	0	0	0	0	0	0	503	1948
2025-11-01 14:30:00	48	118	0	0	166	43	71	0	0	114	45	142	0	0	187	0	0	0	0	0	0	467	1909
2025-11-01 14:45:00	71	97	0	0	168	48	87	0	0	135	31	142	0	0	173	0	0	0	0	0	0	476	1922
Grand Total	947	1884	0	1	2831	578	1339	0	2	1917	681	2078	2	0	2761	0	2	0	0	2	0	**7509**	-
Approach%	33.5%	66.5%	0%		-	30.2%	69.8%	0%		-	24.7%	75.3%	0.1%		-	0%		-	0%		-	**-**	-
Totals %	12.6%	25.1%	0%		37.7%	7.7%	17.8%	0%		25.5%	9.1%	27.7%	0%		36.8%	0%		0%	0%		0%	**-**	-
Heavy	8	14	0		-	8	66	0		-	14	22	0		-	0		-	0		-	**-**	-
Heavy %	0.8%	0.7%	0%		-	1.4%	4.9%	0%		-	2.1%	1.1%	0%		-	0%		-	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-		-	**-**	-

Spectrum

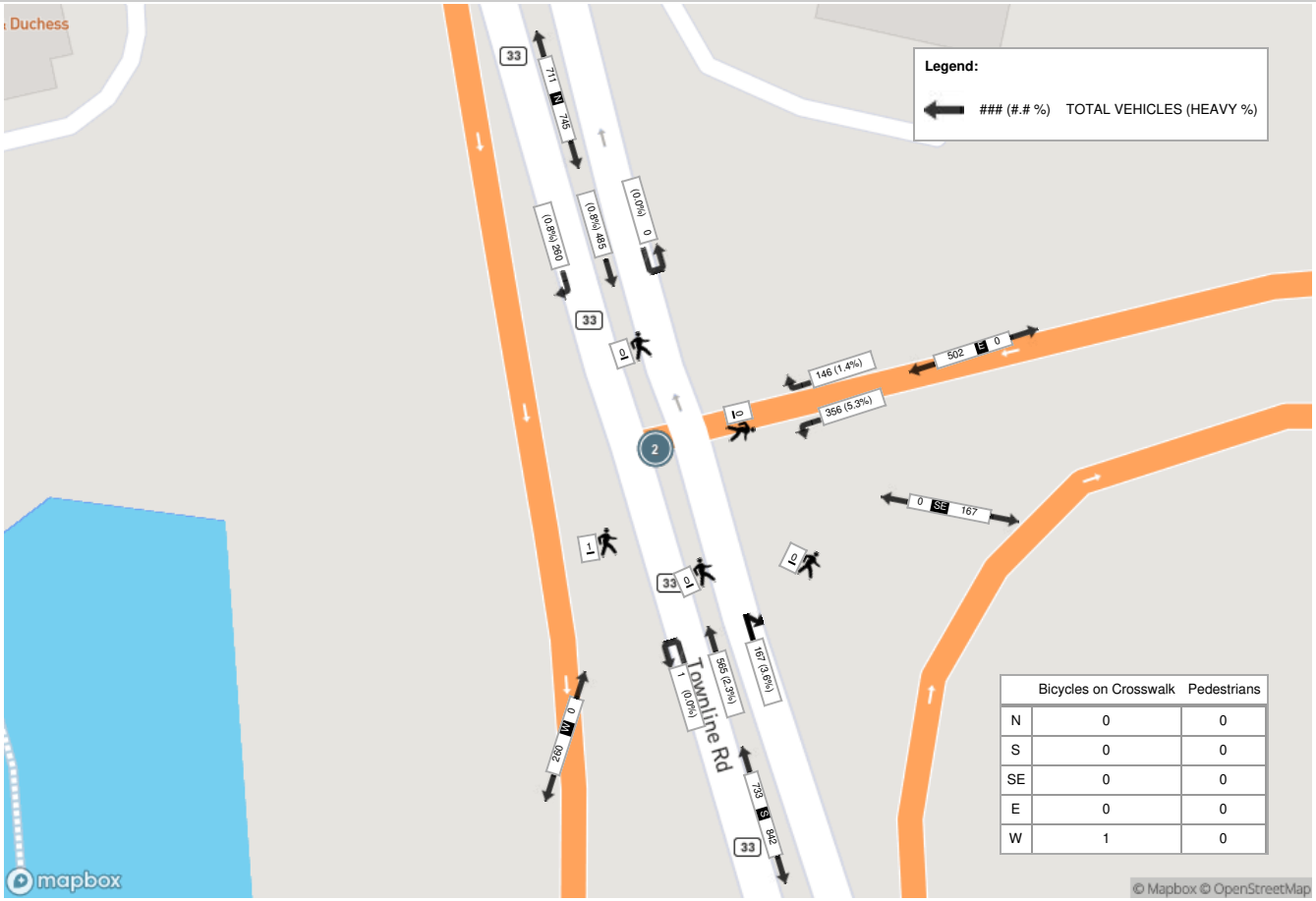
Turning Movement Count
Location Name: HWY 401 WB OFF-RAMP & TOWNLINE ROAD
Date: Sat, Nov 01, 2025 Deployment Lead: Constantinos Kotassidis

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Peak Hour: 12:45 PM - 01:45 PM Weather: Broken Clouds (6 °C)

Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
2025-11-01 12:45:00	68	122	0	0	190	33	95	0	0	128	38	131	0	0	169	0	1	0	0	0	0	487
2025-11-01 13:00:00	73	109	0	0	182	40	90	0	0	130	40	165	1	0	206	0	0	0	0	0	0	518
2025-11-01 13:15:00	57	135	0	0	192	35	85	0	0	120	35	122	0	0	157	0	0	0	0	0	0	469
2025-11-01 13:30:00	62	119	0	0	181	38	86	0	0	124	54	147	0	0	201	0	0	0	0	0	0	506
Grand Total	260	485	0	0	745	146	356	0	0	502	167	565	1	0	733	0	1	0	0	0	0	**1980**
Approach%	34.9%	65.1%	0%		-	29.1%	70.9%	0%		-	22.8%	77.1%	0.1%		-	0%		-	0%		-	**-**
Totals %	13.1%	24.5%	0%		37.6%	7.4%	18%	0%		25.4%	8.4%	28.5%	0.1%		37%	0%		0%	0%		0%	**-**
PHF	0.89	0.9	0		0.97	0.91	0.94	0		0.97	0.77	0.86	0.25		0.89	0		0	0		0	0.96
Heavy	2	4	0		6	2	19	0		21	6	13	0		19	0		0	0		0	46
Heavy %	0.8%	0.8%	0%		0.8%	1.4%	5.3%	0%		4.2%	3.6%	2.3%	0%		2.6%	0%		0%	0%		0%	2.3%
Lights	257	480	0		737	144	337	0		481	161	552	1		714	0		0	0		0	1932
Lights %	98.8%	99%	0%		98.9%	98.6%	94.7%	0%		95.8%	96.4%	97.7%	100%		97.4%	0%		0%	0%		0%	97.6%
Single-Unit Trucks	1	3	0		4	2	13	0		15	2	11	0		13	0		0	0		0	32
Single-Unit Trucks %	0.4%	0.6%	0%		0.5%	1.4%	3.7%	0%		3%	1.2%	1.9%	0%		1.8%	0%		0%	0%		0%	1.6%
Buses	0	0	0		0	0	0	0		0	1	2	0		3	0		0	0		0	3
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0.6%	0.4%	0%		0.4%	0%		0%	0%		0%	0.2%
Articulated Trucks	1	1	0		2	0	6	0		6	3	0	0		3	0		0	0		0	11
Articulated Trucks %	0.4%	0.2%	0%		0.3%	0%	1.7%	0%		1.2%	1.8%	0%	0%		0.4%	0%		0%	0%		0%	0.6%
Bicycles on Road	1	1	0		2	0	0	0		0	0	0	0		0	0		0	0		0	2
Bicycles on Road %	0.4%	0.2%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	0%		0%	0.1%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	0%		-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	1	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	100%		-	0%		**-**

Peak Hour: 12:45 PM - 01:45 PM **Weather: Broken Clouds (6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
SE	0	0
E	0	0
W	1	0

Spectrum

Turning Movement Count
Location Name: TOWNLINE RD & ELLIS RD/SIDEROAD 10N
Date: Sat, Nov 01, 2025 Deployment Lead: Constantinos Kotassidis

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Turning Movement Count (4 . TOWNLINE RD & ELLIS RD/SIDEROAD 10N)

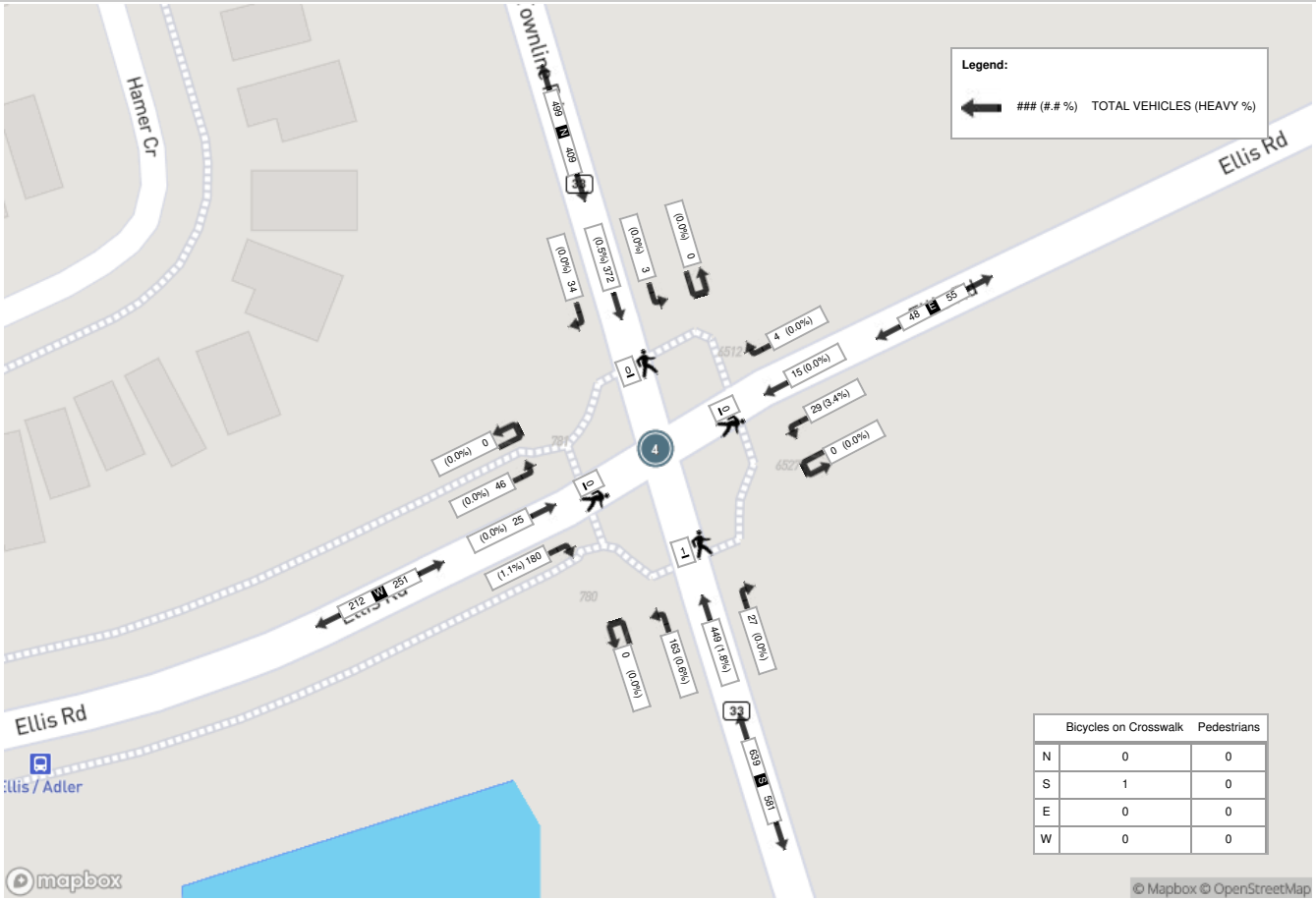
Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-01 11:00:00	7	90	2	0	0	99	0	3	4	0	0	7	5	90	37	0	0	132	43	1	13	0	0	57	295	
2025-11-01 11:15:00	15	103	0	0	0	118	1	1	4	0	0	6	11	85	26	0	0	122	35	2	11	0	0	48	294	
2025-11-01 11:30:00	13	89	2	0	0	104	0	5	3	0	0	8	13	89	35	0	0	137	38	3	15	0	0	56	305	
2025-11-01 11:45:00	8	93	1	0	0	102	0	5	5	0	0	10	12	92	31	0	0	135	34	4	9	0	0	47	294	1188
2025-11-01 12:00:00	20	96	1	0	0	117	1	2	2	0	0	5	12	96	25	0	0	133	74	1	11	0	0	86	341	1234
2025-11-01 12:15:00	11	81	1	0	0	93	1	1	6	0	0	8	8	102	42	0	1	152	49	2	7	0	0	58	311	1251
2025-11-01 12:30:00	13	95	2	0	0	110	1	3	3	0	0	7	5	90	25	0	0	120	30	7	4	0	0	41	278	1224
2025-11-01 12:45:00	5	95	0	0	0	100	1	5	6	0	0	12	8	112	29	0	0	149	41	3	13	0	0	57	318	1248
2025-11-01 13:00:00	4	103	1	0	0	108	2	4	10	0	0	16	8	122	40	0	1	170	35	9	10	0	0	54	348	1255
2025-11-01 13:15:00	9	90	1	0	0	100	0	3	6	0	0	9	2	91	52	0	0	145	55	11	10	0	0	76	330	1274
2025-11-01 13:30:00	16	84	1	0	0	101	1	3	7	0	0	11	9	124	42	0	0	175	49	2	13	0	0	64	351	1347
2025-11-01 13:45:00	5	89	0	0	0	94	1	5	2	0	0	8	5	130	33	0	0	168	26	7	13	0	0	46	316	1345
2025-11-01 14:00:00	9	87	0	0	0	96	0	1	10	0	0	11	8	117	28	0	1	153	21	3	9	0	0	33	293	1290
2025-11-01 14:15:00	11	89	1	0	0	101	1	3	7	0	0	11	5	139	36	0	0	180	29	1	12	0	0	42	334	1294
2025-11-01 14:30:00	9	86	2	0	0	97	0	1	5	0	0	6	6	123	39	0	0	168	36	3	21	0	0	60	331	1274
2025-11-01 14:45:00	7	88	3	0	0	98	0	5	17	0	0	22	9	128	46	0	0	183	28	5	7	0	0	40	343	1301
Grand Total	162	1458	18	0	0	1638	10	50	97	0	0	157	126	1730	566	0	3	2422	623	64	178	0	0	865	**5082**	-
Approach%	9.9%	89%	1.1%	0%		-	6.4%	31.8%	61.8%	0%		-	5.2%	71.4%	23.4%	0%		-	72%	7.4%	20.6%	0%		-	**-**	-
Totals %	3.2%	28.7%	0.4%	0%		32.2%	0.2%	1%	1.9%	0%		3.1%	2.5%	34%	11.1%	0%		47.7%	12.3%	1.3%	3.5%	0%		17%	**-**	-
Heavy	1	6	0	0		-	0	0	1	0		-	0	14	1	0		-	8	0	0	0		-	**-**	-
Heavy %	0.6%	0.4%	0%	0%		-	0%	0%	1%	0%		-	0%	0.8%	0.2%	0%		-	1.3%	0%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

GHD
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Peak Hour: 12:45 PM - 01:45 PM Weather: Broken Clouds (6 °C)

Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-11-01 12:45:00	5	95	0	0	0	100	1	5	6	0	0	12	8	112	29	0	0	149	41	3	13	0	0	57	318
2025-11-01 13:00:00	4	103	1	0	0	108	2	4	10	0	0	16	8	122	40	0	1	170	35	9	10	0	0	54	348
2025-11-01 13:15:00	9	90	1	0	0	100	0	3	6	0	0	9	2	91	52	0	0	145	55	11	10	0	0	76	330
2025-11-01 13:30:00	16	84	1	0	0	101	1	3	7	0	0	11	9	124	42	0	0	175	49	2	13	0	0	64	351
Grand Total	34	372	3	0	0	409	4	15	29	0	0	48	27	449	163	0	1	639	180	25	46	0	0	251	**1347**
Approach%	8.3%	91%	0.7%	0%		-	8.3%	31.3%	60.4%	0%		-	4.2%	70.3%	25.5%	0%		-	71.7%	10%	18.3%	0%		-	**-**
Totals %	2.5%	27.6%	0.2%	0%		30.4%	0.3%	1.1%	2.2%	0%		3.6%	2%	33.3%	12.1%	0%		47.4%	13.4%	1.9%	3.4%	0%		18.6%	**-**
PHF	0.53	0.9	0.75	0		0.95	0.5	0.75	0.73	0		0.75	0.75	0.91	0.78	0		0.91	0.82	0.57	0.88	0		0.83	0.96
Heavy	0	2	0	0		2	0	0	1	0		1	0	8	1	0		9	2	0	0	0		2	14
Heavy %	0%	0.5%	0%	0%		0.5%	0%	0%	3.4%	0%		2.1%	0%	1.8%	0.6%	0%		1.4%	1.1%	0%	0%	0%		0.8%	1%
Lights	34	370	3	0		407	4	14	28	0		46	27	441	162	0		630	177	23	46	0		246	1329
Lights %	100%	99.5%	100%	0%		99.5%	100%	93.3%	96.6%	0%		95.8%	100%	98.2%	99.4%	0%		98.6%	98.3%	92%	100%	0%		98%	98.7%
Single-Unit Trucks	0	1	0	0		1	0	0	1	0		1	0	7	0	0		7	0	0	0	0		0	9
Single-Unit Trucks %	0%	0.3%	0%	0%		0.2%	0%	0%	3.4%	0%		2.1%	0%	1.6%	0%	0%		1.1%	0%	0%	0%	0%		0%	0.7%
Buses	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	2	0	0	0		2	3
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	1.1%	0%	0%	0%		0.8%	0.2%
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	2
Articulated Trucks %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0.6%	0%		0.2%	0%	0%	0%	0%		0%	0.1%
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1	2	0	0		3	4
Bicycles on Road %	0%	0%	0%	0%		0%	0%	6.7%	0%	0%		2.1%	0%	0%	0%	0%		0%	0.6%	8%	0%	0%		1.2%	0.3%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		**-**

Peak Hour: 12:45 PM - 01:45 PM **Weather: Broken Clouds (6 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	1	0
E	0	0
W	0	0

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Turning Movement Count (3 . TOWNLINE RD & JAMIESON PKWY)

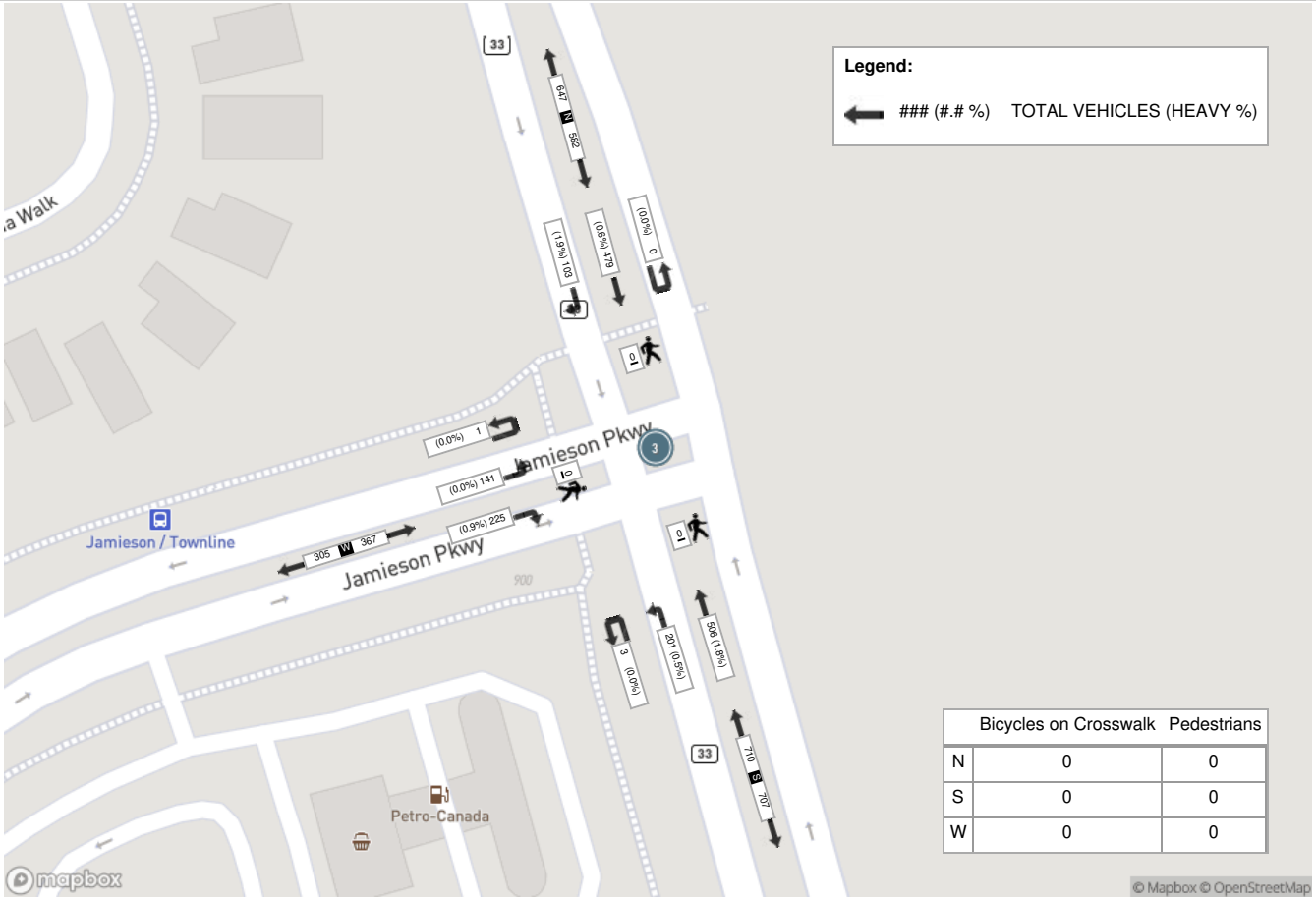
Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-01 11:00:00	27	105	0	0	132	92	47	1	0	140	60	33	0	0	93	365	
2025-11-01 11:15:00	23	119	0	0	142	96	63	1	0	160	60	39	0	0	99	401	
2025-11-01 11:30:00	27	103	0	0	130	98	42	1	0	141	74	36	1	0	111	382	
2025-11-01 11:45:00	21	107	0	0	128	88	47	2	0	137	38	42	0	0	80	345	1493
2025-11-01 12:00:00	25	143	0	0	168	80	54	0	0	134	52	49	0	1	101	403	1531
2025-11-01 12:15:00	23	109	0	0	132	112	48	0	0	160	54	43	0	0	97	389	1519
2025-11-01 12:30:00	27	102	0	0	129	95	51	1	0	147	51	33	0	0	84	360	1497
2025-11-01 12:45:00	19	128	0	0	147	119	53	1	0	173	50	33	0	0	83	403	1555
2025-11-01 13:00:00	29	116	0	0	145	136	60	0	0	196	61	45	0	0	106	447	1599
2025-11-01 13:15:00	34	117	0	0	151	109	50	0	0	159	59	30	0	0	89	399	1609
2025-11-01 13:30:00	21	118	0	0	139	142	38	2	0	182	55	33	1	0	89	410	1659
2025-11-01 13:45:00	30	85	0	0	115	132	56	1	0	189	51	46	0	0	97	401	1657
2025-11-01 14:00:00	20	100	0	0	120	111	51	1	0	163	49	42	0	0	91	374	1584
2025-11-01 14:15:00	25	97	0	0	122	142	58	1	0	201	48	38	0	0	86	409	1594
2025-11-01 14:30:00	20	106	1	0	127	132	44	0	0	176	49	37	0	1	86	389	1573
2025-11-01 14:45:00	28	106	0	0	134	139	59	2	0	200	54	45	0	0	99	433	1605
Grand Total	399	1761	1	0	2161	1823	821	14	0	2658	865	624	2	2	1491	**6310**	-
Approach%	18.5%	81.5%	0%		-	68.6%	30.9%	0.5%		-	58%	41.9%	0.1%		-	**-**	-
Totals %	6.3%	27.9%	0%		34.2%	28.9%	13%	0.2%		42.1%	13.7%	9.9%	0%		23.6%	**-**	-
Heavy	9	6	0		-	15	5	0		-	9	1	0		-	**-**	-
Heavy %	2.3%	0.3%	0%		-	0.8%	0.6%	0%		-	1%	0.2%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
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CANADA

Peak Hour: 12:45 PM - 01:45 PM Weather: Broken Clouds (6 °C)

Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2025-11-01 12:45:00	19	128	0	0	147	119	53	1	0	173	50	33	0	0	83	403
2025-11-01 13:00:00	29	116	0	0	145	136	60	0	0	196	61	45	0	0	106	447
2025-11-01 13:15:00	34	117	0	0	151	109	50	0	0	159	59	30	0	0	89	399
2025-11-01 13:30:00	21	118	0	0	139	142	38	2	0	182	55	33	1	0	89	410
Grand Total	103	479	0	0	582	506	201	3	0	710	225	141	1	0	367	**1659**
Approach%	17.7%	82.3%	0%		-	71.3%	28.3%	0.4%		-	61.3%	38.4%	0.3%		-	**-**
Totals %	6.2%	28.9%	0%		35.1%	30.5%	12.1%	0.2%		42.8%	13.6%	8.5%	0.1%		22.1%	**-**
PHF	0.76	0.94	0		0.96	0.89	0.84	0.38		0.91	0.92	0.78	0.25		0.87	0.93
Heavy	2	3	0		5	9	1	0		10	2	0	0		2	17
Heavy %	1.9%	0.6%	0%		0.9%	1.8%	0.5%	0%		1.4%	0.9%	0%	0%		0.5%	1%
Lights	101	476	0		577	497	200	3		700	223	141	1		365	1642
Lights %	98.1%	99.4%	0%		99.1%	98.2%	99.5%	100%		98.6%	99.1%	100%	100%		99.5%	99%
Single-Unit Trucks	0	2	0		2	7	0	0		7	1	0	0		1	10
Single-Unit Trucks %	0%	0.4%	0%		0.3%	1.4%	0%	0%		1%	0.4%	0%	0%		0.3%	0.6%
Buses	2	0	0		2	1	1	0		2	0	0	0		0	4
Buses %	1.9%	0%	0%		0.3%	0.2%	0.5%	0%		0.3%	0%	0%	0%		0%	0.2%
Articulated Trucks	0	1	0		1	1	0	0		1	1	0	0		1	3
Articulated Trucks %	0%	0.2%	0%		0.2%	0.2%	0%	0%		0.1%	0.4%	0%	0%		0.3%	0.2%
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 12:45 PM - 01:45 PM Weather: Broken Clouds (6 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	0	0

Appendix D

Background Development Excerpts

TABLE 4.1: ESTIMATED TRIP GENERATION (ALL VEHICLES)

LUC	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
Building A Phase 1 LUC 140 – (29,725 sq. ft.)	Eqn.[1]	21	7	28	Eqn.[2]	2	6	8
Building A Phase 1 LUC 150 – (118,897 sq. ft.)	Eqn.[3]	29	9	38	Eqn.[4]	11	30	41
Total Building A (148,622 sq. ft.)		**50**	**16**	**66**		**13**	**36**	**49**
Building B Phase 2 LUC 140 – (31,981 sq. ft.)	Eqn.[1]	22	7	29	Eqn.[2]	3	7	10
Building B Phase 2 LUC 150 – (127,924 sq. ft.)	Eqn.[3]	30	9	39	Eqn.[4]	12	30	42
Total Building B (159,905 sq. ft.)		**52**	**16**	**68**		**15**	**37**	**52**
Total Trip Generation		**102**	**32**	**134**		**28**	**73**	**101**

Source: Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).

Notes:

1. LUC 140, T = 0.61(X) + 9.54, (76% entering, 24% exiting)
2. LUC 140, T = 0.87(X) – 17.5, (31% entering, 69% exiting)
3. LUC 150, T = 0.12(X) + 23.62, (77% entering, 23% exiting)
4. LUC 150, T = 0.12(X) + 26.48, (76% entering, 24% exiting)

TABLE 4.2: ESTIMATED TRIP GENERATION (TRUCKS)

LUC	AM Peak Hour				PM Peak Hour			
	Rate	In	Out	Total	Rate	In	Out	Total
Building A Phase 1 LUC 140 – (29,725 sq. ft.)	0.03[1]	1	0	1	0.03[2]	0	1	1
Building A Phase 1 LUC 150 – (118,897 sq. ft.)	0.02[3]	1	1	2	0.03[4]	2	2	4
Total Building A (148,622 sq. ft.)		**2**	**1**	**3**		**2**	**3**	**5**
Building B Phase 2 LUC 140 – (31,981 sq. ft.)	0.03[1]	1	0	1	0.03[2]	0	1	1
Building B Phase 2 LUC 150 – (127,924 sq. ft.)	0.02[3]	2	1	3	0.03[4]	2	2	4
Total Building B (159,905 sq. ft.)		**3**	**1**	**4**		**2**	**3**	**5**
Trucks		**5**	**2**	**7**		**4**	**6**	**10**

Source: Institute of Transportation Engineers, Trip Generation Manual, 11th ed., (Washington, DC: ITE, 2021).

Notes:

1. LUC 140, 0.03 trips per 1,000 sq. ft. GFA, (56% entering, 24% exiting)
2. LUC 140, 0.03 trips per 1,000 sq. ft. GFA, (41% entering, 69% exiting)
3. LUC 150, 0.02 trips per 1,000 sq. ft. GFA, (52% entering, 48% exiting)
4. LUC 150, 0.03 trips per 1,000 sq. ft. GFA, (52% entering, 48% exiting)

4.4.2 Trip Distribution

For the purposes of this TIS update, Paradigm has developed separate trip distributions for truck and non-truck traffic to and from the site. The trip distribution for non-truck traffic is based on the existing travel patterns documented in the turning movement count data in combination with trip information extracted from the 2016 Transportation Tomorrow Survey (TTS).

Trip origin and destination information were extracted from the TTS database for all trips into and out of traffic analysis zone (TAZ) 7453, separated as trips internal to Cambridge, and those to and from surrounding communities (such as Guelph, Hamilton, and Toronto). The TTS data was then cross-referenced with the general travel patterns documented in the turning movement counts.

Table 4.3 summarizes the estimated trip distribution which reflects both macro travel direction (derived form the TTS) and micro route choice in the study area (derived from the existing travel patterns). **Appendix D** contains the TTS data and development of the trip distribution model for non-truck traffic.

TABLE 4.3: ESTIMATED TRIP DISTRIBUTION (CARS)

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Townline Road	14%	38%	4%	11%
East via Lake Road	9%	3%	4%	12%
East via Highway 401	12%	5%	6%	11%
South via Townline Road	26%	45%	5%	35%
West via Pinebush Road	13%	6%	40%	17%
West via Highway 401	26%	3%	41%	14%
Total	**100%**	**100%**	**100%**	**100%**

The trip distribution for truck traffic reflects existing travel patterns documented in the turning movement counts for heavy vehicle traffic only. **Table 4.4** summarizes the estimated trip distribution for truck traffic. **Figure 4.4** illustrates the site generated traffic estimates for the weekday AM peak hour and weekday PM peak hour.

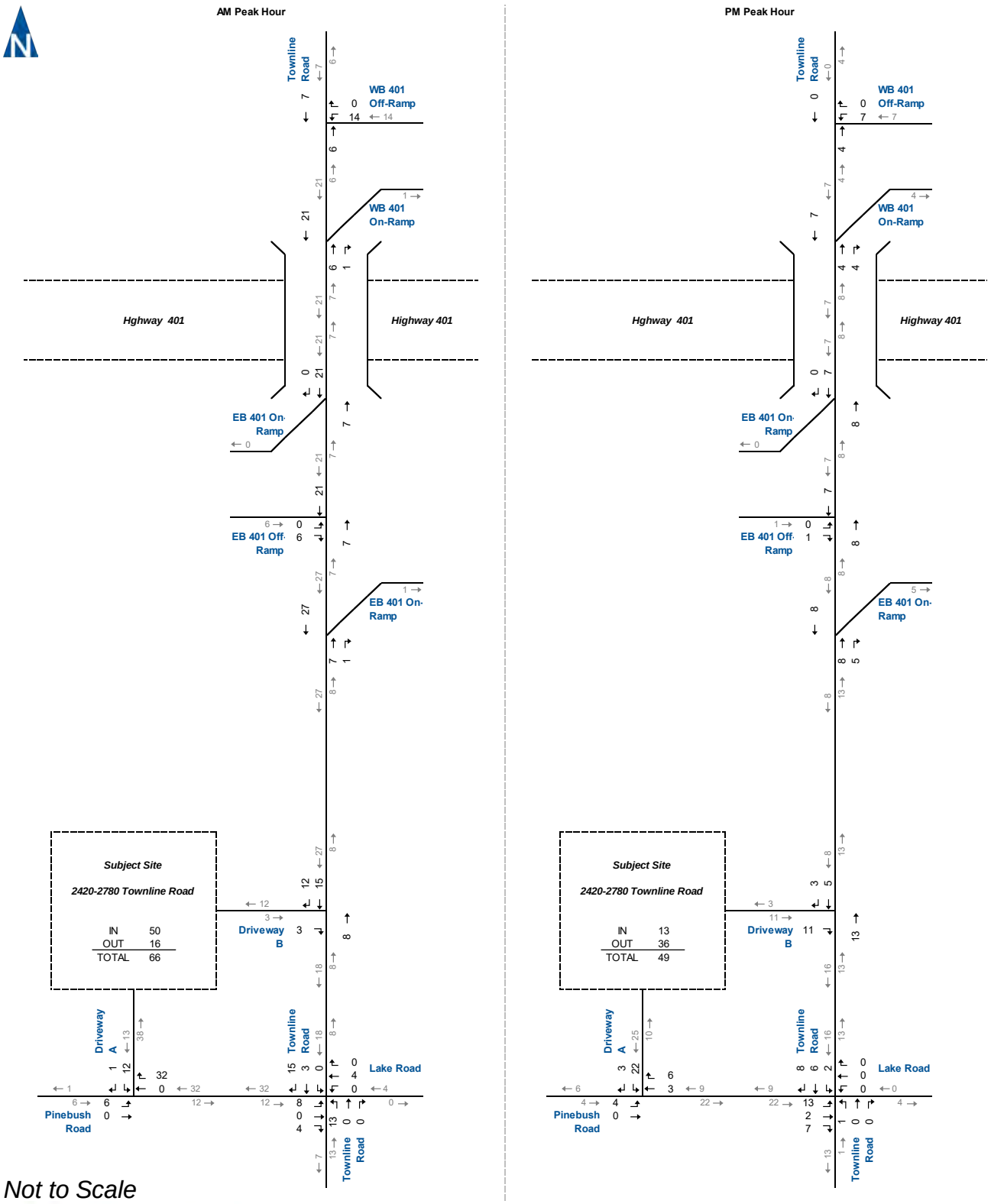


TABLE 4.4: ESTIMATED TRIP DISTRIBUTION (TRUCKS)

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Townline Road	5%	10%	10%	10%
East via Lake Road	0%	5%	5%	5%
East via Highway 401	10%	25%	10%	35%
South via Townline Road	30%	30%	35%	35%
West via Pinebush Road	15%	20%	15%	15%
West via Highway 401	40%	10%	25%	0%
Total	**100%**	**100%**	**100%**	**100%**

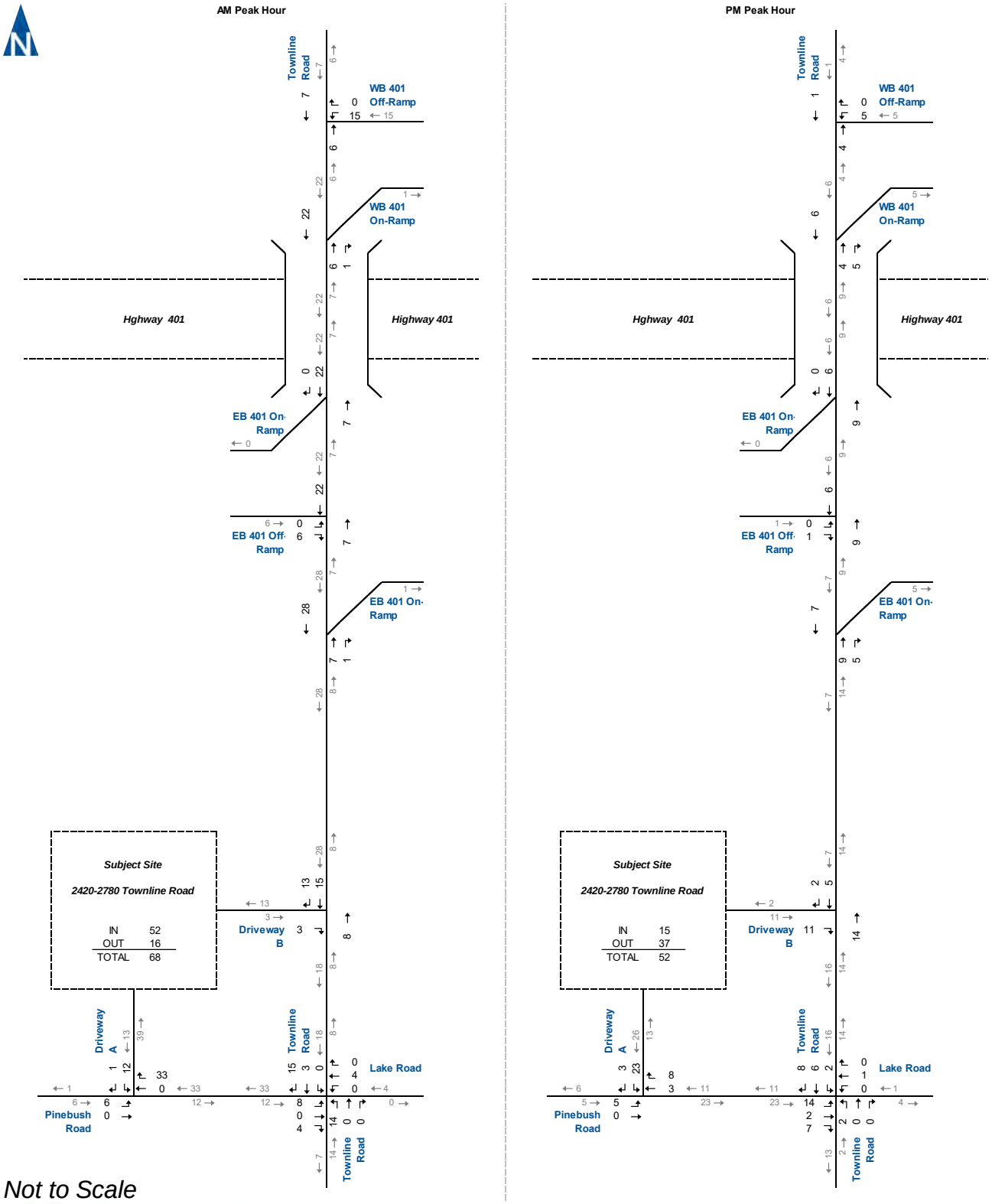
4.5 Future Total Traffic

Figure 4.7, Figure 4.8 and **Figure 4.9** illustrate the estimated total traffic volumes at the 2026, 2031, and 2036 horizons, respectively. These represent the summation of the site-generated traffic volumes (see **Figure 4.4**) with the respective background traffic volumes at each horizon year.



Not to Scale

Site Generated Traffic Volumes Phase 1

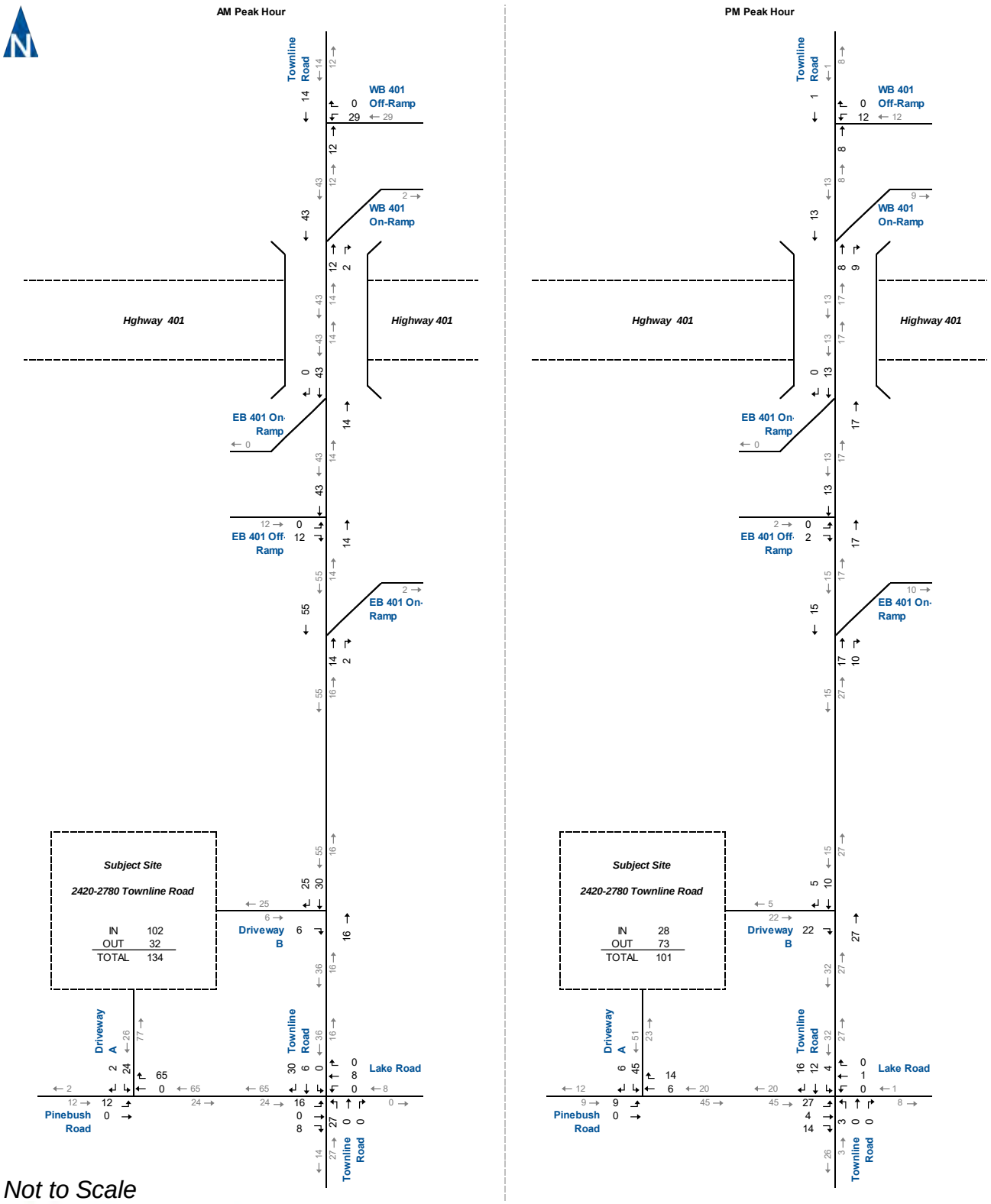


Not to Scale

Site Generated Traffic Volumes Phase 2

2420-2780 Townline Road TIS
240656

Figure 4.5

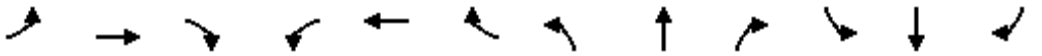


Not to Scale

Site Generated Traffic Volumes Phases 1 & 2

Appendix E

Synchro Outputs

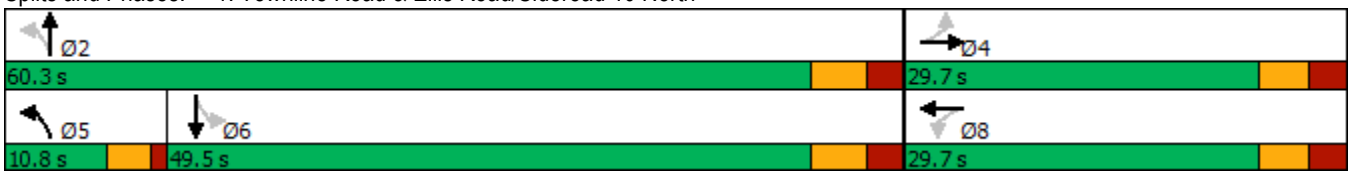


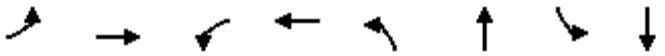
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	28	205	14	10	4	101	504	41	4	567	27
Future Volume (vph)	80	28	205	14	10	4	101	504	41	4	567	27
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.957			0.989			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1392	0	1668	1562	0	1603	1551	0	1334	1575	0
Flt Permitted	0.748			0.388			0.321			0.461		
Satd. Flow (perm)	1300	1392	0	681	1562	0	542	1551	0	647	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		205			4			8			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			555.2			162.4	
Travel Time (s)		9.9			10.4			33.3			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	80	28	205	14	10	4	101	504	41	4	567	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	233	0	14	14	0	101	545	0	4	594	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	10.3	10.3		10.3	10.3		56.4	54.1		45.7	45.7	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.70		0.60	0.60	
v/c Ratio	0.46	0.64		0.15	0.07		0.21	0.50		0.01	0.63	
Control Delay	38.9	15.4		32.4	24.6		4.6	7.6		9.0	15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.9	15.4		32.4	24.6		4.6	7.6		9.0	15.8	
LOS	D	B		C	C		A	A		A	B	
Approach Delay		21.4			28.5			7.2			15.8	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

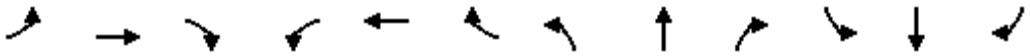
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	80	233	14	14	101	545	4	594
v/c Ratio	0.46	0.64	0.15	0.07	0.21	0.50	0.01	0.63
Control Delay	38.9	15.4	32.4	24.6	4.6	7.6	9.0	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	15.4	32.4	24.6	4.6	7.6	9.0	15.8
Queue Length 50th (m)	10.9	3.6	1.8	1.3	3.2	28.5	0.2	54.2
Queue Length 95th (m)	23.1	22.8	6.9	6.0	9.3	63.7	1.7	107.2
Internal Link Dist (m)		113.8		120.0		531.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	402	572	210	485	492	1095	385	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.41	0.07	0.03	0.21	0.50	0.01	0.63

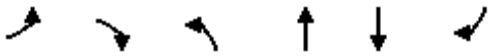
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	28	205	14	10	4	101	504	41	4	567	27
Future Volume (vph)	80	28	205	14	10	4	101	504	41	4	567	27
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1392		1668	1562		1603	1550		1334	1575	
Flt Permitted	0.75	1.00		0.39	1.00		0.32	1.00		0.46	1.00	
Satd. Flow (perm)	1301	1392		682	1562		542	1550		647	1575	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	28	205	14	10	4	101	504	41	4	567	27
RTOR Reduction (vph)	0	178	0	0	3	0	0	2	0	0	2	0
Lane Group Flow (vph)	80	55	0	14	11	0	101	543	0	4	592	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.3	10.3		10.3	10.3		55.0	55.0		45.7	45.7	
Effective Green, g (s)	10.3	10.3		10.3	10.3		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.71	0.71		0.59	0.59	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	184		90	207		456	1098		381	927	
v/s Ratio Prot		0.04			0.01		0.02	c0.35			c0.38	
v/s Ratio Perm	c0.06			0.02			0.14			0.01		
v/c Ratio	0.47	0.30		0.16	0.05		0.22	0.49		0.01	0.64	
Uniform Delay, d1	31.1	30.4		29.8	29.4		4.9	5.1		6.6	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.9		0.8	0.1		0.2	1.6		0.1	3.4	
Delay (s)	33.1	31.3		30.6	29.5		5.1	6.7		6.6	13.9	
Level of Service	C	C		C	C		A	A		A	B	
Approach Delay (s)		31.8			30.0			6.4			13.8	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	129	276	277	514	651	148
Future Volume (vph)	129	276	277	514	651	148
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0	0.0	115.0			0.0
Storage Lanes	0	1	2			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850			0.972	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1635	1347	3203	3302	3165	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1635	1347	3201	3302	3165	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		276			31	
Link Speed (k/h)	50			60	60	
Link Distance (m)	114.3			312.4	555.2	
Travel Time (s)	8.2			18.7	33.3	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	1%	1%	2%	3%
Adj. Flow (vph)	129	276	277	514	651	148
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	276	277	514	799	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.21	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4				
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	5.0	5.0	
Minimum Split (s)	31.0	31.0	11.0	41.0	41.0	
Total Split (s)	31.0	31.0	26.0	67.0	41.0	
Total Split (%)	31.6%	31.6%	26.5%	68.4%	41.8%	
Maximum Green (s)	25.0	25.0	20.0	61.0	35.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	Max	Max	Max	
Walk Time (s)	7.0	7.0		14.0	14.0	
Flash Dont Walk (s)	18.0	18.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	12.1	12.1	20.0	61.1	35.1	
Actuated g/C Ratio	0.14	0.14	0.23	0.72	0.41	
v/c Ratio	0.56	0.65	0.37	0.22	0.61	
Control Delay	43.5	12.0	29.6	4.6	21.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	43.5	12.0	29.6	4.6	21.7	
LOS	D	B	C	A	C	
Approach Delay	22.0			13.4	21.7	
Approach LOS	C			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98			
Actuated Cycle Length: 85.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

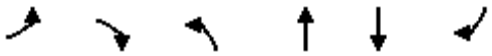
Splits and Phases: 3: Townline Road & Jamieson Parkway





Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	129	276	277	514	799
v/c Ratio	0.56	0.65	0.37	0.22	0.61
Control Delay	43.5	12.0	29.6	4.6	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	12.0	29.6	4.6	21.7
Queue Length 50th (m)	19.8	0.0	19.4	12.1	49.8
Queue Length 95th (m)	36.3	20.9	32.2	21.7	75.0
Internal Link Dist (m)	90.3			288.4	531.2
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	480	590	753	2368	1320
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.47	0.37	0.22	0.61

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	129	276	277	514	651	148
Future Volume (vph)	129	276	277	514	651	148
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1635	1347	3203	3302	3166	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1635	1347	3203	3302	3166	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	129	276	277	514	651	148
RTOR Reduction (vph)	0	237	0	0	18	0
Lane Group Flow (vph)	129	39	277	514	781	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	2%	3%	1%	1%	2%	3%
Turn Type	Perm	Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	12.1	12.1	20.0	61.1	35.1	
Effective Green, g (s)	12.1	12.1	20.0	61.1	35.1	
Actuated g/C Ratio	0.14	0.14	0.23	0.72	0.41	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	232	191	751	2367	1304	
v/s Ratio Prot			c0.09	0.16	c0.25	
v/s Ratio Perm	c0.08	0.03				
v/c Ratio	0.56	0.21	0.37	0.22	0.60	
Uniform Delay, d1	34.0	32.3	27.3	4.0	19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	0.5	1.4	0.2	2.0	
Delay (s)	36.9	32.8	28.7	4.2	21.6	
Level of Service	D	C	C	A	C	
Approach Delay (s)	34.1			12.8	21.6	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

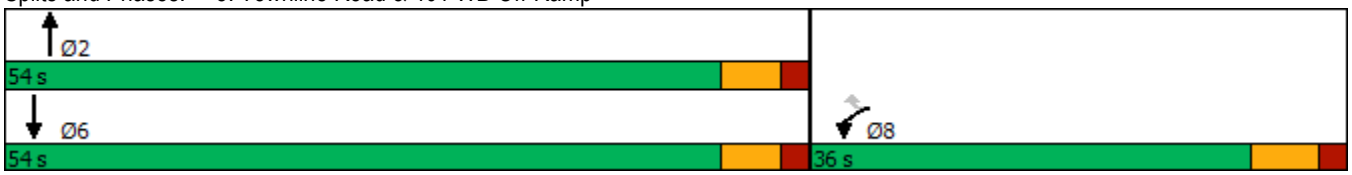


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	457	118	691	0	0	624
Future Volume (vph)	457	118	691	0	0	624
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		118				
Link Speed (k/h)	50		60			60
Link Distance (m)	430.9		432.2			312.4
Travel Time (s)	31.0		25.9			18.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	457	118	691	0	0	624
Shared Lane Traffic (%)						
Lane Group Flow (vph)	457	118	691	0	0	624
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	17.6	17.6	48.1			48.1
Actuated g/C Ratio	0.22	0.22	0.61			0.61
v/c Ratio	0.71	0.29	0.32			0.29
Control Delay	34.3	7.0	8.3			8.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.3	7.0	8.3			8.1
LOS	C	A	A			A
Approach Delay	28.7		8.3			8.1
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	457	118	691	624
v/c Ratio	0.71	0.29	0.32	0.29
Control Delay	34.3	7.0	8.3	8.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.3	7.0	8.3	8.1
Queue Length 50th (m)	32.2	0.0	22.9	20.1
Queue Length 95th (m)	46.7	11.5	39.8	35.5
Internal Link Dist (m)	406.9		408.2	288.4
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1081	592	2151	2151
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	0.42	0.20	0.32	0.29

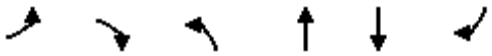
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	457	118	691	0	0	624
Future Volume (vph)	457	118	691	0	0	624
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	457	118	691	0	0	624
RTOR Reduction (vph)	0	91	0	0	0	0
Lane Group Flow (vph)	457	27	691	0	0	624
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	17.6	17.6	48.1			48.1
Effective Green, g (s)	17.6	17.6	48.1			48.1
Actuated g/C Ratio	0.23	0.23	0.62			0.62
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	644	309	2152			2152
v/s Ratio Prot	c0.16		c0.20			0.18
v/s Ratio Perm		0.02				
v/c Ratio	0.71	0.09	0.32			0.29
Uniform Delay, d1	27.9	23.9	7.2			7.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.6	0.1	0.4			0.3
Delay (s)	31.5	24.1	7.6			7.4
Level of Service	C	C	A			A
Approach Delay (s)	30.0		7.6			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

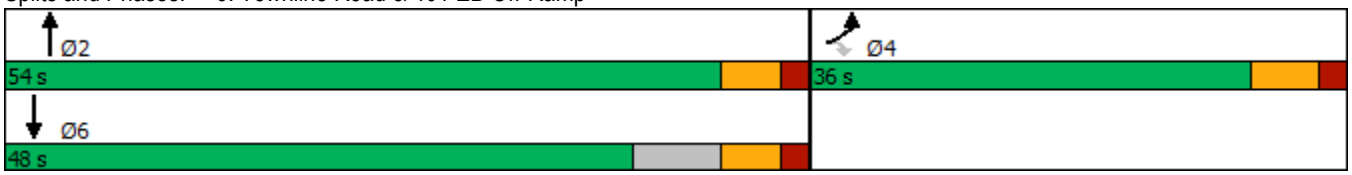


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	335	425	0	746	945	0
Future Volume (vph)	335	425	0	746	945	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		104				
Link Speed (k/h)	50			60	60	
Link Distance (m)	431.4			97.7	432.2	
Travel Time (s)	31.1			5.9	25.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	335	425	0	746	945	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	335	425	0	746	945	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	42.0	
Total Split (s)	36.0	36.0		54.0	48.0	
Total Split (%)	40.0%	40.0%		60.0%	53.3%	
Maximum Green (s)	29.5	29.5		48.0	42.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	10.0	
Flash Dont Walk (s)	19.5	19.5		6.0	19.5	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.5	24.5		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.57	0.57	
v/c Ratio	0.73	0.89		0.38	0.50	
Control Delay	37.1	43.1		11.8	13.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	37.1	43.1		11.8	13.2	
LOS	D	D		B	B	
Approach Delay	40.4			11.8	13.2	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 85.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

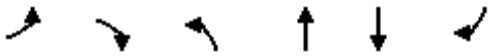




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	335	425	746	945
v/c Ratio	0.73	0.89	0.38	0.50
Control Delay	37.1	43.1	11.8	13.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.1	43.1	11.8	13.2
Queue Length 50th (m)	48.7	51.0	36.7	50.8
Queue Length 95th (m)	77.2	#99.1	50.8	69.1
Internal Link Dist (m)	407.4		73.7	408.2
Turn Bay Length (m)		87.0		
Base Capacity (vph)	557	559	1940	1886
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	0.60	0.76	0.38	0.50

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	335	425	0	746	945	0
Future Volume (vph)	335	425	0	746	945	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	335	425	0	746	945	0
RTOR Reduction (vph)	0	74	0	0	0	0
Lane Group Flow (vph)	335	351	0	746	945	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.5	24.5		48.2	48.2	
Effective Green, g (s)	24.5	24.5		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.57	0.57	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	460	406		1942	1887	
v/s Ratio Prot	0.21			0.22	c0.28	
v/s Ratio Perm		c0.25				
v/c Ratio	0.73	0.86		0.38	0.50	
Uniform Delay, d1	27.4	28.8		10.3	11.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.7	17.1		0.6	1.0	
Delay (s)	33.0	45.9		10.8	12.2	
Level of Service	C	D		B	B	
Approach Delay (s)	40.2			10.8	12.2	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

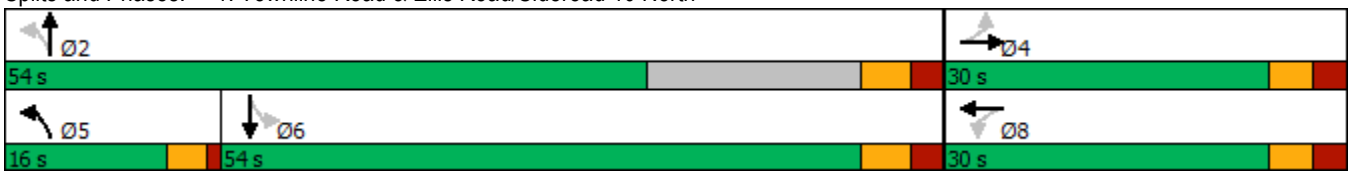
c Critical Lane Group

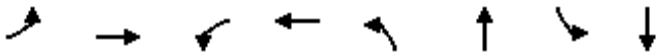
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	20	130	65	37	9	318	803	33	8	459	56
Future Volume (vph)	38	20	130	65	37	9	318	803	33	8	459	56
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.870			0.971			0.994			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1584	0	1668	1606	0	1668	1547	0
Flt Permitted	0.727			0.609			0.353			0.351		
Satd. Flow (perm)	1276	1395	0	1048	1584	0	620	1606	0	616	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		130			9			4			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			555.2			162.4	
Travel Time (s)		9.9			10.4			33.3			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	38	20	130	65	37	9	318	803	33	8	459	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	150	0	65	46	0	318	836	0	8	515	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	54.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	54.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	47.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	10.9	10.9		10.9	10.9		65.5	63.2		47.8	47.8	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.76	0.73		0.55	0.55	
v/c Ratio	0.24	0.52		0.49	0.22		0.52	0.71		0.02	0.60	
Control Delay	37.6	15.8		48.3	31.1		6.8	11.4		10.5	17.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.6	15.8		48.3	31.1		6.8	11.4		10.5	17.1	
LOS	D	B		D	C		A	B		B	B	
Approach Delay		20.2			41.2			10.1			17.0	
Approach LOS		C			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 86.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 92.8%		ICU Level of Service F	
Analysis Period (min) 15			

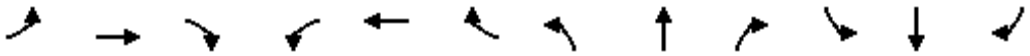
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	150	65	46	318	836	8	515
v/c Ratio	0.24	0.52	0.49	0.22	0.52	0.71	0.02	0.60
Control Delay	37.6	15.8	48.3	31.1	6.8	11.4	10.5	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.6	15.8	48.3	31.1	6.8	11.4	10.5	17.1
Queue Length 50th (m)	5.8	3.0	10.2	5.6	12.0	61.2	0.6	52.4
Queue Length 95th (m)	14.7	19.2	22.5	14.9	25.8	129.8	2.8	94.5
Internal Link Dist (m)		113.8		120.0		531.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	354	482	291	447	615	1186	340	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.31	0.22	0.10	0.52	0.70	0.02	0.60

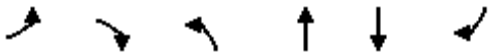
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	20	130	65	37	9	318	803	33	8	459	56
Future Volume (vph)	38	20	130	65	37	9	318	803	33	8	459	56
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1395		1635	1584		1668	1607		1668	1547	
Flt Permitted	0.73	1.00		0.61	1.00		0.35	1.00		0.35	1.00	
Satd. Flow (perm)	1276	1395		1048	1584		620	1607		617	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	38	20	130	65	37	9	318	803	33	8	459	56
RTOR Reduction (vph)	0	114	0	0	8	0	0	1	0	0	4	0
Lane Group Flow (vph)	38	36	0	65	38	0	318	835	0	8	511	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.9	10.9		10.9	10.9		63.2	63.2		47.8	47.8	
Effective Green, g (s)	10.9	10.9		10.9	10.9		63.2	63.2		47.8	47.8	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	160	175		132	199		591	1175		341	855	
v/s Ratio Prot		0.03			0.02		0.07	c0.52			0.33	
v/s Ratio Perm	0.03			c0.06			0.32			0.01		
v/c Ratio	0.24	0.21		0.49	0.19		0.54	0.71		0.02	0.60	
Uniform Delay, d1	34.0	33.9		35.2	33.8		5.5	6.5		8.7	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		2.9	0.5		0.9	3.7		0.1	3.1	
Delay (s)	34.8	34.5		38.0	34.3		6.4	10.1		8.9	16.0	
Level of Service	C	C		D	C		A	B		A	B	
Approach Delay (s)		34.5			36.5			9.1			15.9	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	16.3
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

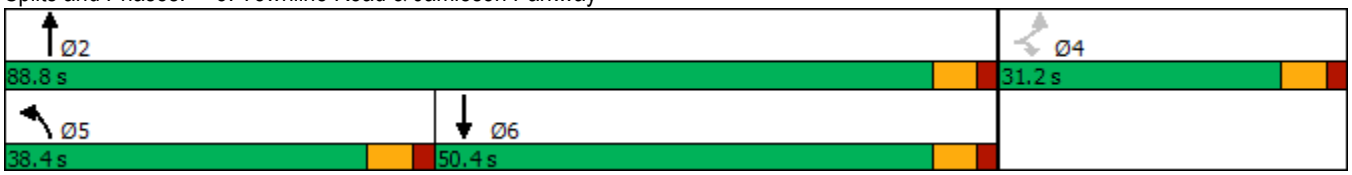


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	209	353	400	915	508	139
Future Volume (vph)	209	353	400	915	508	139
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0	0.0	115.0			0.0
Storage Lanes	0	1	2			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	0.95
Frt		0.850			0.968	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1668	1387	3203	3302	3117	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1668	1387	3203	3302	3117	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		353			33	
Link Speed (k/h)	50			60	60	
Link Distance (m)	114.3			312.4	555.2	
Travel Time (s)	8.2			18.7	33.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	1%	1%	4%	2%
Adj. Flow (vph)	209	353	400	915	508	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	353	400	915	647	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.21	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	Prot	NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases			5	2	6	
Permitted Phases	4	4				
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	5.0	5.0	
Minimum Split (s)	31.0	31.0	11.0	50.4	50.4	
Total Split (s)	31.2	31.2	38.4	88.8	50.4	
Total Split (%)	26.0%	26.0%	32.0%	74.0%	42.0%	
Maximum Green (s)	25.2	25.2	32.4	82.8	44.4	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	Max	Max	
Walk Time (s)	7.0	7.0		23.4	23.4	
Flash Dont Walk (s)	18.0	18.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	19.0	19.0	19.5	82.9	57.4	
Actuated g/C Ratio	0.17	0.17	0.17	0.73	0.50	
v/c Ratio	0.75	0.67	0.73	0.38	0.41	
Control Delay	62.4	11.2	53.1	6.8	19.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.4	11.2	53.1	6.8	19.1	
LOS	E	B	D	A	B	
Approach Delay	30.3			20.9	19.1	
Approach LOS	C			C	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			

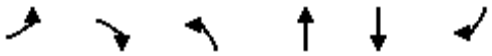
Splits and Phases: 3: Townline Road & Jamieson Parkway





Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	209	353	400	915	647
v/c Ratio	0.75	0.67	0.73	0.38	0.41
Control Delay	62.4	11.2	53.1	6.8	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	11.2	53.1	6.8	19.1
Queue Length 50th (m)	44.8	0.0	44.1	35.7	43.5
Queue Length 95th (m)	70.0	26.5	60.0	54.9	70.1
Internal Link Dist (m)	90.3			288.4	531.2
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	369	582	912	2403	1587
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	0.61	0.44	0.38	0.41

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	209	353	400	915	508	139
Future Volume (vph)	209	353	400	915	508	139
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1668	1387	3203	3302	3116	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1668	1387	3203	3302	3116	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	209	353	400	915	508	139
RTOR Reduction (vph)	0	294	0	0	16	0
Lane Group Flow (vph)	209	59	400	915	631	0
Heavy Vehicles (%)	0%	0%	1%	1%	4%	2%
Turn Type	Perm	Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	19.0	19.0	19.5	82.9	57.4	
Effective Green, g (s)	19.0	19.0	19.5	82.9	57.4	
Actuated g/C Ratio	0.17	0.17	0.17	0.73	0.50	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	278	231	548	2403	1570	
v/s Ratio Prot			c0.12	0.28	c0.20	
v/s Ratio Perm	c0.13	0.04				
v/c Ratio	0.75	0.25	0.73	0.38	0.40	
Uniform Delay, d1	45.2	41.3	44.7	5.8	17.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.9	0.6	4.8	0.5	0.8	
Delay (s)	56.1	41.9	49.6	6.3	18.3	
Level of Service	E	D	D	A	B	
Approach Delay (s)	47.2			19.5	18.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	113.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

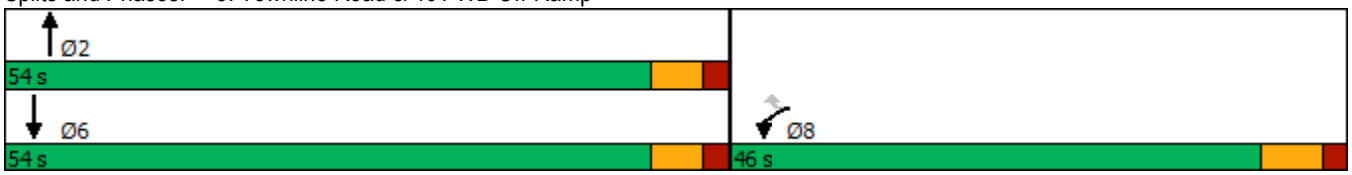


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	472	307	1109	0	0	608
Future Volume (vph)	472	307	1109	0	0	608
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		49				
Link Speed (k/h)	50		60			60
Link Distance (m)	430.9		432.2			312.4
Travel Time (s)	31.0		25.9			18.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	472	307	1109	0	0	608
Shared Lane Traffic (%)						
Lane Group Flow (vph)	472	307	1109	0	0	608
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	20.8	20.8	48.3			48.3
Actuated g/C Ratio	0.25	0.25	0.59			0.59
v/c Ratio	0.63	0.76	0.54			0.29
Control Delay	30.6	35.5	12.3			9.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	30.6	35.5	12.3			9.7
LOS	C	D	B			A
Approach Delay	32.5		12.3			9.7
Approach LOS	C		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 81.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	472	307	1109	608
v/c Ratio	0.63	0.76	0.54	0.29
Control Delay	30.6	35.5	12.3	9.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	30.6	35.5	12.3	9.7
Queue Length 50th (m)	33.3	36.8	49.0	22.2
Queue Length 95th (m)	47.1	63.2	89.0	42.5
Internal Link Dist (m)	406.9		408.2	288.4
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1432	734	2071	2071
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	0.33	0.42	0.54	0.29

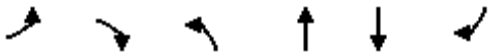
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	472	307	1109	0	0	608
Future Volume (vph)	472	307	1109	0	0	608
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	472	307	1109	0	0	608
RTOR Reduction (vph)	0	37	0	0	0	0
Lane Group Flow (vph)	472	270	1109	0	0	608
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	20.8	20.8	48.3			48.3
Effective Green, g (s)	20.8	20.8	48.3			48.3
Actuated g/C Ratio	0.25	0.25	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	749	371	2071			2071
v/s Ratio Prot	0.16		c0.32			0.17
v/s Ratio Perm		c0.19				
v/c Ratio	0.63	0.73	0.54			0.29
Uniform Delay, d1	27.0	27.8	9.9			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	7.0	1.0			0.4
Delay (s)	28.7	34.8	10.9			8.6
Level of Service	C	C	B			A
Approach Delay (s)	31.1		10.9			8.6
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

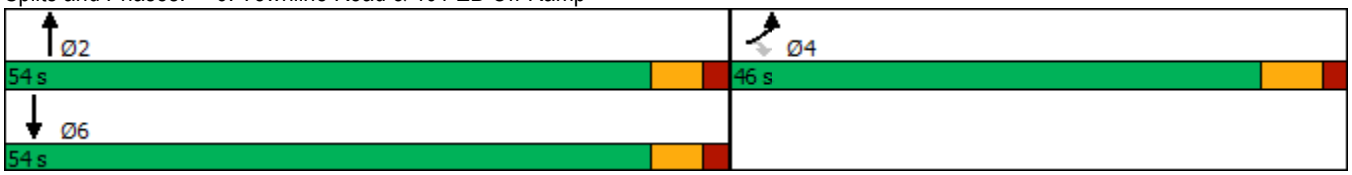


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	358	433	0	978	1014	0
Future Volume (vph)	358	433	0	978	1014	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		65				
Link Speed (k/h)	50			60	60	
Link Distance (m)	431.4			97.7	432.2	
Travel Time (s)	31.1			5.9	25.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	358	433	0	978	1014	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	358	433	0	978	1014	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	28.3	28.3		48.4	48.4	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.70	0.86		0.51	0.55	
Control Delay	34.0	41.8		15.5	16.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	34.0	41.8		15.5	16.2	
LOS	C	D		B	B	
Approach Delay	38.3			15.5	16.2	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

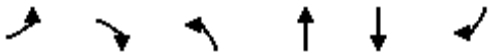
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	358	433	978	1014
v/c Ratio	0.70	0.86	0.51	0.55
Control Delay	34.0	41.8	15.5	16.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.0	41.8	15.5	16.2
Queue Length 50th (m)	52.9	59.3	53.9	57.7
Queue Length 95th (m)	81.1	96.0	88.1	94.2
Internal Link Dist (m)	407.4		73.7	408.2
Turn Bay Length (m)		87.0		
Base Capacity (vph)	722	679	1916	1843
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	0.64	0.51	0.55

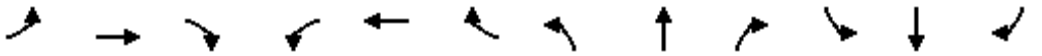
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	358	433	0	978	1014	0
Future Volume (vph)	358	433	0	978	1014	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	358	433	0	978	1014	0
RTOR Reduction (vph)	0	44	0	0	0	0
Lane Group Flow (vph)	358	389	0	978	1014	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	28.3	28.3		48.4	48.4	
Effective Green, g (s)	28.3	28.3		48.4	48.4	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	513	457		1918	1844	
v/s Ratio Prot	0.22			0.28	c0.30	
v/s Ratio Perm		c0.27				
v/c Ratio	0.70	0.85		0.51	0.55	
Uniform Delay, d1	26.7	28.5		12.9	13.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	14.1		1.0	1.2	
Delay (s)	30.8	42.5		13.9	14.5	
Level of Service	C	D		B	B	
Approach Delay (s)	37.2			13.9	14.5	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



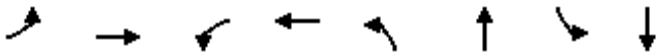
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	25	180	29	15	4	163	449	27	3	372	34
Future Volume (vph)	46	25	180	29	15	4	163	449	27	3	372	34
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.968			0.991			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1570	0	1651	1587	0	1668	1596	0
Flt Permitted	0.745			0.629			0.524			0.470		
Satd. Flow (perm)	1295	1416	0	1104	1570	0	911	1587	0	825	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		180			4			7			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			555.2			162.4	
Travel Time (s)		9.9			10.4			33.3			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	46	25	180	29	15	4	163	449	27	3	372	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	205	0	29	19	0	163	476	0	3	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.0	9.0		9.0	9.0		31.6	31.6		31.6	31.6	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.60	0.60	
v/c Ratio	0.21	0.53		0.16	0.07		0.30	0.50		0.01	0.43	
Control Delay	20.4	10.3		19.8	16.2		7.7	8.8		5.0	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.4	10.3		19.8	16.2		7.7	8.8		5.0	7.7	
LOS	C	B		B	B		A	A		A	A	
Approach Delay		12.1			18.4			8.5			7.7	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	
Analysis Period (min) 15			

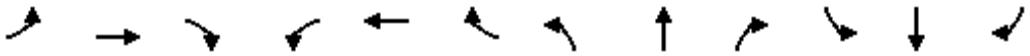
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	205	29	19	163	476	3	406
v/c Ratio	0.21	0.53	0.16	0.07	0.30	0.50	0.01	0.43
Control Delay	20.4	10.3	19.8	16.2	7.7	8.8	5.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	10.3	19.8	16.2	7.7	8.8	5.0	7.7
Queue Length 50th (m)	3.7	2.0	2.3	1.2	6.0	20.2	0.1	15.9
Queue Length 95th (m)	10.4	15.4	7.6	5.2	17.7	47.7	0.9	37.9
Internal Link Dist (m)		113.8		120.0		531.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	491	648	418	598	543	949	492	955
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.32	0.07	0.03	0.30	0.50	0.01	0.43

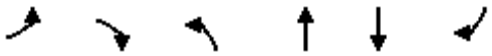
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	25	180	29	15	4	163	449	27	3	372	34
Future Volume (vph)	46	25	180	29	15	4	163	449	27	3	372	34
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1570		1651	1588		1668	1597	
Flt Permitted	0.75	1.00		0.63	1.00		0.52	1.00		0.47	1.00	
Satd. Flow (perm)	1295	1417		1105	1570		910	1588		825	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	25	180	29	15	4	163	449	27	3	372	34
RTOR Reduction (vph)	0	149	0	0	3	0	0	3	0	0	4	0
Lane Group Flow (vph)	46	56	0	29	16	0	163	473	0	3	402	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.0	9.0		9.0	9.0		31.6	31.6		31.6	31.6	
Effective Green, g (s)	9.0	9.0		9.0	9.0		31.6	31.6		31.6	31.6	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.60	0.60		0.60	0.60	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	241		187	267		543	948		492	953	
v/s Ratio Prot		c0.04			0.01			c0.30			0.25	
v/s Ratio Perm	0.04			0.03			0.18			0.00		
v/c Ratio	0.21	0.23		0.16	0.06		0.30	0.50		0.01	0.42	
Uniform Delay, d1	18.9	19.0		18.7	18.4		5.2	6.1		4.3	5.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		0.4	0.1		1.4	1.9		0.0	1.4	
Delay (s)	19.4	19.5		19.1	18.5		6.6	8.0		4.3	7.1	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		19.4			18.9			7.6			7.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	12.3
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

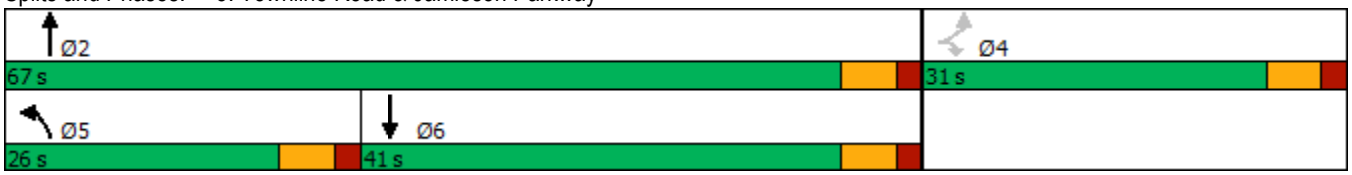


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	142	225	204	506	479	103
Future Volume (vph)	142	225	204	506	479	103
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0	0.0	115.0			0.0
Storage Lanes	0	1	2			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	0.95
Frt		0.850			0.973	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1668	1387	3203	3270	3207	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1668	1387	3203	3270	3207	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		225			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	114.3			312.4	555.2	
Travel Time (s)	8.2			18.7	33.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	1%	2%	1%	2%
Adj. Flow (vph)	142	225	204	506	479	103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	225	204	506	582	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			7.0	7.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.21	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (m)	6.1	6.1	6.1	30.5	30.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	6.1	6.1	1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	Prot	NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases			5	2	6	
Permitted Phases	4	4				
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	5.0	5.0	5.0	
Minimum Split (s)	31.0	31.0	11.0	41.0	41.0	
Total Split (s)	31.0	31.0	26.0	67.0	41.0	
Total Split (%)	31.6%	31.6%	26.5%	68.4%	41.8%	
Maximum Green (s)	25.0	25.0	20.0	61.0	35.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	Max	Max	
Walk Time (s)	7.0	7.0		14.0	14.0	
Flash Dont Walk (s)	18.0	18.0		21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	12.6	12.6	10.7	61.1	44.4	
Actuated g/C Ratio	0.15	0.15	0.12	0.71	0.52	
v/c Ratio	0.58	0.57	0.51	0.22	0.35	
Control Delay	43.8	10.8	39.8	4.8	13.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	43.8	10.8	39.8	4.8	13.2	
LOS	D	B	D	A	B	
Approach Delay	23.6			14.9	13.2	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98			
Actuated Cycle Length: 85.7			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 47.3%		ICU Level of Service A	
Analysis Period (min) 15			

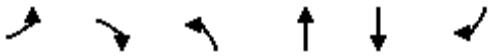
Splits and Phases: 3: Townline Road & Jamieson Parkway





Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	142	225	204	506	582
v/c Ratio	0.58	0.57	0.51	0.22	0.35
Control Delay	43.8	10.8	39.8	4.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	10.8	39.8	4.8	13.2
Queue Length 50th (m)	22.0	0.0	16.2	12.3	26.2
Queue Length 95th (m)	39.5	18.2	27.0	22.1	45.6
Internal Link Dist (m)	90.3			288.4	531.2
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	487	564	748	2331	1674
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.40	0.27	0.22	0.35

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	142	225	204	506	479	103
Future Volume (vph)	142	225	204	506	479	103
Ideal Flow (vphpl)	1775	1650	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.97	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1668	1387	3203	3270	3209	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1668	1387	3203	3270	3209	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	142	225	204	506	479	103
RTOR Reduction (vph)	0	192	0	0	14	0
Lane Group Flow (vph)	142	33	204	506	568	0
Heavy Vehicles (%)	0%	0%	1%	2%	1%	2%
Turn Type	Perm	Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	12.6	12.6	10.7	61.1	44.4	
Effective Green, g (s)	12.6	12.6	10.7	61.1	44.4	
Actuated g/C Ratio	0.15	0.15	0.12	0.71	0.52	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	245	203	399	2331	1662	
v/s Ratio Prot			c0.06	0.15	c0.18	
v/s Ratio Perm	c0.09	0.02				
v/c Ratio	0.58	0.16	0.51	0.22	0.34	
Uniform Delay, d1	34.1	31.9	35.1	4.2	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	0.4	1.1	0.2	0.6	
Delay (s)	37.4	32.3	36.2	4.4	12.7	
Level of Service	D	C	D	A	B	
Approach Delay (s)	34.3			13.5	12.7	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	356	146	566	0	0	485
Future Volume (vph)	356	146	566	0	0	485
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		146				
Link Speed (k/h)	50		60			60
Link Distance (m)	430.9		432.2			312.4
Travel Time (s)	31.0		25.9			18.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	356	146	566	0	0	485
Shared Lane Traffic (%)						
Lane Group Flow (vph)	356	146	566	0	0	485
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	12.8	12.8	38.1			38.1
Actuated g/C Ratio	0.20	0.20	0.60			0.60
v/c Ratio	0.57	0.36	0.27			0.23
Control Delay	26.6	7.0	6.8			6.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.6	7.0	6.8			6.6
LOS	C	A	A			A
Approach Delay	20.9		6.8			6.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63.4			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	356	146	566	485
v/c Ratio	0.57	0.36	0.27	0.23
Control Delay	26.6	7.0	6.8	6.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.6	7.0	6.8	6.6
Queue Length 50th (m)	19.4	0.0	14.1	11.8
Queue Length 95th (m)	30.6	11.9	25.8	22.0
Internal Link Dist (m)	406.9		408.2	288.4
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1435	756	2122	2101
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	0.25	0.19	0.27	0.23

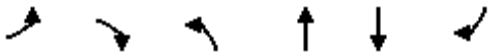
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	356	146	566	0	0	485
Future Volume (vph)	356	146	566	0	0	485
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	356	146	566	0	0	485
RTOR Reduction (vph)	0	117	0	0	0	0
Lane Group Flow (vph)	356	29	566	0	0	485
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	12.8	12.8	38.1			38.1
Effective Green, g (s)	12.8	12.8	38.1			38.1
Actuated g/C Ratio	0.20	0.20	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	622	293	2124			2103
v/s Ratio Prot	c0.12		c0.16			0.14
v/s Ratio Perm		0.02				
v/c Ratio	0.57	0.10	0.27			0.23
Uniform Delay, d1	22.8	20.6	6.0			5.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.3	0.2	0.3			0.3
Delay (s)	24.1	20.8	6.3			6.1
Level of Service	C	C	A			A
Approach Delay (s)	23.1		6.3			6.1
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

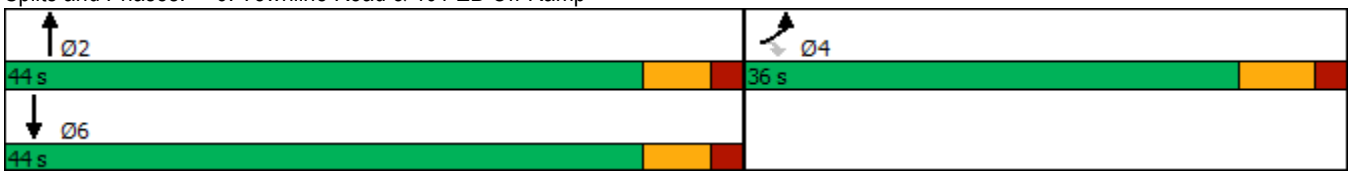


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	274	397	0	461	732	0
Future Volume (vph)	274	397	0	461	732	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		143				
Link Speed (k/h)	50			60	60	
Link Distance (m)	431.4			97.7	432.2	
Travel Time (s)	31.1			5.9	25.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	274	397	0	461	732	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	397	0	461	732	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	19.1	19.1		38.3	38.3	
Actuated g/C Ratio	0.27	0.27		0.55	0.55	
v/c Ratio	0.62	0.79		0.24	0.38	
Control Delay	28.1	26.8		9.8	10.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.1	26.8		9.8	10.9	
LOS	C	C		A	B	
Approach Delay	27.3			9.8	10.9	
Approach LOS	C			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

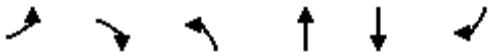
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	274	397	461	732
v/c Ratio	0.62	0.79	0.24	0.38
Control Delay	28.1	26.8	9.8	10.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.1	26.8	9.8	10.9
Queue Length 50th (m)	30.9	30.4	14.5	25.4
Queue Length 95th (m)	51.6	59.6	30.5	50.5
Internal Link Dist (m)	407.4		73.7	408.2
Turn Bay Length (m)		87.0		
Base Capacity (vph)	694	700	1915	1915
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	0.39	0.57	0.24	0.38

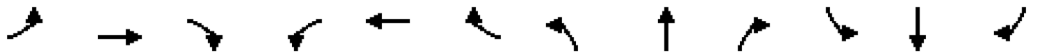
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	274	397	0	461	732	0
Future Volume (vph)	274	397	0	461	732	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	397	0	461	732	0
RTOR Reduction (vph)	0	104	0	0	0	0
Lane Group Flow (vph)	274	293	0	461	732	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.1	19.1		38.3	38.3	
Effective Green, g (s)	19.1	19.1		38.3	38.3	
Actuated g/C Ratio	0.27	0.27		0.55	0.55	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	446	397		1917	1917	
v/s Ratio Prot	0.17			0.13	c0.21	
v/s Ratio Perm		c0.20				
v/c Ratio	0.61	0.74		0.24	0.38	
Uniform Delay, d1	22.2	23.1		8.2	9.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	7.0		0.3	0.6	
Delay (s)	24.7	30.1		8.5	9.6	
Level of Service	C	C		A	A	
Approach Delay (s)	27.9			8.5	9.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

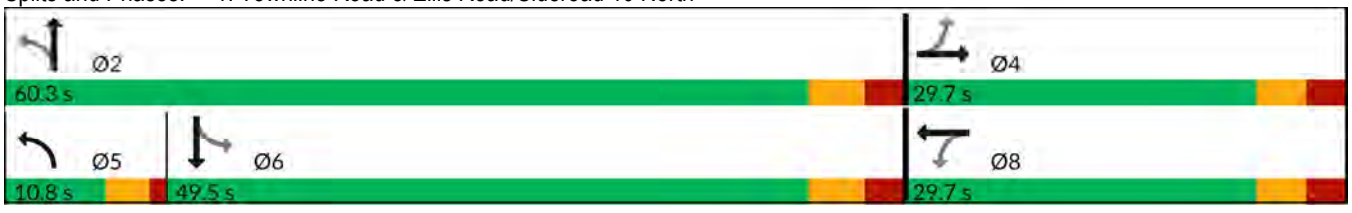


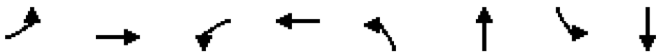
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Future Volume (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.960			0.989			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1392	0	1668	1566	0	1603	1551	0	1334	1575	0
Flt Permitted	0.748			0.377			0.287			0.441		
Satd. Flow (perm)	1300	1392	0	662	1566	0	484	1551	0	619	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		218			4			8			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	248	0	15	15	0	107	591	0	4	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Don't Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	10.6	10.6		10.6	10.6		56.4	54.1		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.70		0.59	0.59	
v/c Ratio	0.47	0.65		0.16	0.07		0.24	0.54		0.01	0.69	
Control Delay (s/veh)	39.3	15.4		32.7	24.5		5.0	8.5		9.3	18.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	39.3	15.4		32.7	24.5		5.0	8.5		9.3	18.0	
LOS	D	B		C	C		A	A		A	B	
Approach Delay (s/veh)		21.5			28.6			7.9			17.9	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.1			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay (s/veh): 14.7		Intersection LOS: B	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

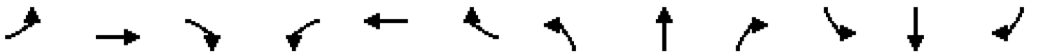




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	248	15	15	107	591	4	645
v/c Ratio	0.47	0.65	0.16	0.07	0.24	0.54	0.01	0.69
Control Delay (s/veh)	39.3	15.4	32.7	24.5	5.0	8.5	9.3	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.3	15.4	32.7	24.5	5.0	8.5	9.3	18.0
Queue Length 50th (m)	11.6	3.9	2.0	1.4	3.5	33.0	0.2	62.8
Queue Length 95th (m)	24.4	23.8	7.1	6.2	10.0	74.6	1.7	#128.7
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	400	579	204	485	453	1091	367	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.43	0.07	0.03	0.24	0.54	0.01	0.69

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)	85	30	218	15	11	4	107	547	44	4	616	29
Future Volume (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1392		1668	1566		1603	1550		1334	1576	
Flt Permitted	0.75	1.00		0.38	1.00		0.29	1.00		0.44	1.00	
Satd. Flow (perm)	1299	1392		662	1566		485	1550		620	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	30	218	15	11	4	107	547	44	4	616	29
RTOR Reduction (vph)	0	188	0	0	3	0	0	2	0	0	2	0
Lane Group Flow (vph)	85	60	0	15	12	0	107	589	0	4	643	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.6	10.6		10.6	10.6		55.0	55.0		45.7	45.7	
Effective Green, g (s)	10.6	10.6		10.6	10.6		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.71	0.71		0.59	0.59	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	176	189		90	213		418	1094		363	924	
v/s Ratio Prot		0.04			0.01		0.02	c0.38			c0.41	
v/s Ratio Perm	c0.07			0.02			0.16			0.01		
v/c Ratio	0.48	0.32		0.17	0.05		0.26	0.54		0.01	0.70	
Uniform Delay, d1	31.1	30.4		29.7	29.3		5.5	5.4		6.7	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.0		0.9	0.1		0.3	1.9		0.1	4.3	
Delay (s)	33.2	31.3		30.6	29.4		5.8	7.3		6.8	15.6	
Level of Service	C	C		C	C		A	A		A	B	
Approach Delay (s/veh)		31.8			30.0			7.1			15.5	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	16.3
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	698	0	0	848
Future Volume (vph)	0	0	698	0	0	848
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	698	0	0	848
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	698	0	0	848
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	698	0	0	848
Future Volume (Veh/h)	0	0	698	0	0	848
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	698	0	0	848
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.79	0.88			0.88	
vC, conflicting volume	1546	698			698	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1207	586			586	
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	100			100	
cM capacity (veh/h)	159	448			868	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	698	0	848
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.41	0.00	0.50
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

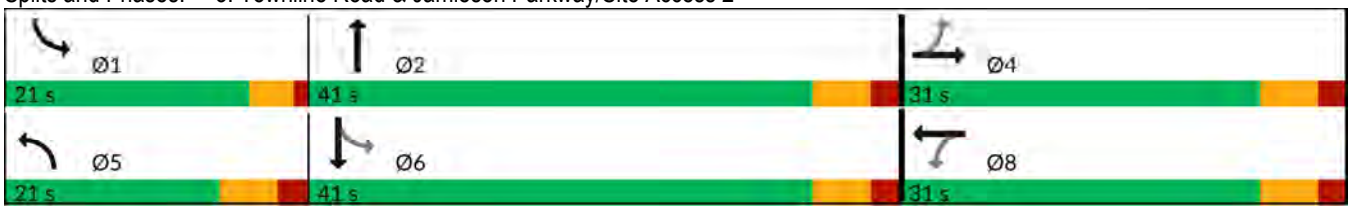
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	0	293	0	0	0	294	557	0	0	705	157
Future Volume (vph)	137	0	293	0	0	0	294	557	0	0	705	157
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850									0.973	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1635	1347	0	1755	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	1755	1632	0	3202	3302	0	1755	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		390									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Adj. Flow (vph)	137	0	293	0	0	0	294	557	0	0	705	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	293	0	0	0	0	294	557	0	0	862	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	14.2	14.2					12.2	53.5			35.3	
Actuated g/C Ratio	0.18	0.18					0.15	0.67			0.44	
v/c Ratio	0.59	0.52					0.60	0.25			0.61	
Control Delay (s/veh)	41.2	4.2					38.0	6.2			19.8	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	41.2	4.2					38.0	6.2			19.8	
LOS	D	A					D	A			B	
Approach Delay (s/veh)		16.0						17.2			19.8	
Approach LOS		B						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 79.8			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay (s/veh): 18.0		Intersection LOS: B	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	137	293	294	557	862
v/c Ratio	0.59	0.52	0.60	0.25	0.61
Control Delay (s/veh)	41.2	4.2	38.0	6.2	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.2	4.2	38.0	6.2	19.8
Queue Length 50th (m)	19.2	0.0	21.3	14.5	47.8
Queue Length 95th (m)	37.0	4.4	37.1	29.3	83.4
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	411	692	607	2214	1419
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.42	0.48	0.25	0.61

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	0	293	0	0	0	294	557	0	0	705	157
Future Volume (vph)	137	0	293	0	0	0	294	557	0	0	705	157
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1635	1347					3203	3302			3167	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1303	1347					3203	3302			3167	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	0	293	0	0	0	294	557	0	0	705	157
RTOR Reduction (vph)	0	241	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	137	52	0	0	0	0	294	557	0	0	844	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	14.2	14.2					12.2	53.5			35.3	
Effective Green, g (s)	14.2	14.2					12.2	53.5			35.3	
Actuated g/C Ratio	0.18	0.18					0.15	0.67			0.44	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	232	239					490	2216			1402	
v/s Ratio Prot		0.04					c0.09	0.17			c0.27	
v/s Ratio Perm	c0.11											
v/c Ratio	0.59	0.22					0.60	0.25			0.60	
Uniform Delay, d1	30.1	28.0					31.5	5.2			16.9	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	4.0	0.5					2.1	0.3			1.9	
Delay (s)	34.1	28.5					33.5	5.5			18.8	
Level of Service	C	C					C	A			B	
Approach Delay (s/veh)		30.3			0.0			15.2			18.8	
Approach LOS		C			A			B			B	

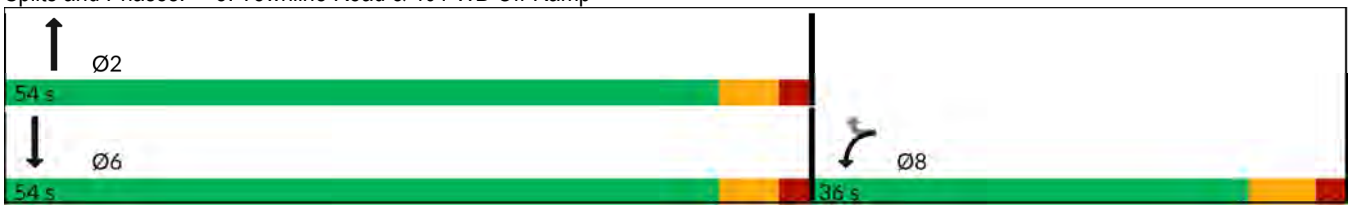
Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	125	745	0	0	676
Future Volume (vph)	513	125	745	0	0	676
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		125				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	513	125	745	0	0	676
Shared Lane Traffic (%)						
Lane Group Flow (vph)	513	125	745	0	0	676
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	19.6	19.6	48.2			48.2
Actuated g/C Ratio	0.24	0.24	0.60			0.60
v/c Ratio	0.73	0.29	0.36			0.32
Control Delay (s/veh)	34.5	6.5	9.4			9.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.5	6.5	9.4			9.1
LOS	C	A	A			A
Approach Delay (s/veh)	29.1		9.4			9.1
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 15.4		Intersection LOS: B	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	513	125	745	676
v/c Ratio	0.73	0.29	0.36	0.32
Control Delay (s/veh)	34.5	6.5	9.4	9.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.5	6.5	9.4	9.1
Queue Length 50th (m)	37.1	0.0	27.0	23.9
Queue Length 95th (m)	52.6	11.6	46.7	41.7
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1055	585	2098	2098
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	0.21	0.36	0.32

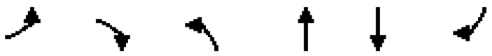
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	125	745	0	0	676
Future Volume (vph)	513	125	745	0	0	676
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	513	125	745	0	0	676
RTOR Reduction (vph)	0	94	0	0	0	0
Lane Group Flow (vph)	513	31	745	0	0	676
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	19.6	19.6	48.2			48.2
Effective Green, g (s)	19.6	19.6	48.2			48.2
Actuated g/C Ratio	0.24	0.24	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	698	335	2100			2100
v/s Ratio Prot	c0.18		c0.21			0.19
v/s Ratio Perm		0.02				
v/c Ratio	0.73	0.09	0.35			0.32
Uniform Delay, d1	28.0	23.5	8.2			8.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.0	0.1	0.5			0.4
Delay (s)	32.0	23.6	8.6			8.4
Level of Service	C	C	A			A
Approach Delay (s/veh)	30.3		8.6			8.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

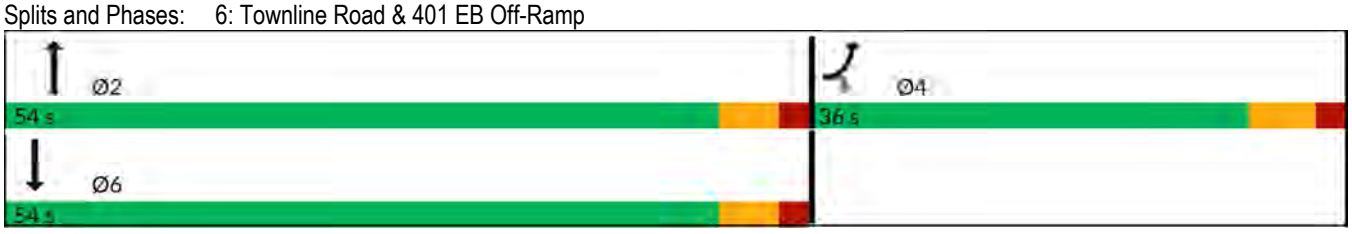


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	355	463	0	806	1046	0
Future Volume (vph)	355	463	0	806	1046	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		80				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	355	463	0	806	1046	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	463	0	806	1046	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	27.5	27.5		48.1	48.1	
Actuated g/C Ratio	0.31	0.31		0.55	0.55	
v/c Ratio	0.71	0.93		0.43	0.57	
Control Delay (s/veh)	35.5	52.4		13.1	15.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.5	52.4		13.1	15.2	
LOS	D	D		B	B	
Approach Delay (s/veh)	45.1			13.1	15.2	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.1			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 23.7		Intersection LOS: C	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

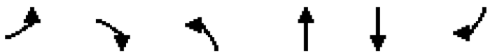




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	355	463	806	1046
v/c Ratio	0.71	0.93	0.43	0.57
Control Delay (s/veh)	35.5	52.4	13.1	15.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	52.4	13.1	15.2
Queue Length 50th (m)	52.5	64.0	42.1	60.9
Queue Length 95th (m)	82.7	#121.2	55.7	79.4
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	537	527	1873	1820
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	0.66	0.88	0.43	0.57

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	355	463	0	806	1046	0
Future Volume (vph)	355	463	0	806	1046	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	463	0	806	1046	0
RTOR Reduction (vph)	0	55	0	0	0	0
Lane Group Flow (vph)	355	408	0	806	1046	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	27.5	27.5		48.1	48.1	
Effective Green, g (s)	27.5	27.5		48.1	48.1	
Actuated g/C Ratio	0.31	0.31		0.55	0.55	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	500	441		1874	1821	
v/s Ratio Prot	0.22			0.23	c0.31	
v/s Ratio Perm		c0.29				
v/c Ratio	0.71	0.93		0.43	0.57	
Uniform Delay, d1	26.8	29.3		11.9	13.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	25.2		0.7	1.3	
Delay (s)	31.5	54.5		12.6	14.6	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	44.5			12.6	14.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

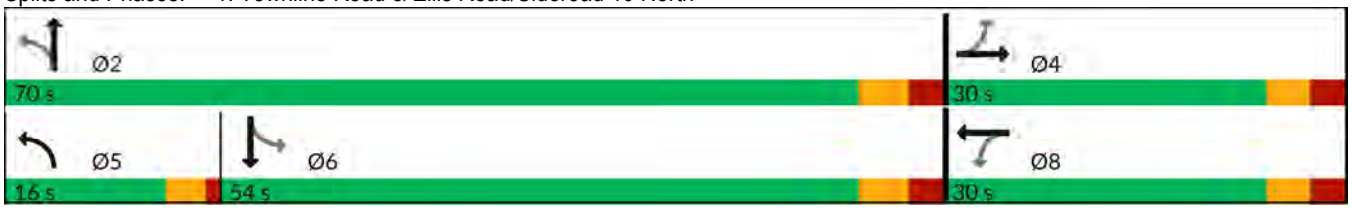
c Critical Lane Group

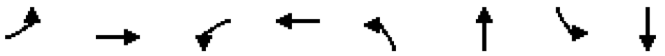
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Future Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.870			0.969			0.994			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1581	0	1668	1606	0	1668	1547	0
Flt Permitted	0.725			0.577			0.336			0.315		
Satd. Flow (perm)	1273	1395	0	993	1581	0	590	1606	0	553	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		138			10			4			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	159	0	69	49	0	337	895	0	8	547	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Don't Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.4	11.4		11.4	11.4		66.1	63.8		49.3	49.3	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.76	0.73		0.56	0.56	
v/c Ratio	0.24	0.53		0.53	0.23		0.59	0.76		0.03	0.63	
Control Delay (s/veh)	37.3	15.4		50.9	30.7		8.1	13.7		10.8	17.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.3	15.4		50.9	30.7		8.1	13.7		10.8	17.8	
LOS	D	B		D	C		A	B		B	B	
Approach Delay (s/veh)		19.8			42.5			12.2			17.7	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 94.5%		ICU Level of Service F	
Analysis Period (min) 15			

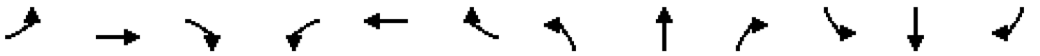
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	159	69	49	337	895	8	547
v/c Ratio	0.24	0.53	0.53	0.23	0.59	0.76	0.03	0.63
Control Delay (s/veh)	37.3	15.4	50.9	30.7	8.1	13.7	10.8	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.3	15.4	50.9	30.7	8.1	13.7	10.8	17.8
Queue Length 50th (m)	6.1	3.2	11.0	5.9	13.3	73.0	0.6	56.5
Queue Length 95th (m)	15.2	19.8	23.9	15.6	28.9	160.7	2.9	106.2
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	349	483	272	441	593	1171	311	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.33	0.25	0.11	0.57	0.76	0.03	0.63

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Future Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1395		1635	1582		1668	1607		1668	1547	
Flt Permitted	0.73	1.00		0.58	1.00		0.34	1.00		0.31	1.00	
Satd. Flow (perm)	1273	1395		993	1582		589	1607		552	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	21	138	69	39	10	337	860	35	8	488	59
RTOR Reduction (vph)	0	120	0	0	9	0	0	1	0	0	3	0
Lane Group Flow (vph)	40	39	0	69	40	0	337	894	0	8	544	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.4	11.4		11.4	11.4		63.8	63.8		49.3	49.3	
Effective Green, g (s)	11.4	11.4		11.4	11.4		63.8	63.8		49.3	49.3	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.56	0.56	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	181		129	206		558	1171		311	871	
v/s Ratio Prot		0.03			0.03		0.07	c0.56			0.35	
v/s Ratio Perm	0.03			c0.07			0.37			0.01		
v/c Ratio	0.24	0.22		0.53	0.20		0.60	0.76		0.03	0.62	
Uniform Delay, d1	34.2	34.0		35.6	34.0		6.1	7.2		8.5	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		4.2	0.5		1.9	4.7		0.2	3.4	
Delay (s)	34.9	34.6		39.8	34.4		7.9	12.0		8.6	16.2	
Level of Service	C	C		D	C		A	B		A	B	
Approach Delay (s/veh)		34.7			37.6			10.9			16.1	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1233	0	0	695
Future Volume (vph)	0	0	1233	0	0	695
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1233	0	0	695
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1233	0	0	695
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1233	0	0	695
Future Volume (Veh/h)	0	0	1233	0	0	695
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	1233	0	0	695
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.60	0.50			0.50	
vC, conflicting volume	1928	1233			1233	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1415	962			962	
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	100			100	
cM capacity (veh/h)	91	154			355	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	1233	0	695
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.73	0.00	0.41
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

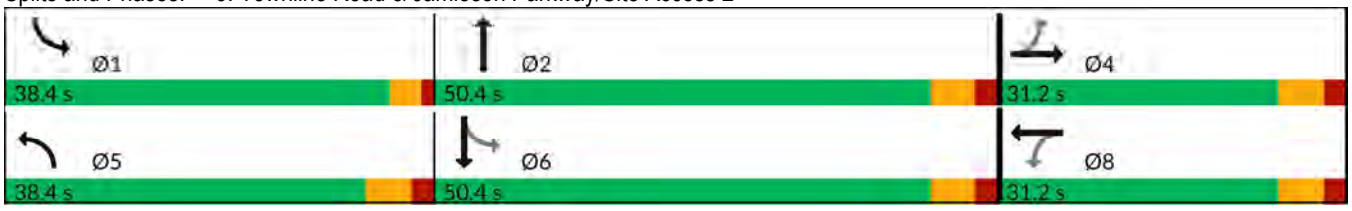
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Future Volume (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.968	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		553									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	375	0	0	0	0	424	979	0	0	688	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	31.2	31.2		31.2	31.2		38.4	50.4		38.4	50.4	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		32.0%	42.0%		32.0%	42.0%	
Maximum Green (s)	25.2	25.2		25.2	25.2		32.4	44.4		34.4	44.4	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			23.4			23.4	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	21.7	21.7					18.9	69.6			44.7	
Actuated g/C Ratio	0.21	0.21					0.18	0.67			0.43	
v/c Ratio	0.80	0.52					0.73	0.44			0.50	
Control Delay (s/veh)	60.6	2.6					47.9	9.0			23.0	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	60.6	2.6					47.9	9.0			23.0	
LOS	E	A					D	A			C	
Approach Delay (s/veh)		24.2						20.7			23.0	
Approach LOS		C						C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 103.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 22.1		Intersection LOS: C	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

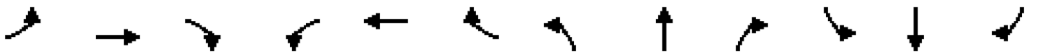




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	222	375	424	979	688
v/c Ratio	0.80	0.52	0.73	0.44	0.50
Control Delay (s/veh)	60.6	2.6	47.9	9.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.6	2.6	47.9	9.0	23.0
Queue Length 50th (m)	42.5	0.0	43.0	47.3	51.8
Queue Length 95th (m)	#80.7	0.0	59.5	60.6	75.7
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	325	757	1009	2222	1365
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.50	0.42	0.44	0.50

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)	222	0	375	0	0	0	424	979	0	0	540	148
Future Volume (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3302			3116	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3302			3116	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	222	0	375	0	0	0	424	979	0	0	540	148
RTOR Reduction (vph)	0	296	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	222	79	0	0	0	0	424	979	0	0	669	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	21.8	21.8					18.9	69.6			44.7	
Effective Green, g (s)	21.8	21.8					18.9	69.6			44.7	
Actuated g/C Ratio	0.21	0.21					0.18	0.67			0.43	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	280	292					585	2222			1347	
v/s Ratio Prot		0.06					c0.13	0.30			c0.21	
v/s Ratio Perm	c0.17											
v/c Ratio	0.79	0.27					0.72	0.44			0.50	
Uniform Delay, d1	38.7	34.1					39.8	7.9			21.2	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	14.2	0.5					4.4	0.6			1.3	
Delay (s)	52.9	34.7					44.2	8.5			22.5	
Level of Service	D	C					D	A			C	
Approach Delay (s/veh)		41.4			0.0			19.3			22.5	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	103.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	325	1185	0	0	646
Future Volume (vph)	512	325	1185	0	0	646
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		39				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	512	325	1185	0	0	646
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	325	1185	0	0	646
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.5	22.5	48.3			48.3
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.65	0.77	0.58			0.32
Control Delay (s/veh)	30.5	37.2	13.9			10.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	30.5	37.2	13.9			10.7
LOS	C	D	B			B
Approach Delay (s/veh)	33.1		13.9			10.7
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 83.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 19.1		Intersection LOS: B	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	512	325	1185	646
v/c Ratio	0.65	0.77	0.58	0.32
Control Delay (s/veh)	30.5	37.2	13.9	10.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.5	37.2	13.9	10.7
Queue Length 50th (m)	36.7	41.7	57.6	25.4
Queue Length 95th (m)	51.1	69.5	103.6	48.2
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1402	714	2028	2028
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	0.37	0.46	0.58	0.32

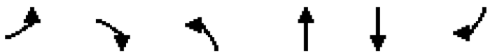
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	325	1185	0	0	646
Future Volume (vph)	512	325	1185	0	0	646
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	512	325	1185	0	0	646
RTOR Reduction (vph)	0	28	0	0	0	0
Lane Group Flow (vph)	512	297	1185	0	0	646
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	22.5	22.5	48.4			48.4
Effective Green, g (s)	22.5	22.5	48.4			48.4
Actuated g/C Ratio	0.27	0.27	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	793	392	2031			2031
v/s Ratio Prot	0.17		c0.34			0.18
v/s Ratio Perm		c0.20				
v/c Ratio	0.65	0.76	0.58			0.32
Uniform Delay, d1	26.9	27.9	11.1			9.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.8	8.1	1.2			0.4
Delay (s)	28.7	36.0	12.3			9.4
Level of Service	C	D	B			A
Approach Delay (s/veh)	31.6		12.3			9.4
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

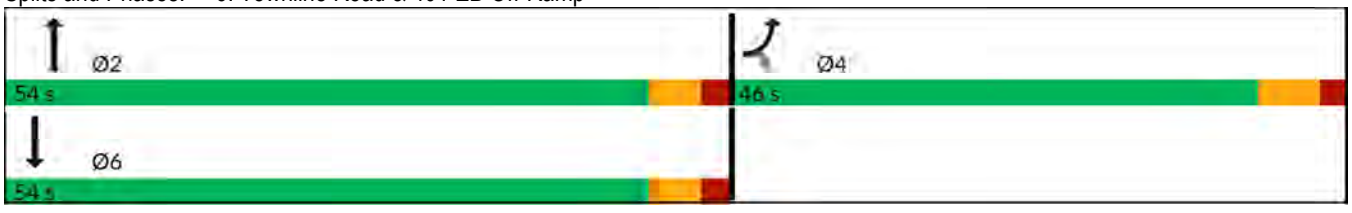


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	379	461	0	1055	1089	0
Future Volume (vph)	379	461	0	1055	1089	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		52				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	379	461	0	1055	1089	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	379	461	0	1055	1089	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	31.2	31.2		48.4	48.4	
Actuated g/C Ratio	0.34	0.34		0.52	0.52	
v/c Ratio	0.69	0.88		0.57	0.61	
Control Delay (s/veh)	33.1	44.5		17.6	18.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.1	44.5		17.6	18.5	
LOS	C	D		B	B	
Approach Delay (s/veh)	39.3			17.6	18.5	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.2			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 24.1		Intersection LOS: C	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

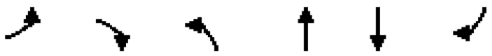




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	379	461	1055	1089
v/c Ratio	0.69	0.88	0.57	0.61
Control Delay (s/veh)	33.1	44.5	17.6	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.1	44.5	17.6	18.5
Queue Length 50th (m)	56.9	68.3	66.7	71.1
Queue Length 95th (m)	86.8	#110.8	97.4	104.2
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	699	652	1854	1784
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	0.71	0.57	0.61

Intersection Summary

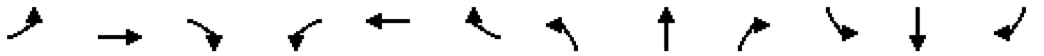
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	379	461	0	1055	1089	0
Future Volume (vph)	379	461	0	1055	1089	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	379	461	0	1055	1089	0
RTOR Reduction (vph)	0	34	0	0	0	0
Lane Group Flow (vph)	379	427	0	1055	1089	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	31.2	31.2		48.4	48.4	
Effective Green, g (s)	31.2	31.2		48.4	48.4	
Actuated g/C Ratio	0.34	0.34		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	548	488		1857	1786	
v/s Ratio Prot	0.23			0.30	c0.32	
v/s Ratio Perm		c0.30				
v/c Ratio	0.69	0.87		0.57	0.61	
Uniform Delay, d1	26.3	28.6		14.8	15.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	15.9		1.3	1.6	
Delay (s)	30.1	44.5		16.0	16.8	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	38.0			16.0	16.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



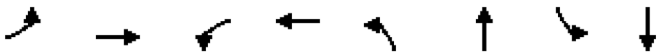
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Future Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.970			0.991			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1418	0	1668	1573	0	1651	1587	0	1668	1596	0
Flt Permitted	0.744			0.622			0.504			0.446		
Satd. Flow (perm)	1293	1418	0	1092	1573	0	876	1587	0	783	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191			4			7			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	218	0	31	20	0	173	505	0	3	431	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Don't Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.2	9.2		9.2	9.2		30.7	30.7		30.7	30.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.59	0.59		0.59	0.59	
v/c Ratio	0.21	0.53		0.16	0.07		0.34	0.54		0.01	0.46	
Control Delay (s/veh)	20.2	10.1		19.6	16.1		8.5	9.7		5.3	8.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.2	10.1		19.6	16.1		8.5	9.7		5.3	8.4	
LOS	C	B		B	B		A	A		A	A	
Approach Delay (s/veh)		12.0			18.2			9.4			8.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.3			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay (s/veh): 9.9		Intersection LOS: A	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

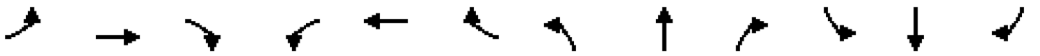
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	218	31	20	173	505	3	431
v/c Ratio	0.21	0.53	0.16	0.07	0.34	0.54	0.01	0.46
Control Delay (s/veh)	20.2	10.1	19.6	16.1	8.5	9.7	5.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.2	10.1	19.6	16.1	8.5	9.7	5.3	8.4
Queue Length 50th (m)	3.9	2.1	2.4	1.3	6.5	21.9	0.1	17.3
Queue Length 95th (m)	10.8	15.9	7.9	5.4	20.4	55.3	1.0	43.8
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	495	661	418	605	514	935	459	941
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.33	0.07	0.03	0.34	0.54	0.01	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Future Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1573		1651	1588		1668	1597	
Flt Permitted	0.74	1.00		0.62	1.00		0.50	1.00		0.45	1.00	
Satd. Flow (perm)	1294	1417		1092	1573		876	1588		782	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	27	191	31	16	4	173	476	29	3	395	36
RTOR Reduction (vph)	0	157	0	0	3	0	0	3	0	0	4	0
Lane Group Flow (vph)	49	61	0	31	17	0	173	502	0	3	427	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.2	9.2		9.2	9.2		30.7	30.7		30.7	30.7	
Effective Green, g (s)	9.2	9.2		9.2	9.2		30.7	30.7		30.7	30.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.59	0.59		0.59	0.59	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	249		192	277		515	933		459	939	
v/s Ratio Prot		c0.04			0.01			c0.32			0.27	
v/s Ratio Perm	0.04			0.03			0.20			0.00		
v/c Ratio	0.21	0.24		0.16	0.06		0.34	0.54		0.01	0.45	
Uniform Delay, d1	18.4	18.5		18.2	17.9		5.5	6.5		4.4	6.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		0.4	0.1		1.8	2.2		0.0	1.6	
Delay (s)	18.9	19.0		18.6	18.0		7.3	8.7		4.5	7.6	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s/veh)		19.0			18.4			8.3			7.6	
Approach LOS		B			B			A			A	

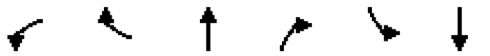
Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.3
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	678	0	0	617
Future Volume (vph)	0	0	678	0	0	617
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	678	0	0	617
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	678	0	0	617
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	678	0	0	617
Future Volume (Veh/h)	0	0	678	0	0	617
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	678	0	0	617
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.94	0.89			0.89	
vC, conflicting volume	1295	678			678	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1029	572			572	
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	100			100	
cM capacity (veh/h)	243	460			887	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	678	0	617
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.40	0.00	0.36
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

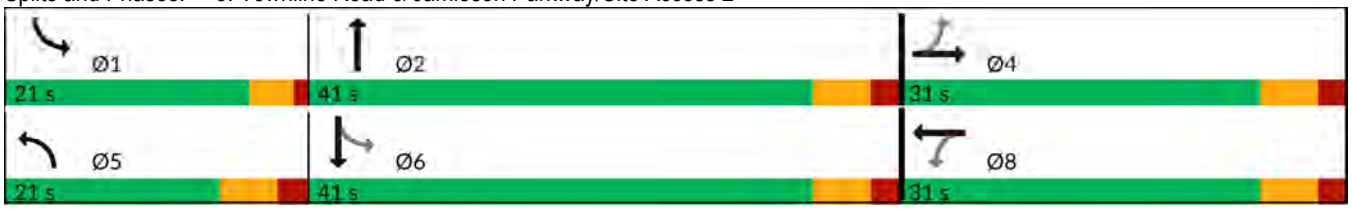
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	239	0	0	0	216	537	0	0	508	109
Future Volume (vph)	151	0	239	0	0	0	216	537	0	0	508	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.974	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		457									31	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	151	0	239	0	0	0	216	537	0	0	508	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	239	0	0	0	0	216	537	0	0	617	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		4.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	14.5	14.5					10.6	52.0			35.3	
Actuated g/C Ratio	0.18	0.18					0.13	0.66			0.45	
v/c Ratio	0.62	0.38					0.50	0.25			0.42	
Control Delay (s/veh)	41.1	1.7					36.6	6.3			16.3	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	41.1	1.7					36.6	6.3			16.3	
LOS	D	A					D	A			B	
Approach Delay (s/veh)		17.0						15.0			16.3	
Approach LOS		B						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 78.6			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 15.9		Intersection LOS: B	
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

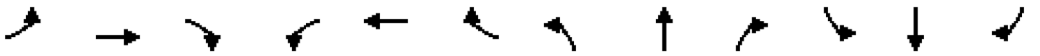
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	151	239	216	537	617
v/c Ratio	0.62	0.38	0.50	0.25	0.42
Control Delay (s/veh)	41.1	1.7	36.6	6.3	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.1	1.7	36.6	6.3	16.3
Queue Length 50th (m)	20.7	0.0	15.3	14.3	29.2
Queue Length 95th (m)	40.2	0.0	28.0	28.4	54.6
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	426	755	616	2163	1460
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.32	0.35	0.25	0.42

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	239	0	0	0	216	537	0	0	508	109
Future Volume (vph)	151	0	239	0	0	0	216	537	0	0	508	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3270			3209	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3270			3209	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	0	239	0	0	0	216	537	0	0	508	109
RTOR Reduction (vph)	0	195	0	0	0	0	0	0	0	0	17	0
Lane Group Flow (vph)	151	44	0	0	0	0	216	537	0	0	600	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	14.5	14.5					10.6	52.0			35.4	
Effective Green, g (s)	14.5	14.5					10.6	52.0			35.4	
Actuated g/C Ratio	0.18	0.18					0.14	0.66			0.45	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	245	256					432	2166			1447	
v/s Ratio Prot		0.03					c0.07	0.16			c0.19	
v/s Ratio Perm	c0.11											
v/c Ratio	0.62	0.17					0.50	0.25			0.41	
Uniform Delay, d1	29.4	26.9					31.5	5.4			14.6	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	4.6	0.3					0.9	0.3			0.9	
Delay (s)	34.0	27.3					32.4	5.6			15.4	
Level of Service	C	C					C	A			B	
Approach Delay (s/veh)		29.9			0.0			13.3			15.4	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

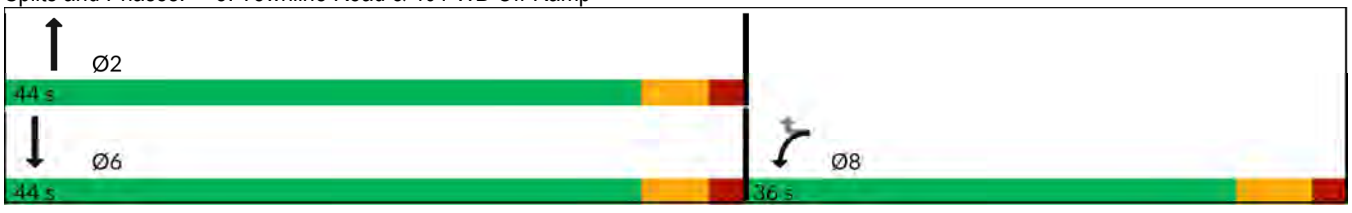


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	155	601	0	0	515
Future Volume (vph)	377	155	601	0	0	515
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		155				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	377	155	601	0	0	515
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	155	601	0	0	515
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	13.2	13.2	38.1			38.1
Actuated g/C Ratio	0.21	0.21	0.60			0.60
v/c Ratio	0.59	0.37	0.28			0.25
Control Delay (s/veh)	26.9	6.8	7.1			6.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	26.9	6.8	7.1			6.8
LOS	C	A	A			A
Approach Delay (s/veh)	21.0		7.1			6.8
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 11.5		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	377	155	601	515
v/c Ratio	0.59	0.37	0.28	0.25
Control Delay (s/veh)	26.9	6.8	7.1	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.9	6.8	7.1	6.8
Queue Length 50th (m)	20.8	0.0	15.5	12.9
Queue Length 95th (m)	32.3	12.2	28.2	23.9
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1427	757	2109	2089
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	0.26	0.20	0.28	0.25

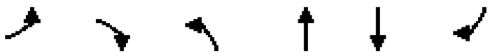
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	155	601	0	0	515
Future Volume (vph)	377	155	601	0	0	515
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	377	155	601	0	0	515
RTOR Reduction (vph)	0	123	0	0	0	0
Lane Group Flow (vph)	377	32	601	0	0	515
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	13.2	13.2	38.1			38.1
Effective Green, g (s)	13.2	13.2	38.1			38.1
Actuated g/C Ratio	0.21	0.21	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	637	301	2111			2090
v/s Ratio Prot	c0.12		c0.17			0.15
v/s Ratio Perm		0.02				
v/c Ratio	0.59	0.11	0.28			0.25
Uniform Delay, d1	22.9	20.5	6.2			6.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.5	0.2	0.3			0.3
Delay (s)	24.3	20.7	6.6			6.4
Level of Service	C	C	A			A
Approach Delay (s/veh)	23.3		6.6			6.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	290	421	0	489	777	0
Future Volume (vph)	290	421	0	489	777	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		126				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	290	421	0	489	777	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	421	0	489	777	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.6	20.6		38.3	38.3	
Actuated g/C Ratio	0.29	0.29		0.54	0.54	
v/c Ratio	0.62	0.83		0.26	0.41	
Control Delay (s/veh)	27.7	30.8		10.5	11.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	27.7	30.8		10.5	11.9	
LOS	C	C		B	B	
Approach Delay (s/veh)	29.5			10.5	11.9	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 71.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 17.9		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

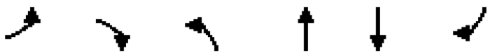
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	290	421	489	777
v/c Ratio	0.62	0.83	0.26	0.41
Control Delay (s/veh)	27.7	30.8	10.5	11.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.7	30.8	10.5	11.9
Queue Length 50th (m)	33.1	36.7	17.1	30.1
Queue Length 95th (m)	54.9	68.8	32.5	54.2
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	680	679	1876	1876
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	0.62	0.26	0.41

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	290	421	0	489	777	0
Future Volume (vph)	290	421	0	489	777	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	290	421	0	489	777	0
RTOR Reduction (vph)	0	90	0	0	0	0
Lane Group Flow (vph)	290	331	0	489	777	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.5	20.5		38.3	38.3	
Effective Green, g (s)	20.5	20.5		38.3	38.3	
Actuated g/C Ratio	0.29	0.29		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	470	418		1880	1880	
v/s Ratio Prot	0.18			0.14	c0.22	
v/s Ratio Perm		c0.23				
v/c Ratio	0.62	0.79		0.26	0.41	
Uniform Delay, d1	22.0	23.4		8.9	9.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	9.9		0.3	0.7	
Delay (s)	24.4	33.3		9.2	10.5	
Level of Service	C	C		A	B	
Approach Delay (s/veh)	29.7			9.2	10.5	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

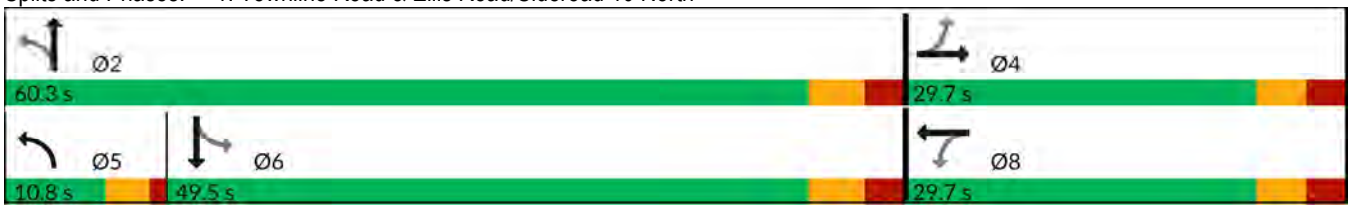
c Critical Lane Group

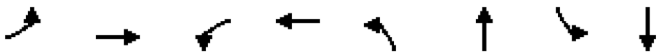
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Future Volume (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.962			0.989			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1392	0	1668	1570	0	1603	1551	0	1334	1575	0
Flt Permitted	0.747			0.357			0.243			0.417		
Satd. Flow (perm)	1298	1392	0	627	1570	0	410	1551	0	586	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		241			4			8			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	274	0	17	16	0	118	652	0	4	711	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Don't Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.2	11.2		11.2	11.2		56.5	54.2		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.70		0.59	0.59	
v/c Ratio	0.50	0.67		0.19	0.07		0.30	0.60		0.01	0.77	
Control Delay (s/veh)	39.9	15.3		33.4	24.4		5.8	9.8		9.5	21.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	39.9	15.3		33.4	24.4		5.8	9.8		9.5	21.7	
LOS	D	B		C	C		A	A		A	C	
Approach Delay (s/veh)		21.5			29.0			9.2			21.6	
Approach LOS		C			C			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.7			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 16.7		Intersection LOS: B	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

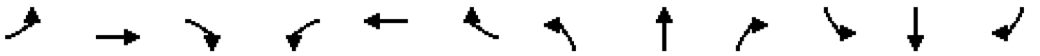




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	274	17	16	118	652	4	711
v/c Ratio	0.50	0.67	0.19	0.07	0.30	0.60	0.01	0.77
Control Delay (s/veh)	39.9	15.3	33.4	24.4	5.8	9.8	9.5	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.9	15.3	33.4	24.4	5.8	9.8	9.5	21.7
Queue Length 50th (m)	12.9	4.3	2.2	1.5	4.0	40.0	0.2	75.9
Queue Length 95th (m)	26.3	25.6	7.7	6.5	11.4	91.7	1.8	#167.8
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	396	592	191	483	402	1083	344	927
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.46	0.09	0.03	0.29	0.60	0.01	0.77

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)	94	33	241	17	12	4	118	603	49	4	679	32
Future Volume (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1392		1668	1570		1603	1550		1334	1576	
Flt Permitted	0.75	1.00		0.36	1.00		0.24	1.00		0.42	1.00	
Satd. Flow (perm)	1298	1392		627	1570		410	1550		586	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	33	241	17	12	4	118	603	49	4	679	32
RTOR Reduction (vph)	0	207	0	0	3	0	0	2	0	0	2	0
Lane Group Flow (vph)	94	67	0	17	13	0	118	650	0	4	709	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.2	11.2		11.2	11.2		55.0	55.0		45.7	45.7	
Effective Green, g (s)	11.2	11.2		11.2	11.2		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	185	198		89	224		367	1085		341	917	
v/s Ratio Prot		0.05			0.01		0.02	c0.42			c0.45	
v/s Ratio Perm	c0.07			0.03			0.20			0.01		
v/c Ratio	0.51	0.34		0.19	0.06		0.32	0.60		0.01	0.77	
Uniform Delay, d1	31.1	30.3		29.7	29.1		6.6	6.1		6.9	12.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.0		1.0	0.1		0.5	2.4		0.1	6.3	
Delay (s)	33.3	31.3		30.7	29.2		7.1	8.5		7.0	18.8	
Level of Service	C	C		C	C		A	A		A	B	
Approach Delay (s/veh)		31.8			30.0			8.3			18.7	
Approach LOS		C			C			A			B	

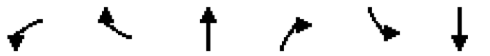
Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	769	0	0	935
Future Volume (vph)	0	0	769	0	0	935
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	769	0	0	935
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	769	0	0	935
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

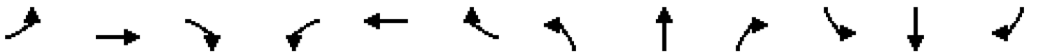
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	769	0	0	935
Future Volume (Veh/h)	0	0	769	0	0	935
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	769	0	0	935
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.74	0.85			0.85	
vC, conflicting volume	1704	769			769	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1307	636			636	
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	100			100	
cM capacity (veh/h)	130	404			802	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	769	0	935
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.45	0.00	0.55
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

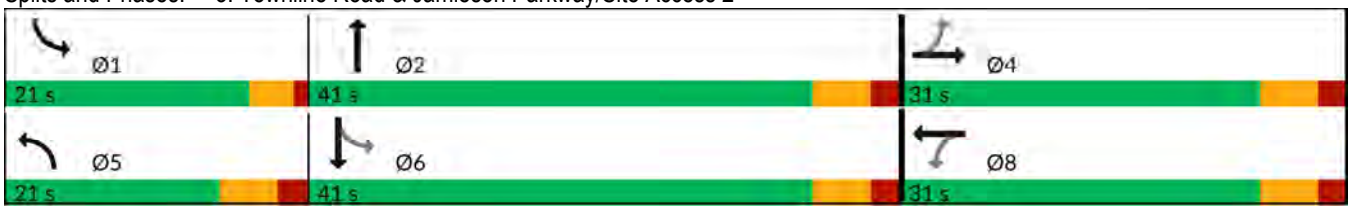


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	323	0	0	0	325	614	0	0	777	173
Future Volume (vph)	151	0	323	0	0	0	325	614	0	0	777	173
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850									0.973	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1635	1347	0	1755	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	1755	1632	0	3202	3302	0	1755	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		375									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Adj. Flow (vph)	151	0	323	0	0	0	325	614	0	0	777	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	323	0	0	0	0	325	614	0	0	950	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	15.1	15.1					12.8	54.1			35.3	
Actuated g/C Ratio	0.19	0.19					0.16	0.67			0.43	
v/c Ratio	0.63	0.58					0.65	0.28			0.68	
Control Delay (s/veh)	42.4	6.2					39.5	6.7			22.3	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	42.4	6.2					39.5	6.7			22.3	
LOS	D	A					D	A			C	
Approach Delay (s/veh)		17.7						18.0			22.3	
Approach LOS		B						B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 81.3			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 19.7		Intersection LOS: B	
Intersection Capacity Utilization 77.1%		ICU Level of Service D	
Analysis Period (min) 15			

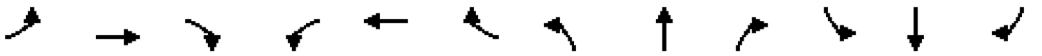
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	151	323	325	614	950
v/c Ratio	0.63	0.58	0.65	0.28	0.68
Control Delay (s/veh)	42.4	6.2	39.5	6.7	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.4	6.2	39.5	6.7	22.3
Queue Length 50th (m)	21.8	0.0	24.2	17.3	58.0
Queue Length 95th (m)	40.3	11.4	41.4	34.3	97.8
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	404	676	595	2197	1394
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.48	0.55	0.28	0.68

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	323	0	0	0	325	614	0	0	777	173
Future Volume (vph)	151	0	323	0	0	0	325	614	0	0	777	173
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1635	1347					3203	3302			3167	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1303	1347					3203	3302			3167	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	0	323	0	0	0	325	614	0	0	777	173
RTOR Reduction (vph)	0	263	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	151	60	0	0	0	0	325	614	0	0	931	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	15.1	15.1					12.8	54.1			35.3	
Effective Green, g (s)	15.1	15.1					12.8	54.1			35.3	
Actuated g/C Ratio	0.19	0.19					0.16	0.67			0.43	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	242	250					504	2199			1376	
v/s Ratio Prot		0.04					c0.10	0.19			c0.29	
v/s Ratio Perm	c0.12											
v/c Ratio	0.62	0.24					0.64	0.28			0.68	
Uniform Delay, d1	30.4	28.2					32.1	5.6			18.4	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	4.9	0.5					2.8	0.3			2.7	
Delay (s)	35.4	28.7					34.9	5.9			21.1	
Level of Service	D	C					C	A			C	
Approach Delay (s/veh)		30.8			0.0			15.9			21.1	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

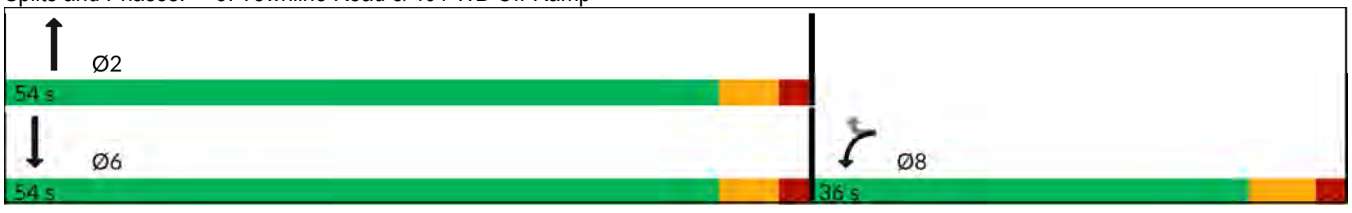


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	137	821	0	0	745
Future Volume (vph)	559	137	821	0	0	745
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		137				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	559	137	821	0	0	745
Shared Lane Traffic (%)						
Lane Group Flow (vph)	559	137	821	0	0	745
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	21.2	21.2	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
v/c Ratio	0.76	0.30	0.40			0.36
Control Delay (s/veh)	34.9	6.1	10.5			10.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.9	6.1	10.5			10.1
LOS	C	A	B			B
Approach Delay (s/veh)	29.2		10.5			10.1
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	559	137	821	745
v/c Ratio	0.76	0.30	0.40	0.36
Control Delay (s/veh)	34.9	6.1	10.5	10.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.9	6.1	10.5	10.1
Queue Length 50th (m)	41.2	0.0	32.4	28.5
Queue Length 95th (m)	57.6	11.9	55.7	49.6
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1035	584	2059	2059
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	0.23	0.40	0.36

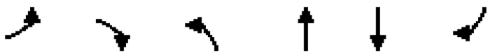
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	137	821	0	0	745
Future Volume (vph)	559	137	821	0	0	745
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	559	137	821	0	0	745
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	559	35	821	0	0	745
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	21.2	21.2	48.2			48.2
Effective Green, g (s)	21.2	21.2	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	741	355	2059			2059
v/s Ratio Prot	c0.20		c0.23			0.21
v/s Ratio Perm		0.03				
v/c Ratio	0.75	0.10	0.40			0.36
Uniform Delay, d1	28.0	23.1	9.1			8.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.4	0.1	0.6			0.5
Delay (s)	32.3	23.2	9.6			9.3
Level of Service	C	C	A			A
Approach Delay (s/veh)	30.5		9.6			9.3
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

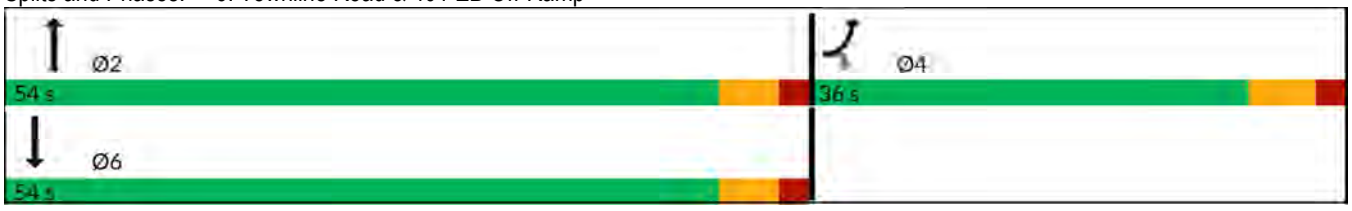


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	389	505	0	888	1150	0
Future Volume (vph)	389	505	0	888	1150	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		61				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	389	505	0	888	1150	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	389	505	0	888	1150	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.74	1.00		0.49	0.65	
Control Delay (s/veh)	37.0	69.3		14.4	17.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	69.3		14.4	17.1	
LOS	D	E		B	B	
Approach Delay (s/veh)	55.3			14.4	17.1	
Approach LOS	E			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay (s/veh): 27.9		Intersection LOS: C	
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



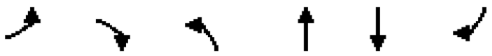


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	389	505	888	1150
v/c Ratio	0.74	1.00	0.49	0.65
Control Delay (s/veh)	37.0	69.3	14.4	17.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	69.3	14.4	17.1
Queue Length 50th (m)	59.1	~78.5	47.8	70.2
Queue Length 95th (m)	#94.9	#143.5	62.9	91.1
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	504	1830	1779
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	0.74	1.00	0.49	0.65

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

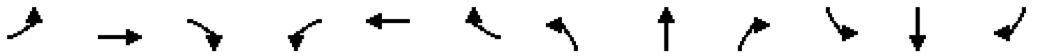
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	389	505	0	888	1150	0
Future Volume (vph)	389	505	0	888	1150	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	389	505	0	888	1150	0
RTOR Reduction (vph)	0	41	0	0	0	0
Lane Group Flow (vph)	389	464	0	888	1150	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.24			0.26	c0.34	
v/s Ratio Perm		c0.33				
v/c Ratio	0.74	1.00		0.49	0.65	
Uniform Delay, d1	26.9	30.3		13.2	15.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	42.4		0.9	1.8	
Delay (s)	32.4	72.6		14.1	16.8	
Level of Service	C	E		B	B	
Approach Delay (s/veh)	55.1			14.1	16.8	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

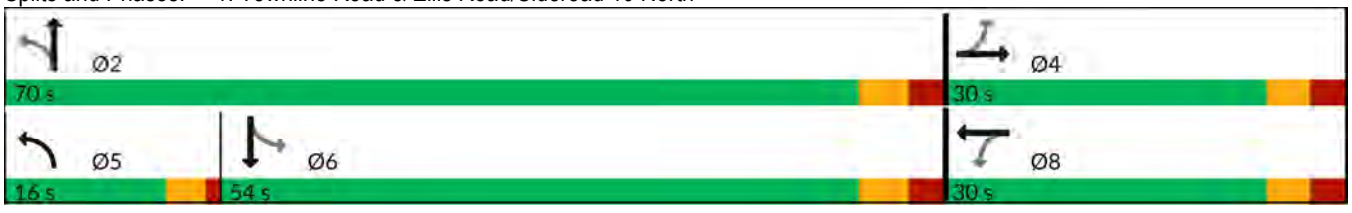


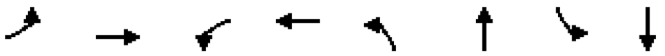
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Future Volume (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.870			0.969			0.994			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1581	0	1668	1606	0	1668	1547	0
Flt Permitted	0.722			0.530			0.285			0.256		
Satd. Flow (perm)	1267	1395	0	912	1581	0	500	1606	0	449	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		152			11			4			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	175	0	76	54	0	372	988	0	9	604	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Don't Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.3	12.3		12.3	12.3		66.1	63.8		48.0	48.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.75	0.72		0.54	0.54	
v/c Ratio	0.25	0.54		0.60	0.24		0.70	0.85		0.04	0.72	
Control Delay (s/veh)	37.0	14.9		55.7	30.3		12.6	19.3		11.7	21.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	14.9		55.7	30.3		12.6	19.3		11.7	21.9	
LOS	D	B		E	C		B	B		B	C	
Approach Delay (s/veh)		19.3			45.2			17.5			21.7	
Approach LOS		B			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 88.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 20.3		Intersection LOS: C	
Intersection Capacity Utilization 101.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

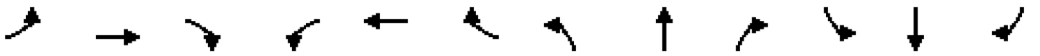




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	175	76	54	372	988	9	604
v/c Ratio	0.25	0.54	0.60	0.24	0.70	0.85	0.04	0.72
Control Delay (s/veh)	37.0	14.9	55.7	30.3	12.6	19.3	11.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	14.9	55.7	30.3	12.6	19.3	11.7	21.9
Queue Length 50th (m)	6.7	3.5	12.3	6.5	16.0	97.7	0.7	70.3
Queue Length 95th (m)	16.1	20.8	26.3	16.6	#37.9	#242.4	3.3	130.0
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	344	490	248	438	532	1160	243	844
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.36	0.31	0.12	0.70	0.85	0.04	0.72

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)	44	23	152	76	43	11	372	949	39	9	539	65
Future Volume (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1395		1635	1582		1668	1607		1668	1547	
Flt Permitted	0.72	1.00		0.53	1.00		0.28	1.00		0.26	1.00	
Satd. Flow (perm)	1267	1395		913	1582		500	1607		449	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	23	152	76	43	11	372	949	39	9	539	65
RTOR Reduction (vph)	0	131	0	0	9	0	0	1	0	0	4	0
Lane Group Flow (vph)	44	44	0	76	45	0	372	987	0	9	600	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		63.8	63.8		48.0	48.0	
Effective Green, g (s)	12.2	12.2		12.2	12.2		63.8	63.8		48.0	48.0	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.72	0.72		0.54	0.54	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	192		126	218		517	1161		244	840	
v/s Ratio Prot		0.03			0.03		0.10	c0.61			0.39	
v/s Ratio Perm	0.03			c0.08			0.42			0.02		
v/c Ratio	0.25	0.23		0.60	0.20		0.72	0.85		0.04	0.71	
Uniform Delay, d1	34.0	33.9		35.8	33.7		8.0	8.8		9.4	15.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		7.9	0.5		4.8	7.9		0.3	5.2	
Delay (s)	34.7	34.5		43.7	34.2		12.7	16.7		9.7	20.2	
Level of Service	C	C		D	C		B	B		A	C	
Approach Delay (s/veh)		34.5			39.7			15.6			20.0	
Approach LOS		C			D			B			C	

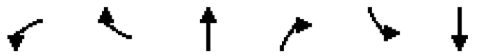
Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1360	0	0	767
Future Volume (vph)	0	0	1360	0	0	767
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1360	0	0	767
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1360	0	0	767
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

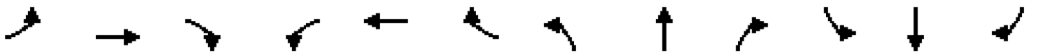
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 80.0%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1360	0	0	767
Future Volume (Veh/h)	0	0	1360	0	0	767
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	1360	0	0	767
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.38	0.24			0.24	
vC, conflicting volume	2127	1360			1360	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1521	928			928	
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	100			100	
cM capacity (veh/h)	50	80			180	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	1360	0	767
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.80	0.00	0.45
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

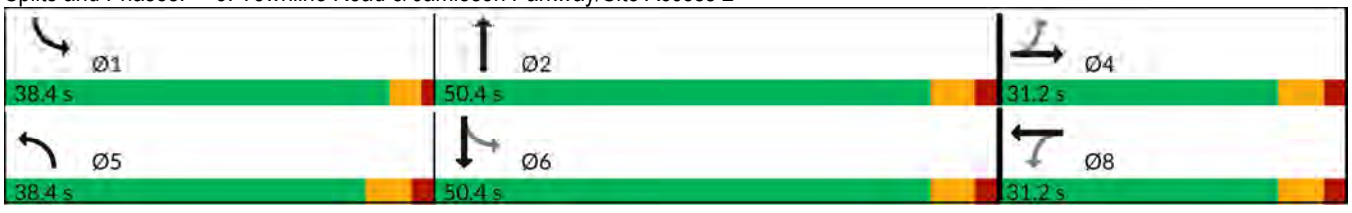


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	0	414	0	0	0	468	1080	0	0	596	163
Future Volume (vph)	245	0	414	0	0	0	468	1080	0	0	596	163
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.968	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		536									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	245	0	414	0	0	0	468	1080	0	0	596	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	414	0	0	0	0	468	1080	0	0	759	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	31.2	31.2		31.2	31.2		38.4	50.4		38.4	50.4	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		32.0%	42.0%		32.0%	42.0%	
Maximum Green (s)	25.2	25.2		25.2	25.2		32.4	44.4		34.4	44.4	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			23.4			23.4	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	23.4	23.4					20.7	71.4			44.6	
Actuated g/C Ratio	0.22	0.22					0.19	0.67			0.42	
v/c Ratio	0.84	0.57					0.75	0.49			0.57	
Control Delay (s/veh)	66.4	3.7					49.0	9.8			25.8	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	66.4	3.7					49.0	9.8			25.8	
LOS	E	A					D	A			C	
Approach Delay (s/veh)		27.0						21.7			25.8	
Approach LOS		C						C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 106.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 23.9		Intersection LOS: C	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

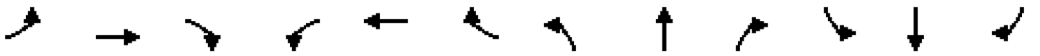




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	245	414	468	1080	759
v/c Ratio	0.84	0.57	0.75	0.49	0.57
Control Delay (s/veh)	66.4	3.7	49.0	9.8	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.4	3.7	49.0	9.8	25.8
Queue Length 50th (m)	49.0	0.0	48.6	55.6	61.6
Queue Length 95th (m)	#95.4	1.1	65.5	69.3	88.4
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	314	737	976	2206	1321
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.56	0.48	0.49	0.57

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)	245	0	414	0	0	0	468	1080	0	0	596	163
Future Volume (vph)	245	0	414	0	0	0	468	1080	0	0	596	163
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3302			3116	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3302			3116	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	245	0	414	0	0	0	468	1080	0	0	596	163
RTOR Reduction (vph)	0	323	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	245	91	0	0	0	0	468	1080	0	0	740	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	23.4	23.4					20.7	71.3			44.6	
Effective Green, g (s)	23.4	23.4					20.7	71.3			44.6	
Actuated g/C Ratio	0.22	0.22					0.19	0.67			0.42	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	291	304					621	2206			1302	
v/s Ratio Prot		0.07					c0.15	0.33			c0.24	
v/s Ratio Perm	c0.18											
v/c Ratio	0.84	0.30					0.75	0.49			0.57	
Uniform Delay, d1	39.9	34.8					40.6	8.7			23.7	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	19.3	0.6					5.2	0.8			1.8	
Delay (s)	59.2	35.3					45.8	9.5			25.5	
Level of Service	E	D					D	A			C	
Approach Delay (s/veh)		44.2			0.0			20.5			25.5	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	356	1308	0	0	713
Future Volume (vph)	560	356	1308	0	0	713
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		27				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	560	356	1308	0	0	713
Shared Lane Traffic (%)						
Lane Group Flow (vph)	560	356	1308	0	0	713
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	25.6	25.6	48.5			48.5
Actuated g/C Ratio	0.30	0.30	0.56			0.56
v/c Ratio	0.64	0.79	0.67			0.36
Control Delay (s/veh)	29.6	38.9	17.2			12.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	29.6	38.9	17.2			12.6
LOS	C	D	B			B
Approach Delay (s/veh)	33.2		17.2			12.6
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 86.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 21.1		Intersection LOS: C	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	560	356	1308	713
v/c Ratio	0.64	0.79	0.67	0.36
Control Delay (s/veh)	29.6	38.9	17.2	12.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.6	38.9	17.2	12.6
Queue Length 50th (m)	41.0	49.7	73.8	31.6
Queue Length 95th (m)	56.1	79.6	131.6	59.0
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1352	684	1956	1956
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	0.41	0.52	0.67	0.36

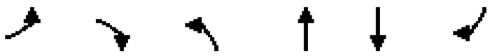
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	356	1308	0	0	713
Future Volume (vph)	560	356	1308	0	0	713
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	560	356	1308	0	0	713
RTOR Reduction (vph)	0	19	0	0	0	0
Lane Group Flow (vph)	560	337	1308	0	0	713
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	25.6	25.6	48.4			48.4
Effective Green, g (s)	25.6	25.6	48.4			48.4
Actuated g/C Ratio	0.30	0.30	0.56			0.56
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	870	430	1958			1958
v/s Ratio Prot	0.19		c0.37			0.20
v/s Ratio Perm		c0.23				
v/c Ratio	0.64	0.78	0.67			0.36
Uniform Delay, d1	26.5	27.9	13.4			10.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.6	9.0	1.8			0.5
Delay (s)	28.1	37.0	15.2			11.1
Level of Service	C	D	B			B
Approach Delay (s/veh)	31.6		15.2			11.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

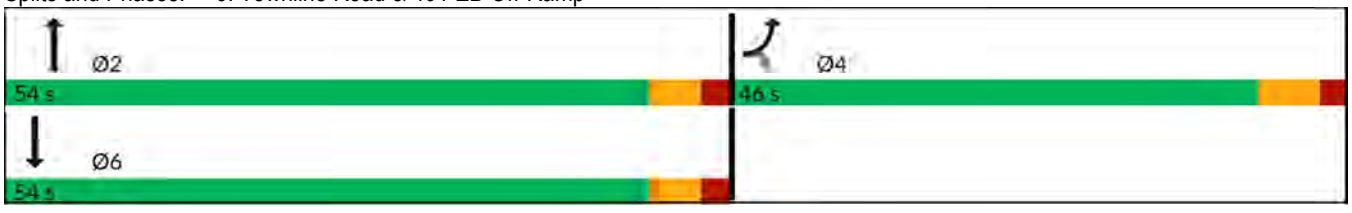


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	415	504	0	1163	1201	0
Future Volume (vph)	415	504	0	1163	1201	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		37				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	415	504	0	1163	1201	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	504	0	1163	1201	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	35.0	35.0		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
v/c Ratio	0.70	0.92		0.65	0.70	
Control Delay (s/veh)	32.9	50.0		20.6	22.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.9	50.0		20.6	22.0	
LOS	C	D		C	C	
Approach Delay (s/veh)	42.3			20.6	22.0	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 95.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 27.2		Intersection LOS: C	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

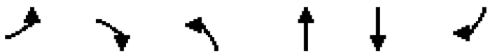




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	415	504	1163	1201
v/c Ratio	0.70	0.92	0.65	0.70
Control Delay (s/veh)	32.9	50.0	20.6	22.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.9	50.0	20.6	22.0
Queue Length 50th (m)	64.3	81.9	88.5	95.1
Queue Length 95th (m)	96.9	#140.6	111.6	120.1
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	670	618	1779	1712
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	0.62	0.82	0.65	0.70

Intersection Summary

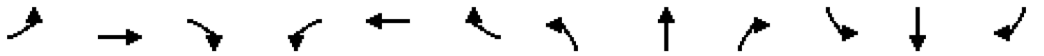
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	415	504	0	1163	1201	0
Future Volume (vph)	415	504	0	1163	1201	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	415	504	0	1163	1201	0
RTOR Reduction (vph)	0	23	0	0	0	0
Lane Group Flow (vph)	415	481	0	1163	1201	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	35.0	35.0		48.2	48.2	
Effective Green, g (s)	35.0	35.0		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	592	527		1780	1712	
v/s Ratio Prot	0.26			0.33	c0.35	
v/s Ratio Perm		c0.33				
v/c Ratio	0.70	0.91		0.65	0.70	
Uniform Delay, d1	25.9	28.9		17.6	18.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	20.1		1.9	2.4	
Delay (s)	29.6	49.0		19.5	20.7	
Level of Service	C	D		B	C	
Approach Delay (s/veh)	40.2			19.5	20.7	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



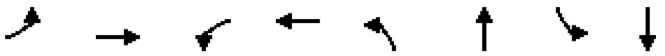
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Future Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.973			0.991			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1418	0	1668	1579	0	1651	1587	0	1668	1596	0
Flt Permitted	0.743			0.573			0.466			0.403		
Satd. Flow (perm)	1291	1418	0	1006	1579	0	810	1587	0	707	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		211			4			7			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	241	0	34	22	0	191	558	0	3	476	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Don't Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.4	9.4		9.4	9.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
v/c Ratio	0.23	0.56		0.19	0.08		0.41	0.60		0.01	0.51	
Control Delay (s/veh)	20.4	10.2		20.1	16.0		10.0	11.0		5.7	9.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.4	10.2		20.1	16.0		10.0	11.0		5.7	9.3	
LOS	C	B		C	B		A	B		A	A	
Approach Delay (s/veh)		12.1			18.5			10.8			9.3	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 51.8			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 10.8		Intersection LOS: B	
Intersection Capacity Utilization 84.8%		ICU Level of Service E	
Analysis Period (min) 15			

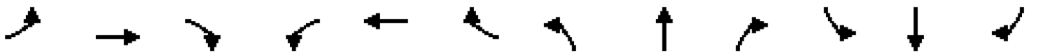
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	241	34	22	191	558	3	476
v/c Ratio	0.23	0.56	0.19	0.08	0.41	0.60	0.01	0.51
Control Delay (s/veh)	20.4	10.2	20.1	16.0	10.0	11.0	5.7	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.4	10.2	20.1	16.0	10.0	11.0	5.7	9.3
Queue Length 50th (m)	4.3	2.4	2.7	1.4	7.6	25.6	0.1	19.9
Queue Length 95th (m)	11.6	16.7	8.4	5.7	25.0	66.6	1.0	51.8
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	499	677	389	613	470	924	410	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.36	0.09	0.04	0.41	0.60	0.01	0.51

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Future Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1579		1651	1588		1668	1596	
Flt Permitted	0.74	1.00		0.57	1.00		0.47	1.00		0.40	1.00	
Satd. Flow (perm)	1291	1417		1006	1579		811	1588		707	1596	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	30	211	34	18	4	191	526	32	3	436	40
RTOR Reduction (vph)	0	173	0	0	3	0	0	3	0	0	4	0
Lane Group Flow (vph)	54	68	0	34	19	0	191	555	0	3	472	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.4	9.4		9.4	9.4		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.4	9.4		9.4	9.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	257		182	286		471	922		410	927	
v/s Ratio Prot		c0.05			0.01			c0.35			0.30	
v/s Ratio Perm	0.04			0.03			0.24			0.00		
v/c Ratio	0.23	0.27		0.19	0.07		0.41	0.60		0.01	0.51	
Uniform Delay, d1	18.1	18.2		18.0	17.6		5.9	7.0		4.6	6.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.5	0.1		2.6	2.9		0.0	2.0	
Delay (s)	18.6	18.8		18.5	17.7		8.5	9.9		4.6	8.4	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s/veh)		18.8			18.1			9.5			8.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	749	0	0	681
Future Volume (vph)	0	0	749	0	0	681
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	749	0	0	681
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	749	0	0	681
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

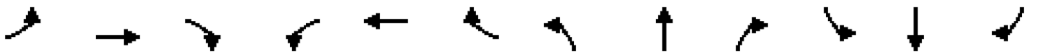
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	749	0	0	681
Future Volume (Veh/h)	0	0	749	0	0	681
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	749	0	0	681
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.91	0.84			0.84	
vC, conflicting volume	1430	749			749	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1089	609			609	
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	100			100	
cM capacity (veh/h)	217	417			817	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	749	0	681
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.44	0.00	0.40
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

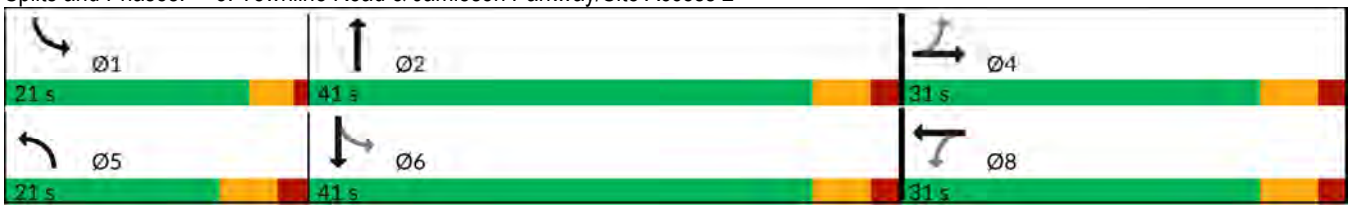


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Future Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.974	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		435									31	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	264	0	0	0	0	238	593	0	0	681	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		4.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	15.7	15.7					11.2	52.6			35.3	
Actuated g/C Ratio	0.20	0.20					0.14	0.65			0.44	
v/c Ratio	0.64	0.43					0.53	0.28			0.48	
Control Delay (s/veh)	41.9	2.1					37.8	7.0			18.0	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	41.9	2.1					37.8	7.0			18.0	
LOS	D	A					D	A			B	
Approach Delay (s/veh)		17.5						15.8			18.0	
Approach LOS		B						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 80.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 17.0		Intersection LOS: B	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

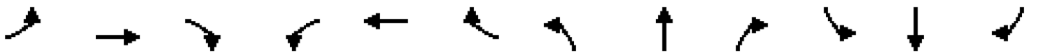
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	167	264	238	593	681
v/c Ratio	0.64	0.43	0.53	0.28	0.48
Control Delay (s/veh)	41.9	2.1	37.8	7.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.9	2.1	37.8	7.0	18.0
Queue Length 50th (m)	23.5	0.0	17.3	17.0	34.8
Queue Length 95th (m)	44.2	0.0	31.3	34.0	64.4
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	417	733	603	2139	1429
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.36	0.39	0.28	0.48

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Future Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3270			3209	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3270			3209	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	0	264	0	0	0	238	593	0	0	561	120
RTOR Reduction (vph)	0	212	0	0	0	0	0	0	0	0	17	0
Lane Group Flow (vph)	167	52	0	0	0	0	238	593	0	0	664	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	15.7	15.7					11.2	52.6			35.4	
Effective Green, g (s)	15.7	15.7					11.2	52.6			35.4	
Actuated g/C Ratio	0.20	0.20					0.14	0.66			0.44	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	259	271					446	2141			1414	
v/s Ratio Prot		0.04					c0.07	0.18			c0.21	
v/s Ratio Perm	c0.13											
v/c Ratio	0.64	0.19					0.53	0.28			0.47	
Uniform Delay, d1	29.7	27.0					32.1	5.8			15.8	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	5.4	0.3					1.2	0.3			1.1	
Delay (s)	35.2	27.3					33.4	6.2			16.9	
Level of Service	D	C					C	A			B	
Approach Delay (s/veh)		30.4			0.0			13.9			16.9	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

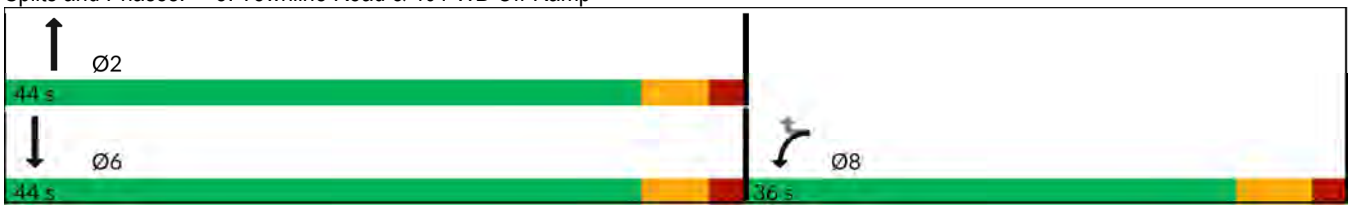


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	169	664	0	0	569
Future Volume (vph)	413	169	664	0	0	569
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		169				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	413	169	664	0	0	569
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	169	664	0	0	569
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	13.9	13.9	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.59			0.59
v/c Ratio	0.62	0.38	0.32			0.28
Control Delay (s/veh)	27.2	6.6	7.6			7.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	27.2	6.6	7.6			7.4
LOS	C	A	A			A
Approach Delay (s/veh)	21.2		7.6			7.4
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 11.9		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	413	169	664	569
v/c Ratio	0.62	0.38	0.32	0.28
Control Delay (s/veh)	27.2	6.6	7.6	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.2	6.6	7.6	7.4
Queue Length 50th (m)	23.1	0.0	18.3	15.2
Queue Length 95th (m)	35.3	12.5	32.8	27.7
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1411	758	2086	2066
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	0.29	0.22	0.32	0.28

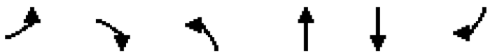
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	169	664	0	0	569
Future Volume (vph)	413	169	664	0	0	569
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	413	169	664	0	0	569
RTOR Reduction (vph)	0	133	0	0	0	0
Lane Group Flow (vph)	413	36	664	0	0	569
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	13.9	13.9	38.1			38.1
Effective Green, g (s)	13.9	13.9	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	663	313	2088			2067
v/s Ratio Prot	c0.13		c0.19			0.16
v/s Ratio Perm		0.03				
v/c Ratio	0.62	0.12	0.32			0.28
Uniform Delay, d1	22.9	20.4	6.7			6.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.8	0.2	0.4			0.3
Delay (s)	24.8	20.5	7.1			6.8
Level of Service	C	C	A			A
Approach Delay (s/veh)	23.5		7.1			6.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

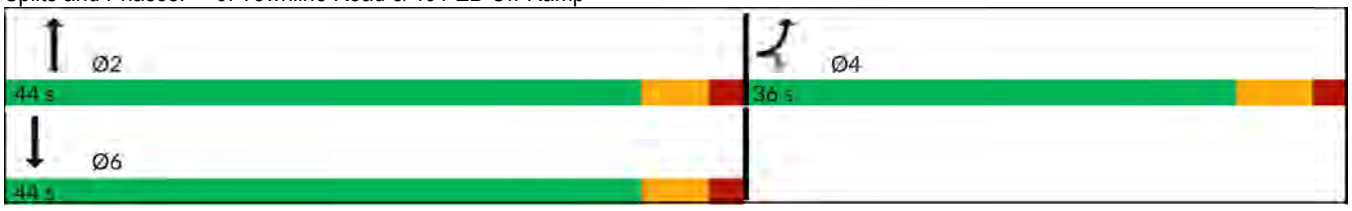


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	318	461	0	540	858	0
Future Volume (vph)	318	461	0	540	858	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		99				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	318	461	0	540	858	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	461	0	540	858	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	23.7	23.7		38.3	38.3	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
v/c Ratio	0.61	0.87		0.30	0.48	
Control Delay (s/veh)	26.6	36.6		12.0	13.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	26.6	36.6		12.0	13.8	
LOS	C	D		B	B	
Approach Delay (s/veh)	32.5			12.0	13.8	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 20.1		Intersection LOS: C	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

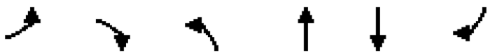




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	318	461	540	858
v/c Ratio	0.61	0.87	0.30	0.48
Control Delay (s/veh)	26.6	36.6	12.0	13.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.6	36.6	12.0	13.8
Queue Length 50th (m)	37.1	48.0	23.5	42.0
Queue Length 95th (m)	60.9	#95.1	36.1	61.1
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	650	639	1795	1795
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	0.72	0.30	0.48

Intersection Summary

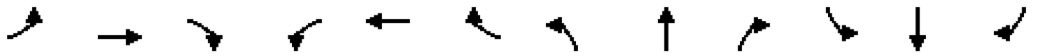
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	318	461	0	540	858	0
Future Volume (vph)	318	461	0	540	858	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	318	461	0	540	858	0
RTOR Reduction (vph)	0	68	0	0	0	0
Lane Group Flow (vph)	318	393	0	540	858	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	23.7	23.7		38.3	38.3	
Effective Green, g (s)	23.7	23.7		38.3	38.3	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	520	463		1799	1799	
v/s Ratio Prot	0.19			0.15	c0.25	
v/s Ratio Perm		c0.27				
v/c Ratio	0.61	0.85		0.30	0.48	
Uniform Delay, d1	21.5	23.7		10.4	11.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	13.6		0.4	0.9	
Delay (s)	23.6	37.4		10.8	12.6	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	31.8			10.8	12.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

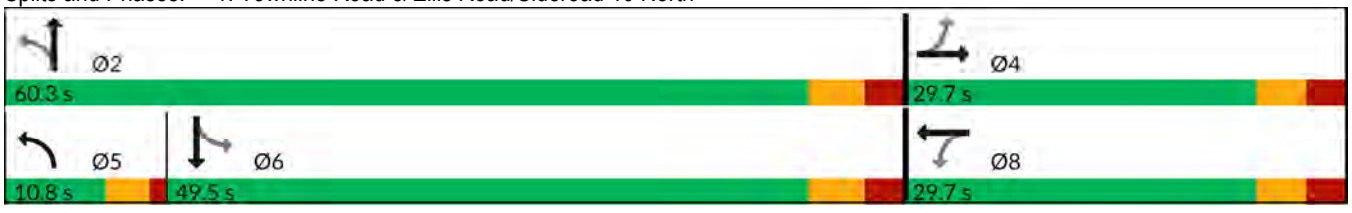


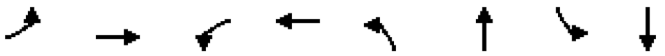
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Future Volume (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.965			0.989			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1392	0	1668	1575	0	1603	1551	0	1334	1575	0
Flt Permitted	0.746			0.331			0.178			0.392		
Satd. Flow (perm)	1296	1392	0	581	1575	0	300	1551	0	550	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		266			4			8			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	302	0	19	17	0	130	719	0	4	783	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Don't Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.1	12.1		12.1	12.1		56.5	54.2		43.6	43.6	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.69		0.55	0.55	
v/c Ratio	0.52	0.69		0.21	0.07		0.40	0.67		0.01	0.90	
Control Delay (s/veh)	39.9	14.9		34.1	23.9		7.9	12.0		10.0	32.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	39.9	14.9		34.1	23.9		7.9	12.0		10.0	32.4	
LOS	D	B		C	C		A	B		A	C	
Approach Delay (s/veh)		21.3			29.3			11.4			32.3	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 21.5		Intersection LOS: C	
Intersection Capacity Utilization 90.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

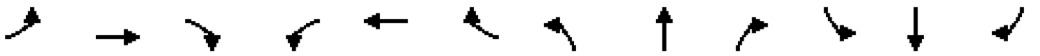




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	302	19	17	130	719	4	783
v/c Ratio	0.52	0.69	0.21	0.07	0.40	0.67	0.01	0.90
Control Delay (s/veh)	39.9	14.9	34.1	23.9	7.9	12.0	10.0	32.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.9	14.9	34.1	23.9	7.9	12.0	10.0	32.4
Queue Length 50th (m)	14.4	4.7	2.5	1.7	4.6	49.6	0.2	93.5
Queue Length 95th (m)	28.7	27.1	8.4	6.7	13.0	116.3	1.8	#199.6
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	391	606	175	479	328	1071	304	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.50	0.11	0.04	0.40	0.67	0.01	0.90

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)	104	36	266	19	13	4	130	665	54	4	748	35
Future Volume (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1392		1668	1574		1603	1550		1334	1576	
Flt Permitted	0.75	1.00		0.33	1.00		0.18	1.00		0.39	1.00	
Satd. Flow (perm)	1297	1392		580	1574		300	1550		550	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	36	266	19	13	4	130	665	54	4	748	35
RTOR Reduction (vph)	0	225	0	0	3	0	0	2	0	0	2	0
Lane Group Flow (vph)	104	77	0	19	14	0	130	717	0	4	781	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.1	12.1		12.1	12.1		54.2	54.2		43.6	43.6	
Effective Green, g (s)	12.1	12.1		12.1	12.1		54.2	54.2		43.6	43.6	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.69	0.69		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	214		89	242		316	1068		305	874	
v/s Ratio Prot		0.06			0.01		0.03	c0.46			c0.50	
v/s Ratio Perm	c0.08			0.03			0.25			0.01		
v/c Ratio	0.52	0.36		0.21	0.06		0.41	0.67		0.01	0.89	
Uniform Delay, d1	30.6	29.8		29.1	28.4		9.0	7.0		7.8	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	1.0		1.2	0.1		0.9	3.4		0.1	13.5	
Delay (s)	33.1	30.8		30.3	28.5		9.9	10.4		7.9	29.0	
Level of Service	C	C		C	C		A	B		A	C	
Approach Delay (s/veh)		31.4			29.4			10.3			28.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	848	0	0	1031
Future Volume (vph)	0	0	848	0	0	1031
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	848	0	0	1031
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	848	0	0	1031
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	848	0	0	1031
Future Volume (Veh/h)	0	0	848	0	0	1031
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	848	0	0	1031
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.66	0.80			0.80	
vC, conflicting volume	1879	848			848	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1377	680			680	
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	100			100	
cM capacity (veh/h)	106	359			725	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	848	0	1031
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.50	0.00	0.61
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

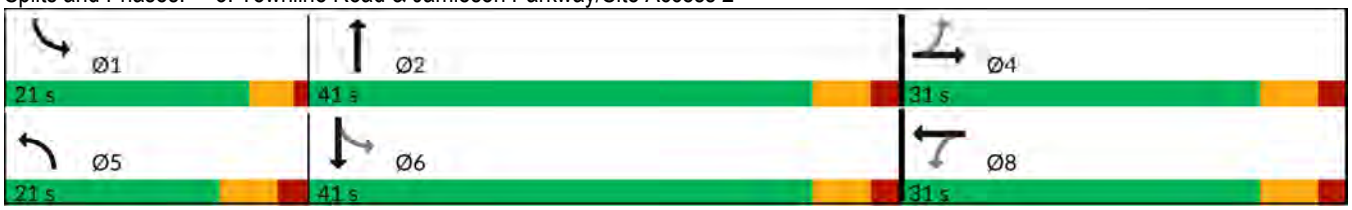
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Future Volume (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850									0.973	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1635	1347	0	1755	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	1755	1632	0	3202	3302	0	1755	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		363									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Adj. Flow (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	357	0	0	0	0	359	677	0	0	1047	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	16.3	16.3					13.3	54.7			35.3	
Actuated g/C Ratio	0.20	0.20					0.16	0.66			0.42	
v/c Ratio	0.65	0.64					0.70	0.31			0.77	
Control Delay (s/veh)	43.3	8.9					41.9	7.3			26.0	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	43.3	8.9					41.9	7.3			26.0	
LOS	D	A					D	A			C	
Approach Delay (s/veh)		19.9						19.3			26.0	
Approach LOS		B						B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 83.1			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 22.1		Intersection LOS: C	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	167	357	359	677	1047
v/c Ratio	0.65	0.64	0.70	0.31	0.77
Control Delay (s/veh)	43.3	8.9	41.9	7.3	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.3	8.9	41.9	7.3	26.0
Queue Length 50th (m)	24.9	0.0	28.0	21.6	72.8
Queue Length 95th (m)	44.4	20.2	46.1	39.3	#123.3
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	395	661	583	2172	1365
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.54	0.62	0.31	0.77

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)	167	0	357	0	0	0	359	677	0	0	856	191
Future Volume (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00					1.00	1.00			1.00	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1635	1347					3203	3302			3167	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1303	1347					3203	3302			3167	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	0	357	0	0	0	359	677	0	0	856	191
RTOR Reduction (vph)	0	287	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	167	70	0	0	0	0	359	677	0	0	1028	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	16.3	16.3					13.3	54.6			35.3	
Effective Green, g (s)	16.3	16.3					13.3	54.6			35.3	
Actuated g/C Ratio	0.20	0.20					0.16	0.66			0.43	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	256	264					513	2174			1348	
v/s Ratio Prot		0.05					c0.11	0.21			c0.32	
v/s Ratio Perm	c0.13											
v/c Ratio	0.65	0.27					0.70	0.31			0.76	
Uniform Delay, d1	30.7	28.2					32.9	6.1			20.2	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	5.9	0.5					4.2	0.4			4.1	
Delay (s)	36.5	28.8					37.1	6.5			24.4	
Level of Service	D	C					D	A			C	
Approach Delay (s/veh)		31.2			0.0			17.1			24.4	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

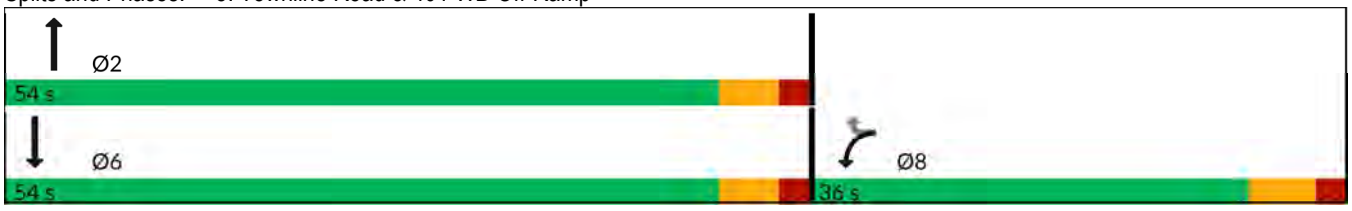


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	149	905	0	0	821
Future Volume (vph)	605	149	905	0	0	821
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		116				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	605	149	905	0	0	821
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	149	905	0	0	821
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.78	0.33	0.45			0.41
Control Delay (s/veh)	35.4	9.2	11.6			11.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	35.4	9.2	11.6			11.2
LOS	D	A	B			B
Approach Delay (s/veh)	30.2		11.6			11.2
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 17.1		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	605	149	905	821
v/c Ratio	0.78	0.33	0.45	0.41
Control Delay (s/veh)	35.4	9.2	11.6	11.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	9.2	11.6	11.2
Queue Length 50th (m)	45.5	3.9	40.4	35.5
Queue Length 95th (m)	63.0	16.8	63.8	56.5
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1016	562	2021	2021
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	0.60	0.27	0.45	0.41

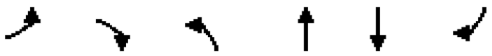
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	149	905	0	0	821
Future Volume (vph)	605	149	905	0	0	821
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	605	149	905	0	0	821
RTOR Reduction (vph)	0	84	0	0	0	0
Lane Group Flow (vph)	605	65	905	0	0	821
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	22.7	22.7	48.2			48.2
Effective Green, g (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	779	374	2022			2022
v/s Ratio Prot	c0.21		c0.26			0.23
v/s Ratio Perm		0.05				
v/c Ratio	0.78	0.17	0.45			0.41
Uniform Delay, d1	28.0	23.2	10.0			9.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.9	0.2	0.7			0.6
Delay (s)	32.9	23.4	10.7			10.3
Level of Service	C	C	B			B
Approach Delay (s/veh)	31.0		10.7			10.3
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

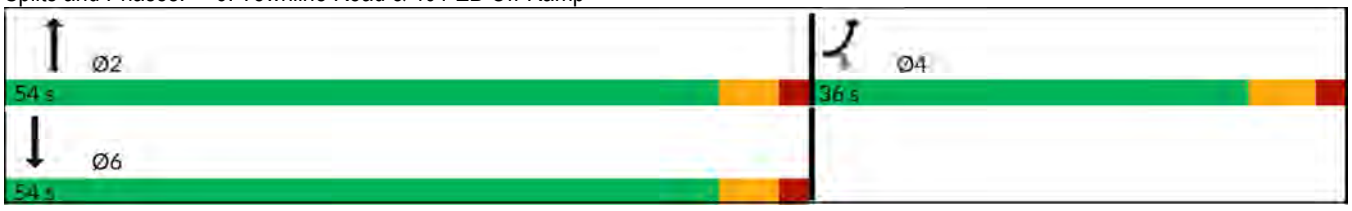


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	422	548	0	979	1265	0
Future Volume (vph)	422	548	0	979	1265	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		45				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	422	548	0	979	1265	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	422	548	0	979	1265	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.80	1.11		0.53	0.71	
Control Delay (s/veh)	41.3	103.3		15.1	18.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	41.3	103.3		15.1	18.6	
LOS	D	F		B	B	
Approach Delay (s/veh)	76.3			15.1	18.6	
Approach LOS	E			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay (s/veh): 35.0		Intersection LOS: C	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



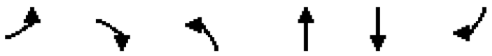


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	422	548	979	1265
v/c Ratio	0.80	1.11	0.53	0.71
Control Delay (s/veh)	41.3	103.3	15.1	18.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.3	103.3	15.1	18.6
Queue Length 50th (m)	66.0	~104.1	54.7	81.4
Queue Length 95th (m)	#112.4	#165.4	71.4	105.4
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	493	1830	1779
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	0.80	1.11	0.53	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

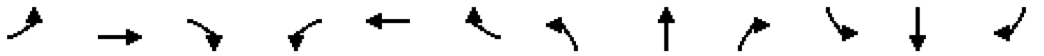
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	422	548	0	979	1265	0
Future Volume (vph)	422	548	0	979	1265	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	422	548	0	979	1265	0
RTOR Reduction (vph)	0	30	0	0	0	0
Lane Group Flow (vph)	422	518	0	979	1265	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.26			0.29	c0.38	
v/s Ratio Perm		c0.37				
v/c Ratio	0.80	1.12		0.53	0.71	
Uniform Delay, d1	27.6	30.3		13.7	15.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.7	78.2		1.1	2.4	
Delay (s)	36.3	108.5		14.8	18.2	
Level of Service	D	F		B	B	
Approach Delay (s/veh)	77.1			14.8	18.2	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

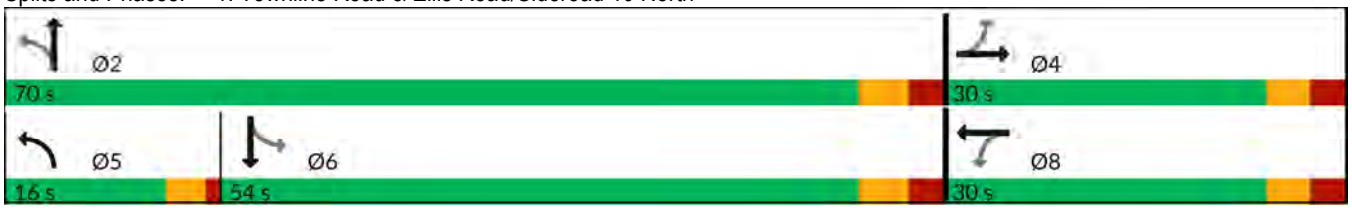


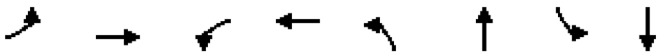
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Future Volume (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.969			0.994			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1394	0	1635	1581	0	1668	1606	0	1668	1547	0
Flt Permitted	0.719			0.487			0.235			0.178		
Satd. Flow (perm)	1262	1394	0	838	1581	0	412	1606	0	312	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			12			4			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	193	0	84	59	0	411	1090	0	10	667	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Don't Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	13.4	13.4		13.4	13.4		66.2	63.9		47.8	47.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.71		0.53	0.53	
v/c Ratio	0.26	0.55		0.67	0.24		0.87	0.95		0.06	0.80	
Control Delay (s/veh)	36.5	14.1		61.6	29.7		29.1	31.8		13.2	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	36.5	14.1		61.6	29.7		29.1	31.8		13.2	27.4	
LOS	D	B		E	C		C	C		B	C	
Approach Delay (s/veh)		18.6			48.4			31.0			27.2	
Approach LOS		B			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.6			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 29.8		Intersection LOS: C	
Intersection Capacity Utilization 109.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

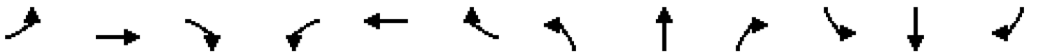




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	193	84	59	411	1090	10	667
v/c Ratio	0.26	0.55	0.67	0.24	0.87	0.95	0.06	0.80
Control Delay (s/veh)	36.5	14.1	61.6	29.7	29.1	31.8	13.2	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.5	14.1	61.6	29.7	29.1	31.8	13.2	27.4
Queue Length 50th (m)	7.5	3.8	13.8	7.2	19.7	137.8	0.8	86.3
Queue Length 95th (m)	17.3	22.2	28.8	17.5	#71.8	#294.9	3.9	#175.4
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	338	497	225	433	472	1145	166	829
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.39	0.37	0.14	0.87	0.95	0.06	0.80

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)	49	25	168	84	47	12	411	1047	43	10	595	72
Future Volume (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1394		1635	1582		1668	1607		1668	1547	
Flt Permitted	0.72	1.00		0.49	1.00		0.24	1.00		0.18	1.00	
Satd. Flow (perm)	1261	1394		837	1582		413	1607		312	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
RTOR Reduction (vph)	0	143	0	0	10	0	0	1	0	0	4	0
Lane Group Flow (vph)	49	50	0	84	49	0	411	1089	0	10	663	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.4	13.4		13.4	13.4		63.9	63.9		47.9	47.9	
Effective Green, g (s)	13.4	13.4		13.4	13.4		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.71		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	188	208		125	236		462	1146		166	827	
v/s Ratio Prot		0.04			0.03		0.12	c0.68			0.43	
v/s Ratio Perm	0.04			c0.10			0.52			0.03		
v/c Ratio	0.26	0.24		0.67	0.21		0.89	0.95		0.06	0.80	
Uniform Delay, d1	33.7	33.6		36.0	33.4		11.3	11.4		10.0	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6		13.3	0.4		18.5	17.0		0.7	8.1	
Delay (s)	34.5	34.2		49.3	33.9		29.8	28.5		10.7	25.1	
Level of Service	C	C		D	C		C	C		B	C	
Approach Delay (s/veh)		34.3			43.0			28.8			24.9	
Approach LOS		C			D			C			C	

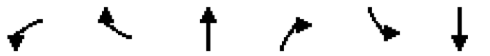
Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1501	0	0	847
Future Volume (vph)	0	0	1501	0	0	847
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1501	0	0	847
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1501	0	0	847
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

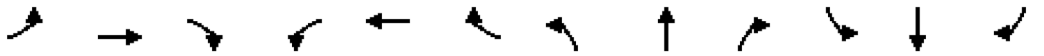
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1501	0	0	847
Future Volume (Veh/h)	0	0	1501	0	0	847
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	1501	0	0	847
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.39	0.22			0.22	
vC, conflicting volume	2348	1501			1501	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1681	1504			1504	
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	100			100	
cM capacity (veh/h)	41	33			99	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	1501	0	847
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.88	0.00	0.50
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

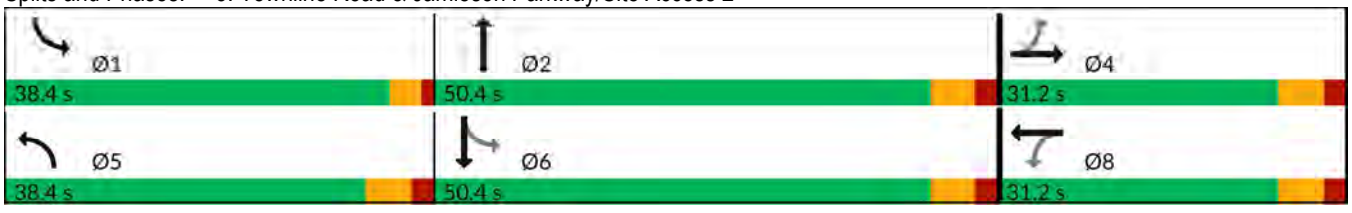


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	0	457	0	0	0	517	1192	0	0	658	180
Future Volume (vph)	270	0	457	0	0	0	517	1192	0	0	658	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.968	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3302	0	1755	3117	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		520									33	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	270	0	457	0	0	0	517	1192	0	0	658	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	457	0	0	0	0	517	1192	0	0	838	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	31.2	31.2		31.2	31.2		38.4	50.4		38.4	50.4	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		32.0%	42.0%		32.0%	42.0%	
Maximum Green (s)	25.2	25.2		25.2	25.2		32.4	44.4		34.4	44.4	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			23.4			23.4	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	25.0	25.0					22.9	73.3			44.5	
Actuated g/C Ratio	0.23	0.23					0.21	0.66			0.40	
v/c Ratio	0.90	0.64					0.78	0.54			0.66	
Control Delay (s/veh)	74.3	5.9					50.2	10.8			29.3	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	74.3	5.9					50.2	10.8			29.3	
LOS	E	A					D	B			C	
Approach Delay (s/veh)		31.3						22.7			29.3	
Approach LOS		C						C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 110.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 26.3		Intersection LOS: C	
Intersection Capacity Utilization 89.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

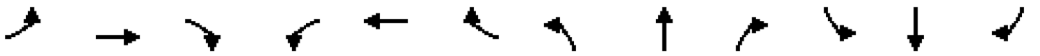




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	270	457	517	1192	838
v/c Ratio	0.90	0.64	0.78	0.54	0.66
Control Delay (s/veh)	74.3	5.9	50.2	10.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	5.9	50.2	10.8	29.3
Queue Length 50th (m)	56.7	0.0	54.7	64.8	73.1
Queue Length 95th (m)	#112.4	12.8	72.6	79.9	104.1
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	303	718	941	2193	1275
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.89	0.64	0.55	0.54	0.66

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)	270	0	457	0	0	0	517	1192	0	0	658	180
Future Volume (vph)	270	0	457	0	0	0	517	1192	0	0	658	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3302			3116	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3302			3116	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	0	457	0	0	0	517	1192	0	0	658	180
RTOR Reduction (vph)	0	353	0	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	270	104	0	0	0	0	517	1192	0	0	818	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	25.1	25.1					22.9	73.4			44.5	
Effective Green, g (s)	25.1	25.1					22.9	73.4			44.5	
Actuated g/C Ratio	0.23	0.23					0.21	0.66			0.40	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	301	315					663	2193			1254	
v/s Ratio Prot		0.07					c0.16	0.36			c0.26	
v/s Ratio Perm	c0.20											
v/c Ratio	0.90	0.33					0.78	0.54			0.65	
Uniform Delay, d1	41.4	35.7					41.4	9.7			26.7	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	27.1	0.6					5.8	1.0			2.7	
Delay (s)	68.5	36.3					47.2	10.7			29.4	
Level of Service	E	D					D	B			C	
Approach Delay (s/veh)		48.3			0.0			21.8			29.4	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	387	1443	0	0	787
Future Volume (vph)	607	387	1443	0	0	787
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		18				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	607	387	1443	0	0	787
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	387	1443	0	0	787
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Don't Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	28.0	28.0	48.4			48.4
Actuated g/C Ratio	0.31	0.31	0.54			0.54
v/c Ratio	0.66	0.82	0.76			0.41
Control Delay (s/veh)	29.4	41.6	20.7			14.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	29.4	41.6	20.7			14.1
LOS	C	D	C			B
Approach Delay (s/veh)	34.2		20.7			14.1
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 23.2		Intersection LOS: C	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	607	387	1443	787
v/c Ratio	0.66	0.82	0.76	0.41
Control Delay (s/veh)	29.4	41.6	20.7	14.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.4	41.6	20.7	14.1
Queue Length 50th (m)	45.4	57.5	94.6	39.2
Queue Length 95th (m)	61.3	90.4	156.9	67.4
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1316	661	1903	1903
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	0.59	0.76	0.41

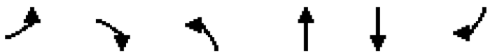
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	387	1443	0	0	787
Future Volume (vph)	607	387	1443	0	0	787
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	607	387	1443	0	0	787
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	607	375	1443	0	0	787
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	28.0	28.0	48.4			48.4
Effective Green, g (s)	28.0	28.0	48.4			48.4
Actuated g/C Ratio	0.31	0.31	0.54			0.54
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	926	458	1905			1905
v/s Ratio Prot	0.21		c0.41			0.22
v/s Ratio Perm		c0.26				
v/c Ratio	0.66	0.82	0.76			0.41
Uniform Delay, d1	26.3	28.1	15.7			11.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	10.9	2.9			0.7
Delay (s)	28.0	39.0	18.6			12.6
Level of Service	C	D	B			B
Approach Delay (s/veh)	32.2		18.6			12.6
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	88.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

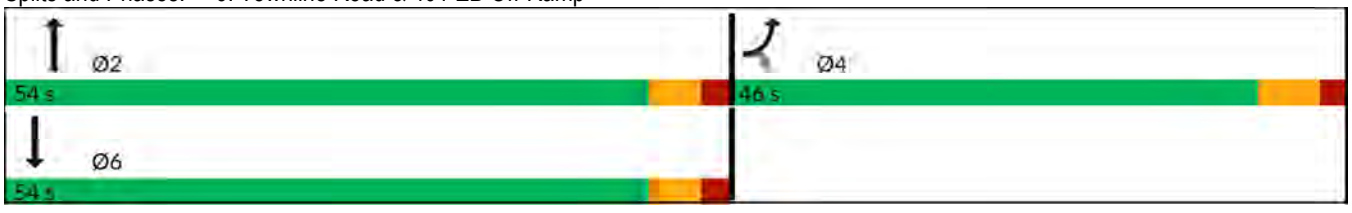


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	451	548	0	1282	1325	0
Future Volume (vph)	451	548	0	1282	1325	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		26				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	451	548	0	1282	1325	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	451	548	0	1282	1325	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Don't Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	38.0	38.0		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
v/c Ratio	0.72	0.96		0.74	0.80	
Control Delay (s/veh)	33.5	58.2		24.0	26.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.5	58.2		24.0	26.1	
LOS	C	E		C	C	
Approach Delay (s/veh)	47.1			24.0	26.1	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.5			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay (s/veh): 31.2		Intersection LOS: C	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

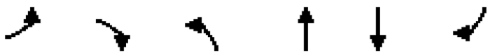




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	451	548	1282	1325
v/c Ratio	0.72	0.96	0.74	0.80
Control Delay (s/veh)	33.5	58.2	24.0	26.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5	58.2	24.0	26.1
Queue Length 50th (m)	71.9	96.5	102.7	111.1
Queue Length 95th (m)	108.2	#163.3	129.1	139.8
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	649	594	1723	1658
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	0.69	0.92	0.74	0.80

Intersection Summary

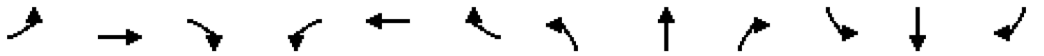
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	451	548	0	1282	1325	0
Future Volume (vph)	451	548	0	1282	1325	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	451	548	0	1282	1325	0
RTOR Reduction (vph)	0	16	0	0	0	0
Lane Group Flow (vph)	451	532	0	1282	1325	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	38.0	38.0		48.0	48.0	
Effective Green, g (s)	38.0	38.0		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	624	556		1722	1656	
v/s Ratio Prot	0.28			0.36	c0.39	
v/s Ratio Perm		c0.37				
v/c Ratio	0.72	0.96		0.74	0.80	
Uniform Delay, d1	25.8	29.5		20.3	21.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	27.4		3.0	4.2	
Delay (s)	29.9	56.9		23.3	25.4	
Level of Service	C	E		C	C	
Approach Delay (s/veh)	44.7			23.3	25.4	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



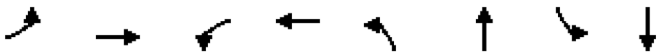
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Future Volume (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.975			0.991			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1418	0	1668	1583	0	1651	1587	0	1668	1596	0
Flt Permitted	0.742			0.511			0.427			0.358		
Satd. Flow (perm)	1290	1418	0	897	1583	0	742	1587	0	628	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		233			4			7			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	266	0	38	24	0	211	616	0	3	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Don't Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
v/c Ratio	0.25	0.59		0.23	0.08		0.49	0.67		0.01	0.57	
Control Delay (s/veh)	20.6	10.3		21.3	15.9		12.4	13.1		6.0	10.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.6	10.3		21.3	15.9		12.4	13.1		6.0	10.4	
LOS	C	B		C	B		B	B		A	B	
Approach Delay (s/veh)		12.2			19.2			12.9			10.4	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 12.2		Intersection LOS: B	
Intersection Capacity Utilization 90.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

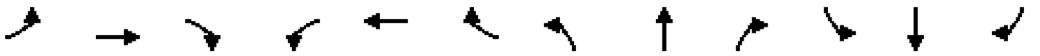




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	266	38	24	211	616	3	525
v/c Ratio	0.25	0.59	0.23	0.08	0.49	0.67	0.01	0.57
Control Delay (s/veh)	20.6	10.3	21.3	15.9	12.4	13.1	6.0	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.6	10.3	21.3	15.9	12.4	13.1	6.0	10.4
Queue Length 50th (m)	4.8	2.6	3.1	1.6	8.9	29.9	0.1	23.0
Queue Length 95th (m)	12.5	17.5	9.2	6.1	31.7	#84.1	1.1	61.6
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	497	689	345	612	428	920	363	926
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.39	0.11	0.04	0.49	0.67	0.01	0.57

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)	60	33	233	38	20	4	211	581	35	3	481	44
Future Volume (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1583		1651	1588		1668	1597	
Flt Permitted	0.74	1.00		0.51	1.00		0.43	1.00		0.36	1.00	
Satd. Flow (perm)	1289	1417		898	1583		742	1588		629	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	33	233	38	20	4	211	581	35	3	481	44
RTOR Reduction (vph)	0	190	0	0	3	0	0	3	0	0	4	0
Lane Group Flow (vph)	60	76	0	38	21	0	211	613	0	3	521	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	261		165	292		429	919		364	924	
v/s Ratio Prot		c0.05			0.01			c0.39			0.33	
v/s Ratio Perm	0.05			0.04			0.28			0.00		
v/c Ratio	0.25	0.29		0.23	0.07		0.49	0.67		0.01	0.56	
Uniform Delay, d1	18.1	18.3		18.1	17.5		6.4	7.5		4.6	6.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		0.7	0.1		4.0	3.8		0.0	2.5	
Delay (s)	18.7	18.9		18.8	17.6		10.4	11.3		4.7	9.3	
Level of Service	B	B		B	B		B	B		A	A	
Approach Delay (s/veh)		18.9			18.3			11.1			9.3	
Approach LOS		B			B			B			A	

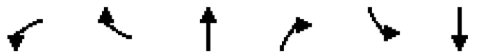
Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	827	0	0	752
Future Volume (vph)	0	0	827	0	0	752
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	0	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	0	1842	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	827	0	0	752
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	827	0	0	752
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

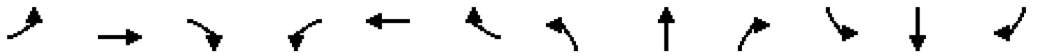
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	827	0	0	752
Future Volume (Veh/h)	0	0	827	0	0	752
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	827	0	0	752
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.88	0.79			0.79	
vC, conflicting volume	1579	827			827	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1158	653			653	
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	100			100	
cM capacity (veh/h)	190	371			742	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	0	0	827	0	752
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.49	0.00	0.44
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s/veh)	0.0		0.0	0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

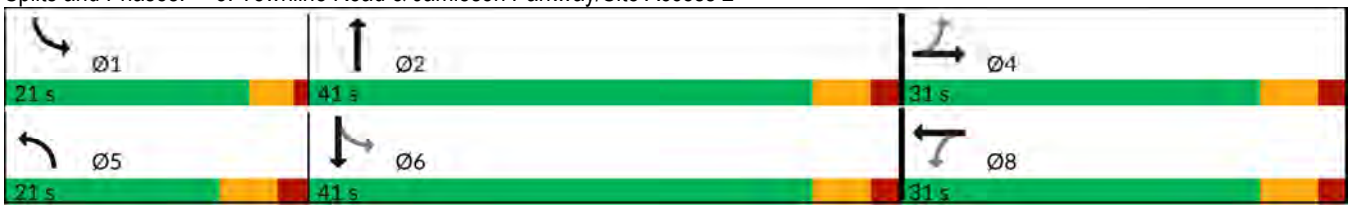


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	0	291	0	0	0	263	655	0	0	619	132
Future Volume (vph)	184	0	291	0	0	0	263	655	0	0	619	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850									0.974	
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1668	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	1755	1632	0	3203	3270	0	1755	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		414									31	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	0	291	0	0	0	263	655	0	0	619	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	291	0	0	0	0	263	655	0	0	751	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	5.0		4.0	5.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	31.0	31.0		31.0	31.0		21.0	41.0		21.0	41.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		22.6%	44.1%		22.6%	44.1%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	35.0		17.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0			14.0			14.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0			21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)	16.6	16.6					11.7	53.1			35.3	
Actuated g/C Ratio	0.20	0.20					0.14	0.65			0.43	
v/c Ratio	0.68	0.48					0.57	0.31			0.54	
Control Delay (s/veh)	43.7	2.9					38.9	7.5			19.6	
Queue Delay	0.0	0.0					0.0	0.0			0.0	
Total Delay (s/veh)	43.7	2.9					38.9	7.5			19.6	
LOS	D	A					D	A			B	
Approach Delay (s/veh)		18.7						16.5			19.6	
Approach LOS		B						B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 81.9			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 18.0		Intersection LOS: B	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

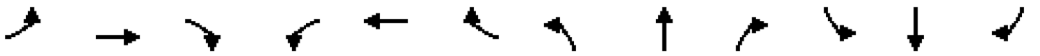
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	184	291	263	655	751
v/c Ratio	0.68	0.48	0.57	0.31	0.54
Control Delay (s/veh)	43.7	2.9	38.9	7.5	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.7	2.9	38.9	7.5	19.6
Queue Length 50th (m)	26.6	0.0	19.7	20.4	41.8
Queue Length 95th (m)	48.8	0.7	34.3	38.0	72.6
Internal Link Dist (m)		492.9		275.0	354.3
Turn Bay Length (m)	45.0		115.0		
Base Capacity (vph)	409	714	592	2122	1403
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.41	0.44	0.31	0.54

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	0	291	0	0	0	263	655	0	0	619	132
Future Volume (vph)	184	0	291	0	0	0	263	655	0	0	619	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0					6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00					0.97	0.95			0.95	
Frt	1.00	0.85					1.00	1.00			0.97	
Flt Protected	0.95	1.00					0.95	1.00			1.00	
Satd. Flow (prot)	1668	1387					3203	3270			3209	
Flt Permitted	0.76	1.00					0.95	1.00			1.00	
Satd. Flow (perm)	1329	1387					3203	3270			3209	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	184	0	291	0	0	0	263	655	0	0	619	132
RTOR Reduction (vph)	0	232	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	184	59	0	0	0	0	263	655	0	0	733	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	Perm	NA		Perm			Prot	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	16.6	16.6					11.7	53.1			35.4	
Effective Green, g (s)	16.6	16.6					11.7	53.1			35.4	
Actuated g/C Ratio	0.20	0.20					0.14	0.65			0.43	
Clearance Time (s)	6.0	6.0					6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)	270	281					458	2125			1390	
v/s Ratio Prot		0.04					c0.08	0.20			c0.23	
v/s Ratio Perm	c0.14											
v/c Ratio	0.68	0.21					0.57	0.31			0.53	
Uniform Delay, d1	30.1	27.1					32.7	6.3			17.0	
Progression Factor	1.00	1.00					1.00	1.00			1.00	
Incremental Delay, d2	6.9	0.4					1.7	0.4			1.4	
Delay (s)	37.0	27.5					34.4	6.6			18.4	
Level of Service	D	C					C	A			B	
Approach Delay (s/veh)		31.2			0.0			14.6			18.4	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

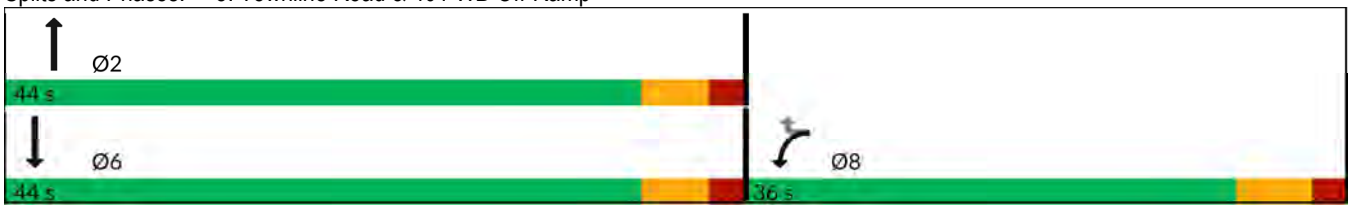


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	184	733	0	0	628
Future Volume (vph)	449	184	733	0	0	628
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		143				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	449	184	733	0	0	628
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	184	733	0	0	628
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Don't Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
v/c Ratio	0.64	0.42	0.36			0.31
Control Delay (s/veh)	27.3	9.6	8.4			8.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	27.3	9.6	8.4			8.0
LOS	C	A	A			A
Approach Delay (s/veh)	22.1		8.4			8.0
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 12.6		Intersection LOS: B	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	449	184	733	628
v/c Ratio	0.64	0.42	0.36	0.31
Control Delay (s/veh)	27.3	9.6	8.4	8.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.3	9.6	8.4	8.0
Queue Length 50th (m)	25.4	4.0	21.6	17.8
Queue Length 95th (m)	38.2	17.6	38.2	32.2
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1390	735	2055	2034
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	0.32	0.25	0.36	0.31

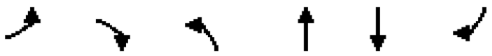
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	184	733	0	0	628
Future Volume (vph)	449	184	733	0	0	628
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	184	733	0	0	628
RTOR Reduction (vph)	0	110	0	0	0	0
Lane Group Flow (vph)	449	74	733	0	0	628
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	14.9	14.9	38.1			38.1
Effective Green, g (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	700	331	2056			2035
v/s Ratio Prot	c0.15		c0.21			0.18
v/s Ratio Perm		0.05				
v/c Ratio	0.64	0.22	0.36			0.31
Uniform Delay, d1	22.9	20.6	7.2			7.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.0	0.3	0.5			0.4
Delay (s)	24.9	20.9	7.7			7.4
Level of Service	C	C	A			A
Approach Delay (s/veh)	23.7		7.7			7.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

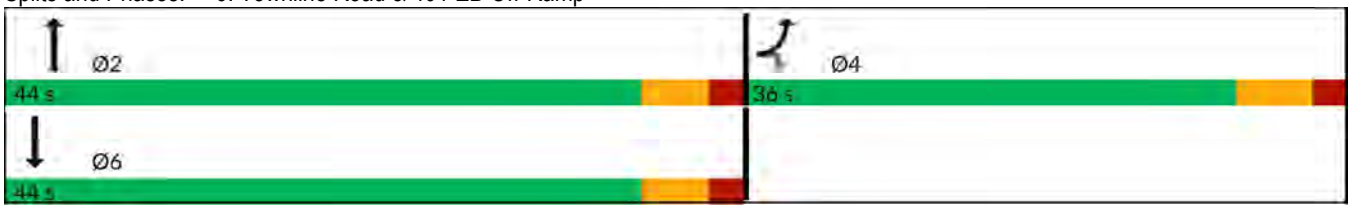


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	401	581	0	596	947	0
Future Volume (vph)	401	581	0	596	947	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		77				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	401	581	0	596	947	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	401	581	0	596	947	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Don't Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
v/c Ratio	0.67	0.99		0.36	0.57	
Control Delay (s/veh)	27.6	60.0		14.1	16.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	27.6	60.0		14.1	16.8	
LOS	C	E		B	B	
Approach Delay (s/veh)	46.8			14.1	16.8	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 27.8		Intersection LOS: C	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

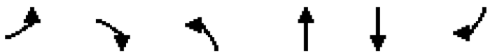




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	401	581	596	947
v/c Ratio	0.67	0.99	0.36	0.57
Control Delay (s/veh)	27.6	60.0	14.1	16.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.6	60.0	14.1	16.8
Queue Length 50th (m)	50.0	77.2	28.7	51.9
Queue Length 95th (m)	80.1	#144.0	40.1	69.3
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	602	585	1662	1662
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	0.67	0.99	0.36	0.57

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	401	581	0	596	947	0
Future Volume (vph)	401	581	0	596	947	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	401	581	0	596	947	0
RTOR Reduction (vph)	0	49	0	0	0	0
Lane Group Flow (vph)	401	532	0	596	947	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		38.0	38.0	
Effective Green, g (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	602	536		1662	1662	
v/s Ratio Prot	0.25			0.17	c0.27	
v/s Ratio Perm		c0.37				
v/c Ratio	0.67	0.99		0.36	0.57	
Uniform Delay, d1	21.1	25.2		13.3	15.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	36.9		0.6	1.4	
Delay (s)	23.9	62.1		13.9	16.5	
Level of Service	C	E		B	B	
Approach Delay (s/veh)	46.5			13.9	16.5	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

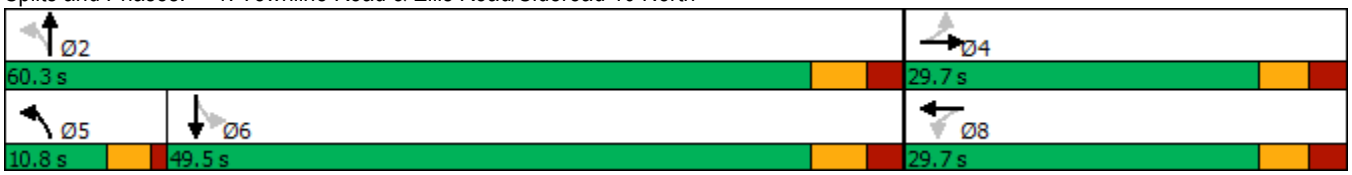
c Critical Lane Group

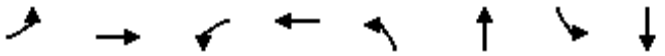
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	30	237	44	11	4	117	567	57	4	654	29
Future Volume (vph)	85	30	237	44	11	4	117	567	57	4	654	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.960			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1566	0	1603	1546	0	1334	1577	0
Flt Permitted	0.748			0.374			0.263			0.428		
Satd. Flow (perm)	1300	1390	0	656	1566	0	444	1546	0	601	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		237			4			10			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	85	30	237	44	11	4	117	567	57	4	654	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	267	0	44	15	0	117	624	0	4	683	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	10.7	10.7		10.7	10.7		56.4	54.1		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.70		0.59	0.59	
v/c Ratio	0.47	0.67		0.48	0.07		0.28	0.57		0.01	0.73	
Control Delay	39.0	15.3		48.2	24.4		5.4	9.1		9.2	19.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.0	15.3		48.2	24.4		5.4	9.1		9.2	19.8	
LOS	D	B		D	C		A	A		A	B	
Approach Delay		21.0			42.2			8.5			19.7	
Approach LOS		C			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

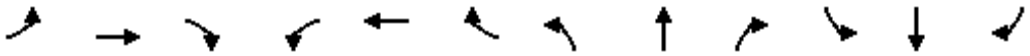




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	267	44	15	117	624	4	683
v/c Ratio	0.47	0.67	0.48	0.07	0.28	0.57	0.01	0.73
Control Delay	39.0	15.3	48.2	24.4	5.4	9.1	9.2	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	15.3	48.2	24.4	5.4	9.1	9.2	19.8
Queue Length 50th (m)	11.6	3.9	6.0	1.4	3.8	36.0	0.2	69.4
Queue Length 95th (m)	24.2	24.7	15.7	6.2	11.1	83.7	1.8	#156.3
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	400	591	202	484	426	1086	355	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.45	0.22	0.03	0.27	0.57	0.01	0.73

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)	85	30	237	44	11	4	117	567	57	4	654	29
Future Volume (vph)	85	30	237	44	11	4	117	567	57	4	654	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1566		1603	1546		1334	1576	
Flt Permitted	0.75	1.00		0.37	1.00		0.26	1.00		0.43	1.00	
Satd. Flow (perm)	1299	1390		656	1566		444	1546		601	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	30	237	44	11	4	117	567	57	4	654	29
RTOR Reduction (vph)	0	204	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	85	63	0	44	12	0	117	621	0	4	682	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.7	10.7		10.7	10.7		55.0	55.0		45.7	45.7	
Effective Green, g (s)	10.7	10.7		10.7	10.7		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.71	0.71		0.59	0.59	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	190		89	214		391	1090		352	923	
v/s Ratio Prot		0.04			0.01		0.02	c0.40			c0.43	
v/s Ratio Perm	0.07			c0.07			0.19			0.01		
v/c Ratio	0.48	0.33		0.49	0.05		0.30	0.57		0.01	0.74	
Uniform Delay, d1	31.1	30.4		31.1	29.3		6.0	5.7		6.7	11.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.0		4.3	0.1		0.4	2.2		0.1	5.3	
Delay (s)	33.1	31.4		35.4	29.4		6.4	7.8		6.8	17.1	
Level of Service	C	C		D	C		A	A		A	B	
Approach Delay (s)		31.8			33.9			7.6			17.0	
Approach LOS		C			C			A			B	

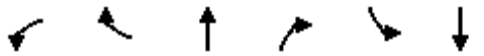
Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	16.3
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	4	737	35	47	887
Future Volume (vph)	10	4	737	35	47	887
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	921	1484	1711	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	921	1484	1711	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	80%	0%	2%	1%	0%	2%
Adj. Flow (vph)	10	4	737	35	47	887
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	4	772	0	47	887
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	4	737	35	47	887
Future Volume (Veh/h)	10	4	737	35	47	887
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	4	737	35	47	887
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.81	0.79			0.79	
vC, conflicting volume	1736	754			772	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1216	560			582	
tC, single (s)	7.2	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3			2.2	
p0 queue free %	91	99			94	
cM capacity (veh/h)	107	422			795	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	10	4	772	47	887
Volume Left	10	0	0	47	0
Volume Right	0	4	35	0	0
cSH	107	422	1700	795	1700
Volume to Capacity	0.09	0.01	0.45	0.06	0.52
Queue Length 95th (m)	2.3	0.2	0.0	1.4	0.0
Control Delay (s)	42.1	13.6	0.0	9.8	0.0
Lane LOS	E	B		A	
Approach Delay (s)	34.0		0.0	0.5	
Approach LOS	D				

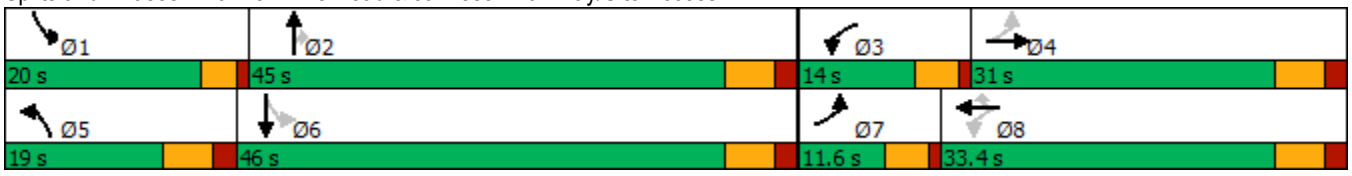
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	19	293	156	43	69	281	562	285	82	685	144
Future Volume (vph)	137	19	293	156	43	69	281	562	285	82	685	144
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.859				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1363	0	3141	1632	1387	3203	3302	1477	1668	3172	0
Flt Permitted	0.639			0.374			0.950			0.441		
Satd. Flow (perm)	1100	1363	0	1236	1632	1387	3201	3302	1477	774	3172	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		293				134			285		25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Adj. Flow (vph)	137	19	293	156	43	69	281	562	285	82	685	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	312	0	156	43	69	281	562	285	82	829	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0	31.0	11.0	41.0	41.0	9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4	33.4	19.0	45.0	45.0	20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%	30.4%	17.3%	40.9%	40.9%	18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4	27.4	13.0	39.0	39.0	16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	20.5	10.9		20.5	12.4	12.4	12.1	49.0	49.0	49.5	40.1	
Actuated g/C Ratio	0.22	0.12		0.22	0.13	0.13	0.13	0.52	0.52	0.52	0.42	
v/c Ratio	0.46	0.75		0.35	0.20	0.23	0.68	0.33	0.32	0.17	0.61	
Control Delay	33.8	18.2		29.3	38.2	1.8	49.3	15.4	3.1	9.1	23.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.8	18.2		29.3	38.2	1.8	49.3	15.4	3.1	9.1	23.6	
LOS	C	B		C	D	A	D	B	A	A	C	
Approach Delay		23.0			23.6			20.8			22.3	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 94.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

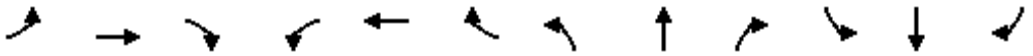




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	137	312	156	43	69	281	562	285	82	829
v/c Ratio	0.46	0.75	0.35	0.20	0.23	0.68	0.33	0.32	0.17	0.61
Control Delay	33.8	18.2	29.3	38.2	1.8	49.3	15.4	3.1	9.1	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	18.2	29.3	38.2	1.8	49.3	15.4	3.1	9.1	23.6
Queue Length 50th (m)	20.1	3.2	11.3	7.1	0.0	24.6	29.1	0.0	4.7	56.1
Queue Length 95th (m)	35.0	29.1	18.7	16.3	0.0	#42.5	53.8	14.5	13.3	92.0
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	296	577	472	475	498	442	1715	904	628	1363
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.54	0.33	0.09	0.14	0.64	0.33	0.32	0.13	0.61

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)	137	19	293	156	43	69	281	562	285	82	685	144
Future Volume (vph)	137	19	293	156	43	69	281	562	285	82	685	144
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1635	1363		3141	1632	1387	3203	3302	1477	1668	3172	
Flt Permitted	0.64	1.00		0.37	1.00	1.00	0.95	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	1100	1363		1236	1632	1387	3203	3302	1477	774	3172	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	19	293	156	43	69	281	562	285	82	685	144
RTOR Reduction (vph)	0	256	0	0	0	61	0	0	140	0	14	0
Lane Group Flow (vph)	137	56	0	156	43	8	281	562	145	82	815	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	22.4	12.2		19.4	10.7	10.7	12.2	49.1	49.1	47.1	41.0	
Effective Green, g (s)	22.4	12.2		19.4	10.7	10.7	12.2	49.1	49.1	47.1	41.0	
Actuated g/C Ratio	0.23	0.13		0.20	0.11	0.11	0.13	0.51	0.51	0.49	0.42	
Clearance Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	311	172		419	180	153	404	1678	750	433	1346	
v/s Ratio Prot	c0.05	0.04		0.03	0.03		c0.09	0.17		0.01	c0.26	
v/s Ratio Perm	c0.06			0.04		0.01			0.10	0.08		
v/c Ratio	0.44	0.33		0.37	0.24	0.05	0.70	0.33	0.19	0.19	0.61	
Uniform Delay, d1	31.1	38.5		32.7	39.2	38.4	40.4	14.1	12.9	13.3	21.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	1.1		0.6	0.7	0.1	5.1	0.5	0.6	0.2	2.0	
Delay (s)	32.1	39.6		33.3	39.9	38.5	45.6	14.6	13.5	13.6	23.6	
Level of Service	C	D		C	D	D	D	B	B	B	C	
Approach Delay (s)		37.3			35.7			22.0			22.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	96.6	Sum of lost time (s)	22.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

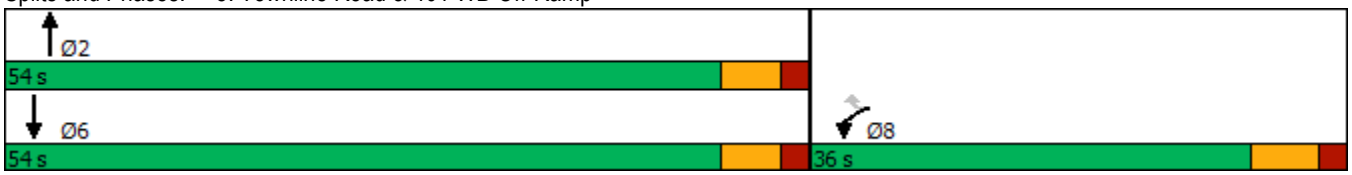


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	221	927	0	0	763
Future Volume (vph)	513	221	927	0	0	763
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		109				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	513	221	927	0	0	763
Shared Lane Traffic (%)						
Lane Group Flow (vph)	513	221	927	0	0	763
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	20.0	20.0	48.2			48.2
Actuated g/C Ratio	0.25	0.25	0.60			0.60
v/c Ratio	0.72	0.52	0.44			0.37
Control Delay	34.0	17.7	10.5			9.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.0	17.7	10.5			9.7
LOS	C	B	B			A
Approach Delay	29.1		10.5			9.7
Approach LOS	C		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.7			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	513	221	927	763
v/c Ratio	0.72	0.52	0.44	0.37
Control Delay	34.0	17.7	10.5	9.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.0	17.7	10.5	9.7
Queue Length 50th (m)	37.1	14.1	37.4	28.9
Queue Length 95th (m)	52.5	33.3	62.7	49.4
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1050	573	2089	2089
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	0.39	0.44	0.37

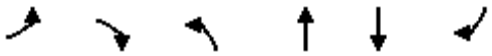
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	221	927	0	0	763
Future Volume (vph)	513	221	927	0	0	763
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	513	221	927	0	0	763
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	513	139	927	0	0	763
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	20.0	20.0	48.2			48.2
Effective Green, g (s)	20.0	20.0	48.2			48.2
Actuated g/C Ratio	0.25	0.25	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	709	340	2090			2090
v/s Ratio Prot	c0.18		c0.26			0.22
v/s Ratio Perm		0.10				
v/c Ratio	0.72	0.41	0.44			0.37
Uniform Delay, d1	27.8	25.4	8.9			8.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.7	0.8	0.7			0.5
Delay (s)	31.5	26.2	9.6			8.9
Level of Service	C	C	A			A
Approach Delay (s)	29.9		9.6			8.9
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

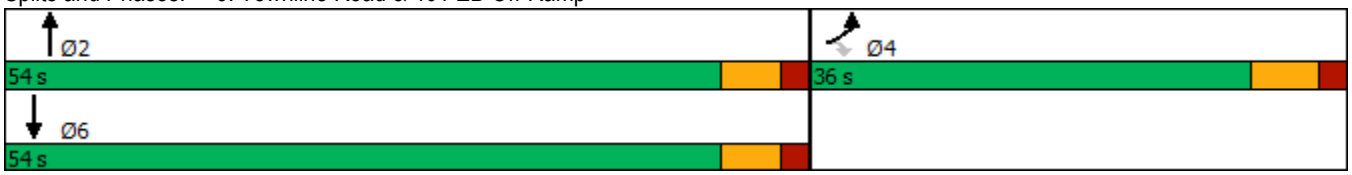


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	461	463	0	883	1085	0
Future Volume (vph)	461	463	0	883	1085	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		72				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	461	463	0	883	1085	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	461	463	0	883	1085	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	27.9	27.9		48.1	48.1	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.91	0.94		0.47	0.60	
Control Delay	53.8	53.7		13.8	15.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	53.8	53.7		13.8	15.8	
LOS	D	D		B	B	
Approach Delay	53.7			13.8	15.8	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

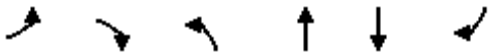




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	461	463	883	1085
v/c Ratio	0.91	0.94	0.47	0.60
Control Delay	53.8	53.7	13.8	15.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	53.8	53.7	13.8	15.8
Queue Length 50th (m)	74.5	65.5	47.6	64.3
Queue Length 95th (m)	#128.4	#123.2	62.4	83.7
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	535	519	1864	1812
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	0.86	0.89	0.47	0.60

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	461	463	0	883	1085	0
Future Volume (vph)	461	463	0	883	1085	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	461	463	0	883	1085	0
RTOR Reduction (vph)	0	49	0	0	0	0
Lane Group Flow (vph)	461	414	0	883	1085	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	27.9	27.9		48.1	48.1	
Effective Green, g (s)	27.9	27.9		48.1	48.1	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	505	445		1865	1813	
v/s Ratio Prot	0.29			0.26	c0.33	
v/s Ratio Perm		c0.29				
v/c Ratio	0.91	0.93		0.47	0.60	
Uniform Delay, d1	29.1	29.3		12.4	13.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.9	25.7		0.9	1.5	
Delay (s)	50.0	55.1		13.3	15.1	
Level of Service	D	E		B	B	
Approach Delay (s)	52.5			13.3	15.1	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

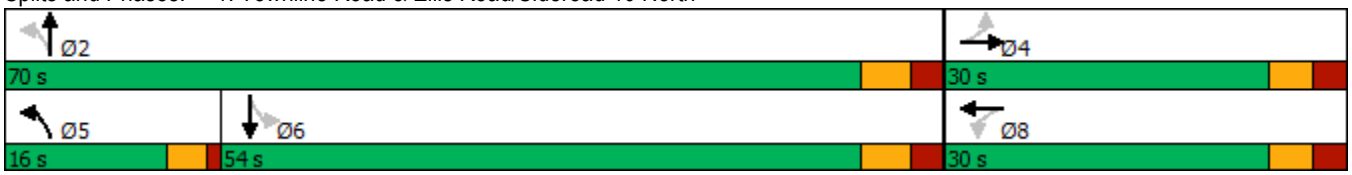
c Critical Lane Group

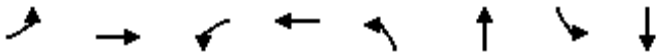
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	158	92	39	10	363	912	70	8	527	59
Future Volume (vph)	40	21	158	92	39	10	363	912	70	8	527	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.969			0.989			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	1599	0	1668	1548	0
Flt Permitted	0.725			0.531			0.294			0.246		
Satd. Flow (perm)	1273	1392	0	914	1581	0	516	1599	0	432	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		158			10			8			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	40	21	158	92	39	10	363	912	70	8	527	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	179	0	92	49	0	363	982	0	8	586	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	13.7	13.7		13.7	13.7		66.2	63.9		48.4	48.4	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.71		0.54	0.54	
v/c Ratio	0.21	0.52		0.66	0.20		0.69	0.86		0.03	0.70	
Control Delay	35.0	13.3		58.3	28.9		12.7	21.2		12.5	22.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.0	13.3		58.3	28.9		12.7	21.2		12.5	22.1	
LOS	D	B		E	C		B	C		B	C	
Approach Delay		17.3			48.1			18.9			22.0	
Approach LOS		B			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 102.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

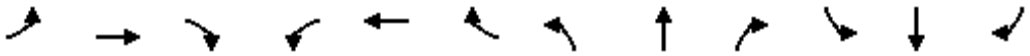




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	179	92	49	363	982	8	586
v/c Ratio	0.21	0.52	0.66	0.20	0.69	0.86	0.03	0.70
Control Delay	35.0	13.3	58.3	28.9	12.7	21.2	12.5	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	13.3	58.3	28.9	12.7	21.2	12.5	22.1
Queue Length 50th (m)	6.1	3.2	15.1	5.9	17.1	105.0	0.6	70.0
Queue Length 95th (m)	14.8	20.5	30.7	15.3	#39.2	#252.2	3.2	129.9
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	340	488	244	430	534	1138	232	837
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.37	0.38	0.11	0.68	0.86	0.03	0.70

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)	40	21	158	92	39	10	363	912	70	8	527	59
Future Volume (vph)	40	21	158	92	39	10	363	912	70	8	527	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1391		1635	1582		1668	1599		1668	1548	
Flt Permitted	0.73	1.00		0.53	1.00		0.29	1.00		0.25	1.00	
Satd. Flow (perm)	1273	1391		913	1582		516	1599		432	1548	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	21	158	92	39	10	363	912	70	8	527	59
RTOR Reduction (vph)	0	134	0	0	8	0	0	2	0	0	4	0
Lane Group Flow (vph)	40	45	0	92	41	0	363	980	0	8	582	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.7	13.7		13.7	13.7		63.9	63.9		48.5	48.5	
Effective Green, g (s)	13.7	13.7		13.7	13.7		63.9	63.9		48.5	48.5	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.71	0.71		0.54	0.54	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	211		139	241		512	1136		233	835	
v/s Ratio Prot		0.03			0.03		0.09	c0.61			0.38	
v/s Ratio Perm	0.03			c0.10			0.41			0.02		
v/c Ratio	0.21	0.21		0.66	0.17		0.71	0.86		0.03	0.70	
Uniform Delay, d1	33.3	33.4		35.9	33.1		8.1	9.7		9.7	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		11.2	0.3		4.5	8.7		0.3	4.8	
Delay (s)	33.9	33.9		47.2	33.5		12.5	18.4		10.0	20.1	
Level of Service	C	C		D	C		B	B		A	C	
Approach Delay (s)		33.9			42.4			16.8			19.9	
Approach LOS		C			D			B			B	

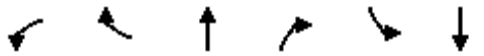
Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.3
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	10	1336	12	18	759
Future Volume (vph)	29	10	1336	12	18	759
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1306	1484	1706	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1306	1484	1706	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	27%	0%	2%	92%	0%	2%
Adj. Flow (vph)	29	10	1336	12	18	759
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	10	1348	0	18	759
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

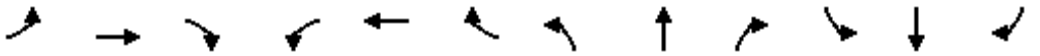
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	10	1336	12	18	759
Future Volume (Veh/h)	29	10	1336	12	18	759
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	10	1336	12	18	759
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.69	0.55			0.55	
vC, conflicting volume	2137	1342			1348	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1558	1215			1225	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	59	92			94	
cM capacity (veh/h)	70	124			319	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	29	10	1348	18	759
Volume Left	29	0	0	18	0
Volume Right	0	10	12	0	0
cSH	70	124	1700	319	1700
Volume to Capacity	0.41	0.08	0.79	0.06	0.45
Queue Length 95th (m)	12.2	2.0	0.0	1.4	0.0
Control Delay (s)	88.7	36.7	0.0	17.0	0.0
Lane LOS	F	E		C	
Approach Delay (s)	75.3		0.0	0.4	
Approach LOS	F				

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

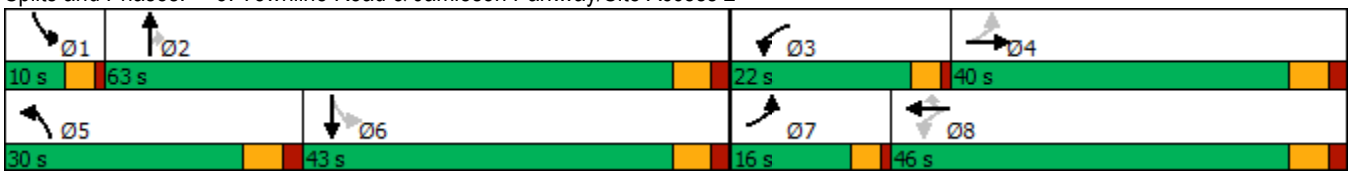


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	32	375	404	93	187	395	907	385	148	500	126
Future Volume (vph)	222	32	375	404	93	187	395	907	385	148	500	126
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.862				0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1406	0	3203	1632	1387	3203	3302	1477	1668	3123	0
Flt Permitted	0.697			0.171			0.950			0.275		
Satd. Flow (perm)	1223	1406	0	577	1632	1387	3203	3302	1477	483	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		370				187			385		23	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Adj. Flow (vph)	222	32	375	404	93	187	395	907	385	148	500	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	407	0	404	93	187	395	907	385	148	626	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	16.0	40.0		22.0	46.0	46.0	30.0	63.0	63.0	10.0	43.0	
Total Split (%)	11.9%	29.6%		16.3%	34.1%	34.1%	22.2%	46.7%	46.7%	7.4%	31.9%	
Maximum Green (s)	12.0	34.0		18.0	40.0	40.0	24.0	57.0	57.0	6.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	50.0	36.0		57.1	40.0	40.0	21.1	57.0	57.0	47.9	39.9	
Actuated g/C Ratio	0.37	0.27		0.42	0.30	0.30	0.16	0.42	0.42	0.35	0.30	
v/c Ratio	0.45	0.63		0.73	0.19	0.35	0.79	0.65	0.46	0.66	0.67	
Control Delay	30.2	11.0		33.5	36.8	6.6	66.4	33.8	4.1	40.3	44.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	11.0		33.5	36.8	6.6	66.4	33.8	4.1	40.3	44.8	
LOS	C	B		C	D	A	E	C	A	D	D	
Approach Delay		17.8			26.6			34.7			44.0	
Approach LOS		B			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

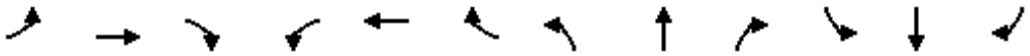




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	222	407	404	93	187	395	907	385	148	626
v/c Ratio	0.45	0.63	0.73	0.19	0.35	0.79	0.65	0.46	0.66	0.67
Control Delay	30.2	11.0	33.5	36.8	6.6	66.4	33.8	4.1	40.3	44.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	11.0	33.5	36.8	6.6	66.4	33.8	4.1	40.3	44.8
Queue Length 50th (m)	38.4	7.5	35.7	18.5	0.0	52.5	100.1	0.0	20.6	75.0
Queue Length 95th (m)	58.0	40.3	47.7	32.9	17.3	69.0	122.6	18.4	#36.8	98.4
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	492	645	598	483	542	569	1394	846	223	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.63	0.68	0.19	0.35	0.69	0.65	0.46	0.66	0.67

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)	222	32	375	404	93	187	395	907	385	148	500	126
Future Volume (vph)	222	32	375	404	93	187	395	907	385	148	500	126
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1406		3203	1632	1387	3203	3302	1477	1668	3122	
Flt Permitted	0.70	1.00		0.17	1.00	1.00	0.95	1.00	1.00	0.27	1.00	
Satd. Flow (perm)	1223	1406		576	1632	1387	3203	3302	1477	482	3122	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	222	32	375	404	93	187	395	907	385	148	500	126
RTOR Reduction (vph)	0	271	0	0	0	132	0	0	222	0	16	0
Lane Group Flow (vph)	222	136	0	404	93	55	395	907	163	148	610	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	48.0	36.0		56.0	40.0	40.0	21.1	57.0	57.0	45.9	39.9	
Effective Green, g (s)	48.0	36.0		56.0	40.0	40.0	21.1	57.0	57.0	45.9	39.9	
Actuated g/C Ratio	0.36	0.27		0.41	0.30	0.30	0.16	0.42	0.42	0.34	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	474	374		550	483	410	500	1394	623	216	922	
v/s Ratio Prot	0.04	0.10		c0.09	0.06		c0.12	c0.27		0.03	0.20	
v/s Ratio Perm	0.12			c0.22		0.04			0.11	0.20		
v/c Ratio	0.47	0.36		0.73	0.19	0.14	0.79	0.65	0.26	0.69	0.66	
Uniform Delay, d1	32.4	40.2		29.9	35.4	34.8	54.8	31.1	25.3	34.6	41.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	2.7		5.1	0.9	0.7	8.3	2.4	1.0	8.7	3.7	
Delay (s)	33.1	42.9		35.0	36.3	35.5	63.1	33.4	26.3	43.2	45.4	
Level of Service	C	D		C	D	D	E	C	C	D	D	
Approach Delay (s)		39.4			35.3			38.8			45.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

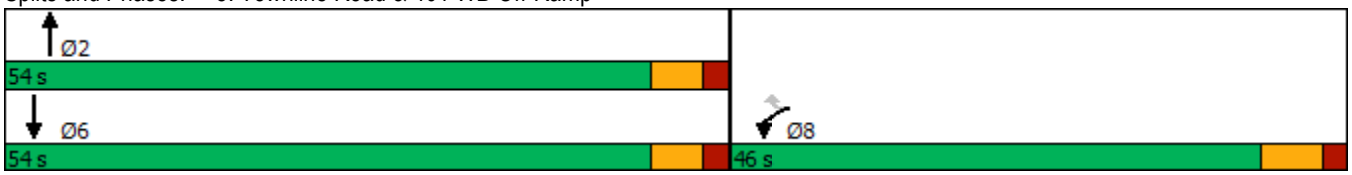


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	407	1381	0	0	863
Future Volume (vph)	512	407	1381	0	0	863
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		22				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	512	407	1381	0	0	863
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	407	1381	0	0	863
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	29.0	29.0	48.4			48.4
Actuated g/C Ratio	0.32	0.32	0.54			0.54
v/c Ratio	0.54	0.84	0.73			0.46
Control Delay	26.7	42.7	20.4			15.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.7	42.7	20.4			15.0
LOS	C	D	C			B
Approach Delay	33.8		20.4			15.0
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	512	407	1381	863
v/c Ratio	0.54	0.84	0.73	0.46
Control Delay	26.7	42.7	20.4	15.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	42.7	20.4	15.0
Queue Length 50th (m)	36.7	61.2	91.5	46.0
Queue Length 95th (m)	50.6	95.7	146.0	75.4
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1301	656	1882	1882
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	0.39	0.62	0.73	0.46

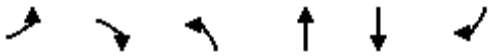
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	407	1381	0	0	863
Future Volume (vph)	512	407	1381	0	0	863
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	512	407	1381	0	0	863
RTOR Reduction (vph)	0	15	0	0	0	0
Lane Group Flow (vph)	512	392	1381	0	0	863
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	29.0	29.0	48.4			48.4
Effective Green, g (s)	29.0	29.0	48.4			48.4
Actuated g/C Ratio	0.32	0.32	0.54			0.54
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	948	469	1884			1884
v/s Ratio Prot	0.17		c0.39			0.25
v/s Ratio Perm		c0.27				
v/c Ratio	0.54	0.84	0.73			0.46
Uniform Delay, d1	25.0	28.2	15.8			12.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.6	12.2	2.6			0.8
Delay (s)	25.6	40.5	18.4			13.5
Level of Service	C	D	B			B
Approach Delay (s)	32.2		18.4			13.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

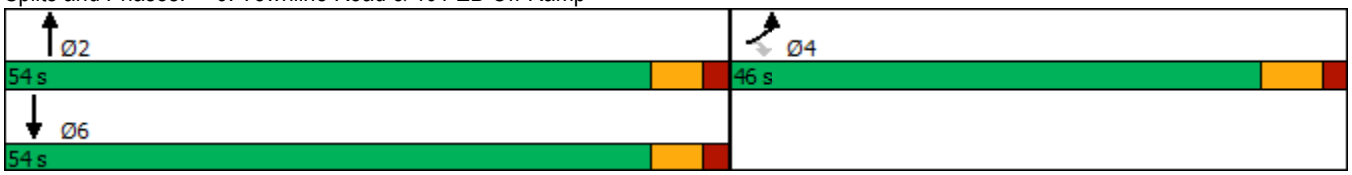


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	497	461	0	1133	1193	0
Future Volume (vph)	497	461	0	1133	1193	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		38				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	497	461	0	1133	1193	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	497	461	0	1133	1193	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	32.8	32.8		48.3	48.3	
Actuated g/C Ratio	0.35	0.35		0.52	0.52	
v/c Ratio	0.88	0.87		0.62	0.68	
Control Delay	46.1	44.0		19.1	20.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.1	44.0		19.1	20.5	
LOS	D	D		B	C	
Approach Delay	45.1			19.1	20.5	
Approach LOS	D			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 93.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 27.2		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

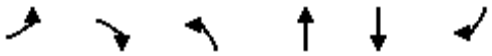




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	497	461	1133	1193
v/c Ratio	0.88	0.87	0.62	0.68
Control Delay	46.1	44.0	19.1	20.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.1	44.0	19.1	20.5
Queue Length 50th (m)	82.5	70.8	77.0	84.7
Queue Length 95th (m)	#125.3	#120.9	107.6	118.8
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	686	633	1822	1753
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	0.72	0.73	0.62	0.68

Intersection Summary

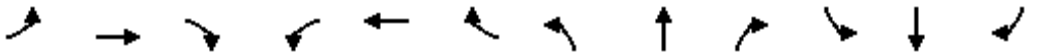
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	497	461	0	1133	1193	0
Future Volume (vph)	497	461	0	1133	1193	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	497	461	0	1133	1193	0
RTOR Reduction (vph)	0	25	0	0	0	0
Lane Group Flow (vph)	497	436	0	1133	1193	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	32.8	32.8		48.3	48.3	
Effective Green, g (s)	32.8	32.8		48.3	48.3	
Actuated g/C Ratio	0.35	0.35		0.52	0.52	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	567	505		1824	1754	
v/s Ratio Prot	c0.31			0.32	c0.35	
v/s Ratio Perm		0.30				
v/c Ratio	0.88	0.86		0.62	0.68	
Uniform Delay, d1	28.5	28.3		16.1	16.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.2	14.3		1.6	2.2	
Delay (s)	42.7	42.6		17.7	19.0	
Level of Service	D	D		B	B	
Approach Delay (s)	42.6			17.7	19.0	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



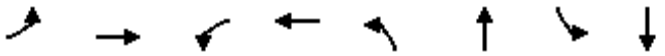
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	221	63	16	4	205	540	67	3	455	36
Future Volume (vph)	49	27	221	63	16	4	205	540	67	3	455	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.866			0.970			0.983			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1413	0	1668	1573	0	1651	1576	0	1668	1599	0
Flt Permitted	0.744			0.557			0.453			0.364		
Satd. Flow (perm)	1293	1413	0	978	1573	0	787	1576	0	639	1599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		221			4			14			9	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	49	27	221	63	16	4	205	540	67	3	455	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	248	0	63	20	0	205	607	0	3	491	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.7	9.7		9.7	9.7		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.58	0.58	
v/c Ratio	0.20	0.56		0.35	0.07		0.45	0.66		0.01	0.53	
Control Delay	19.8	9.8		23.9	15.8		11.1	12.6		5.7	9.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.8	9.8		23.9	15.8		11.1	12.6		5.7	9.7	
LOS	B	A		C	B		B	B		A	A	
Approach Delay		11.4			21.9			12.3			9.7	
Approach LOS		B			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.1			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 88.6%		ICU Level of Service E	
Analysis Period (min) 15			

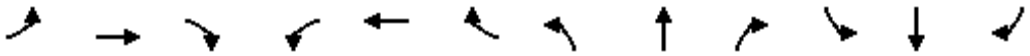
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	248	63	20	205	607	3	491
v/c Ratio	0.20	0.56	0.35	0.07	0.45	0.66	0.01	0.53
Control Delay	19.8	9.8	23.9	15.8	11.1	12.6	5.7	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	9.8	23.9	15.8	11.1	12.6	5.7	9.7
Queue Length 50th (m)	3.9	2.1	5.2	1.3	8.6	29.7	0.1	21.5
Queue Length 95th (m)	10.8	16.7	13.6	5.4	28.2	76.5	1.0	54.0
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	498	679	376	607	454	915	369	927
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.37	0.17	0.03	0.45	0.66	0.01	0.53

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	221	63	16	4	205	540	67	3	455	36
Future Volume (vph)	49	27	221	63	16	4	205	540	67	3	455	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1414		1668	1573		1651	1577		1668	1599	
Flt Permitted	0.74	1.00		0.56	1.00		0.45	1.00		0.36	1.00	
Satd. Flow (perm)	1294	1414		977	1573		787	1577		639	1599	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	27	221	63	16	4	205	540	67	3	455	36
RTOR Reduction (vph)	0	180	0	0	3	0	0	6	0	0	4	0
Lane Group Flow (vph)	49	68	0	63	17	0	205	601	0	3	487	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.7	9.7		9.7	9.7		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.7	9.7		9.7	9.7		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	240	263		181	292		454	911		369	923	
v/s Ratio Prot		0.05			0.01			c0.38			0.30	
v/s Ratio Perm	0.04			c0.06			0.26			0.00		
v/c Ratio	0.20	0.26		0.35	0.06		0.45	0.66		0.01	0.53	
Uniform Delay, d1	17.9	18.1		18.4	17.4		6.3	7.5		4.7	6.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5		1.2	0.1		3.2	3.7		0.0	2.2	
Delay (s)	18.4	18.7		19.6	17.5		9.5	11.2		4.7	8.8	
Level of Service	B	B		B	B		A	B		A	A	
Approach Delay (s)		18.6			19.1			10.8			8.8	
Approach LOS		B			B			B			A	

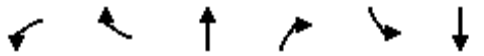
Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	12.3
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	3	808	6	11	728
Future Volume (vph)	9	3	808	6	11	728
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1719	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1719	0	1750	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%
Adj. Flow (vph)	9	3	808	6	11	728
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	3	814	0	11	728
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

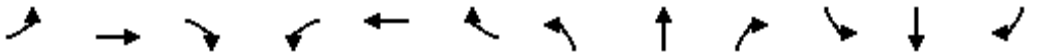
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	3	808	6	11	728
Future Volume (Veh/h)	9	3	808	6	11	728
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	3	808	6	11	728
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.86	0.79			0.79	
vC, conflicting volume	1561	811			814	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1201	628			631	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			99	
cM capacity (veh/h)	175	384			751	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	9	3	814	11	728
Volume Left	9	0	0	11	0
Volume Right	0	3	6	0	0
cSH	175	384	1700	751	1700
Volume to Capacity	0.05	0.01	0.48	0.01	0.43
Queue Length 95th (m)	1.2	0.2	0.0	0.3	0.0
Control Delay (s)	26.7	14.4	0.0	9.9	0.0
Lane LOS	D	B		A	
Approach Delay (s)	23.7		0.0	0.1	
Approach LOS	C				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

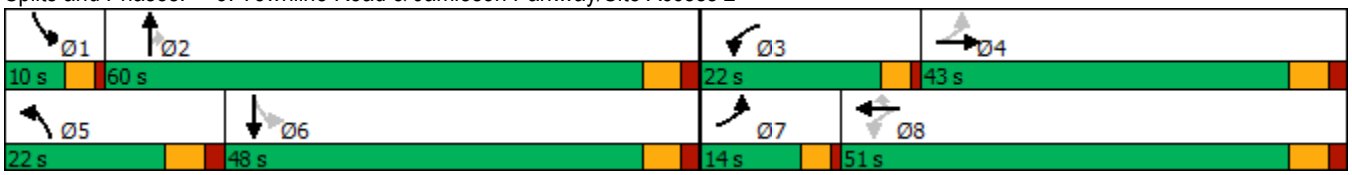


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	56	239	463	80	155	205	518	450	147	492	98
Future Volume (vph)	151	56	239	463	80	155	205	518	450	147	492	98
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.878				0.850			0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1433	0	3235	1632	1387	3203	3270	1492	1668	3214	0
Flt Permitted	0.705			0.185			0.950			0.461		
Satd. Flow (perm)	1237	1433	0	630	1632	1387	3203	3270	1492	809	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		157				155			450		18	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	151	56	239	463	80	155	205	518	450	147	492	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	295	0	463	80	155	205	518	450	147	590	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	14.0	43.0		22.0	51.0	51.0	22.0	60.0	60.0	10.0	48.0	
Total Split (%)	10.4%	31.9%		16.3%	37.8%	37.8%	16.3%	44.4%	44.4%	7.4%	35.6%	
Maximum Green (s)	10.0	37.0		18.0	45.0	45.0	16.0	54.0	54.0	6.0	42.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	29.4	17.6		40.3	24.5	24.5	12.4	54.4	54.4	54.1	46.0	
Actuated g/C Ratio	0.26	0.15		0.35	0.21	0.21	0.11	0.47	0.47	0.47	0.40	
v/c Ratio	0.43	0.84		0.77	0.23	0.37	0.59	0.33	0.48	0.35	0.45	
Control Delay	30.7	42.0		37.0	37.6	7.9	57.3	21.1	3.9	18.2	27.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.7	42.0		37.0	37.6	7.9	57.3	21.1	3.9	18.2	27.9	
LOS	C	D		D	D	A	E	C	A	B	C	
Approach Delay		38.2			30.6			20.8			26.0	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 114.8			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

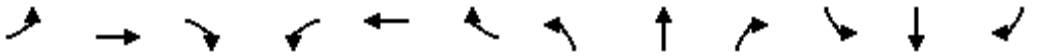
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	295	463	80	155	205	518	450	147	590
v/c Ratio	0.43	0.84	0.77	0.23	0.37	0.59	0.33	0.48	0.35	0.45
Control Delay	30.7	42.0	37.0	37.6	7.9	57.3	21.1	3.9	18.2	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	42.0	37.0	37.6	7.9	57.3	21.1	3.9	18.2	27.9
Queue Length 50th (m)	23.8	31.2	40.0	14.9	0.0	23.0	37.8	0.0	14.8	49.6
Queue Length 95th (m)	38.7	63.1	52.9	27.6	15.7	37.8	60.7	19.3	31.4	80.7
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	357	571	632	643	641	449	1548	943	426	1298
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.52	0.73	0.12	0.24	0.46	0.33	0.48	0.35	0.45

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	56	239	463	80	155	205	518	450	147	492	98
Future Volume (vph)	151	56	239	463	80	155	205	518	450	147	492	98
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1433		3235	1632	1387	3203	3270	1492	1668	3214	
Flt Permitted	0.70	1.00		0.19	1.00	1.00	0.95	1.00	1.00	0.46	1.00	
Satd. Flow (perm)	1237	1433		631	1632	1387	3203	3270	1492	808	3214	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	56	239	463	80	155	205	518	450	147	492	98
RTOR Reduction (vph)	0	133	0	0	0	122	0	0	237	0	11	0
Lane Group Flow (vph)	151	162	0	463	80	33	205	518	213	147	579	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	27.4	17.6		38.3	24.5	24.5	12.4	54.4	54.4	52.0	46.0	
Effective Green, g (s)	27.4	17.6		38.3	24.5	24.5	12.4	54.4	54.4	52.0	46.0	
Actuated g/C Ratio	0.24	0.15		0.33	0.21	0.21	0.11	0.47	0.47	0.45	0.40	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	332	219		589	348	296	346	1550	707	411	1288	
v/s Ratio Prot	0.04	0.11		c0.11	0.05		c0.06	0.16		0.02	c0.18	
v/s Ratio Perm	0.07			c0.15		0.02			0.14	0.14		
v/c Ratio	0.45	0.74		0.79	0.23	0.11	0.59	0.33	0.30	0.36	0.45	
Uniform Delay, d1	36.5	46.4		31.2	37.3	36.3	48.7	18.8	18.5	18.8	25.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	12.6		6.8	0.3	0.2	2.7	0.6	1.1	0.5	1.1	
Delay (s)	37.5	59.0		38.0	37.6	36.5	51.5	19.4	19.6	19.3	26.2	
Level of Service	D	E		D	D	D	D	B	B	B	C	
Approach Delay (s)		51.7			37.6			25.1			24.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	114.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	305	872	0	0	803
Future Volume (vph)	377	305	872	0	0	803
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		95				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	377	305	872	0	0	803
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	305	872	0	0	803
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	16.1	16.1	38.2			38.2
Actuated g/C Ratio	0.24	0.24	0.57			0.57
v/c Ratio	0.51	0.72	0.43			0.40
Control Delay	24.0	25.9	9.9			9.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	24.0	25.9	9.9			9.7
LOS	C	C	A			A
Approach Delay	24.9		9.9			9.7
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	377	305	872	803
v/c Ratio	0.51	0.72	0.43	0.40
Control Delay	24.0	25.9	9.9	9.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.0	25.9	9.9	9.7
Queue Length 50th (m)	20.8	23.5	27.8	25.0
Queue Length 95th (m)	31.5	47.1	55.7	50.6
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1366	698	2020	2000
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	0.28	0.44	0.43	0.40

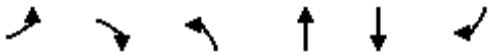
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	305	872	0	0	803
Future Volume (vph)	377	305	872	0	0	803
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	377	305	872	0	0	803
RTOR Reduction (vph)	0	72	0	0	0	0
Lane Group Flow (vph)	377	233	872	0	0	803
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	16.1	16.1	38.3			38.3
Effective Green, g (s)	16.1	16.1	38.3			38.3
Actuated g/C Ratio	0.24	0.24	0.57			0.57
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	741	350	2023			2003
v/s Ratio Prot	0.12		c0.25			0.23
v/s Ratio Perm		c0.16				
v/c Ratio	0.51	0.67	0.43			0.40
Uniform Delay, d1	22.0	23.0	8.1			7.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.6	4.7	0.7			0.6
Delay (s)	22.5	27.7	8.8			8.5
Level of Service	C	C	A			A
Approach Delay (s)	24.8		8.8			8.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

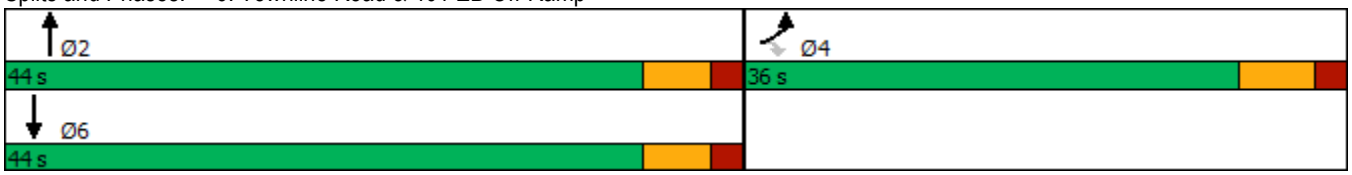


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	442	421	0	608	905	0
Future Volume (vph)	442	421	0	608	905	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		87				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	442	421	0	608	905	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	442	421	0	608	905	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.2	24.2		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
v/c Ratio	0.84	0.80		0.34	0.51	
Control Delay	38.6	30.2		12.4	14.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	38.6	30.2		12.4	14.3	
LOS	D	C		B	B	
Approach Delay	34.5			12.4	14.3	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

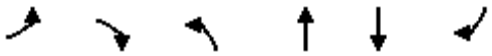




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	442	421	608	905
v/c Ratio	0.84	0.80	0.34	0.51
Control Delay	38.6	30.2	12.4	14.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.6	30.2	12.4	14.3
Queue Length 50th (m)	57.0	42.6	26.9	44.6
Queue Length 95th (m)	#91.8	75.8	40.9	65.3
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	646	628	1783	1783
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	0.68	0.67	0.34	0.51

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	442	421	0	608	905	0
Future Volume (vph)	442	421	0	608	905	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	442	421	0	608	905	0
RTOR Reduction (vph)	0	59	0	0	0	0
Lane Group Flow (vph)	442	362	0	608	905	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.2	24.2		38.2	38.2	
Effective Green, g (s)	24.2	24.2		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	528	470		1785	1785	
v/s Ratio Prot	c0.27			0.17	c0.26	
v/s Ratio Perm		0.25				
v/c Ratio	0.84	0.77		0.34	0.51	
Uniform Delay, d1	23.5	22.8		10.9	12.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.1	7.6		0.5	1.0	
Delay (s)	34.6	30.5		11.4	13.2	
Level of Service	C	C		B	B	
Approach Delay (s)	32.6			11.4	13.2	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

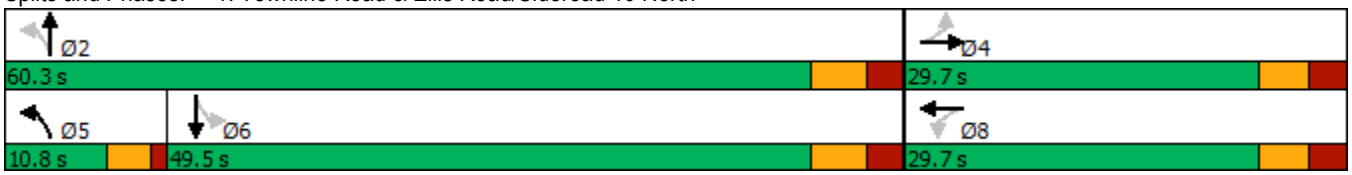
c Critical Lane Group

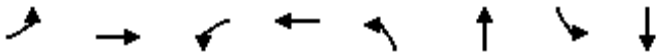
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	33	260	46	12	4	128	623	62	4	717	32
Future Volume (vph)	94	33	260	46	12	4	128	623	62	4	717	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.962			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1570	0	1603	1546	0	1334	1577	0
Flt Permitted	0.747			0.354			0.219			0.405		
Satd. Flow (perm)	1298	1390	0	621	1570	0	370	1546	0	569	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		260			4			10			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	94	33	260	46	12	4	128	623	62	4	717	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	293	0	46	16	0	128	685	0	4	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.3	11.3		11.3	11.3		56.4	54.1		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.70		0.59	0.59	
v/c Ratio	0.50	0.69		0.51	0.07		0.34	0.64		0.01	0.81	
Control Delay	39.5	15.3		50.3	24.2		6.5	10.7		9.8	24.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.5	15.3		50.3	24.2		6.5	10.7		9.8	24.1	
LOS	D	B		D	C		A	B		A	C	
Approach Delay		21.2			43.6			10.0			24.0	
Approach LOS		C			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 96.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

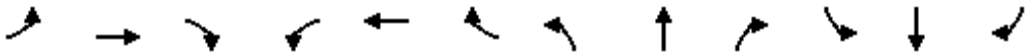




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	293	46	16	128	685	4	749
v/c Ratio	0.50	0.69	0.51	0.07	0.34	0.64	0.01	0.81
Control Delay	39.5	15.3	50.3	24.2	6.5	10.7	9.8	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	15.3	50.3	24.2	6.5	10.7	9.8	24.1
Queue Length 50th (m)	12.9	4.3	6.3	1.5	4.4	43.7	0.2	83.7
Queue Length 95th (m)	26.3	26.2	16.5	6.5	12.5	103.8	1.8	#184.9
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	396	605	189	482	376	1078	333	926
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.48	0.24	0.03	0.34	0.64	0.01	0.81

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)	94	33	260	46	12	4	128	623	62	4	717	32
Future Volume (vph)	94	33	260	46	12	4	128	623	62	4	717	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1570		1603	1546		1334	1576	
Flt Permitted	0.75	1.00		0.35	1.00		0.22	1.00		0.40	1.00	
Satd. Flow (perm)	1298	1390		621	1570		370	1546		568	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	33	260	46	12	4	128	623	62	4	717	32
RTOR Reduction (vph)	0	223	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	94	70	0	46	13	0	128	682	0	4	748	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.3	11.3		11.3	11.3		55.0	55.0		45.7	45.7	
Effective Green, g (s)	11.3	11.3		11.3	11.3		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	199		89	225		342	1081		330	916	
v/s Ratio Prot		0.05			0.01		0.03	c0.44			c0.47	
v/s Ratio Perm	0.07			c0.07			0.24			0.01		
v/c Ratio	0.51	0.35		0.52	0.06		0.37	0.63		0.01	0.82	
Uniform Delay, d1	31.1	30.4		31.1	29.0		7.4	6.3		6.9	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.1		5.0	0.1		0.7	2.8		0.1	8.0	
Delay (s)	33.2	31.4		36.1	29.1		8.1	9.1		7.0	21.1	
Level of Service	C	C		D	C		A	A		A	C	
Approach Delay (s)		31.9			34.3			9.0			21.0	
Approach LOS		C			C			A			C	

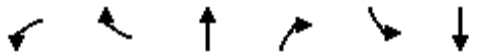
Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	4	808	35	47	974
Future Volume (vph)	10	4	808	35	47	974
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	921	1484	1711	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	921	1484	1711	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	80%	0%	2%	1%	0%	2%
Adj. Flow (vph)	10	4	808	35	47	974
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	4	843	0	47	974
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	4	808	35	47	974
Future Volume (Veh/h)	10	4	808	35	47	974
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	4	808	35	47	974
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.76	0.76			0.76	
vC, conflicting volume	1894	826			843	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1297	608			632	
tC, single (s)	7.2	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3			2.2	
p0 queue free %	89	99			94	
cM capacity (veh/h)	88	378			727	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	10	4	843	47	974
Volume Left	10	0	0	47	0
Volume Right	0	4	35	0	0
cSH	88	378	1700	727	1700
Volume to Capacity	0.11	0.01	0.50	0.06	0.57
Queue Length 95th (m)	2.8	0.2	0.0	1.6	0.0
Control Delay (s)	51.1	14.6	0.0	10.3	0.0
Lane LOS	F	B		B	
Approach Delay (s)	40.7		0.0	0.5	
Approach LOS	E				

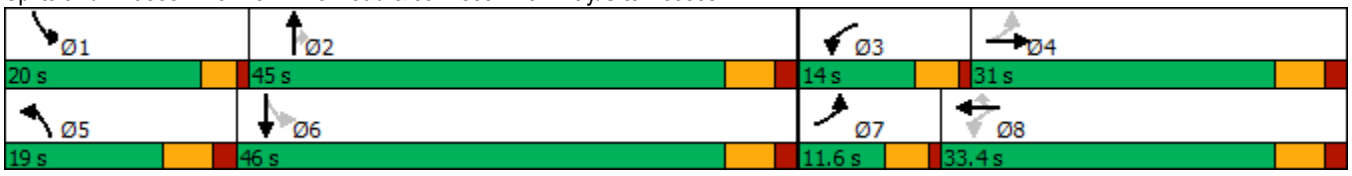
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	19	323	156	43	69	312	619	285	82	757	160
Future Volume (vph)	151	19	323	156	43	69	312	619	285	82	757	160
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.858				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1361	0	3141	1632	1387	3203	3302	1477	1668	3172	0
Flt Permitted	0.643			0.357			0.950			0.417		
Satd. Flow (perm)	1107	1361	0	1180	1632	1387	3202	3302	1477	732	3172	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		323				134			285		25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Adj. Flow (vph)	151	19	323	156	43	69	312	619	285	82	757	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	342	0	156	43	69	312	619	285	82	917	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0	31.0	11.0	41.0	41.0	9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4	33.4	19.0	45.0	45.0	20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%	30.4%	17.3%	40.9%	40.9%	18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4	27.4	13.0	39.0	39.0	16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	21.0	11.3		21.0	12.9	12.9	12.6	49.5	49.5	49.6	40.2	
Actuated g/C Ratio	0.22	0.12		0.22	0.14	0.14	0.13	0.52	0.52	0.52	0.42	
v/c Ratio	0.51	0.77		0.36	0.20	0.23	0.74	0.36	0.32	0.18	0.68	
Control Delay	35.1	18.0		29.3	37.7	1.7	52.2	16.1	3.2	9.5	25.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.1	18.0		29.3	37.7	1.7	52.2	16.1	3.2	9.5	25.8	
LOS	D	B		C	D	A	D	B	A	A	C	
Approach Delay		23.2			23.5			22.4			24.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 95.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 86.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

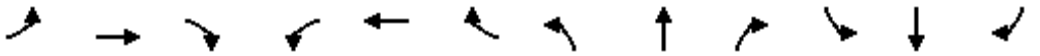




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	342	156	43	69	312	619	285	82	917
v/c Ratio	0.51	0.77	0.36	0.20	0.23	0.74	0.36	0.32	0.18	0.68
Control Delay	35.1	18.0	29.3	37.7	1.7	52.2	16.1	3.2	9.5	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	18.0	29.3	37.7	1.7	52.2	16.1	3.2	9.5	25.8
Queue Length 50th (m)	22.3	3.2	11.3	7.1	0.0	27.6	32.7	0.0	4.7	64.8
Queue Length 95th (m)	38.1	30.3	18.6	16.3	0.0	#52.8	61.7	14.8	13.9	107.8
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	299	596	466	470	495	438	1712	903	604	1350
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.57	0.33	0.09	0.14	0.71	0.36	0.32	0.14	0.68

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)	151	19	323	156	43	69	312	619	285	82	757	160
Future Volume (vph)	151	19	323	156	43	69	312	619	285	82	757	160
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1635	1362		3141	1632	1387	3203	3302	1477	1668	3172	
Flt Permitted	0.64	1.00		0.36	1.00	1.00	0.95	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	1106	1362		1181	1632	1387	3203	3302	1477	732	3172	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	19	323	156	43	69	312	619	285	82	757	160
RTOR Reduction (vph)	0	281	0	0	0	61	0	0	140	0	14	0
Lane Group Flow (vph)	151	61	0	156	43	8	312	619	145	82	903	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	22.9	12.7		19.9	11.2	11.2	12.6	49.5	49.5	47.3	41.1	
Effective Green, g (s)	22.9	12.7		19.9	11.2	11.2	12.6	49.5	49.5	47.3	41.1	
Actuated g/C Ratio	0.23	0.13		0.20	0.11	0.11	0.13	0.51	0.51	0.48	0.42	
Clearance Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	314	177		415	187	159	413	1674	749	414	1335	
v/s Ratio Prot	c0.05	0.04		0.03	0.03		c0.10	0.19		0.01	c0.28	
v/s Ratio Perm	c0.06			0.04		0.01			0.10	0.08		
v/c Ratio	0.48	0.34		0.38	0.23	0.05	0.76	0.37	0.19	0.20	0.68	
Uniform Delay, d1	31.5	38.7		32.8	39.3	38.5	41.0	14.6	13.1	13.6	22.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.2		0.6	0.6	0.1	7.7	0.6	0.6	0.2	2.8	
Delay (s)	32.7	39.8		33.4	39.9	38.6	48.7	15.2	13.7	13.9	25.6	
Level of Service	C	D		C	D	D	D	B	B	B	C	
Approach Delay (s)		37.6			35.8			23.5			24.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	22.5
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

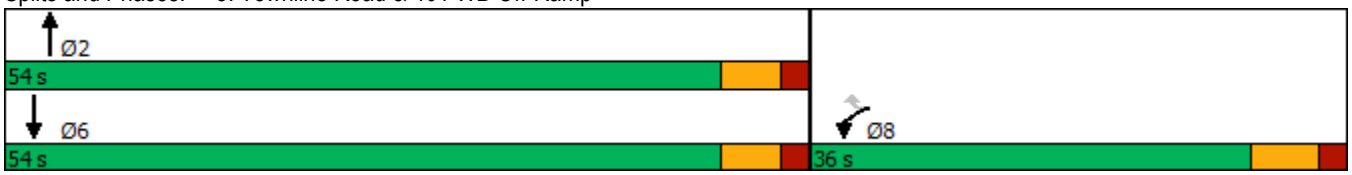


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	233	1003	0	0	832
Future Volume (vph)	559	233	1003	0	0	832
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		90				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	559	233	1003	0	0	832
Shared Lane Traffic (%)						
Lane Group Flow (vph)	559	233	1003	0	0	832
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	21.5	21.5	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
v/c Ratio	0.75	0.55	0.49			0.41
Control Delay	34.4	20.5	11.7			10.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.4	20.5	11.7			10.7
LOS	C	C	B			B
Approach Delay	30.3		11.7			10.7
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	559	233	1003	832
v/c Ratio	0.75	0.55	0.49	0.41
Control Delay	34.4	20.5	11.7	10.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.4	20.5	11.7	10.7
Queue Length 50th (m)	41.2	18.4	44.1	34.2
Queue Length 95th (m)	57.6	39.2	72.9	57.4
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1031	553	2051	2051
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	0.42	0.49	0.41

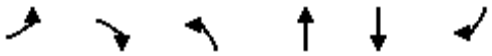
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	233	1003	0	0	832
Future Volume (vph)	559	233	1003	0	0	832
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	559	233	1003	0	0	832
RTOR Reduction (vph)	0	66	0	0	0	0
Lane Group Flow (vph)	559	167	1003	0	0	832
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	21.5	21.5	48.2			48.2
Effective Green, g (s)	21.5	21.5	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	748	359	2052			2052
v/s Ratio Prot	c0.20		c0.29			0.24
v/s Ratio Perm		0.12				
v/c Ratio	0.75	0.46	0.49			0.41
Uniform Delay, d1	27.9	25.5	9.9			9.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.1	1.0	0.8			0.6
Delay (s)	32.0	26.5	10.7			9.8
Level of Service	C	C	B			A
Approach Delay (s)	30.3		10.7			9.8
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

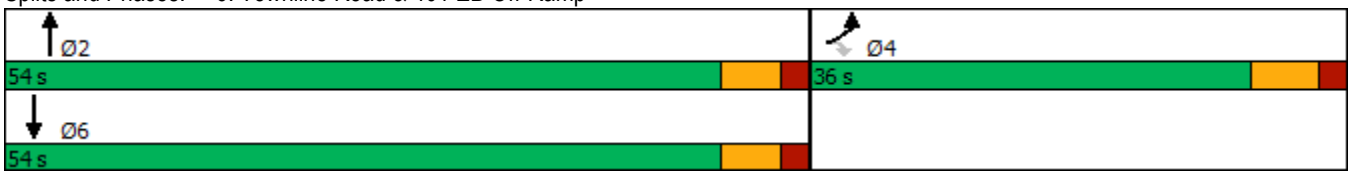


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	495	505	0	965	1189	0
Future Volume (vph)	495	505	0	965	1189	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		55				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	495	505	0	965	1189	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	495	505	0	965	1189	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.94	1.01		0.53	0.67	
Control Delay	58.7	71.8		14.9	17.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	58.7	71.8		14.9	17.6	
LOS	E	E		B	B	
Approach Delay	65.3			14.9	17.6	
Approach LOS	E			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 31.9		Intersection LOS: C	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



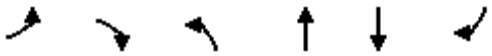


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	495	505	965	1189
v/c Ratio	0.94	1.01	0.53	0.67
Control Delay	58.7	71.8	14.9	17.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	58.7	71.8	14.9	17.6
Queue Length 50th (m)	82.5	~80.9	53.7	73.9
Queue Length 95th (m)	#141.8	#145.1	70.1	95.7
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	500	1830	1779
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	0.94	1.01	0.53	0.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

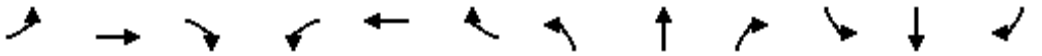
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	495	505	0	965	1189	0
Future Volume (vph)	495	505	0	965	1189	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	495	505	0	965	1189	0
RTOR Reduction (vph)	0	37	0	0	0	0
Lane Group Flow (vph)	495	468	0	965	1189	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.31			0.28	c0.36	
v/s Ratio Perm		c0.33				
v/c Ratio	0.94	1.01		0.53	0.67	
Uniform Delay, d1	29.4	30.2		13.6	15.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.6	44.6		1.1	2.0	
Delay (s)	55.0	74.8		14.7	17.2	
Level of Service	E	E		B	B	
Approach Delay (s)	65.0			14.7	17.2	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

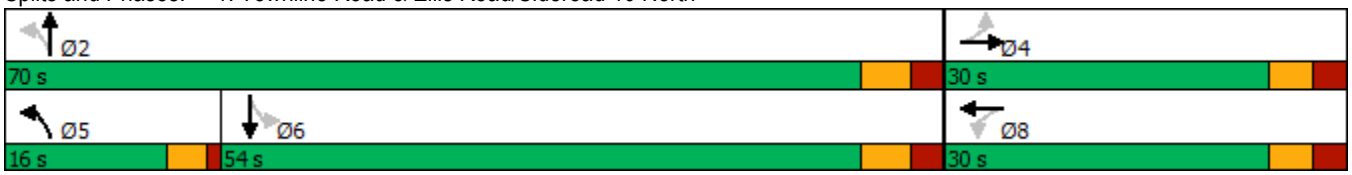


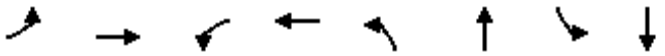
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	172	99	43	11	398	1001	74	9	578	65
Future Volume (vph)	44	23	172	99	43	11	398	1001	74	9	578	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.969			0.990			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	1600	0	1668	1548	0
Flt Permitted	0.722			0.495			0.245			0.176		
Satd. Flow (perm)	1267	1392	0	852	1581	0	430	1600	0	309	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		172			11			7			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	44	23	172	99	43	11	398	1001	74	9	578	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	195	0	99	54	0	398	1075	0	9	643	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	14.8	14.8		14.8	14.8		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.73	0.70		0.53	0.53	
v/c Ratio	0.21	0.53		0.72	0.20		0.84	0.96		0.06	0.79	
Control Delay	34.6	12.8		63.2	28.4		25.0	33.7		14.0	27.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.6	12.8		63.2	28.4		25.0	33.7		14.0	27.3	
LOS	C	B		E	C		C	C		B	C	
Approach Delay		16.8			50.9			31.3			27.2	
Approach LOS		B			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.1			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 30.1		Intersection LOS: C	
Intersection Capacity Utilization 110.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

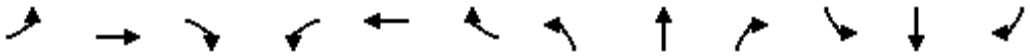




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	195	99	54	398	1075	9	643
v/c Ratio	0.21	0.53	0.72	0.20	0.84	0.96	0.06	0.79
Control Delay	34.6	12.8	63.2	28.4	25.0	33.7	14.0	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	12.8	63.2	28.4	25.0	33.7	14.0	27.3
Queue Length 50th (m)	6.7	3.5	16.6	6.5	20.5	143.6	0.7	84.6
Queue Length 95th (m)	15.9	21.4	33.2	16.3	#71.4	#302.1	3.8	#173.5
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	334	494	225	425	476	1124	162	817
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.39	0.44	0.13	0.84	0.96	0.06	0.79

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)	44	23	172	99	43	11	398	1001	74	9	578	65
Future Volume (vph)	44	23	172	99	43	11	398	1001	74	9	578	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1391		1635	1582		1668	1600		1668	1548	
Flt Permitted	0.72	1.00		0.50	1.00		0.25	1.00		0.18	1.00	
Satd. Flow (perm)	1267	1391		852	1582		430	1600		309	1548	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	23	172	99	43	11	398	1001	74	9	578	65
RTOR Reduction (vph)	0	144	0	0	9	0	0	2	0	0	4	0
Lane Group Flow (vph)	44	51	0	99	45	0	398	1073	0	9	639	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.8	14.8		14.8	14.8		63.9	63.9		47.9	47.9	
Effective Green, g (s)	14.8	14.8		14.8	14.8		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.70	0.70		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	226		138	257		465	1123		162	814	
v/s Ratio Prot		0.04			0.03		0.11	c0.67			0.41	
v/s Ratio Perm	0.03			c0.12			0.49			0.03		
v/c Ratio	0.21	0.23		0.72	0.17		0.86	0.96		0.06	0.79	
Uniform Delay, d1	33.1	33.1		36.1	32.8		10.9	12.3		10.5	17.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		16.3	0.3		14.3	18.1		0.7	7.5	
Delay (s)	33.6	33.6		52.4	33.2		25.2	30.3		11.2	24.9	
Level of Service	C	C		D	C		C	C		B	C	
Approach Delay (s)		33.6			45.6			28.9			24.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	16.3
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	10	1463	12	18	831
Future Volume (vph)	29	10	1463	12	18	831
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1306	1484	1707	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1306	1484	1707	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	27%	0%	2%	92%	0%	2%
Adj. Flow (vph)	29	10	1463	12	18	831
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	10	1475	0	18	831
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

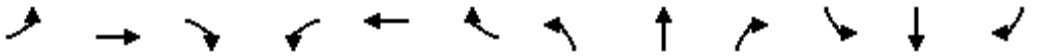
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	10	1463	12	18	831
Future Volume (Veh/h)	29	10	1463	12	18	831
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	10	1463	12	18	831
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.65	0.48			0.48	
vC, conflicting volume	2336	1469			1475	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1645	1436			1448	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	49	87			92	
cM capacity (veh/h)	57	80			228	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	29	10	1475	18	831
Volume Left	29	0	0	18	0
Volume Right	0	10	12	0	0
cSH	57	80	1700	228	1700
Volume to Capacity	0.51	0.13	0.87	0.08	0.49
Queue Length 95th (m)	15.1	3.1	0.0	1.9	0.0
Control Delay (s)	121.9	56.5	0.0	22.1	0.0
Lane LOS	F	F		C	
Approach Delay (s)	105.1		0.0	0.5	
Approach LOS	F				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

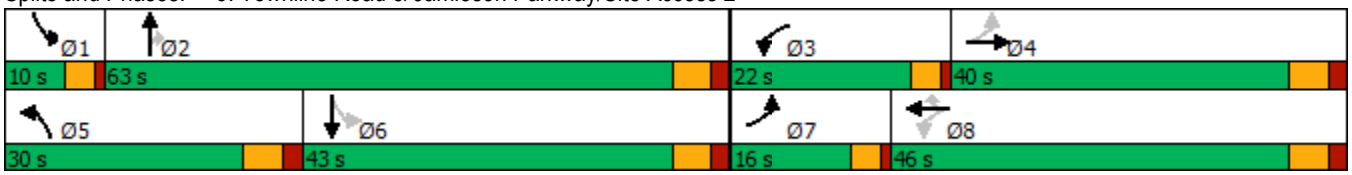


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	32	414	404	93	187	439	1008	385	148	556	141
Future Volume (vph)	245	32	414	404	93	187	439	1008	385	148	556	141
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.861				0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1405	0	3203	1632	1387	3203	3302	1477	1668	3123	0
Flt Permitted	0.697			0.114			0.950			0.223		
Satd. Flow (perm)	1223	1405	0	384	1632	1387	3203	3302	1477	391	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		354				187			368		23	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Adj. Flow (vph)	245	32	414	404	93	187	439	1008	385	148	556	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	446	0	404	93	187	439	1008	385	148	697	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	16.0	40.0		22.0	46.0	46.0	30.0	63.0	63.0	10.0	43.0	
Total Split (%)	11.9%	29.6%		16.3%	34.1%	34.1%	22.2%	46.7%	46.7%	7.4%	31.9%	
Maximum Green (s)	12.0	34.0		18.0	40.0	40.0	24.0	57.0	57.0	6.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	49.7	35.7		57.2	40.0	40.0	22.2	57.0	57.0	46.8	38.8	
Actuated g/C Ratio	0.37	0.26		0.42	0.30	0.30	0.16	0.42	0.42	0.35	0.29	
v/c Ratio	0.50	0.71		0.80	0.19	0.35	0.83	0.72	0.46	0.77	0.76	
Control Delay	31.9	16.8		42.3	36.8	6.6	68.9	36.1	4.9	52.4	49.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.9	16.8		42.3	36.8	6.6	68.9	36.1	4.9	52.4	49.2	
LOS	C	B		D	D	A	E	D	A	D	D	
Approach Delay		22.1			31.8			37.4			49.8	
Approach LOS		C			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 36.4		Intersection LOS: D	
Intersection Capacity Utilization 99.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

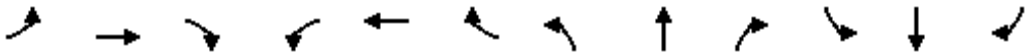




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	245	446	404	93	187	439	1008	385	148	697
v/c Ratio	0.50	0.71	0.80	0.19	0.35	0.83	0.72	0.46	0.77	0.76
Control Delay	31.9	16.8	42.3	36.8	6.6	68.9	36.1	4.9	52.4	49.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	16.8	42.3	36.8	6.6	68.9	36.1	4.9	52.4	49.2
Queue Length 50th (m)	43.1	20.3	36.7	18.5	0.0	58.2	116.1	2.6	20.6	88.2
Queue Length 95th (m)	64.1	62.5	54.6	32.9	17.3	76.7	141.1	22.6	#44.8	112.0
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	489	631	540	483	542	569	1394	836	192	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.71	0.75	0.19	0.35	0.77	0.72	0.46	0.77	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)	245	32	414	404	93	187	439	1008	385	148	556	141
Future Volume (vph)	245	32	414	404	93	187	439	1008	385	148	556	141
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1404		3203	1632	1387	3203	3302	1477	1668	3122	
Flt Permitted	0.70	1.00		0.11	1.00	1.00	0.95	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	1223	1404		385	1632	1387	3203	3302	1477	391	3122	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	245	32	414	404	93	187	439	1008	385	148	556	141
RTOR Reduction (vph)	0	260	0	0	0	132	0	0	213	0	16	0
Lane Group Flow (vph)	245	186	0	404	93	55	439	1008	172	148	681	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	47.7	35.7		56.0	40.0	40.0	22.2	57.0	57.0	44.8	38.8	
Effective Green, g (s)	47.7	35.7		56.0	40.0	40.0	22.2	57.0	57.0	44.8	38.8	
Actuated g/C Ratio	0.35	0.26		0.41	0.30	0.30	0.16	0.42	0.42	0.33	0.29	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	471	371		499	483	410	526	1394	623	186	897	
v/s Ratio Prot	0.05	0.13		c0.10	0.06		c0.14	0.31		0.04	0.22	
v/s Ratio Perm	0.14			c0.24		0.04			0.12	c0.23		
v/c Ratio	0.52	0.50		0.81	0.19	0.14	0.83	0.72	0.28	0.80	0.76	
Uniform Delay, d1	33.2	42.1		32.3	35.4	34.8	54.6	32.4	25.5	37.0	43.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	4.8		9.4	0.9	0.7	11.0	3.3	1.1	20.5	6.0	
Delay (s)	34.2	46.8		41.7	36.3	35.5	65.6	35.7	26.6	57.5	49.8	
Level of Service	C	D		D	D	D	E	D	C	E	D	
Approach Delay (s)		42.4			39.3			41.0			51.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

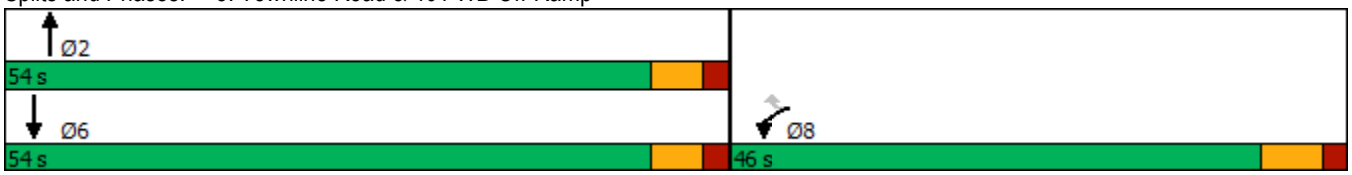


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	438	1504	0	0	930
Future Volume (vph)	560	438	1504	0	0	930
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		15				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	560	438	1504	0	0	930
Shared Lane Traffic (%)						
Lane Group Flow (vph)	560	438	1504	0	0	930
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	31.5	31.5	48.4			48.4
Actuated g/C Ratio	0.34	0.34	0.52			0.52
v/c Ratio	0.56	0.87	0.82			0.51
Control Delay	26.7	45.4	24.8			16.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.7	45.4	24.8			16.7
LOS	C	D	C			B
Approach Delay	34.9		24.8			16.7
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	560	438	1504	930
v/c Ratio	0.56	0.87	0.82	0.51
Control Delay	26.7	45.4	24.8	16.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	45.4	24.8	16.7
Queue Length 50th (m)	41.0	69.4	115.7	55.6
Queue Length 95th (m)	56.0	108.2	#172.2	82.8
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1266	635	1831	1831
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	0.44	0.69	0.82	0.51

Intersection Summary

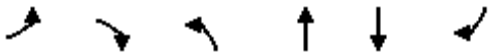
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	438	1504	0	0	930
Future Volume (vph)	560	438	1504	0	0	930
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	560	438	1504	0	0	930
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	560	428	1504	0	0	930
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	31.4	31.4	48.3			48.3
Effective Green, g (s)	31.4	31.4	48.3			48.3
Actuated g/C Ratio	0.34	0.34	0.52			0.52
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1001	495	1833			1833
v/s Ratio Prot	0.19		c0.43			0.27
v/s Ratio Perm		c0.29				
v/c Ratio	0.56	0.86	0.82			0.51
Uniform Delay, d1	24.8	28.4	18.3			14.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.7	14.6	4.3			1.0
Delay (s)	25.4	43.0	22.6			15.2
Level of Service	C	D	C			B
Approach Delay (s)	33.1		22.6			15.2
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

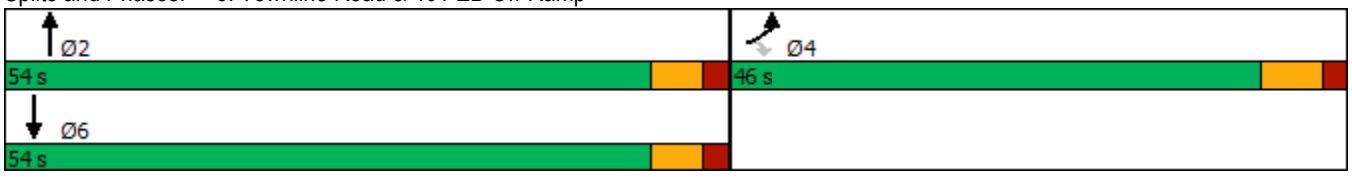


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	533	504	0	1241	1305	0
Future Volume (vph)	533	504	0	1241	1305	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		27				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	533	504	0	1241	1305	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	533	504	0	1241	1305	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	35.4	35.4		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
v/c Ratio	0.89	0.92		0.70	0.77	
Control Delay	47.7	51.4		21.9	24.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.7	51.4		21.9	24.0	
LOS	D	D		C	C	
Approach Delay	49.5			21.9	24.0	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 96.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

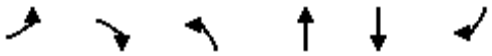




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	533	504	1241	1305
v/c Ratio	0.89	0.92	0.70	0.77
Control Delay	47.7	51.4	21.9	24.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.7	51.4	21.9	24.0
Queue Length 50th (m)	91.4	83.9	97.8	108.2
Queue Length 95th (m)	#148.1	#143.1	122.8	136.7
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	667	610	1771	1704
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	0.80	0.83	0.70	0.77

Intersection Summary

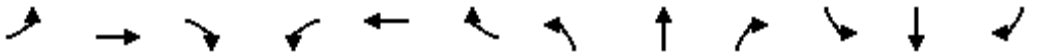
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	533	504	0	1241	1305	0
Future Volume (vph)	533	504	0	1241	1305	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	533	504	0	1241	1305	0
RTOR Reduction (vph)	0	17	0	0	0	0
Lane Group Flow (vph)	533	487	0	1241	1305	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	35.4	35.4		48.2	48.2	
Effective Green, g (s)	35.4	35.4		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	596	531		1773	1705	
v/s Ratio Prot	0.33			0.35	c0.38	
v/s Ratio Perm		c0.34				
v/c Ratio	0.89	0.92		0.70	0.77	
Uniform Delay, d1	28.6	28.9		18.4	19.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.8	20.7		2.3	3.3	
Delay (s)	44.4	49.6		20.7	22.7	
Level of Service	D	D		C	C	
Approach Delay (s)	46.9			20.7	22.7	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



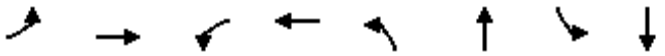
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	241	66	18	4	223	590	70	3	496	40
Future Volume (vph)	54	30	241	66	18	4	223	590	70	3	496	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.973			0.984			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1415	0	1668	1579	0	1651	1577	0	1668	1599	0
Flt Permitted	0.743			0.503			0.416			0.323		
Satd. Flow (perm)	1291	1415	0	883	1579	0	723	1577	0	567	1599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		241			4			13			9	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	54	30	241	66	18	4	223	590	70	3	496	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	271	0	66	22	0	223	660	0	3	536	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	10.0	10.0		10.0	10.0		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.57	0.57		0.57	0.57	
v/c Ratio	0.22	0.58		0.39	0.07		0.54	0.73		0.01	0.58	
Control Delay	19.8	9.8		25.6	15.6		13.9	15.4		6.0	10.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.8	9.8		25.6	15.6		13.9	15.4		6.0	10.9	
LOS	B	A		C	B		B	B		A	B	
Approach Delay		11.5			23.1			15.0			10.8	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 93.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

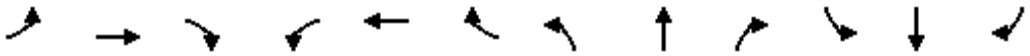




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	271	66	22	223	660	3	536
v/c Ratio	0.22	0.58	0.39	0.07	0.54	0.73	0.01	0.58
Control Delay	19.8	9.8	25.6	15.6	13.9	15.4	6.0	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	9.8	25.6	15.6	13.9	15.4	6.0	10.9
Queue Length 50th (m)	4.3	2.4	5.5	1.4	10.3	35.3	0.1	25.1
Queue Length 95th (m)	11.6	17.5	14.4	5.7	35.4	#108.3	1.1	63.6
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	494	690	338	606	415	910	325	922
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.39	0.20	0.04	0.54	0.73	0.01	0.58

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)	54	30	241	66	18	4	223	590	70	3	496	40
Future Volume (vph)	54	30	241	66	18	4	223	590	70	3	496	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1414		1668	1579		1651	1578		1668	1599	
Flt Permitted	0.74	1.00		0.50	1.00		0.42	1.00		0.32	1.00	
Satd. Flow (perm)	1291	1414		883	1579		723	1578		567	1599	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	30	241	66	18	4	223	590	70	3	496	40
RTOR Reduction (vph)	0	195	0	0	3	0	0	6	0	0	4	0
Lane Group Flow (vph)	54	76	0	66	19	0	223	654	0	3	532	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.0	10.0		10.0	10.0		30.1	30.1		30.1	30.1	
Effective Green, g (s)	10.0	10.0		10.0	10.0		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	269		168	301		415	906		325	918	
v/s Ratio Prot		0.05			0.01			c0.41			0.33	
v/s Ratio Perm	0.04			c0.07			0.31			0.01		
v/c Ratio	0.22	0.28		0.39	0.06		0.54	0.72		0.01	0.58	
Uniform Delay, d1	17.9	18.1		18.5	17.4		6.9	8.1		4.8	7.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		1.5	0.1		4.9	5.0		0.1	2.7	
Delay (s)	18.4	18.7		20.1	17.4		11.8	13.1		4.8	9.8	
Level of Service	B	B		C	B		B	B		A	A	
Approach Delay (s)		18.7			19.4			12.8			9.8	
Approach LOS		B			B			B			A	

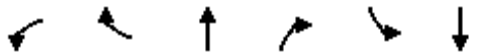
Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	12.3
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	3	879	6	11	792
Future Volume (vph)	9	3	879	6	11	792
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1719	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1719	0	1750	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%
Adj. Flow (vph)	9	3	879	6	11	792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	3	885	0	11	792
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

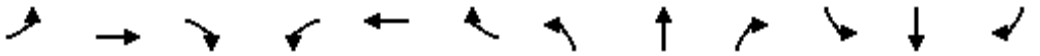
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	3	879	6	11	792
Future Volume (Veh/h)	9	3	879	6	11	792
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	3	879	6	11	792
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.85	0.76			0.76	
vC, conflicting volume	1696	882			885	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1270	687			691	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	99			98	
cM capacity (veh/h)	156	342			687	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	9	3	885	11	792
Volume Left	9	0	0	11	0
Volume Right	0	3	6	0	0
cSH	156	342	1700	687	1700
Volume to Capacity	0.06	0.01	0.52	0.02	0.47
Queue Length 95th (m)	1.4	0.2	0.0	0.4	0.0
Control Delay (s)	29.5	15.6	0.0	10.3	0.0
Lane LOS	D	C		B	
Approach Delay (s)	26.0		0.0	0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

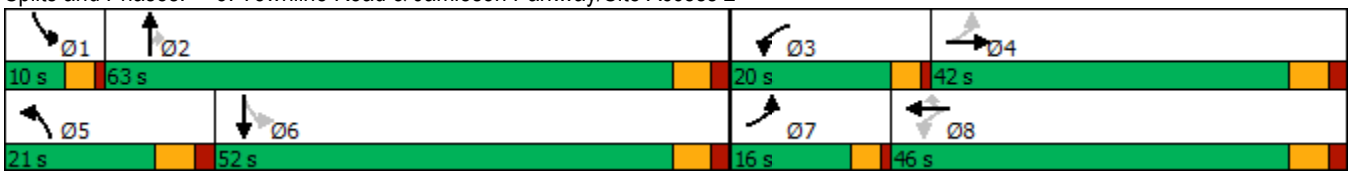


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	56	264	463	80	155	227	574	450	147	545	109
Future Volume (vph)	167	56	264	463	80	155	227	574	450	147	545	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		35.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.876				0.850			0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1429	0	3235	1632	1387	3203	3270	1492	1668	3214	0
Flt Permitted	0.705			0.172			0.950			0.436		
Satd. Flow (perm)	1237	1429	0	586	1632	1387	3203	3270	1492	765	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		171				155			385		19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	167	56	264	463	80	155	227	574	450	147	545	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	320	0	463	80	155	227	574	450	147	654	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	16.0	42.0		20.0	46.0	46.0	21.0	63.0	63.0	10.0	52.0	
Total Split (%)	11.9%	31.1%		14.8%	34.1%	34.1%	15.6%	46.7%	46.7%	7.4%	38.5%	
Maximum Green (s)	12.0	36.0		16.0	40.0	40.0	15.0	57.0	57.0	6.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	32.7	19.2		40.8	23.3	23.3	12.9	57.3	57.3	56.5	48.5	
Actuated g/C Ratio	0.28	0.16		0.34	0.20	0.20	0.11	0.48	0.48	0.48	0.41	
v/c Ratio	0.44	0.86		0.84	0.25	0.39	0.65	0.36	0.49	0.36	0.49	
Control Delay	31.7	43.1		43.9	40.9	8.6	61.0	21.2	5.9	18.1	28.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.7	43.1		43.9	40.9	8.6	61.0	21.2	5.9	18.1	28.4	
LOS	C	D		D	D	A	E	C	A	B	C	
Approach Delay		39.2			35.7			22.9			26.6	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 118.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

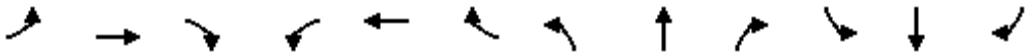




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	320	463	80	155	227	574	450	147	654
v/c Ratio	0.44	0.86	0.84	0.25	0.39	0.65	0.36	0.49	0.36	0.49
Control Delay	31.7	43.1	43.9	40.9	8.6	61.0	21.2	5.9	18.1	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	43.1	43.9	40.9	8.6	61.0	21.2	5.9	18.1	28.4
Queue Length 50th (m)	27.8	35.0	41.7	15.8	0.0	26.2	42.6	7.9	14.7	57.1
Queue Length 95th (m)	44.1	68.6	#58.8	29.0	16.2	43.0	68.3	35.4	31.4	90.0
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0		35.0	115.0	
Base Capacity (vph)	391	556	562	555	573	408	1585	921	411	1328
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.58	0.82	0.14	0.27	0.56	0.36	0.49	0.36	0.49

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)	167	56	264	463	80	155	227	574	450	147	545	109
Future Volume (vph)	167	56	264	463	80	155	227	574	450	147	545	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1430		3235	1632	1387	3203	3270	1492	1668	3214	
Flt Permitted	0.70	1.00		0.17	1.00	1.00	0.95	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	1237	1430		587	1632	1387	3203	3270	1492	765	3214	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	56	264	463	80	155	227	574	450	147	545	109
RTOR Reduction (vph)	0	143	0	0	0	124	0	0	198	0	11	0
Lane Group Flow (vph)	167	177	0	463	80	31	227	574	252	147	643	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	30.7	19.2		38.8	23.3	23.3	12.9	57.4	57.4	54.5	48.5	
Effective Green, g (s)	30.7	19.2		38.8	23.3	23.3	12.9	57.4	57.4	54.5	48.5	
Actuated g/C Ratio	0.26	0.16		0.33	0.20	0.20	0.11	0.49	0.49	0.46	0.41	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	363	232		542	321	273	349	1587	724	398	1318	
v/s Ratio Prot	0.04	0.12		c0.11	0.05		c0.07	0.18		0.02	c0.20	
v/s Ratio Perm	0.07			c0.17		0.02			0.17	0.15		
v/c Ratio	0.46	0.76		0.85	0.25	0.11	0.65	0.36	0.35	0.37	0.49	
Uniform Delay, d1	36.0	47.3		32.9	40.1	39.0	50.5	19.0	18.8	18.8	25.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	13.7		12.4	0.4	0.2	4.3	0.6	1.3	0.6	1.3	
Delay (s)	36.9	61.1		45.4	40.5	39.1	54.8	19.6	20.1	19.4	27.0	
Level of Service	D	E		D	D	D	D	B	C	B	C	
Approach Delay (s)		52.8			43.4			26.2			25.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	118.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	319	935	0	0	857
Future Volume (vph)	413	319	935	0	0	857
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		79				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	413	319	935	0	0	857
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	319	935	0	0	857
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	17.8	17.8	38.3			38.3
Actuated g/C Ratio	0.26	0.26	0.56			0.56
v/c Ratio	0.52	0.74	0.47			0.44
Control Delay	23.6	27.5	11.3			10.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	23.6	27.5	11.3			10.9
LOS	C	C	B			B
Approach Delay	25.3		11.3			10.9
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 68.7			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	413	319	935	857
v/c Ratio	0.52	0.74	0.47	0.44
Control Delay	23.6	27.5	11.3	10.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.6	27.5	11.3	10.9
Queue Length 50th (m)	23.1	27.7	34.1	30.4
Queue Length 95th (m)	34.1	51.8	66.4	59.7
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1334	675	1972	1953
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	0.31	0.47	0.47	0.44

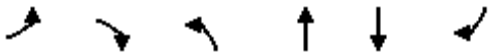
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	319	935	0	0	857
Future Volume (vph)	413	319	935	0	0	857
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	413	319	935	0	0	857
RTOR Reduction (vph)	0	59	0	0	0	0
Lane Group Flow (vph)	413	260	935	0	0	857
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	17.8	17.8	38.3			38.3
Effective Green, g (s)	17.8	17.8	38.3			38.3
Actuated g/C Ratio	0.26	0.26	0.56			0.56
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	799	377	1973			1954
v/s Ratio Prot	0.13		c0.26			0.24
v/s Ratio Perm		c0.18				
v/c Ratio	0.52	0.69	0.47			0.44
Uniform Delay, d1	21.7	22.9	9.1			8.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.6	5.4	0.8			0.7
Delay (s)	22.3	28.3	9.9			9.6
Level of Service	C	C	A			A
Approach Delay (s)	24.9		9.9			9.6
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

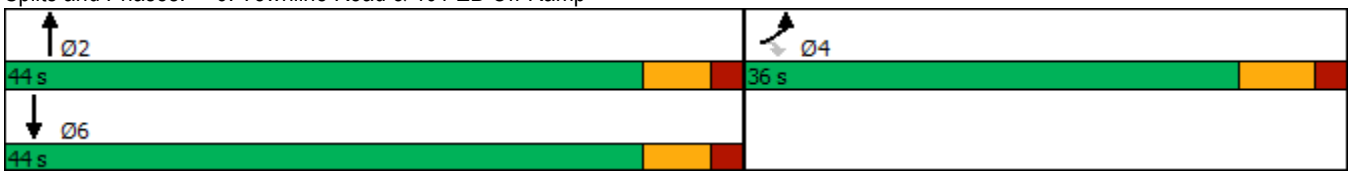


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	470	461	0	659	986	0
Future Volume (vph)	470	461	0	659	986	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		68				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	470	461	0	659	986	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	470	461	0	659	986	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	25.7	25.7		38.2	38.2	
Actuated g/C Ratio	0.34	0.34		0.50	0.50	
v/c Ratio	0.86	0.86		0.38	0.56	
Control Delay	40.2	37.8		13.3	15.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	40.2	37.8		13.3	15.6	
LOS	D	D		B	B	
Approach Delay	39.0			13.3	15.6	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 76.4			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

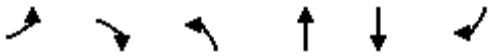




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	470	461	659	986
v/c Ratio	0.86	0.86	0.38	0.56
Control Delay	40.2	37.8	13.3	15.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.2	37.8	13.3	15.6
Queue Length 50th (m)	62.0	52.9	31.8	53.8
Queue Length 95th (m)	#108.1	#101.7	44.7	73.1
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	634	606	1748	1748
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	0.74	0.76	0.38	0.56

Intersection Summary

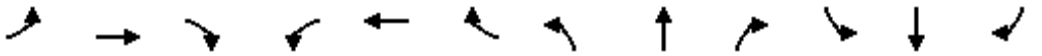
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	470	461	0	659	986	0
Future Volume (vph)	470	461	0	659	986	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	470	461	0	659	986	0
RTOR Reduction (vph)	0	45	0	0	0	0
Lane Group Flow (vph)	470	416	0	659	986	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.7	25.7		38.2	38.2	
Effective Green, g (s)	25.7	25.7		38.2	38.2	
Actuated g/C Ratio	0.34	0.34		0.50	0.50	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	549	489		1750	1750	
v/s Ratio Prot	c0.29			0.19	c0.28	
v/s Ratio Perm		0.29				
v/c Ratio	0.86	0.85		0.38	0.56	
Uniform Delay, d1	23.6	23.6		11.8	13.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.4	13.3		0.6	1.3	
Delay (s)	36.1	36.9		12.4	14.6	
Level of Service	D	D		B	B	
Approach Delay (s)	36.5			12.4	14.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

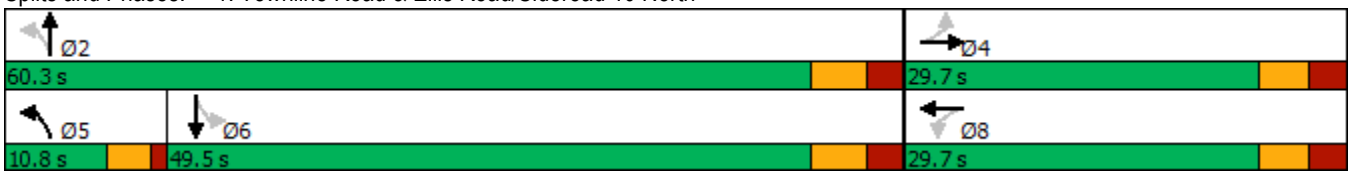


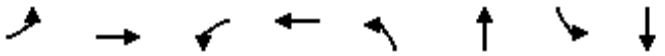
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Future Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.965			0.987			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1575	0	1603	1547	0	1334	1577	0
Flt Permitted	0.746			0.312			0.148			0.372		
Satd. Flow (perm)	1296	1390	0	548	1575	0	250	1547	0	522	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		256			4			10			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	321	0	48	17	0	140	752	0	4	821	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.8	12.8		12.8	12.8		56.6	54.3		43.5	43.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.68		0.55	0.55	
v/c Ratio	0.50	0.73		0.55	0.07		0.48	0.71		0.01	0.95	
Control Delay	38.2	18.1		53.0	23.3		10.2	14.1		11.0	41.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.2	18.1		53.0	23.3		10.2	14.1		11.0	41.0	
LOS	D	B		D	C		B	B		B	D	
Approach Delay		23.0			45.2			13.5			40.8	
Approach LOS		C			D			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 26.5		Intersection LOS: C	
Intersection Capacity Utilization 103.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

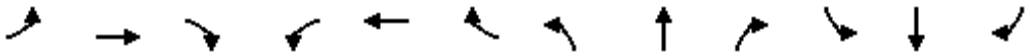




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	321	48	17	140	752	4	821
v/c Ratio	0.50	0.73	0.55	0.07	0.48	0.71	0.01	0.95
Control Delay	38.2	18.1	53.0	23.3	10.2	14.1	11.0	41.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	18.1	53.0	23.3	10.2	14.1	11.0	41.0
Queue Length 50th (m)	14.4	8.7	6.7	1.7	5.0	54.2	0.2	103.0
Queue Length 95th (m)	28.2	33.3	17.1	6.6	16.0	144.7	2.0	#227.7
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	388	596	164	475	294	1060	285	864
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.54	0.29	0.04	0.48	0.71	0.01	0.95

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)	104	36	285	48	13	4	140	685	67	4	786	35
Future Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1574		1603	1547		1334	1576	
Flt Permitted	0.75	1.00		0.31	1.00		0.15	1.00		0.37	1.00	
Satd. Flow (perm)	1297	1390		549	1574		249	1547		523	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	36	285	48	13	4	140	685	67	4	786	35
RTOR Reduction (vph)	0	215	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	104	106	0	48	14	0	140	749	0	4	820	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.8	12.8		12.8	12.8		54.3	54.3		43.5	43.5	
Effective Green, g (s)	12.8	12.8		12.8	12.8		54.3	54.3		43.5	43.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68	0.68		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	224		88	253		286	1057		286	863	
v/s Ratio Prot		0.08			0.01		0.04	c0.48			c0.52	
v/s Ratio Perm	0.08			c0.09			0.29			0.01		
v/c Ratio	0.50	0.47		0.55	0.05		0.49	0.71		0.01	0.95	
Uniform Delay, d1	30.4	30.2		30.6	28.2		10.7	7.7		8.2	16.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	1.6		6.7	0.1		1.3	4.0		0.1	20.6	
Delay (s)	32.2	31.8		37.4	28.3		12.0	11.7		8.3	37.5	
Level of Service	C	C		D	C		B	B		A	D	
Approach Delay (s)		31.9			35.0			11.8			37.4	
Approach LOS		C			C			B			D	

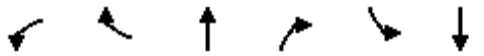
Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	16.3
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	4	887	35	47	1070
Future Volume (vph)	10	4	887	35	47	1070
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	921	1484	1713	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	921	1484	1713	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	80%	0%	2%	1%	0%	2%
Adj. Flow (vph)	10	4	887	35	47	1070
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	4	922	0	47	1070
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	4	887	35	47	1070
Future Volume (Veh/h)	10	4	887	35	47	1070
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	4	887	35	47	1070
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.66	0.71			0.71	
vC, conflicting volume	2068	904			922	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1386	666			691	
tC, single (s)	7.2	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3			2.2	
p0 queue free %	85	99			93	
cM capacity (veh/h)	66	331			652	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	10	4	922	47	1070
Volume Left	10	0	0	47	0
Volume Right	0	4	35	0	0
cSH	66	331	1700	652	1700
Volume to Capacity	0.15	0.01	0.54	0.07	0.63
Queue Length 95th (m)	3.8	0.3	0.0	1.8	0.0
Control Delay (s)	69.1	16.0	0.0	10.9	0.0
Lane LOS	F	C		B	
Approach Delay (s)	53.9		0.0	0.5	
Approach LOS	F				

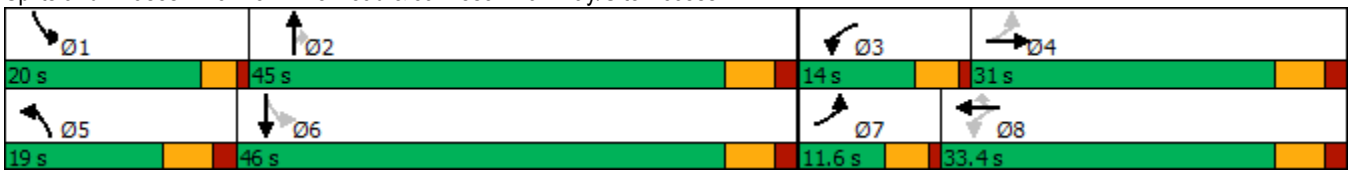
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	19	357	156	43	69	346	682	285	82	836	178
Future Volume (vph)	167	19	357	156	43	69	346	682	285	82	836	178
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		35.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.858				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1361	0	3141	1632	1387	3203	3302	1477	1668	3172	0
Flt Permitted	0.657			0.294			0.950			0.392		
Satd. Flow (perm)	1131	1361	0	972	1632	1387	3202	3302	1477	688	3172	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		312				134			226		26	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Adj. Flow (vph)	167	19	357	156	43	69	346	682	285	82	836	178
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	376	0	156	43	69	346	682	285	82	1014	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0	31.0	11.0	41.0	41.0	9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4	33.4	19.0	45.0	45.0	20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%	30.4%	17.3%	40.9%	40.9%	18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4	27.4	13.0	39.0	39.0	16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	23.5	13.8		23.5	15.4	15.4	13.0	49.8	49.8	49.8	40.2	
Actuated g/C Ratio	0.24	0.14		0.24	0.16	0.16	0.13	0.51	0.51	0.51	0.41	
v/c Ratio	0.52	0.82		0.37	0.17	0.21	0.82	0.41	0.33	0.19	0.77	
Control Delay	34.8	23.5		28.7	35.9	1.4	59.2	18.3	5.9	10.8	30.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.8	23.5		28.7	35.9	1.4	59.2	18.3	5.9	10.8	30.6	
LOS	C	C		C	D	A	E	B	A	B	C	
Approach Delay		27.0			22.8			26.4			29.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 98.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 27.1		Intersection LOS: C	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

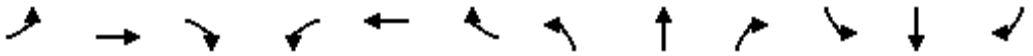




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	376	156	43	69	346	682	285	82	1014
v/c Ratio	0.52	0.82	0.37	0.17	0.21	0.82	0.41	0.33	0.19	0.77
Control Delay	34.8	23.5	28.7	35.9	1.4	59.2	18.3	5.9	10.8	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	23.5	28.7	35.9	1.4	59.2	18.3	5.9	10.8	30.6
Queue Length 50th (m)	24.9	11.2	11.3	7.1	0.0	32.8	41.1	5.6	5.4	81.5
Queue Length 95th (m)	41.5	44.0	18.5	16.3	0.0	#64.5	73.5	25.9	15.0	#133.5
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0		35.0	115.0	
Base Capacity (vph)	322	579	451	457	485	425	1671	859	568	1312
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.65	0.35	0.09	0.14	0.81	0.41	0.33	0.14	0.77

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)	167	19	357	156	43	69	346	682	285	82	836	178
Future Volume (vph)	167	19	357	156	43	69	346	682	285	82	836	178
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1635	1361		3141	1632	1387	3203	3302	1477	1668	3171	
Flt Permitted	0.66	1.00		0.29	1.00	1.00	0.95	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	1130	1361		972	1632	1387	3203	3302	1477	689	3171	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	19	357	156	43	69	346	682	285	82	836	178
RTOR Reduction (vph)	0	265	0	0	0	60	0	0	114	0	15	0
Lane Group Flow (vph)	167	111	0	156	43	9	346	682	171	82	999	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	3%	0%	0%	1%	1%	1%	0%	2%	3%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	25.3	15.1		22.3	13.6	13.6	13.0	49.8	49.8	47.4	41.1	
Effective Green, g (s)	25.3	15.1		22.3	13.6	13.6	13.0	49.8	49.8	47.4	41.1	
Actuated g/C Ratio	0.25	0.15		0.22	0.14	0.14	0.13	0.50	0.50	0.47	0.41	
Clearance Time (s)	4.5	6.0		4.5	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	336	204		403	221	187	414	1637	732	386	1298	
v/s Ratio Prot	c0.05	c0.08		0.03	0.03		c0.11	0.21		0.01	c0.31	
v/s Ratio Perm	0.07			0.05		0.01			0.12	0.09		
v/c Ratio	0.50	0.54		0.39	0.19	0.05	0.84	0.42	0.23	0.21	0.77	
Uniform Delay, d1	31.3	39.5		32.4	38.5	37.8	42.7	16.1	14.4	14.7	25.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	2.9		0.6	0.4	0.1	13.6	0.8	0.7	0.3	4.4	
Delay (s)	32.5	42.4		33.1	39.0	37.9	56.3	16.9	15.2	15.0	30.0	
Level of Service	C	D		C	D	D	E	B	B	B	C	
Approach Delay (s)		39.3			35.3			26.9			28.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.4	Sum of lost time (s)	22.5
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

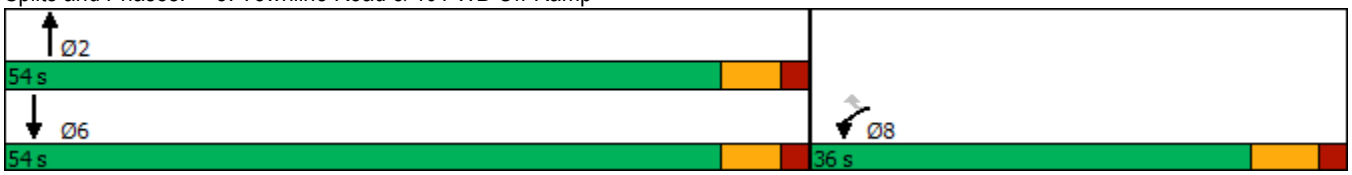


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	245	1087	0	0	908
Future Volume (vph)	605	245	1087	0	0	908
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		72				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	605	245	1087	0	0	908
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	245	1087	0	0	908
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.78	0.58	0.54			0.45
Control Delay	35.4	23.6	12.8			11.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	35.4	23.6	12.8			11.6
LOS	D	C	B			B
Approach Delay	32.0		12.8			11.6
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	605	245	1087	908
v/c Ratio	0.78	0.58	0.54	0.45
Control Delay	35.4	23.6	12.8	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.4	23.6	12.8	11.6
Queue Length 50th (m)	45.5	23.1	52.2	40.6
Queue Length 95th (m)	63.0	45.1	81.5	64.2
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1016	534	2021	2021
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	0.60	0.46	0.54	0.45

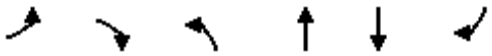
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	245	1087	0	0	908
Future Volume (vph)	605	245	1087	0	0	908
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	605	245	1087	0	0	908
RTOR Reduction (vph)	0	52	0	0	0	0
Lane Group Flow (vph)	605	193	1087	0	0	908
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	22.7	22.7	48.2			48.2
Effective Green, g (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	779	374	2022			2022
v/s Ratio Prot	c0.21		c0.31			0.26
v/s Ratio Perm		0.14				
v/c Ratio	0.78	0.51	0.54			0.45
Uniform Delay, d1	28.0	25.7	10.8			10.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.9	1.2	1.0			0.7
Delay (s)	32.9	26.9	11.8			10.8
Level of Service	C	C	B			B
Approach Delay (s)	31.2		11.8			10.8
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

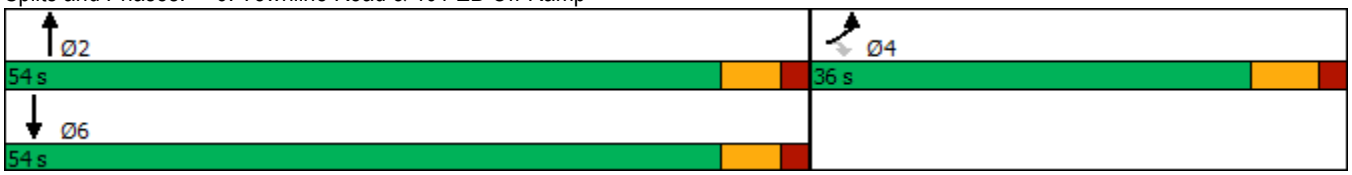


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	528	548	0	1056	1304	0
Future Volume (vph)	528	548	0	1056	1304	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		41				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	528	548	0	1056	1304	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	548	0	1056	1304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	1.01	1.12		0.58	0.73	
Control Delay	72.9	105.2		15.7	19.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	72.9	105.2		15.7	19.2	
LOS	E	F		B	B	
Approach Delay	89.3			15.7	19.2	
Approach LOS	F			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



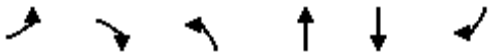


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	528	548	1056	1304
v/c Ratio	1.01	1.12	0.58	0.73
Control Delay	72.9	105.2	15.7	19.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	72.9	105.2	15.7	19.2
Queue Length 50th (m)	~91.3	~105.1	61.1	85.6
Queue Length 95th (m)	#155.3	#166.5	79.2	110.7
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	491	1830	1779
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	1.01	1.12	0.58	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

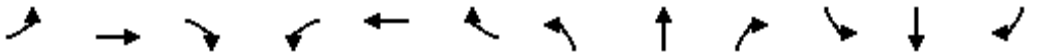
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	528	548	0	1056	1304	0
Future Volume (vph)	528	548	0	1056	1304	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	528	548	0	1056	1304	0
RTOR Reduction (vph)	0	28	0	0	0	0
Lane Group Flow (vph)	528	520	0	1056	1304	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.33			0.31	c0.39	
v/s Ratio Perm		c0.37				
v/c Ratio	1.01	1.12		0.58	0.73	
Uniform Delay, d1	30.2	30.2		14.2	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.7	80.3		1.3	2.7	
Delay (s)	70.9	110.6		15.5	18.8	
Level of Service	E	F		B	B	
Approach Delay (s)	91.1			15.5	18.8	
Approach LOS	F			B	B	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

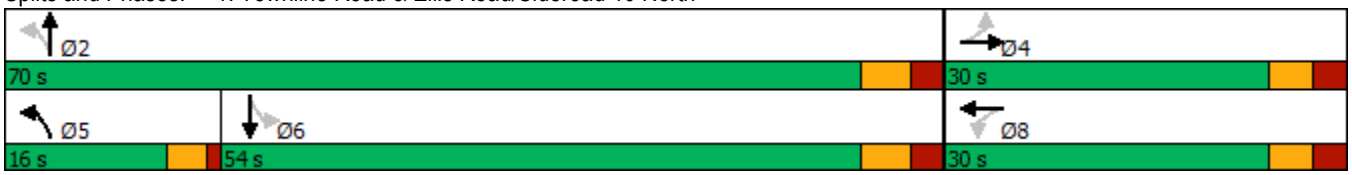


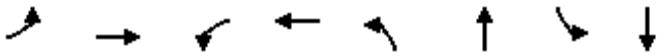
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Future Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.969			0.990			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	1600	0	1668	1548	0
Flt Permitted	0.719			0.459			0.196			0.090		
Satd. Flow (perm)	1262	1392	0	790	1581	0	344	1600	0	158	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		188			12			7			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	213	0	107	59	0	437	1177	0	10	706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	15.9	15.9		15.9	15.9		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.72	0.69		0.52	0.52	
v/c Ratio	0.23	0.54		0.79	0.21		1.04	1.06		0.12	0.87	
Control Delay	34.3	12.4		72.6	28.1		71.4	61.8		18.5	34.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.3	12.4		72.6	28.1		71.4	61.8		18.5	34.8	
LOS	C	B		E	C		E	E		B	C	
Approach Delay		16.5			56.8			64.4			34.6	
Approach LOS		B			E			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.2			
Natural Cycle: 125			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 51.7		Intersection LOS: D	
Intersection Capacity Utilization 117.9%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North



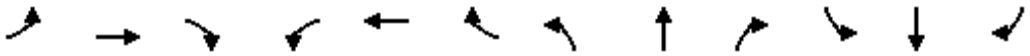


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	213	107	59	437	1177	10	706
v/c Ratio	0.23	0.54	0.79	0.21	1.04	1.06	0.12	0.87
Control Delay	34.3	12.4	72.6	28.1	71.4	61.8	18.5	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	12.4	72.6	28.1	71.4	61.8	18.5	34.8
Queue Length 50th (m)	7.5	3.8	18.3	7.2	~45.8	~232.4	0.9	104.1
Queue Length 95th (m)	17.1	22.5	36.5	17.5	#104.1	#348.3	4.7	#202.8
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	329	502	206	422	420	1111	82	807
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.42	0.52	0.14	1.04	1.06	0.12	0.87

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)	49	25	188	107	47	12	437	1099	78	10	634	72
Future Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1391		1635	1582		1668	1601		1668	1548	
Flt Permitted	0.72	1.00		0.46	1.00		0.20	1.00		0.09	1.00	
Satd. Flow (perm)	1261	1391		789	1582		344	1601		158	1548	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
RTOR Reduction (vph)	0	156	0	0	10	0	0	2	0	0	4	0
Lane Group Flow (vph)	49	57	0	107	49	0	437	1175	0	10	702	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.9	15.9		15.9	15.9		63.9	63.9		47.9	47.9	
Effective Green, g (s)	15.9	15.9		15.9	15.9		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.69		0.52	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	240		136	273		411	1110		82	805	
v/s Ratio Prot		0.04			0.03		0.14	c0.73			0.45	
v/s Ratio Perm	0.04			c0.14			c0.60			0.06		
v/c Ratio	0.23	0.24		0.79	0.18		1.06	1.06		0.12	0.87	
Uniform Delay, d1	32.8	32.9		36.5	32.5		17.8	14.1		11.3	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		25.2	0.3		62.2	43.9		3.0	12.5	
Delay (s)	33.3	33.4		61.7	32.8		80.0	58.0		14.3	31.9	
Level of Service	C	C		E	C		E	E		B	C	
Approach Delay (s)		33.4			51.4			63.9			31.7	
Approach LOS		C			D			E			C	

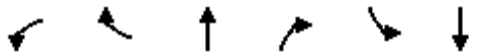
Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	16.3
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	10	1604	12	18	911
Future Volume (vph)	29	10	1604	12	18	911
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1306	1484	1708	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1306	1484	1708	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	27%	0%	2%	92%	0%	2%
Adj. Flow (vph)	29	10	1604	12	18	911
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	10	1616	0	18	911
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	10	1604	12	18	911
Future Volume (Veh/h)	29	10	1604	12	18	911
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	10	1604	12	18	911
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.66	0.46			0.46	
vC, conflicting volume	2557	1610			1616	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1721	1741			1754	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.3			2.2	
p0 queue free %	42	80			89	
cM capacity (veh/h)	50	50			165	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	29	10	1616	18	911
Volume Left	29	0	0	18	0
Volume Right	0	10	12	0	0
cSH	50	50	1700	165	1700
Volume to Capacity	0.58	0.20	0.95	0.11	0.54
Queue Length 95th (m)	17.0	5.1	0.0	2.7	0.0
Control Delay (s)	148.9	94.8	0.0	29.4	0.0
Lane LOS	F	F		D	
Approach Delay (s)	135.0		0.0	0.6	
Approach LOS	F				

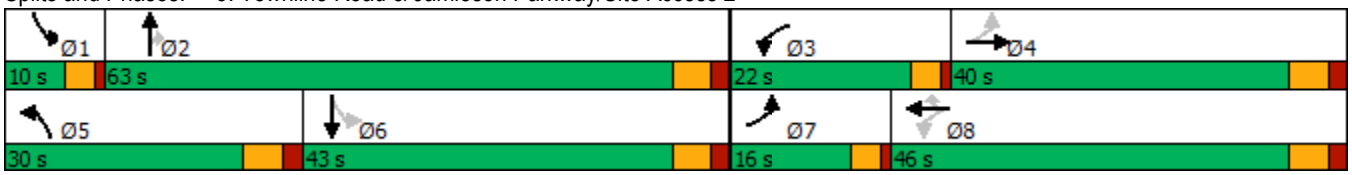
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Future Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		35.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.860				0.850			0.850		0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1403	0	3203	1632	1387	3203	3302	1477	1668	3120	0
Flt Permitted	0.697			0.101			0.950			0.168		
Satd. Flow (perm)	1223	1403	0	341	1632	1387	3203	3302	1477	295	3120	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		343				172			169		23	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Adj. Flow (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	489	0	404	93	187	488	1120	385	148	776	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	16.0	40.0		22.0	46.0	46.0	30.0	63.0	63.0	10.0	43.0	
Total Split (%)	11.9%	29.6%		16.3%	34.1%	34.1%	22.2%	46.7%	46.7%	7.4%	31.9%	
Maximum Green (s)	12.0	34.0		18.0	40.0	40.0	24.0	57.0	57.0	6.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	49.7	35.7		57.2	40.0	40.0	23.2	57.0	57.0	45.8	37.8	
Actuated g/C Ratio	0.37	0.26		0.42	0.30	0.30	0.17	0.42	0.42	0.34	0.28	
v/c Ratio	0.55	0.78		0.83	0.19	0.35	0.89	0.80	0.53	0.92	0.87	
Control Delay	33.7	23.6		46.4	36.8	8.5	73.3	39.6	18.6	81.2	57.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.7	23.6		46.4	36.8	8.5	73.3	39.6	18.6	81.2	57.0	
LOS	C	C		D	D	A	E	D	B	F	E	
Approach Delay		27.2			34.7			43.8			60.8	
Approach LOS		C			C			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 43.1		Intersection LOS: D	
Intersection Capacity Utilization 105.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

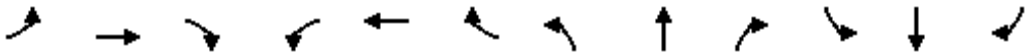




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	270	489	404	93	187	488	1120	385	148	776
v/c Ratio	0.55	0.78	0.83	0.19	0.35	0.89	0.80	0.53	0.92	0.87
Control Delay	33.7	23.6	46.4	36.8	8.5	73.3	39.6	18.6	81.2	57.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	23.6	46.4	36.8	8.5	73.3	39.6	18.6	81.2	57.0
Queue Length 50th (m)	48.3	38.1	38.9	18.5	2.8	65.7	135.7	41.6	20.6	102.2
Queue Length 95th (m)	71.0	86.6	56.9	32.9	21.0	#92.2	163.8	72.0	#53.1	#136.3
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0		35.0	115.0	
Base Capacity (vph)	489	623	528	483	532	569	1394	721	161	889
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.78	0.77	0.19	0.35	0.86	0.80	0.53	0.92	0.87

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)	270	32	457	404	93	187	488	1120	385	148	618	158
Future Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1403		3203	1632	1387	3203	3302	1477	1668	3121	
Flt Permitted	0.70	1.00		0.10	1.00	1.00	0.95	1.00	1.00	0.17	1.00	
Satd. Flow (perm)	1223	1403		340	1632	1387	3203	3302	1477	295	3121	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
RTOR Reduction (vph)	0	252	0	0	0	121	0	0	98	0	17	0
Lane Group Flow (vph)	270	237	0	404	93	66	488	1120	287	148	759	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	47.7	35.7		56.0	40.0	40.0	23.2	57.0	57.0	43.8	37.8	
Effective Green, g (s)	47.7	35.7		56.0	40.0	40.0	23.2	57.0	57.0	43.8	37.8	
Actuated g/C Ratio	0.35	0.26		0.41	0.30	0.30	0.17	0.42	0.42	0.32	0.28	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	471	371		486	483	410	550	1394	623	156	873	
v/s Ratio Prot	0.05	0.17		c0.10	0.06		c0.15	0.34		0.04	0.24	
v/s Ratio Perm	0.15			c0.24		0.05			0.19	c0.26		
v/c Ratio	0.57	0.64		0.83	0.19	0.16	0.89	0.80	0.46	0.95	0.87	
Uniform Delay, d1	33.9	43.9		36.0	35.4	35.1	54.6	34.1	28.0	40.2	46.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	8.1		11.5	0.9	0.8	15.9	5.0	2.4	56.2	11.5	
Delay (s)	35.6	52.1		47.5	36.3	35.9	70.5	39.1	30.4	96.4	57.8	
Level of Service	D	D		D	D	D	E	D	C	F	E	
Approach Delay (s)		46.2			42.8			45.1			64.0	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

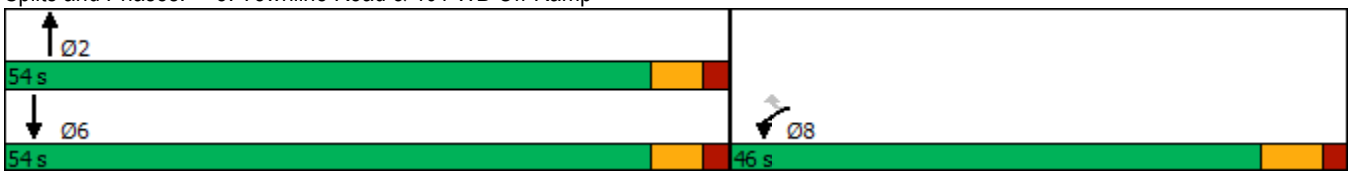


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	469	1639	0	0	1004
Future Volume (vph)	607	469	1639	0	0	1004
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		10				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	607	469	1639	0	0	1004
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	469	1639	0	0	1004
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	33.9	33.9	48.3			48.3
Actuated g/C Ratio	0.36	0.36	0.51			0.51
v/c Ratio	0.58	0.89	0.92			0.56
Control Delay	26.7	48.3	32.6			18.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.7	48.3	32.6			18.5
LOS	C	D	C			B
Approach Delay	36.1		32.6			18.5
Approach LOS	D		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 94.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 29.8		Intersection LOS: C	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	607	469	1639	1004
v/c Ratio	0.58	0.89	0.92	0.56
Control Delay	26.7	48.3	32.6	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	48.3	32.6	18.5
Queue Length 50th (m)	45.4	77.8	152.6	69.7
Queue Length 95th (m)	61.3	#130.6	#212.3	91.7
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1233	616	1784	1784
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	0.76	0.92	0.56

Intersection Summary

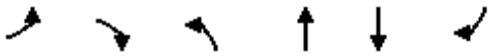
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	469	1639	0	0	1004
Future Volume (vph)	607	469	1639	0	0	1004
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	607	469	1639	0	0	1004
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	607	463	1639	0	0	1004
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	33.8	33.8	48.2			48.2
Effective Green, g (s)	33.8	33.8	48.2			48.2
Actuated g/C Ratio	0.36	0.36	0.51			0.51
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1051	520	1785			1785
v/s Ratio Prot	0.21		c0.47			0.29
v/s Ratio Perm		c0.32				
v/c Ratio	0.58	0.89	0.92			0.56
Uniform Delay, d1	24.6	28.6	21.3			15.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	16.8	9.1			1.3
Delay (s)	25.3	45.4	30.4			17.2
Level of Service	C	D	C			B
Approach Delay (s)	34.1		30.4			17.2
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

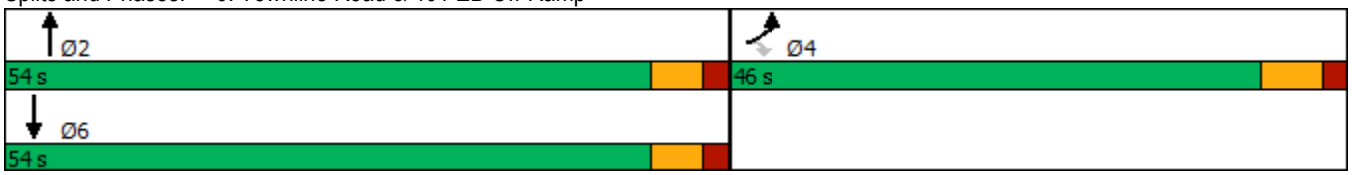


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	569	548	0	1360	1429	0
Future Volume (vph)	569	548	0	1360	1429	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		19				
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	569	548	0	1360	1429	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	569	548	0	1360	1429	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	38.4	38.4		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
v/c Ratio	0.91	0.96		0.79	0.87	
Control Delay	48.8	58.8		25.8	29.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	48.8	58.8		25.8	29.8	
LOS	D	E		C	C	
Approach Delay	53.7			25.8	29.8	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

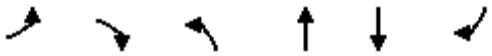




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	569	548	1360	1429
v/c Ratio	0.91	0.96	0.79	0.87
Control Delay	48.8	58.8	25.8	29.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.8	58.8	25.8	29.8
Queue Length 50th (m)	101.0	97.8	113.1	126.1
Queue Length 95th (m)	#163.9	#165.0	141.4	158.6
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	646	587	1715	1651
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	0.88	0.93	0.79	0.87

Intersection Summary

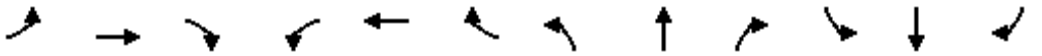
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	569	548	0	1360	1429	0
Future Volume (vph)	569	548	0	1360	1429	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	569	548	0	1360	1429	0
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	569	536	0	1360	1429	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	38.4	38.4		48.0	48.0	
Effective Green, g (s)	38.4	38.4		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	628	559		1715	1650	
v/s Ratio Prot	0.35			0.38	c0.42	
v/s Ratio Perm		c0.37				
v/c Ratio	0.91	0.96		0.79	0.87	
Uniform Delay, d1	28.5	29.5		21.3	22.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.7	27.8		3.9	6.4	
Delay (s)	45.2	57.3		25.2	29.0	
Level of Service	D	E		C	C	
Approach Delay (s)	51.1			25.2	29.0	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



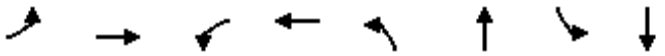
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Future Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.975			0.985			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1415	0	1668	1583	0	1651	1579	0	1668	1599	0
Flt Permitted	0.742			0.449			0.376			0.278		
Satd. Flow (perm)	1290	1415	0	788	1583	0	653	1579	0	488	1599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		252			4			13			9	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			507.3			185.7			162.4	
Travel Time (s)		9.9			36.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	296	0	70	24	0	243	718	0	3	585	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.57	0.57	
v/c Ratio	0.24	0.62		0.45	0.08		0.65	0.79		0.01	0.64	
Control Delay	19.8	10.6		28.3	15.4		21.1	19.1		6.3	12.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.8	10.6		28.3	15.4		21.1	19.1		6.3	12.6	
LOS	B	B		C	B		C	B		A	B	
Approach Delay		12.2			25.0			19.6			12.5	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 98.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

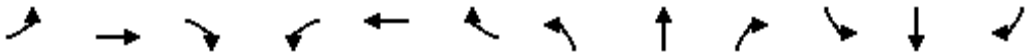




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	296	70	24	243	718	3	585
v/c Ratio	0.24	0.62	0.45	0.08	0.65	0.79	0.01	0.64
Control Delay	19.8	10.6	28.3	15.4	21.1	19.1	6.3	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	10.6	28.3	15.4	21.1	19.1	6.3	12.6
Queue Length 50th (m)	4.8	3.5	5.9	1.6	12.7	42.2	0.1	29.7
Queue Length 95th (m)	12.5	19.8	15.4	5.9	#53.9	#127.6	1.2	77.2
Internal Link Dist (m)		113.8		483.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	489	693	299	603	371	904	278	914
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.43	0.23	0.04	0.65	0.79	0.01	0.64

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)	60	33	263	70	20	4	243	645	73	3	541	44
Future Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1414		1668	1583		1651	1578		1668	1598	
Flt Permitted	0.74	1.00		0.45	1.00		0.38	1.00		0.28	1.00	
Satd. Flow (perm)	1289	1414		787	1583		653	1578		488	1598	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	33	263	70	20	4	243	645	73	3	541	44
RTOR Reduction (vph)	0	202	0	0	3	0	0	6	0	0	4	0
Lane Group Flow (vph)	60	94	0	70	21	0	243	712	0	3	581	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Effective Green, g (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	278		155	311		372	899		278	910	
v/s Ratio Prot		0.07			0.01			c0.45			0.36	
v/s Ratio Perm	0.05			c0.09			0.37			0.01		
v/c Ratio	0.24	0.34		0.45	0.07		0.65	0.79		0.01	0.64	
Uniform Delay, d1	17.9	18.2		18.7	17.3		7.8	8.9		4.9	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.7		2.1	0.1		8.6	7.1		0.1	3.4	
Delay (s)	18.3	19.0		20.8	17.3		16.4	16.0		5.0	11.1	
Level of Service	B	B		C	B		B	B		A	B	
Approach Delay (s)		18.9			19.9			16.1			11.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	3	957	6	11	863
Future Volume (vph)	9	3	957	6	11	863
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1719	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1719	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		337.8			185.7
Travel Time (s)	7.5		20.3			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	9	3	957	6	11	863
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	3	963	0	11	863
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

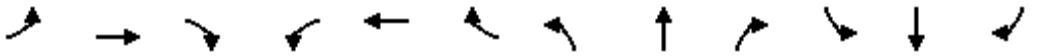
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	3	957	6	11	863
Future Volume (Veh/h)	9	3	957	6	11	863
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	3	957	6	11	863
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			338			186
pX, platoon unblocked	0.81	0.71			0.71	
vC, conflicting volume	1845	960			963	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1336	737			741	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	99			98	
cM capacity (veh/h)	137	298			619	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	9	3	963	11	863
Volume Left	9	0	0	11	0
Volume Right	0	3	6	0	0
cSH	137	298	1700	619	1700
Volume to Capacity	0.07	0.01	0.57	0.02	0.51
Queue Length 95th (m)	1.6	0.2	0.0	0.4	0.0
Control Delay (s)	33.2	17.2	0.0	10.9	0.0
Lane LOS	D	C		B	
Approach Delay (s)	29.2		0.0	0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

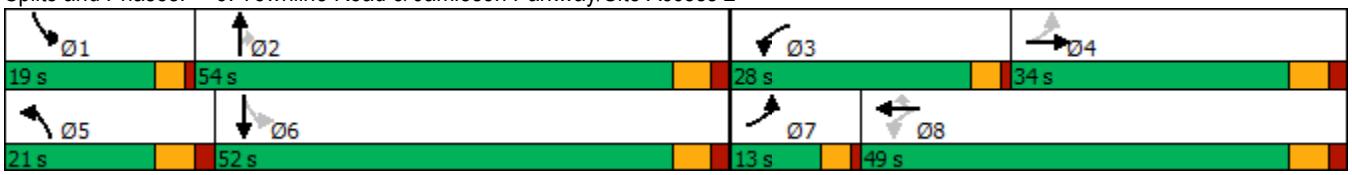


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	56	291	463	80	155	252	636	450	147	603	121
Future Volume (vph)	184	56	291	463	80	155	252	636	450	147	603	121
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		35.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.874				0.850			0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1426	0	3235	1632	1387	3203	3270	1492	1668	3214	0
Flt Permitted	0.705			0.161			0.950			0.364		
Satd. Flow (perm)	1237	1426	0	548	1632	1387	3203	3270	1492	639	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		175				155			312		19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		495.6			135.6			291.0			337.8	
Travel Time (s)		35.7			9.8			17.5			20.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	56	291	463	80	155	252	636	450	147	603	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	347	0	463	80	155	252	636	450	147	724	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	13.0	34.0		28.0	49.0	49.0	21.0	54.0	54.0	19.0	52.0	
Total Split (%)	9.6%	25.2%		20.7%	36.3%	36.3%	15.6%	40.0%	40.0%	14.1%	38.5%	
Maximum Green (s)	9.0	28.0		24.0	43.0	43.0	15.0	48.0	48.0	15.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	32.0	20.8		45.2	30.1	30.1	13.5	51.2	51.2	59.3	46.5	
Actuated g/C Ratio	0.26	0.17		0.37	0.25	0.25	0.11	0.42	0.42	0.49	0.38	
v/c Ratio	0.51	0.89		0.76	0.20	0.34	0.71	0.46	0.56	0.36	0.58	
Control Delay	35.3	49.5		36.8	36.1	7.1	65.2	28.8	12.1	17.9	33.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.3	49.5		36.8	36.1	7.1	65.2	28.8	12.1	17.9	33.1	
LOS	D	D		D	D	A	E	C	B	B	C	
Approach Delay		44.6			30.1			30.1			30.6	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 121.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 32.4		Intersection LOS: C	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

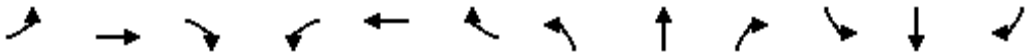




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	184	347	463	80	155	252	636	450	147	724
v/c Ratio	0.51	0.89	0.76	0.20	0.34	0.71	0.46	0.56	0.36	0.58
Control Delay	35.3	49.5	36.8	36.1	7.1	65.2	28.8	12.1	17.9	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	49.5	36.8	36.1	7.1	65.2	28.8	12.1	17.9	33.1
Queue Length 50th (m)	31.0	42.8	41.7	15.3	0.0	30.7	58.2	22.1	16.8	73.0
Queue Length 95th (m)	48.1	#92.2	56.1	27.8	15.4	48.4	89.8	64.0	32.9	105.3
Internal Link Dist (m)		471.6		111.6			267.0			313.8
Turn Bay Length (m)	45.0		45.0			115.0		35.0	115.0	
Base Capacity (vph)	358	466	741	584	595	400	1378	809	463	1242
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.74	0.62	0.14	0.26	0.63	0.46	0.56	0.32	0.58

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)	184	56	291	463	80	155	252	636	450	147	603	121
Future Volume (vph)	184	56	291	463	80	155	252	636	450	147	603	121
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1426		3235	1632	1387	3203	3270	1492	1668	3214	
Flt Permitted	0.70	1.00		0.16	1.00	1.00	0.95	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	1237	1426		547	1632	1387	3203	3270	1492	638	3214	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	184	56	291	463	80	155	252	636	450	147	603	121
RTOR Reduction (vph)	0	145	0	0	0	117	0	0	180	0	12	0
Lane Group Flow (vph)	184	202	0	463	80	38	252	636	270	147	712	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	30.0	20.9		43.2	30.1	30.1	13.5	51.2	51.2	57.3	46.5	
Effective Green, g (s)	30.0	20.9		43.2	30.1	30.1	13.5	51.2	51.2	57.3	46.5	
Actuated g/C Ratio	0.25	0.17		0.36	0.25	0.25	0.11	0.42	0.42	0.47	0.38	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	338	245		600	405	344	356	1381	630	393	1233	
v/s Ratio Prot	0.04	0.14		c0.12	0.05		c0.08	c0.19		0.03	c0.22	
v/s Ratio Perm	0.09			c0.16		0.03			0.18	0.14		
v/c Ratio	0.54	0.83		0.77	0.20	0.11	0.71	0.46	0.43	0.37	0.58	
Uniform Delay, d1	38.6	48.4		31.4	36.0	35.2	51.9	25.1	24.7	18.6	29.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.8	19.7		6.1	0.2	0.1	6.3	1.1	2.1	0.6	2.0	
Delay (s)	40.4	68.1		37.5	36.2	35.4	58.3	26.2	26.8	19.2	31.6	
Level of Service	D	E		D	D	D	E	C	C	B	C	
Approach Delay (s)		58.5			36.9			32.4			29.5	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	121.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	334	1004	0	0	916
Future Volume (vph)	449	334	1004	0	0	916
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		65				
Link Speed (k/h)	50		60			60
Link Distance (m)	404.2		404.3			291.0
Travel Time (s)	29.1		24.3			17.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	449	334	1004	0	0	916
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	334	1004	0	0	916
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	18.9	18.9	38.3			38.3
Actuated g/C Ratio	0.27	0.27	0.55			0.55
v/c Ratio	0.54	0.76	0.52			0.48
Control Delay	23.7	29.8	12.4			11.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	23.7	29.8	12.4			11.9
LOS	C	C	B			B
Approach Delay	26.3		12.4			11.9
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 60.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	449	334	1004	916
v/c Ratio	0.54	0.76	0.52	0.48
Control Delay	23.7	29.8	12.4	11.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.7	29.8	12.4	11.9
Queue Length 50th (m)	25.4	31.8	40.1	35.4
Queue Length 95th (m)	37.1	57.3	74.5	66.3
Internal Link Dist (m)	380.2		380.3	267.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1312	657	1939	1920
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	0.34	0.51	0.52	0.48

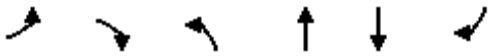
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	334	1004	0	0	916
Future Volume (vph)	449	334	1004	0	0	916
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	334	1004	0	0	916
RTOR Reduction (vph)	0	47	0	0	0	0
Lane Group Flow (vph)	449	287	1004	0	0	916
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	18.9	18.9	38.3			38.3
Effective Green, g (s)	18.9	18.9	38.3			38.3
Actuated g/C Ratio	0.27	0.27	0.55			0.55
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	835	394	1942			1923
v/s Ratio Prot	0.15		c0.28			0.26
v/s Ratio Perm		c0.20				
v/c Ratio	0.54	0.73	0.52			0.48
Uniform Delay, d1	21.7	23.1	9.9			9.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.7	6.6	1.0			0.8
Delay (s)	22.3	29.6	10.9			10.4
Level of Service	C	C	B			B
Approach Delay (s)	25.5		10.9			10.4
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

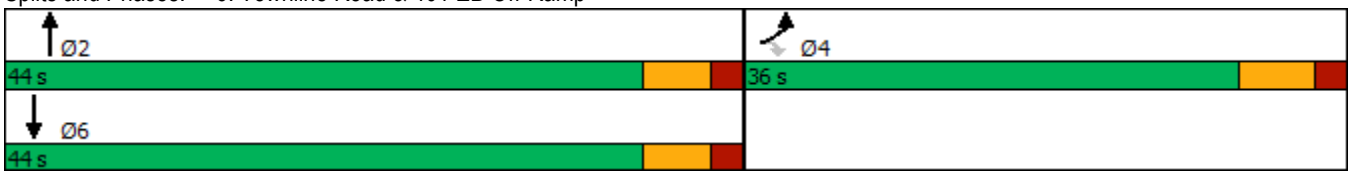


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	553	581	0	715	1075	297
Future Volume (vph)	553	581	0	715	1075	297
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.968	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3402	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3402	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		52			60	
Link Speed (k/h)	50			60	60	
Link Distance (m)	421.5			209.0	404.3	
Travel Time (s)	30.3			12.5	24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	553	581	0	715	1075	297
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	581	0	715	1372	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
v/c Ratio	0.92	1.02		0.43	0.83	
Control Delay	47.6	68.7		14.9	23.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.6	68.7		14.9	23.1	
LOS	D	E		B	C	
Approach Delay	58.4			14.9	23.1	
Approach LOS	E			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 33.7		Intersection LOS: C	
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



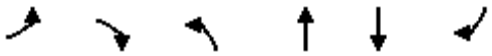


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	553	581	715	1372
v/c Ratio	0.92	1.02	0.43	0.83
Control Delay	47.6	68.7	14.9	23.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.6	68.7	14.9	23.1
Queue Length 50th (m)	78.5	~84.9	35.9	87.3
Queue Length 95th (m)	#137.9	#149.3	49.1	116.1
Internal Link Dist (m)	397.5		185.0	380.3
Turn Bay Length (m)		87.0		
Base Capacity (vph)	602	569	1662	1647
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	0.92	1.02	0.43	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

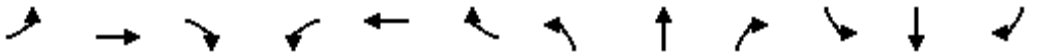
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	553	581	0	715	1075	297
Future Volume (vph)	553	581	0	715	1075	297
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	0.97	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3401	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3401	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	553	581	0	715	1075	297
RTOR Reduction (vph)	0	33	0	0	32	0
Lane Group Flow (vph)	553	548	0	715	1341	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		38.0	38.0	
Effective Green, g (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	602	536		1662	1615	
v/s Ratio Prot	0.34			0.20	c0.39	
v/s Ratio Perm		c0.38				
v/c Ratio	0.92	1.02		0.43	0.83	
Uniform Delay, d1	24.1	25.2		13.9	18.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.0	44.8		0.8	5.1	
Delay (s)	43.1	70.0		14.7	23.3	
Level of Service	D	E		B	C	
Approach Delay (s)	56.9			14.7	23.3	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

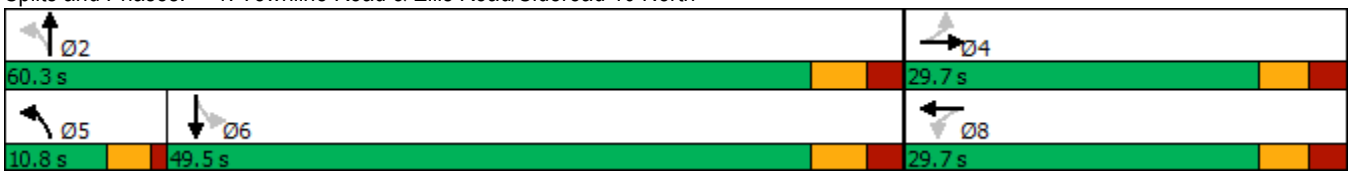


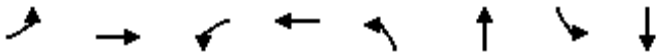
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	30	230	38	11	4	111	554	51	4	639	29
Future Volume (vph)	85	30	230	38	11	4	111	554	51	4	639	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.960			0.987			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1566	0	1603	1547	0	1334	1575	0
Flt Permitted	0.748			0.374			0.272			0.436		
Satd. Flow (perm)	1300	1390	0	656	1566	0	459	1547	0	612	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		230			4			9			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	85	30	230	38	11	4	111	554	51	4	639	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	260	0	38	15	0	111	605	0	4	668	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	10.7	10.7		10.7	10.7		56.5	54.1		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.70		0.59	0.59	
v/c Ratio	0.47	0.66		0.42	0.07		0.26	0.56		0.01	0.72	
Control Delay	39.0	15.3		44.2	24.4		5.2	8.7		9.2	19.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.0	15.3		44.2	24.4		5.2	8.7		9.2	19.1	
LOS	D	B		D	C		A	A		A	B	
Approach Delay		21.2			38.6			8.2			19.0	
Approach LOS		C			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

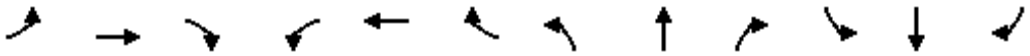




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	260	38	15	111	605	4	668
v/c Ratio	0.47	0.66	0.42	0.07	0.26	0.56	0.01	0.72
Control Delay	39.0	15.3	44.2	24.4	5.2	8.7	9.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	15.3	44.2	24.4	5.2	8.7	9.2	19.1
Queue Length 50th (m)	11.6	3.9	5.1	1.4	3.6	34.1	0.2	66.9
Queue Length 95th (m)	24.2	24.5	14.0	6.2	10.6	78.5	1.7	#150.2
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	400	587	202	484	436	1087	362	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.44	0.19	0.03	0.25	0.56	0.01	0.72

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)	85	30	230	38	11	4	111	554	51	4	639	29
Future Volume (vph)	85	30	230	38	11	4	111	554	51	4	639	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1391		1668	1566		1603	1548		1334	1576	
Flt Permitted	0.75	1.00		0.37	1.00		0.27	1.00		0.44	1.00	
Satd. Flow (perm)	1299	1391		656	1566		460	1548		612	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	30	230	38	11	4	111	554	51	4	639	29
RTOR Reduction (vph)	0	198	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	85	62	0	38	12	0	111	602	0	4	667	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.7	10.7		10.7	10.7		55.0	55.0		45.7	45.7	
Effective Green, g (s)	10.7	10.7		10.7	10.7		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.71	0.71		0.59	0.59	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	190		89	214		402	1091		358	923	
v/s Ratio Prot		0.04			0.01		0.02	c0.39			c0.42	
v/s Ratio Perm	c0.07			0.06			0.18			0.01		
v/c Ratio	0.48	0.32		0.43	0.05		0.28	0.55		0.01	0.72	
Uniform Delay, d1	31.1	30.4		30.8	29.3		5.8	5.6		6.7	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.0		3.3	0.1		0.4	2.0		0.1	4.9	
Delay (s)	33.1	31.4		34.1	29.4		6.2	7.6		6.8	16.5	
Level of Service	C	C		C	C		A	A		A	B	
Approach Delay (s)		31.8			32.8			7.3			16.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	16.3
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	9	707	58	30	877
Future Volume (vph)	16	9	707	58	30	877
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1063	1484	1685	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1063	1484	1685	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	56%	0%	2%	17%	0%	2%
Adj. Flow (vph)	16	9	707	58	30	877
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	9	765	0	30	877
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

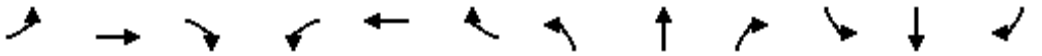
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	707	58	30	877
Future Volume (Veh/h)	16	9	707	58	30	877
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	9	707	58	30	877
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.82	0.79			0.79	
vC, conflicting volume	1673	736			765	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1131	532			569	
tC, single (s)	7.0	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3			2.2	
p0 queue free %	89	98			96	
cM capacity (veh/h)	139	435			800	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	16	9	765	30	877
Volume Left	16	0	0	30	0
Volume Right	0	9	58	0	0
cSH	139	435	1700	800	1700
Volume to Capacity	0.11	0.02	0.45	0.04	0.52
Queue Length 95th (m)	2.9	0.5	0.0	0.9	0.0
Control Delay (s)	34.1	13.4	0.0	9.7	0.0
Lane LOS	D	B		A	
Approach Delay (s)	26.7		0.0	0.3	
Approach LOS	D				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

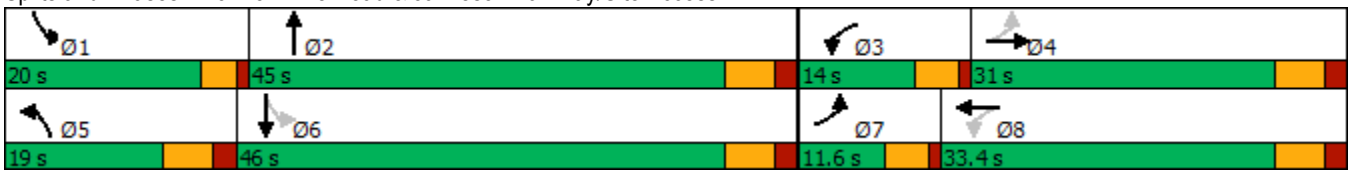


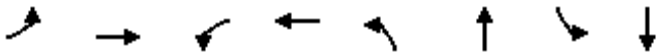
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	0	293	33	4	9	294	615	118	29	721	157
Future Volume (vph)	137	0	293	33	4	9	294	615	118	29	721	157
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850			0.896			0.976			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1313	1462	0	3203	3136	0	1668	3143	0
Flt Permitted	0.625						0.950			0.373		
Satd. Flow (perm)	1076	1347	0	1382	1462	0	3201	3136	0	655	3143	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		408			9			22			26	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Adj. Flow (vph)	137	0	293	33	4	9	294	615	118	29	721	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	293	0	33	13	0	294	733	0	29	878	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4		19.0	45.0		20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%		17.3%	40.9%		18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4		13.0	39.0		16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	15.7	8.1		9.7	8.5		12.0	54.5		48.4	40.3	
Actuated g/C Ratio	0.18	0.09		0.11	0.10		0.14	0.63		0.56	0.47	
v/c Ratio	0.48	0.59		0.22	0.09		0.66	0.37		0.07	0.59	
Control Delay	36.6	5.7		37.0	26.2		43.7	9.9		6.5	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.6	5.7		37.0	26.2		43.7	9.9		6.5	19.5	
LOS	D	A		D	C		D	A		A	B	
Approach Delay		15.5			33.9			19.6			19.1	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 85.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 82.0%		ICU Level of Service D	
Analysis Period (min) 15			

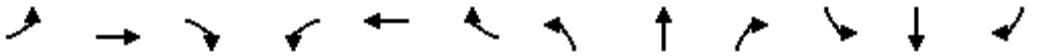
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	137	293	33	13	294	733	29	878
v/c Ratio	0.48	0.59	0.22	0.09	0.66	0.37	0.07	0.59
Control Delay	36.6	5.7	37.0	26.2	43.7	9.9	6.5	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	5.7	37.0	26.2	43.7	9.9	6.5	19.5
Queue Length 50th (m)	20.1	0.0	5.6	0.7	25.4	26.8	1.5	59.1
Queue Length 95th (m)	36.1	2.2	11.8	6.0	39.1	53.6	4.4	81.5
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	287	683	181	476	488	1996	635	1489
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.43	0.18	0.03	0.60	0.37	0.05	0.59

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	0	293	33	4	9	294	615	118	29	721	157
Future Volume (vph)	137	0	293	33	4	9	294	615	118	29	721	157
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.90		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1635	1347		1313	1462		3203	3135		1668	3144	
Flt Permitted	0.62	1.00		1.00	1.00		0.95	1.00		0.37	1.00	
Satd. Flow (perm)	1076	1347		1382	1462		3203	3135		655	3144	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	0	293	33	4	9	294	615	118	29	721	157
RTOR Reduction (vph)	0	259	0	0	9	0	0	9	0	0	14	0
Lane Group Flow (vph)	137	34	0	33	4	0	294	724	0	29	864	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	20.3	10.9		6.8	1.9		12.0	54.5		45.3	42.9	
Effective Green, g (s)	20.3	10.9		6.8	1.9		12.0	54.5		45.3	42.9	
Actuated g/C Ratio	0.22	0.12		0.07	0.02		0.13	0.58		0.49	0.46	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	317	157		97	29		412	1833		344	1447	
v/s Ratio Prot	c0.06	0.03		0.02	0.00		c0.09	0.23		0.00	c0.27	
v/s Ratio Perm	c0.03			0.01						0.04		
v/c Ratio	0.43	0.22		0.34	0.14		0.71	0.39		0.08	0.60	
Uniform Delay, d1	31.2	37.3		41.1	44.9		39.0	10.4		12.5	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.7		2.1	2.3		5.8	0.6		0.1	1.8	
Delay (s)	32.1	38.0		43.2	47.1		44.7	11.1		12.6	20.5	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s)		36.1			44.3			20.7			20.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	22.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

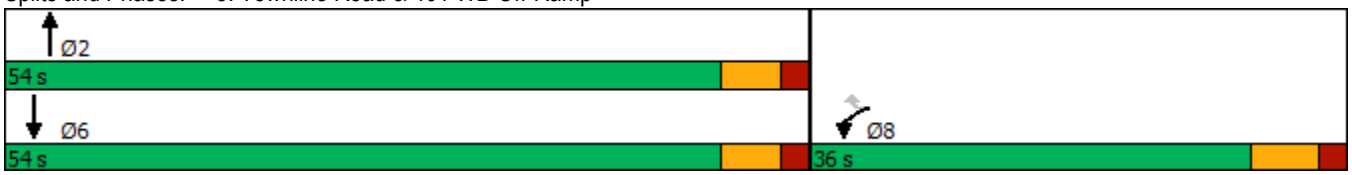


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	184	862	0	0	708
Future Volume (vph)	513	184	862	0	0	708
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		129				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	513	184	862	0	0	708
Shared Lane Traffic (%)						
Lane Group Flow (vph)	513	184	862	0	0	708
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	19.6	19.6	48.2			48.2
Actuated g/C Ratio	0.24	0.24	0.60			0.60
v/c Ratio	0.73	0.42	0.41			0.34
Control Delay	34.5	11.8	9.9			9.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.5	11.8	9.9			9.3
LOS	C	B	A			A
Approach Delay	28.5		9.9			9.3
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	513	184	862	708
v/c Ratio	0.73	0.42	0.41	0.34
Control Delay	34.5	11.8	9.9	9.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.5	11.8	9.9	9.3
Queue Length 50th (m)	37.1	6.6	32.7	25.3
Queue Length 95th (m)	52.6	22.1	55.7	44.0
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1055	588	2098	2098
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	0.31	0.41	0.34

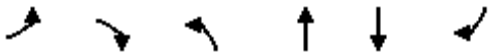
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	184	862	0	0	708
Future Volume (vph)	513	184	862	0	0	708
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	513	184	862	0	0	708
RTOR Reduction (vph)	0	98	0	0	0	0
Lane Group Flow (vph)	513	86	862	0	0	708
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	19.6	19.6	48.2			48.2
Effective Green, g (s)	19.6	19.6	48.2			48.2
Actuated g/C Ratio	0.24	0.24	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	698	335	2100			2100
v/s Ratio Prot	c0.18		c0.25			0.20
v/s Ratio Perm		0.06				
v/c Ratio	0.73	0.26	0.41			0.34
Uniform Delay, d1	28.0	24.5	8.5			8.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.0	0.4	0.6			0.4
Delay (s)	32.0	24.9	9.1			8.5
Level of Service	C	C	A			A
Approach Delay (s)	30.1		9.1			8.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

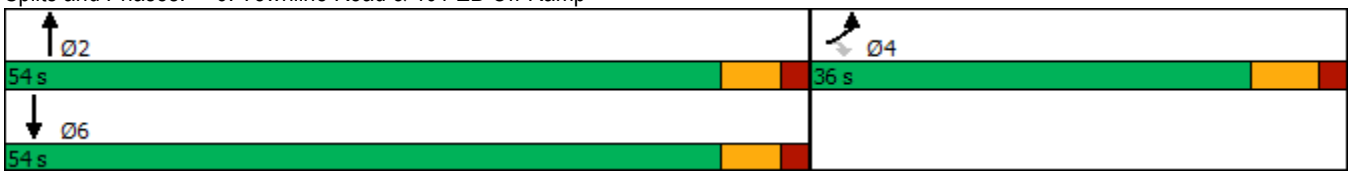


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	425	463	0	853	1060	0
Future Volume (vph)	425	463	0	853	1060	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		77				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	425	463	0	853	1060	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	425	463	0	853	1060	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	27.7	27.7		48.1	48.1	
Actuated g/C Ratio	0.31	0.31		0.54	0.54	
v/c Ratio	0.84	0.93		0.46	0.58	
Control Delay	45.2	52.6		13.5	15.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	45.2	52.6		13.5	15.5	
LOS	D	D		B	B	
Approach Delay	49.1			13.5	15.5	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

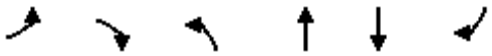




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	425	463	853	1060
v/c Ratio	0.84	0.93	0.46	0.58
Control Delay	45.2	52.6	13.5	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.2	52.6	13.5	15.5
Queue Length 50th (m)	66.5	64.6	45.4	62.1
Queue Length 95th (m)	#113.5	#122.0	59.7	80.9
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	536	524	1868	1816
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	0.79	0.88	0.46	0.58

Intersection Summary

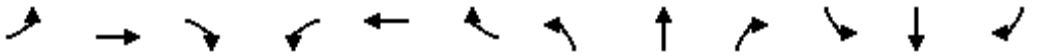
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	425	463	0	853	1060	0
Future Volume (vph)	425	463	0	853	1060	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	463	0	853	1060	0
RTOR Reduction (vph)	0	53	0	0	0	0
Lane Group Flow (vph)	425	410	0	853	1060	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	27.7	27.7		48.1	48.1	
Effective Green, g (s)	27.7	27.7		48.1	48.1	
Actuated g/C Ratio	0.31	0.31		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	502	443		1870	1817	
v/s Ratio Prot	0.27			0.25	c0.32	
v/s Ratio Perm		c0.29				
v/c Ratio	0.85	0.93		0.46	0.58	
Uniform Delay, d1	28.3	29.3		12.2	13.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.5	25.2		0.8	1.4	
Delay (s)	40.8	54.5		13.0	14.8	
Level of Service	D	D		B	B	
Approach Delay (s)	47.9			13.0	14.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	88.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

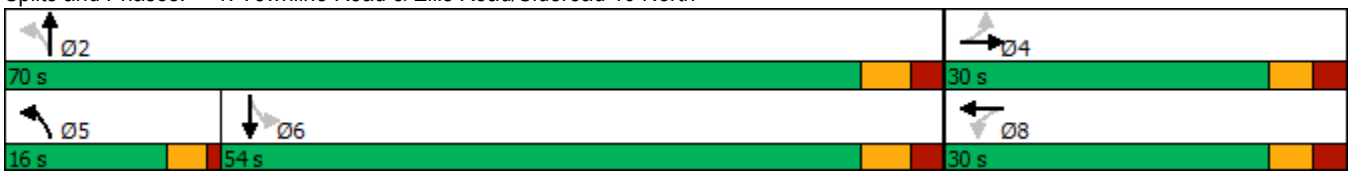


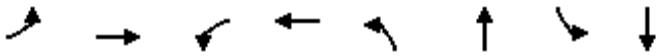
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	142	78	39	10	348	883	58	8	497	59
Future Volume (vph)	40	21	142	78	39	10	348	883	58	8	497	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.969			0.991			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1394	0	1635	1581	0	1668	1602	0	1668	1547	0
Flt Permitted	0.725			0.569			0.324			0.282		
Satd. Flow (perm)	1273	1394	0	979	1581	0	569	1602	0	495	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		142			10			7			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	40	21	142	78	39	10	348	883	58	8	497	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	163	0	78	49	0	348	941	0	8	556	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.2	12.2		12.2	12.2		66.1	63.8		48.9	48.9	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.75	0.72		0.55	0.55	
v/c Ratio	0.23	0.52		0.58	0.22		0.62	0.81		0.03	0.65	
Control Delay	36.5	14.7		52.8	30.0		9.2	16.7		11.4	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.5	14.7		52.8	30.0		9.2	16.7		11.4	19.0	
LOS	D	B		D	C		A	B		B	B	
Approach Delay		19.0			44.0			14.6			18.9	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 88.3			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

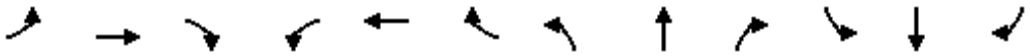




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	163	78	49	348	941	8	556
v/c Ratio	0.23	0.52	0.58	0.22	0.62	0.81	0.03	0.65
Control Delay	36.5	14.7	52.8	30.0	9.2	16.7	11.4	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	14.7	52.8	30.0	9.2	16.7	11.4	19.0
Queue Length 50th (m)	6.1	3.2	12.5	5.9	14.6	86.0	0.6	61.0
Queue Length 95th (m)	15.0	20.1	26.4	15.4	31.8	#222.4	3.0	112.4
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	346	482	266	437	575	1159	274	860
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.34	0.29	0.11	0.61	0.81	0.03	0.65

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)	40	21	142	78	39	10	348	883	58	8	497	59
Future Volume (vph)	40	21	142	78	39	10	348	883	58	8	497	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1394		1635	1582		1668	1602		1668	1547	
Flt Permitted	0.73	1.00		0.57	1.00		0.32	1.00		0.28	1.00	
Satd. Flow (perm)	1273	1394		980	1582		569	1602		494	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	21	142	78	39	10	348	883	58	8	497	59
RTOR Reduction (vph)	0	122	0	0	9	0	0	2	0	0	4	0
Lane Group Flow (vph)	40	41	0	78	40	0	348	939	0	8	552	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		63.8	63.8		48.9	48.9	
Effective Green, g (s)	12.2	12.2		12.2	12.2		63.8	63.8		48.9	48.9	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.72	0.72		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	192		135	218		546	1157		273	856	
v/s Ratio Prot		0.03			0.03		0.08	c0.59			0.36	
v/s Ratio Perm	0.03			c0.08			0.38			0.02		
v/c Ratio	0.23	0.21		0.58	0.19		0.64	0.81		0.03	0.65	
Uniform Delay, d1	33.9	33.8		35.6	33.7		6.6	8.2		8.9	13.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6		5.9	0.4		2.4	6.2		0.2	3.7	
Delay (s)	34.5	34.3		41.5	34.1		9.1	14.5		9.1	17.4	
Level of Service	C	C		D	C		A	B		A	B	
Approach Delay (s)		34.4			38.6			13.0			17.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	88.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	26	1264	29	13	705
Future Volume (vph)	53	26	1264	29	13	705
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1442	1484	1702	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1442	1484	1702	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	15%	0%	2%	38%	0%	2%
Adj. Flow (vph)	53	26	1264	29	13	705
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	26	1293	0	13	705
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	26	1264	29	13	705
Future Volume (Veh/h)	53	26	1264	29	13	705
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	26	1264	29	13	705
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.46	0.34			0.34	
vC, conflicting volume	2010	1278			1293	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1490	854			897	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	4	79			95	
cM capacity (veh/h)	55	124			263	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	53	26	1293	13	705
Volume Left	53	0	0	13	0
Volume Right	0	26	29	0	0
cSH	55	124	1700	263	1700
Volume to Capacity	0.96	0.21	0.76	0.05	0.41
Queue Length 95th (m)	32.8	5.7	0.0	1.2	0.0
Control Delay (s)	228.3	41.6	0.0	19.4	0.0
Lane LOS	F	E		C	
Approach Delay (s)	166.8		0.0	0.4	
Approach LOS	F				

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

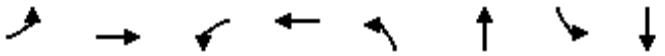
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	0	375	107	11	31	424	1008	38	10	593	148
Future Volume (vph)	222	0	375	107	11	31	424	1008	38	10	593	148
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.889			0.995			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1558	1451	0	3203	3226	0	1668	3123	0
Flt Permitted	0.471			0.488			0.950			0.274		
Satd. Flow (perm)	827	1387	0	801	1451	0	3203	3226	0	481	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		426			31			3			25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Adj. Flow (vph)	222	0	375	107	11	31	424	1008	38	10	593	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	375	0	107	42	0	424	1046	0	10	741	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	15.0	35.0		19.0	39.0		29.0	64.0		17.0	52.0	
Total Split (%)	11.1%	25.9%		14.1%	28.9%		21.5%	47.4%		12.6%	38.5%	
Maximum Green (s)	10.5	29.0		14.5	33.0		23.0	58.0		13.0	46.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			23.4			23.4	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	23.5	10.2		20.4	11.7		19.1	69.6		54.2	46.3	
Actuated g/C Ratio	0.21	0.09		0.19	0.11		0.17	0.64		0.49	0.42	
v/c Ratio	0.74	0.73		0.47	0.23		0.76	0.51		0.03	0.56	
Control Delay	54.4	11.1		42.6	23.1		53.3	13.4		10.1	26.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.4	11.1		42.6	23.1		53.3	13.4		10.1	26.4	
LOS	D	B		D	C		D	B		B	C	
Approach Delay		27.2			37.1			24.9			26.1	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 109.6			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

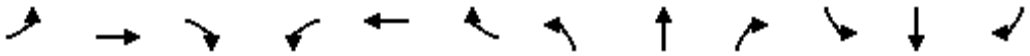




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	375	107	42	424	1046	10	741
v/c Ratio	0.74	0.73	0.47	0.23	0.76	0.51	0.03	0.56
Control Delay	54.4	11.1	42.6	23.1	53.3	13.4	10.1	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	11.1	42.6	23.1	53.3	13.4	10.1	26.4
Queue Length 50th (m)	41.1	0.0	18.5	2.2	43.6	51.5	0.6	57.6
Queue Length 95th (m)	#78.2	14.4	33.7	12.3	69.0	115.9	3.1	97.5
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	299	682	274	461	677	2050	411	1334
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.55	0.39	0.09	0.63	0.51	0.02	0.56

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)	222	0	375	107	11	31	424	1008	38	10	593	148
Future Volume (vph)	222	0	375	107	11	31	424	1008	38	10	593	148
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1558	1451		3203	3224		1668	3123	
Flt Permitted	0.47	1.00		0.49	1.00		0.95	1.00		0.27	1.00	
Satd. Flow (perm)	827	1387		800	1451		3203	3224		481	3123	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	222	0	375	107	11	31	424	1008	38	10	593	148
RTOR Reduction (vph)	0	333	0	0	29	0	0	1	0	0	14	0
Lane Group Flow (vph)	222	42	0	107	13	0	424	1045	0	10	727	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	28.6	12.8		19.5	8.2		19.1	69.6		50.7	49.6	
Effective Green, g (s)	28.6	12.8		19.5	8.2		19.1	69.6		50.7	49.6	
Actuated g/C Ratio	0.25	0.11		0.17	0.07		0.17	0.60		0.44	0.43	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	153		209	103		530	1946		222	1343	
v/s Ratio Prot	c0.10	0.03		0.05	0.01		c0.13	c0.32		0.00	0.23	
v/s Ratio Perm	c0.08			0.04						0.02		
v/c Ratio	0.69	0.27		0.51	0.13		0.80	0.54		0.05	0.54	
Uniform Delay, d1	37.7	47.0		42.8	50.2		46.3	13.4		18.2	24.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	1.0		2.1	0.6		8.4	1.1		0.1	1.6	
Delay (s)	44.0	47.9		44.9	50.8		54.7	14.5		18.3	26.0	
Level of Service	D	D		D	D		D	B		B	C	
Approach Delay (s)		46.5			46.6			26.1			25.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	115.3	Sum of lost time (s)	22.5
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

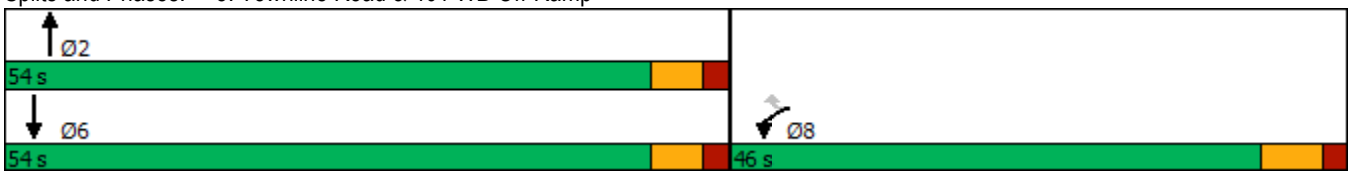


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	347	1230	0	0	749
Future Volume (vph)	512	347	1230	0	0	749
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		34				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	512	347	1230	0	0	749
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	347	1230	0	0	749
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	24.2	24.2	48.4			48.4
Actuated g/C Ratio	0.28	0.28	0.57			0.57
v/c Ratio	0.61	0.79	0.62			0.38
Control Delay	29.2	38.8	15.4			12.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	29.2	38.8	15.4			12.1
LOS	C	D	B			B
Approach Delay	33.1		15.4			12.1
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 85.2			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	512	347	1230	749
v/c Ratio	0.61	0.79	0.62	0.38
Control Delay	29.2	38.8	15.4	12.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.2	38.8	15.4	12.1
Queue Length 50th (m)	36.7	46.8	64.7	32.5
Queue Length 95th (m)	50.9	76.0	116.3	60.6
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1375	698	1989	1989
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	0.37	0.50	0.62	0.38

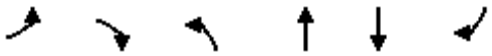
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	347	1230	0	0	749
Future Volume (vph)	512	347	1230	0	0	749
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	512	347	1230	0	0	749
RTOR Reduction (vph)	0	24	0	0	0	0
Lane Group Flow (vph)	512	323	1230	0	0	749
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	24.2	24.2	48.4			48.4
Effective Green, g (s)	24.2	24.2	48.4			48.4
Actuated g/C Ratio	0.28	0.28	0.57			0.57
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	836	414	1990			1990
v/s Ratio Prot	0.17		c0.35			0.21
v/s Ratio Perm		c0.22				
v/c Ratio	0.61	0.78	0.62			0.38
Uniform Delay, d1	26.4	28.0	12.2			10.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.3	9.0	1.5			0.5
Delay (s)	27.7	37.0	13.7			10.6
Level of Service	C	D	B			B
Approach Delay (s)	31.5		13.7			10.6
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

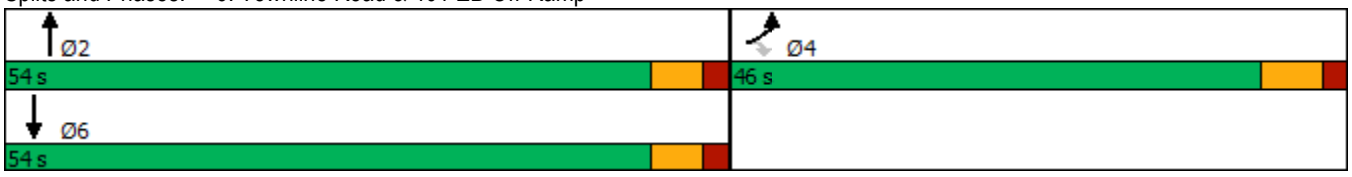


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	406	461	0	1073	1135	0
Future Volume (vph)	406	461	0	1073	1135	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		45				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	406	461	0	1073	1135	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	406	461	0	1073	1135	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	31.8	31.8		48.3	48.3	
Actuated g/C Ratio	0.34	0.34		0.52	0.52	
v/c Ratio	0.73	0.88		0.58	0.64	
Control Delay	34.9	44.8		18.0	19.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	34.9	44.8		18.0	19.3	
LOS	C	D		B	B	
Approach Delay	40.1			18.0	19.3	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

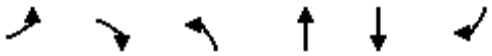




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	406	461	1073	1135
v/c Ratio	0.73	0.88	0.58	0.64
Control Delay	34.9	44.8	18.0	19.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.9	44.8	18.0	19.3
Queue Length 50th (m)	62.4	69.5	69.2	76.4
Queue Length 95th (m)	94.6	#113.8	99.5	110.4
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	694	644	1843	1772
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	0.59	0.72	0.58	0.64

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	406	461	0	1073	1135	0
Future Volume (vph)	406	461	0	1073	1135	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	406	461	0	1073	1135	0
RTOR Reduction (vph)	0	30	0	0	0	0
Lane Group Flow (vph)	406	431	0	1073	1135	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	31.8	31.8		48.3	48.3	
Effective Green, g (s)	31.8	31.8		48.3	48.3	
Actuated g/C Ratio	0.34	0.34		0.52	0.52	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	555	495		1843	1773	
v/s Ratio Prot	0.25			0.30	c0.33	
v/s Ratio Perm		c0.30				
v/c Ratio	0.73	0.87		0.58	0.64	
Uniform Delay, d1	26.7	28.5		15.2	15.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9	15.4		1.4	1.8	
Delay (s)	31.6	43.9		16.6	17.7	
Level of Service	C	D		B	B	
Approach Delay (s)	38.1			16.6	17.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

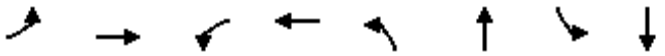
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	195	36	16	4	180	490	43	3	400	36
Future Volume (vph)	49	27	195	36	16	4	180	490	43	3	400	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.970			0.988			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1573	0	1651	1583	0	1668	1597	0
Flt Permitted	0.744			0.619			0.499			0.423		
Satd. Flow (perm)	1293	1416	0	1087	1573	0	867	1583	0	742	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		195			4			10			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	49	27	195	36	16	4	180	490	43	3	400	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	222	0	36	20	0	180	533	0	3	436	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.2	9.2		9.2	9.2		30.4	30.4		30.4	30.4	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
v/c Ratio	0.21	0.54		0.19	0.07		0.36	0.57		0.01	0.46	
Control Delay	20.2	10.1		20.1	16.1		8.8	10.2		5.7	8.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.2	10.1		20.1	16.1		8.8	10.2		5.7	8.5	
LOS	C	B		C	B		A	B		A	A	
Approach Delay		11.9			18.7			9.8			8.5	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
Analysis Period (min) 15			

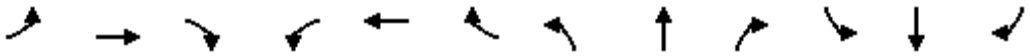
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	222	36	20	180	533	3	436
v/c Ratio	0.21	0.54	0.19	0.07	0.36	0.57	0.01	0.46
Control Delay	20.2	10.1	20.1	16.1	8.8	10.2	5.7	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	10.1	20.1	16.1	8.8	10.2	5.7	8.5
Queue Length 50th (m)	3.9	2.1	2.9	1.3	6.9	23.7	0.1	17.6
Queue Length 95th (m)	10.8	15.9	8.8	5.4	21.7	59.9	1.0	44.4
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	498	665	418	608	507	930	434	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.33	0.09	0.03	0.36	0.57	0.01	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	195	36	16	4	180	490	43	3	400	36
Future Volume (vph)	49	27	195	36	16	4	180	490	43	3	400	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1573		1651	1583		1668	1597	
Flt Permitted	0.74	1.00		0.62	1.00		0.50	1.00		0.42	1.00	
Satd. Flow (perm)	1294	1417		1087	1573		868	1583		743	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	27	195	36	16	4	180	490	43	3	400	36
RTOR Reduction (vph)	0	160	0	0	3	0	0	4	0	0	4	0
Lane Group Flow (vph)	49	62	0	36	17	0	180	529	0	3	432	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.3	9.3		9.3	9.3		30.4	30.4		30.4	30.4	
Effective Green, g (s)	9.3	9.3		9.3	9.3		30.4	30.4		30.4	30.4	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	231	253		194	281		507	925		434	933	
v/s Ratio Prot		c0.04			0.01			c0.33			0.27	
v/s Ratio Perm	0.04			0.03			0.21			0.00		
v/c Ratio	0.21	0.24		0.19	0.06		0.36	0.57		0.01	0.46	
Uniform Delay, d1	18.2	18.3		18.1	17.7		5.7	6.7		4.5	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		0.5	0.1		1.9	2.6		0.0	1.7	
Delay (s)	18.7	18.8		18.6	17.8		7.6	9.3		4.5	7.8	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		18.8			18.3			8.9			7.8	
Approach LOS		B			B			A			A	

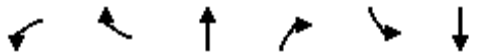
Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	15	697	17	8	623
Future Volume (vph)	32	15	697	17	8	623
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1716	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1716	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	32	15	697	17	8	623
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	15	714	0	8	623
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	15	697	17	8	623
Future Volume (Veh/h)	32	15	697	17	8	623
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	15	697	17	8	623
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.88	0.82			0.82	
vC, conflicting volume	1344	706			714	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1048	534			544	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	97			99	
cM capacity (veh/h)	221	452			851	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	32	15	714	8	623
Volume Left	32	0	0	8	0
Volume Right	0	15	17	0	0
cSH	221	452	1700	851	1700
Volume to Capacity	0.15	0.03	0.42	0.01	0.37
Queue Length 95th (m)	3.8	0.8	0.0	0.2	0.0
Control Delay (s)	24.1	13.2	0.0	9.3	0.0
Lane LOS	C	B		A	
Approach Delay (s)	20.6		0.0	0.1	
Approach LOS	C				

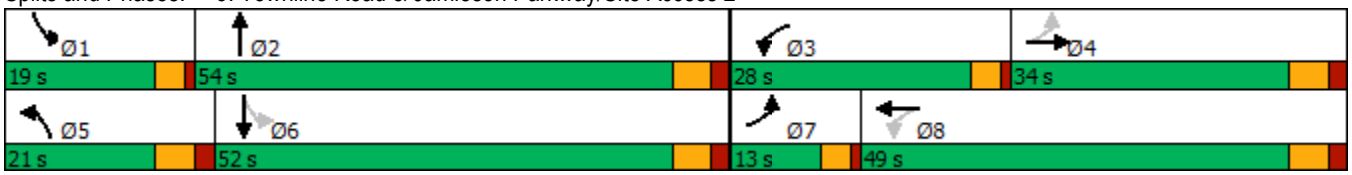
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

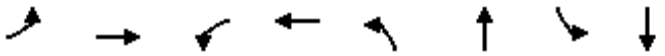
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	239	64	7	19	216	554	23	6	540	109
Future Volume (vph)	151	0	239	64	7	19	216	554	23	6	540	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.890			0.994			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1452	0	3203	3253	0	1668	3214	0
Flt Permitted	0.588						0.950			0.435		
Satd. Flow (perm)	1032	1387	0	1755	1452	0	3203	3253	0	764	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		502			19			3			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	151	0	239	64	7	19	216	554	23	6	540	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	239	0	64	26	0	216	577	0	6	649	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0		11.0	50.4		9.0	41.0	
Total Split (s)	13.0	34.0		28.0	49.0		21.0	54.0		19.0	52.0	
Total Split (%)	9.6%	25.2%		20.7%	36.3%		15.6%	40.0%		14.1%	38.5%	
Maximum Green (s)	9.0	28.0		24.0	43.0		15.0	48.0		15.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.4	6.1		12.2	6.4		11.5	62.0		54.0	46.3	
Actuated g/C Ratio	0.18	0.07		0.13	0.07		0.12	0.67		0.59	0.50	
v/c Ratio	0.55	0.43		0.29	0.22		0.54	0.26		0.01	0.40	
Control Delay	41.7	2.4		37.3	27.3		44.0	7.5		5.8	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.7	2.4		37.3	27.3		44.0	7.5		5.8	15.9	
LOS	D	A		D	C		D	A		A	B	
Approach Delay		17.6			34.4			17.4			15.8	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 92.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

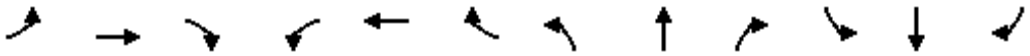




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	151	239	64	26	216	577	6	649
v/c Ratio	0.55	0.43	0.29	0.22	0.54	0.26	0.01	0.40
Control Delay	41.7	2.4	37.3	27.3	44.0	7.5	5.8	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	2.4	37.3	27.3	44.0	7.5	5.8	15.9
Queue Length 50th (m)	23.7	0.0	11.1	1.2	19.3	19.0	0.3	36.8
Queue Length 95th (m)	#46.1	0.0	20.8	9.2	31.1	38.8	1.5	56.4
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	276	772	439	690	523	2186	671	1621
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.31	0.15	0.04	0.41	0.26	0.01	0.40

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)	151	0	239	64	7	19	216	554	23	6	540	109
Future Volume (vph)	151	0	239	64	7	19	216	554	23	6	540	109
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1668	1453		3203	3253		1668	3213	
Flt Permitted	0.59	1.00		1.00	1.00		0.95	1.00		0.43	1.00	
Satd. Flow (perm)	1033	1387		1755	1453		3203	3253		763	3213	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	0	239	64	7	19	216	554	23	6	540	109
RTOR Reduction (vph)	0	218	0	0	18	0	0	1	0	0	10	0
Lane Group Flow (vph)	151	21	0	64	8	0	216	576	0	6	640	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	20.1	8.9		10.0	2.8		11.5	62.0		50.7	49.6	
Effective Green, g (s)	20.1	8.9		10.0	2.8		11.5	62.0		50.7	49.6	
Actuated g/C Ratio	0.20	0.09		0.10	0.03		0.12	0.62		0.51	0.50	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	124		170	41		371	2033		399	1606	
v/s Ratio Prot	c0.07	0.02		0.03	0.01		c0.07	0.18		0.00	c0.20	
v/s Ratio Perm	c0.04			0.01						0.01		
v/c Ratio	0.51	0.17		0.38	0.18		0.58	0.28		0.02	0.40	
Uniform Delay, d1	34.7	41.7		41.7	47.1		41.6	8.5		11.9	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.7		1.4	2.2		2.3	0.3		0.0	0.7	
Delay (s)	36.2	42.4		43.1	49.2		43.9	8.8		11.9	16.2	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s)		40.0			44.9			18.4			16.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	99.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	168	628	0	0	577
Future Volume (vph)	377	168	628	0	0	577
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		168				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	377	168	628	0	0	577
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	168	628	0	0	577
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	13.2	13.2	38.1			38.1
Actuated g/C Ratio	0.21	0.21	0.60			0.60
v/c Ratio	0.59	0.39	0.30			0.28
Control Delay	26.9	6.8	7.2			7.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.9	6.8	7.2			7.0
LOS	C	A	A			A
Approach Delay	20.7		7.2			7.0
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	377	168	628	577
v/c Ratio	0.59	0.39	0.30	0.28
Control Delay	26.9	6.8	7.2	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.9	6.8	7.2	7.0
Queue Length 50th (m)	20.8	0.0	16.3	14.7
Queue Length 95th (m)	32.3	12.7	29.5	27.0
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1427	764	2109	2089
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	0.26	0.22	0.30	0.28

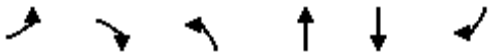
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	168	628	0	0	577
Future Volume (vph)	377	168	628	0	0	577
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	377	168	628	0	0	577
RTOR Reduction (vph)	0	133	0	0	0	0
Lane Group Flow (vph)	377	35	628	0	0	577
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	13.2	13.2	38.1			38.1
Effective Green, g (s)	13.2	13.2	38.1			38.1
Actuated g/C Ratio	0.21	0.21	0.60			0.60
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	637	301	2111			2090
v/s Ratio Prot	c0.12		c0.18			0.16
v/s Ratio Perm		0.02				
v/c Ratio	0.59	0.12	0.30			0.28
Uniform Delay, d1	22.9	20.6	6.3			6.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.5	0.2	0.4			0.3
Delay (s)	24.3	20.7	6.7			6.5
Level of Service	C	C	A			A
Approach Delay (s)	23.2		6.7			6.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

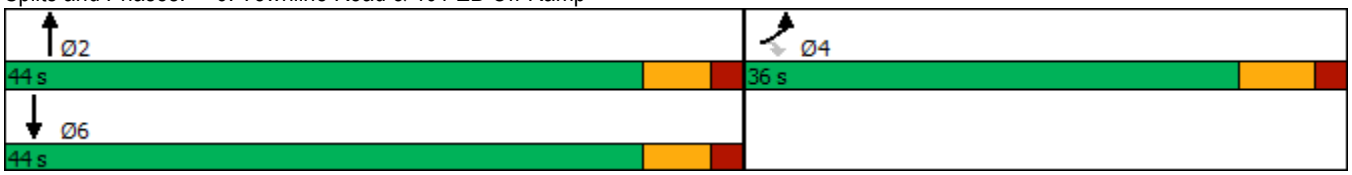


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	306	421	0	500	804	0
Future Volume (vph)	306	421	0	500	804	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		116				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	306	421	0	500	804	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	306	421	0	500	804	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.9	20.9		38.3	38.3	
Actuated g/C Ratio	0.29	0.29		0.53	0.53	
v/c Ratio	0.65	0.83		0.27	0.43	
Control Delay	28.5	31.8		10.7	12.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.5	31.8		10.7	12.2	
LOS	C	C		B	B	
Approach Delay	30.4			10.7	12.2	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 71.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

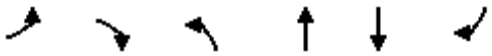
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	306	421	500	804
v/c Ratio	0.65	0.83	0.27	0.43
Control Delay	28.5	31.8	10.7	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.5	31.8	10.7	12.2
Queue Length 50th (m)	35.4	38.3	17.9	32.0
Queue Length 95th (m)	58.2	70.6	33.2	56.4
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	677	671	1868	1868
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	0.45	0.63	0.27	0.43

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	306	421	0	500	804	0
Future Volume (vph)	306	421	0	500	804	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	306	421	0	500	804	0
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	306	339	0	500	804	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.9	20.9		38.3	38.3	
Effective Green, g (s)	20.9	20.9		38.3	38.3	
Actuated g/C Ratio	0.29	0.29		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	476	424		1869	1869	
v/s Ratio Prot	0.19			0.14	c0.23	
v/s Ratio Perm		c0.23				
v/c Ratio	0.64	0.80		0.27	0.43	
Uniform Delay, d1	22.1	23.5		9.1	10.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	10.1		0.4	0.7	
Delay (s)	25.1	33.6		9.4	10.8	
Level of Service	C	C		A	B	
Approach Delay (s)	30.0			9.4	10.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

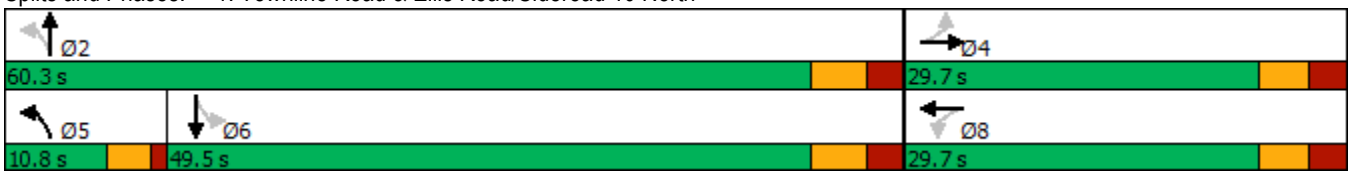
c Critical Lane Group

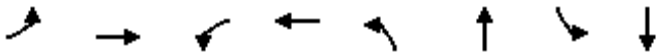
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	33	253	40	12	4	122	610	56	4	702	32
Future Volume (vph)	94	33	253	40	12	4	122	610	56	4	702	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.962			0.987			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1570	0	1603	1547	0	1334	1575	0
Flt Permitted	0.747			0.354			0.228			0.412		
Satd. Flow (perm)	1298	1390	0	621	1570	0	385	1547	0	579	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		253			4			9			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	94	33	253	40	12	4	122	610	56	4	702	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	286	0	40	16	0	122	666	0	4	734	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.3	11.3		11.3	11.3		56.5	54.2		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.73	0.70		0.59	0.59	
v/c Ratio	0.50	0.69		0.45	0.07		0.32	0.62		0.01	0.79	
Control Delay	39.6	15.3		45.9	24.3		6.2	10.2		9.5	23.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.6	15.3		45.9	24.3		6.2	10.2		9.5	23.1	
LOS	D	B		D	C		A	B		A	C	
Approach Delay		21.3			39.7			9.6			23.0	
Approach LOS		C			D			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 77.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 94.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

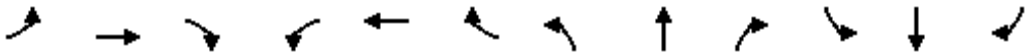




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	286	40	16	122	666	4	734
v/c Ratio	0.50	0.69	0.45	0.07	0.32	0.62	0.01	0.79
Control Delay	39.6	15.3	45.9	24.3	6.2	10.2	9.5	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	15.3	45.9	24.3	6.2	10.2	9.5	23.1
Queue Length 50th (m)	12.9	4.3	5.5	1.5	4.1	41.5	0.2	80.5
Queue Length 95th (m)	26.3	25.9	14.6	6.5	11.9	97.4	1.8	#178.1
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	396	600	189	482	386	1079	340	927
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.48	0.21	0.03	0.32	0.62	0.01	0.79

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)	94	33	253	40	12	4	122	610	56	4	702	32
Future Volume (vph)	94	33	253	40	12	4	122	610	56	4	702	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1391		1668	1570		1603	1548		1334	1576	
Flt Permitted	0.75	1.00		0.35	1.00		0.23	1.00		0.41	1.00	
Satd. Flow (perm)	1298	1391		621	1570		385	1548		578	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	33	253	40	12	4	122	610	56	4	702	32
RTOR Reduction (vph)	0	217	0	0	3	0	0	3	0	0	2	0
Lane Group Flow (vph)	94	69	0	40	13	0	122	663	0	4	732	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	11.3	11.3		11.3	11.3		55.0	55.0		45.7	45.7	
Effective Green, g (s)	11.3	11.3		11.3	11.3		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	199		89	225		351	1083		336	916	
v/s Ratio Prot		0.05			0.01		0.02	c0.43			c0.46	
v/s Ratio Perm	c0.07			0.06			0.22			0.01		
v/c Ratio	0.51	0.35		0.45	0.06		0.35	0.61		0.01	0.80	
Uniform Delay, d1	31.1	30.3		30.8	29.0		7.1	6.2		6.9	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.1		3.6	0.1		0.6	2.6		0.1	7.3	
Delay (s)	33.2	31.4		34.4	29.1		7.7	8.8		7.0	20.1	
Level of Service	C	C		C	C		A	A		A	C	
Approach Delay (s)		31.8			32.9			8.6			20.0	
Approach LOS		C			C			A			C	

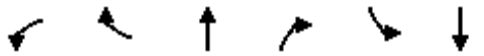
Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	9	778	58	30	964
Future Volume (vph)	16	9	778	58	30	964
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1063	1484	1688	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1063	1484	1688	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	56%	0%	2%	17%	0%	2%
Adj. Flow (vph)	16	9	778	58	30	964
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	9	836	0	30	964
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

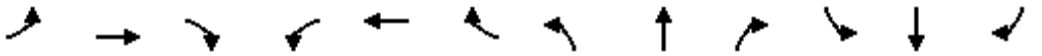
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	778	58	30	964
Future Volume (Veh/h)	16	9	778	58	30	964
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	9	778	58	30	964
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.77	0.75			0.75	
vC, conflicting volume	1831	807			836	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1189	571			610	
tC, single (s)	7.0	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3			2.2	
p0 queue free %	87	98			96	
cM capacity (veh/h)	121	391			730	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	16	9	836	30	964
Volume Left	16	0	0	30	0
Volume Right	0	9	58	0	0
cSH	121	391	1700	730	1700
Volume to Capacity	0.13	0.02	0.49	0.04	0.57
Queue Length 95th (m)	3.4	0.5	0.0	1.0	0.0
Control Delay (s)	39.4	14.4	0.0	10.1	0.0
Lane LOS	E	B		B	
Approach Delay (s)	30.4		0.0	0.3	
Approach LOS	D				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

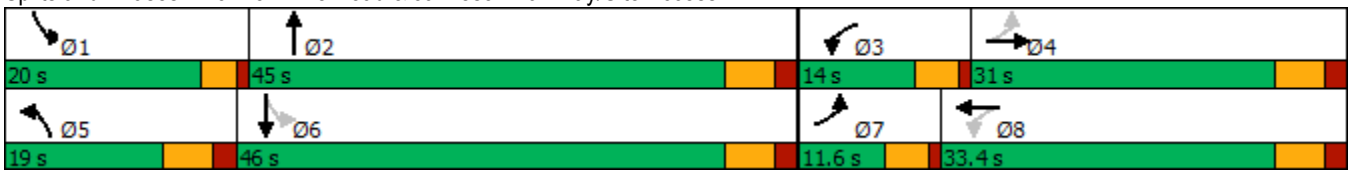


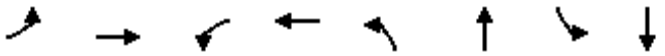
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	0	323	33	4	9	325	672	118	29	793	173
Future Volume (vph)	151	0	323	33	4	9	325	672	118	29	793	173
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850			0.896			0.978			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1313	1462	0	3203	3144	0	1668	3143	0
Flt Permitted	0.556						0.950			0.353		
Satd. Flow (perm)	957	1347	0	1382	1462	0	3202	3144	0	620	3143	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		395			9			20			27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Adj. Flow (vph)	151	0	323	33	4	9	325	672	118	29	793	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	323	0	33	13	0	325	790	0	29	966	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4		19.0	45.0		20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%		17.3%	40.9%		18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4		13.0	39.0		16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.6	8.9		10.5	9.4		12.6	55.1		48.5	40.4	
Actuated g/C Ratio	0.19	0.10		0.12	0.11		0.14	0.63		0.55	0.46	
v/c Ratio	0.52	0.66		0.21	0.08		0.71	0.40		0.07	0.66	
Control Delay	37.6	8.4		35.9	25.2		46.4	10.9		7.2	21.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.6	8.4		35.9	25.2		46.4	10.9		7.2	21.8	
LOS	D	A		D	C		D	B		A	C	
Approach Delay		17.7			32.9			21.3			21.4	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 87.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

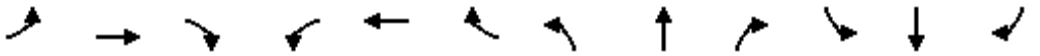




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	151	323	33	13	325	790	29	966
v/c Ratio	0.52	0.66	0.21	0.08	0.71	0.40	0.07	0.66
Control Delay	37.6	8.4	35.9	25.2	46.4	10.9	7.2	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.6	8.4	35.9	25.2	46.4	10.9	7.2	21.8
Queue Length 50th (m)	22.3	0.0	5.6	0.7	28.4	29.7	1.5	67.8
Queue Length 95th (m)	39.0	10.0	11.5	5.8	#49.5	66.1	5.1	101.6
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	290	669	191	468	480	1988	608	1465
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.48	0.17	0.03	0.68	0.40	0.05	0.66

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)	151	0	323	33	4	9	325	672	118	29	793	173
Future Volume (vph)	151	0	323	33	4	9	325	672	118	29	793	173
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.90		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1635	1347		1313	1462		3203	3143		1668	3144	
Flt Permitted	0.56	1.00		1.00	1.00		0.95	1.00		0.35	1.00	
Satd. Flow (perm)	956	1347		1382	1462		3203	3143		619	3144	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	151	0	323	33	4	9	325	672	118	29	793	173
RTOR Reduction (vph)	0	283	0	0	9	0	0	8	0	0	15	0
Lane Group Flow (vph)	151	40	0	33	4	0	325	782	0	29	951	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	21.2	11.8		7.6	2.7		12.6	55.1		45.3	42.9	
Effective Green, g (s)	21.2	11.8		7.6	2.7		12.6	55.1		45.3	42.9	
Actuated g/C Ratio	0.22	0.12		0.08	0.03		0.13	0.58		0.48	0.45	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	167		107	41		426	1828		322	1424	
v/s Ratio Prot	c0.07	0.03		0.02	0.00		c0.10	0.25		0.00	c0.30	
v/s Ratio Perm	c0.04			0.01						0.04		
v/c Ratio	0.48	0.24		0.31	0.10		0.76	0.43		0.09	0.67	
Uniform Delay, d1	31.5	37.4		41.1	44.8		39.6	11.0		13.1	20.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.8		1.6	1.1		7.9	0.7		0.1	2.5	
Delay (s)	32.6	38.2		42.7	45.9		47.5	11.8		13.2	22.8	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s)		36.4			43.6			22.2			22.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	94.7	Sum of lost time (s)	22.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

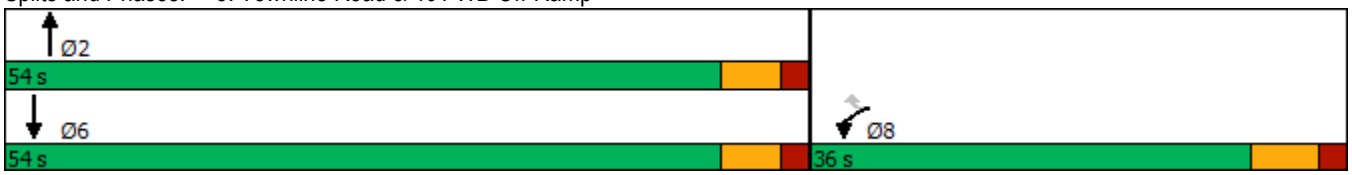


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	196	938	0	0	777
Future Volume (vph)	559	196	938	0	0	777
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		106				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	559	196	938	0	0	777
Shared Lane Traffic (%)						
Lane Group Flow (vph)	559	196	938	0	0	777
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	21.5	21.5	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
v/c Ratio	0.75	0.45	0.46			0.38
Control Delay	34.4	15.1	11.3			10.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.4	15.1	11.3			10.4
LOS	C	B	B			B
Approach Delay	29.4		11.3			10.4
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	559	196	938	777
v/c Ratio	0.75	0.45	0.46	0.38
Control Delay	34.4	15.1	11.3	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.4	15.1	11.3	10.4
Queue Length 50th (m)	41.2	11.1	40.1	31.3
Queue Length 95th (m)	57.6	28.3	66.7	52.9
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1031	563	2051	2051
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	0.35	0.46	0.38

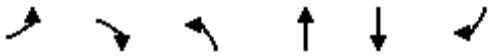
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	196	938	0	0	777
Future Volume (vph)	559	196	938	0	0	777
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	559	196	938	0	0	777
RTOR Reduction (vph)	0	78	0	0	0	0
Lane Group Flow (vph)	559	118	938	0	0	777
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	21.5	21.5	48.2			48.2
Effective Green, g (s)	21.5	21.5	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	748	359	2052			2052
v/s Ratio Prot	c0.20		c0.27			0.22
v/s Ratio Perm		0.09				
v/c Ratio	0.75	0.33	0.46			0.38
Uniform Delay, d1	27.9	24.5	9.6			9.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.1	0.5	0.7			0.5
Delay (s)	32.0	25.1	10.3			9.6
Level of Service	C	C	B			A
Approach Delay (s)	30.2		10.3			9.6
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

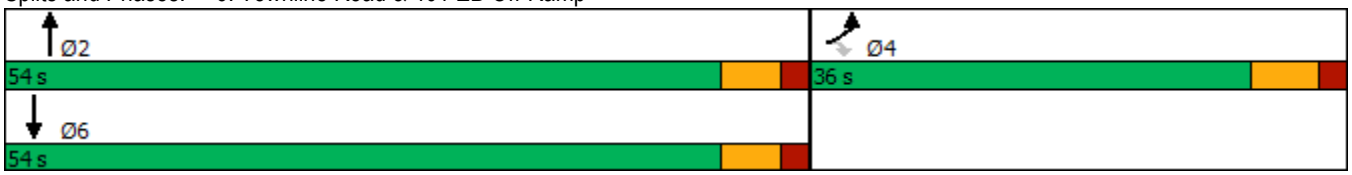


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	459	505	0	935	1164	0
Future Volume (vph)	459	505	0	935	1164	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		59				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	459	505	0	935	1164	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	459	505	0	935	1164	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.87	1.00		0.51	0.65	
Control Delay	48.1	69.9		14.7	17.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	48.1	69.9		14.7	17.3	
LOS	D	E		B	B	
Approach Delay	59.6			14.7	17.3	
Approach LOS	E			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 29.8		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



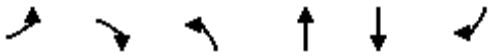


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	459	505	935	1164
v/c Ratio	0.87	1.00	0.51	0.65
Control Delay	48.1	69.9	14.7	17.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.1	69.9	14.7	17.3
Queue Length 50th (m)	74.0	~79.4	51.4	71.5
Queue Length 95th (m)	#127.6	#144.0	67.2	92.7
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	503	1830	1779
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	0.87	1.00	0.51	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.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	459	505	0	935	1164	0
Future Volume (vph)	459	505	0	935	1164	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	459	505	0	935	1164	0
RTOR Reduction (vph)	0	40	0	0	0	0
Lane Group Flow (vph)	459	465	0	935	1164	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.29			0.27	c0.35	
v/s Ratio Perm		c0.33				
v/c Ratio	0.87	1.01		0.51	0.65	
Uniform Delay, d1	28.5	30.2		13.5	15.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.9	43.1		1.0	1.9	
Delay (s)	43.4	73.3		14.5	16.9	
Level of Service	D	E		B	B	
Approach Delay (s)	59.1			14.5	16.9	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

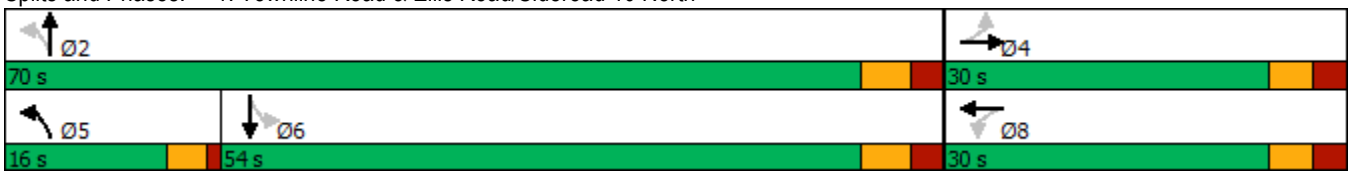
c Critical Lane Group

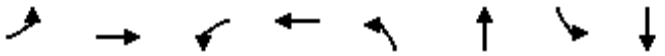
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	156	85	43	11	383	972	62	9	548	65
Future Volume (vph)	44	23	156	85	43	11	383	972	62	9	548	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.969			0.991			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1394	0	1635	1581	0	1668	1602	0	1668	1547	0
Flt Permitted	0.722			0.526			0.273			0.219		
Satd. Flow (perm)	1267	1394	0	905	1581	0	479	1602	0	384	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		156			11			6			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	44	23	156	85	43	11	383	972	62	9	548	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	179	0	85	54	0	383	1034	0	9	613	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	13.1	13.1		13.1	13.1		66.1	63.8		47.8	47.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.71		0.54	0.54	
v/c Ratio	0.24	0.53		0.64	0.22		0.75	0.90		0.04	0.74	
Control Delay	36.1	14.1		57.4	29.6		15.6	24.5		12.4	23.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.1	14.1		57.4	29.6		15.6	24.5		12.4	23.5	
LOS	D	B		E	C		B	C		B	C	
Approach Delay		18.4			46.6			22.1			23.3	
Approach LOS		B			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.3			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 105.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

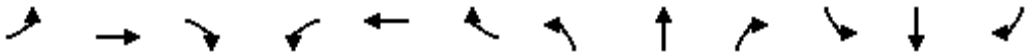




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	179	85	54	383	1034	9	613
v/c Ratio	0.24	0.53	0.64	0.22	0.75	0.90	0.04	0.74
Control Delay	36.1	14.1	57.4	29.6	15.6	24.5	12.4	23.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	14.1	57.4	29.6	15.6	24.5	12.4	23.5
Queue Length 50th (m)	6.7	3.5	13.9	6.5	17.7	116.8	0.7	74.2
Queue Length 95th (m)	16.1	21.1	28.7	16.5	#49.0	#268.9	3.5	#139.0
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	341	489	243	433	514	1146	205	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.37	0.35	0.12	0.75	0.90	0.04	0.74

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)	44	23	156	85	43	11	383	972	62	9	548	65
Future Volume (vph)	44	23	156	85	43	11	383	972	62	9	548	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1394		1635	1582		1668	1602		1668	1547	
Flt Permitted	0.72	1.00		0.53	1.00		0.27	1.00		0.22	1.00	
Satd. Flow (perm)	1267	1394		905	1582		480	1602		384	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	23	156	85	43	11	383	972	62	9	548	65
RTOR Reduction (vph)	0	133	0	0	9	0	0	2	0	0	4	0
Lane Group Flow (vph)	44	46	0	85	45	0	383	1032	0	9	609	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.1	13.1		13.1	13.1		63.8	63.8		47.8	47.8	
Effective Green, g (s)	13.1	13.1		13.1	13.1		63.8	63.8		47.8	47.8	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.72		0.54	0.54	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	204		132	232		503	1145		205	828	
v/s Ratio Prot		0.03			0.03		0.10	c0.64			0.39	
v/s Ratio Perm	0.03			c0.09			0.44			0.02		
v/c Ratio	0.24	0.23		0.64	0.19		0.76	0.90		0.04	0.74	
Uniform Delay, d1	33.6	33.6		35.9	33.4		8.8	10.2		9.8	15.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6		10.3	0.4		6.7	11.4		0.4	5.8	
Delay (s)	34.3	34.1		46.1	33.8		15.5	21.6		10.2	21.6	
Level of Service	C	C		D	C		B	C		B	C	
Approach Delay (s)		34.2			41.4			20.0			21.5	
Approach LOS		C			D			B			C	

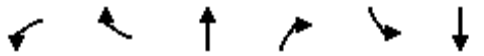
Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	16.3
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	26	1391	29	13	777
Future Volume (vph)	53	26	1391	29	13	777
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1442	1484	1703	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1442	1484	1703	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	15%	0%	2%	38%	0%	2%
Adj. Flow (vph)	53	26	1391	29	13	777
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	26	1420	0	13	777
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.2%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	26	1391	29	13	777
Future Volume (Veh/h)	53	26	1391	29	13	777
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	26	1391	29	13	777
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.47	0.33			0.33	
vC, conflicting volume	2208	1406			1420	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1613	1210			1254	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	0	64			93	
cM capacity (veh/h)	47	73			183	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	53	26	1420	13	777
Volume Left	53	0	0	13	0
Volume Right	0	26	29	0	0
cSH	47	73	1700	183	1700
Volume to Capacity	1.14	0.36	0.84	0.07	0.46
Queue Length 95th (m)	37.0	10.2	0.0	1.7	0.0
Control Delay (s)	313.3	79.1	0.0	26.2	0.0
Lane LOS	F	F		D	
Approach Delay (s)	236.2		0.0	0.4	
Approach LOS	F				

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

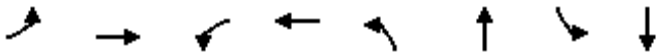
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	0	414	107	11	31	468	1109	38	10	649	163
Future Volume (vph)	245	0	414	107	11	31	468	1109	38	10	649	163
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.889			0.995			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1558	1451	0	3203	3228	0	1668	3123	0
Flt Permitted	0.639			0.315			0.950			0.248		
Satd. Flow (perm)	1122	1387	0	517	1451	0	3203	3228	0	435	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		402			31			3			25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Adj. Flow (vph)	245	0	414	107	11	31	468	1109	38	10	649	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	414	0	107	42	0	468	1147	0	10	812	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	15.0	35.0		19.0	39.0		29.0	64.0		17.0	52.0	
Total Split (%)	11.1%	25.9%		14.1%	28.9%		21.5%	47.4%		12.6%	38.5%	
Maximum Green (s)	10.5	29.0		14.5	33.0		23.0	58.0		13.0	46.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			23.4			23.4	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	25.7	13.2		25.3	14.5		20.6	71.4		54.4	46.5	
Actuated g/C Ratio	0.22	0.12		0.22	0.13		0.18	0.62		0.48	0.41	
v/c Ratio	0.78	0.80		0.49	0.20		0.81	0.57		0.04	0.63	
Control Delay	56.0	18.1		41.0	21.2		58.0	16.3		12.2	30.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	56.0	18.1		41.0	21.2		58.0	16.3		12.2	30.8	
LOS	E	B		D	C		E	B		B	C	
Approach Delay		32.2			35.4			28.4			30.6	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 114.4			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 93.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

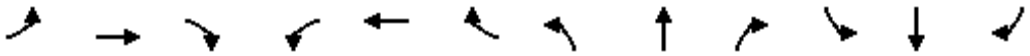




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	245	414	107	42	468	1147	10	812
v/c Ratio	0.78	0.80	0.49	0.20	0.81	0.57	0.04	0.63
Control Delay	56.0	18.1	41.0	21.2	58.0	16.3	12.2	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	18.1	41.0	21.2	58.0	16.3	12.2	30.8
Queue Length 50th (m)	47.6	2.5	19.0	2.2	49.4	60.8	0.6	69.2
Queue Length 95th (m)	71.9	35.1	33.3	11.8	#88.3	151.1	3.6	120.5
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	315	654	262	444	650	2014	376	1283
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.63	0.41	0.09	0.72	0.57	0.03	0.63

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)	245	0	414	107	11	31	468	1109	38	10	649	163
Future Volume (vph)	245	0	414	107	11	31	468	1109	38	10	649	163
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1558	1451		3203	3228		1668	3122	
Flt Permitted	0.64	1.00		0.31	1.00		0.95	1.00		0.25	1.00	
Satd. Flow (perm)	1122	1387		517	1451		3203	3228		434	3122	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	245	0	414	107	11	31	468	1109	38	10	649	163
RTOR Reduction (vph)	0	353	0	0	28	0	0	1	0	0	15	0
Lane Group Flow (vph)	245	61	0	107	14	0	468	1146	0	10	797	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	27.7	14.5		24.1	12.7		20.6	71.3		50.9	49.8	
Effective Green, g (s)	27.7	14.5		24.1	12.7		20.6	71.3		50.9	49.8	
Actuated g/C Ratio	0.23	0.12		0.20	0.11		0.17	0.60		0.43	0.42	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	322	169		204	155		555	1937		197	1308	
v/s Ratio Prot	c0.08	0.04		0.05	0.01		c0.15	c0.35		0.00	0.26	
v/s Ratio Perm	c0.09			0.06						0.02		
v/c Ratio	0.76	0.36		0.52	0.09		0.84	0.59		0.05	0.61	
Uniform Delay, d1	41.3	47.9		40.9	47.9		47.5	14.7		19.5	26.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.1	1.3		2.4	0.3		11.2	1.3		0.1	2.1	
Delay (s)	51.4	49.2		43.3	48.1		58.7	16.1		19.6	29.0	
Level of Service	D	D		D	D		E	B		B	C	
Approach Delay (s)		50.0			44.7			28.4			28.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	22.5
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

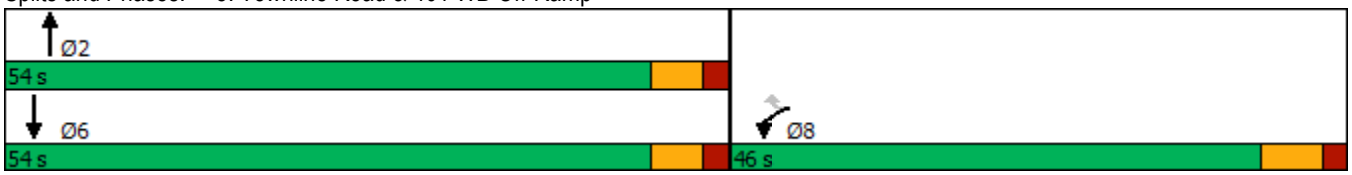


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	378	1353	0	0	816
Future Volume (vph)	560	378	1353	0	0	816
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		24				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	560	378	1353	0	0	816
Shared Lane Traffic (%)						
Lane Group Flow (vph)	560	378	1353	0	0	816
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	27.2	27.2	48.4			48.4
Actuated g/C Ratio	0.31	0.31	0.55			0.55
v/c Ratio	0.62	0.81	0.70			0.42
Control Delay	28.7	40.4	18.8			13.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	28.7	40.4	18.8			13.9
LOS	C	D	B			B
Approach Delay	33.4		18.8			13.9
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 88.2			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	560	378	1353	816
v/c Ratio	0.62	0.81	0.70	0.42
Control Delay	28.7	40.4	18.8	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.7	40.4	18.8	13.9
Queue Length 50th (m)	41.0	54.6	82.4	39.7
Queue Length 95th (m)	56.0	86.4	141.2	70.4
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1328	670	1921	1921
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	0.42	0.56	0.70	0.42

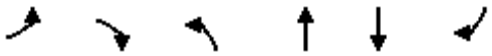
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	378	1353	0	0	816
Future Volume (vph)	560	378	1353	0	0	816
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	560	378	1353	0	0	816
RTOR Reduction (vph)	0	17	0	0	0	0
Lane Group Flow (vph)	560	361	1353	0	0	816
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	27.2	27.2	48.4			48.4
Effective Green, g (s)	27.2	27.2	48.4			48.4
Actuated g/C Ratio	0.31	0.31	0.55			0.55
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	908	449	1922			1922
v/s Ratio Prot	0.19		c0.39			0.23
v/s Ratio Perm		c0.25				
v/c Ratio	0.62	0.80	0.70			0.42
Uniform Delay, d1	26.0	28.0	14.6			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.3	10.1	2.2			0.7
Delay (s)	27.3	38.1	16.8			12.4
Level of Service	C	D	B			B
Approach Delay (s)	31.6		16.8			12.4
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

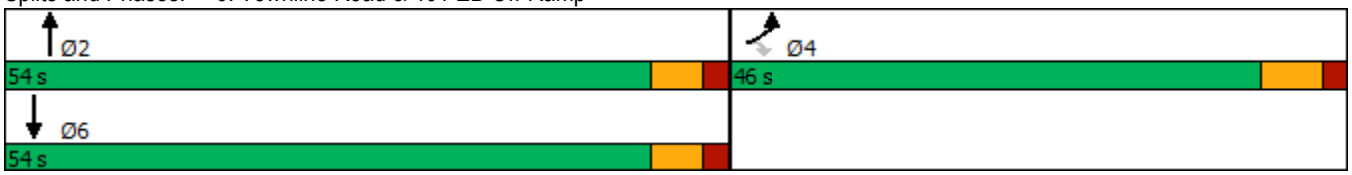


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	442	504	0	1181	1247	0
Future Volume (vph)	442	504	0	1181	1247	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		33				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	442	504	0	1181	1247	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	442	504	0	1181	1247	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	35.2	35.2		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
v/c Ratio	0.75	0.92		0.66	0.73	
Control Delay	35.0	50.5		21.0	22.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	35.0	50.5		21.0	22.8	
LOS	C	D		C	C	
Approach Delay	43.2			21.0	22.8	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 95.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

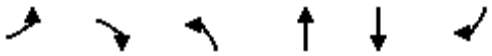




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	442	504	1181	1247
v/c Ratio	0.75	0.92	0.66	0.73
Control Delay	35.0	50.5	21.0	22.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.0	50.5	21.0	22.8
Queue Length 50th (m)	70.0	82.7	90.6	100.7
Queue Length 95th (m)	105.4	#141.6	114.2	127.1
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	669	615	1776	1708
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	0.66	0.82	0.66	0.73

Intersection Summary

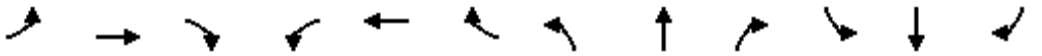
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	442	504	0	1181	1247	0
Future Volume (vph)	442	504	0	1181	1247	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	442	504	0	1181	1247	0
RTOR Reduction (vph)	0	21	0	0	0	0
Lane Group Flow (vph)	442	483	0	1181	1247	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	35.2	35.2		48.2	48.2	
Effective Green, g (s)	35.2	35.2		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	594	529		1776	1708	
v/s Ratio Prot	0.27			0.33	c0.37	
v/s Ratio Perm		c0.33				
v/c Ratio	0.74	0.91		0.66	0.73	
Uniform Delay, d1	26.4	28.9		17.8	18.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	20.2		2.0	2.8	
Delay (s)	31.5	49.1		19.8	21.5	
Level of Service	C	D		B	C	
Approach Delay (s)	40.9			19.8	21.5	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



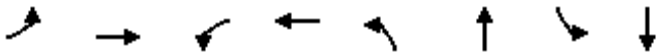
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	215	39	18	4	198	540	46	3	441	40
Future Volume (vph)	54	30	215	39	18	4	198	540	46	3	441	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.973			0.988			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1579	0	1651	1583	0	1668	1597	0
Flt Permitted	0.743			0.563			0.462			0.382		
Satd. Flow (perm)	1291	1416	0	988	1579	0	803	1583	0	671	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		215			4			9			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	54	30	215	39	18	4	198	540	46	3	441	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	245	0	39	22	0	198	586	0	3	481	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.4	9.4		9.4	9.4		30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
v/c Ratio	0.23	0.56		0.22	0.08		0.43	0.64		0.01	0.52	
Control Delay	20.3	10.2		20.8	16.0		10.4	11.7		5.7	9.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.3	10.2		20.8	16.0		10.4	11.7		5.7	9.4	
LOS	C	B		C	B		B	B		A	A	
Approach Delay		12.0			19.1			11.4			9.4	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 51.8			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

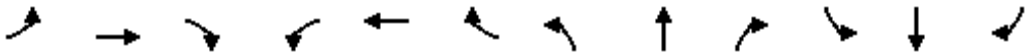
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	245	39	22	198	586	3	481
v/c Ratio	0.23	0.56	0.22	0.08	0.43	0.64	0.01	0.52
Control Delay	20.3	10.2	20.8	16.0	10.4	11.7	5.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	10.2	20.8	16.0	10.4	11.7	5.7	9.4
Queue Length 50th (m)	4.3	2.4	3.1	1.4	8.0	27.5	0.1	20.1
Queue Length 95th (m)	11.6	16.8	9.4	5.7	26.5	72.5	1.0	52.6
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	499	679	381	613	465	921	389	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.36	0.10	0.04	0.43	0.64	0.01	0.52

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	215	39	18	4	198	540	46	3	441	40
Future Volume (vph)	54	30	215	39	18	4	198	540	46	3	441	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1579		1651	1583		1668	1597	
Flt Permitted	0.74	1.00		0.56	1.00		0.46	1.00		0.38	1.00	
Satd. Flow (perm)	1291	1417		988	1579		804	1583		670	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	30	215	39	18	4	198	540	46	3	441	40
RTOR Reduction (vph)	0	176	0	0	3	0	0	4	0	0	4	0
Lane Group Flow (vph)	54	69	0	39	19	0	198	582	0	3	477	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.4	9.4		9.4	9.4		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.4	9.4		9.4	9.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	257		179	286		467	919		389	927	
v/s Ratio Prot		c0.05			0.01			c0.37			0.30	
v/s Ratio Perm	0.04			0.04			0.25			0.00		
v/c Ratio	0.23	0.27		0.22	0.07		0.42	0.63		0.01	0.51	
Uniform Delay, d1	18.1	18.2		18.1	17.6		6.0	7.2		4.6	6.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.6	0.1		2.8	3.3		0.0	2.0	
Delay (s)	18.6	18.8		18.7	17.7		8.8	10.5		4.6	8.5	
Level of Service	B	B		B	B		A	B		A	A	
Approach Delay (s)		18.8			18.3			10.1			8.5	
Approach LOS		B			B			B			A	

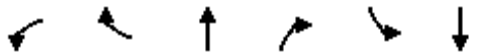
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	15	768	17	8	687
Future Volume (vph)	32	15	768	17	8	687
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1716	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1716	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	32	15	768	17	8	687
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	15	785	0	8	687
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	15	768	17	8	687
Future Volume (Veh/h)	32	15	768	17	8	687
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	15	768	17	8	687
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.87	0.80			0.80	
vC, conflicting volume	1480	776			785	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1125	596			606	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	96			99	
cM capacity (veh/h)	197	406			785	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	32	15	785	8	687
Volume Left	32	0	0	8	0
Volume Right	0	15	17	0	0
cSH	197	406	1700	785	1700
Volume to Capacity	0.16	0.04	0.46	0.01	0.40
Queue Length 95th (m)	4.3	0.9	0.0	0.2	0.0
Control Delay (s)	26.8	14.2	0.0	9.6	0.0
Lane LOS	D	B		A	
Approach Delay (s)	22.8		0.0	0.1	
Approach LOS	C				

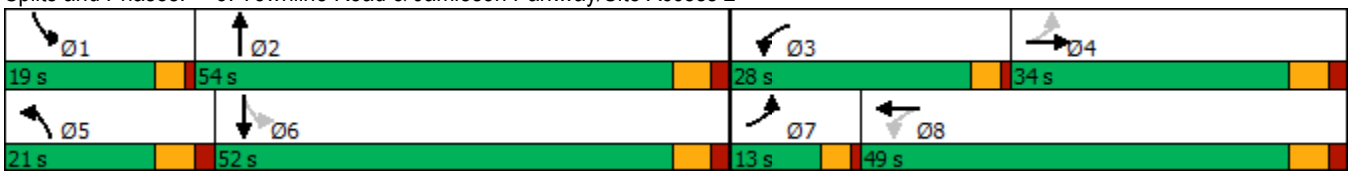
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

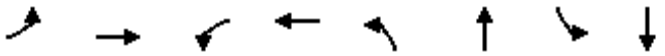
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	264	64	7	19	238	610	23	6	593	120
Future Volume (vph)	167	0	264	64	7	19	238	610	23	6	593	120
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.890			0.995			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1452	0	3203	3256	0	1668	3214	0
Flt Permitted	0.588						0.950			0.412		
Satd. Flow (perm)	1032	1387	0	1755	1452	0	3203	3256	0	723	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		487			19			3			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	167	0	264	64	7	19	238	610	23	6	593	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	264	0	64	26	0	238	633	0	6	713	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0		11.0	50.4		9.0	41.0	
Total Split (s)	13.0	34.0		28.0	49.0		21.0	54.0		19.0	52.0	
Total Split (%)	9.6%	25.2%		20.7%	36.3%		15.6%	40.0%		14.1%	38.5%	
Maximum Green (s)	9.0	28.0		24.0	43.0		15.0	48.0		15.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.5	6.1		12.3	6.4		12.0	62.5		54.0	46.3	
Actuated g/C Ratio	0.18	0.07		0.13	0.07		0.13	0.67		0.58	0.50	
v/c Ratio	0.61	0.48		0.29	0.22		0.58	0.29		0.01	0.44	
Control Delay	44.8	3.0		37.5	27.5		44.7	7.6		5.8	16.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.8	3.0		37.5	27.5		44.7	7.6		5.8	16.7	
LOS	D	A		D	C		D	A		A	B	
Approach Delay		19.2			34.6			17.8			16.6	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 92.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

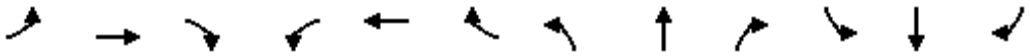




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	264	64	26	238	633	6	713
v/c Ratio	0.61	0.48	0.29	0.22	0.58	0.29	0.01	0.44
Control Delay	44.8	3.0	37.5	27.5	44.7	7.6	5.8	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	3.0	37.5	27.5	44.7	7.6	5.8	16.7
Queue Length 50th (m)	26.7	0.0	11.2	1.2	21.4	21.3	0.3	42.2
Queue Length 95th (m)	#55.1	0.0	20.9	9.2	33.9	43.1	1.5	63.2
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	274	760	437	686	520	2191	646	1611
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.35	0.15	0.04	0.46	0.29	0.01	0.44

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)	167	0	264	64	7	19	238	610	23	6	593	120
Future Volume (vph)	167	0	264	64	7	19	238	610	23	6	593	120
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1668	1453		3203	3254		1668	3213	
Flt Permitted	0.59	1.00		1.00	1.00		0.95	1.00		0.41	1.00	
Satd. Flow (perm)	1033	1387		1755	1453		3203	3254		723	3213	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	0	264	64	7	19	238	610	23	6	593	120
RTOR Reduction (vph)	0	240	0	0	18	0	0	1	0	0	10	0
Lane Group Flow (vph)	167	24	0	64	8	0	238	632	0	6	703	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	20.2	8.9		10.1	2.8		12.0	62.5		50.7	49.6	
Effective Green, g (s)	20.2	8.9		10.1	2.8		12.0	62.5		50.7	49.6	
Actuated g/C Ratio	0.20	0.09		0.10	0.03		0.12	0.63		0.51	0.50	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	123		171	40		385	2037		377	1596	
v/s Ratio Prot	c0.08	0.02		0.03	0.01		c0.07	0.19		0.00	c0.22	
v/s Ratio Perm	c0.04			0.01						0.01		
v/c Ratio	0.57	0.19		0.37	0.19		0.62	0.31		0.02	0.44	
Uniform Delay, d1	35.3	42.1		41.9	47.4		41.7	8.7		12.1	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.8		1.4	2.3		2.9	0.4		0.0	0.9	
Delay (s)	37.8	42.9		43.3	49.7		44.7	9.0		12.1	17.1	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s)		40.9			45.1			18.8			17.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	22.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	182	691	0	0	631
Future Volume (vph)	413	182	691	0	0	631
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		161				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	413	182	691	0	0	631
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	182	691	0	0	631
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	13.9	13.9	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.59			0.59
v/c Ratio	0.62	0.41	0.33			0.31
Control Delay	27.2	8.3	7.7			7.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	27.2	8.3	7.7			7.6
LOS	C	A	A			A
Approach Delay	21.4		7.7			7.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	413	182	691	631
v/c Ratio	0.62	0.41	0.33	0.31
Control Delay	27.2	8.3	7.7	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.2	8.3	7.7	7.6
Queue Length 50th (m)	23.1	2.0	19.3	17.2
Queue Length 95th (m)	35.3	15.4	34.3	31.1
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1411	754	2086	2066
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	0.29	0.24	0.33	0.31

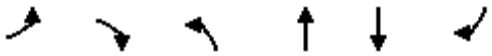
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	182	691	0	0	631
Future Volume (vph)	413	182	691	0	0	631
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	413	182	691	0	0	631
RTOR Reduction (vph)	0	126	0	0	0	0
Lane Group Flow (vph)	413	56	691	0	0	631
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	13.9	13.9	38.1			38.1
Effective Green, g (s)	13.9	13.9	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.59			0.59
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	663	313	2088			2067
v/s Ratio Prot	c0.13		c0.20			0.18
v/s Ratio Perm		0.04				
v/c Ratio	0.62	0.18	0.33			0.31
Uniform Delay, d1	22.9	20.6	6.7			6.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.8	0.3	0.4			0.4
Delay (s)	24.8	20.9	7.1			7.0
Level of Service	C	C	A			A
Approach Delay (s)	23.6		7.1			7.0
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

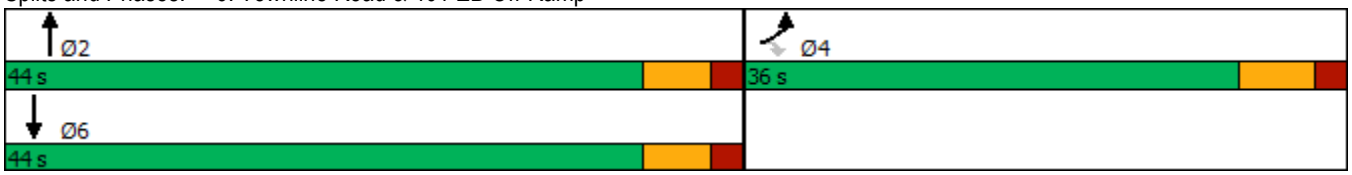


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	334	461	0	551	885	0
Future Volume (vph)	334	461	0	551	885	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		92				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	334	461	0	551	885	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	461	0	551	885	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.0	24.0		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
v/c Ratio	0.64	0.87		0.31	0.49	
Control Delay	27.4	37.3		12.1	14.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	27.4	37.3		12.1	14.1	
LOS	C	D		B	B	
Approach Delay	33.1			12.1	14.1	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

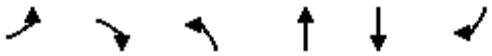




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	334	461	551	885
v/c Ratio	0.64	0.87	0.31	0.49
Control Delay	27.4	37.3	12.1	14.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.4	37.3	12.1	14.1
Queue Length 50th (m)	39.5	49.1	24.5	44.4
Queue Length 95th (m)	64.3	#96.6	36.8	63.5
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	648	632	1788	1788
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	0.52	0.73	0.31	0.49

Intersection Summary

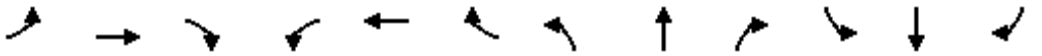
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	334	461	0	551	885	0
Future Volume (vph)	334	461	0	551	885	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	334	461	0	551	885	0
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	334	399	0	551	885	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.0	24.0		38.2	38.2	
Effective Green, g (s)	24.0	24.0		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	467		1789	1789	
v/s Ratio Prot	0.20			0.16	c0.25	
v/s Ratio Perm		c0.27				
v/c Ratio	0.64	0.85		0.31	0.49	
Uniform Delay, d1	21.6	23.7		10.6	11.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	14.1		0.4	1.0	
Delay (s)	24.2	37.8		11.0	12.9	
Level of Service	C	D		B	B	
Approach Delay (s)	32.0			11.0	12.9	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

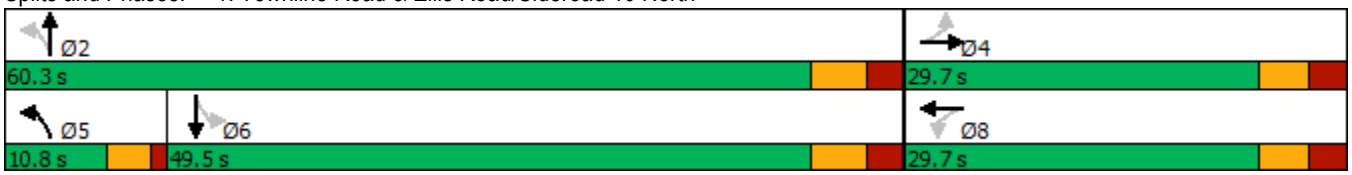


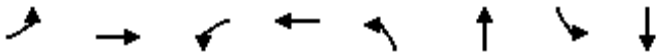
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Future Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.867			0.965			0.988			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1575	0	1603	1549	0	1334	1575	0
Flt Permitted	0.746			0.323			0.160			0.387		
Satd. Flow (perm)	1296	1390	0	567	1575	0	270	1549	0	543	1575	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		262			4			9			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	314	0	42	17	0	134	733	0	4	806	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.4	12.4		12.4	12.4		56.5	54.2		43.5	43.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69		0.55	0.55	
v/c Ratio	0.51	0.72		0.48	0.07		0.44	0.69		0.01	0.93	
Control Delay	39.2	16.8		47.7	23.6		8.9	12.8		10.2	36.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.2	16.8		47.7	23.6		8.9	12.8		10.2	36.9	
LOS	D	B		D	C		A	B		B	D	
Approach Delay		22.3			40.8			12.2			36.8	
Approach LOS		C			D			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

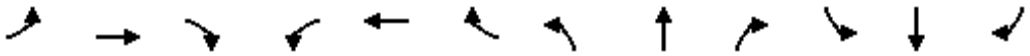




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	314	42	17	134	733	4	806
v/c Ratio	0.51	0.72	0.48	0.07	0.44	0.69	0.01	0.93
Control Delay	39.2	16.8	47.7	23.6	8.9	12.8	10.2	36.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	16.8	47.7	23.6	8.9	12.8	10.2	36.9
Queue Length 50th (m)	14.4	6.9	5.8	1.7	4.8	51.6	0.2	99.4
Queue Length 95th (m)	28.5	30.8	15.3	6.7	14.1	127.6	1.9	#213.8
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	390	602	171	477	308	1066	299	869
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.52	0.25	0.04	0.44	0.69	0.01	0.93

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)	104	36	278	42	13	4	134	672	61	4	771	35
Future Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1574		1603	1548		1334	1576	
Flt Permitted	0.75	1.00		0.32	1.00		0.16	1.00		0.39	1.00	
Satd. Flow (perm)	1297	1390		566	1574		271	1548		543	1576	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	36	278	42	13	4	134	672	61	4	771	35
RTOR Reduction (vph)	0	221	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	104	93	0	42	14	0	134	730	0	4	805	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		54.2	54.2		43.5	43.5	
Effective Green, g (s)	12.4	12.4		12.4	12.4		54.2	54.2		43.5	43.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.69	0.69		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	218		88	247		299	1063		299	868	
v/s Ratio Prot		0.07			0.01		0.04	c0.47			c0.51	
v/s Ratio Perm	c0.08			0.07			0.27			0.01		
v/c Ratio	0.51	0.43		0.48	0.06		0.45	0.69		0.01	0.93	
Uniform Delay, d1	30.5	30.0		30.3	28.3		9.9	7.3		8.0	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.3		4.0	0.1		1.1	3.6		0.1	17.3	
Delay (s)	32.7	31.4		34.3	28.4		11.0	10.9		8.1	33.5	
Level of Service	C	C		C	C		B	B		A	C	
Approach Delay (s)		31.7			32.6			10.9			33.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.3
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	9	857	58	30	1060
Future Volume (vph)	16	9	857	58	30	1060
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1063	1484	1690	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1063	1484	1690	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	56%	0%	2%	17%	0%	2%
Adj. Flow (vph)	16	9	857	58	30	1060
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	9	915	0	30	1060
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

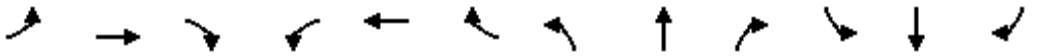
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	857	58	30	1060
Future Volume (Veh/h)	16	9	857	58	30	1060
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	9	857	58	30	1060
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.69	0.70			0.70	
vC, conflicting volume	2006	886			915	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	618			659	
tC, single (s)	7.0	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3			2.2	
p0 queue free %	84	97			95	
cM capacity (veh/h)	99	343			653	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	16	9	915	30	1060
Volume Left	16	0	0	30	0
Volume Right	0	9	58	0	0
cSH	99	343	1700	653	1700
Volume to Capacity	0.16	0.03	0.54	0.05	0.62
Queue Length 95th (m)	4.2	0.6	0.0	1.1	0.0
Control Delay (s)	48.4	15.8	0.0	10.8	0.0
Lane LOS	E	C		B	
Approach Delay (s)	36.7		0.0	0.3	
Approach LOS	E				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

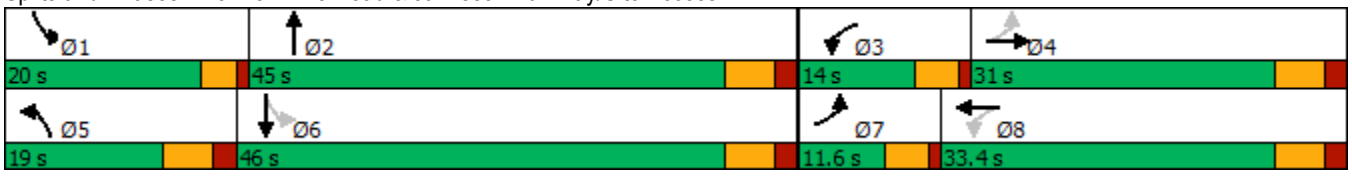


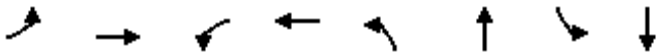
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Future Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850			0.896			0.979			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1313	1462	0	3203	3149	0	1668	3143	0
Flt Permitted	0.482						0.950			0.332		
Satd. Flow (perm)	829	1347	0	1382	1462	0	3202	3149	0	583	3143	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		385			9			18			27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Adj. Flow (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	357	0	33	13	0	359	853	0	29	1063	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4		19.0	45.0		20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%		17.3%	40.9%		18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4		13.0	39.0		16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.2	10.5		11.6	10.5		13.2	55.8		48.7	40.5	
Actuated g/C Ratio	0.20	0.12		0.13	0.12		0.15	0.62		0.54	0.45	
v/c Ratio	0.56	0.72		0.19	0.07		0.76	0.43		0.07	0.74	
Control Delay	38.5	11.9		35.1	24.2		50.6	12.5		8.4	25.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.5	11.9		35.1	24.2		50.6	12.5		8.4	25.6	
LOS	D	B		D	C		D	B		A	C	
Approach Delay		20.4			32.0			23.8			25.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 89.7			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 87.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

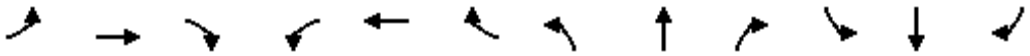




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	357	33	13	359	853	29	1063
v/c Ratio	0.56	0.72	0.19	0.07	0.76	0.43	0.07	0.74
Control Delay	38.5	11.9	35.1	24.2	50.6	12.5	8.4	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	11.9	35.1	24.2	50.6	12.5	8.4	25.6
Queue Length 50th (m)	24.9	0.0	5.6	0.7	31.8	33.2	1.5	78.3
Queue Length 95th (m)	42.1	18.5	11.2	5.6	#63.5	84.2	6.1	#134.8
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	298	656	203	458	470	1966	577	1433
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.54	0.16	0.03	0.76	0.43	0.05	0.74

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)	167	0	357	33	4	9	359	735	118	29	872	191
Future Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.90		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1635	1347		1313	1462		3203	3150		1668	3143	
Flt Permitted	0.48	1.00		1.00	1.00		0.95	1.00		0.33	1.00	
Satd. Flow (perm)	829	1347		1382	1462		3203	3150		582	3143	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	0	357	33	4	9	359	735	118	29	872	191
RTOR Reduction (vph)	0	307	0	0	9	0	0	8	0	0	15	0
Lane Group Flow (vph)	167	50	0	33	4	0	359	845	0	29	1048	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	3%	8%	0%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	22.8	13.5		8.6	3.8		13.2	55.8		45.6	43.1	
Effective Green, g (s)	22.8	13.5		8.6	3.8		13.2	55.8		45.6	43.1	
Actuated g/C Ratio	0.23	0.14		0.09	0.04		0.14	0.57		0.47	0.44	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	187		118	57		435	1810		301	1395	
v/s Ratio Prot	c0.08	0.04		0.01	0.00		c0.11	0.27		0.00	c0.33	
v/s Ratio Perm	c0.05			0.01						0.04		
v/c Ratio	0.53	0.27		0.28	0.08		0.83	0.47		0.10	0.75	
Uniform Delay, d1	31.8	37.4		41.4	45.0		40.8	12.0		13.9	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.8		1.3	0.6		12.1	0.9		0.1	3.8	
Delay (s)	33.5	38.1		42.7	45.5		52.9	12.9		14.0	26.3	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s)		36.6			43.5			24.7			26.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	22.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

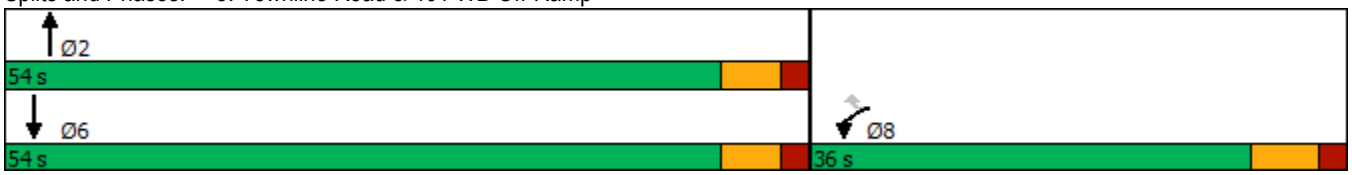


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	208	1022	0	0	853
Future Volume (vph)	605	208	1022	0	0	853
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		85				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	605	208	1022	0	0	853
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	208	1022	0	0	853
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.78	0.48	0.51			0.42
Control Delay	35.4	18.2	12.3			11.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	35.4	18.2	12.3			11.3
LOS	D	B	B			B
Approach Delay	31.0		12.3			11.3
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	605	208	1022	853
v/c Ratio	0.78	0.48	0.51	0.42
Control Delay	35.4	18.2	12.3	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.4	18.2	12.3	11.3
Queue Length 50th (m)	45.5	15.6	47.8	37.4
Queue Length 95th (m)	63.0	34.3	74.8	59.2
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1016	542	2021	2021
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	0.60	0.38	0.51	0.42

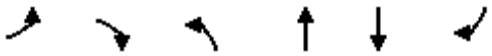
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	208	1022	0	0	853
Future Volume (vph)	605	208	1022	0	0	853
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	605	208	1022	0	0	853
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	605	146	1022	0	0	853
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	22.7	22.7	48.2			48.2
Effective Green, g (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	779	374	2022			2022
v/s Ratio Prot	c0.21		c0.29			0.24
v/s Ratio Perm		0.11				
v/c Ratio	0.78	0.39	0.51			0.42
Uniform Delay, d1	28.0	24.7	10.5			9.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.9	0.7	0.9			0.6
Delay (s)	32.9	25.4	11.4			10.5
Level of Service	C	C	B			B
Approach Delay (s)	31.0		11.4			10.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

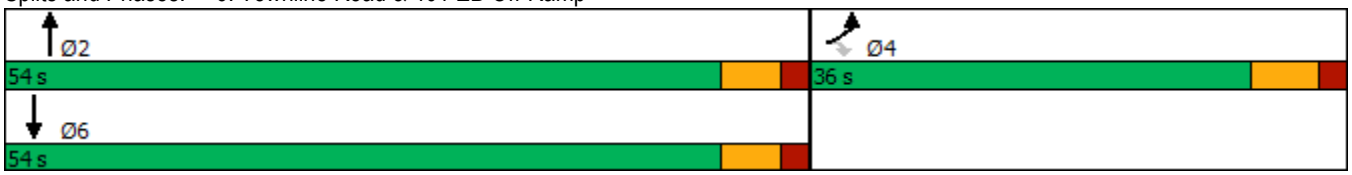


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	492	548	0	1026	1279	0
Future Volume (vph)	492	548	0	1026	1279	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3336	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		43				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	492	548	0	1026	1279	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	492	548	0	1026	1279	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.94	1.11		0.56	0.72	
Control Delay	57.6	104.3		15.5	18.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	57.6	104.3		15.5	18.8	
LOS	E	F		B	B	
Approach Delay	82.2			15.5	18.8	
Approach LOS	F			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 37.5		Intersection LOS: D	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp



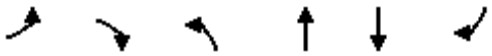


Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	492	548	1026	1279
v/c Ratio	0.94	1.11	0.56	0.72
Control Delay	57.6	104.3	15.5	18.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.6	104.3	15.5	18.8
Queue Length 50th (m)	81.7	~104.6	58.6	83.0
Queue Length 95th (m)	#141.1	#166.0	76.0	107.4
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	525	492	1830	1779
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	0.94	1.11	0.56	0.72

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	492	548	0	1026	1279	0
Future Volume (vph)	492	548	0	1026	1279	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3336	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	548	0	1026	1279	0
RTOR Reduction (vph)	0	29	0	0	0	0
Lane Group Flow (vph)	492	519	0	1026	1279	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		48.0	48.0	
Effective Green, g (s)	29.5	29.5		48.0	48.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	463		1830	1779	
v/s Ratio Prot	0.31			0.30	c0.38	
v/s Ratio Perm		c0.37				
v/c Ratio	0.94	1.12		0.56	0.72	
Uniform Delay, d1	29.4	30.2		14.0	15.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.4	79.3		1.2	2.5	
Delay (s)	53.7	109.5		15.2	18.4	
Level of Service	D	F		B	B	
Approach Delay (s)	83.1			15.2	18.4	
Approach LOS	F			B	B	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

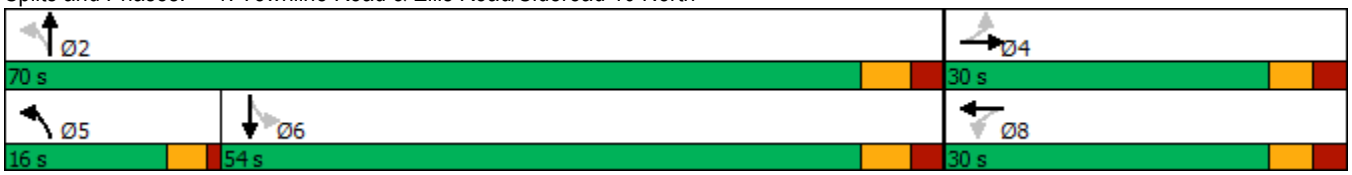
c Critical Lane Group

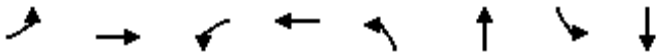
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Future Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.869			0.969			0.991			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1394	0	1635	1581	0	1668	1602	0	1668	1547	0
Flt Permitted	0.719			0.486			0.224			0.136		
Satd. Flow (perm)	1262	1394	0	836	1581	0	393	1602	0	239	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		172			12			6			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	197	0	93	59	0	422	1136	0	10	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	14.4	14.4		14.4	14.4		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.73	0.71		0.53	0.53	
v/c Ratio	0.24	0.54		0.70	0.23		0.93	1.00		0.08	0.82	
Control Delay	35.6	13.4		63.3	29.0		39.2	44.1		14.8	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.6	13.4		63.3	29.0		39.2	44.1		14.8	29.4	
LOS	D	B		E	C		D	D		B	C	
Approach Delay		17.8			50.0			42.8			29.2	
Approach LOS		B			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.6			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 37.3		Intersection LOS: D	
Intersection Capacity Utilization 113.4%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North



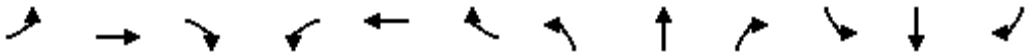


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	197	93	59	422	1136	10	676
v/c Ratio	0.24	0.54	0.70	0.23	0.93	1.00	0.08	0.82
Control Delay	35.6	13.4	63.3	29.0	39.2	44.1	14.8	29.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	13.4	63.3	29.0	39.2	44.1	14.8	29.4
Queue Length 50th (m)	7.5	3.8	15.5	7.2	26.1	~168.7	0.8	91.1
Queue Length 95th (m)	17.3	22.0	31.5	17.5	#84.2	#322.7	4.1	#185.3
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	335	496	222	428	456	1131	126	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.40	0.42	0.14	0.93	1.00	0.08	0.82

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)	49	25	172	93	47	12	422	1070	66	10	604	72
Future Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1394		1635	1582		1668	1602		1668	1547	
Flt Permitted	0.72	1.00		0.49	1.00		0.22	1.00		0.14	1.00	
Satd. Flow (perm)	1261	1394		836	1582		393	1602		238	1547	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
RTOR Reduction (vph)	0	145	0	0	10	0	0	2	0	0	4	0
Lane Group Flow (vph)	49	52	0	93	49	0	422	1134	0	10	672	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.4	14.4		14.4	14.4		63.9	63.9		47.9	47.9	
Effective Green, g (s)	14.4	14.4		14.4	14.4		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.71		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	221		132	251		446	1129		125	817	
v/s Ratio Prot		0.04			0.03		0.13	c0.71			0.43	
v/s Ratio Perm	0.04			c0.11			0.54			0.04		
v/c Ratio	0.24	0.24		0.70	0.19		0.95	1.00		0.08	0.82	
Uniform Delay, d1	33.3	33.3		36.1	33.1		13.9	13.3		10.5	17.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		15.7	0.4		29.1	27.9		1.2	9.2	
Delay (s)	34.0	33.9		51.8	33.4		43.0	41.3		11.8	27.0	
Level of Service	C	C		D	C		D	D		B	C	
Approach Delay (s)		33.9			44.7			41.7			26.8	
Approach LOS		C			D			D			C	

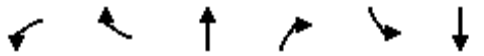
Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	26	1532	29	13	857
Future Volume (vph)	53	26	1532	29	13	857
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1442	1484	1705	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1442	1484	1705	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	15%	0%	2%	38%	0%	2%
Adj. Flow (vph)	53	26	1532	29	13	857
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	26	1561	0	13	857
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	26	1532	29	13	857
Future Volume (Veh/h)	53	26	1532	29	13	857
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	26	1532	29	13	857
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.49	0.30			0.30	
vC, conflicting volume	2430	1546			1561	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1738	1653			1700	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	0	31			89	
cM capacity (veh/h)	38	38			116	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	53	26	1561	13	857
Volume Left	53	0	0	13	0
Volume Right	0	26	29	0	0
cSH	38	38	1700	116	1700
Volume to Capacity	1.38	0.69	0.92	0.11	0.50
Queue Length 95th (m)	41.5	18.9	0.0	2.8	0.0
Control Delay (s)	440.8	218.3	0.0	40.0	0.0
Lane LOS	F	F		E	
Approach Delay (s)	367.6		0.0	0.6	
Approach LOS	F				

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

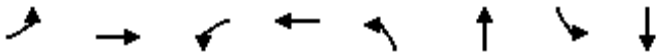
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Future Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.889			0.995			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1558	1451	0	3203	3230	0	1668	3123	0
Flt Permitted	0.656			0.250			0.950			0.219		
Satd. Flow (perm)	1151	1387	0	410	1451	0	3203	3230	0	384	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		385			31			3			25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Adj. Flow (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	457	0	107	42	0	517	1259	0	10	891	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	15.0	35.0		19.0	39.0		29.0	64.0		17.0	52.0	
Total Split (%)	11.1%	25.9%		14.1%	28.9%		21.5%	47.4%		12.6%	38.5%	
Maximum Green (s)	10.5	29.0		14.5	33.0		23.0	58.0		13.0	46.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			23.4			23.4	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	29.0	16.4		28.7	17.9		22.5	73.1		54.3	46.4	
Actuated g/C Ratio	0.24	0.14		0.24	0.15		0.19	0.61		0.45	0.39	
v/c Ratio	0.80	0.88		0.51	0.17		0.86	0.64		0.04	0.73	
Control Delay	57.7	27.8		41.4	19.8		63.3	19.4		13.5	36.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	57.7	27.8		41.4	19.8		63.3	19.4		13.5	36.2	
LOS	E	C		D	B		E	B		B	D	
Approach Delay		38.9			35.3			32.2			36.0	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 119.5			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 34.6		Intersection LOS: C	
Intersection Capacity Utilization 100.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

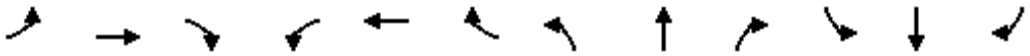




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	457	107	42	517	1259	10	891
v/c Ratio	0.80	0.88	0.51	0.17	0.86	0.64	0.04	0.73
Control Delay	57.7	27.8	41.4	19.8	63.3	19.4	13.5	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	27.8	41.4	19.8	63.3	19.4	13.5	36.2
Queue Length 50th (m)	54.1	15.6	19.3	2.3	60.2	86.2	0.8	89.6
Queue Length 95th (m)	79.5	60.3	33.3	11.8	#104.4	177.5	3.7	138.2
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	336	630	249	426	622	1976	338	1228
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.73	0.43	0.10	0.83	0.64	0.03	0.73

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)	270	0	457	107	11	31	517	1221	38	10	711	180
Future Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1558	1451		3203	3232		1668	3122	
Flt Permitted	0.66	1.00		0.25	1.00		0.95	1.00		0.22	1.00	
Satd. Flow (perm)	1151	1387		410	1451		3203	3232		385	3122	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
RTOR Reduction (vph)	0	330	0	0	27	0	0	1	0	0	15	0
Lane Group Flow (vph)	270	127	0	107	15	0	517	1258	0	10	876	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	31.1	17.8		27.5	16.0		22.5	73.1		51.0	49.8	
Effective Green, g (s)	31.1	17.8		27.5	16.0		22.5	73.1		51.0	49.8	
Actuated g/C Ratio	0.25	0.14		0.22	0.13		0.18	0.59		0.41	0.40	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	343	198		197	187		580	1903		170	1252	
v/s Ratio Prot	c0.08	0.09		0.05	0.01		c0.16	0.39		0.00	c0.28	
v/s Ratio Perm	c0.11			0.07						0.02		
v/c Ratio	0.79	0.64		0.54	0.08		0.89	0.66		0.06	0.70	
Uniform Delay, d1	42.2	50.1		41.0	47.6		49.6	17.2		21.7	30.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.3	7.0		3.0	0.2		15.8	1.8		0.1	3.3	
Delay (s)	53.5	57.1		44.0	47.8		65.5	19.0		21.8	34.2	
Level of Service	D	E		D	D		E	B		C	C	
Approach Delay (s)		55.8			45.1			32.5			34.1	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	124.1	Sum of lost time (s)	22.5
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

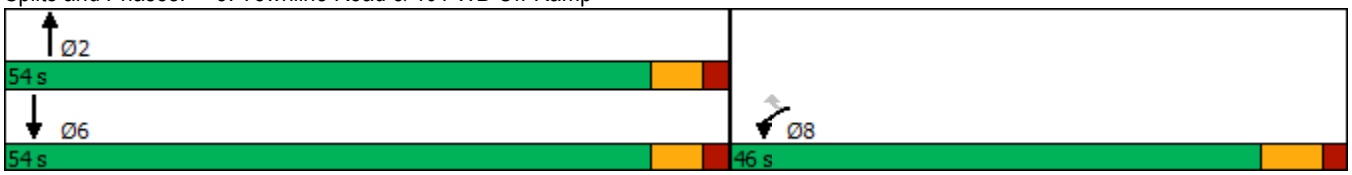


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	409	1488	0	0	890
Future Volume (vph)	607	409	1488	0	0	890
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		16				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	607	409	1488	0	0	890
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	409	1488	0	0	890
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	29.6	29.6	48.4			48.4
Actuated g/C Ratio	0.33	0.33	0.53			0.53
v/c Ratio	0.63	0.84	0.80			0.48
Control Delay	28.5	43.1	22.9			15.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	28.5	43.1	22.9			15.5
LOS	C	D	C			B
Approach Delay	34.4		22.9			15.5
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	607	409	1488	890
v/c Ratio	0.63	0.84	0.80	0.48
Control Delay	28.5	43.1	22.9	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.5	43.1	22.9	15.5
Queue Length 50th (m)	45.4	62.7	108.2	49.8
Queue Length 95th (m)	61.3	97.9	#166.0	78.3
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1292	648	1869	1869
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	0.63	0.80	0.48

Intersection Summary

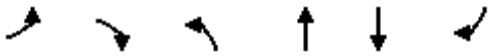
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	409	1488	0	0	890
Future Volume (vph)	607	409	1488	0	0	890
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	607	409	1488	0	0	890
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	607	398	1488	0	0	890
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	29.6	29.6	48.4			48.4
Effective Green, g (s)	29.6	29.6	48.4			48.4
Actuated g/C Ratio	0.33	0.33	0.53			0.53
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	961	476	1871			1871
v/s Ratio Prot	0.21		c0.43			0.25
v/s Ratio Perm		c0.27				
v/c Ratio	0.63	0.84	0.80			0.48
Uniform Delay, d1	25.8	28.2	17.0			13.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	12.1	3.6			0.9
Delay (s)	27.2	40.3	20.6			14.0
Level of Service	C	D	C			B
Approach Delay (s)	32.5		20.6			14.0
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

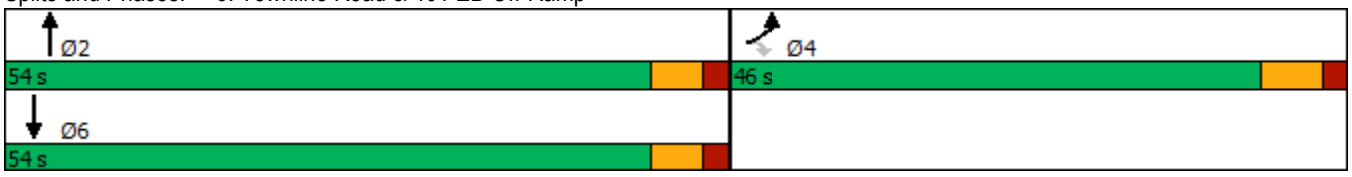


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	478	548	0	1300	1371	0
Future Volume (vph)	478	548	0	1300	1371	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3400	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	478	548	0	1300	1371	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	478	548	0	1300	1371	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	38.1	38.1		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
v/c Ratio	0.77	0.96		0.76	0.83	
Control Delay	35.8	58.8		24.4	27.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	35.8	58.8		24.4	27.5	
LOS	D	E		C	C	
Approach Delay	48.1			24.4	27.5	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

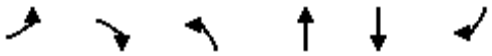




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	478	548	1300	1371
v/c Ratio	0.77	0.96	0.76	0.83
Control Delay	35.8	58.8	24.4	27.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.8	58.8	24.4	27.5
Queue Length 50th (m)	78.1	97.1	105.2	117.5
Queue Length 95th (m)	117.2	#164.0	131.5	147.6
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	648	591	1721	1656
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	0.74	0.93	0.76	0.83

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	478	548	0	1300	1371	0
Future Volume (vph)	478	548	0	1300	1371	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3400	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	548	0	1300	1371	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	478	534	0	1300	1371	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	38.1	38.1		48.0	48.0	
Effective Green, g (s)	38.1	38.1		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	625	557		1720	1655	
v/s Ratio Prot	0.30			0.37	c0.40	
v/s Ratio Perm		c0.37				
v/c Ratio	0.76	0.96		0.76	0.83	
Uniform Delay, d1	26.3	29.5		20.5	21.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	27.7		3.1	4.9	
Delay (s)	31.9	57.2		23.7	26.7	
Level of Service	C	E		C	C	
Approach Delay (s)	45.4			23.7	26.7	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

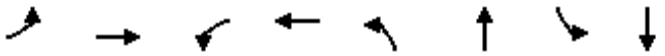
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Future Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. 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
Frt		0.868			0.975			0.989			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1583	0	1651	1584	0	1668	1597	0
Flt Permitted	0.742			0.502			0.423			0.338		
Satd. Flow (perm)	1290	1416	0	881	1583	0	735	1584	0	593	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		237			4			9			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			443.9			170.8			162.4	
Travel Time (s)		9.9			32.0			10.2			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	270	0	43	24	0	218	644	0	3	530	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.7	9.7		9.7	9.7		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.58	0.58	
v/c Ratio	0.25	0.59		0.26	0.08		0.51	0.70		0.01	0.57	
Control Delay	20.6	10.3		22.2	15.9		13.0	14.3		6.0	10.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.6	10.3		22.2	15.9		13.0	14.3		6.0	10.5	
LOS	C	B		C	B		B	B		A	B	
Approach Delay		12.2			19.9			14.0			10.5	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.1			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 92.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

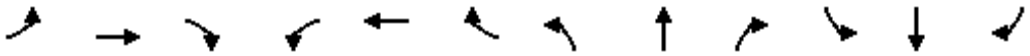




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	270	43	24	218	644	3	530
v/c Ratio	0.25	0.59	0.26	0.08	0.51	0.70	0.01	0.57
Control Delay	20.6	10.3	22.2	15.9	13.0	14.3	6.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	10.3	22.2	15.9	13.0	14.3	6.0	10.5
Queue Length 50th (m)	4.8	2.6	3.5	1.6	9.4	32.2	0.1	23.3
Queue Length 95th (m)	12.5	17.8	10.2	6.1	33.7	#104.2	1.1	62.6
Internal Link Dist (m)		113.8		419.9		146.8		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	496	691	339	612	424	919	342	927
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.39	0.13	0.04	0.51	0.70	0.01	0.57

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)	60	33	237	43	20	4	218	595	49	3	486	44
Future Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1583		1651	1584		1668	1597	
Flt Permitted	0.74	1.00		0.50	1.00		0.42	1.00		0.34	1.00	
Satd. Flow (perm)	1289	1417		880	1583		735	1584		593	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	33	237	43	20	4	218	595	49	3	486	44
RTOR Reduction (vph)	0	193	0	0	3	0	0	4	0	0	4	0
Lane Group Flow (vph)	60	77	0	43	21	0	218	640	0	3	526	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	261		162	292		425	916		343	924	
v/s Ratio Prot		c0.05			0.01			c0.40			0.33	
v/s Ratio Perm	0.05			0.05			0.30			0.01		
v/c Ratio	0.25	0.29		0.27	0.07		0.51	0.70		0.01	0.57	
Uniform Delay, d1	18.1	18.3		18.2	17.5		6.6	7.7		4.6	6.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		0.9	0.1		4.4	4.4		0.0	2.5	
Delay (s)	18.7	18.9		19.1	17.6		10.9	12.2		4.7	9.4	
Level of Service	B	B		B	B		B	B		A	A	
Approach Delay (s)		18.9			18.5			11.9			9.4	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	15	846	17	8	758
Future Volume (vph)	32	15	846	17	8	758
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1658	1484	1716	0	1785	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1658	1484	1716	0	1785	1842
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		378.3			170.8
Travel Time (s)	7.5		22.7			10.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	32	15	846	17	8	758
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	15	863	0	8	758
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	15	846	17	8	758
Future Volume (Veh/h)	32	15	846	17	8	758
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	15	846	17	8	758
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			378			171
pX, platoon unblocked	0.86	0.78			0.78	
vC, conflicting volume	1628	854			863	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1206	668			679	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			99	
cM capacity (veh/h)	174	358			716	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	32	15	863	8	758
Volume Left	32	0	0	8	0
Volume Right	0	15	17	0	0
cSH	174	358	1700	716	1700
Volume to Capacity	0.18	0.04	0.51	0.01	0.45
Queue Length 95th (m)	5.0	1.0	0.0	0.3	0.0
Control Delay (s)	30.3	15.5	0.0	10.1	0.0
Lane LOS	D	C		B	
Approach Delay (s)	25.6		0.0	0.1	
Approach LOS	D				

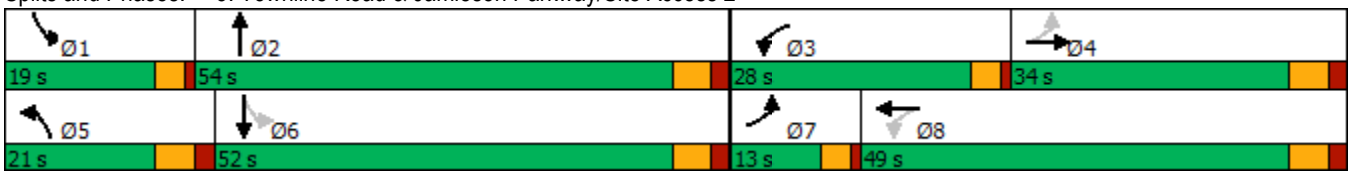
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

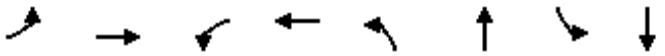
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Future Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.890			0.995			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1452	0	3203	3255	0	1668	3214	0
Flt Permitted	0.588						0.950			0.387		
Satd. Flow (perm)	1032	1387	0	1755	1452	0	3203	3255	0	679	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		474			19			3			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		516.9			135.6			299.0			378.3	
Travel Time (s)		37.2			9.8			17.9			22.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	291	0	64	26	0	263	695	0	6	783	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0		11.0	50.4		9.0	41.0	
Total Split (s)	13.0	34.0		28.0	49.0		21.0	54.0		19.0	52.0	
Total Split (%)	9.6%	25.2%		20.7%	36.3%		15.6%	40.0%		14.1%	38.5%	
Maximum Green (s)	9.0	28.0		24.0	43.0		15.0	48.0		15.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.4	6.1		12.3	6.4		12.7	63.2		54.0	46.3	
Actuated g/C Ratio	0.18	0.07		0.13	0.07		0.14	0.68		0.58	0.49	
v/c Ratio	0.68	0.55		0.29	0.22		0.60	0.32		0.01	0.49	
Control Delay	49.0	4.0		37.9	27.6		45.1	7.8		6.0	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.0	4.0		37.9	27.6		45.1	7.8		6.0	17.7	
LOS	D	A		D	C		D	A		A	B	
Approach Delay		21.4			34.9			18.0			17.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 93.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

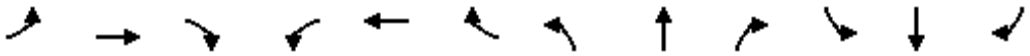




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	184	291	64	26	263	695	6	783
v/c Ratio	0.68	0.55	0.29	0.22	0.60	0.32	0.01	0.49
Control Delay	49.0	4.0	37.9	27.6	45.1	7.8	6.0	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	4.0	37.9	27.6	45.1	7.8	6.0	17.7
Queue Length 50th (m)	30.2	0.0	11.3	1.3	23.8	24.0	0.3	49.0
Queue Length 95th (m)	#52.4	0.0	20.9	9.2	37.3	48.0	1.5	70.8
Internal Link Dist (m)		492.9		111.6		275.0		354.3
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	272	748	433	681	516	2198	619	1598
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.39	0.15	0.04	0.51	0.32	0.01	0.49

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)	184	0	291	64	7	19	263	672	23	6	651	132
Future Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1668	1453		3203	3256		1668	3213	
Flt Permitted	0.59	1.00		1.00	1.00		0.95	1.00		0.39	1.00	
Satd. Flow (perm)	1033	1387		1755	1453		3203	3256		680	3213	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	184	0	291	64	7	19	263	672	23	6	651	132
RTOR Reduction (vph)	0	265	0	0	18	0	0	1	0	0	10	0
Lane Group Flow (vph)	184	26	0	64	8	0	263	694	0	6	773	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	20.2	8.9		10.1	2.8		12.7	63.2		50.7	49.6	
Effective Green, g (s)	20.2	8.9		10.1	2.8		12.7	63.2		50.7	49.6	
Actuated g/C Ratio	0.20	0.09		0.10	0.03		0.13	0.63		0.50	0.49	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	292	122		170	40		404	2047		353	1585	
v/s Ratio Prot	c0.08	0.02		0.03	0.01		c0.08	0.21		0.00	c0.24	
v/s Ratio Perm	c0.04			0.01						0.01		
v/c Ratio	0.63	0.21		0.38	0.19		0.65	0.34		0.02	0.49	
Uniform Delay, d1	36.1	42.5		42.3	47.7		41.8	8.8		12.4	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.9		1.4	2.3		3.7	0.5		0.0	1.1	
Delay (s)	40.5	43.4		43.7	50.0		45.5	9.2		12.4	18.1	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s)		42.3			45.5			19.2			18.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	197	760	0	0	690
Future Volume (vph)	449	197	760	0	0	690
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		132				
Link Speed (k/h)	50		60			60
Link Distance (m)	416.5		423.7			299.0
Travel Time (s)	30.0		25.4			17.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	449	197	760	0	0	690
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	197	760	0	0	690
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
v/c Ratio	0.64	0.46	0.37			0.34
Control Delay	27.3	11.7	8.5			8.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	27.3	11.7	8.5			8.2
LOS	C	B	A			A
Approach Delay	22.5		8.5			8.2
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	449	197	760	690
v/c Ratio	0.64	0.46	0.37	0.34
Control Delay	27.3	11.7	8.5	8.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.3	11.7	8.5	8.2
Queue Length 50th (m)	25.4	6.4	22.5	20.0
Queue Length 95th (m)	38.2	21.3	39.8	35.8
Internal Link Dist (m)	392.5		399.7	275.0
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1390	729	2055	2034
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	0.32	0.27	0.37	0.34

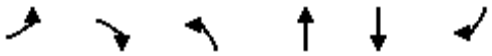
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	197	760	0	0	690
Future Volume (vph)	449	197	760	0	0	690
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	197	760	0	0	690
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	449	95	760	0	0	690
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	14.9	14.9	38.1			38.1
Effective Green, g (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	700	331	2056			2035
v/s Ratio Prot	c0.15		c0.22			0.20
v/s Ratio Perm		0.07				
v/c Ratio	0.64	0.29	0.37			0.34
Uniform Delay, d1	22.9	20.9	7.3			7.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.0	0.5	0.5			0.5
Delay (s)	24.9	21.4	7.8			7.6
Level of Service	C	C	A			A
Approach Delay (s)	23.8		7.8			7.6
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

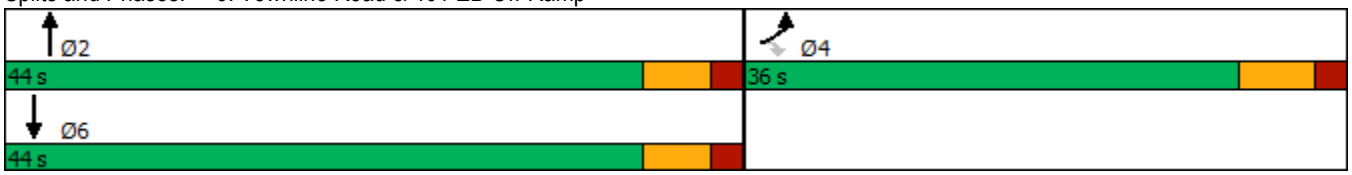


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	417	581	0	607	974	0
Future Volume (vph)	417	581	0	607	974	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3500	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		71				
Link Speed (k/h)	50			60	60	
Link Distance (m)	411.1			172.5	423.7	
Travel Time (s)	29.6			10.4	25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	417	581	0	607	974	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	417	581	0	607	974	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
v/c Ratio	0.69	1.00		0.37	0.59	
Control Delay	28.7	62.1		14.1	17.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.7	62.1		14.1	17.1	
LOS	C	E		B	B	
Approach Delay	48.1			14.1	17.1	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

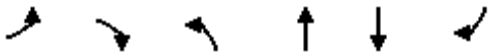




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	417	581	607	974
v/c Ratio	0.69	1.00	0.37	0.59
Control Delay	28.7	62.1	14.1	17.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.7	62.1	14.1	17.1
Queue Length 50th (m)	52.6	78.4	29.3	53.9
Queue Length 95th (m)	84.2	#145.2	40.8	71.8
Internal Link Dist (m)	387.1		148.5	399.7
Turn Bay Length (m)		87.0		
Base Capacity (vph)	602	581	1662	1662
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	0.69	1.00	0.37	0.59

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	417	581	0	607	974	0
Future Volume (vph)	417	581	0	607	974	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3500	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	417	581	0	607	974	0
RTOR Reduction (vph)	0	45	0	0	0	0
Lane Group Flow (vph)	417	536	0	607	974	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.5	29.5		38.0	38.0	
Effective Green, g (s)	29.5	29.5		38.0	38.0	
Actuated g/C Ratio	0.37	0.37		0.48	0.48	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	602	536		1662	1662	
v/s Ratio Prot	0.26			0.17	c0.28	
v/s Ratio Perm		c0.37				
v/c Ratio	0.69	1.00		0.37	0.59	
Uniform Delay, d1	21.4	25.2		13.3	15.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	39.0		0.6	1.5	
Delay (s)	24.9	64.2		14.0	16.8	
Level of Service	C	E		B	B	
Approach Delay (s)	47.8			14.0	16.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

E-1 Site Access 1 and Townline Road Signal Warrant

Justification 7 - Projected Volumes

Intersection: Site Access 1 and Townline Road Alt A (FT Count Date: 2026-08-28

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? AM PM Peak Hour **Proceed to c2**

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour	0	737	35	0	0	0	47	887	0	10	0	4	0
PM Peak Hour	0	1,336	12	0	0	0	18	759	0	29	0	10	0
AHV	0	518	12	0	0	0	16	412	0	10	0	4	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	958			**13**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	971	107.9	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	13	5.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	958	106.4	
	B. Combined vehicle and pedestrian volume crossing artery	-	-	-	75	10	13.0	

Justification 7 - Projected Volumes

Intersection: Site Access 1 and Townline Road Alt B (FT.Count Date: 2026-08-20

Return to Justifications 1 - 6

INPUT

PRIOR TO START - FILL OUT GEOMETRY INPUTS IN THE INPUT DATA SPREADSHEET - STEPS A to D

a.- Both Intersection Roads Exist? No

b.- What kind of count estimate available? AM PM Peak Hour **Proceed to c2**

c1.- 8-Hour Count Estimate

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18:00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

c2.- Peak Hour Estimate

Peak Hour	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AM Peak Hour	0	707	58	0	0	0	30	877	0	16	0	9	0
PM Peak Hour	0	1,264	29	0	0	0	13	705	0	53	0	26	0
AHV	0	493	22	0	0	0	11	396	0	17	0	9	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	921			**26**									

c3.- AADT Estimate - can leave movements without data blank. If midblock reading, can assign demand to through movement.

AADT	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
AHV	0	0	0	0	0	0	0	0	0	0	0	0	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	0			**0**									

d. Justification 7 Result

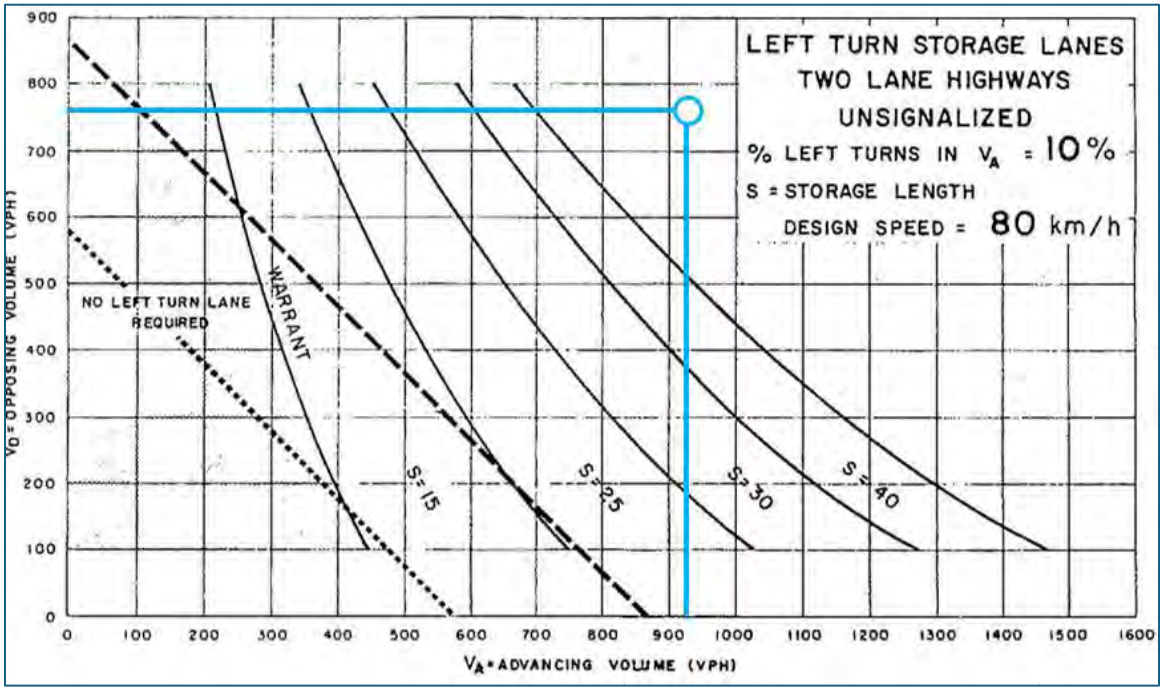
Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	947	105.2	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	26	10.2	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	921	102.3	
	B. Combined vehicle and pedestrian volume crossing artery	-	-	-	75	17	23.0	

E-2 Site Access 1 and Townline Road Left-Turn Lane Warrant

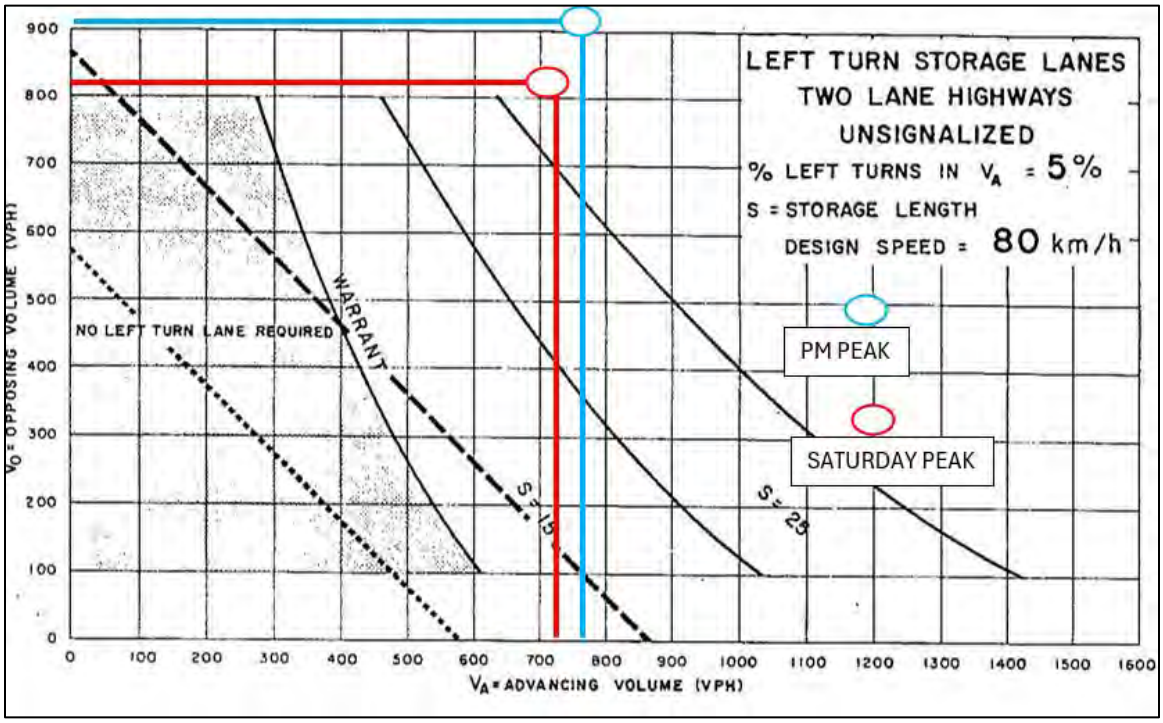
Site Access 1 and Townline Road – Future Total 2028 Site Plan A

Peak Hour	AM	PM	Saturday
Advancing Traffic Volume V_a	934	777	739
Opposing Traffic Volume V_O	772	1348	814
Left Turn Traffic	47	18	11
Left Turn Traffic Percentage	5.03%	2.32%	2.6%
Left Turn Warrant	Yes	Yes	Yes

AM PEAK HOUR



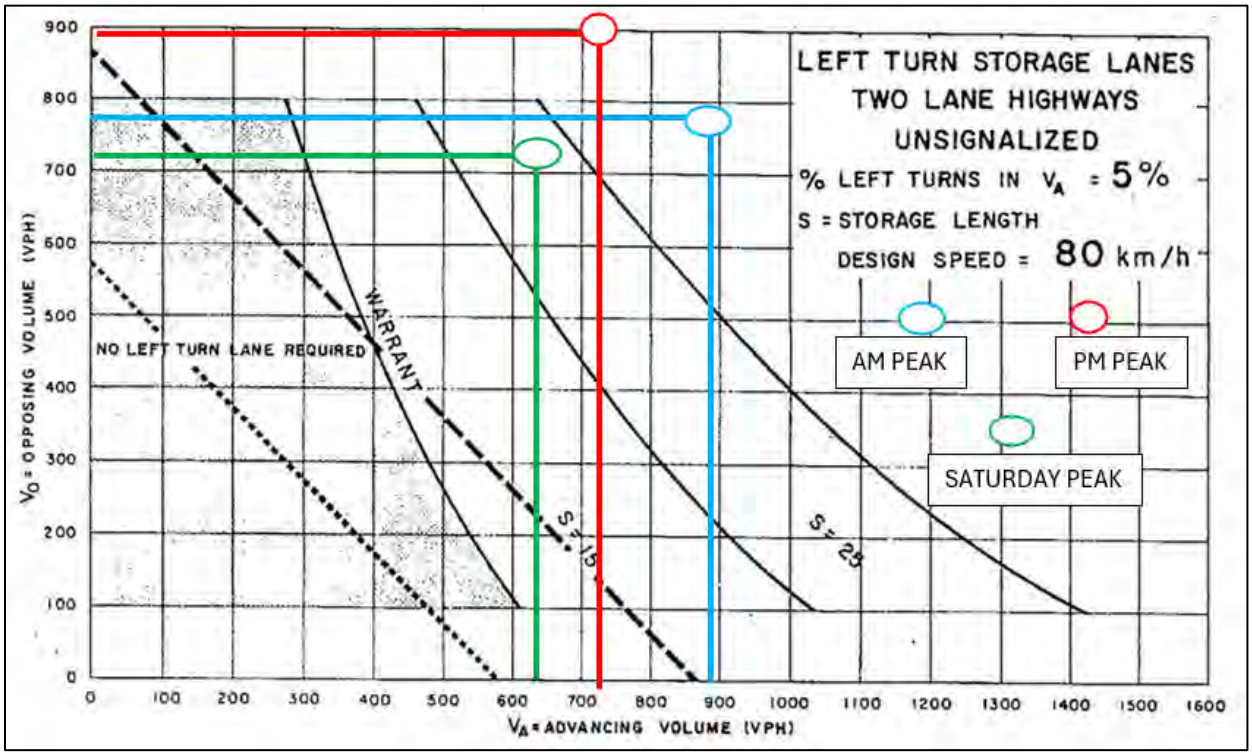
PM PEAK HOUR AND SATURDAY PEAK



Site Access 1 and Townline Road – Future Total 2028 Site Plan B

Peak Hour	AM	PM	Saturday
Advancing Traffic Volume V_a	895	713	628
Opposing Traffic Volume V_O	765	1293	714
Left Turn Traffic	24	10	6
Left Turn Traffic Percentage	2.68%	1.14%	0.96%
Left Turn Warrant	Yes	Yes	Yes

AM PEAK, PM PEAK AND SATURDAY PEAK



E-3 MTO Ramp Sim Traffic Reports

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5245	5230	5266	5135	5124	5198
Vehs Exited	5255	5219	5263	5171	5129	5208
Starting Vehs	185	171	177	208	186	182
Ending Vehs	175	182	180	172	181	178
Travel Distance (km)	5265	5270	5357	5182	5202	5255
Travel Time (hr)	182.1	180.3	186.1	173.7	179.9	180.4
Total Delay (hr)	80.5	78.5	83.2	73.7	79.3	79.0
Total Stops	6994	7079	7341	6817	7064	7060
Fuel Used (l)	519.3	519.8	531.1	508.0	515.3	518.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5245	5230	5266	5135	5124	5198
Vehs Exited	5255	5219	5263	5171	5129	5208
Starting Vehs	185	171	177	208	186	182
Ending Vehs	175	182	180	172	181	178
Travel Distance (km)	5265	5270	5357	5182	5202	5255
Travel Time (hr)	182.1	180.3	186.1	173.7	179.9	180.4
Total Delay (hr)	80.5	78.5	83.2	73.7	79.3	79.0
Total Stops	6994	7079	7341	6817	7064	7060
Fuel Used (l)	519.3	519.8	531.1	508.0	515.3	518.7

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	2.1	1.8	0.3	0.0	0.7
Total Del/Veh (s)	34.5	29.7	14.0	16.9	20.6

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	86.5	112.4	87.5	87.7	81.6	104.6	96.4
Average Queue (m)	52.3	67.8	55.4	54.8	41.4	60.3	63.9
95th Queue (m)	79.7	94.0	83.0	80.5	72.6	94.1	95.6
Link Distance (m)		397.5		173.8	173.8	390.3	390.3
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)	0	1	0				
Queuing Penalty (veh)	0	3	1				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6190	6259	6031	6153	6037	6135
Vehs Exited	6243	6243	6032	6096	6012	6123
Starting Vehs	328	347	297	318	277	313
Ending Vehs	275	363	296	375	302	321
Travel Distance (km)	6464	6513	6284	6379	6304	6389
Travel Time (hr)	326.7	393.8	296.7	378.6	305.2	340.2
Total Delay (hr)	201.0	267.5	175.1	254.8	182.6	216.2
Total Stops	12281	11014	11070	13851	11105	11863
Fuel Used (l)	719.3	791.5	685.4	755.6	689.8	728.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6190	6259	6031	6153	6037	6135
Vehs Exited	6243	6243	6032	6096	6012	6123
Starting Vehs	328	347	297	318	277	313
Ending Vehs	275	363	296	375	302	321
Travel Distance (km)	6464	6513	6284	6379	6304	6389
Travel Time (hr)	326.7	393.8	296.7	378.6	305.2	340.2
Total Delay (hr)	201.0	267.5	175.1	254.8	182.6	216.2
Total Stops	12281	11014	11070	13851	11105	11863
Fuel Used (l)	719.3	791.5	685.4	755.6	689.8	728.3

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	2.0	1.9	0.6	0.0	0.7
Total Del/Veh (s)	28.9	26.5	28.2	23.6	26.3

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	85.0	100.2	88.7	137.6	132.2	128.7	136.1
Average Queue (m)	46.2	64.4	52.7	91.1	78.0	76.2	81.6
95th Queue (m)	74.2	86.6	80.1	140.5	129.6	116.0	121.7
Link Distance (m)		397.5		173.8	173.8	390.3	390.3
Upstream Blk Time (%)				2	1		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)	0	0	0				
Queuing Penalty (veh)	0	1	1				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4882	4783	4953	4907	5021	4912
Vehs Exited	4886	4823	4922	4909	5029	4913
Starting Vehs	180	190	155	167	167	170
Ending Vehs	176	150	186	165	159	170
Travel Distance (km)	4786	4685	4824	4830	4935	4812
Travel Time (hr)	171.2	165.7	176.9	178.4	184.6	175.4
Total Delay (hr)	77.0	73.5	82.5	83.5	87.6	80.8
Total Stops	6929	6701	7127	7191	7420	7073
Fuel Used (l)	479.4	471.0	489.4	490.4	502.9	486.6

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4882	4783	4953	4907	5021	4912
Vehs Exited	4886	4823	4922	4909	5029	4913
Starting Vehs	180	190	155	167	167	170
Ending Vehs	176	150	186	165	159	170
Travel Distance (km)	4786	4685	4824	4830	4935	4812
Travel Time (hr)	171.2	165.7	176.9	178.4	184.6	175.4
Total Delay (hr)	77.0	73.5	82.5	83.5	87.6	80.8
Total Stops	6929	6701	7127	7191	7420	7073
Fuel Used (l)	479.4	471.0	489.4	490.4	502.9	486.6

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	2.0	1.9	0.2	0.0	0.7
Total Del/Veh (s)	27.7	23.2	13.3	14.9	18.3

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	76.2	86.0	83.6	63.8	60.7	77.2	75.7
Average Queue (m)	42.6	59.4	46.0	35.7	27.6	44.5	49.2
95th Queue (m)	68.1	79.2	72.2	54.5	48.5	68.6	70.8
Link Distance (m)		397.5		173.8	173.8	390.3	390.3
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)	0	0	0				
Queuing Penalty (veh)	0	0	0				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5245	5230	5266	5135	5124	5198
Vehs Exited	5255	5219	5263	5171	5129	5208
Starting Vehs	185	171	177	208	186	182
Ending Vehs	175	182	180	172	181	178
Travel Distance (km)	5265	5270	5357	5182	5202	5255
Travel Time (hr)	182.1	180.3	186.1	173.7	179.9	180.4
Total Delay (hr)	80.5	78.5	83.2	73.7	79.3	79.0
Total Stops	6994	7079	7341	6817	7064	7060
Fuel Used (l)	519.3	519.8	531.1	508.0	515.3	518.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5245	5230	5266	5135	5124	5198
Vehs Exited	5255	5219	5263	5171	5129	5208
Starting Vehs	185	171	177	208	186	182
Ending Vehs	175	182	180	172	181	178
Travel Distance (km)	5265	5270	5357	5182	5202	5255
Travel Time (hr)	182.1	180.3	186.1	173.7	179.9	180.4
Total Delay (hr)	80.5	78.5	83.2	73.7	79.3	79.0
Total Stops	6994	7079	7341	6817	7064	7060
Fuel Used (l)	519.3	519.8	531.1	508.0	515.3	518.7

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	1.3	2.8	0.0	0.0	0.4
Total Del/Veh (s)	27.9	15.4	11.8	10.5	14.1

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	88.4	89.4	62.9	74.6	76.1	68.2	70.6
Average Queue (m)	47.5	56.7	27.4	45.4	44.8	36.4	38.1
95th Queue (m)	76.2	81.0	48.4	71.8	69.5	64.0	66.8
Link Distance (m)		385.0		390.3	390.3	267.1	267.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6190	6259	6031	6153	6037	6135
Vehs Exited	6243	6243	6032	6096	6012	6123
Starting Vehs	328	347	297	318	277	313
Ending Vehs	275	363	296	375	302	321
Travel Distance (km)	6464	6513	6284	6379	6304	6389
Travel Time (hr)	326.7	393.8	296.7	378.6	305.2	340.2
Total Delay (hr)	201.0	267.5	175.1	254.8	182.6	216.2
Total Stops	12281	11014	11070	13851	11105	11863
Fuel Used (l)	719.3	791.5	685.4	755.6	689.8	728.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6190	6259	6031	6153	6037	6135
Vehs Exited	6243	6243	6032	6096	6012	6123
Starting Vehs	328	347	297	318	277	313
Ending Vehs	275	363	296	375	302	321
Travel Distance (km)	6464	6513	6284	6379	6304	6389
Travel Time (hr)	326.7	393.8	296.7	378.6	305.2	340.2
Total Delay (hr)	201.0	267.5	175.1	254.8	182.6	216.2
Total Stops	12281	11014	11070	13851	11105	11863
Fuel Used (l)	719.3	791.5	685.4	755.6	689.8	728.3

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	2.4	3.4	0.0	0.0	0.7
Total Del/Veh (s)	25.9	31.7	63.6	13.5	38.9

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	82.6	108.2	111.7	279.1	280.5	83.3	86.6
Average Queue (m)	43.3	55.7	65.4	184.4	183.3	46.2	49.8
95th Queue (m)	72.7	89.2	103.5	325.8	326.3	72.9	76.9
Link Distance (m)		385.0		390.3	390.3	267.1	267.1
Upstream Blk Time (%)				1	1		
Queuing Penalty (veh)				6	6		
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)	0	0	0				
Queuing Penalty (veh)	0	0	2				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4882	4783	4953	4907	5021	4912
Vehs Exited	4886	4823	4922	4909	5029	4913
Starting Vehs	180	190	155	167	167	170
Ending Vehs	176	150	186	165	159	170
Travel Distance (km)	4786	4685	4824	4830	4935	4812
Travel Time (hr)	171.2	165.7	176.9	178.4	184.6	175.4
Total Delay (hr)	77.0	73.5	82.5	83.5	87.6	80.8
Total Stops	6929	6701	7127	7191	7420	7073
Fuel Used (l)	479.4	471.0	489.4	490.4	502.9	486.6

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4882	4783	4953	4907	5021	4912
Vehs Exited	4886	4823	4922	4909	5029	4913
Starting Vehs	180	190	155	167	167	170
Ending Vehs	176	150	186	165	159	170
Travel Distance (km)	4786	4685	4824	4830	4935	4812
Travel Time (hr)	171.2	165.7	176.9	178.4	184.6	175.4
Total Delay (hr)	77.0	73.5	82.5	83.5	87.6	80.8
Total Stops	6929	6701	7127	7191	7420	7073
Fuel Used (l)	479.4	471.0	489.4	490.4	502.9	486.6

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	1.2	2.8	0.0	0.0	0.4
Total Del/Veh (s)	21.0	13.5	11.5	9.0	11.9

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	54.6	63.0	56.8	67.2	78.0	59.4	63.6
Average Queue (m)	23.6	36.7	27.9	34.2	39.7	33.5	34.1
95th Queue (m)	47.0	54.6	46.8	56.4	65.8	54.7	57.4
Link Distance (m)		385.0		390.3	390.3	267.1	267.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4808	4829	4846	4727	4790	4800
Vehs Exited	4801	4840	4828	4751	4833	4809
Starting Vehs	162	158	152	175	190	166
Ending Vehs	169	147	170	151	147	158
Travel Distance (km)	5248	5232	5251	5157	5209	5219
Travel Time (hr)	163.1	161.4	166.0	161.1	165.6	163.4
Total Delay (hr)	63.1	61.6	65.8	62.8	66.4	64.0
Total Stops	6078	5828	6216	5997	6168	6055
Fuel Used (l)	494.6	493.8	498.2	487.7	496.6	494.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4808	4829	4846	4727	4790	4800
Vehs Exited	4801	4840	4828	4751	4833	4809
Starting Vehs	162	158	152	175	190	166
Ending Vehs	169	147	170	151	147	158
Travel Distance (km)	5248	5232	5251	5157	5209	5219
Travel Time (hr)	163.1	161.4	166.0	161.1	165.6	163.4
Total Delay (hr)	63.1	61.6	65.8	62.8	66.4	64.0
Total Stops	6078	5828	6216	5997	6168	6055
Fuel Used (l)	494.6	493.8	498.2	487.7	496.6	494.2

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	2.0	1.8	0.3	0.0	0.6
Total Del/Veh (s)	30.4	26.5	13.9	15.9	19.0

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	71.6	78.9	75.7	97.5	83.2	96.1	100.1
Average Queue (m)	42.8	57.6	46.8	56.7	40.2	53.3	59.3
95th Queue (m)	64.7	73.6	68.2	84.6	73.1	88.0	92.8
Link Distance (m)		432.0		177.2	177.2	417.2	417.2
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)		0	0				
Queuing Penalty (veh)		0	0				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5508	5502	5398	5491	5450	5470
Vehs Exited	5501	5482	5388	5471	5455	5459
Starting Vehs	240	231	239	223	222	231
Ending Vehs	247	251	249	243	217	239
Travel Distance (km)	6305	6330	6164	6279	6316	6279
Travel Time (hr)	234.5	249.1	277.4	285.6	231.7	255.7
Total Delay (hr)	114.1	128.5	159.7	165.7	111.0	135.8
Total Stops	8357	8869	8111	8124	8458	8382
Fuel Used (l)	629.2	645.1	656.1	677.7	627.9	647.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5508	5502	5398	5491	5450	5470
Vehs Exited	5501	5482	5388	5471	5455	5459
Starting Vehs	240	231	239	223	222	231
Ending Vehs	247	251	249	243	217	239
Travel Distance (km)	6305	6330	6164	6279	6316	6279
Travel Time (hr)	234.5	249.1	277.4	285.6	231.7	255.7
Total Delay (hr)	114.1	128.5	159.7	165.7	111.0	135.8
Total Stops	8357	8869	8111	8124	8458	8382
Fuel Used (l)	629.2	645.1	656.1	677.7	627.9	647.2

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	2.0	1.7	0.4	0.0	0.6
Total Del/Veh (s)	27.1	24.7	22.4	23.1	23.6

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	75.2	81.6	78.4	140.4	114.3	131.2	131.5
Average Queue (m)	41.9	56.4	46.5	84.0	66.5	72.1	77.3
95th Queue (m)	64.4	74.1	69.4	125.4	109.6	114.5	117.4
Link Distance (m)		432.0		177.2	177.2	417.2	417.2
Upstream Blk Time (%)				0			
Queuing Penalty (veh)				0			
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)	0	0	0				
Queuing Penalty (veh)	0	0	0				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3757	3765	3785	3756	3757	3763
Vehs Exited	3748	3784	3802	3777	3779	3778
Starting Vehs	112	108	126	126	123	120
Ending Vehs	121	89	109	105	101	102
Travel Distance (km)	4099	4167	4171	4128	4128	4139
Travel Time (hr)	119.3	121.6	119.9	125.3	118.6	120.9
Total Delay (hr)	40.4	41.5	40.0	45.8	39.1	41.4
Total Stops	4593	4606	4613	4719	4501	4606
Fuel Used (l)	377.2	383.8	382.5	384.3	377.3	381.0

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3757	3765	3785	3756	3757	3763
Vehs Exited	3748	3784	3802	3777	3779	3778
Starting Vehs	112	108	126	126	123	120
Ending Vehs	121	89	109	105	101	102
Travel Distance (km)	4099	4167	4171	4128	4128	4139
Travel Time (hr)	119.3	121.6	119.9	125.3	118.6	120.9
Total Delay (hr)	40.4	41.5	40.0	45.8	39.1	41.4
Total Stops	4593	4606	4613	4719	4501	4606
Fuel Used (l)	377.2	383.8	382.5	384.3	377.3	381.0

6: Townline Road & 401 EB Off-Ramp Performance by movement

Movement	EBL	EBR	NBT	SBT	All
Denied Del/Veh (s)	1.5	1.4	0.2	0.0	0.6
Total Del/Veh (s)	23.2	19.0	12.0	14.0	16.1

Intersection: 6: Townline Road & 401 EB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	R	T	T	T	T
Maximum Queue (m)	56.6	69.8	66.6	57.5	50.8	65.3	67.5
Average Queue (m)	34.3	47.5	35.1	34.9	17.0	37.2	42.2
95th Queue (m)	52.6	65.2	59.8	54.1	39.4	60.6	62.9
Link Distance (m)		432.0		177.2	177.2	417.2	417.2
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	87.0		87.0				
Storage Blk Time (%)		0					
Queuing Penalty (veh)		0					

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4808	4829	4846	4727	4790	4800
Vehs Exited	4801	4840	4828	4751	4833	4809
Starting Vehs	162	158	152	175	190	166
Ending Vehs	169	147	170	151	147	158
Travel Distance (km)	5248	5232	5251	5157	5209	5219
Travel Time (hr)	163.1	161.4	166.0	161.1	165.6	163.4
Total Delay (hr)	63.1	61.6	65.8	62.8	66.4	64.0
Total Stops	6078	5828	6216	5997	6168	6055
Fuel Used (l)	494.6	493.8	498.2	487.7	496.6	494.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4808	4829	4846	4727	4790	4800
Vehs Exited	4801	4840	4828	4751	4833	4809
Starting Vehs	162	158	152	175	190	166
Ending Vehs	169	147	170	151	147	158
Travel Distance (km)	5248	5232	5251	5157	5209	5219
Travel Time (hr)	163.1	161.4	166.0	161.1	165.6	163.4
Total Delay (hr)	63.1	61.6	65.8	62.8	66.4	64.0
Total Stops	6078	5828	6216	5997	6168	6055
Fuel Used (l)	494.6	493.8	498.2	487.7	496.6	494.2

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	1.2	2.5	0.0	0.0	0.3
Total Del/Veh (s)	28.3	13.1	11.0	9.9	13.7

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	81.1	88.0	56.1	83.4	78.2	73.0	74.5
Average Queue (m)	45.7	54.9	20.7	42.6	38.2	32.5	33.5
95th Queue (m)	71.2	77.9	39.7	70.4	64.2	60.9	62.3
Link Distance (m)		426.5		417.2	417.2	289.8	289.8
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)		0					
Queuing Penalty (veh)		0					

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5508	5502	5398	5491	5450	5470
Vehs Exited	5501	5482	5388	5471	5455	5459
Starting Vehs	240	231	239	223	222	231
Ending Vehs	247	251	249	243	217	239
Travel Distance (km)	6305	6330	6164	6279	6316	6279
Travel Time (hr)	234.5	249.1	277.4	285.6	231.7	255.7
Total Delay (hr)	114.1	128.5	159.7	165.7	111.0	135.8
Total Stops	8357	8869	8111	8124	8458	8382
Fuel Used (l)	629.2	645.1	656.1	677.7	627.9	647.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5508	5502	5398	5491	5450	5470
Vehs Exited	5501	5482	5388	5471	5455	5459
Starting Vehs	240	231	239	223	222	231
Ending Vehs	247	251	249	243	217	239
Travel Distance (km)	6305	6330	6164	6279	6316	6279
Travel Time (hr)	234.5	249.1	277.4	285.6	231.7	255.7
Total Delay (hr)	114.1	128.5	159.7	165.7	111.0	135.8
Total Stops	8357	8869	8111	8124	8458	8382
Fuel Used (l)	629.2	645.1	656.1	677.7	627.9	647.2

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	1.9	2.9	0.0	0.0	0.6
Total Del/Veh (s)	25.5	26.3	28.3	13.4	23.1

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	71.3	84.3	100.4	147.6	151.6	87.5	90.4
Average Queue (m)	41.2	51.4	52.2	92.7	88.1	41.7	45.0
95th Queue (m)	66.7	74.4	84.6	139.5	136.4	70.7	75.8
Link Distance (m)		426.5		417.2	417.2	289.8	289.8
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3757	3765	3785	3756	3757	3763
Vehs Exited	3748	3784	3802	3777	3779	3778
Starting Vehs	112	108	126	126	123	120
Ending Vehs	121	89	109	105	101	102
Travel Distance (km)	4099	4167	4171	4128	4128	4139
Travel Time (hr)	119.3	121.6	119.9	125.3	118.6	120.9
Total Delay (hr)	40.4	41.5	40.0	45.8	39.1	41.4
Total Stops	4593	4606	4613	4719	4501	4606
Fuel Used (l)	377.2	383.8	382.5	384.3	377.3	381.0

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3757	3765	3785	3756	3757	3763
Vehs Exited	3748	3784	3802	3777	3779	3778
Starting Vehs	112	108	126	126	123	120
Ending Vehs	121	89	109	105	101	102
Travel Distance (km)	4099	4167	4171	4128	4128	4139
Travel Time (hr)	119.3	121.6	119.9	125.3	118.6	120.9
Total Delay (hr)	40.4	41.5	40.0	45.8	39.1	41.4
Total Stops	4593	4606	4613	4719	4501	4606
Fuel Used (l)	377.2	383.8	382.5	384.3	377.3	381.0

5: Townline Road & 401 WB Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	0.8	2.6	0.0	0.0	0.3
Total Del/Veh (s)	21.9	8.4	8.6	7.9	10.6

Intersection: 5: Townline Road & 401 WB Off-Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (m)	52.0	58.8	33.7	54.6	43.7	48.2	54.3
Average Queue (m)	23.2	34.4	15.8	29.4	22.5	23.6	25.5
95th Queue (m)	44.3	51.9	26.9	47.3	39.4	41.4	45.2
Link Distance (m)		426.5		417.2	417.2	289.8	289.8
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	102.0		130.0				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Appendix F

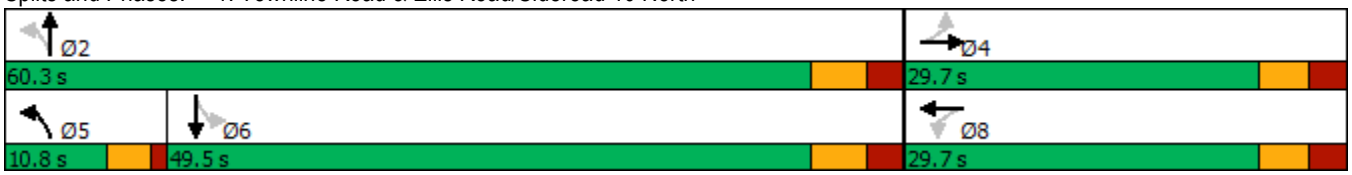
Intersection Improvement Synchro Reports

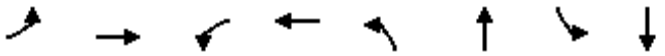
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Future Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.867			0.965			0.987			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1575	0	1603	2940	0	1334	2996	0
Flt Permitted	0.746			0.315			0.278			0.366		
Satd. Flow (perm)	1296	1390	0	553	1575	0	469	2940	0	514	2996	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		257			4			20			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			395.3			185.7			162.4	
Travel Time (s)		9.9			28.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	321	0	48	17	0	140	752	0	4	821	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.7	12.7		12.7	12.7		56.6	54.3		43.6	43.6	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.68		0.55	0.55	
v/c Ratio	0.50	0.73		0.55	0.07		0.33	0.37		0.01	0.50	
Control Delay	38.3	18.0		52.7	23.4		6.7	6.6		10.8	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.3	18.0		52.7	23.4		6.7	6.6		10.8	13.3	
LOS	D	B		D	C		A	A		B	B	
Approach Delay		23.0			45.0			6.6			13.3	
Approach LOS		C			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 13.4		Intersection LOS: B	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

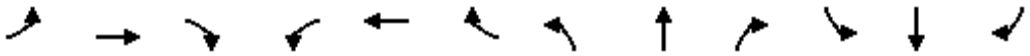
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	321	48	17	140	752	4	821
v/c Ratio	0.50	0.73	0.55	0.07	0.33	0.37	0.01	0.50
Control Delay	38.3	18.0	52.7	23.4	6.7	6.6	10.8	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	18.0	52.7	23.4	6.7	6.6	10.8	13.3
Queue Length 50th (m)	14.4	8.6	6.7	1.7	5.0	19.3	0.2	35.6
Queue Length 95th (m)	28.3	33.2	17.1	6.6	16.0	43.4	2.0	67.2
Internal Link Dist (m)		113.8		371.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	388	597	165	475	431	2016	282	1649
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.54	0.29	0.04	0.32	0.37	0.01	0.50

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Future Volume (vph)	104	36	285	48	13	4	140	685	67	4	786	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1574		1603	2939		1334	2994	
Flt Permitted	0.75	1.00		0.31	1.00		0.28	1.00		0.37	1.00	
Satd. Flow (perm)	1297	1390		553	1574		469	2939		514	2994	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	36	285	48	13	4	140	685	67	4	786	35
RTOR Reduction (vph)	0	216	0	0	3	0	0	6	0	0	3	0
Lane Group Flow (vph)	104	105	0	48	14	0	140	746	0	4	818	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.7	12.7		12.7	12.7		54.3	54.3		43.7	43.7	
Effective Green, g (s)	12.7	12.7		12.7	12.7		54.3	54.3		43.7	43.7	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68	0.68		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	207	222		88	252		415	2012		283	1649	
v/s Ratio Prot		0.08			0.01		0.03	c0.25			c0.27	
v/s Ratio Perm	0.08			c0.09			0.20			0.01		
v/c Ratio	0.50	0.47		0.55	0.05		0.34	0.37		0.01	0.50	
Uniform Delay, d1	30.4	30.3		30.6	28.2		5.0	5.3		8.1	11.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	1.6		6.7	0.1		0.5	0.5		0.1	1.1	
Delay (s)	32.3	31.9		37.4	28.3		5.5	5.8		8.1	12.1	
Level of Service	C	C		D	C		A	A		A	B	
Approach Delay (s)		32.0			35.0			5.8			12.0	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	4	887	35	47	1070
Future Volume (vph)	10	4	887	35	47	1070
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.994			
Flt Protected	0.950					0.998
Satd. Flow (prot)	921	1484	3251	0	0	3496
Flt Permitted	0.950					0.998
Satd. Flow (perm)	921	1484	3251	0	0	3496
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		327.9			185.7
Travel Time (s)	7.5		19.7			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	80%	0%	2%	1%	0%	2%
Adj. Flow (vph)	10	4	887	35	47	1070
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	4	922	0	0	1117
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

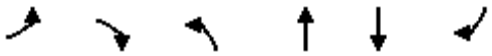
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	4	887	35	47	1070
Future Volume (Veh/h)	10	4	887	35	47	1070
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	4	887	35	47	1070
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			328			186
pX, platoon unblocked	0.91	0.89			0.89	
vC, conflicting volume	1534	461			922	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	853	145			664	
tC, single (s)	8.4	6.9			4.1	
tC, 2 stage (s)						
tF (s)	4.3	3.3			2.2	
p0 queue free %	94	99			94	
cM capacity (veh/h)	157	784			831	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	10	4	591	331	404	713
Volume Left	10	0	0	0	47	0
Volume Right	0	4	0	35	0	0
cSH	157	784	1700	1700	831	1700
Volume to Capacity	0.06	0.01	0.35	0.19	0.06	0.42
Queue Length 95th (m)	1.5	0.1	0.0	0.0	1.4	0.0
Control Delay (s)	29.4	9.6	0.0	0.0	1.7	0.0
Lane LOS	D	A			A	
Approach Delay (s)	23.8		0.0		0.6	
Approach LOS	C					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

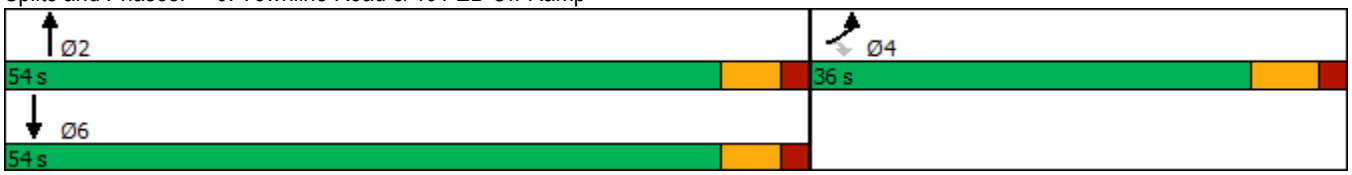


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	528	548	0	1056	1304	0
Future Volume (vph)	528	548	0	1056	1304	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.958	0.850				
Flt Protected	0.965					
Satd. Flow (prot)	3027	1287	0	3433	3336	0
Flt Permitted	0.965					
Satd. Flow (perm)	3027	1287	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41	41				
Link Speed (k/h)	50			60	60	
Link Distance (m)	407.3			183.2	399.0	
Travel Time (s)	29.3			11.0	23.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	528	548	0	1056	1304	0
Shared Lane Traffic (%)		38%				
Lane Group Flow (vph)	736	340	0	1056	1304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	25.2	25.2		48.1	48.1	
Actuated g/C Ratio	0.29	0.29		0.56	0.56	
v/c Ratio	0.80	0.84		0.55	0.70	
Control Delay	33.7	43.8		14.0	17.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	33.7	43.8		14.0	17.0	
LOS	C	D		B	B	
Approach Delay	36.9			14.0	17.0	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 85.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

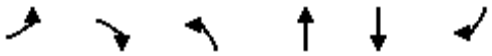




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	736	340	1056	1304
v/c Ratio	0.80	0.84	0.55	0.70
Control Delay	33.7	43.8	14.0	17.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.7	43.8	14.0	17.0
Queue Length 50th (m)	54.1	50.6	59.1	82.7
Queue Length 95th (m)	74.0	#96.0	79.2	110.7
Internal Link Dist (m)	383.3		159.2	375.0
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1069	469	1923	1869
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	0.69	0.72	0.55	0.70

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	528	548	0	1056	1304	0
Future Volume (vph)	528	548	0	1056	1304	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.96	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3027	1287		3433	3336	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3027	1287		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	528	548	0	1056	1304	0
RTOR Reduction (vph)	29	29	0	0	0	0
Lane Group Flow (vph)	707	311	0	1056	1304	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.2	25.2		48.2	48.2	
Effective Green, g (s)	25.2	25.2		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.56	0.56	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	888	377		1926	1871	
v/s Ratio Prot	0.23			0.31	c0.39	
v/s Ratio Perm		c0.24				
v/c Ratio	0.80	0.83		0.55	0.70	
Uniform Delay, d1	28.0	28.3		11.9	13.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	13.7		1.1	2.2	
Delay (s)	33.0	42.0		13.1	15.8	
Level of Service	C	D		B	B	
Approach Delay (s)	35.8			13.1	15.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	85.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

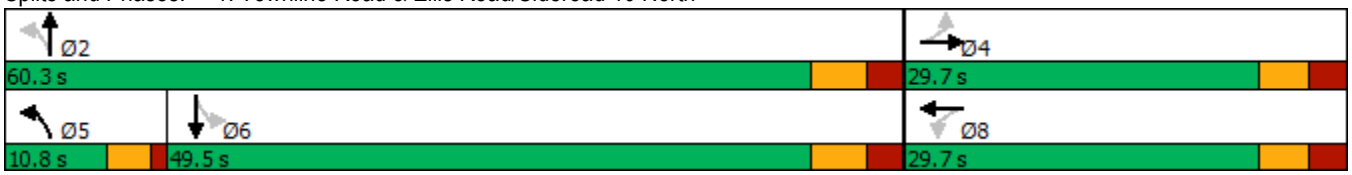
c Critical Lane Group

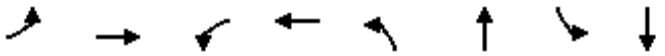
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Future Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.867			0.965			0.988			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1390	0	1668	1575	0	1603	2943	0	1334	2993	0
Flt Permitted	0.746			0.323			0.285			0.373		
Satd. Flow (perm)	1296	1390	0	567	1575	0	481	2943	0	524	2993	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		262			4			19			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			416.0			175.2			162.4	
Travel Time (s)		9.9			30.0			10.5			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Adj. Flow (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	314	0	42	17	0	134	733	0	4	806	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	29.7	29.7		29.7	29.7		9.0	49.5		49.5	49.5	
Total Split (s)	29.7	29.7		29.7	29.7		10.8	60.3		49.5	49.5	
Total Split (%)	33.0%	33.0%		33.0%	33.0%		12.0%	67.0%		55.0%	55.0%	
Maximum Green (s)	23.7	23.7		23.7	23.7		6.8	54.0		43.2	43.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			35.2		35.2	35.2	
Flash Dont Walk (s)	13.7	13.7		13.7	13.7			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	12.4	12.4		12.4	12.4		56.5	54.2		43.6	43.6	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69		0.55	0.55	
v/c Ratio	0.51	0.72		0.48	0.07		0.31	0.36		0.01	0.49	
Control Delay	39.2	16.8		47.7	23.6		6.2	6.2		10.5	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	39.2	16.8		47.7	23.6		6.2	6.2		10.5	12.8	
LOS	D	B		D	C		A	A		B	B	
Approach Delay		22.3			40.8			6.2			12.8	
Approach LOS		C			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

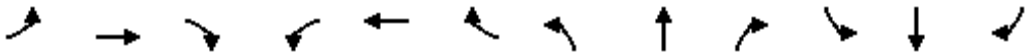
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	314	42	17	134	733	4	806
v/c Ratio	0.51	0.72	0.48	0.07	0.31	0.36	0.01	0.49
Control Delay	39.2	16.8	47.7	23.6	6.2	6.2	10.5	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	16.8	47.7	23.6	6.2	6.2	10.5	12.8
Queue Length 50th (m)	14.4	6.9	5.8	1.7	4.8	18.6	0.2	34.7
Queue Length 95th (m)	28.5	30.8	15.3	6.7	14.1	39.3	1.9	62.4
Internal Link Dist (m)		113.8		392.0		151.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	390	602	171	477	441	2027	289	1656
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.52	0.25	0.04	0.30	0.36	0.01	0.49

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Future Volume (vph)	104	36	278	42	13	4	134	672	61	4	771	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.96		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1390		1668	1574		1603	2941		1334	2994	
Flt Permitted	0.75	1.00		0.32	1.00		0.28	1.00		0.37	1.00	
Satd. Flow (perm)	1297	1390		566	1574		480	2941		524	2994	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	36	278	42	13	4	134	672	61	4	771	35
RTOR Reduction (vph)	0	221	0	0	3	0	0	6	0	0	3	0
Lane Group Flow (vph)	104	93	0	42	14	0	134	727	0	4	803	0
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	4%	4%	5%	25%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		54.2	54.2		43.6	43.6	
Effective Green, g (s)	12.4	12.4		12.4	12.4		54.2	54.2		43.6	43.6	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.69	0.69		0.55	0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	218		88	247		423	2020		289	1654	
v/s Ratio Prot		0.07			0.01		0.03	c0.25			c0.27	
v/s Ratio Perm	c0.08			0.07			0.19			0.01		
v/c Ratio	0.51	0.43		0.48	0.06		0.32	0.36		0.01	0.49	
Uniform Delay, d1	30.5	30.0		30.3	28.3		4.8	5.1		8.0	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	1.3		4.0	0.1		0.4	0.5		0.1	1.0	
Delay (s)	32.7	31.4		34.3	28.4		5.3	5.6		8.0	11.8	
Level of Service	C	C		C	C		A	A		A	B	
Approach Delay (s)		31.7			32.6			5.6			11.8	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.3
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	9	857	58	30	1060
Future Volume (vph)	16	9	857	58	30	1060
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.990			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1063	1484	3207	0	0	3498
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1063	1484	3207	0	0	3498
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		371.7			175.2
Travel Time (s)	7.5		22.3			10.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	56%	0%	2%	17%	0%	2%
Adj. Flow (vph)	16	9	857	58	30	1060
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	9	915	0	0	1090
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	9	857	58	30	1060
Future Volume (Veh/h)	16	9	857	58	30	1060
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	9	857	58	30	1060
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			372			175
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1476	458			915	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	867	198			703	
tC, single (s)	7.9	6.9			4.1	
tC, 2 stage (s)						
tF (s)	4.1	3.3			2.2	
p0 queue free %	91	99			96	
cM capacity (veh/h)	181	740			821	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	16	9	571	344	383	707
Volume Left	16	0	0	0	30	0
Volume Right	0	9	0	58	0	0
cSH	181	740	1700	1700	821	1700
Volume to Capacity	0.09	0.01	0.34	0.20	0.04	0.42
Queue Length 95th (m)	2.2	0.3	0.0	0.0	0.9	0.0
Control Delay (s)	26.8	9.9	0.0	0.0	1.2	0.0
Lane LOS	D	A			A	
Approach Delay (s)	20.7		0.0		0.4	
Approach LOS	C					

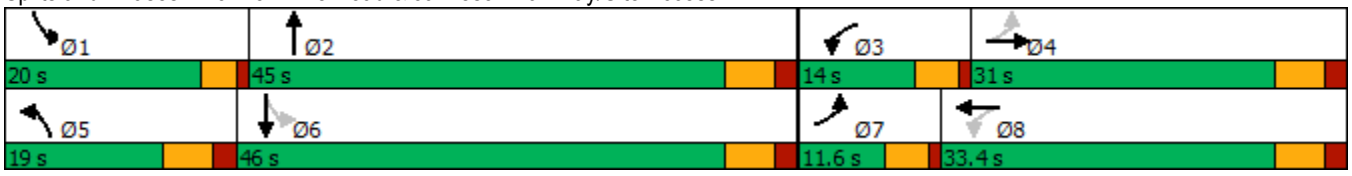
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

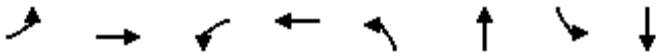
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Future Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor							1.00				1.00	
Frt		0.850			0.896			0.979			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1313	1462	0	3203	3175	0	1668	3143	0
Flt Permitted	0.488						0.950			0.332		
Satd. Flow (perm)	840	1347	0	1382	1462	0	3202	3175	0	583	3143	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		385			9			18			27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		491.2			135.6			307.1			371.7	
Travel Time (s)		35.4			9.8			18.4			22.3	
Confl. Peds. (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	2%	8%	0%	3%	3%
Adj. Flow (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	357	0	33	13	0	359	853	0	29	1063	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	41.0		9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4		19.0	45.0		20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%		17.3%	40.9%		18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4		13.0	39.0		16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.0	10.3		11.4	10.4		13.2	55.8		48.7	40.5	
Actuated g/C Ratio	0.20	0.12		0.13	0.12		0.15	0.62		0.54	0.45	
v/c Ratio	0.56	0.72		0.19	0.07		0.76	0.43		0.07	0.74	
Control Delay	38.6	12.1		35.3	24.3		50.4	12.3		8.3	25.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.6	12.1		35.3	24.3		50.4	12.3		8.3	25.5	
LOS	D	B		D	C		D	B		A	C	
Approach Delay		20.5			32.2			23.6			25.0	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 89.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 87.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

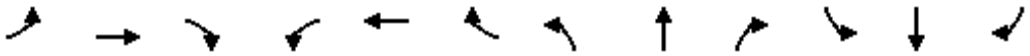




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	357	33	13	359	853	29	1063
v/c Ratio	0.56	0.72	0.19	0.07	0.76	0.43	0.07	0.74
Control Delay	38.6	12.1	35.3	24.3	50.4	12.3	8.3	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	12.1	35.3	24.3	50.4	12.3	8.3	25.5
Queue Length 50th (m)	24.9	0.0	5.6	0.7	31.8	33.0	1.5	78.3
Queue Length 95th (m)	42.1	18.8	11.4	5.6	#62.6	82.2	5.9	#131.2
Internal Link Dist (m)		467.2		111.6		283.1		347.7
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	297	656	201	458	470	1985	578	1435
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.54	0.16	0.03	0.76	0.43	0.05	0.74

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)	167	0	357	33	4	9	359	735	118	29	872	191
Future Volume (vph)	167	0	357	33	4	9	359	735	118	29	872	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.90		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1635	1347		1313	1462		3203	3176		1668	3143	
Flt Permitted	0.49	1.00		1.00	1.00		0.95	1.00		0.33	1.00	
Satd. Flow (perm)	839	1347		1382	1462		3203	3176		582	3143	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	167	0	357	33	4	9	359	735	118	29	872	191
RTOR Reduction (vph)	0	308	0	0	9	0	0	8	0	0	15	0
Lane Group Flow (vph)	167	49	0	33	4	0	359	845	0	29	1048	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	27%	0%	0%	1%	2%	8%	0%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	22.7	13.4		8.5	3.7		13.1	55.7		45.6	43.1	
Effective Green, g (s)	22.7	13.4		8.5	3.7		13.1	55.7		45.6	43.1	
Actuated g/C Ratio	0.23	0.14		0.09	0.04		0.14	0.57		0.47	0.44	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	186		117	55		433	1825		301	1397	
v/s Ratio Prot	c0.08	0.04		0.01	0.00		c0.11	0.27		0.00	c0.33	
v/s Ratio Perm	c0.04			0.01						0.04		
v/c Ratio	0.53	0.27		0.28	0.08		0.83	0.46		0.10	0.75	
Uniform Delay, d1	31.7	37.3		41.4	45.0		40.8	11.9		13.8	22.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.8		1.3	0.6		12.4	0.8		0.1	3.7	
Delay (s)	33.5	38.1		42.7	45.6		53.2	12.8		14.0	26.2	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s)		36.6			43.5			24.8			25.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	22.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

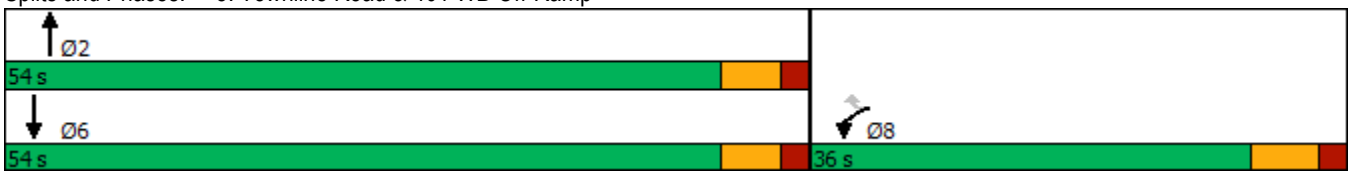


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	208	1022	0	0	853
Future Volume (vph)	605	208	1022	0	0	853
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2863	1375	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2863	1375	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		85				
Link Speed (k/h)	50		60			60
Link Distance (m)	440.2		426.1			307.1
Travel Time (s)	31.7		25.6			18.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Adj. Flow (vph)	605	208	1022	0	0	853
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	208	1022	0	0	853
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	54.0			54.0
Total Split (s)	36.0	36.0	54.0			54.0
Total Split (%)	40.0%	40.0%	60.0%			60.0%
Maximum Green (s)	29.5	29.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.78	0.48	0.51			0.42
Control Delay	35.4	18.2	12.3			11.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	35.4	18.2	12.3			11.3
LOS	D	B	B			B
Approach Delay	31.0		12.3			11.3
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	605	208	1022	853
v/c Ratio	0.78	0.48	0.51	0.42
Control Delay	35.4	18.2	12.3	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.4	18.2	12.3	11.3
Queue Length 50th (m)	45.5	15.6	47.8	37.4
Queue Length 95th (m)	63.0	34.3	74.8	59.2
Internal Link Dist (m)	416.2		402.1	283.1
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1016	542	2021	2021
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	0.60	0.38	0.51	0.42

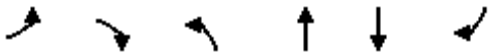
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	208	1022	0	0	853
Future Volume (vph)	605	208	1022	0	0	853
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2863	1375	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2863	1375	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	605	208	1022	0	0	853
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	605	146	1022	0	0	853
Heavy Vehicles (%)	13%	7%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	22.7	22.7	48.2			48.2
Effective Green, g (s)	22.7	22.7	48.2			48.2
Actuated g/C Ratio	0.27	0.27	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	779	374	2022			2022
v/s Ratio Prot	c0.21		c0.29			0.24
v/s Ratio Perm		0.11				
v/c Ratio	0.78	0.39	0.51			0.42
Uniform Delay, d1	28.0	24.7	10.5			9.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.9	0.7	0.9			0.6
Delay (s)	32.9	25.4	11.4			10.5
Level of Service	C	C	B			B
Approach Delay (s)	31.0		11.4			10.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

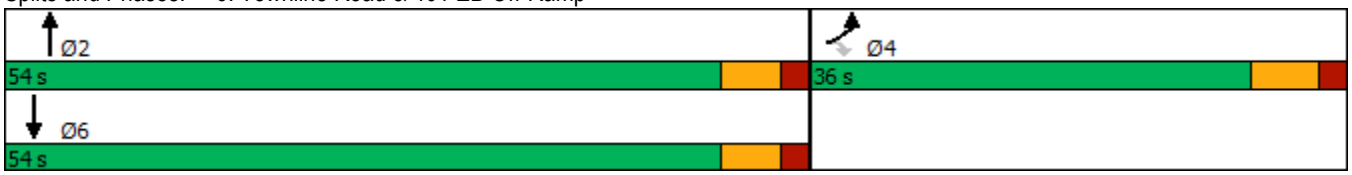


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	492	548	0	1026	1279	0
Future Volume (vph)	492	548	0	1026	1279	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.954	0.850				
Flt Protected	0.967					
Satd. Flow (prot)	3021	1287	0	3433	3336	0
Flt Permitted	0.967					
Satd. Flow (perm)	3021	1287	0	3433	3336	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	43	43				
Link Speed (k/h)	50			60	60	
Link Distance (m)	441.6			186.4	426.1	
Travel Time (s)	31.8			11.2	25.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Adj. Flow (vph)	492	548	0	1026	1279	0
Shared Lane Traffic (%)		40%				
Lane Group Flow (vph)	711	329	0	1026	1279	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	36.0	36.0		54.0	54.0	
Total Split (s)	36.0	36.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	29.5	29.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	24.7	24.7		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.56	0.56	
v/c Ratio	0.79	0.82		0.53	0.68	
Control Delay	33.0	41.8		13.5	16.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	33.0	41.8		13.5	16.3	
LOS	C	D		B	B	
Approach Delay	35.8			13.5	16.3	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 85.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Townline Road & 401 EB Off-Ramp

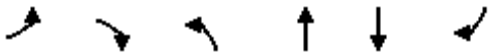




Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	711	329	1026	1279
v/c Ratio	0.79	0.82	0.53	0.68
Control Delay	33.0	41.8	13.5	16.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.0	41.8	13.5	16.3
Queue Length 50th (m)	51.4	47.8	54.3	76.9
Queue Length 95th (m)	70.7	#90.2	76.0	107.4
Internal Link Dist (m)	417.6		162.4	402.1
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1075	474	1937	1882
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	0.66	0.69	0.53	0.68

Intersection Summary

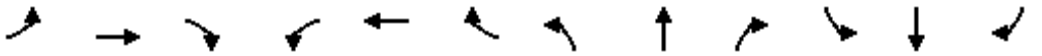
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	492	548	0	1026	1279	0
Future Volume (vph)	492	548	0	1026	1279	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.95	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3019	1287		3433	3336	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3019	1287		3433	3336	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	548	0	1026	1279	0
RTOR Reduction (vph)	31	31	0	0	0	0
Lane Group Flow (vph)	680	298	0	1026	1279	0
Heavy Vehicles (%)	4%	4%	0%	4%	7%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	24.6	24.6		48.2	48.2	
Effective Green, g (s)	24.6	24.6		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.57	0.57	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	870	371		1939	1885	
v/s Ratio Prot	0.23			0.30	c0.38	
v/s Ratio Perm		c0.23				
v/c Ratio	0.78	0.80		0.53	0.68	
Uniform Delay, d1	27.9	28.1		11.5	13.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	11.9		1.0	2.0	
Delay (s)	32.5	40.1		12.5	15.1	
Level of Service	C	D		B	B	
Approach Delay (s)	34.9			12.5	15.1	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

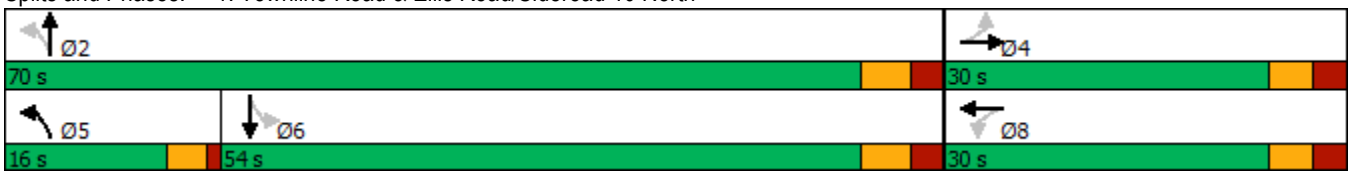


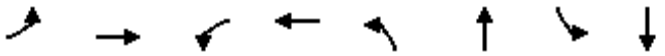
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Future Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.868			0.969			0.990			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	3041	0	1668	2942	0
Flt Permitted	0.719			0.459			0.315			0.240		
Satd. Flow (perm)	1262	1392	0	790	1581	0	553	3041	0	421	2942	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		188			12			14			17	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			395.3			185.7			162.4	
Travel Time (s)		9.9			28.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	213	0	107	59	0	437	1177	0	10	706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	15.9	15.9		15.9	15.9		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.72	0.69		0.52	0.52	
v/c Ratio	0.23	0.54		0.79	0.21		0.81	0.56		0.05	0.46	
Control Delay	34.3	12.4		72.6	28.1		20.7	9.0		14.0	15.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.3	12.4		72.6	28.1		20.7	9.0		14.0	15.7	
LOS	C	B		E	C		C	A		B	B	
Approach Delay		16.5			56.8			12.2			15.7	
Approach LOS		B			E			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.2			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 88.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

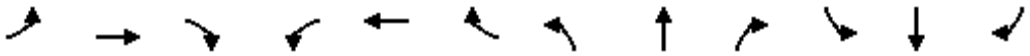




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	213	107	59	437	1177	10	706
v/c Ratio	0.23	0.54	0.79	0.21	0.81	0.56	0.05	0.46
Control Delay	34.3	12.4	72.6	28.1	20.7	9.0	14.0	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	12.4	72.6	28.1	20.7	9.0	14.0	15.7
Queue Length 50th (m)	7.5	3.8	18.3	7.2	25.3	47.3	0.8	38.6
Queue Length 95th (m)	17.1	22.5	36.5	17.5	#73.9	82.4	4.0	62.2
Internal Link Dist (m)		113.8		371.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	329	502	206	422	542	2113	218	1535
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.42	0.52	0.14	0.81	0.56	0.05	0.46

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)	49	25	188	107	47	12	437	1099	78	10	634	72
Future Volume (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1391		1635	1582		1668	3041		1668	2941	
Flt Permitted	0.72	1.00		0.46	1.00		0.32	1.00		0.24	1.00	
Satd. Flow (perm)	1261	1391		789	1582		553	3041		422	2941	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	25	188	107	47	12	437	1099	78	10	634	72
RTOR Reduction (vph)	0	156	0	0	10	0	0	4	0	0	8	0
Lane Group Flow (vph)	49	57	0	107	49	0	437	1173	0	10	698	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.9	15.9		15.9	15.9		63.9	63.9		47.9	47.9	
Effective Green, g (s)	15.9	15.9		15.9	15.9		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.69	0.69		0.52	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	240		136	273		528	2109		219	1529	
v/s Ratio Prot		0.04			0.03		c0.11	0.39			0.24	
v/s Ratio Perm	0.04			c0.14			c0.47			0.02		
v/c Ratio	0.23	0.24		0.79	0.18		0.83	0.56		0.05	0.46	
Uniform Delay, d1	32.8	32.9		36.5	32.5		7.2	7.0		10.9	13.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		25.2	0.3		10.3	1.1		0.4	1.0	
Delay (s)	33.3	33.4		61.7	32.8		17.5	8.1		11.3	14.9	
Level of Service	C	C		E	C		B	A		B	B	
Approach Delay (s)		33.4			51.4			10.6			14.8	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	16.3
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	10	1604	12	18	911
Future Volume (vph)	29	10	1604	12	18	911
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.999			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1306	1484	3245	0	0	3498
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1306	1484	3245	0	0	3498
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		327.9			185.7
Travel Time (s)	7.5		19.7			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	27%	0%	2%	92%	0%	2%
Adj. Flow (vph)	29	10	1604	12	18	911
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	10	1616	0	0	929
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	10	1604	12	18	911
Future Volume (Veh/h)	29	10	1604	12	18	911
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	10	1604	12	18	911
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			328			186
pX, platoon unblocked	0.78	0.73			0.73	
vC, conflicting volume	2102	808			1616	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1202	0			1095	
tC, single (s)	7.3	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	73	99			96	
cM capacity (veh/h)	109	793			468	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	29	10	1069	547	322	607
Volume Left	29	0	0	0	18	0
Volume Right	0	10	0	12	0	0
cSH	109	793	1700	1700	468	1700
Volume to Capacity	0.27	0.01	0.63	0.32	0.04	0.36
Queue Length 95th (m)	7.5	0.3	0.0	0.0	0.9	0.0
Control Delay (s)	49.6	9.6	0.0	0.0	1.3	0.0
Lane LOS	E	A			A	
Approach Delay (s)	39.3		0.0		0.5	
Approach LOS	E					

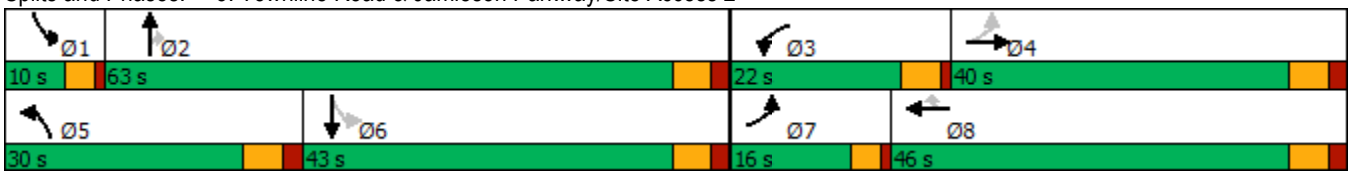
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Future Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		35.0	115.0		0.0
Storage Lanes	1		0	2		1	2		1	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt		0.860				0.850			0.850		0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1403	0	3203	1632	1387	3203	3302	1477	1668	3120	0
Flt Permitted	0.697			0.950			0.950			0.202		
Satd. Flow (perm)	1223	1403	0	3203	1632	1387	3203	3302	1477	355	3120	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		342				172			169		23	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		532.7			135.6			285.8			327.9	
Travel Time (s)		38.4			9.8			17.1			19.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Adj. Flow (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	489	0	404	93	187	488	1120	385	148	776	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4					8			2	6		
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		4.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0	31.0	11.0	50.4	50.4	9.0	41.0	
Total Split (s)	16.0	40.0		22.0	46.0	46.0	30.0	63.0	63.0	10.0	43.0	
Total Split (%)	11.9%	29.6%		16.3%	34.1%	34.1%	22.2%	46.7%	46.7%	7.4%	31.9%	
Maximum Green (s)	12.0	34.0		17.0	40.0	40.0	24.0	57.0	57.0	6.0	37.0	
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0		5.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0	7.0		14.0	14.0		14.0	
Flash Dont Walk (s)		18.0			18.0	18.0		21.0	21.0		21.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effct Green (s)	35.9	21.8		17.1	27.9	27.9	22.0	57.4	57.4	47.5	39.4	
Actuated g/C Ratio	0.29	0.18		0.14	0.23	0.23	0.18	0.46	0.46	0.38	0.32	
v/c Ratio	0.68	0.92		0.91	0.25	0.42	0.86	0.73	0.50	0.74	0.77	
Control Delay	40.3	39.1		79.0	39.6	9.7	65.4	31.9	16.0	45.9	44.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.3	39.1		79.0	39.6	9.7	65.4	31.9	16.0	45.9	44.7	
LOS	D	D		E	D	A	E	C	B	D	D	
Approach Delay		39.5			54.7			37.0			44.9	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 123.5			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 41.9		Intersection LOS: D	
Intersection Capacity Utilization 106.2%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

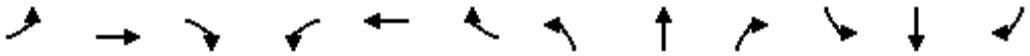




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	270	489	404	93	187	488	1120	385	148	776
v/c Ratio	0.68	0.92	0.91	0.25	0.42	0.86	0.73	0.50	0.74	0.77
Control Delay	40.3	39.1	79.0	39.6	9.7	65.4	31.9	16.0	45.9	44.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	39.1	79.0	39.6	9.7	65.4	31.9	16.0	45.9	44.7
Queue Length 50th (m)	48.3	38.6	50.8	18.5	2.8	58.9	115.1	34.8	16.8	90.1
Queue Length 95th (m)	71.0	87.0	#90.2	32.9	21.0	#92.2	163.8	72.0	#47.9	#136.3
Internal Link Dist (m)		508.7		111.6			261.8			303.9
Turn Bay Length (m)	45.0		45.0			115.0		35.0	115.0	
Base Capacity (vph)	399	636	443	532	568	626	1534	776	200	1011
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.77	0.91	0.17	0.33	0.78	0.73	0.50	0.74	0.77

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)	270	32	457	404	93	187	488	1120	385	148	618	158
Future Volume (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		5.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	1403		3203	1632	1387	3203	3302	1477	1668	3121	
Flt Permitted	0.70	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	1223	1403		3203	1632	1387	3203	3302	1477	354	3121	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	32	457	404	93	187	488	1120	385	148	618	158
RTOR Reduction (vph)	0	281	0	0	0	133	0	0	90	0	16	0
Lane Group Flow (vph)	270	208	0	404	93	54	488	1120	295	148	760	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	4%	2%
Turn Type	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4					8			2	6		
Actuated Green, G (s)	34.0	21.9		17.1	27.9	27.9	22.0	57.4	57.4	45.4	39.4	
Effective Green, g (s)	34.0	21.9		17.1	27.9	27.9	22.0	57.4	57.4	45.4	39.4	
Actuated g/C Ratio	0.28	0.18		0.14	0.23	0.23	0.18	0.47	0.47	0.37	0.32	
Clearance Time (s)	4.0	6.0		5.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	380	248		443	368	313	571	1535	687	194	996	
v/s Ratio Prot	0.07	c0.15		c0.13	0.06		c0.15	c0.34		0.04	0.24	
v/s Ratio Perm	0.13					0.04			0.20	0.24		
v/c Ratio	0.71	0.84		0.91	0.25	0.17	0.85	0.73	0.43	0.76	0.76	
Uniform Delay, d1	38.9	49.0		52.4	39.2	38.5	49.1	26.7	22.0	29.5	37.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.2	21.1		22.9	0.4	0.3	11.9	3.1	2.0	16.2	5.5	
Delay (s)	45.1	70.2		75.3	39.6	38.7	61.1	29.8	24.0	45.7	43.3	
Level of Service	D	E		E	D	D	E	C	C	D	D	
Approach Delay (s)		61.2			60.4			36.3			43.7	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	123.4	Sum of lost time (s)	23.0
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

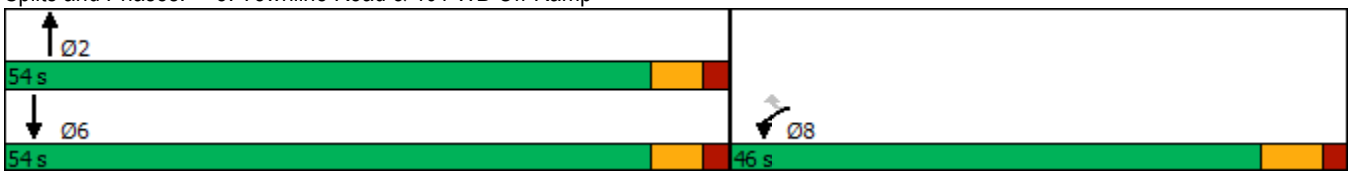


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	469	1639	0	0	1004
Future Volume (vph)	607	469	1639	0	0	1004
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		10				
Link Speed (k/h)	50		60			60
Link Distance (m)	398.5		399.0			285.8
Travel Time (s)	28.7		23.9			17.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	607	469	1639	0	0	1004
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	469	1639	0	0	1004
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	33.9	33.9	48.3			48.3
Actuated g/C Ratio	0.36	0.36	0.51			0.51
v/c Ratio	0.58	0.89	0.92			0.56
Control Delay	26.7	48.3	32.6			18.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.7	48.3	32.6			18.5
LOS	C	D	C			B
Approach Delay	36.1		32.6			18.5
Approach LOS	D		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 94.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 29.8		Intersection LOS: C	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	607	469	1639	1004
v/c Ratio	0.58	0.89	0.92	0.56
Control Delay	26.7	48.3	32.6	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	48.3	32.6	18.5
Queue Length 50th (m)	45.4	77.8	152.6	69.7
Queue Length 95th (m)	61.3	#130.6	#212.3	91.7
Internal Link Dist (m)	374.5		375.0	261.8
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1233	616	1784	1784
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	0.76	0.92	0.56

Intersection Summary

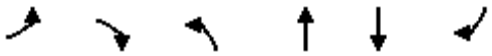
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	469	1639	0	0	1004
Future Volume (vph)	607	469	1639	0	0	1004
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	607	469	1639	0	0	1004
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	607	463	1639	0	0	1004
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	33.8	33.8	48.2			48.2
Effective Green, g (s)	33.8	33.8	48.2			48.2
Actuated g/C Ratio	0.36	0.36	0.51			0.51
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1051	520	1785			1785
v/s Ratio Prot	0.21		c0.47			0.29
v/s Ratio Perm		c0.32				
v/c Ratio	0.58	0.89	0.92			0.56
Uniform Delay, d1	24.6	28.6	21.3			15.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	16.8	9.1			1.3
Delay (s)	25.3	45.4	30.4			17.2
Level of Service	C	D	C			B
Approach Delay (s)	34.1		30.4			17.2
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

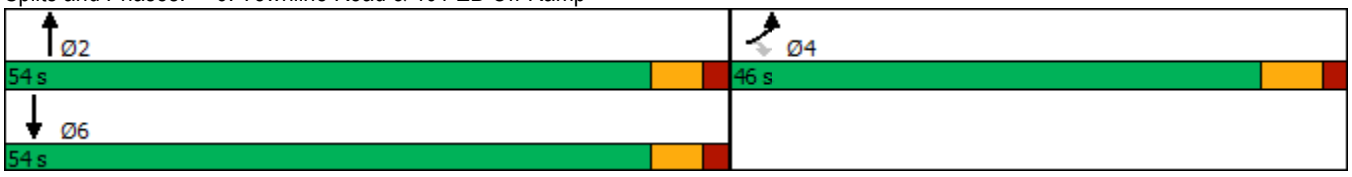


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	569	548	0	1360	1429	0
Future Volume (vph)	569	548	0	1360	1429	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.961	0.850				
Flt Protected	0.964					
Satd. Flow (prot)	3070	1312	0	3535	3400	0
Flt Permitted	0.964					
Satd. Flow (perm)	3070	1312	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	19	19				
Link Speed (k/h)	50			60	60	
Link Distance (m)	407.3			183.2	399.0	
Travel Time (s)	29.3			11.0	23.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	569	548	0	1360	1429	0
Shared Lane Traffic (%)		36%				
Lane Group Flow (vph)	766	351	0	1360	1429	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	29.2	29.2		48.3	48.3	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.76	0.80		0.72	0.78	
Control Delay	31.6	40.5		19.8	22.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	31.6	40.5		19.8	22.2	
LOS	C	D		B	C	
Approach Delay	34.4			19.8	22.2	
Approach LOS	C			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

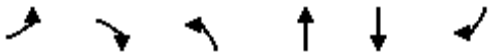
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	766	351	1360	1429
v/c Ratio	0.76	0.80	0.72	0.78
Control Delay	31.6	40.5	19.8	22.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.6	40.5	19.8	22.2
Queue Length 50th (m)	58.9	57.0	87.7	97.8
Queue Length 95th (m)	77.9	92.0	141.4	158.6
Internal Link Dist (m)	383.3		159.2	375.0
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1365	589	1895	1822
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	0.56	0.60	0.72	0.78

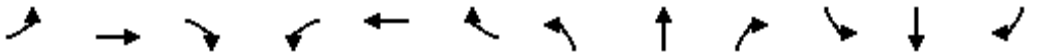
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	569	548	0	1360	1429	0
Future Volume (vph)	569	548	0	1360	1429	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.96	0.85		1.00	1.00	
Flt Protected	0.96	1.00		1.00	1.00	
Satd. Flow (prot)	3072	1312		3535	3400	
Flt Permitted	0.96	1.00		1.00	1.00	
Satd. Flow (perm)	3072	1312		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	569	548	0	1360	1429	0
RTOR Reduction (vph)	13	13	0	0	0	0
Lane Group Flow (vph)	753	338	0	1360	1429	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	29.2	29.2		48.3	48.3	
Effective Green, g (s)	29.2	29.2		48.3	48.3	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	996	425		1897	1824	
v/s Ratio Prot	0.25			0.38	c0.42	
v/s Ratio Perm		c0.26				
v/c Ratio	0.76	0.80		0.72	0.78	
Uniform Delay, d1	27.2	27.7		15.7	16.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	9.9		2.4	3.4	
Delay (s)	30.5	37.6		18.1	20.1	
Level of Service	C	D		B	C	
Approach Delay (s)	32.8			18.1	20.1	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

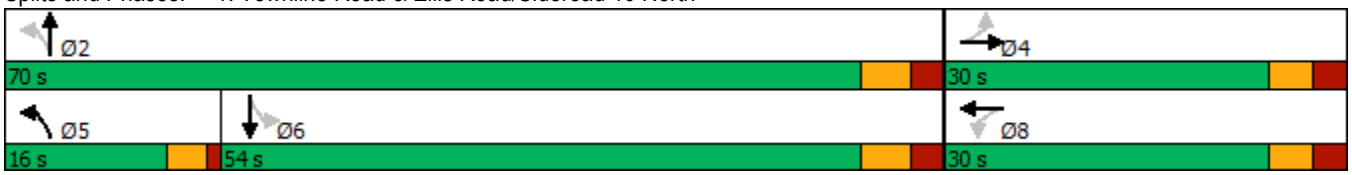


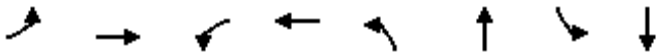
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Future Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.869			0.969			0.991			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1394	0	1635	1581	0	1668	3044	0	1668	2939	0
Flt Permitted	0.719			0.486			0.333			0.250		
Satd. Flow (perm)	1262	1394	0	836	1581	0	585	3044	0	439	2939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		172			12			12			17	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			416.0			175.2			162.4	
Travel Time (s)		9.9			30.0			10.5			9.7	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Adj. Flow (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	197	0	93	59	0	422	1136	0	10	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	30.0	30.0		30.0	30.0		9.0	54.0		54.0	54.0	
Total Split (s)	30.0	30.0		30.0	30.0		16.0	70.0		54.0	54.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		16.0%	70.0%		54.0%	54.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		12.0	63.7		47.7	47.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.0	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		1.0	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0			39.7		39.7	39.7	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0			8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	14.4	14.4		14.4	14.4		66.2	63.9		48.2	48.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.73	0.71		0.53	0.53	
v/c Ratio	0.24	0.54		0.70	0.23		0.74	0.53		0.04	0.43	
Control Delay	35.6	13.4		63.3	29.0		15.5	8.0		13.1	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.6	13.4		63.3	29.0		15.5	8.0		13.1	14.4	
LOS	D	B		E	C		B	A		B	B	
Approach Delay		17.8			50.0			10.0			14.4	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

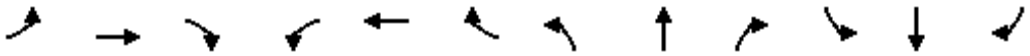




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	197	93	59	422	1136	10	676
v/c Ratio	0.24	0.54	0.70	0.23	0.74	0.53	0.04	0.43
Control Delay	35.6	13.4	63.3	29.0	15.5	8.0	13.1	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	13.4	63.3	29.0	15.5	8.0	13.1	14.4
Queue Length 50th (m)	7.5	3.8	15.5	7.2	21.6	40.6	0.8	34.4
Queue Length 95th (m)	17.3	22.0	31.5	17.5	#57.4	74.0	3.8	57.2
Internal Link Dist (m)		113.8		392.0		151.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	335	496	222	428	571	2150	233	1569
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.40	0.42	0.14	0.74	0.53	0.04	0.43

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)	49	25	172	93	47	12	422	1070	66	10	604	72
Future Volume (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1394		1635	1582		1668	3044		1668	2939	
Flt Permitted	0.72	1.00		0.49	1.00		0.33	1.00		0.25	1.00	
Satd. Flow (perm)	1261	1394		836	1582		585	3044		439	2939	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	25	172	93	47	12	422	1070	66	10	604	72
RTOR Reduction (vph)	0	145	0	0	10	0	0	4	0	0	8	0
Lane Group Flow (vph)	49	52	0	93	49	0	422	1132	0	10	668	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	0%	1%	0%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.4	14.4		14.4	14.4		63.9	63.9		48.2	48.2	
Effective Green, g (s)	14.4	14.4		14.4	14.4		63.9	63.9		48.2	48.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.71		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	221		132	251		552	2146		233	1563	
v/s Ratio Prot		0.04			0.03		c0.10	0.37			0.23	
v/s Ratio Perm	0.04			c0.11			c0.44			0.02		
v/c Ratio	0.24	0.24		0.70	0.19		0.76	0.53		0.04	0.43	
Uniform Delay, d1	33.3	33.3		36.1	33.1		6.2	6.3		10.2	12.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		15.7	0.4		6.2	0.9		0.3	0.9	
Delay (s)	34.0	33.9		51.8	33.4		12.4	7.2		10.5	13.7	
Level of Service	C	C		D	C		B	A		B	B	
Approach Delay (s)		33.9			44.7			8.6			13.7	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	16.3
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	26	1532	29	13	857
Future Volume (vph)	53	26	1532	29	13	857
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.997			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1442	1484	3239	0	0	3497
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1442	1484	3239	0	0	3497
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		371.7			175.2
Travel Time (s)	7.5		22.3			10.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	15%	0%	2%	38%	0%	2%
Adj. Flow (vph)	53	26	1532	29	13	857
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	26	1561	0	0	870
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	26	1532	29	13	857
Future Volume (Veh/h)	53	26	1532	29	13	857
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	26	1532	29	13	857
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			372			175
pX, platoon unblocked	0.79	0.74			0.74	
vC, conflicting volume	2001	780			1561	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1159	0			1055	
tC, single (s)	7.1	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	60	97			97	
cM capacity (veh/h)	131	807			494	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	53	26	1021	540	299	571
Volume Left	53	0	0	0	13	0
Volume Right	0	26	0	29	0	0
cSH	131	807	1700	1700	494	1700
Volume to Capacity	0.40	0.03	0.60	0.32	0.03	0.34
Queue Length 95th (m)	13.1	0.8	0.0	0.0	0.6	0.0
Control Delay (s)	49.9	9.6	0.0	0.0	0.9	0.0
Lane LOS	E	A			A	
Approach Delay (s)	36.6		0.0		0.3	
Approach LOS	E					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

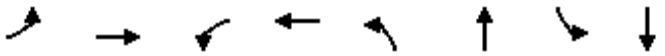
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Future Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.889			0.995			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1558	1451	0	3203	3230	0	1668	3123	0
Flt Permitted	0.553			0.284			0.950			0.216		
Satd. Flow (perm)	971	1387	0	466	1451	0	3203	3230	0	379	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		387			31			3			25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		491.2			135.6			307.1			371.7	
Travel Time (s)		35.4			9.8			18.4			22.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Adj. Flow (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	457	0	107	42	0	517	1259	0	10	891	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0		11.0	50.4		9.0	50.4	
Total Split (s)	15.0	35.0		19.0	39.0		29.0	64.0		17.0	52.0	
Total Split (%)	11.1%	25.9%		14.1%	28.9%		21.5%	47.4%		12.6%	38.5%	
Maximum Green (s)	10.5	29.0		14.5	33.0		23.0	58.0		13.0	46.0	
Yellow Time (s)	3.5	4.0		3.5	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			23.4			23.4	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	29.9	16.3		26.7	17.7		22.4	73.0		54.3	46.4	
Actuated g/C Ratio	0.25	0.14		0.22	0.15		0.19	0.61		0.45	0.39	
v/c Ratio	0.80	0.87		0.51	0.17		0.86	0.64		0.04	0.73	
Control Delay	57.6	27.5		43.0	19.9		63.3	19.4		13.5	36.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	57.6	27.5		43.0	19.9		63.3	19.4		13.5	36.2	
LOS	E	C		D	B		E	B		B	D	
Approach Delay		38.7			36.5			32.1			35.9	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 119.5			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 34.6		Intersection LOS: C	
Intersection Capacity Utilization 100.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

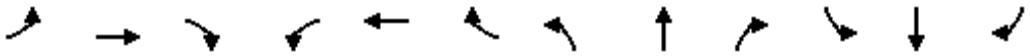




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	457	107	42	517	1259	10	891
v/c Ratio	0.80	0.87	0.51	0.17	0.86	0.64	0.04	0.73
Control Delay	57.6	27.5	43.0	19.9	63.3	19.4	13.5	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	27.5	43.0	19.9	63.3	19.4	13.5	36.2
Queue Length 50th (m)	54.1	15.2	19.3	2.3	60.2	86.2	0.8	89.6
Queue Length 95th (m)	#86.3	59.5	33.3	11.8	#104.4	177.5	3.7	138.2
Internal Link Dist (m)		467.2		111.6		283.1		347.7
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	339	631	249	426	621	1975	336	1228
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.72	0.43	0.10	0.83	0.64	0.03	0.73

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)	270	0	457	107	11	31	517	1221	38	10	711	180
Future Volume (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1558	1451		3203	3232		1668	3122	
Flt Permitted	0.55	1.00		0.28	1.00		0.95	1.00		0.22	1.00	
Satd. Flow (perm)	971	1387		465	1451		3203	3232		378	3122	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	0	457	107	11	31	517	1221	38	10	711	180
RTOR Reduction (vph)	0	329	0	0	28	0	0	1	0	0	15	0
Lane Group Flow (vph)	270	128	0	107	14	0	517	1258	0	10	876	0
Heavy Vehicles (%)	0%	0%	0%	7%	0%	0%	1%	2%	26%	0%	4%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	35.1	18.9		25.8	14.1		22.4	73.0		51.0	49.8	
Effective Green, g (s)	35.1	18.9		25.8	14.1		22.4	73.0		51.0	49.8	
Actuated g/C Ratio	0.28	0.15		0.21	0.11		0.18	0.58		0.41	0.40	
Clearance Time (s)	4.5	6.0		4.5	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	363	209		197	163		572	1882		166	1240	
v/s Ratio Prot	c0.10	0.09		0.05	0.01		c0.16	0.39		0.00	c0.28	
v/s Ratio Perm	c0.11			0.06						0.02		
v/c Ratio	0.74	0.61		0.54	0.09		0.90	0.67		0.06	0.71	
Uniform Delay, d1	39.1	49.8		42.9	49.8		50.4	17.9		22.2	31.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.0	5.3		3.0	0.2		17.6	1.9		0.2	3.4	
Delay (s)	47.1	55.1		45.9	50.1		68.0	19.8		22.3	35.0	
Level of Service	D	E		D	D		E	B		C	D	
Approach Delay (s)		52.1			47.1			33.8			34.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	125.3	Sum of lost time (s)	22.5
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

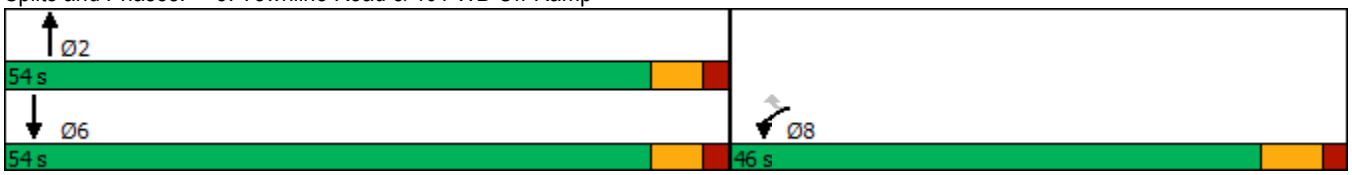


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	409	1488	0	0	890
Future Volume (vph)	607	409	1488	0	0	890
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	2941	1456	3500	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	2941	1456	3500	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		16				
Link Speed (k/h)	50		60			60
Link Distance (m)	440.2		426.1			307.1
Travel Time (s)	31.7		25.6			18.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Adj. Flow (vph)	607	409	1488	0	0	890
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	409	1488	0	0	890
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	46.0	46.0	54.0			54.0
Total Split (s)	46.0	46.0	54.0			54.0
Total Split (%)	46.0%	46.0%	54.0%			54.0%
Maximum Green (s)	39.5	39.5	48.0			48.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	43.0			43.0
Flash Dont Walk (s)	29.5	29.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	29.6	29.6	48.4			48.4
Actuated g/C Ratio	0.33	0.33	0.53			0.53
v/c Ratio	0.63	0.84	0.80			0.48
Control Delay	28.5	43.1	22.9			15.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	28.5	43.1	22.9			15.5
LOS	C	D	C			B
Approach Delay	34.4		22.9			15.5
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	607	409	1488	890
v/c Ratio	0.63	0.84	0.80	0.48
Control Delay	28.5	43.1	22.9	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.5	43.1	22.9	15.5
Queue Length 50th (m)	45.4	62.7	108.2	49.8
Queue Length 95th (m)	61.3	97.9	#166.0	78.3
Internal Link Dist (m)	416.2		402.1	283.1
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1292	648	1869	1869
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	0.63	0.80	0.48

Intersection Summary

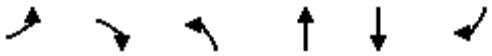
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	409	1488	0	0	890
Future Volume (vph)	607	409	1488	0	0	890
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	2941	1456	3500			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	2941	1456	3500			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	607	409	1488	0	0	890
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	607	398	1488	0	0	890
Heavy Vehicles (%)	10%	1%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	29.6	29.6	48.4			48.4
Effective Green, g (s)	29.6	29.6	48.4			48.4
Actuated g/C Ratio	0.33	0.33	0.53			0.53
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	961	476	1871			1871
v/s Ratio Prot	0.21		c0.43			0.25
v/s Ratio Perm		c0.27				
v/c Ratio	0.63	0.84	0.80			0.48
Uniform Delay, d1	25.8	28.2	17.0			13.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	12.1	3.6			0.9
Delay (s)	27.2	40.3	20.6			14.0
Level of Service	C	D	C			B
Approach Delay (s)	32.5		20.6			14.0
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

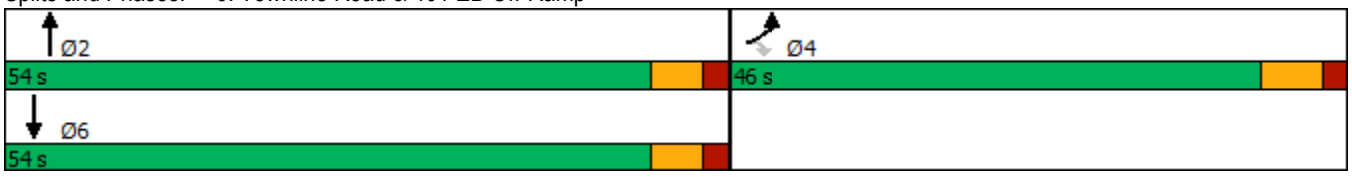


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	478	548	0	1300	1371	0
Future Volume (vph)	478	548	0	1300	1371	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.952	0.850				
Flt Protected	0.967					
Satd. Flow (prot)	3053	1312	0	3535	3400	0
Flt Permitted	0.967					
Satd. Flow (perm)	3053	1312	0	3535	3400	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	23	23				
Link Speed (k/h)	50			60	60	
Link Distance (m)	441.6			186.4	426.1	
Travel Time (s)	31.8			11.2	25.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Adj. Flow (vph)	478	548	0	1300	1371	0
Shared Lane Traffic (%)		41%				
Lane Group Flow (vph)	703	323	0	1300	1371	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		54.0	54.0	
Total Split (s)	46.0	46.0		54.0	54.0	
Total Split (%)	46.0%	46.0%		54.0%	54.0%	
Maximum Green (s)	39.5	39.5		48.0	48.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		42.0	42.0	
Flash Dont Walk (s)	29.5	29.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	26.9	26.9		48.4	48.4	
Actuated g/C Ratio	0.31	0.31		0.55	0.55	
v/c Ratio	0.74	0.77		0.67	0.73	
Control Delay	31.1	38.5		17.6	19.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	31.1	38.5		17.6	19.4	
LOS	C	D		B	B	
Approach Delay	33.4			17.6	19.4	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 87.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

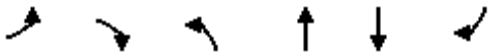
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	703	323	1300	1371
v/c Ratio	0.74	0.77	0.67	0.73
Control Delay	31.1	38.5	17.6	19.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.1	38.5	17.6	19.4
Queue Length 50th (m)	52.2	50.0	75.7	84.6
Queue Length 95th (m)	69.9	81.6	131.5	147.6
Internal Link Dist (m)	417.6		162.4	402.1
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1395	606	1946	1871
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	0.53	0.67	0.73

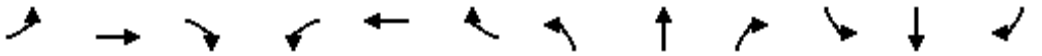
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	478	548	0	1300	1371	0
Future Volume (vph)	478	548	0	1300	1371	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.95	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3053	1312		3535	3400	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3053	1312		3535	3400	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	548	0	1300	1371	0
RTOR Reduction (vph)	16	16	0	0	0	0
Lane Group Flow (vph)	687	307	0	1300	1371	0
Heavy Vehicles (%)	3%	2%	0%	1%	5%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.9	26.9		48.4	48.4	
Effective Green, g (s)	26.9	26.9		48.4	48.4	
Actuated g/C Ratio	0.31	0.31		0.55	0.55	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	935	401		1948	1874	
v/s Ratio Prot	0.23			0.37	c0.40	
v/s Ratio Perm		c0.23				
v/c Ratio	0.73	0.77		0.67	0.73	
Uniform Delay, d1	27.3	27.6		14.0	14.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	8.5		1.8	2.6	
Delay (s)	30.3	36.1		15.8	17.4	
Level of Service	C	D		B	B	
Approach Delay (s)	32.1			15.8	17.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	87.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



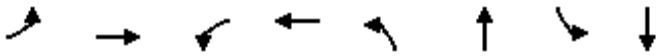
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Future Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.867			0.975			0.985			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1415	0	1668	1583	0	1651	3000	0	1668	3038	0
Flt Permitted	0.742			0.449			0.431			0.379		
Satd. Flow (perm)	1290	1415	0	788	1583	0	749	3000	0	665	3038	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		252			4			27			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			395.3			185.7			162.4	
Travel Time (s)		9.9			28.5			11.1			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	296	0	70	24	0	243	718	0	3	585	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.57	0.57	
v/c Ratio	0.24	0.62		0.45	0.08		0.57	0.42		0.01	0.34	
Control Delay	19.8	10.6		28.3	15.4		15.6	7.6		6.3	7.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.8	10.6		28.3	15.4		15.6	7.6		6.3	7.0	
LOS	B	B		C	B		B	A		A	A	
Approach Delay		12.2			25.0			9.6			7.0	
Approach LOS		B			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.9			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North

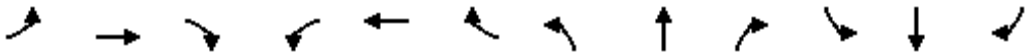




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	296	70	24	243	718	3	585
v/c Ratio	0.24	0.62	0.45	0.08	0.57	0.42	0.01	0.34
Control Delay	19.8	10.6	28.3	15.4	15.6	7.6	6.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	10.6	28.3	15.4	15.6	7.6	6.3	7.0
Queue Length 50th (m)	4.8	3.5	5.9	1.6	11.8	15.5	0.1	12.0
Queue Length 95th (m)	12.5	19.8	15.4	5.9	#48.2	34.1	1.1	26.9
Internal Link Dist (m)		113.8		371.3		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	489	693	299	603	426	1720	378	1737
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.43	0.23	0.04	0.57	0.42	0.01	0.34

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)	60	33	263	70	20	4	243	645	73	3	541	44
Future Volume (vph)	60	33	263	70	20	4	243	645	73	3	541	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.97		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1414		1668	1583		1651	2999		1668	3037	
Flt Permitted	0.74	1.00		0.45	1.00		0.43	1.00		0.38	1.00	
Satd. Flow (perm)	1289	1414		787	1583		750	2999		665	3037	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	33	263	70	20	4	243	645	73	3	541	44
RTOR Reduction (vph)	0	202	0	0	3	0	0	12	0	0	8	0
Lane Group Flow (vph)	60	94	0	70	21	0	243	706	0	3	577	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Effective Green, g (s)	10.4	10.4		10.4	10.4		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.57	0.57		0.57	0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	278		155	311		427	1709		379	1731	
v/s Ratio Prot		0.07			0.01			0.24			0.19	
v/s Ratio Perm	0.05			c0.09			c0.32			0.00		
v/c Ratio	0.24	0.34		0.45	0.07		0.57	0.41		0.01	0.33	
Uniform Delay, d1	17.9	18.2		18.7	17.3		7.2	6.4		4.9	6.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.7		2.1	0.1		5.4	0.7		0.0	0.5	
Delay (s)	18.3	19.0		20.8	17.3		12.6	7.1		4.9	6.5	
Level of Service	B	B		C	B		B	A		A	A	
Approach Delay (s)		18.9			19.9			8.5			6.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	3	957	6	11	863
Future Volume (vph)	9	3	957	6	11	863
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.999			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1658	1484	3267	0	0	3497
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1658	1484	3267	0	0	3497
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		327.9			185.7
Travel Time (s)	7.5		19.7			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	9	3	957	6	11	863
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	3	963	0	0	874
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

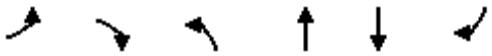
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	3	957	6	11	863
Future Volume (Veh/h)	9	3	957	6	11	863
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	3	957	6	11	863
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			328			186
pX, platoon unblocked	0.90	0.88			0.88	
vC, conflicting volume	1414	482			963	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1059	133			681	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			99	
cM capacity (veh/h)	197	789			809	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	9	3	638	325	299	575
Volume Left	9	0	0	0	11	0
Volume Right	0	3	0	6	0	0
cSH	197	789	1700	1700	809	1700
Volume to Capacity	0.05	0.00	0.38	0.19	0.01	0.34
Queue Length 95th (m)	1.1	0.1	0.0	0.0	0.3	0.0
Control Delay (s)	24.2	9.6	0.0	0.0	0.5	0.0
Lane LOS	C	A			A	
Approach Delay (s)	20.5		0.0		0.2	
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

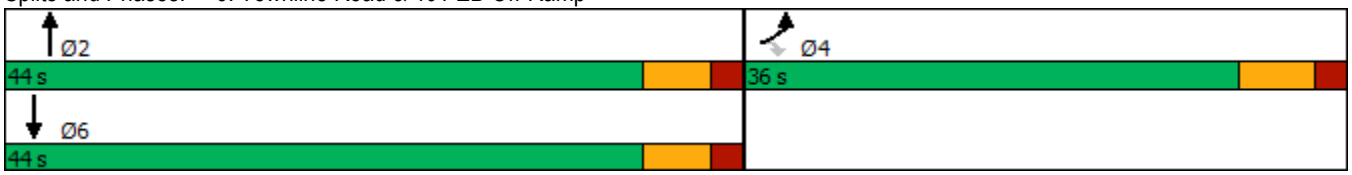


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	553	581	0	715	1075	0
Future Volume (vph)	553	581	0	715	1075	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.957	0.850				
Flt Protected	0.966					
Satd. Flow (prot)	3095	1325	0	3500	3500	0
Flt Permitted	0.966					
Satd. Flow (perm)	3095	1325	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	52	52				
Link Speed (k/h)	50			60	60	
Link Distance (m)	407.3			183.2	399.0	
Travel Time (s)	29.3			11.0	23.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	553	581	0	715	1075	0
Shared Lane Traffic (%)		38%				
Lane Group Flow (vph)	774	360	0	715	1075	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	23.7	23.7		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
v/c Ratio	0.76	0.79		0.40	0.60	
Control Delay	26.3	32.7		12.8	15.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.3	32.7		12.8	15.4	
LOS	C	C		B	B	
Approach Delay	28.3			12.8	15.4	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

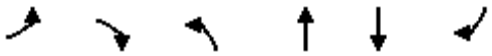
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	774	360	715	1075
v/c Ratio	0.76	0.79	0.40	0.60
Control Delay	26.3	32.7	12.8	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.3	32.7	12.8	15.4
Queue Length 50th (m)	46.1	42.7	30.8	53.3
Queue Length 95th (m)	64.6	76.2	49.1	82.1
Internal Link Dist (m)	383.3		159.2	375.0
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1263	558	1794	1794
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	0.65	0.40	0.60

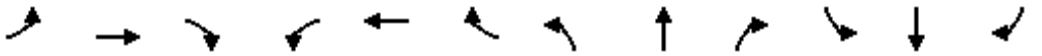
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	553	581	0	715	1075	0
Future Volume (vph)	553	581	0	715	1075	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.96	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3094	1325		3500	3500	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3094	1325		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	553	581	0	715	1075	0
RTOR Reduction (vph)	35	35	0	0	0	0
Lane Group Flow (vph)	739	325	0	715	1075	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	23.7	23.7		38.2	38.2	
Effective Green, g (s)	23.7	23.7		38.2	38.2	
Actuated g/C Ratio	0.32	0.32		0.51	0.51	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	985	422		1797	1797	
v/s Ratio Prot	0.24			0.20	c0.31	
v/s Ratio Perm		c0.24				
v/c Ratio	0.75	0.77		0.40	0.60	
Uniform Delay, d1	22.7	22.9		11.1	12.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	8.2		0.7	1.5	
Delay (s)	25.9	31.1		11.7	14.2	
Level of Service	C	C		B	B	
Approach Delay (s)	27.5			11.7	14.2	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



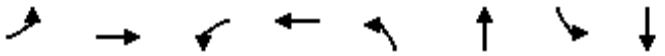
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Future Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	30.0		0.0	40.0		0.0	55.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.868			0.975			0.989			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1583	0	1651	3010	0	1668	3035	0
Flt Permitted	0.742			0.502			0.455			0.407		
Satd. Flow (perm)	1290	1416	0	881	1583	0	791	3010	0	714	3035	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		237			4			19			21	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			416.0			175.2			162.4	
Travel Time (s)		9.9			30.0			10.5			9.7	
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Adj. Flow (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	270	0	43	24	0	218	644	0	3	530	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (s)	26.0	26.0		26.0	26.0		36.3	36.3		36.3	36.3	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	2.7	2.7		2.7	2.7		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	10.0	10.0		10.0	10.0		22.0	22.0		22.0	22.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	9.7	9.7		9.7	9.7		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.58	0.58		0.58	0.58	
v/c Ratio	0.25	0.59		0.26	0.08		0.48	0.37		0.01	0.30	
Control Delay	20.6	10.3		22.2	15.9		11.7	6.9		6.0	6.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.6	10.3		22.2	15.9		11.7	6.9		6.0	6.4	
LOS	C	B		C	B		B	A		A	A	
Approach Delay		12.2			19.9			8.1			6.4	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.1			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

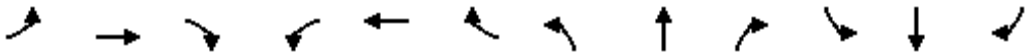
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	270	43	24	218	644	3	530
v/c Ratio	0.25	0.59	0.26	0.08	0.48	0.37	0.01	0.30
Control Delay	20.6	10.3	22.2	15.9	11.7	6.9	6.0	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	10.3	22.2	15.9	11.7	6.9	6.0	6.4
Queue Length 50th (m)	4.8	2.6	3.5	1.6	9.1	12.5	0.1	9.7
Queue Length 95th (m)	12.5	17.8	10.2	6.1	31.4	28.7	1.1	22.8
Internal Link Dist (m)		113.8		392.0		151.2		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	496	691	339	612	456	1746	412	1762
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.39	0.13	0.04	0.48	0.37	0.01	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Future Volume (vph)	60	33	237	43	20	4	218	595	49	3	486	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1651	1417		1668	1583		1651	3009		1668	3034	
Flt Permitted	0.74	1.00		0.50	1.00		0.46	1.00		0.41	1.00	
Satd. Flow (perm)	1289	1417		880	1583		791	3009		715	3034	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	33	237	43	20	4	218	595	49	3	486	44
RTOR Reduction (vph)	0	193	0	0	3	0	0	8	0	0	9	0
Lane Group Flow (vph)	60	77	0	43	21	0	218	636	0	3	521	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	1%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.6	9.6		9.6	9.6		30.1	30.1		30.1	30.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.3	6.3		6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	261		162	292		457	1741		413	1756	
v/s Ratio Prot		c0.05			0.01			0.21			0.17	
v/s Ratio Perm	0.05			0.05			c0.28			0.00		
v/c Ratio	0.25	0.29		0.27	0.07		0.48	0.37		0.01	0.30	
Uniform Delay, d1	18.1	18.3		18.2	17.5		6.4	5.8		4.6	5.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.6		0.9	0.1		3.5	0.6		0.0	0.4	
Delay (s)	18.7	18.9		19.1	17.6		9.9	6.4		4.7	6.0	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s)		18.9			18.5			7.3			6.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	15	846	17	8	758
Future Volume (vph)	32	15	846	17	8	758
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt		0.850	0.997			
Flt Protected	0.950					0.999
Satd. Flow (prot)	1658	1484	3261	0	0	3497
Flt Permitted	0.950					0.999
Satd. Flow (perm)	1658	1484	3261	0	0	3497
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		371.7			175.2
Travel Time (s)	7.5		22.3			10.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	32	15	846	17	8	758
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	15	863	0	0	766
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.11	1.11	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	32	15	846	17	8	758
Future Volume (Veh/h)	32	15	846	17	8	758
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	32	15	846	17	8	758
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			372			175
pX, platoon unblocked	0.95	0.94			0.94	
vC, conflicting volume	1250	432			863	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1085	280			737	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	98			99	
cM capacity (veh/h)	202	683			829	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	32	15	564	299	261	505
Volume Left	32	0	0	0	8	0
Volume Right	0	15	0	17	0	0
cSH	202	683	1700	1700	829	1700
Volume to Capacity	0.16	0.02	0.33	0.18	0.01	0.30
Queue Length 95th (m)	4.2	0.5	0.0	0.0	0.2	0.0
Control Delay (s)	26.1	10.4	0.0	0.0	0.4	0.0
Lane LOS	D	B			A	
Approach Delay (s)	21.1		0.0		0.1	
Approach LOS	C					

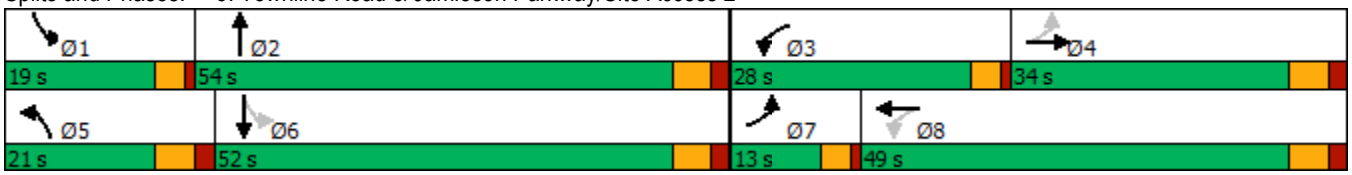
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

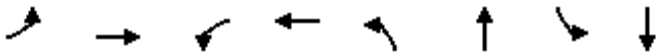
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Future Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	45.0		0.0	45.0		0.0	115.0		0.0	115.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.850			0.890			0.995			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1452	0	3203	3255	0	1668	3214	0
Flt Permitted	0.588						0.950			0.387		
Satd. Flow (perm)	1032	1387	0	1755	1452	0	3203	3255	0	679	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		474			19			3			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		491.2			135.6			307.1			371.7	
Travel Time (s)		35.4			9.8			18.4			22.3	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	291	0	64	26	0	263	695	0	6	783	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.11	1.21	1.21	1.11	1.21	1.21	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	10.0		2.0	10.0		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	0.6		2.0	0.6		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			28.7			28.7	
Detector 2 Size(m)		0.6			0.6			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	31.0		9.0	31.0		11.0	50.4		9.0	41.0	
Total Split (s)	13.0	34.0		28.0	49.0		21.0	54.0		19.0	52.0	
Total Split (%)	9.6%	25.2%		20.7%	36.3%		15.6%	40.0%		14.1%	38.5%	
Maximum Green (s)	9.0	28.0		24.0	43.0		15.0	48.0		15.0	46.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			14.0			14.0	
Flash Dont Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.4	6.1		12.3	6.4		12.7	63.2		54.0	46.3	
Actuated g/C Ratio	0.18	0.07		0.13	0.07		0.14	0.68		0.58	0.49	
v/c Ratio	0.68	0.55		0.29	0.22		0.60	0.32		0.01	0.49	
Control Delay	49.0	4.0		37.9	27.6		45.1	7.8		6.0	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.0	4.0		37.9	27.6		45.1	7.8		6.0	17.7	
LOS	D	A		D	C		D	A		A	B	
Approach Delay		21.4			34.9			18.0			17.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 93.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2

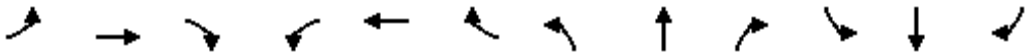




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	184	291	64	26	263	695	6	783
v/c Ratio	0.68	0.55	0.29	0.22	0.60	0.32	0.01	0.49
Control Delay	49.0	4.0	37.9	27.6	45.1	7.8	6.0	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	4.0	37.9	27.6	45.1	7.8	6.0	17.7
Queue Length 50th (m)	30.2	0.0	11.3	1.3	23.8	24.0	0.3	49.0
Queue Length 95th (m)	#52.4	0.0	20.9	9.2	37.3	48.0	1.5	70.8
Internal Link Dist (m)		467.2		111.6		283.1		347.7
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	272	748	433	681	516	2198	619	1598
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.39	0.15	0.04	0.51	0.32	0.01	0.49

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)	184	0	291	64	7	19	263	672	23	6	651	132
Future Volume (vph)	184	0	291	64	7	19	263	672	23	6	651	132
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.89		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	1387		1668	1453		3203	3256		1668	3213	
Flt Permitted	0.59	1.00		1.00	1.00		0.95	1.00		0.39	1.00	
Satd. Flow (perm)	1033	1387		1755	1453		3203	3256		680	3213	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	184	0	291	64	7	19	263	672	23	6	651	132
RTOR Reduction (vph)	0	265	0	0	18	0	0	1	0	0	10	0
Lane Group Flow (vph)	184	26	0	64	8	0	263	694	0	6	773	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	20.2	8.9		10.1	2.8		12.7	63.2		50.7	49.6	
Effective Green, g (s)	20.2	8.9		10.1	2.8		12.7	63.2		50.7	49.6	
Actuated g/C Ratio	0.20	0.09		0.10	0.03		0.13	0.63		0.50	0.49	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	292	122		170	40		404	2047		353	1585	
v/s Ratio Prot	c0.08	0.02		0.03	0.01		c0.08	0.21		0.00	c0.24	
v/s Ratio Perm	c0.04			0.01						0.01		
v/c Ratio	0.63	0.21		0.38	0.19		0.65	0.34		0.02	0.49	
Uniform Delay, d1	36.1	42.5		42.3	47.7		41.8	8.8		12.4	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.9		1.4	2.3		3.7	0.5		0.0	1.1	
Delay (s)	40.5	43.4		43.7	50.0		45.5	9.2		12.4	18.1	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s)		42.3			45.5			19.2			18.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	197	760	0	0	690
Future Volume (vph)	449	197	760	0	0	690
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	102.0	130.0		0.0	0.0	
Storage Lanes	1	1		0	0	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	3081	1456	3535	0	0	3500
Flt Permitted	0.950					
Satd. Flow (perm)	3081	1456	3535	0	0	3500
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		132				
Link Speed (k/h)	50		60			60
Link Distance (m)	440.2		426.1			307.1
Travel Time (s)	31.7		25.6			18.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	449	197	760	0	0	690
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	197	760	0	0	690
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.0		7.0			7.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2			2
Detector Template	Left	Right	Thru			Thru
Leading Detector (m)	6.1	6.1	30.5			30.5
Trailing Detector (m)	0.0	0.0	0.0			0.0
Detector 1 Position(m)	0.0	0.0	0.0			0.0
Detector 1 Size(m)	6.1	6.1	1.8			1.8
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Detector 2 Position(m)			28.7			28.7
Detector 2 Size(m)			1.8			1.8
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA			NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6
Switch Phase						
Minimum Initial (s)	10.0	10.0	8.0			8.0
Minimum Split (s)	36.0	36.0	44.0			44.0
Total Split (s)	36.0	36.0	44.0			44.0
Total Split (%)	45.0%	45.0%	55.0%			55.0%
Maximum Green (s)	29.5	29.5	38.0			38.0
Yellow Time (s)	4.5	4.5	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.5	6.5	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Max			Max
Walk Time (s)	10.0	10.0	33.0			33.0
Flash Dont Walk (s)	19.5	19.5	5.0			5.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
v/c Ratio	0.64	0.46	0.37			0.34
Control Delay	27.3	11.7	8.5			8.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	27.3	11.7	8.5			8.2
LOS	C	B	A			A
Approach Delay	22.5		8.5			8.2
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

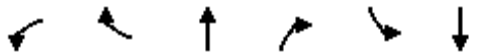
Splits and Phases: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	449	197	760	690
v/c Ratio	0.64	0.46	0.37	0.34
Control Delay	27.3	11.7	8.5	8.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.3	11.7	8.5	8.2
Queue Length 50th (m)	25.4	6.4	22.5	20.0
Queue Length 95th (m)	38.2	21.3	39.8	35.8
Internal Link Dist (m)	416.2		402.1	283.1
Turn Bay Length (m)	102.0	130.0		
Base Capacity (vph)	1390	729	2055	2034
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	0.32	0.27	0.37	0.34

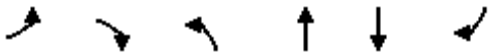
Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	197	760	0	0	690
Future Volume (vph)	449	197	760	0	0	690
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5	6.0			6.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3081	1456	3535			3500
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3081	1456	3535			3500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	197	760	0	0	690
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	449	95	760	0	0	690
Heavy Vehicles (%)	5%	1%	1%	0%	0%	2%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	14.9	14.9	38.1			38.1
Effective Green, g (s)	14.9	14.9	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
Clearance Time (s)	6.5	6.5	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	700	331	2056			2035
v/s Ratio Prot	c0.15		c0.22			0.20
v/s Ratio Perm		0.07				
v/c Ratio	0.64	0.29	0.37			0.34
Uniform Delay, d1	22.9	20.9	7.3			7.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.0	0.5	0.5			0.5
Delay (s)	24.9	21.4	7.8			7.6
Level of Service	C	C	A			A
Approach Delay (s)	23.8		7.8			7.6
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

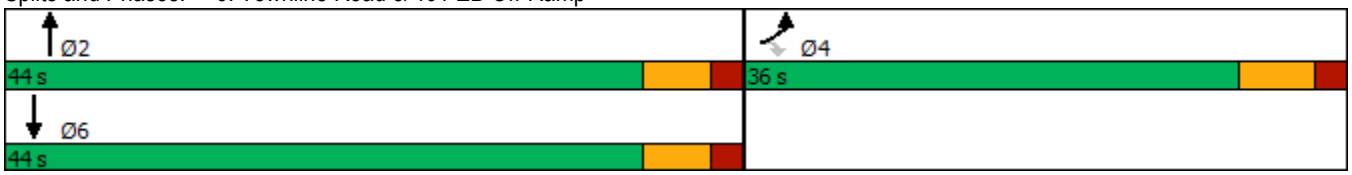


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	417	581	0	607	974	0
Future Volume (vph)	417	581	0	607	974	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	87.0	87.0	0.0			0.0
Storage Lanes	1	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Frt	0.942	0.850				
Flt Protected	0.970					
Satd. Flow (prot)	3062	1325	0	3500	3500	0
Flt Permitted	0.970					
Satd. Flow (perm)	3062	1325	0	3500	3500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	71	71				
Link Speed (k/h)	50			60	60	
Link Distance (m)	441.6			186.4	426.1	
Travel Time (s)	31.8			11.2	25.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Adj. Flow (vph)	417	581	0	607	974	0
Shared Lane Traffic (%)		45%				
Lane Group Flow (vph)	678	320	0	607	974	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.11	1.13	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	6.1	6.1		30.5	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	6.1		1.8	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				28.7	28.7	
Detector 2 Size(m)				1.8	1.8	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	12.0	12.0		5.0	5.0	
Minimum Split (s)	36.0	36.0		44.0	44.0	
Total Split (s)	36.0	36.0		44.0	44.0	
Total Split (%)	45.0%	45.0%		55.0%	55.0%	
Maximum Green (s)	29.5	29.5		38.0	38.0	
Yellow Time (s)	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	10.0	10.0		32.0	32.0	
Flash Dont Walk (s)	19.5	19.5		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.7	20.7		38.2	38.2	
Actuated g/C Ratio	0.29	0.29		0.53	0.53	
v/c Ratio	0.72	0.74		0.32	0.52	
Control Delay	24.9	28.3		10.9	13.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.9	28.3		10.9	13.0	
LOS	C	C		B	B	
Approach Delay	26.0			10.9	13.0	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 71.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

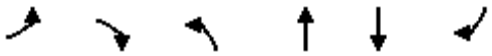
Splits and Phases: 6: Townline Road & 401 EB Off-Ramp





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	678	320	607	974
v/c Ratio	0.72	0.74	0.32	0.52
Control Delay	24.9	28.3	10.9	13.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.9	28.3	10.9	13.0
Queue Length 50th (m)	37.1	32.6	21.5	39.5
Queue Length 95th (m)	53.3	61.2	40.8	71.8
Internal Link Dist (m)	417.6		162.4	402.1
Turn Bay Length (m)	87.0	87.0		
Base Capacity (vph)	1312	591	1871	1871
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	0.52	0.54	0.32	0.52

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	417	581	0	607	974	0
Future Volume (vph)	417	581	0	607	974	0
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.5	6.5		6.0	6.0	
Lane Util. Factor	0.97	0.91		0.95	0.95	
Frt	0.94	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3063	1325		3500	3500	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3063	1325		3500	3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	417	581	0	607	974	0
RTOR Reduction (vph)	50	50	0	0	0	0
Lane Group Flow (vph)	628	270	0	607	974	0
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.7	20.7		38.2	38.2	
Effective Green, g (s)	20.7	20.7		38.2	38.2	
Actuated g/C Ratio	0.29	0.29		0.54	0.54	
Clearance Time (s)	6.5	6.5		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	888	384		1872	1872	
v/s Ratio Prot	c0.20			0.17	c0.28	
v/s Ratio Perm		0.20				
v/c Ratio	0.71	0.70		0.32	0.52	
Uniform Delay, d1	22.6	22.6		9.3	10.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	5.7		0.5	1.0	
Delay (s)	25.2	28.3		9.8	11.7	
Level of Service	C	C		A	B	
Approach Delay (s)	26.2			9.8	11.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Appendix G

Transportation Tomorrow Survey 2022

AM INBOUND
Mon Nov 10 2025 13:37:37 GMT-0500 (Eastern Standard Time) - Run Time: 3088ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(7313,7322,7353,7354,7355,7356,7478,8304)
TblG:

Filters:
Start time of trip - start_time In 600-900
and
Trip Purpose of Destination - purp_dest In W

Trip 2022
Table:

AM OUTBOUND
Mon Nov 10 2025 15:16:46 GMT-0500 (Eastern Standard Time) - Run Time: 2984ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(7313,7322,7353,7354,7355,7356,7478,8304)
TblG:

Filters:
Start time of trip - start_time In 600-900
and
Trip Purpose of Origin - purp_orig In W

Trip 2022
Table:

,1

Cambridge,33

PM INBOUND
Mon Nov 10 2025 15:12:37 GMT-0500 (Eastern Standard Time) - Run Time: 2955ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of origin - pd_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(7313,7322,7353,7354,7355,7356,7478,8304)
TblG:

Filters:
Start time of trip - start_time In 1600-1900
and
Trip Purpose of Destination - purp_dest In W

Trip 2022
Table:

,1

Cambridge,7

PM OUTBOUND
Mon Nov 10 2025 15:17:49 GMT-0500 (Eastern Standard Time) - Run Time: 2941ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(7313,7322,7353,7354,7355,7356,7478,8304)
TblG:

Filters:
Start time of trip - start_time In 1600-1900
and
Trip Purpose of Origin - purp_orig In W

Trip 2022
Table:

,1	N Townline	S Townline	E Ellis Road	W Ellis Road	W Jamieson Parkway	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp	N Townline	S Townline	E Ellis Road	W Ellis Road	W Jamieson Parkway	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp
PD 1 of T	41						1			0	0	0	0	0	0	41	0	0
Vaughan	13						1			0	0	0	0	0	0	13	0	0
Bramptor	88						1			0	0	0	0	0	0	88	0	0
Mississa	13						1			0	0	0	0	0	0	13	0	0
Oakville	25						1			0	0	0	0	0	0	25	0	0
Burlingto	13						1			0	0	0	0	0	0	13	0	0
Flamboro	25	0.5					0.5			12.5	0	0	0	0	0	12.5	0	0
Ancaster	61		0.5				0.5			0	30.5	0	0	0	0	30.5	0	0
Glanbroo	137		0.5				0.5			0	68.5	0	0	0	0	68.5	0	0
Stoney C	23		0.5				0.5			0	11.5	0	0	0	0	11.5	0	0
Hamilton	35	0.5					0.5			17.5	0	0	0	0	0	17.5	0	0
Lincoln	29		0.5				0.5			0	14.5	0	0	0	0	14.5	0	0
Waterloo	261					1				0	0	0	0	0	261	0	0	0
Kitchene	1073					1				0	0	0	0	0	1073	0	0	0
Cambridg	2169		1							0	2169	0	0	0	0	0	0	0
North Du	43		0.5			0.5				0	21.5	0	0	0	21.5	0	0	0
Wilmot	48					1				0	0	0	0	0	48	0	0	0
Woolwich	141	0.5				0.5				70.5	0	0	0	0	70.5	0	0	0
Guelph	320	0.5					0.5			160	0	0	0	0	0	160	0	0
Puslinch	46	0.5					0.5			23	0	0	0	0	0	23	0	0
Oxford	74					1				0	0	0	0	0	74	0	0	0
Brant	23		1							0	23	0	0	0	0	0	0	0
Brantford	18		0.5			0.5				0	9	0	0	0	9	0	0	0
Chatswo	18	1								18	0	0	0	0	0	0	0	0
	4737									301.5	2347.5	0	0	0	1557	531	0	0
										6%	50%	0%	0%	0%	33%	11%	0%	0%

,1	N Townline	S Townline	E Ellis Road	W Ellis Road	W Jamieson Parkway	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp	N Townline	S Townline	E Ellis Road	W Ellis Road	W Jamieson Parkway	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp
PD 1 of Tc	78									1	0	0	0	0	0	0	0	78
Vaughan	13									1	0	0	0	0	0	0	0	13
Brampton	88									1	0	0	0	0	0	0	0	88
Mississau	22									1	0	0	0	0	0	0	0	22
Oakville	25									1	0	0	0	0	0	0	0	25
Flamboro	13	0.333	0.333							0.333	4.329	4.329	0	0	0	0	0	4.329
Glanbrook	84	0.333	0.333							0.333	27.972	27.972	0	0	0	0	0	27.972
Hamilton	88	0.333	0.333							0.333	29.304	29.304	0	0	0	0	0	29.304
Waterloo	213								1		0	0	0	0	0	0	213	0
Kitchener	911								1		0	0	0	0	0	0	911	0
Cambridge	1966		1								0	1966	0	0	0	0	0	0
North Dun	66								1		0	0	0	0	0	0	66	0
Wilmot	14								1		0	0	0	0	0	0	14	0
Wellesley	39								1		0	0	0	0	0	0	39	0
Woolwich	141								1		0	0	0	0	0	0	141	0
Guelph	196	1									196	0	0	0	0	0	0	0
Puslinch	80	0.5								0.5	40	0	0	0	0	0	0	40
Oxford	74								1		0	0	0	0	0	0	74	0
Brant	23		1								0	23	0	0	0	0	0	0
Brantford	37		1								0	37	0	0	0	0	0	0
	4171									297.605	2087.605	0	0	0	0	0	1458	327.605
										7%	50%	0%	0%	0%	0%	0%	35%	8%

TTS

		N Townline	S Townline	E Ellis	W Ellis	W Jamieson	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp	
AM	INBOUND	6%	50%	0%	0%	0%	33%	11%	0%	0%	**100%**
	OUTBOUND										**0%**
PM	INBOUND										**0%**
	OUTBOUND	7%	50%	0%	0%	0%	0%	0%	35%	8%	**100%**

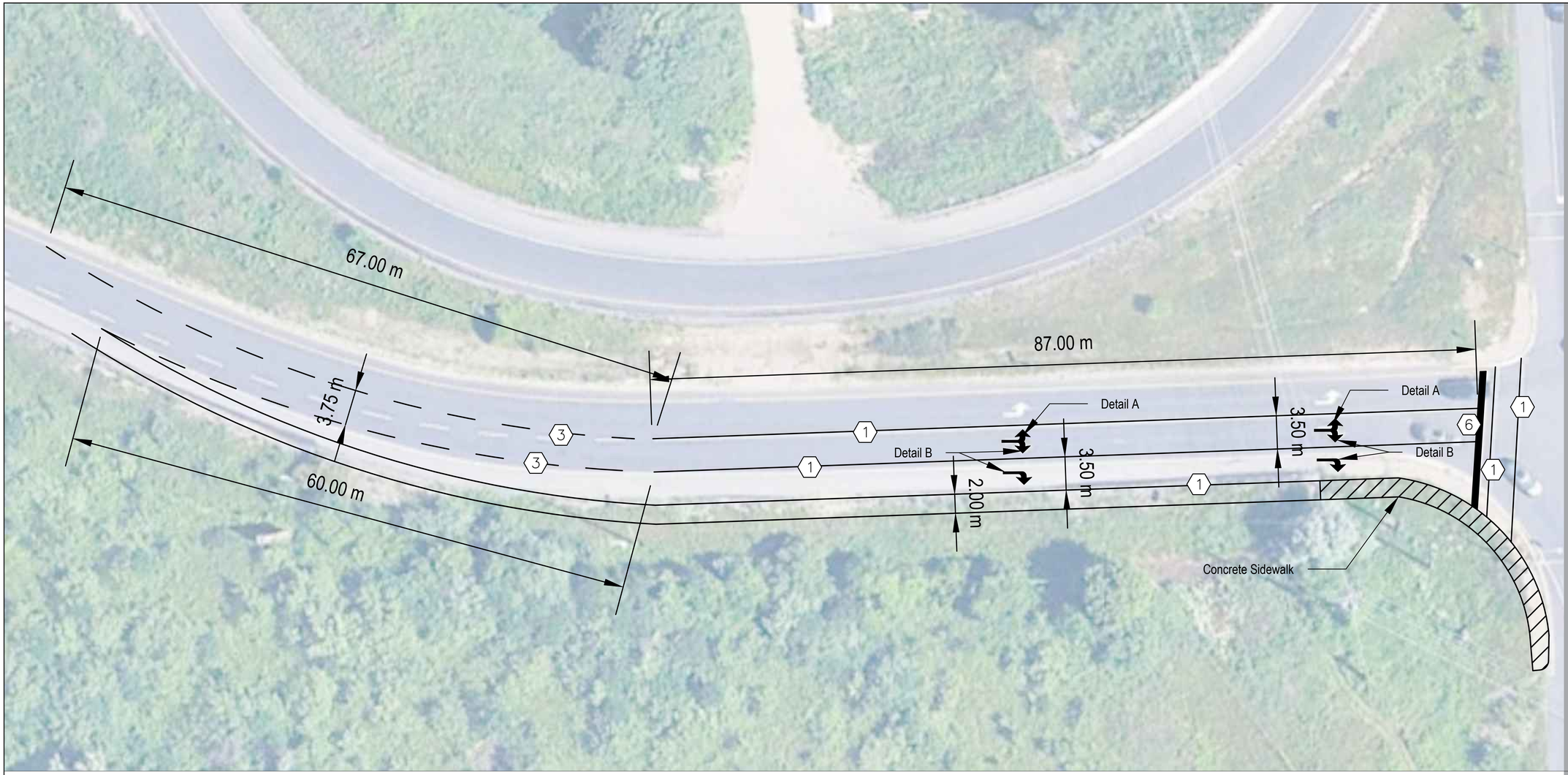
Existing

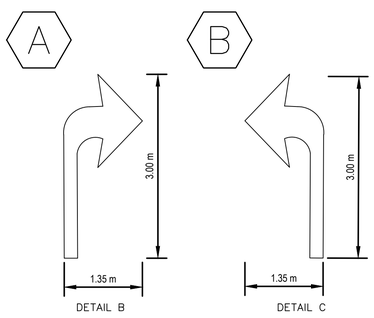
		N Townline	S Townline	E Ellis	W Ellis	W Jamieson	W EB Off Ramp	E WB Off ramp	W WB On Ramp	W EB On Ramp	
AM	INBOUND	24%	31%	1%	9%	17%	14%	5%	0%	0%	**100%**
	OUTBOUN	24%	45%	2%	5%	0%	0%	0%	17%	6%	**100%**
PM	INBOUND	20%	43%	3%	6%	0%	16%	13%	0%	0%	**100%**
	OUTBOUN	31%	39%	1%	12%	0%	0%	0%	13%	4%	**100%**
SAT	INBOUND	25%	32%	2%	12%	0%	19%	10%	0%	0%	**100%**
	OUTBOUN	26%	42%	2%	9%	0%	0%	0%	15%	6%	**100%**



Appendix H

Highway 401 Eastbound Off-Ramp Widening Functional Design





PAVEMENT MARKING LEGEND			
IDENTIFICATION	TYPE	COLOUR	WIDTH (cm)
1	SOLID	WHITE	10
2	1–1–1 BROKEN	YELLOW	10
3	3–3–3 BROKEN	YELLOW	10
4	SOLID	YELLOW	10
5	3–6–3 BROKEN	YELLOW	10
6	SOLID	WHITE	60
7	0.4–0.4–0.4 BROKEN	WHITE	40
8	SOLID	YELLOW	20

PAVEMENT MARKING LEGEND TABLE NOTES

1. **3-3-3, 3-6-3, 3-9-3, DENOTES PAVEMENT MARKING SPACING (I.E., 3m LINE, 3m GAP, 3m LINE)**
2. **USE ⓧ TO DENOTE PAVEMENT MARKING**

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LICENSED PROFESSIONAL ENGINEER
Aug. 10, 2026
W.C. MARIA
PROVINCE OF ONTARIO

No.	Issue	Checked	Approved	Date
1	First Submission	W.M	W.M	8/10/26

Author	V.C	Designer	V.C
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client
FIELDGATE PROPERTIES

Project
2809 TOWNLINE ROAD

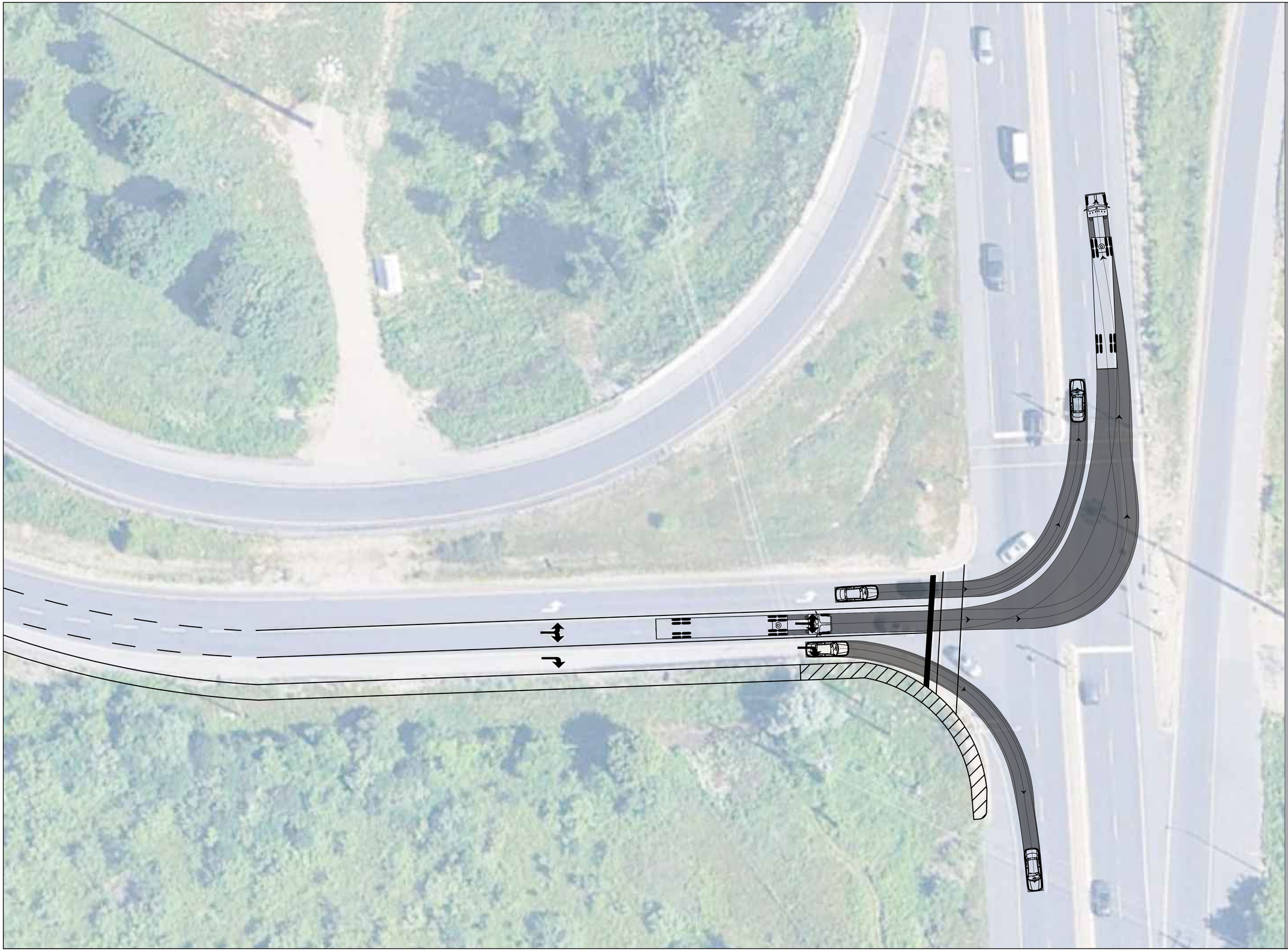
Date August 10, 2026
Scale NTS

Project No. 12672387

Title
TOWNLINE ROAD AND 401 EASTBOUND OFF-RAMP WIDENING FUNCTIONAL DESIGN

Size ANSI D

Sheet No. FD-101



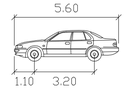
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W.C. MARIA
PROVINCE OF ONTARIO



P

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

WB-20

	meters		
Tractor Width	: 2.60	Lock to Lock Time	: 6.0
Trailer Width	: 2.60	Steering Angle	: 28.2
Tractor Track	: 2.60	Articulating Angle	: 70.0
Trailer Track	: 2.60		

No.	Issue	Checked	Approved	Date
1	First Submission	W.M	W.M	8/10/26

Author	V.C	Designer	V.C
Drafting Check	W.M	Design Check	W.M
Project Manager	W.M	Project Director	W.M

Client

FIELDGATE PROPERTIES

Project

2809 TOWNLINE ROAD

Date	Scale
August 10, 2026	NTS

Project No.
12672387

Title

TOWNLINE ROAD AND 401 EASTBOUND OFF-RAMP WIDENING - TURNING MOVEMENT DIAGRAM

Size
ANSI D

Sheet No.
FD-102



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The Power of Commitment