2809 Townline Road Industrial/Commercial Development

Traffic Impact Study

Fieldgate Properties

18 February 2026

→ The Power of Commitment

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GHD Ltd

100 Milverton Drive, Suite 404

Mississauga, Ontario L5R 4H1, Canada

T +1 416 213 7121 | **F** +1 905 890 8499 | **E** info-northamerica@ghd.com | **ghd.com**

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Executive Summary

GHD Limited was retained to prepare a Traffic Study 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 ft^2, as well as a gas station featuring 24 fueling stations. The total GFA for Site Plan A is 1,015,662 ft^2.

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 ft^2, bringing the total GFA for Site Plan B to 1,273,234 ft^2.

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

Site Plan A is expected to generate a total of 739 two-way site trips during the a.m. peak hour consisting of 531 inbound and 208 outbound trips. During the p.m. peak hour, it is expected to generate 1052 new two-way site trips consisting of 415 inbound and 637 outbound trips. During the Saturday peak hour, it is expected to generate 1,365 new two-way site trips consisting of 665 inbound and 700 outbound trips.

Site Plan B development is expected to generate a total of 586 two-way site trips during the a.m. peak hour consisting of 453 inbound and 133 outbound trips. During the p.m. peak hour, it is expected to generate 598 new two-way site

trips consisting of 168 inbound and 430 outbound trips. During the Saturday peak hour, it is expected to generate 247 new two-way site trips consisting of 96 inbound and 151 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 0.89 during the a.m. peak hour
- Eastbound Right with a v/c of 0.93 during the a.m. peak hour
- Eastbound left with a v/c of 0.80 during the p.m. peak hour
- Eastbound Right with a v/c of 0.88 during the p.m. peak hour
- Eastbound left with a v/c of 0.77 during the Saturday peak hour
- Eastbound Right with a v/c of 0.82 during the Saturday peak hour

Townline Road and Ellis Road and Sideroad 10 North

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

Townline Road and Site Access 1

- Northbound through with a V/C of 1.07 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 0.95 during the a.m. peak hour
- Eastbound Right with a v/c of 0.87 during the a.m. peak hour
- Eastbound left with a v/c of 0.77 during the p.m. peak hour
- Eastbound Right with a v/c of 0.88 during the p.m. peak hour
- Eastbound Right with a v/c of 0.82 during the Saturday peak hour

Townline Road and Ellis Road and Sideroad 10 North

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

Townline Road and Site Access 1

- Northbound through with a V/C of 1.04 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 0.92 during the a.m. peak hour
- Eastbound Right with a v/c of 1.02 during the a.m. peak hour
- Eastbound left with a v/c of 0.81 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the p.m. peak hour
- Southbound through with a v/c of 0.93 during the p.m. peak hour
- Eastbound left with a v/c of 0.77 during the Saturday peak hour
- Eastbound Right with a v/c of 0.87 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.75 during the a.m. peak hour
- Northbound through with a v/c of 0.91 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a v/c of 0.87 during the a.m. peak hour
- Northbound left with a v/c of 0.92 during the p.m. peak hour
- Northbound through-right with a v/c of 1.05 during the p.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.17 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 1.01 during the a.m. peak hour
- Eastbound Right with a v/c of 0.99 during the a.m. peak hour
- Eastbound left with a v/c of 0.78 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the p.m. peak hour
- Southbound through with a v/c of 0.89 during the p.m. peak hour
- Eastbound Right with a v/c of 0.86 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Northbound through with a v/c of 0.85 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a v/c of 1.01 during the a.m. peak hour
- Northbound through-right with a v/c of 0.95 during the p.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.16 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 0.98 during the a.m. peak hour
- Eastbound Right with a v/c of 1.13 during the a.m. peak hour
- Southbound through with a v/c of 0.86 during the a.m. peak hour
- Eastbound left with a v/c of 0.83 during the p.m. peak hour
- Eastbound Right with a v/c of 0.96 during the p.m. peak hour
- Southbound through with a v/c of 1.04 during the p.m. peak hour
- Eastbound left with a v/c of 0.84 during the Saturday peak hour
- Eastbound Right with a v/c of 1.03 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.78 during the a.m. peak hour
- Westbound right with a v/c of 0.75 during the p.m. peak hour
- Northbound through with a V/C of 0.99 during the p.m. peak hour

Townline Road and Jamieson Parkway/Site Access 2

- Eastbound through right with a v/c of 0.92 during the p.m. peak hour
- Westbound left with a v/c of 0.90 during the p.m. peak hour
- Northbound left with a v/c of 0.91 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 1.01 during the a.m. peak hour
- Northbound left with a V/C of 1.14 during the p.m. peak hour
- Northbound through-right with a V/C of 1.16 during the p.m. peak hour
- Southbound through-right with a V/C of 0.91 during the a.m. peak hour
- Northbound through-right with a V/C of 0.91 during the Saturday. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.28 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 1.09 during the a.m. peak hour
- Eastbound Right with a v/c of 1.13 during the a.m. peak hour
- Southbound through with a v/c of 0.85 during the a.m. peak hour

- Eastbound left with a v/c of 0.81 during the p.m. peak hour
- Eastbound Right with a v/c of 0.97 during the p.m. peak hour
- Southbound through with a v/c of 1.03 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.77 during the a.m. peak hour
- Northbound through with a V/C of 0.95 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 1.00 during the a.m. peak hour
- Northbound left with a V/C of 1.05 during the p.m. peak hour
- Northbound through-right with a V/C of 1.11 during the p.m. peak hour
- Southbound through-right with a V/C of 0.86 during the a.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.29 during the p.m. peak hour

Upon comparison of both Site Plans with the recommended intersection improvements both Site Plans operate similarly however Site Plan B requires less improvements for the intersection of Jamieson Parkway/Site Access 2 and Townline Road whereas Site Plan A will require additional lanes in the northbound direction to operate under capacity until the future 2038 scenario and below a v/c of 1. From the perspective of project buildout, the Site Plan B slightly outperforms Site Plan A as this Site Plan generates less traffic due to the nature of the buildings to be implemented.

A review of loading and parking requirements was undertaken and confirmed that the proposed concept plans for both Site Plans would 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.

Recommended improvements include but are not limited to the following:

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

- 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
- A left-turn lane added on the southbound approach.
- Optimized signal timings

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

- 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

Townline Road and Site Access 1

- Signalization of the intersection
- Exclusive westbound right-lane and left-lane
- Addition of a northbound through/right-lane
- Exclusive Southbound left-lane
- Optimized signal timings

Highway 401 Eastbound off-ramp and Townline Road

- Addition of an eastbound shared left/right turn lane

Townline Road and Ellis Road and Sideroad 10N

- Addition of a northbound and southbound through lane

Sincerely,

GHD



February 17, 2026

Vincenzo Costantino
Transportation Planner

William Maria, P. Eng.
Transportation Planning Lead

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1. Introduction

1.1 Retainer and Objective

GHD Limited was retained to prepare a Traffic Impact Study for a proposed industrial 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
- Yueqi Wang, Transportation Engineering Co-op
- Vincenzo Costantino, B.Eng., Transportation Planner

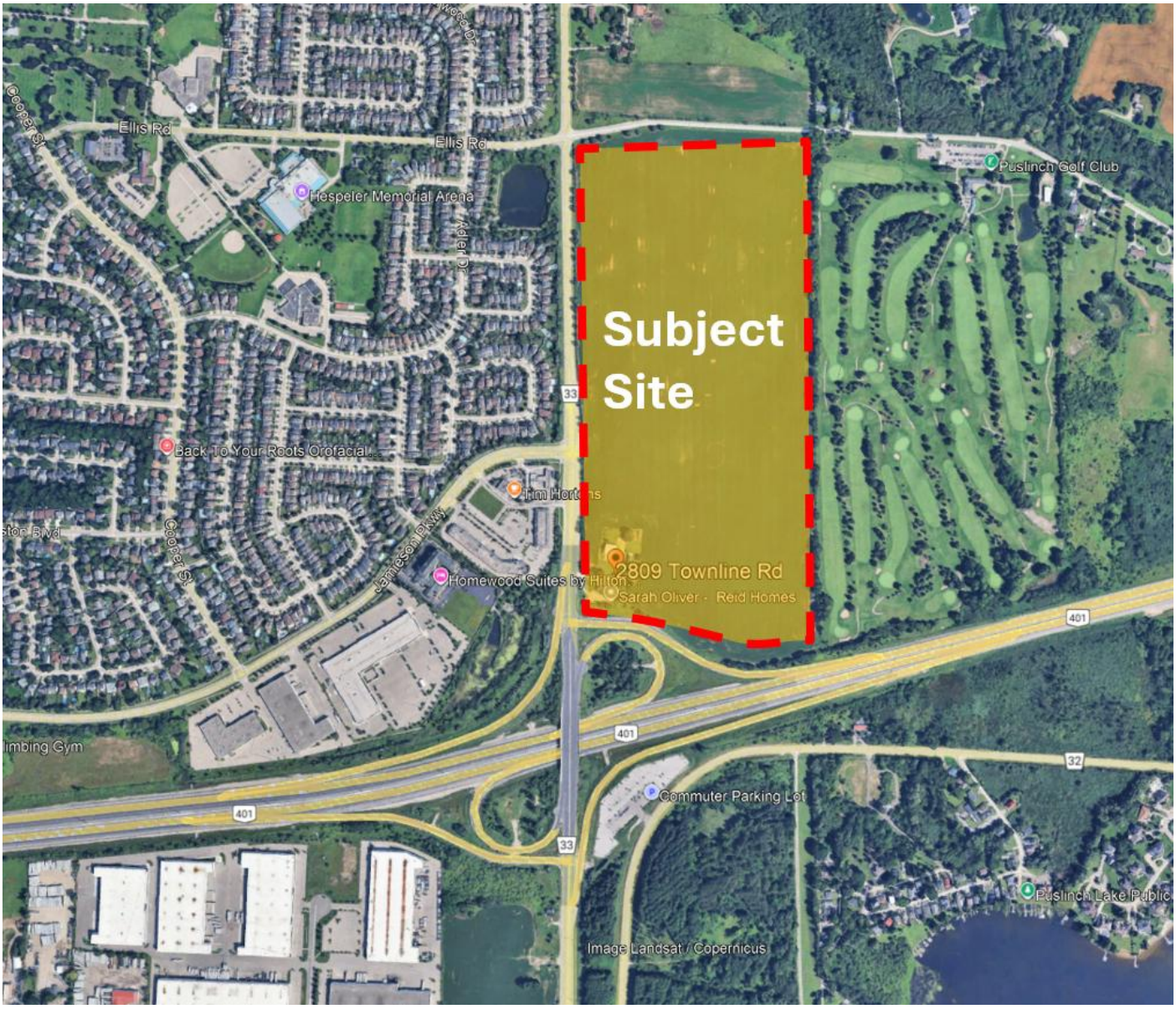


Figure 1 Site Location

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

2.2 Proposed Development Content

A site plan prepared by Ware Malcomb is provided in **Figure 2** 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 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 2** below.



Figure 2 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 3** below.



Figure 3 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.

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.

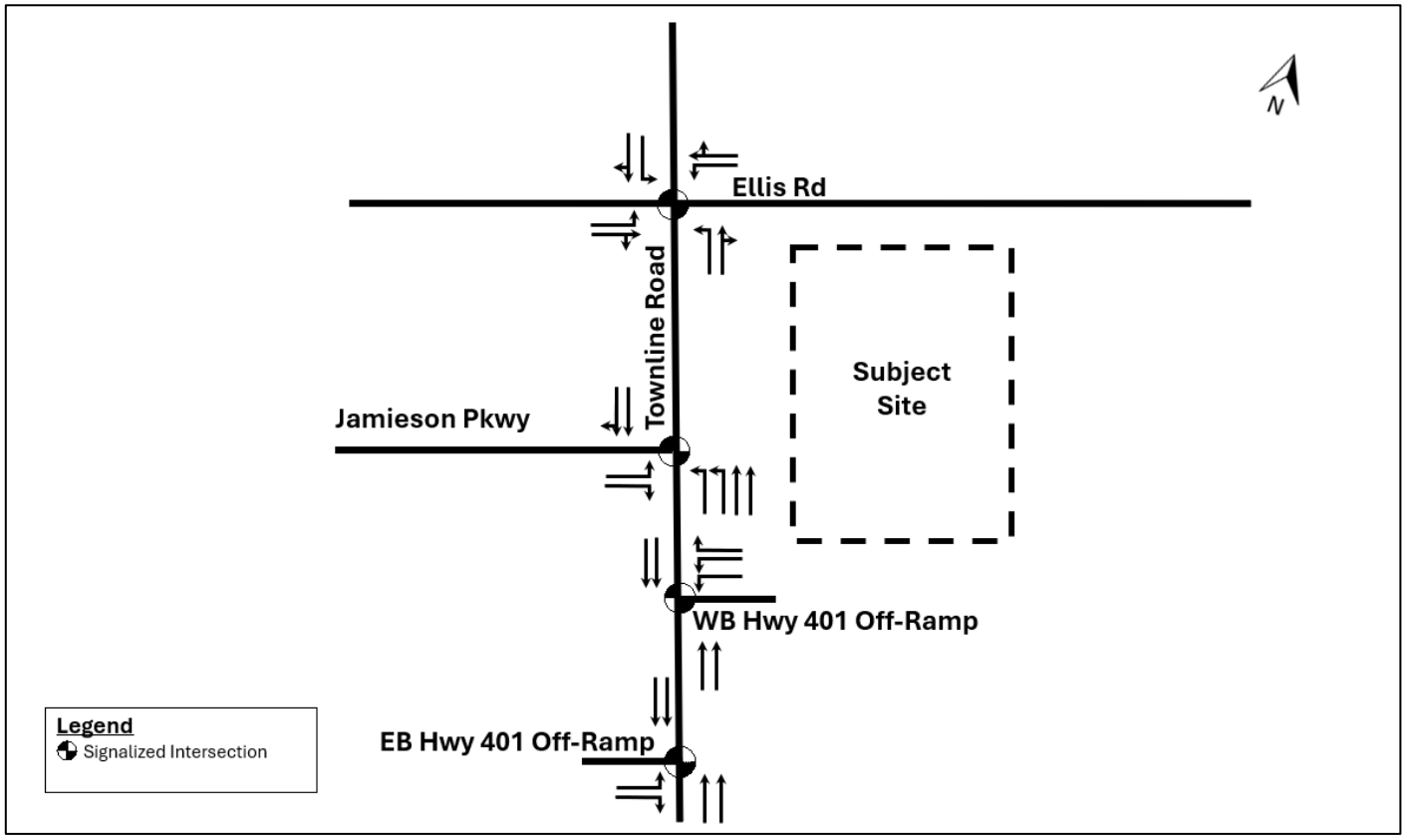


Figure 4 Existing Lane Configuration and Traffic Controls

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	Both sides	Not present
Jamieson Pkwy	Both sides	Both sides	Not present
Ellis Road	Both sides	Both Side	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 4** below.



Figure 5 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.

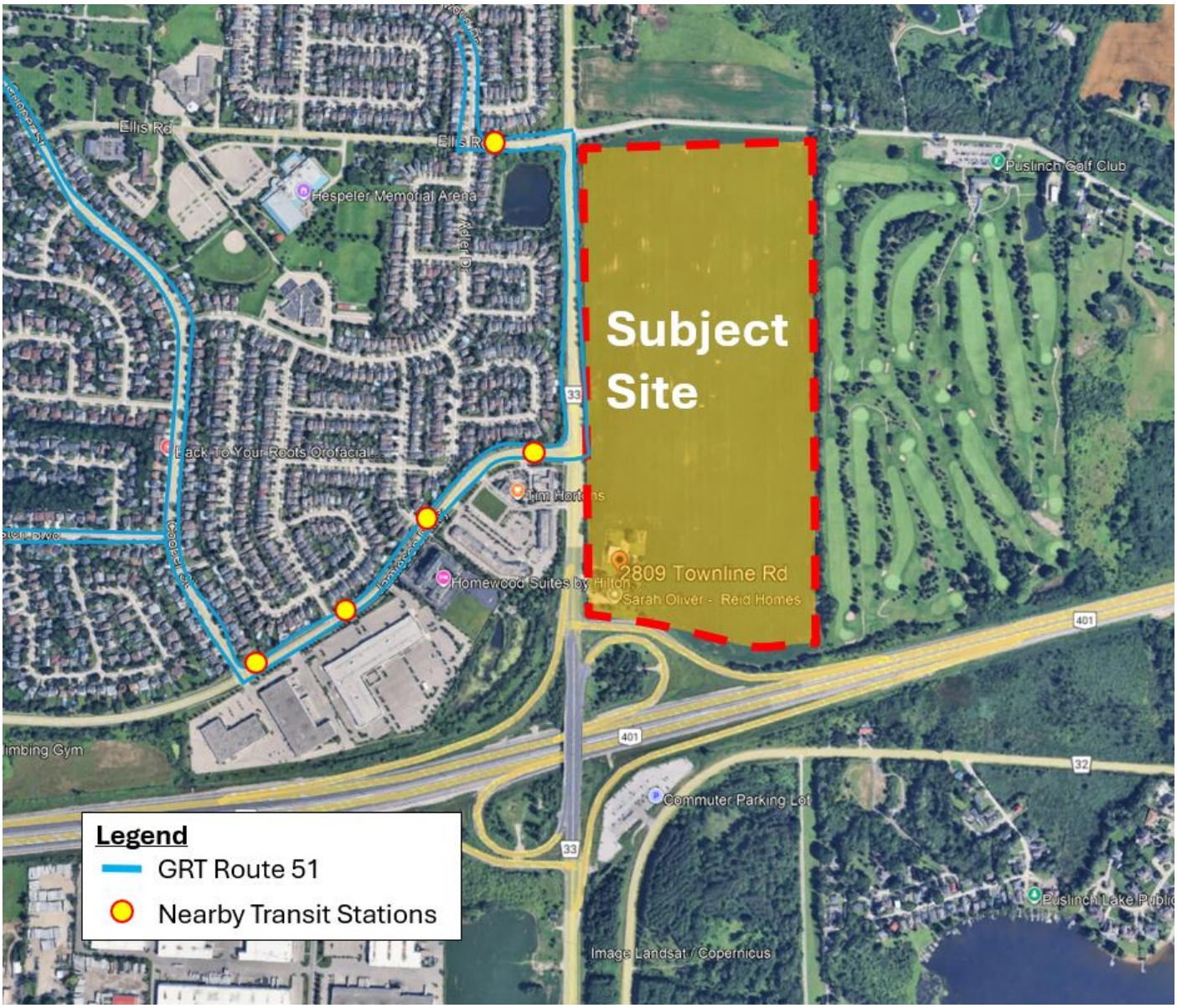


Figure 6 Existing Transit Routes and Transit Stops

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 7** below with the full turning movement counts provided in **Appendix C.**

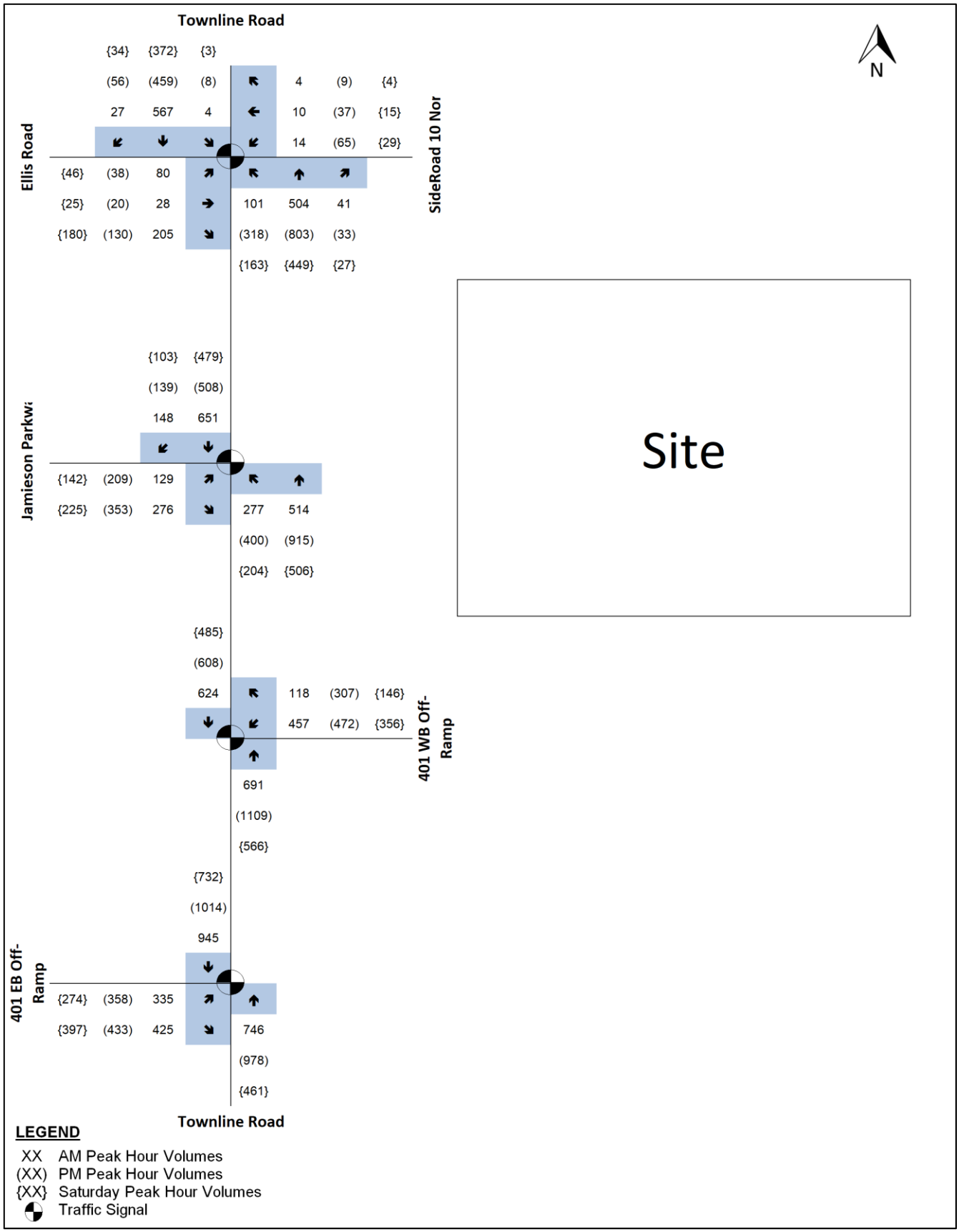


Figure 7 Baseline 2025 Traffic Volumes

4. Future Conditions

4.1 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.

4.2 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.

4.3 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.

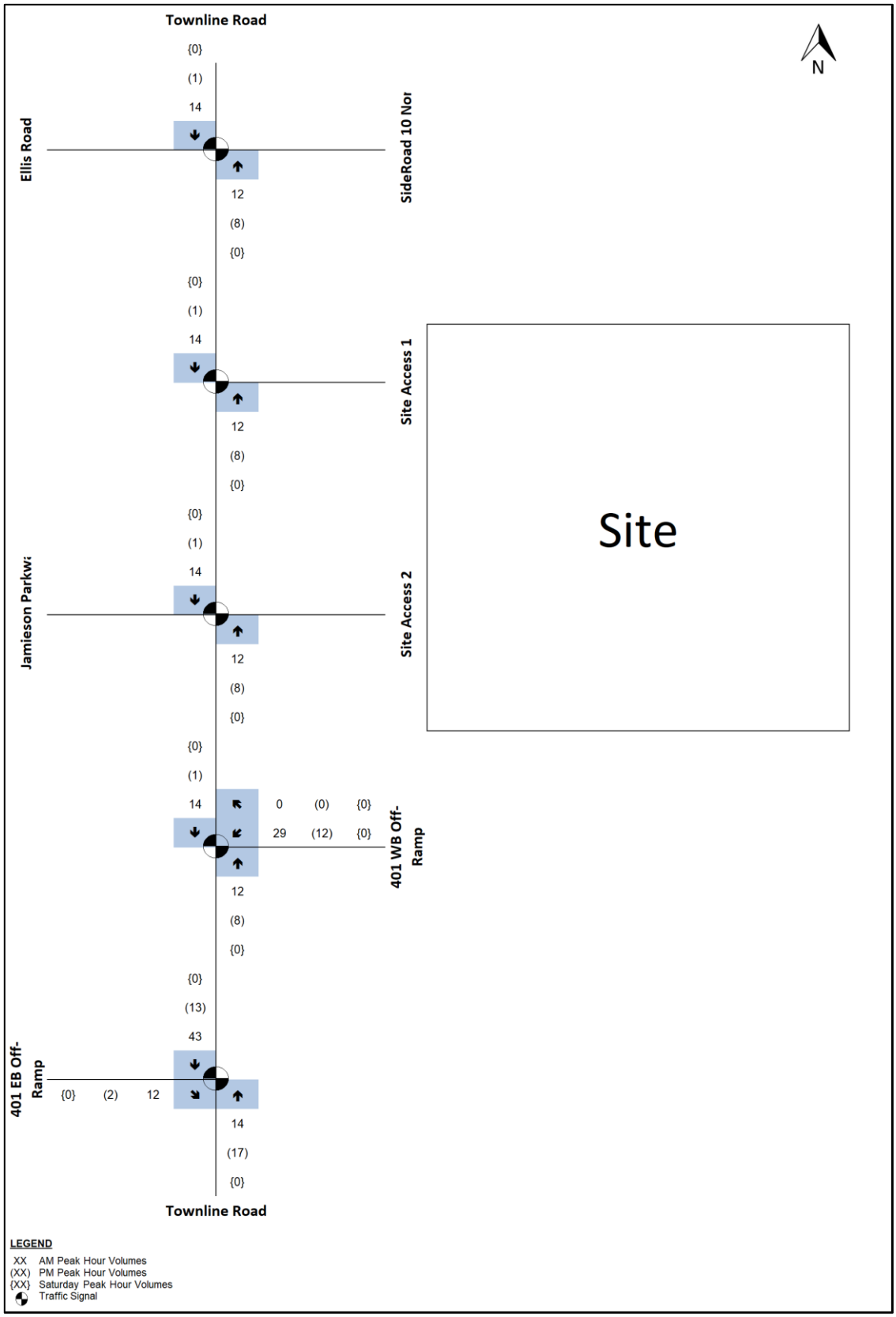


Figure 8 Background Development Volumes

4.4 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**.

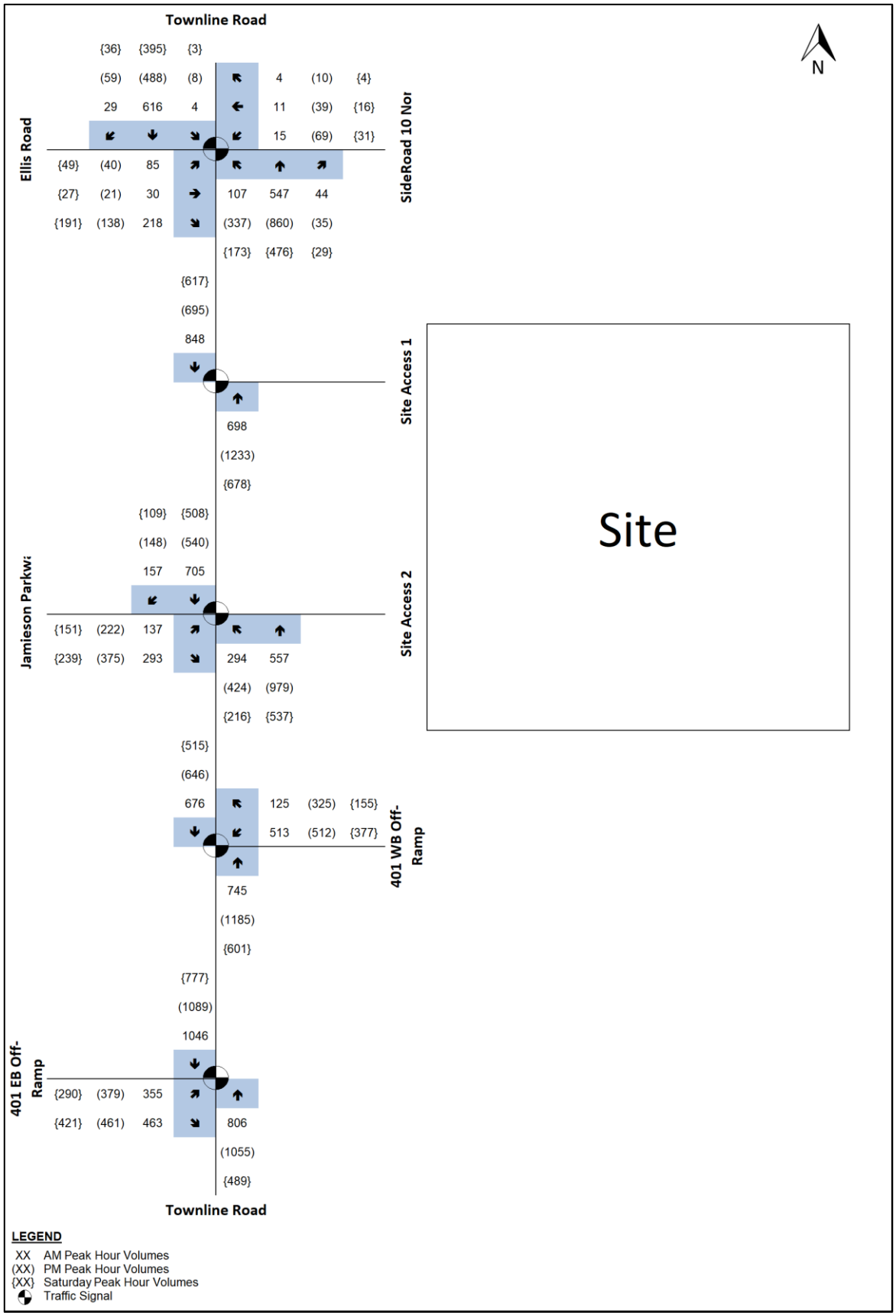


Figure 9 2028 Future Background Traffic Volumes

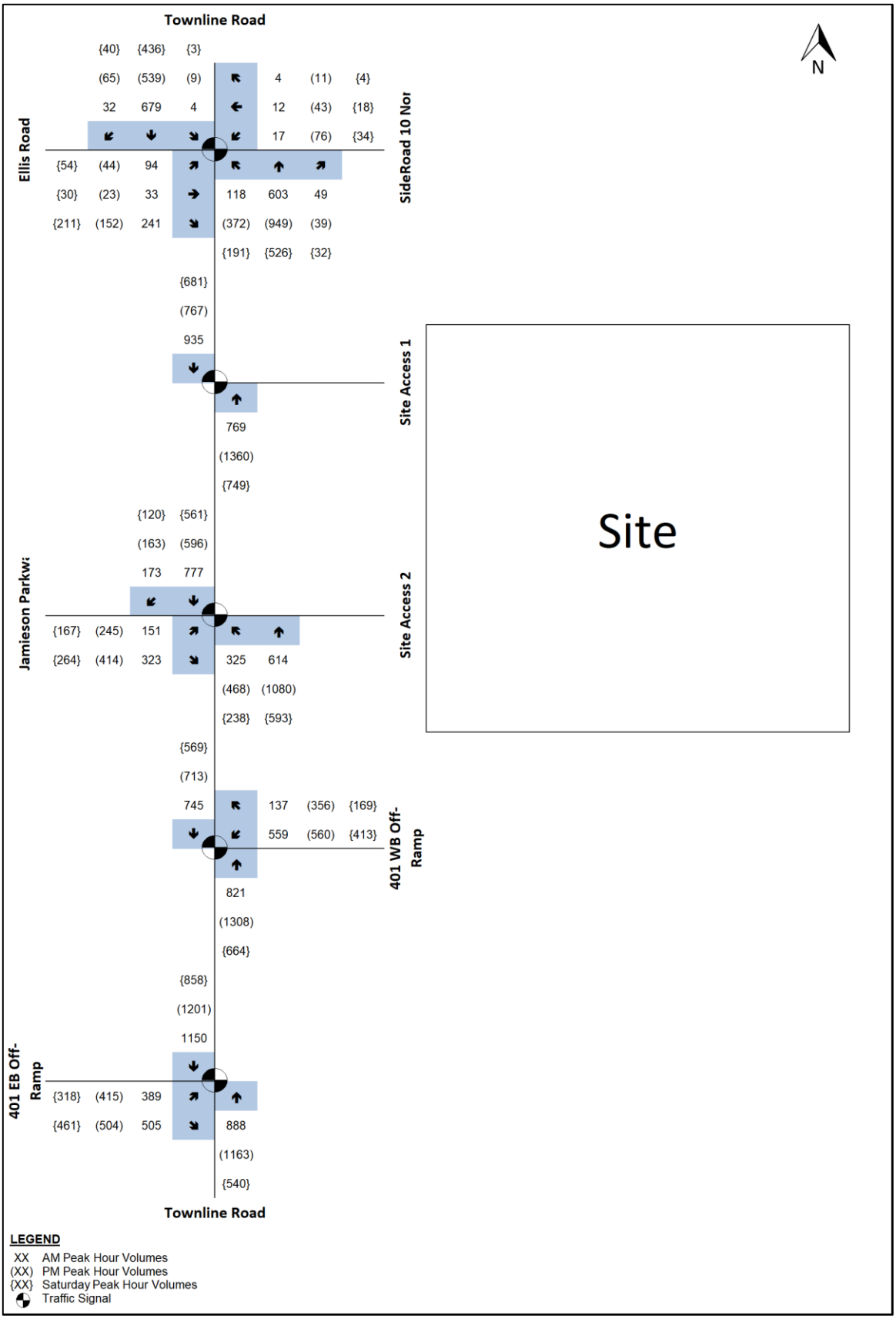


Figure 10 2033 Future Background Traffic Volumes

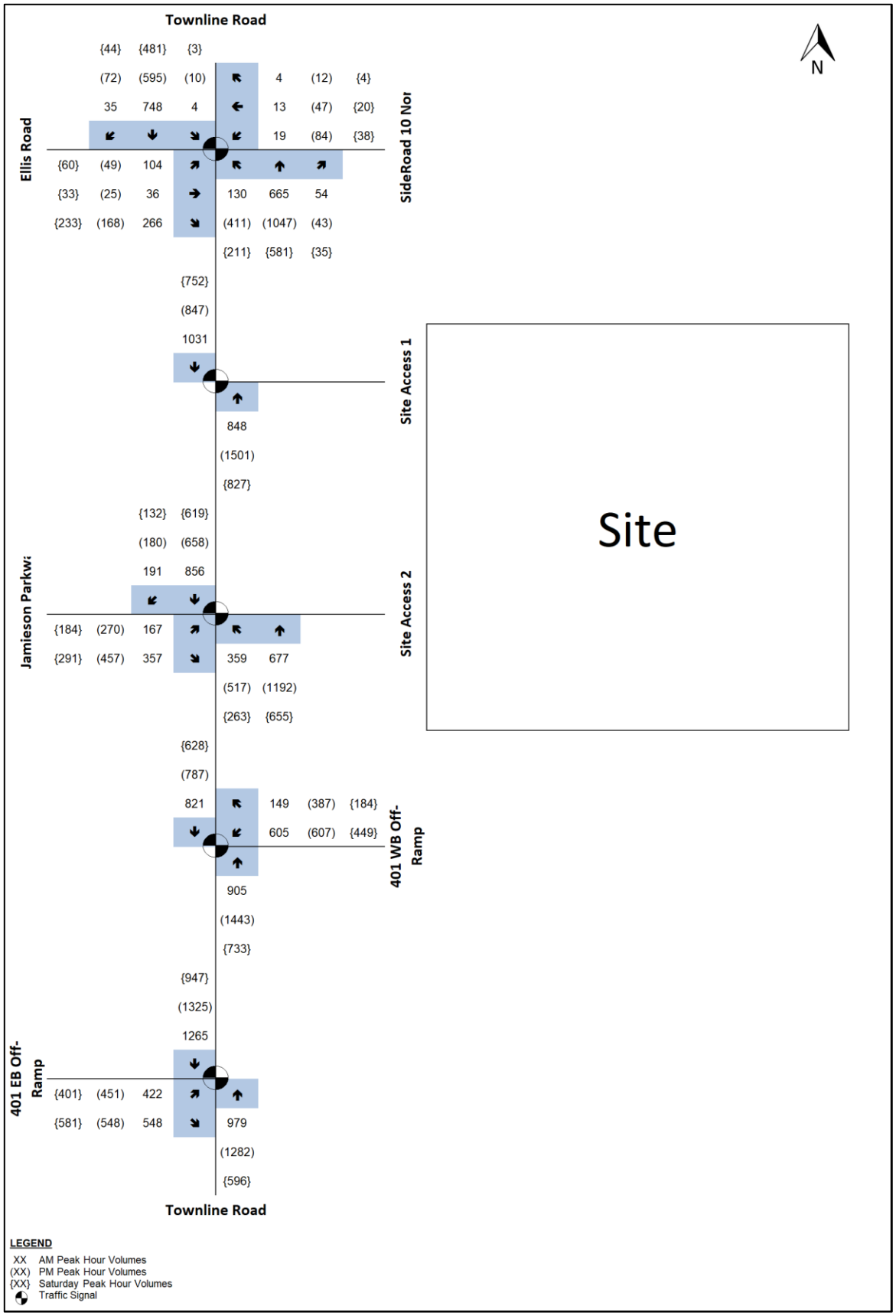


Figure 11 Future Background 2038 Volumes

5. Site Generated Traffic

5.1 Site Trip Generation

As there are two conceptual site plans for the development, site trip generation was calculated separately for each case. In both Site Plans, the trip generation for Buildings 1 through 6 remains the same. 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) 150 – Warehousing was applied to Buildings 1 to 3, and LUC 130 – Industrial Park was used for Buildings 4 to 6.

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.

Table 2 summarizes the estimated trip generation for buildings 1 to 6 for the subject site.

Table 2 Total Site Trip Generation for Buildings 1 to 6

Land Use Code	GFA	Parameters	Peak Hour Trip Generation								
			Weekday AM			Weekday PM			Saturday Midday		
			In	Out	Total	In	Out	Total	In	Out	Total
Warehousing (LUC 150) Building 1	174,375 ft² GFA	Trip Rate	0.138	0.040	0.178	0.063	0.161	0.224	0.034	0.018	0.052
		Trip Ratio	77%	23%	100%	28%	72%	100%	64%	36%	100%
		New Trips	24	7	31	11	28	39	6	3	9
Warehousing (LUC 150) Building 2	174,375 ft² GFA	Trip Rate	0.138	0.040	0.178	0.063	0.161	0.224	0.034	0.018	0.052
		Trip Ratio	77%	23%	100%	28%	72%	100%	64%	36%	100%
		New Trips	24	7	31	11	28	39	6	3	9
Warehousing (LUC 150) Building 3	174,375 ft² GFA	Trip Rate	0.138	0.040	0.178	0.063	0.161	0.224	0.034	0.018	0.052
		Trip Ratio	77%	23%	100%	28%	72%	100%	64%	36%	100%
		New Trips	24	7	31	11	28	39	6	3	9
Industrial Park (LUC 130) Building 4	112,236 ft² GFA	Trip Rate	0.970	0.294	1.264	0.329	0.846	1.175	0.196	0.400	0.596
		Trip Ratio	77%	23%	100%	28%	72%	100%	32%	68%	100%
		New Trips	109	33	142	37	95	132	22	45	67
Industrial Park (LUC 130) Building 5	112,236 ft² GFA	Trip Rate	0.970	0.294	1.264	0.329	0.846	1.175	0.196	0.400	0.596
		Trip Ratio	77%	23%	100%	28%	72%	100%	32%	68%	100%
		New Trips	109	33	142	37	95	132	22	45	67
Industrial Park	105,636 ft² GFA	Trip Rate	1.032	0.303	1.335	0.350	0.890	1.240	0.189	0.417	0.606
		Trip Ratio	77%	23%	100%	28%	72%	100%	32%	68%	100%

(LUC 130) Building 6		New Trips	109	32	141	37	94	131	20	44	64
		Total Trips	**399**	**119**	**518**	**144**	**368**	**512**	**82**	**143**	**225**

Site Plan A

For Site Plan A the site includes the addition of 1 big box retail with a GFA of 162,428 ft^2 and a gas station with 24 fueling stations.

To determine the site generated traffic for the big box retailer the average of LUC 815 – Free Standing Discount Store, 862 – Home Improvement Store, 863 – Electronic Superstore and 869 – Discount Home Furnishing Superstore. The gas station used LUC 945 – Convenience Store/Gas Station.

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 each assumed land use for the big box retail and based on the averages between the uses. The gas station also applied pass-by rates based on the ITE published document.

The table below outlines the adjusted site trips generated as well as the average of the trips and pass-by that were applied to the study intersections.

Table 3 Site Trip Generation – 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
Free Standing Discount Store (LUC 815)	162,426 ft^2 GFA	Trip Rate	0.825	0.357	1.182	2.432	2.425	4.857	3.589	3.454	7.043
		Trip Ratio	70%	30%	100%	50%	50%	100%	51%	49%	100%
		Gross Trips	134	58	192	395	394	789	583	561	1144
		Pass-by Trips	20	20	40	79	79	158	138	138	276
		Adjusted Trips	114	38	152	316	315	631	445	423	868
Home Improvement Store (LUC 862)	162,426 ft^2 GFA	Trip Rate	0.138	0.040	0.178	1.114	1.164	2.278	2.222	2.137	4.359
		Trip Ratio	57%	43%	100%	49%	51%	100%	51%	49%	100%
		Gross Trips	139	105	244	181	189	370	361	347	708
		Pass-by Trips	0	0	0	78	78	156	0	0	0
		Adjusted Trips	139	105	244	103	111	214	361	347	708
Electronic Superstore (LUC 863)	162,426 ft^2 GFA	Trip Rate	0.357	0.135	0.493	3.497	3.497	6.994	3.294	3.164	6.458
		Trip Ratio	73%	27%	100%	50%	50%	100%	51%	49%	100%
		Gross Trips	58	22	80	568	568	1136	535	514	1049
		Pass-by Trips	0	0	0	228	228	456	0	0	0

		Adjusted Trips	58	22	80	340	340	680	535	514	1049
Discount Home Furnishing Superstore (LUC 869)	162,426 ft² GFA	Trip Rate	0.369	0.203	0.573	0.831	0.739	1.570	1.835	1.563	3.398
		Trip Ratio	64%	36%	100%	53%	47%	100%	54%	46%	100%
		Gross Trips	60	33	93	135	120	255	298	254	552
		Pass-by Trips	0	0	0	0	0	0	0	0	0
		Adjusted Trips	60	33	93	135	120	255	298	254	552
Average Trips			**93**	**50**	**142**	**224**	**222**	**445**	**410**	**385**	**794**
Average Pass-by Trips			**5**	**5**	**10**	**96**	**96**	**192**	**34**	**34**	**68**
Industrial Park (LUC 130) Building 6	105,636 ft² GFA	Trip Rate	6.833	6.833	13.667	7.917	7.916	15.833	7.208	7.167	14.375
		Trip Ratio	50%	50%	100%	50%	50%	100%	50%	50%	100%
		Gross Trips	164	164	328	190	190	380	173	172	345
		Pass-by Trips	125	125	250	143	143	286	0	0	0
		Adjusted Trips	39	39	78	47	47	94	173	172	345
Total Trips			**132**	**89**	**221**	**271**	**269**	**540**	**583**	**557**	**1140**
Total Pass-by Trips			**130**	**130**	**260**	**239**	**239**	**478**	**34**	**34**	**68**

Table 4 Total Site Trip Generation - Site Plan A

Buildings	Peak Hour Trip Generation								
	Weekday AM			Weekday PM			Saturday Midday		
	In	Out	Total	In	Out	Total	In	Out	Total
Retail and Gas Station Site Trips	132	89	221	271	269	540	583	557	1140
Buildings 1 to 6 Site Trips	399	119	518	144	368	512	82	143	225
Total Site Trips	**531**	**208**	**739**	**415**	**637**	**1052**	**665**	**700**	**1365**
Retail and Gas Station Pass-by Trips	**130**	**130**	**260**	**239**	**239**	**478**	**34**	**34**	**68**

The proposed Site Plan A development is expected to generate a total of 739 two-way site trips during the a.m. peak hour consisting of 531 inbound and 208 outbound trips. During the p.m. peak hour, it is expected to generate 1052 new two-way site trips consisting of 415 inbound and 637 outbound trips. During the Saturday peak hour, it is expected to generate 1365 new two-way site trips consisting of 665 inbound and 700 outbound trips.

Additionally, the development is expected to generate a total of 260 two-way pass-by trips during the a.m. peak hour consisting of 130 inbound and 130 outbound trips. During the p.m. peak hour, it is expected to generate 478 pass-by trips consisting of 239 inbound and 239 outbound trips. During the Saturday peak hour, it is expected to generate 68 pass-by trips consisting of 34 inbound and 34 outbound trips. The pass by trips for the retail and the gas station component are shown below.

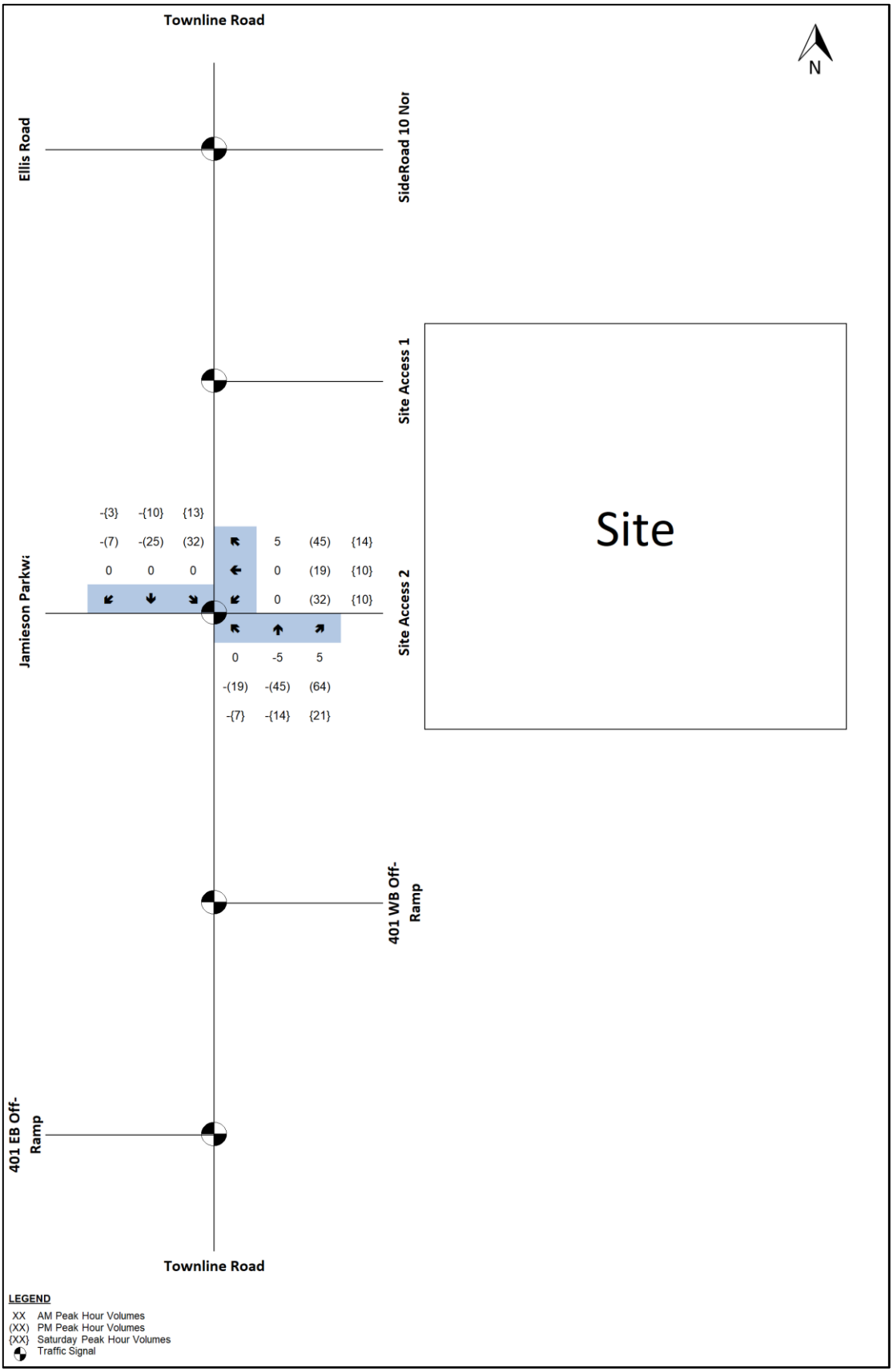


Figure 12 Retail Pass-By Trips

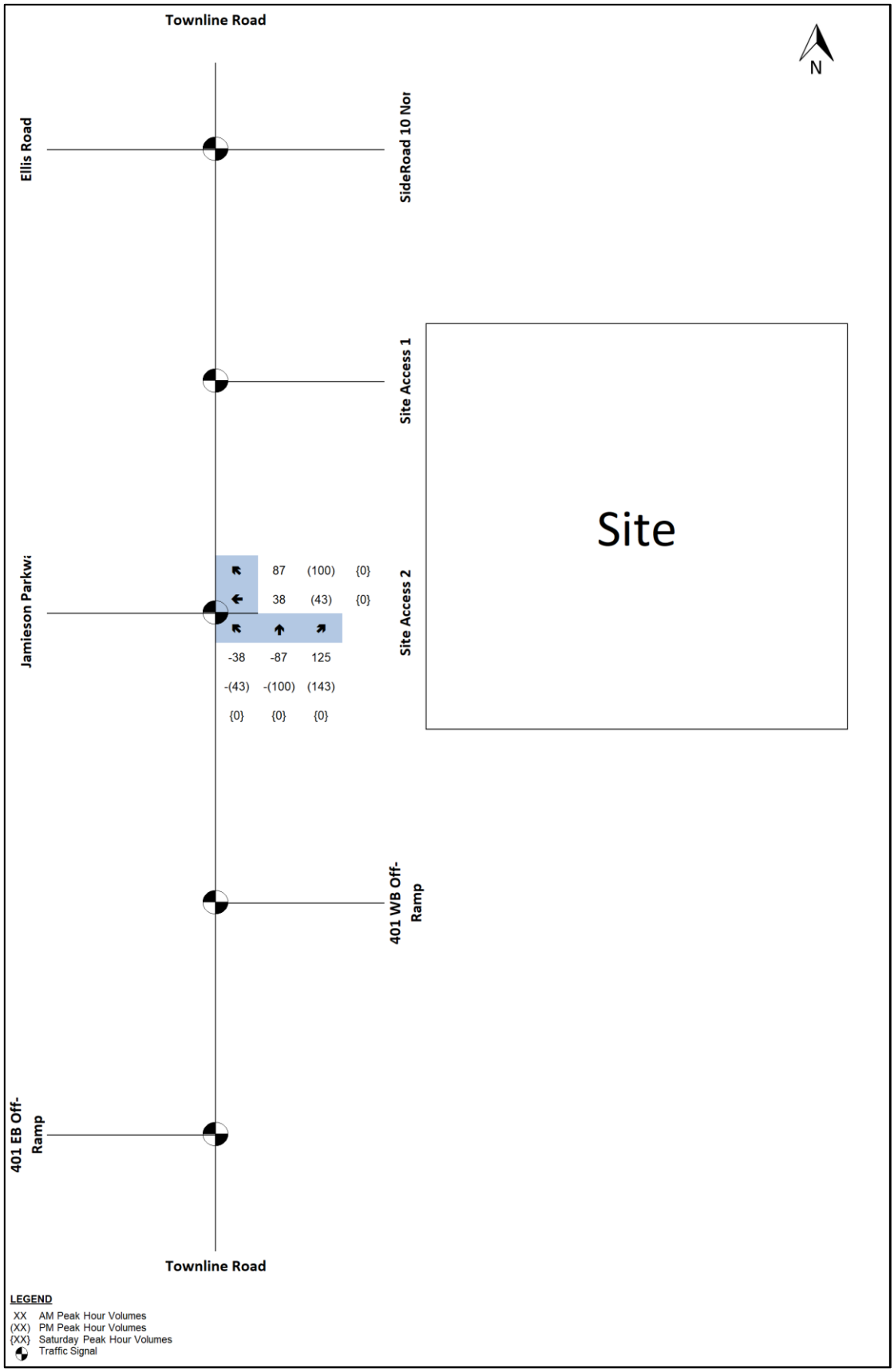


Figure 13 Gas Station Pass-By Trips

Site Plan B

For Site Plan B, the site includes the addition of two warehouses referred to as building 7 and 8 located on the southern portion of the lot with a GFA of 210,00 ft^2 for each building.

To determine the site generated traffic for the warehouses LUC 150 – Warehousing was selected and applied as part of the ITE 12th edition trip generation manual.

The table below summarizes the estimated trip generation for new buildings 7 and 8 on the subject site.

Table 5 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
Warehousing (LUC 150) Building 7	210,000 ft^2 GFA	Trip Rate	0.129	0.033	0.162	0.057	0.148	0.205	0.033	0.019	0.052
		Trip Ratio	77%	23%	100%	28%	72%	100%	64%	36%	100%
		Gross Trips	27	7	34	12	31	43	7	4	11
Warehousing (LUC 150) Building 8	210,000 ft^2 GFA	Trip Rate	0.129	0.033	0.162	0.057	0.148	0.205	0.033	0.019	0.052
		Trip Ratio	77%	23%	100%	28%	72%	100%	64%	36%	100%
		Gross Trips	27	7	34	12	31	43	7	4	11
Buildings 7 and 8 Total Site Trips			**54**	**14**	**68**	**24**	**62**	**86**	**14**	**8**	**22**

Table 6 Total Site Trip Generation - Site Plan B

Buildings	Peak Hour Trip Generation								
	Weekday AM			Weekday PM			Saturday Midday		
	In	Out	Total	In	Out	Total	In	Out	Total
Buildings 1 to 6 Site Trips	399	119	518	144	368	512	82	143	225
Buildings 7 and 8 Site Trips	54	14	68	24	62	86	14	8	22
Total Site Trips	**453**	**133**	**586**	**168**	**430**	**598**	**96**	**151**	**247**

The proposed Site Plan B development is expected to generate a total of 586 two-way site trips during the a.m. peak hour consisting of 453 inbound and 133 outbound trips. During the p.m. peak hour, it is expected to generate 598 new two-way site trips consisting of 168 inbound and 430 outbound trips. During the Saturday peak hour, it is expected to generate 247 new two-way site trips consisting of 96 inbound and 151 outbound trips.

5.2 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 7** and **Table 8** and the distribution for Site Plan B is summarized in **Table 9.**

Table 7 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	25%	30%	5%	10%	15%	10%	5%	0%	0%
	Outbound	25%	35%	5%	5%	10%	0%	0%	10%	10%
PM	Inbound	20%	35%	5%	5%	10%	15%	10%	0%	0%
	Outbound	30%	25%	5%	5%	25%	0%	0%	5%	5%
Sat	Inbound	20%	35%	5%	5%	10%	15%	10%	0%	0%
	Outbound	25%	30%	5%	5%	25%	0%	0%	5%	5%

Table 8 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%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%
PM	Inbound	10%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%
Sat	Inbound	10%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%

Table 9 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%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%
PM	Inbound	10%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%
Sat	Inbound	10%	40%	10%	5%	0%	20%	15%	0%	0%
	Outbound	10%	25%	15%	5%	5%	0%	0%	20%	20%

The percentage distributions for the conceptual site plans are shown below

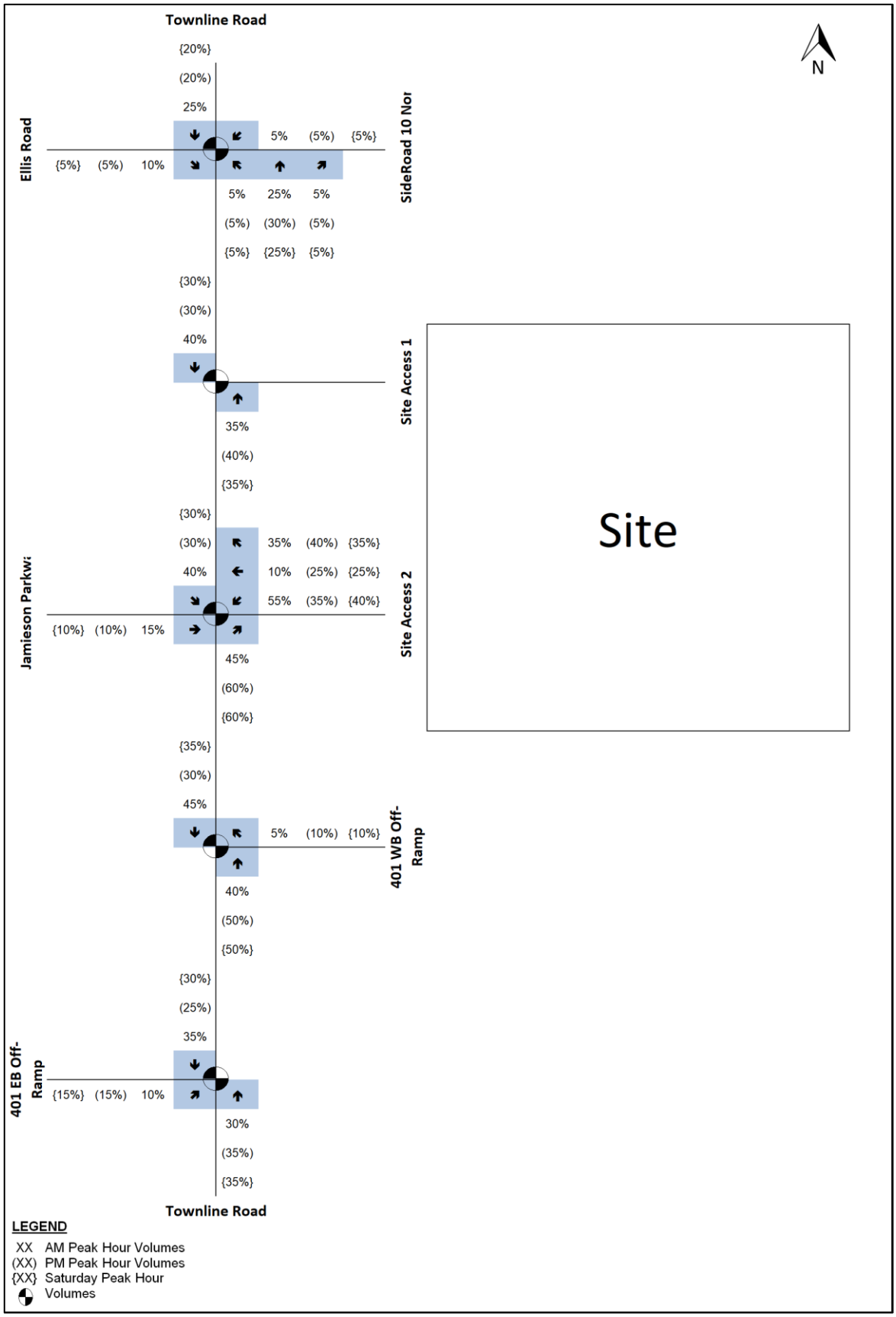


Figure 14 Site Trip Distribution Commercial – Site Plan A

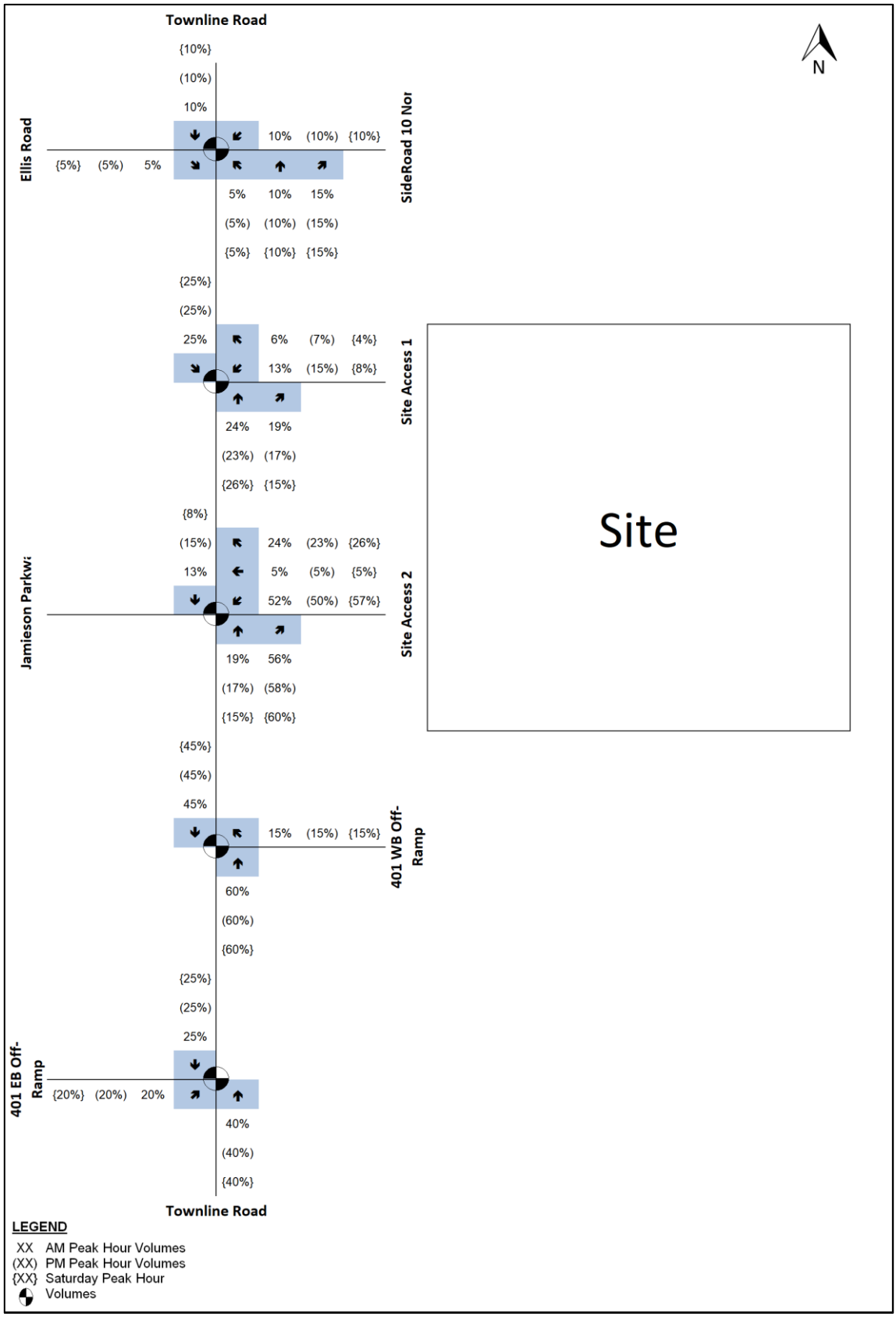


Figure 15 Site Trip Distribution Industrial – Site Plan A

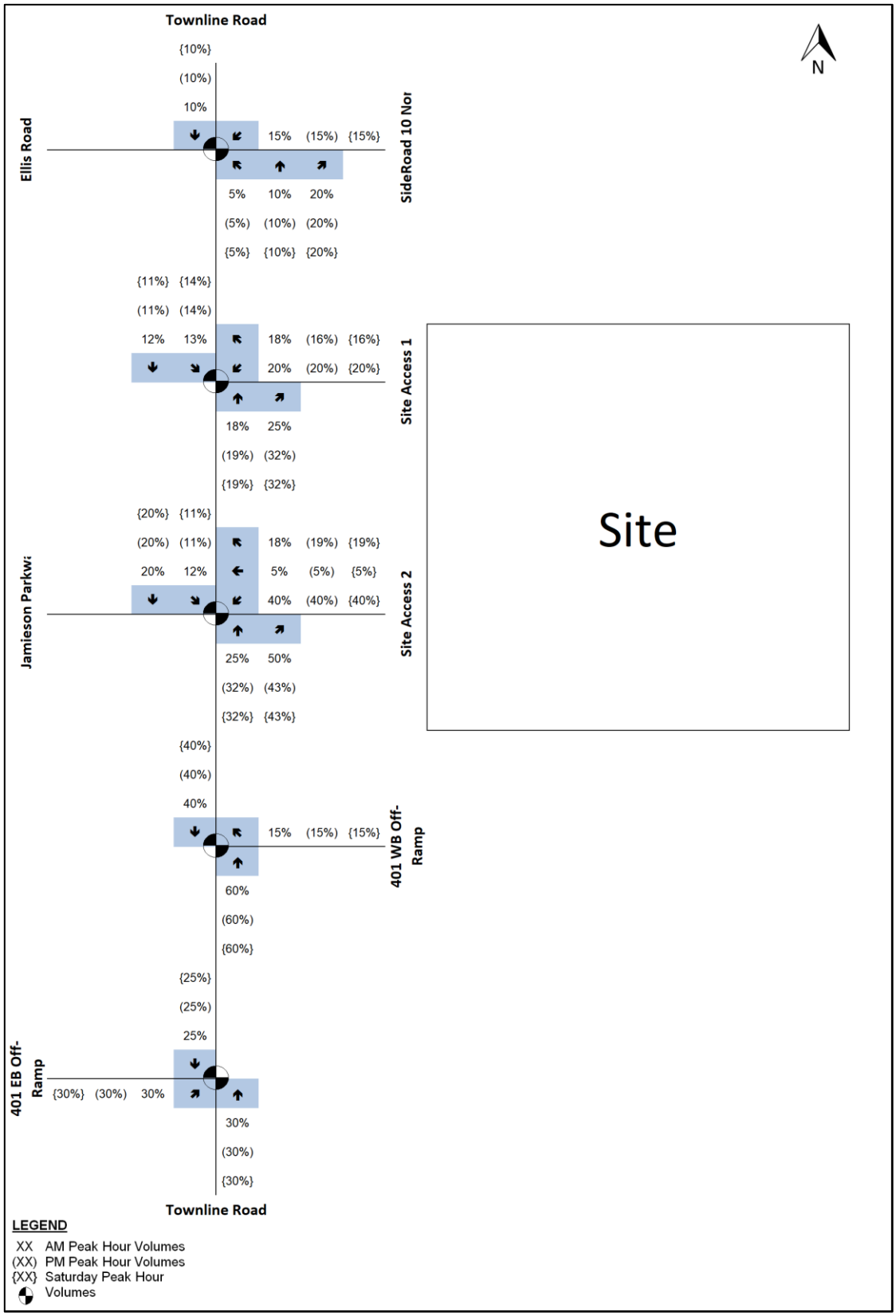


Figure 16 Site Trip Distribution Industrial – Site Plan B

The total site trips for each Site Plan are shown in Error! Reference source not found.**Figure 17** and **Figure 18**

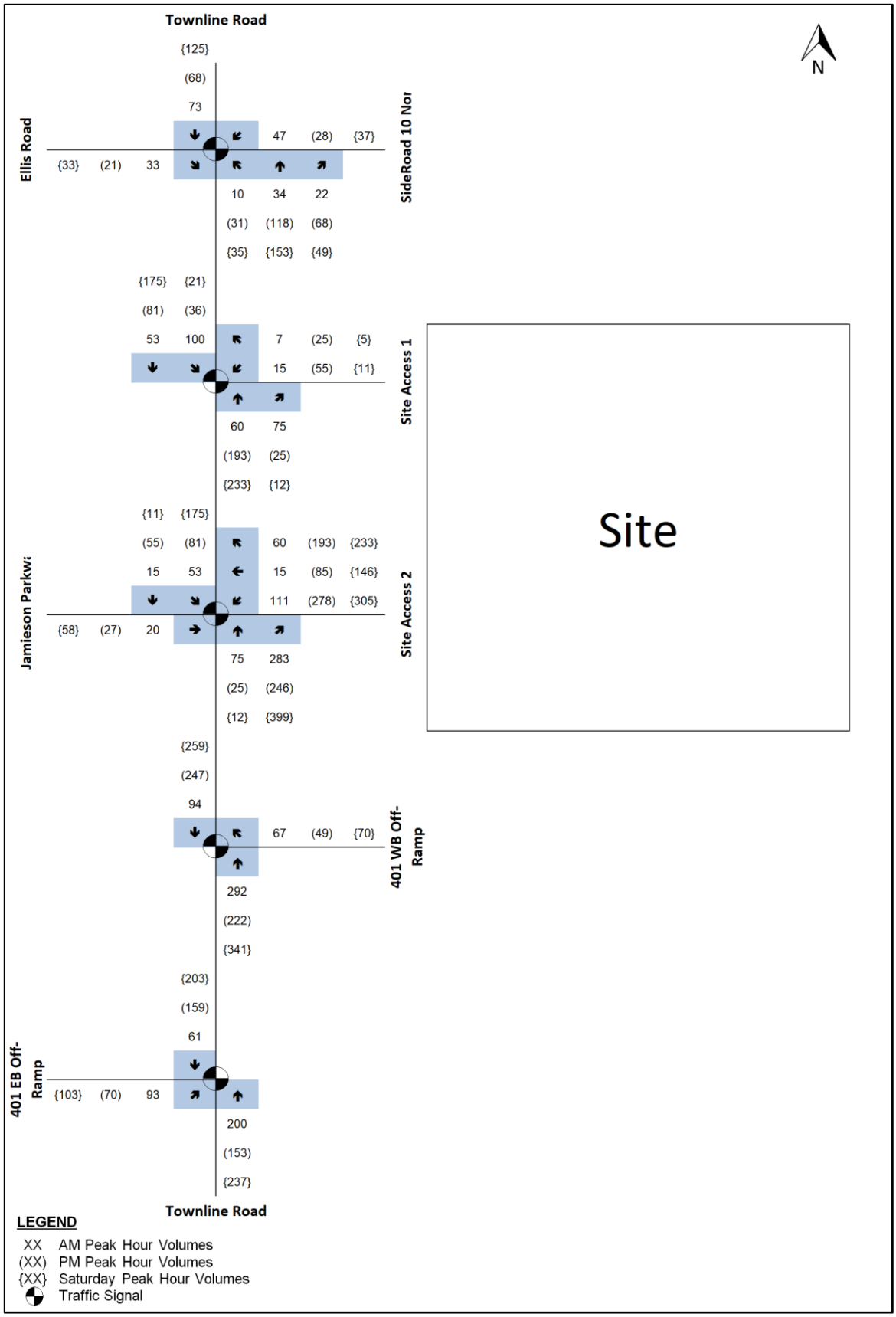


Figure 17 Total Site Trips – Site Plan A

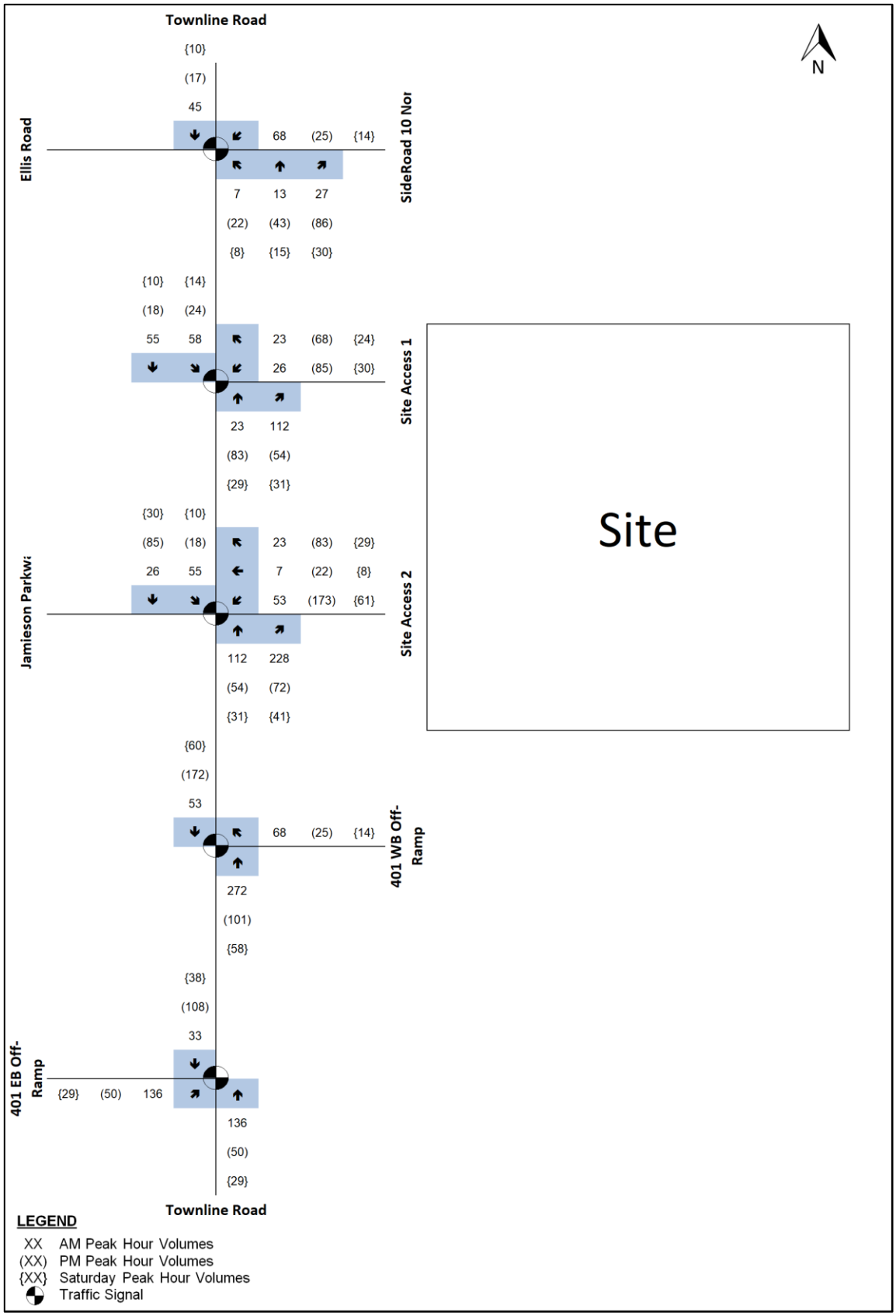


Figure 18 Total Site Trips – Site Plan B

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 19** to Figure 21Figure 20 for Site Plan A and **Figure 22** and **Figure 24**Figure 24 for Site Plan B.

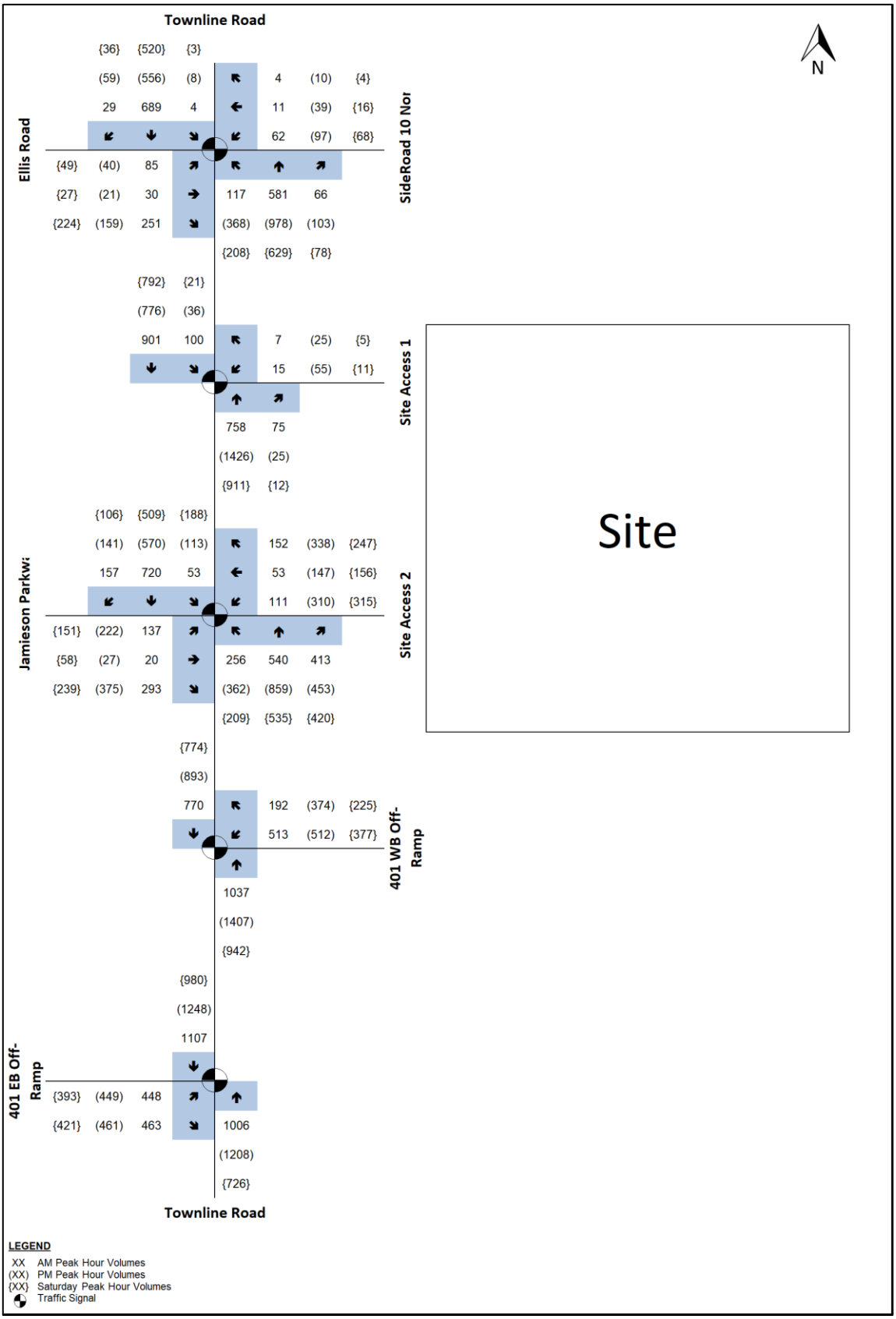


Figure 19 2028 Future Total Traffic Volumes – Site Plan A

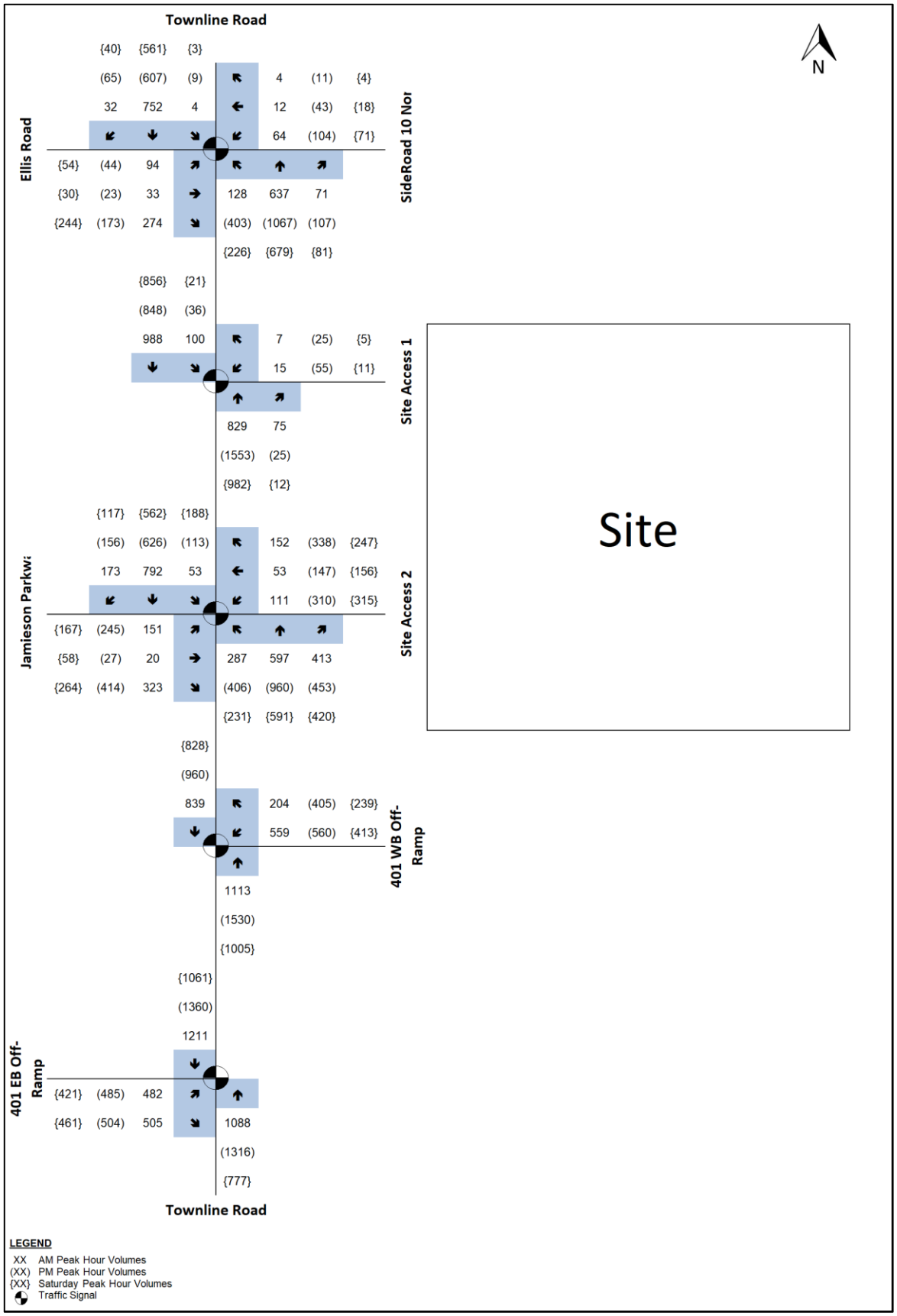


Figure 20 2033 Future Total Traffic Volumes – Site Plan A

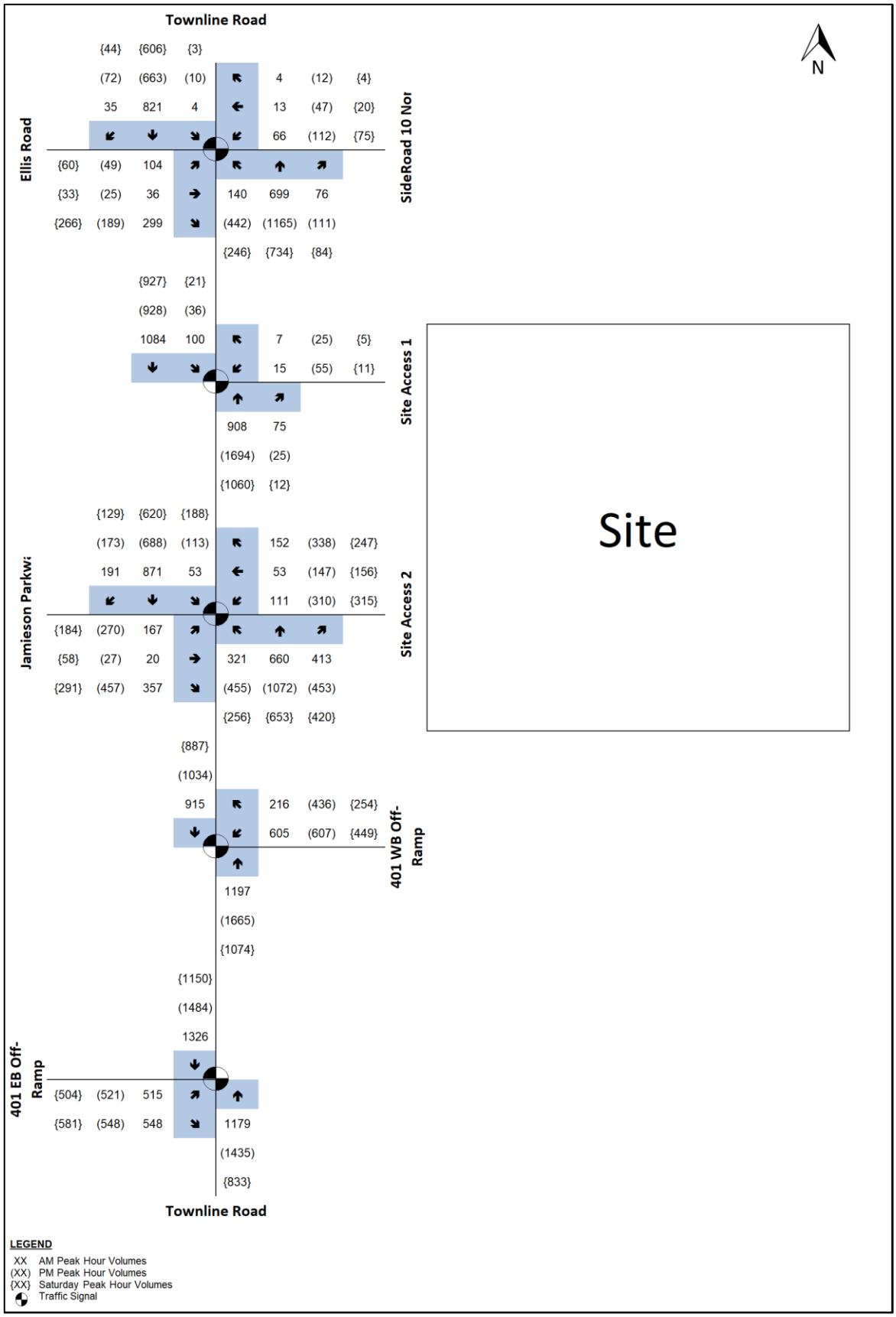


Figure 21 Future Total 2038 Traffic Volumes - Site Plan A

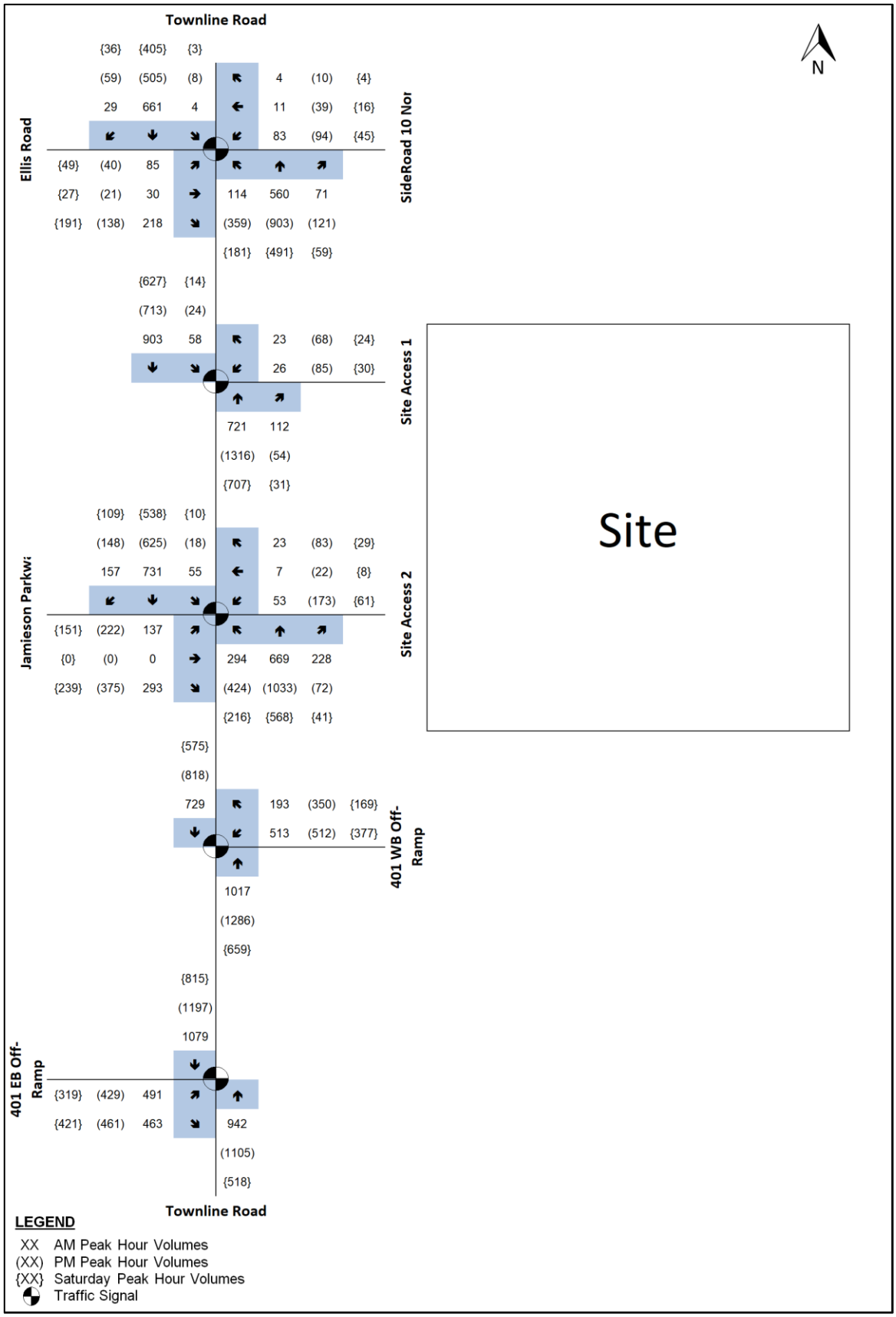


Figure 22 2028 Future Total Traffic Volumes – Site Plan B

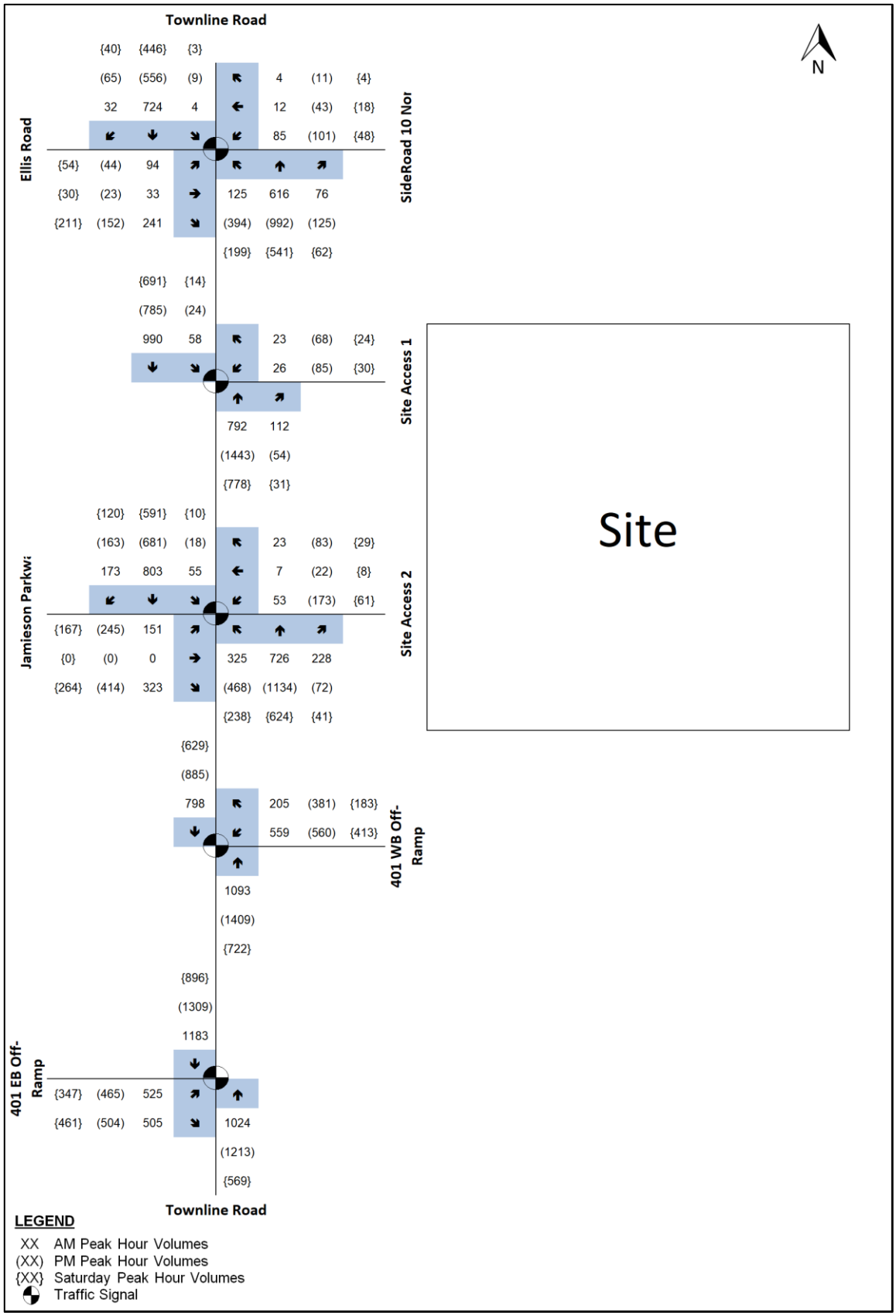


Figure 23 Future Total 2033 Volumes - Site Plan B

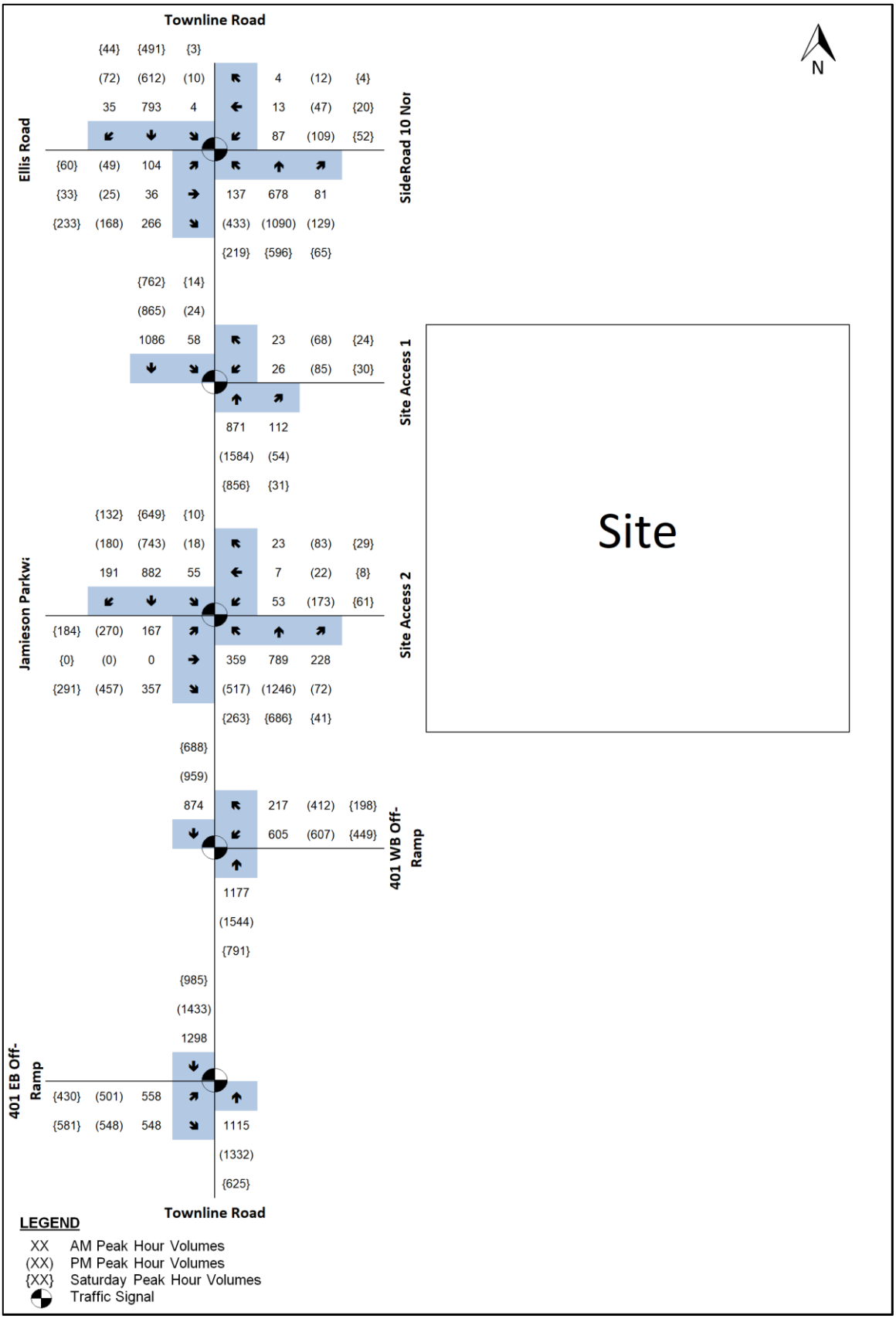


Figure 24 2038 Future Total Traffic Volumes – Site Plan B

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 10 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: 0.67 (C) 20 EBL = 0.73 (C) 33 **EBR = 0.86 (D) 46** NBT = 0.38 (B) 11 SBT = 0.57 (B) 13	 EBL = 80 m EBR = 100 m NBT = 50 m SBT = 85 m	Overall: 0.7 (C) 21 EBL = 0.7 (C) 31 **EBR = 0.85 (D) 42** NBT = 0.51 (B) 14 SBT = 0.61 (B) 15	 EBL = 85 m EBR = 100 m NBT = 90 m SBT = 110 m	Overall: 0.54 (B) 16 EBL = 0.61 (C) 25 EBR = 0.74 (C) 30 NBT = 0.24 (A) 8 SBT = 0.44 (B) 10	 EBL = 55 m EBR = 60 m NBT = 30 m SBT = 60 m
Future Background 2028	Overall: 0.75 (C) 23 EBL = 0.71 (C) 31 **EBR = 0.93 (D) 54** NBT = 0.43 (B) 13 SBT = 0.65 (B) 16	 EBL = 85 m EBR = 125 m NBT = 55 m SBT = 95 m	Overall: 0.75 (C) 23 EBL = 0.69 (C) 30 **EBR = 0.87 (D) 44** NBT = 0.57 (B) 16 SBT = 0.67 (B) 18	 EBL = 90 m EBR = 110 m NBT = 100 m SBT = 120 m	Overall: 0.58 (B) 17 EBL = 0.62 (C) 24 **EBR = 0.79 (C) 33** NBT = 0.26 (A) 9 SBT = 0.47 (B) 11	 EBL = 55 m EBR = 70 m NBT = 35 m SBT = 65 m
Future Total 2028 (Site Plan A)	Overall: 0.79 (C) 26 **EBL = 0.89 (D) 46** **EBR = 0.94 (E) 56** NBT = 0.54 (B) 14 SBT = 0.71 (B) 17	 EBL = 125 m EBR = 125 m NBT = 75 m SBT = 105 m	**Overall: 0.84 (C) 26** **EBL = 0.8 (D) 35** **EBR = 0.88 (D) 44** NBT = 0.66 (B) 18 SBT = 0.82 (C) 23	 EBL = 110 m EBR = 125 m NBT = 120 m SBT = 165 m	Overall: 0.71 (B) 19 **EBL = 0.77 (C) 30** **EBR = 0.82 (D) 35** NBT = 0.4 (B) 11 SBT = 0.64 (B) 14	 EBL = 80 m EBR = 80 m NBT = 50 m SBT = 90 m
Future Total 2028 (Site Plan B)	Overall: 0.78 (C) 27 **EBL = 0.95 (E) 58** **EBR = 0.87 (D) 45** NBT = 0.51 (B) 14 SBT = 0.67 (B) 17	 EBL = 145 m EBR = 120 m NBT = 70 m SBT = 100 m	Overall: 0.82 (C) 25 **EBL = 0.77 (C) 34** **EBR = 0.88 (D) 44** NBT = 0.6 (B) 17 SBT = 0.78 (C) 21	 EBL = 105 m EBR = 120 m NBT = 105 m SBT = 150 m	Overall: 0.62 (B) 18 EBL = 0.67 (C) 26 **EBR = 0.8 (C) 34** NBT = 0.28 (A) 10 SBT = 0.52 (B) 12	 EBL = 65 m EBR = 75 m NBT = 35 m SBT = 70 m
Future Background 2033	Overall: 0.84 (C) 28 EBL = 0.74 (C) 32 **EBR = 1.00 (E) 73** NBT = 0.49 (B) 14 SBT = 0.73 (B) 19	 EBL = 95 m EBR = 145 m NBT = 65 m SBT = 110 m	Overall: 0.83 (C) 26 EBL = 0.7 (C) 30 **EBR = 0.91 (D) 49** NBT = 0.65 (B) 20 SBT = 0.77 (C) 23	 EBL = 100 m EBR = 140 m NBT = 115 m SBT = 140 m	Overall: 0.66 (B) 19 EBL = 0.61 (C) 24 **EBR = 0.85 (D) 37** NBT = 0.3 (B) 11 SBT = 0.55 (B) 14	 EBL = 60 m EBR = 95 m NBT = 40 m SBT = 75 m
Future Total 2033 (Site Plan A)	**Overall: 0.87 (C) 31** **EBL = 0.92 (D) 50** **EBR = 1.02 (E) 76** NBT = 0.59 (B) 16 SBT = 0.79 (C) 20	 EBL = 140 m EBR = 145 m NBT = 85 m SBT = 125 m	**Overall: 0.92 (C) 32** **EBL = 0.81 (D) 36** **EBR = 0.92 (D) 50** NBT = 0.74 (C) 22 **SBT = 0.93 (C) 33**	 EBL = 120 m EBR = 145 m NBT = 135 m SBT = 205 m	Overall: 0.78 (C) 21 **EBL = 0.77 (C) 29** **EBR = 0.87 (D) 39** NBT = 0.44 (B) 13 SBT = 0.71 (B) 17	 EBL = 85 m EBR = 105 m NBT = 55 m SBT = 100 m
Future Total 2033 (Site Plan B)	**Overall: 0.85 (C) 34** **EBL = 1.01 (E) 71** **EBR = 0.99 (E) 70** NBT = 0.56 (B) 15 SBT = 0.76 (B) 20	 EBL = 155 m EBR = 145 m NBT = 80 m SBT = 115 m	**Overall: 0.9 (C) 30** **EBL = 0.78 (C) 34** **EBR = 0.92 (D) 50** NBT = 0.69 (C) 21 **SBT = 0.89 (C) 30**	 EBL = 115 m EBR = 145 m NBT = 120 m SBT = 190 m	Overall: 0.7 (B) 20 EBL = 0.66 (C) 25 **EBR = 0.86 (D) 39** NBT = 0.33 (B) 11 SBT = 0.6 (B) 15	 EBL = 70 m EBR = 100 m NBT = 40 m SBT = 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 Background 2038	**Overall: 0.93 (D) 35** **EBL = 0.8 (D) 36** **EBR = 1.12 (F) 108** NBT = 0.53 (B) 15 SBT = 0.81 (C) 21	EBL = 115 m EBR = 165 m NBT = 75 m SBT = 130 m	**Overall: 0.91 (C) 32** EBL = 0.72 (C) 30 **EBR = 0.96 (E) 57** NBT = 0.74 (C) 23 **SBT = 0.88 (C) 30**	EBL = 110 m EBR = 165 m NBT = 130 m SBT = 170 m	Overall: 0.8 (C) 28 EBL = 0.67 (C) 24 **EBR = 0.99 (E) 62** NBT = 0.36 (B) 14 SBT = 0.65 (B) 18	EBL = 80 m EBR = 145 m NBT = 40 m SBT = 85 m
Future Total 2038 (Alterative A)	**Overall: 0.96 (D) 40** **EBL = 0.98 (E) 64** **EBR = 1.13 (F) 112** NBT = 0.64 (B) 17 **SBT = 0.86 (C) 24**	EBL = 150 m EBR = 170 m NBT = 95 m SBT = 145 m	**Overall: 1 (D) 45** **EBL = 0.83 (D) 36** **EBR = 0.96 (E) 59** NBT = 0.84 (C) 27 **SBT = 1.04 (E) 58**	EBL = 145 m EBR = 165 m NBT = 155 m SBT = 235 m	**Overall: 0.91 (C) 31** **EBL = 0.84 (C) 33** **EBR = 1.03 (E) 73** NBT = 0.5 (B) 16 SBT = 0.81 (C) 22	EBL = 120 m EBR = 155 m NBT = 60 m SBT = 115 m
Future Total 2038 (Alterative B)	**Overall: 0.95 (D) 45** **EBL = 1.09 (F) 95** **EBR = 1.13 (F) 112** NBT = 0.62 (B) 16 **SBT = 0.85 (C) 23**	EBL = 175 m EBR = 170 m NBT = 90 m SBT = 140 m	**Overall: 1 (D) 44** **EBL = 0.81 (C) 34** **EBR = 0.97 (E) 61** NBT = 0.8 (C) 26 **SBT = 1.03 (E) 55**	EBL = 140 m EBR = 175 m NBT = 145 m SBT = 225 m	**Overall: 0.79 (C) 23** EBL = 0.66 (C) 24 **EBR = 0.92 (D) 46** NBT = 0.38 (B) 13 SBT = 0.7 (B) 18	EBL = 75 m EBR = 125 m NBT = 45 m SBT = 95 m

7.1.1 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 11 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	515	4%	536	90	13.4	20	150	390
	NBT	1179	4%	1226	90	15.3	22	165	N/A
	SBT	1326	7%	1419	90	17.7	25	187.5	N/A
Future Total 2038-PM (ALT A)	EBL	521	3%	537	100	14.9	21	157.5	390
	NBT	1435	1%	1449	100	20.1	28	210	N/A
	SBT	1484	5%	1558	100	21.6	29	217.5	N/A
	EBL	504	2%	514	80	11.4	17	127.5	390

Future Total 2038- SAT (ALT A)	NBT	833	2%	850	80	9.4	15	112.5	N/A
	SBT	1150	2%	1173	80	13.0	19	142.5	N/A
Future Total 2038- AM (ALT B)	EBL	558	4%	580	90	14.5	21	157.5	390
	NBT	1115	4%	1160	90	14.5	21	157.5	N/A
	SBT	1298	7%	1389	90	17.4	24	180	N/A
Future Total 2038- PM (ALT B)	EBL	501	3%	516	100	14.3	21	157.5	390
	NBT	1332	1%	1345	100	18.7	26	195	N/A
	SBT	1433	5%	1505	100	20.9	29	217.5	N/A
Future Total 2038- SAT (ALT B)	EBL	430	2%	439	80	9.7	15	112.5	390
	NBT	625	2%	638	80	7.1	12	90	N/A
	SBT	985	2%	1005	80	11.2	17	127.5	N/A

7.1.2 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 12 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) (Factored by 1.5)	Recommended Storage, MTO Table B7-5 (vehicles)	Recommended Storage (in metres, 7.5 m/vehicle)	Available Storage (metres)
Future Total 2038- AM (ALT A)	EBR	548	60	90	20.6	28	210	87
Future Total 2038- PM (ALT A)	EBR	548	60	100	22.8	31	232.5	87
Future Total 2038- SAT (ALT A)	EBR	581	60	80	19.4	27	202.5	87
Future Total 2038- AM (ALT B)	EBR	548	60	90	20.6	28	210	87

Future Total 2038- PM (ALT B)	EBR	548	60	100	22.8	31	232.5	87
Future Total 2038- SAT (ALT B)	EBR	581	60	80	19.4	27	202.5	87

Under existing traffic conditions, the intersection operates at satisfactory levels with an overall V/C ratio of 0.67 LOS C during the a.m. peak hour, 0.70 LOS C during the p.m. peak hour and an overall V/C of 0.54 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 0.75 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 0.58 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 0.79 LOS D during the a.m. peak hour, 0.84 LOS C during the p.m. peak hour and an overall V/C of 0.71 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.89 LOS D as well as the eastbound right lane which reports a V/C of 0.94 LOS D during the a.m. peak hour. During the p.m. peak hour the eastbound left reports a critical V/C of 0.80 LOS D and the eastbound right reports critical with a V/C of 0.88 LOS D. During the Saturday peak hour the eastbound left reports critical with a V/C of 0.77 LOS C and the eastbound right-turn reports critical with a V/C of 0.88 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: 16% of left turning volume
- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound left movement: 26% 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 0.78 LOS D during the a.m. peak hour, 0.82 LOS C during the p.m. peak hour and an overall V/C of 0.62 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.95 LOS D as well as the eastbound right lane which reports a V/C of 0.87 LOS D during the a.m. peak hour. During the p.m. peak hour, the eastbound left reports a critical V/C of 0.77 LOS D and the eastbound right reports critical with a V/C of 0.88 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: 28% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound left movement: 12% of left turning volume
- Eastbound right movement: 0% of right-turning volume

Saturday Peak Hour

- Eastbound left movement: 9% of left turning volume
- 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 0.84 LOS C during the a.m. peak hour, an overall V/C of 0.83 LOS C during the p.m. peak hour and an overall V/C ratio of 0.66 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 0.87 LOS C during the a.m. peak hour, 0.92 LOS C during the p.m. peak hour and an overall V/C of 0.78 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 0.92 LOS D as well as the eastbound right lane which reports a V/C of 1.02 LOS E during the a.m. peak hour. During the p.m. peak hour, the eastbound left reports a critical V/C of 0.81 LOS D, the eastbound right reports critical with a V/C of 0.92 LOS D and the southbound through reports a critical V/C of 0.93. During the Saturday peak hour, the eastbound left reports critical with a V/C of 0.77 LOS C and the eastbound right-turn reports critical with a V/C of 0.87 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: 19% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound left movement: 14% of left turning volume
- Eastbound right movement: 0% of right-turning volume
- Southbound through movement: 12% of through volume

Saturday Peak Hour

- Eastbound left movement: 24% 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 0.85 LOS D during the a.m. peak hour, 0.90 LOS C during the p.m. peak hour and an overall V/C of 0.70 LOS C during the Saturday peak hour. The eastbound left lane reports critical with a V/C of 1.01 LOS E as well as the eastbound right lane which reports a V/C of 0.99 LOS E during the a.m. peak hour. During the p.m. peak hour, the eastbound left reports a critical V/C of 0.78 LOS C, the eastbound right reports critical with a V/C of 0.92 LOS D and the southbound through reports a critical V/C of 0.89 LOS C. During the Saturday peak hour,

the eastbound right-turn reports critical with a V/C of 0.86 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: 26% of left turning volume
- Eastbound right movement: 0% of right-turning volume

P.M. Peak Hour

- Eastbound left movement: 11% of left turning volume
- Eastbound right movement: 0% of right-turning volume
- Southbound through movement: 8% of through 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 0.93 LOS D during the a.m. peak hour, an overall V/C of 0.91 LOS C during the p.m. peak hour and an overall V/C ratio of 0.80 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 0.96 LOS D during the a.m. peak hour, critical V/C of 1.00 LOS D during the p.m. peak hour and a critical V/C of 0.91 LOS C during the Saturday peak hour. During the a.m. peak hour, the eastbound left, right and southbound through 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: 17% of left turning volume
- Eastbound right movement: 0% of right turning volume
- Southbound through movement: 5% of through volume

P.M. Peak Hour

- Eastbound left movement: 13% of left turning volume
- Eastbound right movement: 0% of right turning volume
- Southbound through movement: 11% of through volume

Saturday Peak Hour

- Eastbound left movement: 20% 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 0.95 LOS D during the a.m. peak hour, critical V/C of 1.00 LOS D during the p.m. peak hour and an overall V/C of 0.79 LOS B during the Saturday peak hour. During the a.m. peak hour, the eastbound left, and eastbound right and southbound through movement report critical movements. The p.m. peak hour also reports critical movements in the eastbound right, and southbound through. 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: 24% of left turning volume
- Eastbound right movement: 0% of right turning volume
- Southbound through movement: 3% of through volume

P.M. Peak Hour

- Eastbound left movement: 10% of left turning volume
- Eastbound right movement: 0% of right turning volume
- Southbound through movement: 7% of through 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 28% of left-turning volume during the a.m. 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.

As indicated by the queueing analysis there is sufficient queue length for the left-turn lane however the eastbound recommended length exceeds the available eastbound right storage.

7.1.3 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 the ramp need for improvement. 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 over capacity. The below capacity table shows the result of the improvement in the ultimate condition.

Table 13 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: 0.82 (C) 22 **EBLR = 0.79 (C) 33** **EBR = 0.82 (D) 41** NBT = 0.61 (B) 14 SBT = 0.82 (B) 19	 EBLR = 75 m EBR = 95 m NBT = 95 m SBT = 145 m	**Overall: 0.88 (C) 26** EBLR = 0.74 (C) 30 **EBR = 0.79 (D) 38** NBT = 0.75 (B) 18 **SBT = 0.93 (C) 28**	 EBLR = 75 m EBR = 90 m NBT = 155 m SBT = 235 m	Overall: 0.75 (B) 19 EBLR = 0.74 (C) 26 **EBR = 0.76 (C) 31** NBT = 0.46 (B) 12 SBT = 0.75 (B) 17	 EBLR = 65 m EBR = 75 m NBT = 60 m SBT = 115 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: 0.82 (C) 23 **EBLR = 0.81 (C) 33** **EBR = 0.84 (D) 43** NBT = 0.6 (B) 14 SBT = 0.81 (B) 20	 EBLR = 80 m EBR = 105 m NBT = 90 m SBT = 140 m	**Overall: 0.87 (C) 25** **EBLR = 0.75 (C) 30** **EBR = 0.8 (D) 38** NBT = 0.71 (B) 17 **SBT = 0.91 (C) 27**	 EBLR = 75 m EBR = 90 m NBT = 145 m SBT = 225 m	Overall: 0.64 (B) 16 EBLR = 0.67 (C) 24 EBR = 0.66 (C) 27 NBT = 0.34 (A) 9 SBT = 0.63 (B) 13	 EBLR = 50 m EBR = 55 m NBT = 45 m SBT = 95 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 0.82 LOS C during the a.m. peak hour, an overall V/C of 0.88 LOS C during the p.m. peak and an overall V/C of 0.75 LOS B Saturday peak hour. The eastbound left and right reports critical during the a.m. peak. The eastbound right turn lane and southbound lane reports critical in p.m. peak and the eastbound right turn lane reports critical in the Saturday peak hour.

Under the future total 2038 for Site B reports a V/C of 0.82 LOS C during the a.m. peak hour, an overall V/C of 0.87 LOS C during the p.m. peak and an overall V/C of 0.75 LOS B during the Saturday peak hour. The eastbound left and right reports critical during the a.m. peak. The eastbound right turn lane, eastbound left/right turn lane and southbound lane report critical in p.m. peak and the eastbound right turn lane reports critical in the Saturday peak hour.

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.

7.2 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 14 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: 0.62 (C) 22 WBL = 0.44 (C) 23 WBR = 0.52 (C) 26 NBT = 0.71 (C) 23 SBT = 0.38 (B) 17	 WBL = 50 m WBR = 70 m NBT = 115 m SBT = 55 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

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)	Overall: 0.56 (B) 15 WBL = 0.73 (C) 32 WBR = 0.39 (C) 26 NBT = 0.49 (A) 10 SBT = 0.37 (A) 9	 WBL = 55 m WBR = 35 m NBT = 70 m SBT = 50 m	Overall: 0.74 (C) 25 WBL = 0.44 (C) 23 WBR = 0.63 (C) 30 NBT = 0.84 (C) 28 SBT = 0.53 (B) 19	 WBL = 50 m WBR = 90 m NBT = 150 m SBT = 80 m	Overall: 0.48 (B) 12 WBL = 0.58 (C) 24 WBR = 0.53 (C) 24 NBT = 0.45 (A) 8 SBT = 0.37 (A) 7	 WBL = 35 m WBR = 35 m NBT = 55 m SBT = 40 m
Future Total 2028 (Site Plan B)	Overall: 0.54 (B) 15 WBL = 0.72 (C) 32 WBR = 0.39 (C) 26 NBT = 0.48 (A) 9 SBT = 0.34 (A) 8	 WBL = 50 m WBR = 35 m NBT = 70 m SBT = 45 m	Overall: 0.68 (C) 23 WBL = 0.43 (C) 23 WBR = 0.58 (C) 28 NBT = 0.77 (C) 25 SBT = 0.49 (B) 19	 WBL = 50 m WBR = 80 m NBT = 135 m SBT = 75 m	Overall: 0.39 (B) 12 WBL = 0.59 (C) 24 WBR = 0.12 (C) 21 NBT = 0.31 (A) 7 SBT = 0.28 (A) 6	 WBL = 35 m WBR = 15 m NBT = 35 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: 0.69 (C) 24 WBL = 0.48 (C) 24 WBR = 0.59 (C) 28 NBT = 0.78 (C) 25 SBT = 0.42 (B) 18	 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: 0.61 (B) 16 **WBL = 0.75 (C) 32** WBR = 0.43 (C) 26 NBT = 0.54 (B) 11 SBT = 0.41 (A) 10	 WBL = 60 m WBR = 40 m NBT = 85 m SBT = 60 m	Overall: 0.81 (C) 28 WBL = 0.48 (C) 24 WBR = 0.69 (C) 32 **NBT = 0.91 (C) 33** SBT = 0.57 (C) 20	 WBL = 60 m WBR = 100 m NBT = 190 m SBT = 90 m	Overall: 0.52 (B) 13 WBL = 0.6 (C) 24 WBR = 0.58 (C) 25 NBT = 0.49 (A) 9 SBT = 0.4 (A) 8	 WBL = 35 m WBR = 40 m NBT = 60 m SBT = 50 m
Future Total 2033 (Site Plan B)	Overall: 0.59 (B) 16 WBL = 0.73 (C) 32 WBR = 0.44 (C) 26 NBT = 0.53 (B) 11 SBT = 0.39 (A) 9	 WBL = 55 m WBR = 40 m NBT = 85 m SBT = 55 m	Overall: 0.76 (C) 26 WBL = 0.48 (C) 24 WBR = 0.65 (C) 30 **NBT = 0.85 (C) 28** SBT = 0.54 (B) 19	 WBL = 55 m WBR = 90 m NBT = 155 m SBT = 80 m	Overall: 0.43 (B) 12 WBL = 0.63 (C) 25 WBR = 0.24 (C) 21 NBT = 0.35 (A) 7 SBT = 0.31 (A) 7	 WBL = 35 m WBR = 20 m NBT = 40 m SBT = 35 m
Future Background 2038	Overall: 0.55 (B) 17 **WBL = 0.78 (C) 33** WBR = 0.17 (C) 23 NBT = 0.45 (B) 11 SBT = 0.41 (B) 10	 WBL = 65 m WBR = 20 m NBT = 65 m SBT = 60 m	Overall: 0.77 (C) 26 WBL = 0.52 (C) 25 WBR = 0.65 (C) 30 **NBT = 0.86 (C) 29** SBT = 0.47 (B) 18	 WBL = 65 m WBR = 90 m NBT = 160 m SBT = 70 m	Overall: 0.44 (B) 13 WBL = 0.64 (C) 25 WBR = 0.22 (C) 21 NBT = 0.36 (A) 8 SBT = 0.31 (A) 7	 WBL = 40 m WBR = 20 m NBT = 40 m SBT = 35 m
Future Total 2038 (Site Plan A)	Overall: 0.65 (B) 17 **WBL = 0.78 (C) 33** WBR = 0.47 (C) 26 NBT = 0.59 (B) 13 SBT = 0.45 (B) 11	 WBL = 65 m WBR = 45 m NBT = 95 m SBT = 65 m	**Overall: 0.88 (C) 34** WBL = 0.52 (C) 25 **WBR = 0.75 (C) 35** **NBT = 0.99 (D) 46** SBT = 0.62 (C) 21	 WBL = 65 m WBR = 110 m NBT = 220 m SBT = 95 m	Overall: 0.55 (B) 13 WBL = 0.61 (C) 24 WBR = 0.62 (C) 26 NBT = 0.53 (A) 10 SBT = 0.44 (A) 9	 WBL = 40 m WBR = 45 m NBT = 70 m SBT = 55 m
Future Total 2038 (Site Plan B)	Overall: 0.65 (B) 17 **WBL = 0.77 (C) 33** WBR = 0.49 (C) 27 NBT = 0.59 (B) 12 SBT = 0.44 (B) 10	 WBL = 65 m WBR = 45 m NBT = 95 m SBT = 65 m	**Overall: 0.85 (C) 30** WBL = 0.53 (C) 25 WBR = 0.72 (C) 33 **NBT = 0.95 (D) 37** SBT = 0.59 (C) 20	 WBL = 65 m WBR = 105 m NBT = 205 m SBT = 90 m	Overall: 0.47 (B) 13 WBL = 0.65 (C) 25 WBR = 0.35 (C) 22 NBT = 0.4 (A) 8 SBT = 0.35 (A) 8	 WBL = 40 m WBR = 25 m NBT = 45 m SBT = 40 m

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 15 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	124*
	NBT	1179	4%	1226	90	15.3	22	165	N/A
	SBT	915	2%	933	90	11.7	18	135	N/A
Future Total 2038-PM (ALT A)	WBL	607	9%	662	100	9.2	14	105	124*
	NBT	1665	2%	1698	100	23.6	32	240	N/A
	SBT	1034	2%	1055	100	14.6	21	157.5	N/A
Future Total 2038-SAT (ALT A)	WBL	449	5%	471	80	5.2	9	67.5	124*
	NBT	1074	2%	1095	80	12.2	18	135	N/A
	SBT	887	1%	896	80	10.0	15	112.5	N/A
Future Total 2038-AM (ALT B)	WBL	605	13%	684	90	8.5	14	105	124*
	NBT	1177	4%	1224	90	15.3	22	165	N/A
	SBT	874	2%	891	90	11.1	17	127.5	N/A
Future Total 2038-PM (ALT B)	WBL	607	9%	662	100	9.2	14	105	124*
	NBT	1544	2%	1575	100	21.9	30	225	N/A
	SBT	959	2%	978	100	13.6	20	150	N/A
Future Total 2038-SAT (ALT B)	WBL	449	5%	471	80	5.2	9	67.5	124*
	NBT	791	2%	807	80	9.0	14	105	N/A
	SBT	688	1%	695	80	7.7	12	90	N/A

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

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 16 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) (Factored by 1.5)	Recommended Storage, MTO Table B7-5 (vehicles)	Recommended Storage (in metres, 7.5 m/vehicle)	Available Storage (metres)
Future Total 2038-AM (ALT A)	EBR	216	60	90	8.1	13	97.5	62
Future Total 2038-PM (ALT A)	EBR	436	60	100	18.2	25	187.5	62
Future Total 2038-SAT (ALT A)	EBR	254	60	80	8.5	14	105	62
Future Total 2038-AM (ALT B)	EBR	217	60	90	8.1	13	97.5	62
Future Total 2038-PM (ALT B)	EBR	412	60	100	17.2	24	180	62
Future Total 2038-SAT (ALT B)	EBR	198	60	80	6.6	11	82.5	62

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 0.62 LOS C during the p.m. peak hour and an overall V/C ratio of 0.36 LOS B during the Saturday Peak hour. No movements report critical.

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 0.56 LOS B during the a.m. peak hour, 0.74 LOS C during the p.m. peak hour and an overall V/C of 0.48 LOS B during the Saturday peak hour. No critical movements are reported.

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 0.54 LOS B during the a.m. peak hour, 0.68 LOS C during the p.m. peak hour and an overall V/C of 0.38 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 0.51 LOS B during the a.m. peak hour, an overall V/C of 0.69 LOS C during the p.m. peak hour and an overall V/C ratio of 0.39 LOS B during the Saturday Peak hour. The westbound left direction reports critical during the a.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 critical V/C ratio of 0.61 LOS B during the a.m. peak hour, critical V/C of 0.81 LOS C during the p.m. peak hour and a V/C of 0.52 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 northbound through 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 through volume

P.M. Peak Hour

- Northbound through movement: 15% of through volume

Although critical the through volume for the proposed site contributes to 15% of the total northbound through volume where although critical the queueing and delay are 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 0.59 LOS B during the a.m. peak hour, a V/C ratio of 0.76 LOS C during the p.m. peak hour and an overall V/C of 0.43 LOS B during the Saturday peak hour. The p.m. peak hour reports critical movements in the northbound through direction. For the reported critical movement, the site trips contribute the following percentage of volume:

P.M. Peak Hour

- Northbound through movement: 7% of through 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 0.55 LOS B during the a.m. peak hour, an overall V/C of 0.77 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 northbound through 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 critical V/C ratio of 0.65 LOS B during the a.m. peak hour, critical V/C of 0.88 LOS D during the p.m. peak hour and a V/C of 0.55 LOS C 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: 6% of right turning volume
- Northbound through movement: 13% of through volume

Although critical the through volume for the proposed site contributes to 6% of the total westbound right turns and 13% of the total northbound through volume which are nominal in comparison to the corridor growth.

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 0.65 LOS B during the a.m. peak hour, a V/C ratio of 0.85 LOS C during the p.m. peak hour and an overall V/C of 0.47 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 northbound through 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

- Northbound through movement: 6% of through volume

Although critical the through volume for the proposed site A contributes 13% and site B contributes 6% of the total northbound through volume which indicates that the corridor growth for the northbound movement is the driving factor for causing the movement to become critical.

Therefore, though critical in the northbound through direction the critical movement will not be expected until the 2033 future horizon year where during the year of build-out 2028 there are no expected critical movement. As a result, no geometric improvements are recommended for the intersection.

As per the queueing analysis the recommended storage exceeds the available for the right turn lane however operationally the delay and under critical V/C of the movement indicate that it operates under acceptable parameters. Furthermore, it is shown that the Site Plan B outperforms Site Plan A and requires a lower recommended storage length in comparison.

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 17 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	 EBL = 40 m EBR = 20 m NBL = 35 m	Overall: 0.54 (C) 25 EBL = 0.75 (E) 56 EBR = 0.25 (D) 42 NBL = 0.73 (D) 50	 EBL = 70 m EBR = 30 m NBL = 60 m	Overall: 0.41 (B) 18 EBL = 0.58 (D) 37 EBR = 0.16 (C) 32 NBL = 0.51 (D) 36	 EBL = 40 m EBR = 20 m NBL = 30 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 = 0.22 (A) 4 SBT = 0.6 (C) 22	NBT = 25 m SBT = 75 m	NBT = 0.38 (A) 6 SBT = 0.4 (B) 18	NBT = 55 m SBT = 70 m	NBT = 0.22 (A) 4 SBT = 0.34 (B) 13	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: 0.59 (C) 25 EBL = 0.51 (C) 35 EBTR = 0.34 (D) 40 WBL = 0.27 (C) 31 WBT = 0.26 (D) 38 WBR = 0.11 (D) 37 NBL = 0.64 (D) 43 NBT = 0.31 (B) 13 NBR = 0.28 (B) 13 SBL = 0.12 (B) 12 SBTR = 0.62 (C) 23	EBL = 35 m EBTR = 30 m WBL = 15 m WBT = 20 m WBR = 15 m NBL = 40 m NBT = 50 m NBR = 20 m SBL = 10 m SBTR = 100 m	Overall: 0.66 (D) 38 EBL = 0.65 (D) 44 EBTR = 0.72 (E) 61 WBL = 0.81 (E) 63 WBT = 0.55 (D) 49 WBR = 0.61 (D) 51 NBL = 0.79 (E) 58 NBT = 0.52 (C) 22 NBR = 0.3 (B) 19 SBL = 0.35 (B) 19 SBTR = 0.55 (C) 30	EBL = 65 m EBTR = 65 m WBL = 70 m WBT = 55 m WBR = 60 m NBL = 70 m NBT = 110 m NBR = 20 m SBL = 25 m SBTR = 105 m	Overall: 0.57 (C) 32 EBL = 0.47 (D) 37 EBTR = 0.77 (E) 59 WBL = 0.62 (C) 33 WBT = 0.47 (D) 41 WBR = 0.18 (D) 37 NBL = 0.6 (D) 51 NBT = 0.37 (C) 22 NBR = 0.28 (C) 21 SBL = 0.39 (B) 16 SBTR = 0.46 (C) 25	EBL = 40 m EBTR = 70 m WBL = 40 m WBT = 50 m WBR = 20 m NBL = 40 m NBT = 70 m NBR = 25 m SBL = 40 m SBTR = 80 m
Future Total 2028 (Site Plan B)	Overall: 0.63 (C) 24 EBL = 0.51 (C) 32 EBTR = 0.21 (D) 38 WBL = 0.28 (D) 37 WBTR = 0.1 (D) 41 NBL = 0.7 (D) 43 NBTR = 0.5 (B) 14 SBL = 0.16 (B) 12 SBTR = 0.61 (C) 21	EBL = 40 m EBTR = 5 m WBL = 20 m WBTR = 10 m NBL = 40 m NBTR = 70 m SBL = 10 m SBTR = 85 m	Overall: 0.69 (C) 34 EBL = 0.7 (D) 48 EBTR = 0.35 (D) 50 WBL = 0.65 (D) 42 WBTR = 0.18 (D) 46 NBL = 0.83 (E) 58 NBTR = 0.59 (B) 18 SBL = 0.08 (B) 19 SBTR = 0.59 (C) 29	EBL = 60 m EBTR = 35 m WBL = 50 m WBTR = 20 m NBL = 90 m NBTR = 150 m SBL = 5 m SBTR = 115 m	Overall: 0.48 (C) 23 EBL = 0.57 (D) 38 EBTR = 0.17 (D) 43 WBL = 0.32 (D) 41 WBTR = 0.15 (D) 47 NBL = 0.58 (D) 43 NBTR = 0.3 (A) 9 SBL = 0.03 (B) 12 SBTR = 0.4 (B) 16	EBL = 45 m EBTR = 0 m WBL = 20 m WBTR = 15 m NBL = 35 m NBTR = 45 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: 0.65 (C) 26 EBL = 0.56 (D) 36 EBTR = 0.36 (D) 40 WBL = 0.27 (C) 31 WBT = 0.25 (D) 38 WBR = 0.11 (D) 37 NBL = 0.7 (D) 45	EBL = 40 m EBTR = 30 m WBL = 15 m WBT = 20 m WBR = 15 m NBL = 50 m NBT = 60 m	Overall: 0.75 (D) 43 EBL = 0.66 (D) 43 EBTR = 0.84 (E) 72 WBL = 0.83 (E) 69 WBT = 0.47 (D) 46 WBR = 0.61 (D) 50 NBL = 0.87 (E) 68	EBL = 70 m EBTR = 95 m WBL = 70 m WBT = 55 m WBR = 65 m NBL = 85 m NBT = 130 m	Overall: 0.61 (C) 33 EBL = 0.5 (D) 37 EBTR = 0.79 (E) 61 WBL = 0.63 (C) 33 WBT = 0.45 (D) 40 WBR = 0.18 (D) 37 NBL = 0.64 (D) 53	EBL = 45 m EBTR = 80 m WBL = 40 m WBT = 50 m WBR = 20 m NBL = 45 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 = 0.35 (B) 14 NBR = 0.28 (B) 14 SBL = 0.13 (B) 13 SBTR = 0.69 (C) 25	NBR = 20 m SBL = 10 m SBTR = 120 m	NBT = 0.6 (C) 26 NBR = 0.3 (C) 21 SBL = 0.41 (C) 22 SBTR = 0.65 (C) 35	NBR = 20 m SBL = 25 m SBTR = 115 m	NBT = 0.42 (C) 23 NBR = 0.28 (C) 22 SBL = 0.42 (B) 17 SBTR = 0.51 (C) 27	NBT = 80 m NBR = 25 m SBL = 40 m SBTR = 90 m
Future Total 2033 (Site Plan B)	Overall: 0.69 (C) 26 EBL = 0.52 (C) 33 EBTR = 0.22 (D) 38 WBL = 0.28 (D) 37 WBTR = 0.09 (D) 41 NBL = 0.76 (D) 46 NBTR = 0.54 (B) 15 SBL = 0.17 (B) 12 SBTR = 0.69 (C) 24	EBL = 40 m EBTR = 10 m WBL = 20 m WBTR = 10 m NBL = 50 m NBTR = 85 m SBL = 10 m SBTR = 100 m	Overall: 0.72 (D) 36 EBL = 0.72 (D) 51 EBTR = 0.32 (D) 53 WBL = 0.71 (D) 53 WBTR = 0.21 (D) 53 NBL = 0.84 (E) 60 NBTR = 0.62 (B) 17 SBL = 0.09 (C) 20 SBTR = 0.64 (C) 31	EBL = 75 m EBTR = 35 m WBL = 55 m WBTR = 25 m NBL = 90 m NBTR = 160 m SBL = 5 m SBTR = 135 m	Overall: 0.53 (C) 23 EBL = 0.6 (D) 39 EBTR = 0.18 (D) 43 WBL = 0.32 (D) 42 WBTR = 0.15 (D) 47 NBL = 0.62 (D) 44 NBTR = 0.33 (A) 9 SBL = 0.03 (B) 12 SBTR = 0.45 (B) 17	EBL = 50 m EBTR = 0 m WBL = 20 m WBTR = 15 m NBL = 35 m NBTR = 50 m SBL = 5 m SBTR = 65 m
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: 0.73 (C) 28 EBL = 0.51 (C) 32 EBTR = 0.49 (D) 40 WBL = 0.28 (C) 33 WBT = 0.26 (D) 39 WBR = 0.14 (C) 33 NBL = 0.78 (D) 50 NBT = 0.41 (B) 17 NBR = 0.28 (B) 11 SBL = 0.13 (B) 14 SBTR = 0.8 (C) 31	EBL = 45 m EBTR = 40 m WBL = 15 m WBT = 20 m WBR = 15 m NBL = 60 m NBT = 70 m NBR = 15 m SBL = 10 m SBTR = 150 m	Overall: 0.83 (D) 47 EBL = 0.69 (D) 42 **EBTR = 0.92 (F) 86** **WBL = 0.9 (F) 83** WBT = 0.48 (D) 49 WBR = 0.71 (D) 51 **NBL = 0.91 (E) 75** NBT = 0.69 (C) 30 NBR = 0.3 (B) 15 SBL = 0.47 (C) 24 SBTR = 0.74 (D) 40	EBL = 80 m EBTR = 125 m WBL = 70 m WBT = 55 m WBR = 85 m NBL = 95 m NBT = 150 m NBR = 15 m SBL = 25 m SBTR = 130 m	Overall: 0.66 (C) 34 EBL = 0.54 (D) 38 EBTR = 0.81 (E) 63 WBL = 0.64 (C) 34 WBT = 0.43 (D) 40 WBR = 0.18 (D) 37 NBL = 0.69 (E) 55 NBT = 0.46 (C) 25 NBR = 0.28 (C) 23 SBL = 0.46 (B) 18 SBTR = 0.58 (C) 29	EBL = 50 m EBTR = 90 m WBL = 40 m WBT = 50 m WBR = 20 m NBL = 50 m NBT = 85 m NBR = 25 m SBL = 40 m SBTR = 105 m
Future Total 2038 (Site Plan B)	Overall: 0.76 (C) 28 EBL = 0.54 (C) 33 EBTR = 0.23 (D) 39 WBL = 0.28 (D) 37 WBTR = 0.09 (D) 41 NBL = 0.83 (D) 52 NBTR = 0.58 (B) 16 SBL = 0.19 (B) 13 SBTR = 0.78 (C) 27	EBL = 40 m EBTR = 15 m WBL = 20 m WBTR = 10 m NBL = 65 m NBTR = 100 m SBL = 10 m SBTR = 125 m	Overall: 0.77 (D) 38 EBL = 0.83 (E) 65 EBTR = 0.49 (E) 57 WBL = 0.74 (D) 54 WBTR = 0.19 (D) 51 NBL = 0.87 (E) 63 NBTR = 0.68 (B) 18 SBL = 0.11 (C) 21 SBTR = 0.72 (C) 35	EBL = 80 m EBTR = 45 m WBL = 60 m WBTR = 25 m NBL = 105 m NBTR = 180 m SBL = 5 m SBTR = 155 m	Overall: 0.58 (C) 24 EBL = 0.63 (D) 41 EBTR = 0.18 (D) 43 WBL = 0.33 (D) 42 WBTR = 0.15 (D) 47 NBL = 0.66 (D) 45 NBTR = 0.36 (A) 9 SBL = 0.03 (B) 12 SBTR = 0.5 (B) 18	EBL = 55 m EBTR = 0 m WBL = 20 m WBTR = 15 m NBL = 40 m NBTR = 55 m SBL = 5 m SBTR = 75 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 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 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.
- 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

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 0.59 LOS C during the a.m. peak hour, a V/C of 0.66 LOS D during the p.m. peak hour and an overall V/C of 0.57 LOS C during the Saturday peak hour. No crotical 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 0.63 LOS C during the a.m. peak hour, a V/C of 0.69 LOS C during the p.m. peak hour and an overall V/C of 0.48 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 0.65 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 0.61 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 0.69 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 0.53 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 0.73 LOS C during the a.m. peak hour, a critical V/C of 0.83 LOS D during the p.m. peak hour and an overall V/C of 0.66 LOS C during the Saturday peak hour. The p.m. peak hour reports a critical movement in the eastbound through right, westbound left direction, and northbound left movement. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Eastbound through right movement: 5% of the through right volume
- Westbound left movement: 100% left turning volume.
- Northbound left movement: 0% 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 and signal and intersection improvements the intersection operates with a V/C ratio of 0.76 LOS C during the a.m. peak hour, a critical V/C of 0.77 LOS D during the p.m. peak hour and an overall V/C of 0.58 LOS D during the Saturday peak hour. No critical movements are reported.

As a result, the proposed site traffic can be accommodated at this intersection with no issues under the Site Plan B option. Under the Site Plan A scenario, the p.m. peak hour reports above capacity only under the Future Total 2038 scenario indicating that there is no critical movements under the 2028 and 2033 horizon year. Additionally, the v/c is reported below 1.00. Although critical the critical behaviour of the outbound volumes for a retail building and gas station is expected as there is a typically higher outbound volume during the p.m. peak hour coinciding with driver behaviour opting to use these services after working hours. Therefore, although critical Site Plan A 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

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 18 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: 0.77 (B) 19 EBL = 0.44 (C) 32 EBTR = 0.33 (C) 31 WBL = 0.7 (D) 54 WBTR = 0.05 (C) 29 NBL = 0.33 (A) 8 NBTR = 0.6 (A) 9 SBL = 0.01 (A) 7 SBTR = 0.79 (B) 20	EBL = 25 m EBTR = 25 m WBL = 25 m WBTR = 10 m NBL = 15 m NBTR = 95 m SBL = 5 m SBTR = 175 m	**Overall: 0.95 (C) 27** EBL = 0.2 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.68 (D) 48 WBTR = 0.16 (C) 33 NBL = 0.75 (B) 16 **NBTR = 0.96 (C) 30** SBL = 0.05 (B) 11 SBTR = 0.74 (C) 22	EBL = 15 m EBTR = 20 m WBL = 35 m WBTR = 15 m NBL = 50 m NBTR = 300 m SBL = 5 m SBTR = 160 m	Overall: 0.67 (B) 14 EBL = 0.2 (B) 18 EBTR = 0.26 (B) 19 WBL = 0.38 (B) 20 WBTR = 0.06 (B) 18 NBL = 0.52 (B) 11 NBTR = 0.77 (B) 15 SBL = 0.01 (A) 5 SBTR = 0.6 (B) 10	EBL = 10 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 35 m NBTR = 120 m SBL = 5 m SBTR = 65 m
Future Total 2028 (Site Plan B)	Overall: 0.76 (B) 18 EBL = 0.43 (C) 32 EBTR = 0.32 (C) 31 WBL = 0.69 (D) 52 WBTR = 0.05 (C) 29 NBL = 0.32 (A) 7 NBTR = 0.59 (A) 8	EBL = 25 m EBTR = 25 m WBL = 25 m WBTR = 5 m NBL = 15 m NBTR = 90 m SBL = 5 m SBTR = 170 m	**Overall: 0.89 (C) 21** EBL = 0.21 (C) 34 EBTR = 0.2 (C) 34 WBL = 0.61 (D) 42 WBTR = 0.17 (C) 34 NBL = 0.68 (B) 11 **NBTR = 0.9 (C) 21**	EBL = 15 m EBTR = 20 m WBL = 30 m WBTR = 15 m NBL = 35 m NBTR = 265 m SBL = 5 m SBTR = 120 m	Overall: 0.51 (B) 11 EBL = 0.21 (B) 19 EBTR = 0.24 (B) 19 WBL = 0.23 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.36 (A) 7 NBTR = 0.59 (A) 9	EBL = 10 m EBTR = 15 m WBL = 10 m WBTR = 5 m NBL = 25 m NBTR = 60 m SBL = 5 m SBTR = 45 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
	SBL = 0.01 (A) 7 SBTR = 0.77 (B) 19		SBL = 0.04 (A) 10 SBTR = 0.67 (B) 19		SBL = 0.01 (A) 4 SBTR = 0.46 (A) 8	
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 NBL = 0.32 (A) 7 NBTR = 0.6 (A) 8 SBL = 0.01 (A) 7 SBTR = 0.77 (B) 19	EBL = 30 m EBTR = 25 m WBL = 10 m WBTR = 10 m NBL = 15 m NBTR = 95 m SBL = 5 m SBTR = 170 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 NBL = 0.72 (B) 13 **NBTR = 0.85 (B) 17** SBL = 0.04 (A) 10 SBTR = 0.71 (C) 20	EBL = 20 m EBTR = 20 m WBL = 30 m WBTR = 20 m NBL = 40 m NBTR = 245 m SBL = 5 m SBTR = 130 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 NBL = 0.41 (A) 8 NBTR = 0.6 (A) 10 SBL = 0.01 (A) 5 SBTR = 0.51 (A) 8	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 5 m NBL = 25 m NBTR = 70 m SBL = 5 m SBTR = 55 m
Future Total 2033 (Site Plan A)	Overall: 0.84 (C) 22 EBL = 0.45 (C) 32 EBTR = 0.37 (C) 31 WBL = 0.74 (E) 59 WBTR = 0.05 (C) 29 NBL = 0.42 (A) 10 NBTR = 0.67 (B) 11 SBL = 0.01 (A) 8 **SBTR = 0.87 (C) 26**	EBL = 25 m EBTR = 30 m WBL = 25 m WBTR = 10 m NBL = 15 m NBTR = 125 m SBL = 5 m SBTR = 210 m	**Overall: 1.04 (D) 43** EBL = 0.21 (C) 33 EBTR = 0.22 (C) 34 WBL = 0.73 (D) 53 WBTR = 0.17 (C) 33 **NBL = 0.92 (D) 37** **NBTR = 1.05 (E) 56** SBL = 0.1 (B) 13 SBTR = 0.83 (C) 28	EBL = 15 m EBTR = 25 m WBL = 35 m WBTR = 20 m NBL = 80 m NBTR = 350 m SBL = 5 m SBTR = 190 m	Overall: 0.73 (B) 16 EBL = 0.22 (B) 18 EBTR = 0.3 (B) 19 WBL = 0.42 (C) 20 WBTR = 0.06 (B) 17 NBL = 0.62 (B) 15 NBTR = 0.84 (B) 18 SBL = 0.01 (A) 5 SBTR = 0.65 (B) 11	EBL = 15 m EBTR = 20 m WBL = 15 m WBTR = 5 m NBL = 50 m NBTR = 135 m SBL = 5 m SBTR = 80 m
Future Total 2033 (Site Plan B)	**Overall: 0.85 (C) 22** EBL = 0.44 (C) 32 EBTR = 0.33 (C) 31 WBL = 0.7 (D) 53 WBTR = 0.05 (C) 28 NBL = 0.41 (A) 10 NBTR = 0.66 (B) 10 SBL = 0.01 (A) 8 **SBTR = 0.89 (C) 29**	EBL = 25 m EBTR = 25 m WBL = 25 m WBTR = 10 m NBL = 15 m NBTR = 115 m SBL = 5 m SBTR = 200 m	**Overall: 0.98 (C) 32** EBL = 0.21 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.64 (D) 44 WBTR = 0.17 (C) 34 NBL = 0.83 (C) 22 **NBTR = 1.00 (D) 39** SBL = 0.07 (B) 11 SBTR = 0.76 (C) 23	EBL = 15 m EBTR = 20 m WBL = 35 m WBTR = 15 m NBL = 65 m NBTR = 315 m SBL = 5 m SBTR = 165 m	Overall: 0.56 (B) 12 EBL = 0.21 (B) 19 EBTR = 0.24 (B) 19 WBL = 0.24 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.44 (A) 9 NBTR = 0.66 (B) 11 SBL = 0.01 (A) 4 SBTR = 0.53 (A) 9	EBL = 10 m EBTR = 15 m WBL = 10 m WBTR = 5 m NBL = 30 m NBTR = 80 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	EBL = 30 m EBTR = 30 m WBL = 10 m WBTR = 10 m NBL = 15 m NBTR = 120 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**	EBL = 20 m EBTR = 25 m WBL = 30 m WBTR = 20 m NBL = 75 m NBTR = 295 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	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 10 m NBL = 35 m NBTR = 85 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
	SBL = 0.01 (A) 8 **SBTR = 0.89 (C) 29**	SBL = 5 m SBTR = 200 m	SBL = 0.06 (B) 11 SBTR = 0.8 (C) 25	SBL = 5 m SBTR = 175 m	SBL = 0.01 (A) 5 SBTR = 0.56 (A) 9	SBL = 5 m SBTR = 65 m
Future Total 2038 (Site Plan A)	**Overall: 0.94 (C) 33** EBL = 0.46 (C) 31 EBTR = 0.55 (C) 33 WBL = 0.76 (E) 63 WBTR = 0.05 (C) 28 NBL = 0.56 (B) 16 NBTR = 0.74 (B) 14 SBL = 0.02 (A) 9 **SBTR = 1.01 (D) 51**	 EBL = 30 m EBTR = 40 m WBL = 25 m WBTR = 10 m NBL = 25 m NBTR = 180 m SBL = 5 m SBTR = 245 m	**Overall: 1.14 (E) 74** EBL = 0.22 (C) 33 EBTR = 0.24 (C) 33 WBL = 0.81 (E) 64 WBTR = 0.18 (C) 33 **NBL = 1.14 (F) 109** **NBTR = 1.16 (F) 95** SBL = 0.13 (B) 15 **SBTR = 0.91 (D) 37**	 EBL = 20 m EBTR = 25 m WBL = 40 m WBTR = 20 m NBL = 115 m NBTR = 390 m SBL = 5 m SBTR = 220 m	Overall: 0.79 (C) 21 EBL = 0.23 (B) 18 EBTR = 0.45 (B) 20 WBL = 0.46 (C) 21 WBTR = 0.06 (B) 17 NBL = 0.78 (C) 26 NBTR = 0.91 (C) 26 SBL = 0.02 (A) 5 SBTR = 0.72 (B) 14	 EBL = 15 m EBTR = 25 m WBL = 20 m WBTR = 5 m NBL = 65 m NBTR = 165 m SBL = 5 m SBTR = 115 m
Future Total 2038 (Site Plan B)	**Overall: 0.93 (C) 31** EBL = 0.44 (C) 32 EBTR = 0.43 (C) 31 WBL = 0.72 (E) 56 WBTR = 0.05 (C) 28 NBL = 0.57 (B) 15 NBTR = 0.74 (B) 12 SBL = 0.01 (A) 8 **SBTR = 1.00 (D) 49**	 EBL = 25 m EBTR = 30 m WBL = 25 m WBTR = 10 m NBL = 25 m NBTR = 160 m SBL = 5 m SBTR = 240 m	**Overall: 1.08 (E) 58** EBL = 0.22 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.66 (D) 46 WBTR = 0.18 (C) 33 **NBL = 1.05 (E) 75** **NBTR = 1.11 (E) 76** SBL = 0.14 (B) 15 **SBTR = 0.86 (C) 30**	 EBL = 15 m EBTR = 20 m WBL = 35 m WBTR = 20 m NBL = 100 m NBTR = 370 m SBL = 5 m SBTR = 200 m	Overall: 0.62 (B) 13 EBL = 0.22 (B) 19 EBTR = 0.25 (B) 19 WBL = 0.26 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.56 (B) 12 NBTR = 0.74 (B) 13 SBL = 0.01 (A) 5 SBTR = 0.59 (A) 10	 EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 5 m NBL = 40 m NBTR = 115 m SBL = 5 m 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 0.77 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 of 0.67 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 0.96 LOS C. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through right movement: 15% 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 0.76 LOS C during the a.m. peak hour, a V/C of 0.89 LOS C during the p.m. peak hour and an overall V/C of 0.51 LOS B during the Saturday peak hour. The northbound through right direction reports critical during the p.m. peak. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through right movement: 14% of through-right 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 0.72 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 0.84 LOS C during the a.m. peak hour, a critical V/C of 1.04 LOS D during the p.m. peak hour and an overall V/C of 0.73 LOS B 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, and northbound through right direction. The site traffic volumes contribute the following percentage of volume to its respective movement:

A.M. Peak Hour

- Southbound through-right: 9% of through-right volume

P.M. Peak Hour

- Northbound through right: 16% of through-right volume
- Northbound left movement: 8% of left turning 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 0.85 LOS C during the a.m. peak hour, a critical V/C of 0.98 LOS C during the p.m. peak hour and an overall V/C of 0.56 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 through-right direction. The site traffic volumes contribute the following percentage of volume to its respective movement:

A.M. Peak Hour

- Southbound through-right: 6% of through-right volume

P.M. Peak Hour

- Northbound through right: 12% 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 0.94 LOS C during the a.m. peak hour, a critical V/C of 1.14 LOS F during the p.m. peak hour and an overall V/C of 0.79 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: 8% of through-right volume

P.M. Peak Hour

- Southbound through-right: 2% of through-right volume
- Northbound through right: 14% of through-right volume
- Northbound left movement: 4% 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 0.93 LOS C during the a.m. peak hour, a critical V/C of 1.08 LOS E during the p.m. peak hour and an overall V/C of 0.62 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, northbound through-right and southbound through-right. 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: 9% of through-right volume
- Northbound through right: 11% of through-right volume
- Northbound left movement: 7% 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 14% of the southbound through-right volume 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 southbound through-right and northbound left movement during the p.m. peak. The township may opt to optimise signal timings but under our review the similar movements remain critical.

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

Based on the review of the capacity analysis and the existing intersection, the intersection has the potential to add an additional through lane to accommodate the high through volumes along Townline Road and the Town should consider widening to accommodate the corridor growth and anticipated site traffic. For the purpose of the sensitivity analysis a through lane was added in the northbound and southbound direction to the intersection to see how it will perform under the ultimate condition.

Table 19 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: 0.57 (B) 16 EBL = 0.46 (C) 31 EBTR = 0.55 (C) 33 WBL = 0.76 (E) 63 WBTR = 0.05 (C) 28 NBL = 0.36 (A) 6 NBTR = 0.39 (A) 6 SBL = 0.01 (A) 9 SBTR = 0.53 (B) 13	EBL = 30 m EBTR = 40 m WBL = 25 m WBTR = 10 m NBL = 20 m NBTR = 50 m SBL = 5 m SBTR = 75 m	**Overall: 0.88 (B) 17** EBL = 0.22 (C) 33 EBTR = 0.24 (C) 33 WBL = 0.81 (E) 64 WBTR = 0.18 (C) 33 NBL = 0.86 (C) 22 NBTR = 0.61 (A) 9 SBL = 0.05 (B) 12 SBTR = 0.48 (B) 15	EBL = 20 m EBTR = 25 m WBL = 40 m WBTR = 20 m NBL = 80 m NBTR = 95 m SBL = 5 m SBTR = 65 m	Overall: 0.58 (B) 11 EBL = 0.23 (B) 18 EBTR = 0.45 (B) 20 WBL = 0.46 (C) 21 WBTR = 0.06 (B) 17 NBL = 0.62 (B) 15 NBTR = 0.48 (A) 8 SBL = 0.01 (A) 5 SBTR = 0.38 (A) 7	EBL = 15 m EBTR = 25 m WBL = 20 m WBTR = 5 m NBL = 55 m NBTR = 45 m SBL = 5 m SBTR = 35 m
Future Total 2038 (Site Plan B)	Overall: 0.56 (B) 14 EBL = 0.44 (C) 32 EBTR = 0.43 (C) 31 WBL = 0.72 (E) 56 WBTR = 0.05 (C) 28 NBL = 0.37 (A) 6 NBTR = 0.39 (A) 6 SBL = 0.01 (A) 8 SBTR = 0.52 (B) 12	EBL = 25 m EBTR = 30 m WBL = 25 m WBTR = 10 m NBL = 15 m NBTR = 45 m SBL = 5 m SBTR = 70 m	Overall: 0.83 (B) 15 EBL = 0.22 (C) 34 EBTR = 0.21 (C) 34 WBL = 0.66 (D) 46 WBTR = 0.18 (C) 33 NBL = 0.83 (B) 17 NBTR = 0.58 (A) 8 SBL = 0.05 (B) 11 SBTR = 0.45 (B) 14	EBL = 15 m EBTR = 20 m WBL = 35 m WBTR = 20 m NBL = 75 m NBTR = 85 m SBL = 5 m SBTR = 60 m	Overall: 0.45 (A) 9 EBL = 0.22 (B) 19 EBTR = 0.25 (B) 19 WBL = 0.26 (B) 19 WBTR = 0.06 (B) 18 NBL = 0.51 (B) 10 NBTR = 0.39 (A) 6 SBL = 0.01 (A) 5 SBTR = 0.31 (A) 6	EBL = 15 m EBTR = 20 m WBL = 10 m WBTR = 5 m NBL = 35 m NBTR = 30 m SBL = 5 m 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.

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 existing, future background, and future total traffic conditions are summarized in the following table.

Table 20 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)	Overall: 0.56 (A) 3 WBL = 0.26 (D) 40 WBR = 0 (D) 37 NBT = 0.52 (A) 3 NBR = 0.05 (A) 1 SBL = 0.18 (A) 2 SBT = 0.57 (A) 3	WBL = 10 m WBR = 5 m NBT = 50 m NBR = 5 m SBL = 10 m SBT = 65 m	**Overall: 1.02 (D) 41** WBL = 0.5 (E) 58 WBR = 0.02 (D) 53 **NBT = 1.07 (E) 61** NBR = 0.02 (A) 3 SBL = 0.35 (D) 41 SBT = 0.51 (A) 4	WBL = 25 m WBR = 10 m NBT = 480 m NBR = 5 m SBL = 5 m SBT = 75 m	Overall: 0.6 (A) 4 WBL = 0.2 (D) 39 WBR = 0 (D) 37 NBT = 0.62 (A) 4 NBR = 0.01 (A) 1 SBL = 0.05 (A) 1 SBT = 0.5 (A) 3	WBL = 10 m WBR = 5 m NBT = 70 m NBR = 5 m SBL = 5 m SBT = 50 m
Future Total 2028 (Site Plan B)	Overall: 0.59 (A) 5 WBL = 0.29 (D) 38 WBR = 0.02 (D) 36	WBL = 10 m WBR = 10 m NBT = 60 m	**Overall: 0.97 (C) 31** WBL = 0.49 (C) 34 WBR = 0.06 (C) 31	WBL = 25 m WBR = 10 m NBT = 295 m	Overall: 0.51 (A) 5 WBL = 0.33 (D) 38 WBR = 0.02 (D) 35	WBL = 15 m WBR = 10 m NBT = 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
	NBT = 0.52 (A) 4 NBR = 0.08 (A) 2 SBL = 0.11 (A) 2 SBT = 0.61 (A) 5	NBR = 5 m SBL = 5 m SBT = 90 m	**NBT = 1.04 (D) 46** NBR = 0.04 (A) 3 SBL = 0.25 (A) 9 SBT = 0.53 (A) 6	NBR = 5 m SBL = 10 m SBT = 75 m	NBT = 0.52 (A) 4 NBR = 0.02 (A) 2 SBL = 0.03 (A) 2 SBT = 0.43 (A) 4	NBR = 5 m SBL = 5 m SBT = 50 m
Future Total 2033 (Site Plan A)	Overall: 0.61 (A) 4 WBL = 0.26 (D) 40 WBR = 0 (D) 37 NBT = 0.57 (A) 3 NBR = 0.05 (A) 1 SBL = 0.2 (A) 2 SBT = 0.63 (A) 4	WBL = 10 m WBR = 5 m NBT = 60 m NBR = 5 m SBL = 10 m SBT = 80 m	**Overall: 1.11 (E) 64** WBL = 0.5 (E) 58 WBR = 0.02 (D) 53 **NBT = 1.17 (F) 98** NBR = 0.02 (A) 3 SBL = 0.35 (D) 41 SBT = 0.55 (A) 5	WBL = 25 m WBR = 10 m NBT = 545 m NBR = 5 m SBL = 5 m SBT = 90 m	Overall: 0.65 (A) 4 WBL = 0.2 (D) 39 WBR = 0 (D) 37 NBT = 0.67 (A) 4 NBR = 0.01 (A) 1 SBL = 0.05 (A) 1 SBT = 0.55 (A) 3	WBL = 10 m WBR = 5 m NBT = 90 m NBR = 5 m SBL = 5 m SBT = 55 m
Future Total 2033 (Site Plan B)	Overall: 0.66 (A) 6 WBL = 0.29 (D) 38 WBR = 0.02 (D) 36 NBT = 0.58 (A) 5 NBR = 0.08 (A) 2 SBL = 0.12 (A) 2 SBT = 0.68 (A) 6	WBL = 10 m WBR = 10 m NBT = 75 m NBR = 5 m SBL = 5 m SBT = 115 m	**Overall: 1.07 (E) 57** WBL = 0.49 (C) 34 WBR = 0.17 (C) 32 **NBT = 1.16 (F) 90** NBR = 0.04 (A) 3 SBL = 0.25 (A) 9 SBT = 0.59 (A) 7	WBL = 25 m WBR = 15 m NBT = 340 m NBR = 5 m SBL = 10 m SBT = 90 m	Overall: 0.57 (A) 6 WBL = 0.33 (D) 38 WBR = 0.02 (D) 35 NBT = 0.58 (A) 5 NBR = 0.02 (A) 2 SBL = 0.03 (A) 2 SBT = 0.48 (A) 4	WBL = 15 m WBR = 10 m NBT = 80 m NBR = 5 m SBL = 5 m SBT = 60 m
Future Total 2038 (Site Plan A)	Overall: 0.67 (A) 4 WBL = 0.26 (D) 40 WBR = 0 (D) 37 NBT = 0.62 (A) 4 NBR = 0.05 (A) 1 SBL = 0.22 (A) 2 SBT = 0.69 (A) 5	WBL = 10 m WBR = 5 m NBT = 75 m NBR = 5 m SBL = 10 m SBT = 105 m	**Overall: 1.21 (F) 92** WBL = 0.5 (E) 58 WBR = 0.02 (D) 53 **NBT = 1.28 (F) 144** NBR = 0.02 (A) 3 SBL = 0.35 (D) 41 SBT = 0.6 (A) 5	WBL = 25 m WBR = 10 m NBT = 615 m NBR = 5 m SBL = 5 m SBT = 105 m	Overall: 0.7 (A) 5 WBL = 0.2 (D) 39 WBR = 0 (D) 37 NBT = 0.72 (A) 5 NBR = 0.01 (A) 1 SBL = 0.06 (A) 1 SBT = 0.59 (A) 3	WBL = 10 m WBR = 5 m NBT = 110 m NBR = 5 m SBL = 5 m SBT = 65 m
Future Total 2038 (Site Plan B)	Overall: 0.73 (A) 7 WBL = 0.29 (D) 38 WBR = 0.02 (D) 36 NBT = 0.65 (A) 6 NBR = 0.08 (A) 2 SBL = 0.14 (A) 3 SBT = 0.76 (A) 8	WBL = 10 m WBR = 10 m NBT = 95 m NBR = 5 m SBL = 5 m SBT = 155 m	**Overall: 1.19 (F) 91** WBL = 0.49 (C) 34 WBR = 0.26 (C) 32 **NBT = 1.29 (F) 146** NBR = 0.04 (A) 3 SBL = 0.25 (A) 9 SBT = 0.66 (A) 8	WBL = 25 m WBR = 15 m NBT = 395 m NBR = 5 m SBL = 10 m SBT = 115 m	Overall: 0.63 (A) 6 WBL = 0.33 (D) 38 WBR = 0.02 (D) 35 NBT = 0.65 (A) 6 NBR = 0.02 (A) 2 SBL = 0.03 (A) 2 SBT = 0.54 (A) 4	WBL = 15 m WBR = 10 m NBT = 100 m NBR = 5 m SBL = 5 m SBT = 70 m

GHD reviewed site access 1 and Townline Road with the implementation of a stop-controlled intersection but found that under all circumstances the westbound traffic leaving the site will experience major delays and V/C that exploring signalization was the next option. To check the validity of signal implementation, GHD ran a signal warrant for the Site Plan A and B cases for the future total 2028 scenario as it represents the build-out of the proposed development. The signal warrant for both Site Plans falls under case 2 – Might Be Warranted, which indicates that under the condition it doesn't completely satisfy but it has the potential to be signalized if agreed upon. The detailed signal warrant calculation sheets are attached in **Appendix E-1.**

GHD also reviewed a left-turn lane warrant for the intersection which is attached in **Appendix 89E-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. A right-turn lane was also determined to be warranted based on the projected right turning volumes into the intersection which exceed the threshold of 60 vehicles in the peak hour.

To ensure the V/C and delays are reduced with the implementation of the site access and Townline road the following was added to the intersection and into the model:

- Exclusive westbound right-lane and left-lane
- Exclusive northbound right-lane
- Exclusive Southbound left-lane
- Optimized signal timings

Future total 2028 Site Plan A

Under the 2028 future total traffic Site Plan A scenario, with the addition of site generated traffic, and intersection improvements operates with an overall V/C ratio of 0.56 LOS A during the a.m. peak hour, a critical V/C of 1.02 LOS D during the p.m. peak hour and an overall V/C of 0.60 LOS A during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through direction with a V/C of 1.07 LOS E. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through movement: 14% of through 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 0.59 LOS A during the a.m. peak hour, a V/C of 0.97 LOS C during the p.m. peak hour and an overall V/C of 0.51 LOS A during the Saturday peak hour. The northbound through direction reports critical during the p.m. peak. The site traffic volumes contribute the following percentage of volume to its respective critical movement:

P.M. Peak Hour

- Northbound through movement: 6% of through-right volume

Future total 2033 Site Plan A

Under the 2033 future total traffic Site Plan A scenario, with the addition of site generated traffic, and intersection improvements operates with an overall V/C ratio of 0.61 LOS A during the a.m. peak hour, a critical V/C of 1.11 LOS E during the p.m. peak hour and an overall V/C of 0.65 LOS A during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through direction with a V/C of 1.17 LOS F. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through movement: 12% of through volume

Future total 2033 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 0.66 LOS A during the a.m. peak hour, a V/C of 1.07 LOS E during the p.m. peak hour and an overall V/C of 0.57 LOS A during the Saturday peak hour. The northbound through direction reports critical during the p.m. peak. The site traffic volumes contribute the following percentage of volume to its respective critical movement:

P.M. Peak Hour

- Northbound through movement: 6% of through-right volume

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 V/C ratio of 0.67 LOS A during the a.m. peak hour, a critical V/C of 1.21 LOS F during the p.m. peak hour and an overall V/C of 0.71 LOS C during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through right movement. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through movement: 11% of through-right 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 V/C ratio of 0.73 LOS A during the a.m. peak hour, a critical V/C of 1.19 LOS F during the p.m. peak hour and an overall V/C of 0.63 LOS A during the Saturday peak hour. The p.m. peak hour reports a critical movement in the northbound through right movement. The site traffic volumes contribute the following percentage of volume to its respective movement:

P.M. Peak Hour

- Northbound through movement: 5% of through-right volume

As a result, comparing the Site Plan A to the Site Plan B scenario both operate similarly. Where the northbound through volume generated by the site traffic is contributes a minor impact to the intersection where the Site Plan A contributes a maximum of 14% of the northbound through volume and in Site Plan B the northbound through site traffic contributes a maximum of 6% of the northbound through volume. This indicates that the corridor growth the main factor of causing the critical northbound through volume. As a result, to allow of the access to function GHD recommends the implementation of a signalized intersection at site access 1 and Townline Road.

7.5.1 Intersection Improvements Townline Road and Site Access 1

With the high volumes observed along the northbound direction an additional through-right lane was added to accommodate the over capacity volumes for this proposed intersection.

Table 21 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)	Overall: 0.67 (A) 4 WBL = 0.26 (D) 40 WBR = 0 (D) 37 NBTR = 0.36 (A) 2 SBL = 0.22 (A) 2 SBT = 0.69 (A) 5	 WBL = 10 m WBR = 5 m NBTR = 25 m SBL = 10 m SBT = 105 m	Overall: 0.68 (A) 8 WBL = 0.5 (E) 58 WBR = 0.02 (D) 53 NBTR = 0.68 (A) 8 SBL = 0.19 (A) 6 SBT = 0.6 (A) 5	 WBL = 25 m WBR = 10 m NBTR = 145 m SBL = 5 m SBT = 105 m	Overall: 0.57 (A) 3 WBL = 0.2 (D) 39 WBR = 0 (D) 37 NBTR = 0.39 (A) 2 SBL = 0.05 (A) 1 SBT = 0.59 (A) 3	 WBL = 10 m WBR = 5 m NBTR = 25 m SBL = 5 m SBT = 65 m
Future Total 2038 (Site Plan B)	Overall: 0.73 (A) 6 WBL = 0.29 (D) 38 WBR = 0.02 (D) 36 NBTR = 0.39 (A) 3 SBL = 0.14 (A) 3 SBT = 0.76 (A) 8	 WBL = 10 m WBR = 10 m NBTR = 30 m SBL = 5 m SBT = 155 m	Overall: 0.68 (A) 9 WBL = 0.49 (C) 34 WBR = 0.26 (C) 32 NBTR = 0.7 (A) 7 SBL = 0.16 (A) 5 SBT = 0.66 (A) 8	 WBL = 25 m WBR = 15 m NBTR = 100 m SBL = 5 m SBT = 115 m	Overall: 0.53 (A) 5 WBL = 0.33 (D) 38 WBR = 0.02 (D) 35 NBTR = 0.36 (A) 3 SBL = 0.03 (A) 2 SBT = 0.54 (A) 4	 WBL = 15 m WBR = 10 m NBTR = 30 m SBL = 5 m SBT = 70 m

As per the capacity analysis for both Site Plans converting the exclusive right-turn lane to a through-right lane reports no critical movements under the ultimate 2038 condition.

7.6 Potential Lane Configurations

As per the capacity analysis above the **Figure 25** and **Figure 26** 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.**

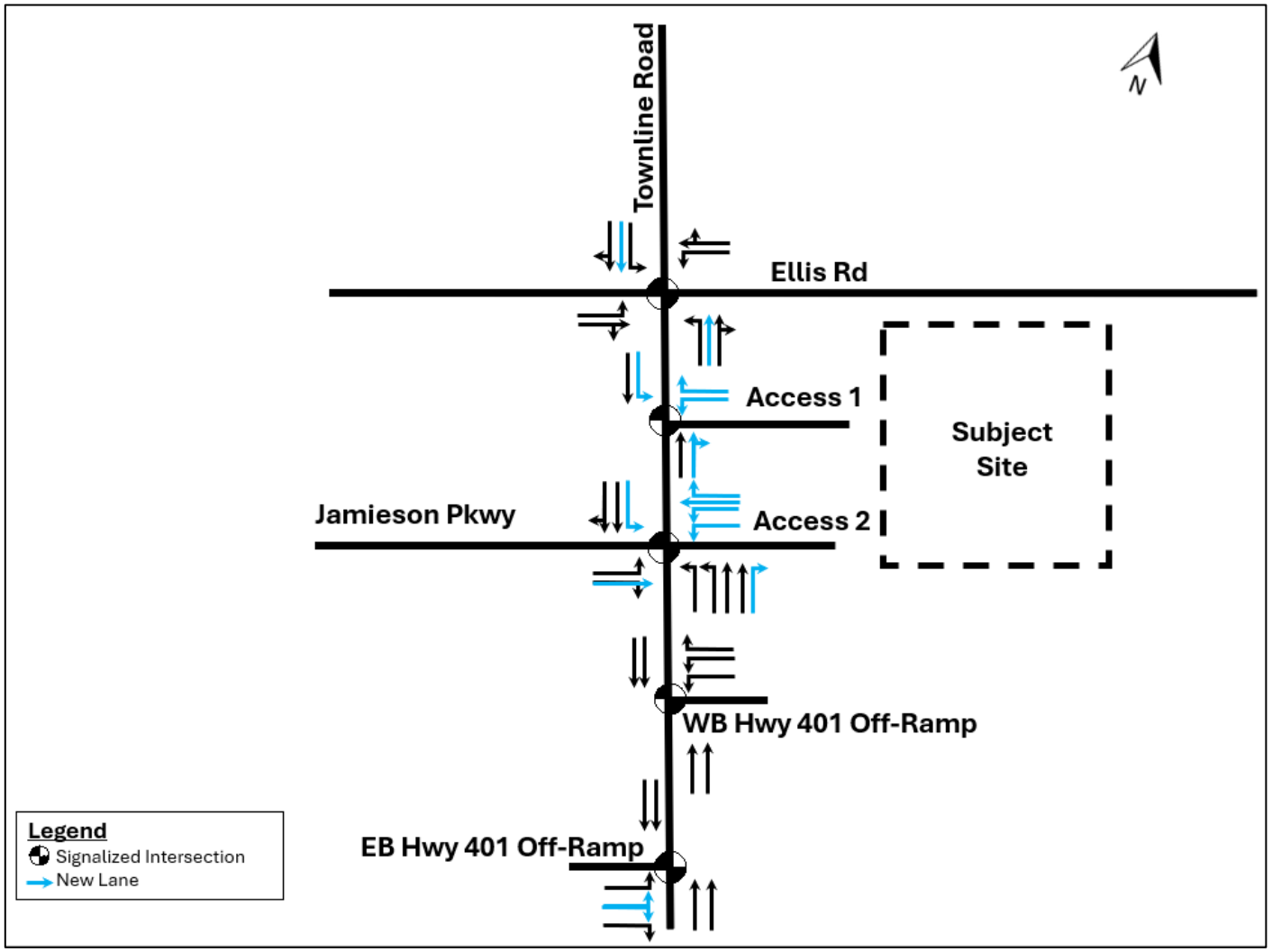


Figure 25 Site Plan A Lane Improvements

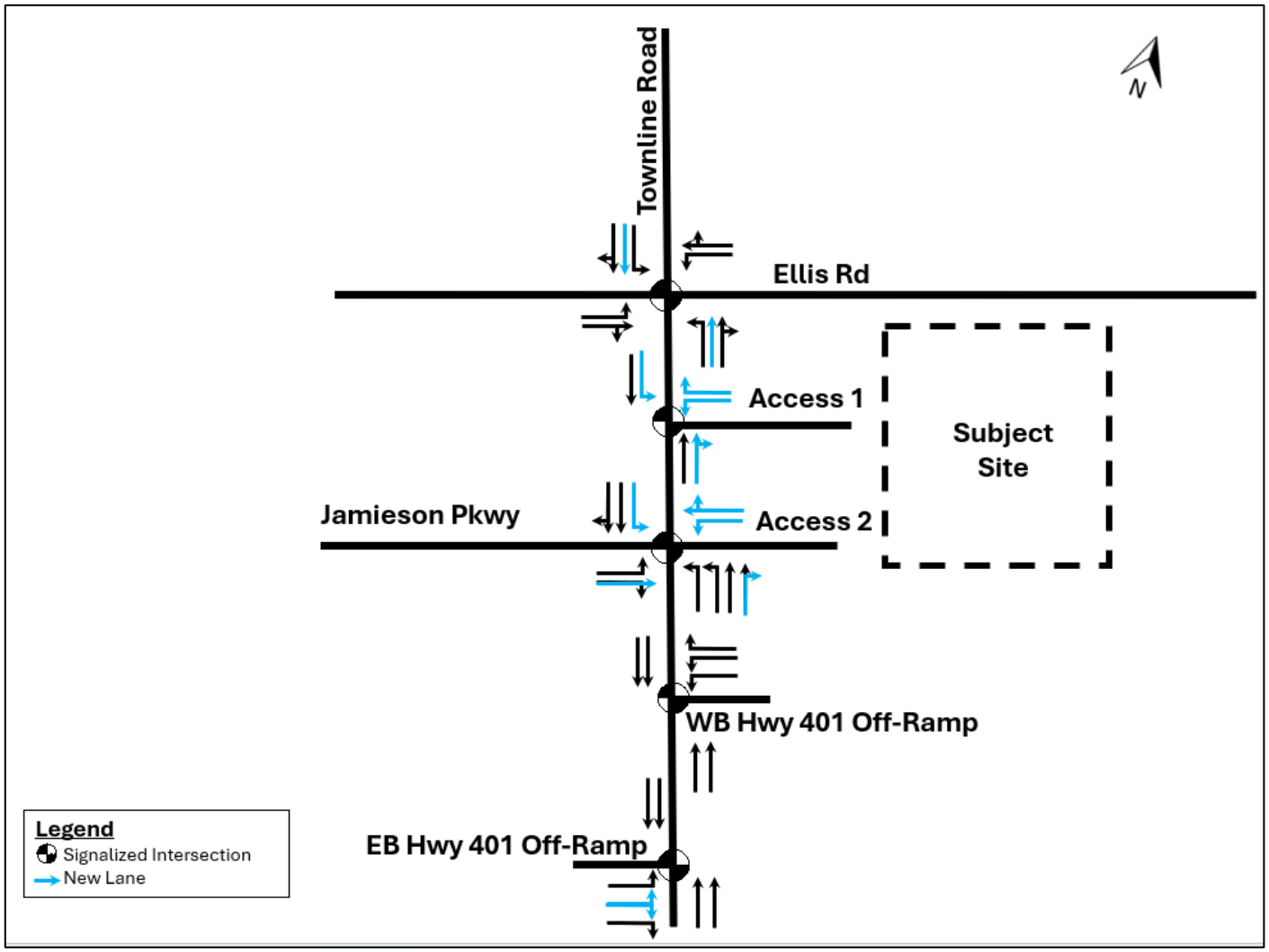


Figure 26 Site Plan B Lane Improvements

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
- Warehouse
  - 1 per 200 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

For the buildings 1 to 3, the parking provision will follow the warehousing land-use and for building 4 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
    - 1 per 200 m^2 = 16,200/200 = 81 required parking spaces
- Building 2: 16,200 m^2
    - 1 per 200 m^2 = 16,200/200 = 81 required parking spaces
- Building 3: 16,200 m^2
    - 1 per 200 m^2 = 16,200/200 = 81 required parking spaces
- Building 4: 10,427 m^2
    - 10,000/100 + 427/200 = 102 required parking spaces
- Building 5: 10,427 m^2
    - 10,000/100 + 427/200 = 102 required parking spaces
- Building 6: 9,814 m^2
    - 1 per 100 m^2 = 9,814/100 = 98 required parking spaces

In total 545 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 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

In total for Site Plan A, the site requires 1300 parking spaces for the proposed development under the Town of Puslinch Zoning

Site Plan B

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

- Building 7: 19,510 m^2
    - 1 per 200 m^2 = 19,510/200 = 98 required parking spaces
- Building 8: 19,510 m^2
    - 1 per 200 m^2 = 19,500/200 = 98 required parking spaces

In total for Site Plan B, the site requires 741 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: 81 required parking spaces
    - 1 + 3% x 81 = 4 required accessible parking spaces
- Building 2: 81 required parking spaces
    - 1 + 3% x 81 = 4 required accessible parking spaces
- Building 3: 81 required parking spaces
    - 1 + 3% x 81 = 4 required accessible parking spaces
- Building 4: 102 required parking spaces
    - 4 + 2% x 102 = 7 required accessible parking spaces
- Building 5: 102 required parking spaces
    - 4 + 2% x 102 = 7 required accessible parking spaces
- Building 6: 98 required parking spaces
    - 1 + 3% x 98 = 4 required accessible parking spaces

Required number of accessible parking spaces for Buildings 1 to 6 = 30 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 54 accessible parking spaces

Site Plan B

- Building 7: 98 required parking spaces
    - 1 + 3% x 98 = 4 required accessible parking spaces
- Building 8: 98 required parking spaces
    - 1 + 3% x 98 = 4 required accessible parking spaces

In total for Site Plan B the proposed development requires 38 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 = 33 required bicycle parking spaces
- Building 2: 16,200 m^2
    - 16,200 m^2 / 1000 x 2 = 33 required bicycle parking spaces
- Building 3: 16,200 m^2
    - 16,200 m^2 / 1000 x 2 = 33 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, 161 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 x 2 = 31 required bicycle parking spaces

In total 192 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 = 40 required bicycle parking spaces
- Building 8: 19,510 m^2
    - 19,510 m^2 / 1000 x 2 = 40 required bicycle parking spaces

In total 241 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 m² and less than 5,000 m²: 2
- Greater than 5,000 m²: 3 + 1 additional space for each 10,000 m² in excess of 5,000 m²

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 = 2 spaces
- Retail: 15090 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 = 2 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 26 loading spaces under the Town's By-Law.

In total, Site Plan B is required to provide a total of 30 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 22 Site Plan A Parking Requirements

Type	GFA	By-Law Requirement	Provided
Vehicle Parking	94,358 m^2 Total GFA	1,300 vehicle parking spaces	2,384 vehicle parking spaces
Accessible Parking		54 accessible parking spaces	54 accessible parking spaces will be provided
Bicycle Parking		161 Bicycle Parking spaces	161 Bicycle Parking spaces will be provided
Loading Spaces		26 loading spaces	208 loading spaces

Table 23 Site Plan B Parking Requirements

Type	GFA	By-Law Requirement	Provided
Vehicle Parking	118,287 m^2 Total GFA	741 vehicle parking spaces	1,460 vehicle parking spaces
Barrier Free Parking		38 accessible parking spaces	38 accessible parking spaces will be provided
Bicycle Parking		241 Bicycle Parking spaces	241 Bicycle Parking spaces will be provided
Loading Spaces		30 loading spaces	274 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.

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 24 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	>160 m	Table 9.9.4
B2: Vehicles turning right from stop	130 m	205 m	165 m	>160 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 and is shown for a WB-20 truck as it provides an assessment for the worst-case scenario.



Figure 27 Intersection Sight Distance Passenger Vehicle (Site Access 1)

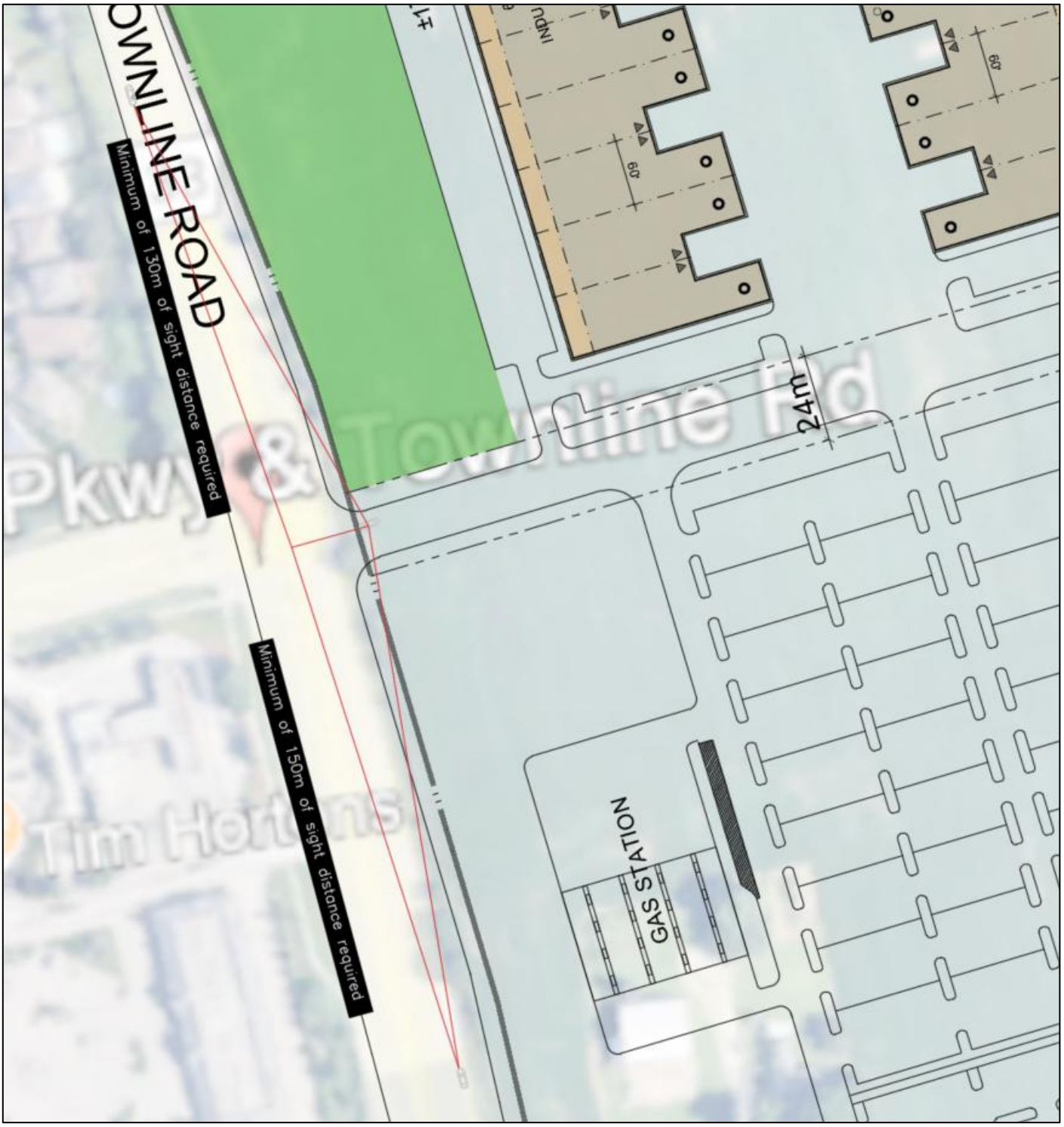


Figure 28 Intersection Sight Distance Passenger Vehicle (Site Access 2)

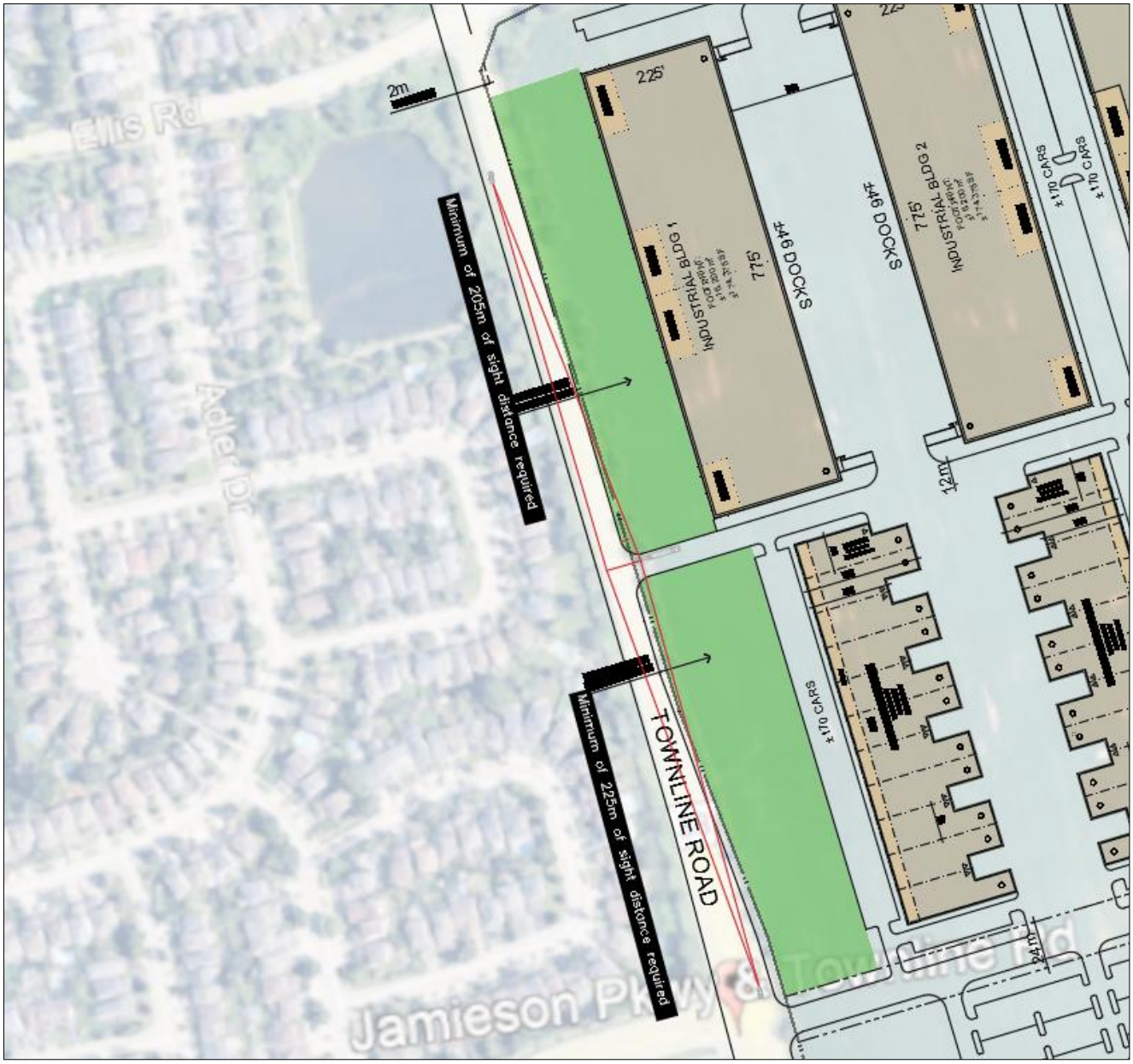


Figure 29 Intersection Site Distance WB-20 (Site Access 1)



Figure 30 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, 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 25 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 site plan prepared by Ware Malcomb proposes two Site Plans for the site which are noted as Site Plan A and Site Plan B.

Both Site Plans consist of 6 industrial buildings located on the northern portion of the site on the Site Access 2/Jamieson Parkway and Townline Road. The GFA breakdown of the 6 buildings are as follows:

- 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 the 6 industrial buildings mentioned above with a box retail component with a GFA of 162,428 ft^2, and 1 gas station with a capacity of 24 fueling stations located on the southern portion of the lot. The total GFA for Site Plan A is 1,015,662 ft^2 (94,358m^2).

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.

Accesses to the subject site are proposed via a two full-moves driveway on Townline Road. Site Access 1 will be noted as the north most access on the lot, and Site Access 2 intersects with Townline Road and connects to Jamieson Parkway.

The proposed Site Plan A development is expected to generate a total of 739 two-way site trips during the a.m. peak hour consisting of 531 inbound and 208 outbound trips. During the p.m. peak hour, it is expected to generate 1052 new two-way site trips consisting of 415 inbound and 637 outbound trips. During the Saturday peak hour, it is expected to generate 1365 new two-way site trips consisting of 665 inbound and 700 outbound trips.

Additionally, the Site Plan A development is expected to generate a total of 260 two-way pass-by trips during the a.m. peak hour consisting of 130 inbound and 130 outbound trips. During the p.m. peak hour, it is expected to generate 478 pass-by trips consisting of 239 inbound and 239 outbound trips. During the Saturday peak hour, it is expected to generate 68 pass-by trips consisting of 34 inbound and 34 outbound trips.

The proposed Site Plan B development is expected to generate a total of 586 two-way site trips during the a.m. peak hour consisting of 453 inbound and 133 outbound trips. During the p.m. peak hour, it is expected to generate 598 new two-way site trips consisting of 168 inbound and 430 outbound trips. During the Saturday peak hour, it is expected to generate 247 new two-way site trips consisting of 96 inbound and 151 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 0.89 during the a.m. peak hour
- Eastbound Right with a v/c of 0.93 during the a.m. peak hour
- Eastbound left with a v/c of 0.80 during the p.m. peak hour
- Eastbound Right with a v/c of 0.88 during the p.m. peak hour
- Eastbound left with a v/c of 0.77 during the Saturday peak hour
- Eastbound Right with a v/c of 0.82 during the Saturday peak hour

Townline Road and Ellis Road and Sideroad 10 North

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

Townline Road and Site Access 1

- Northbound through with a V/C of 1.07 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 0.95 during the a.m. peak hour
- Eastbound Right with a v/c of 0.87 during the a.m. peak hour
- Eastbound left with a v/c of 0.77 during the p.m. peak hour
- Eastbound Right with a v/c of 0.88 during the p.m. peak hour
- Eastbound Right with a v/c of 0.82 during the Saturday peak hour

Townline Road and Ellis Road and Sideroad 10 North

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

Townline Road and Site Access 1

- Northbound through with a V/C of 1.04 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 0.92 during the a.m. peak hour
- Eastbound Right with a v/c of 1.02 during the a.m. peak hour
- Eastbound left with a v/c of 0.81 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the p.m. peak hour
- Southbound through with a v/c of 0.93 during the p.m. peak hour
- Eastbound left with a v/c of 0.77 during the Saturday peak hour
- Eastbound Right with a v/c of 0.87 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.75 during the a.m. peak hour
- Northbound through with a v/c of 0.91 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a v/c of 0.87 during the a.m. peak hour
- Northbound left with a v/c of 0.92 during the p.m. peak hour
- Northbound through-right with a v/c of 1.05 during the p.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.17 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 1.01 during the a.m. peak hour
- Eastbound Right with a v/c of 0.99 during the a.m. peak hour
- Eastbound left with a v/c of 0.78 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the p.m. peak hour
- Southbound through with a v/c of 0.89 during the p.m. peak hour
- Eastbound Right with a v/c of 0.86 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Northbound through with a v/c of 0.85 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a v/c of 1.01 during the a.m. peak hour
- Northbound through-right with a v/c of 0.95 during the p.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.16 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 0.98 during the a.m. peak hour
- Eastbound Right with a v/c of 1.13 during the a.m. peak hour
- Southbound through with a v/c of 0.86 during the a.m. peak hour
- Eastbound left with a v/c of 0.83 during the p.m. peak hour
- Eastbound Right with a v/c of 0.96 during the p.m. peak hour
- Southbound through with a v/c of 1.04 during the p.m. peak hour
- Eastbound left with a v/c of 0.84 during the Saturday peak hour
- Eastbound Right with a v/c of 1.03 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.78 during the a.m. peak hour
- Westbound right with a v/c of 0.75 during the p.m. peak hour
- Northbound through with a V/C of 0.99 during the p.m. peak hour

Townline Road and Jamieson Parkway/Site Access 2

- Eastbound through right with a v/c of 0.92 during the p.m. peak hour
- Westbound left with a v/c of 0.90 during the p.m. peak hour
- Northbound left with a v/c of 0.91 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 1.01 during the a.m. peak hour
- Northbound left with a V/C of 1.14 during the p.m. peak hour
- Northbound through-right with a V/C of 1.16 during the p.m. peak hour
- Southbound through-right with a V/C of 0.91 during the a.m. peak hour
- Northbound through-right with a V/C of 0.91 during the Saturday. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.28 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 1.09 during the a.m. peak hour
- Eastbound Right with a v/c of 1.13 during the a.m. peak hour
- Southbound through with a v/c of 0.85 during the a.m. peak hour

- Eastbound left with a v/c of 0.81 during the p.m. peak hour
- Eastbound Right with a v/c of 0.97 during the p.m. peak hour
- Southbound through with a v/c of 1.03 during the p.m. peak hour
- Eastbound Right with a v/c of 0.92 during the Saturday peak hour

Highway 401 Westbound Off-Ramp

- Westbound left with a v/c of 0.77 during the a.m. peak hour
- Northbound through with a V/C of 0.95 during the p.m. peak hour

Townline Road and Ellis Road and Sideroad 10 North

- Southbound through-right with a V/C of 1.00 during the a.m. peak hour
- Northbound left with a V/C of 1.05 during the p.m. peak hour
- Northbound through-right with a V/C of 1.11 during the p.m. peak hour
- Southbound through-right with a V/C of 0.86 during the a.m. peak hour

Townline Road and Site Access 1

- Northbound through with a V/C of 1.29 during the p.m. peak hour

Upon comparison of both Site Plans with the recommended intersection improvements both Site Plans operate similarly however Site Plan B requires less improvements for the intersection of Jamieson Parkway/Site Access 2 and Townline Road whereas Site Plan A will require additional lanes in the northbound direction to operate under capacity until the future 2038 scenario and below a v/c of 1. From the perspective of project buildout, the Site Plan B slightly outperforms Site Plan A as this Site Plan generates less traffic due to the nature of the buildings to be implemented.

A review of loading and parking requirements was undertaken and confirmed that the proposed site plan meets the municipal zoning requirements for both Site Plans.

The proposed site access meets the OPSD 350 design standard and Township of Puslinch Zoning By-law

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.

TDM measures are proposed for the subject site to encourage employees to explore various modes of transportation in order to reduce their dependency on single occupancy vehicle trips.

A site circulation assessment for a WB-20 truck, emergency vehicles, passenger vehicles, and waste collection vehicles confirmed no issues with the site circulation.

The traffic study confirms that the proposed development concepts A and B can be accommodated by the existing road network with the following recommended improvements:

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

- 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
- A left-turn lane added on the southbound approach.
- Optimized signal timings

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

- 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

Townline Road and Site Access 1

- Signalization of the intersection
- Exclusive westbound right-lane and left-lane
- Addition of a northbound through/right-lane
- Exclusive Southbound left-lane
- Optimized signal timings

Highway 401 Eastbound off-ramp and Townline Road

- Addition of an eastbound shared left/right turn lane

Townline Road and Ellis Road and Sideroad 10N

- Addition of a northbound and 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.	○ Nature of the retail is important…impacts trip generation ○ Cross-jurisdictional nature of application ○ Service Station / Big Box retail access in proximity to ramp terminals ○ Northern most proposed access to Townline violates Regional Road Access Policy. ○ 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: 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 ○ Site Plan Control Application ○ Plan of Subdivision ○ Community Plan ○ 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 ○ Policy and Procedures for Access onto Regional Roads ○ Twp Eng. Design and Infrastructure Manual (EDIM)
4	Public Meeting	○ 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 ○ ○ ○
6	Size and number of phases of Development	○ One Phase of development ○ Two Alternatives to consider: Alternative A or Alternative B

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

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

Item	Description	Details
22	Site access and circulation	X Review sight distances at all new access points ○ Internal traffic controls X Loading facilities and access X Service/maintenance vehicle access X Emergency vehicle access
23	Submission format	○ Three hard copies of main report including appendices (other than analysis results/output e.g. Synchro reports) ○ 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 ○ 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

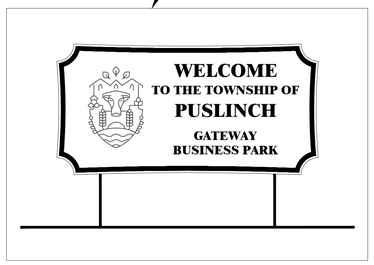
The Land Development Review module is designed to better serve stakeholders through streamlining all land development planning approvals by the Ministry.

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

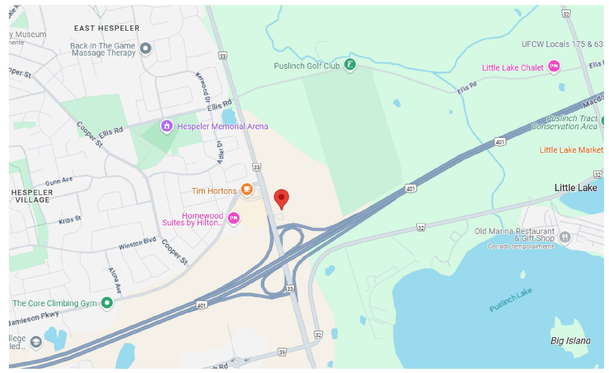
Retail Store:
1/20 m²

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

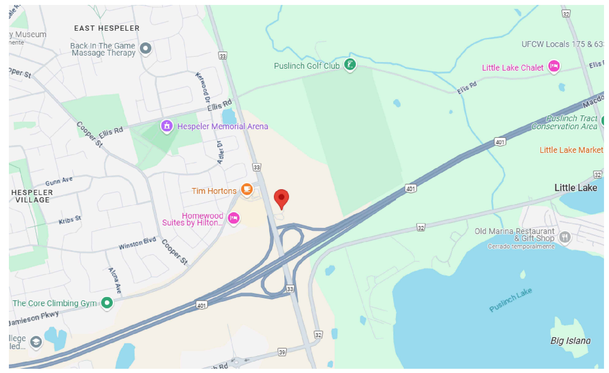
Barrier-free stalls:
1 stall if the total number of parking stalls is between 3 and 25 stalls.
1 stall + 3% if the total number of parking stalls is between 26 and 100 stalls.
4 stalls + 2% if the total number of parking stalls is between 101 and 200 stalls.
8 stalls + 2% if the total number of parking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

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

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

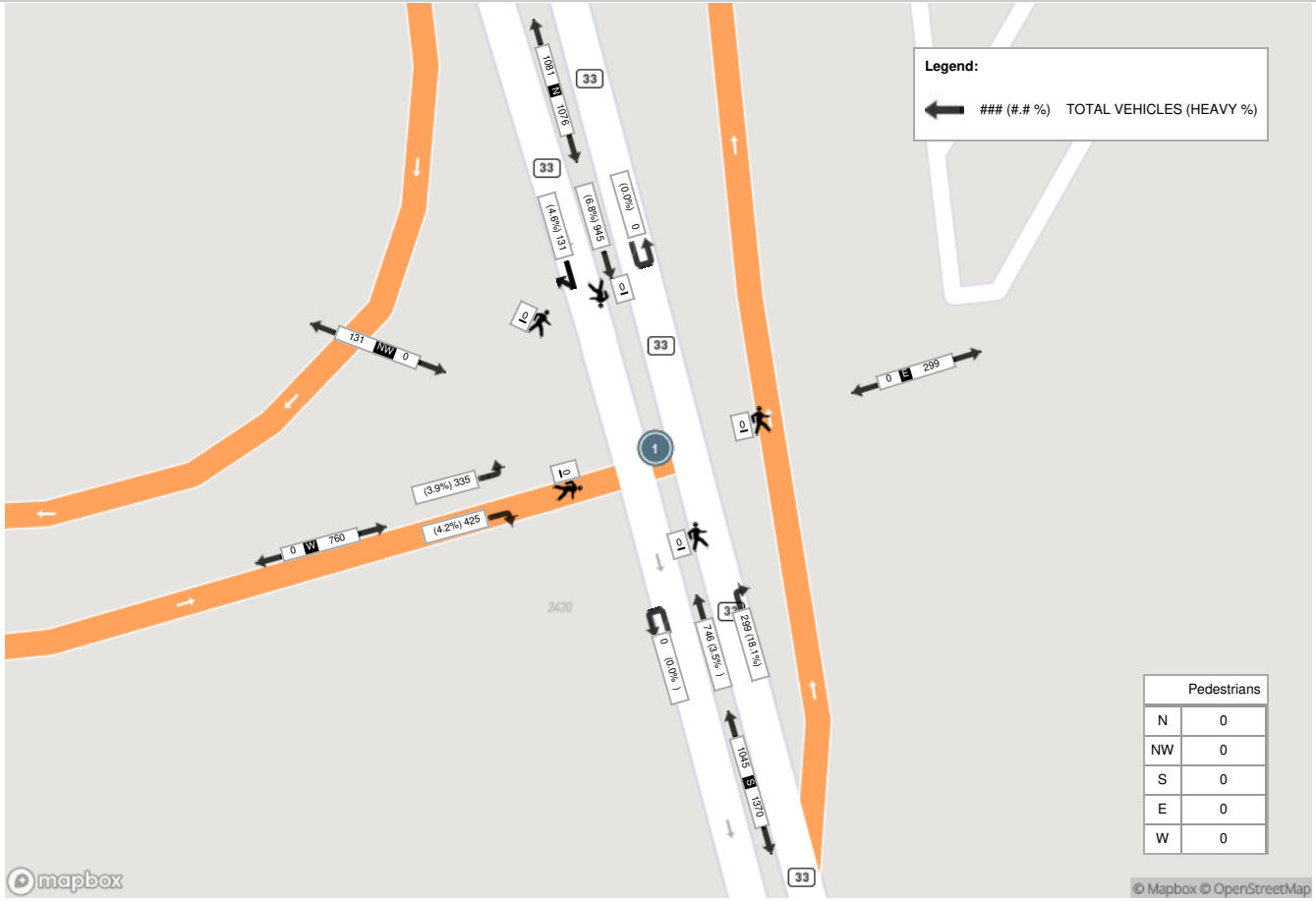
Turning Movement Count
Location Name: HWY 401 EB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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

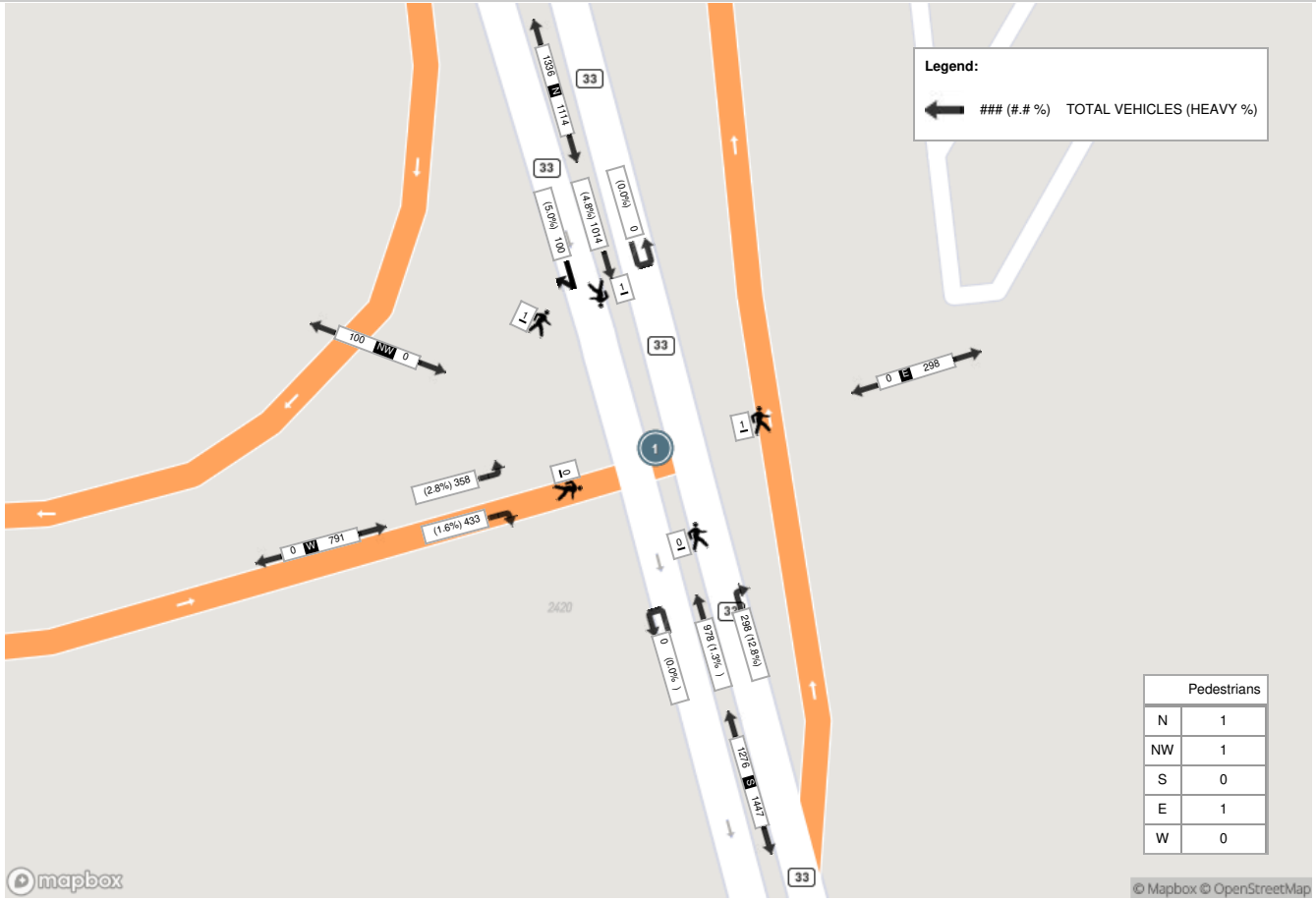
Start Time	N Approach TOWNLINE RD					E Approach HWY 401 EB ON RAMP FROM NB TOWNLINE RD			S Approach TOWNLINE RD					W Approach HWY 401 EB OFF RAMP AT TOWNLINE RD					NW Approach HWY 401 EB ON RAMP FROM SB TOWNLINE RD			Int. Total (15 min)
	Hard Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach 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)**



	Pedestrians
N	0
NW	0
S	0
E	0
W	0

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



	Pedestrians
N	1
NW	1
S	0
E	1
W	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
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CANADA

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

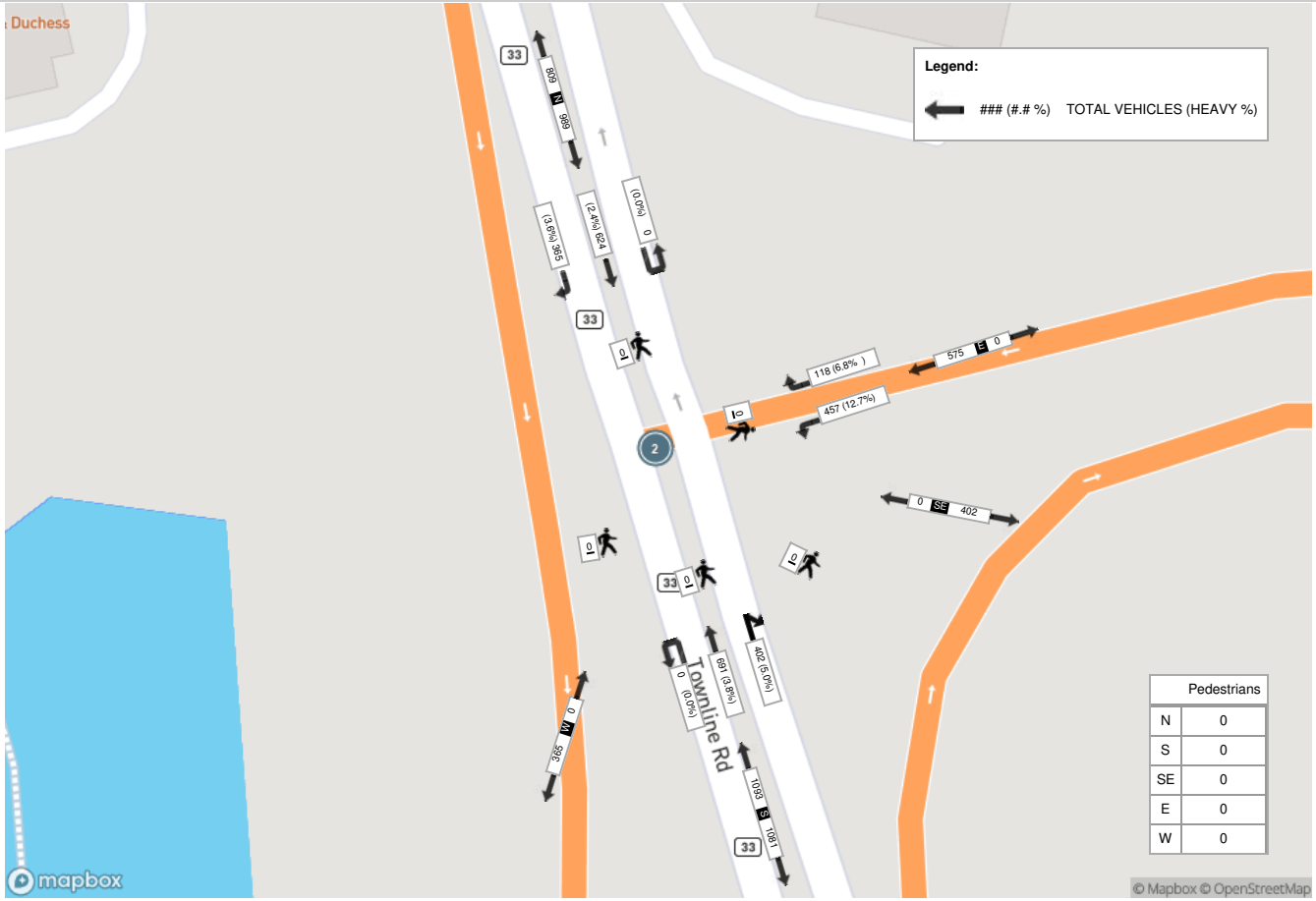
Turning Movement Count
Location Name: HWY 401 WB OFF-RAMP & TOWNLINE ROAD
Date: Tue, Sep 30, 2025 Deployment Lead: Rey Fernandez

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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

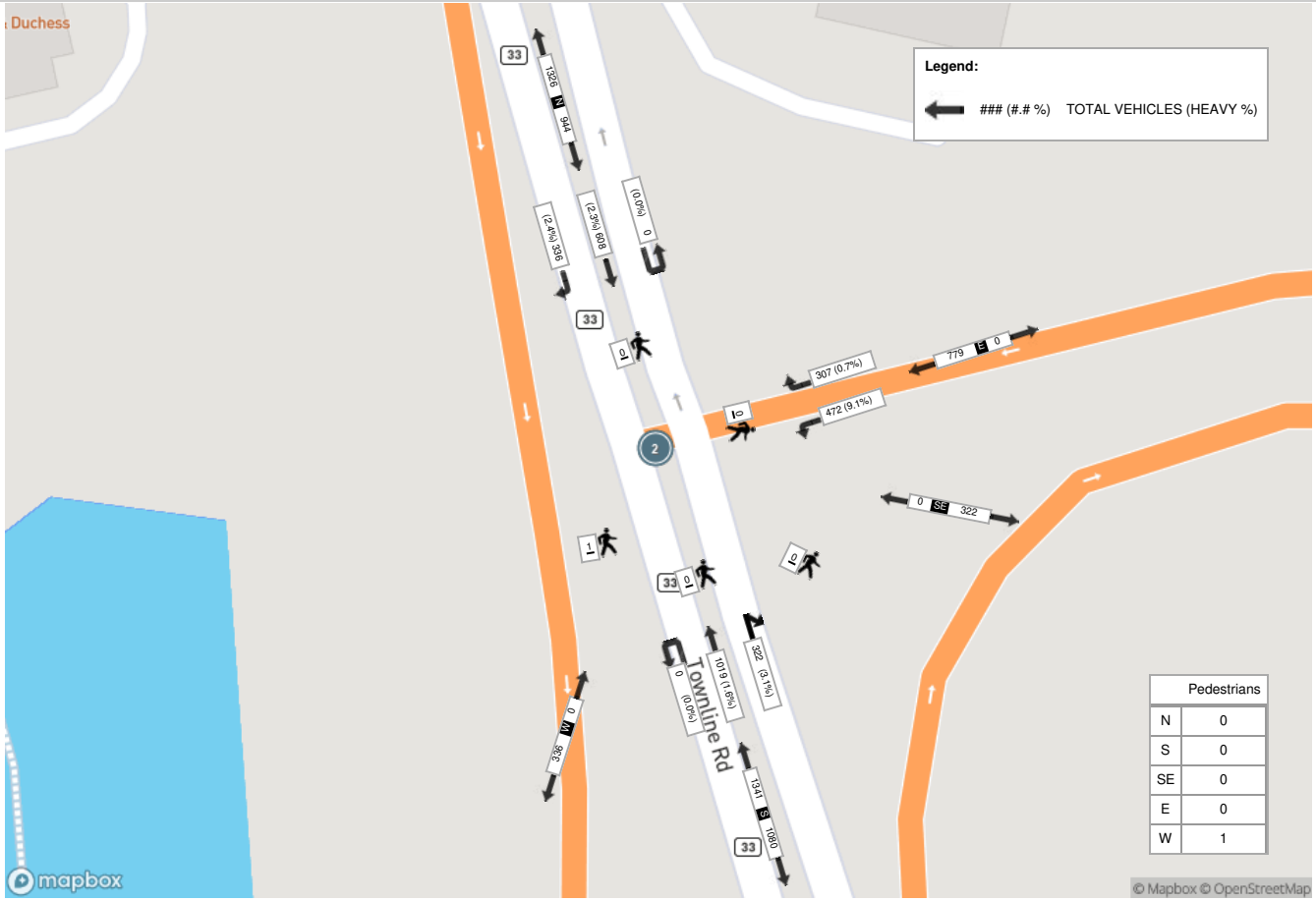
Start Time	N Approach TOWNLINE ROAD					E Approach HWY 401 WB OFF-RAMP					S Approach TOWNLINE ROAD					W Approach HWY 401 WB ON-RAMP			SE Approach HWY 401 WB ON-RAMP			Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Hard Right	Thru	UTurn	Peds	Approach Total	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)**



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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CANADA

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

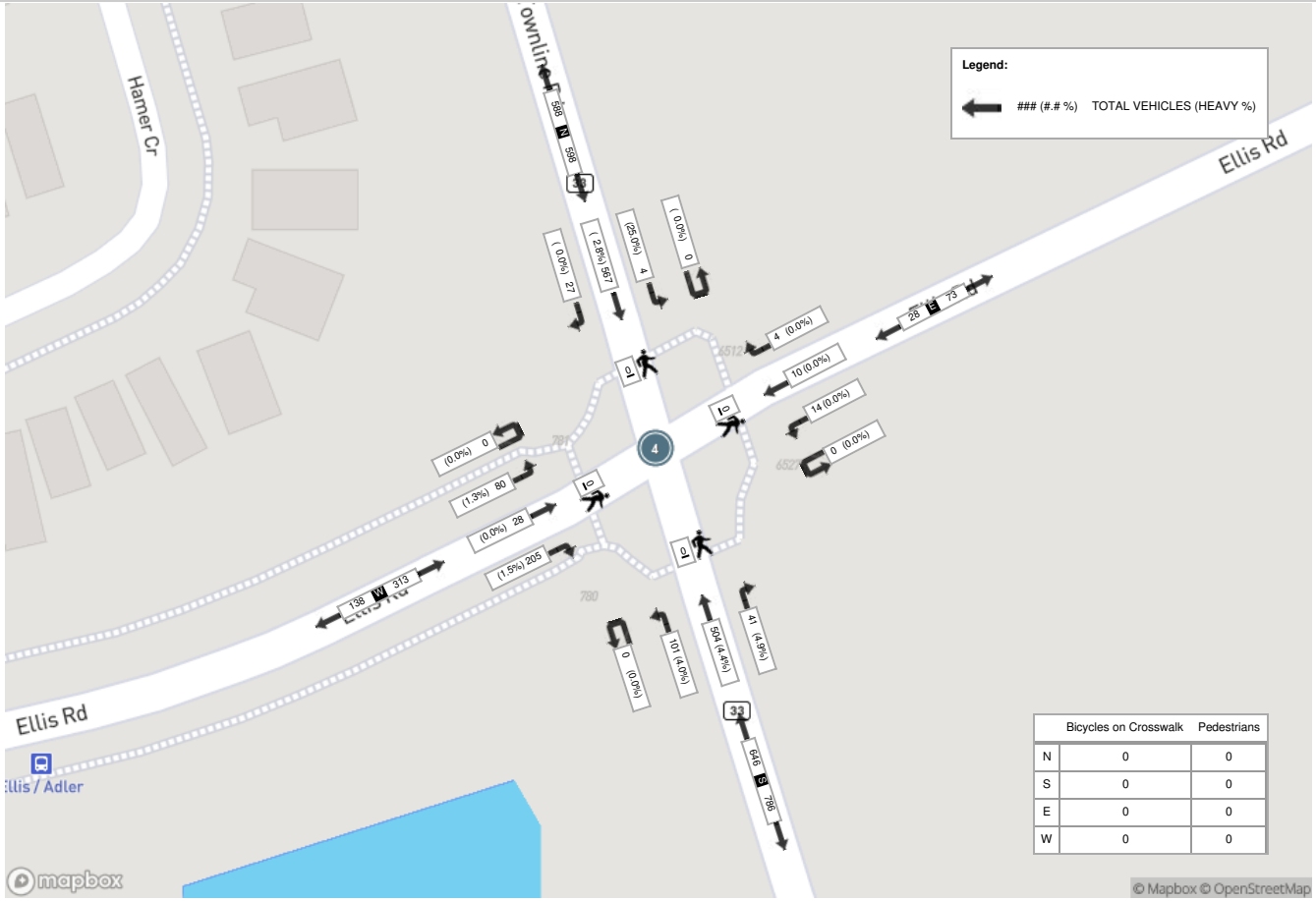
Start Time	N Approach TOWNLINE RD						E Approach SIDEROAD 10N						S Approach TOWNLINE RD						W Approach ELLIS RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach 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%		**-**

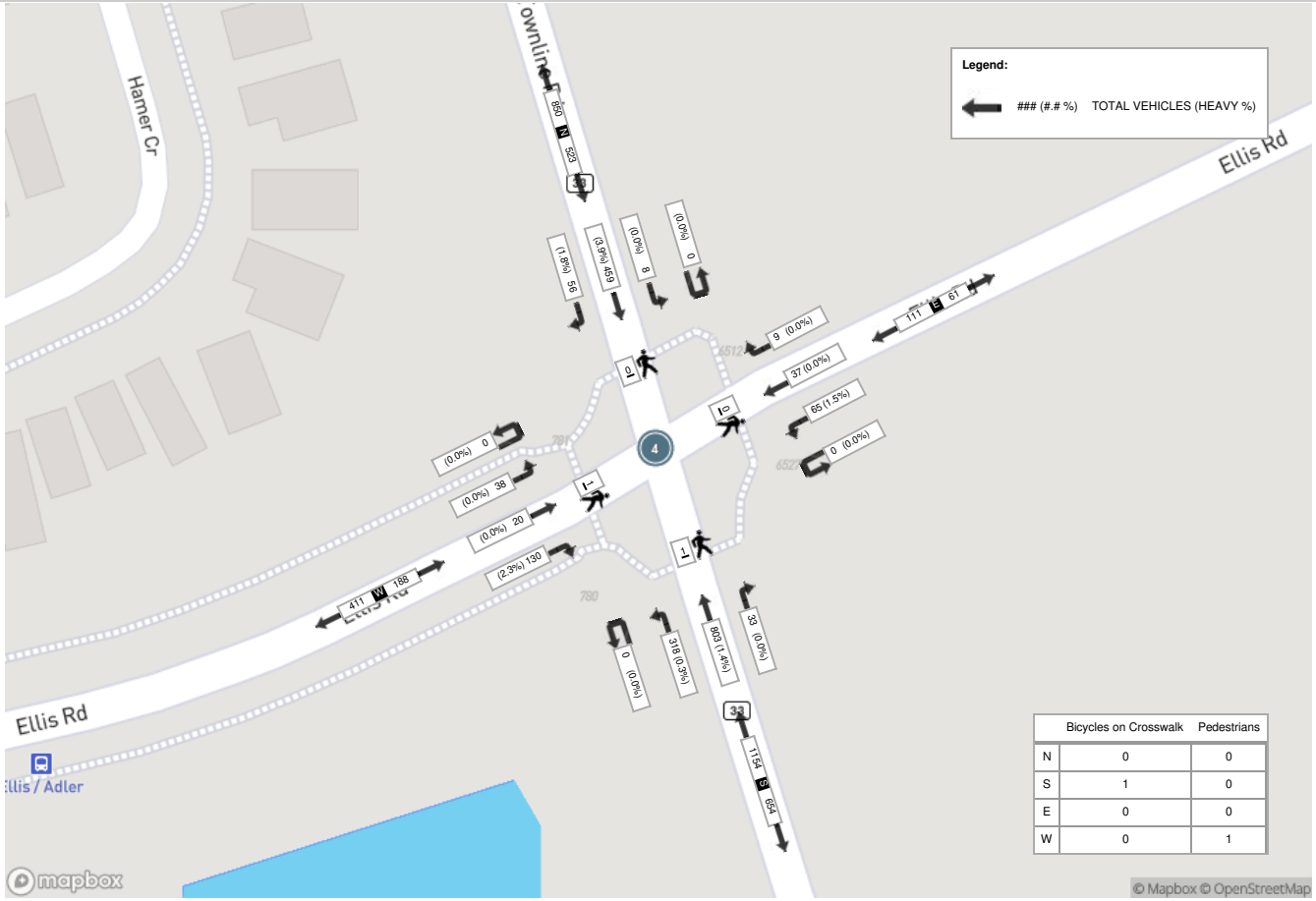
GHD
210 140 ALLSTATE PARKWAY
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CANADA

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



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

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 %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

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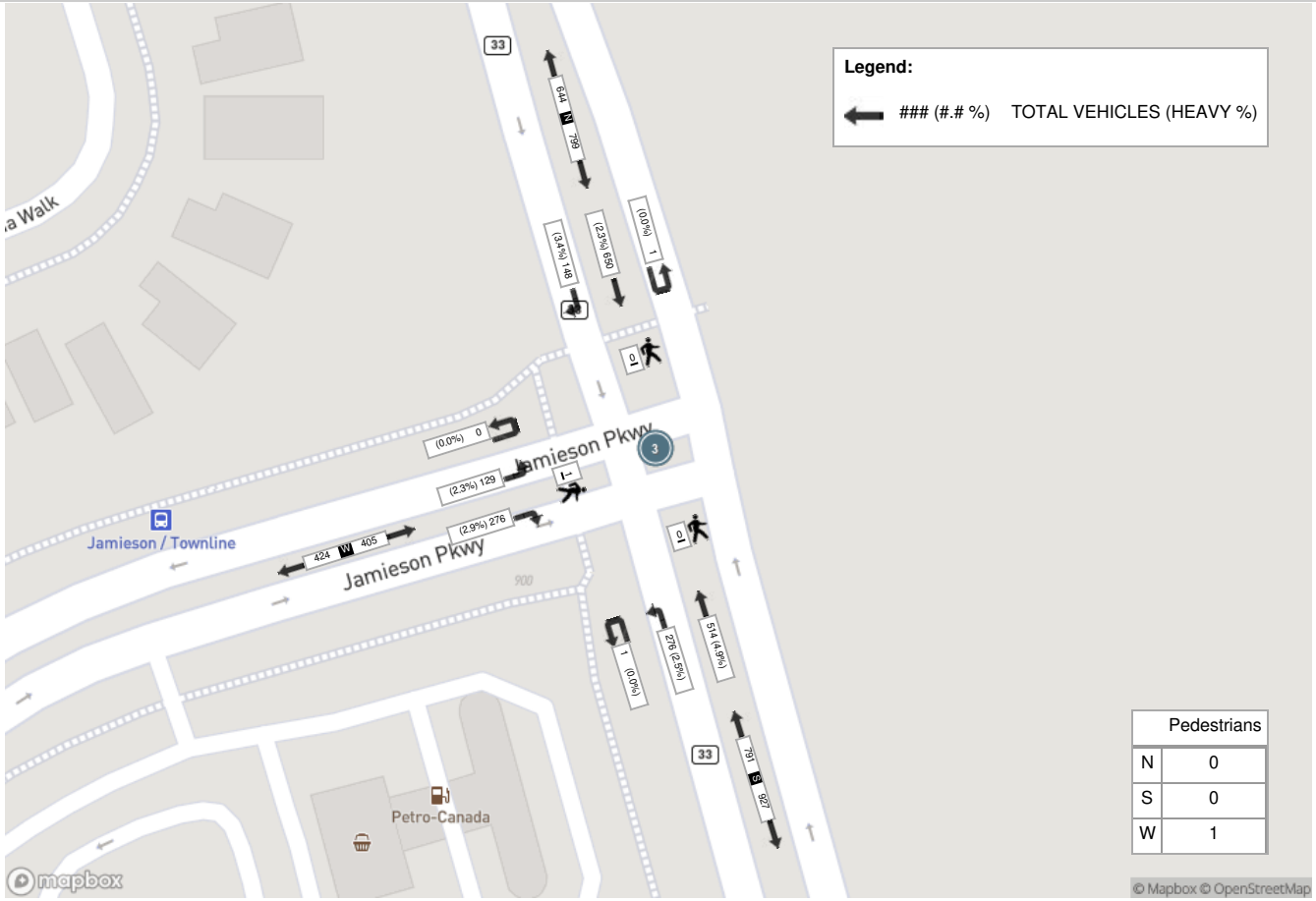
Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (11 °C)

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%		**-**

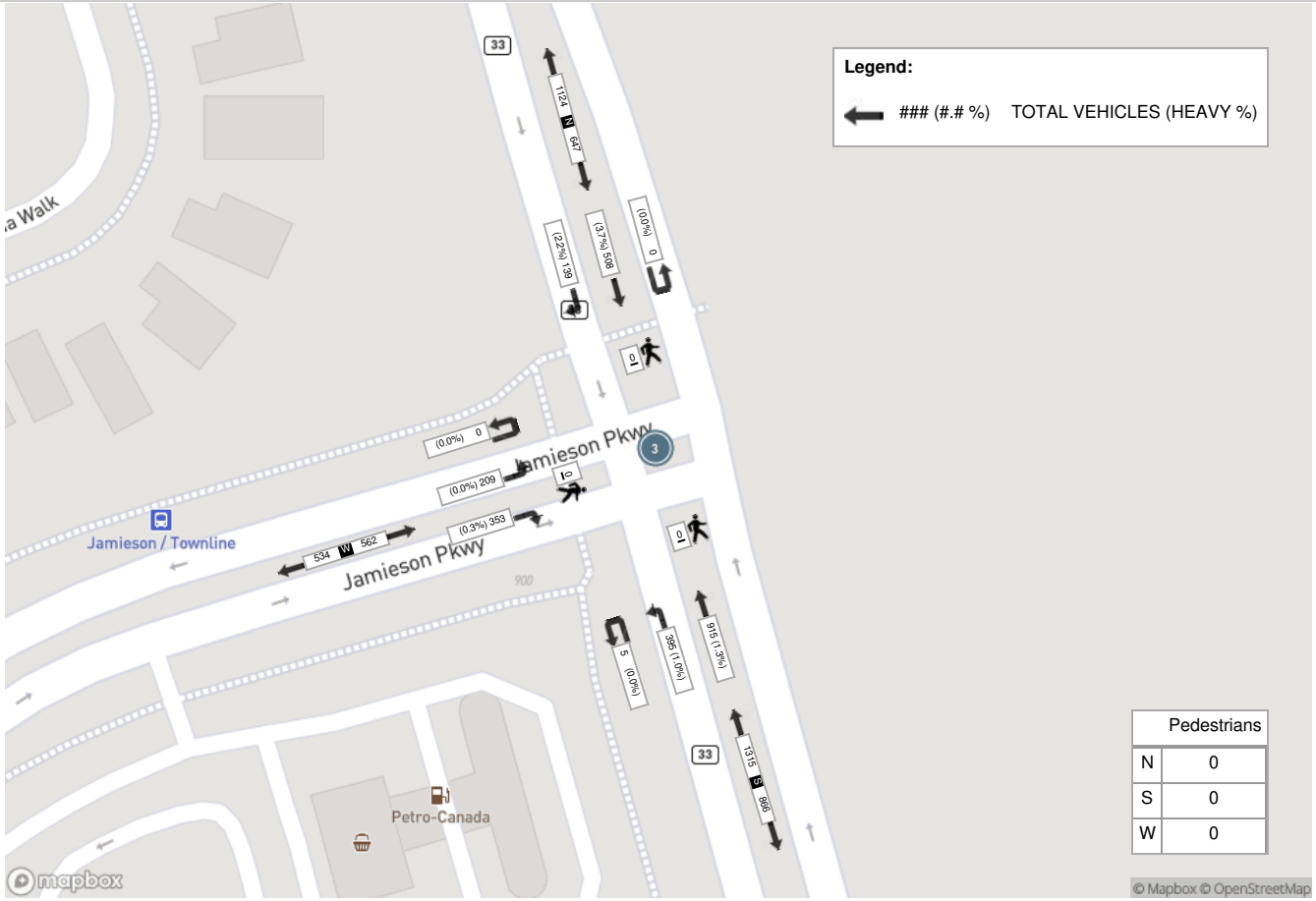
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (23 °C)

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)



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

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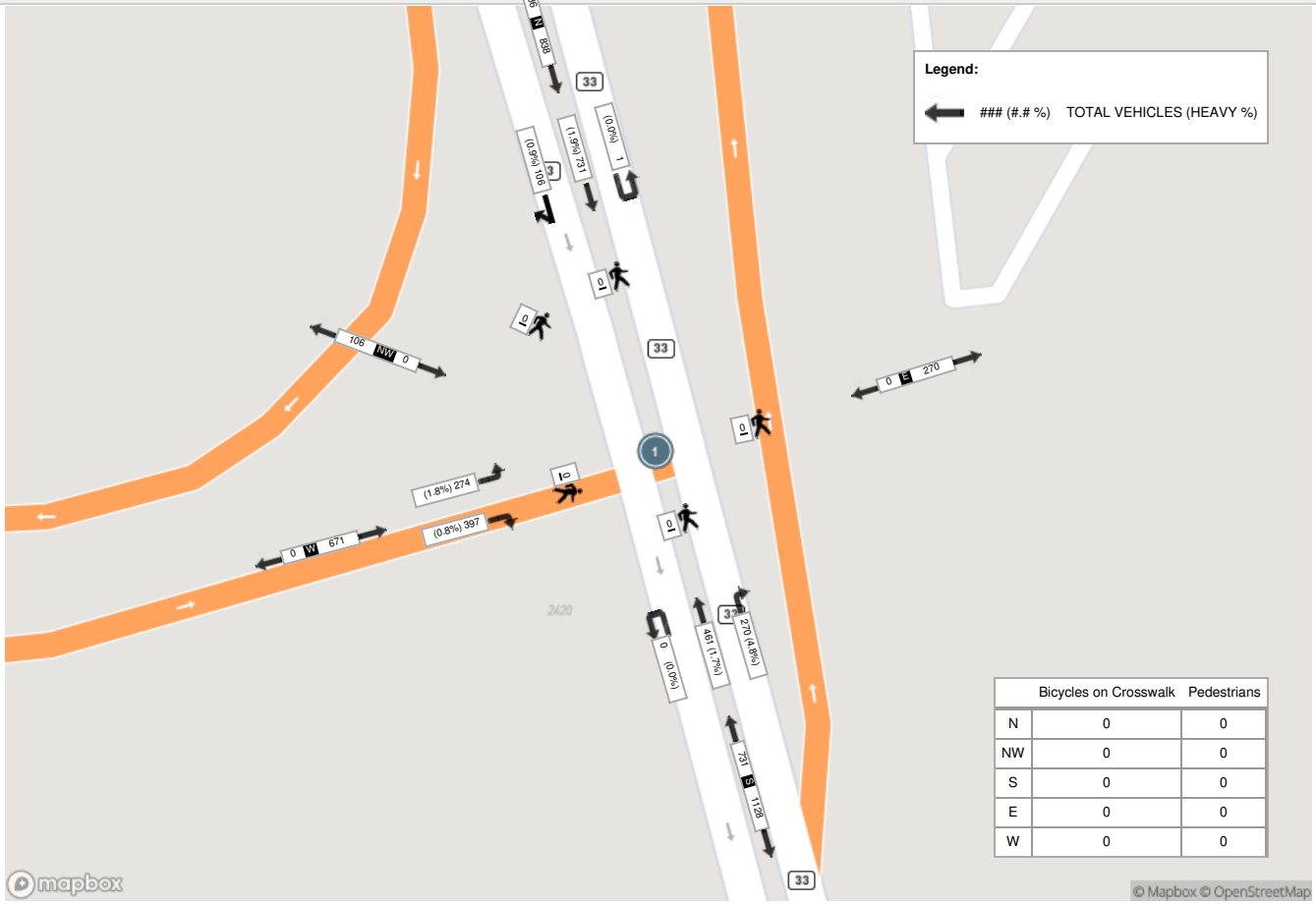
Turning Movement Count (1 . HWY 401 EB OFF-RAMP & TOWNLINE ROAD)

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

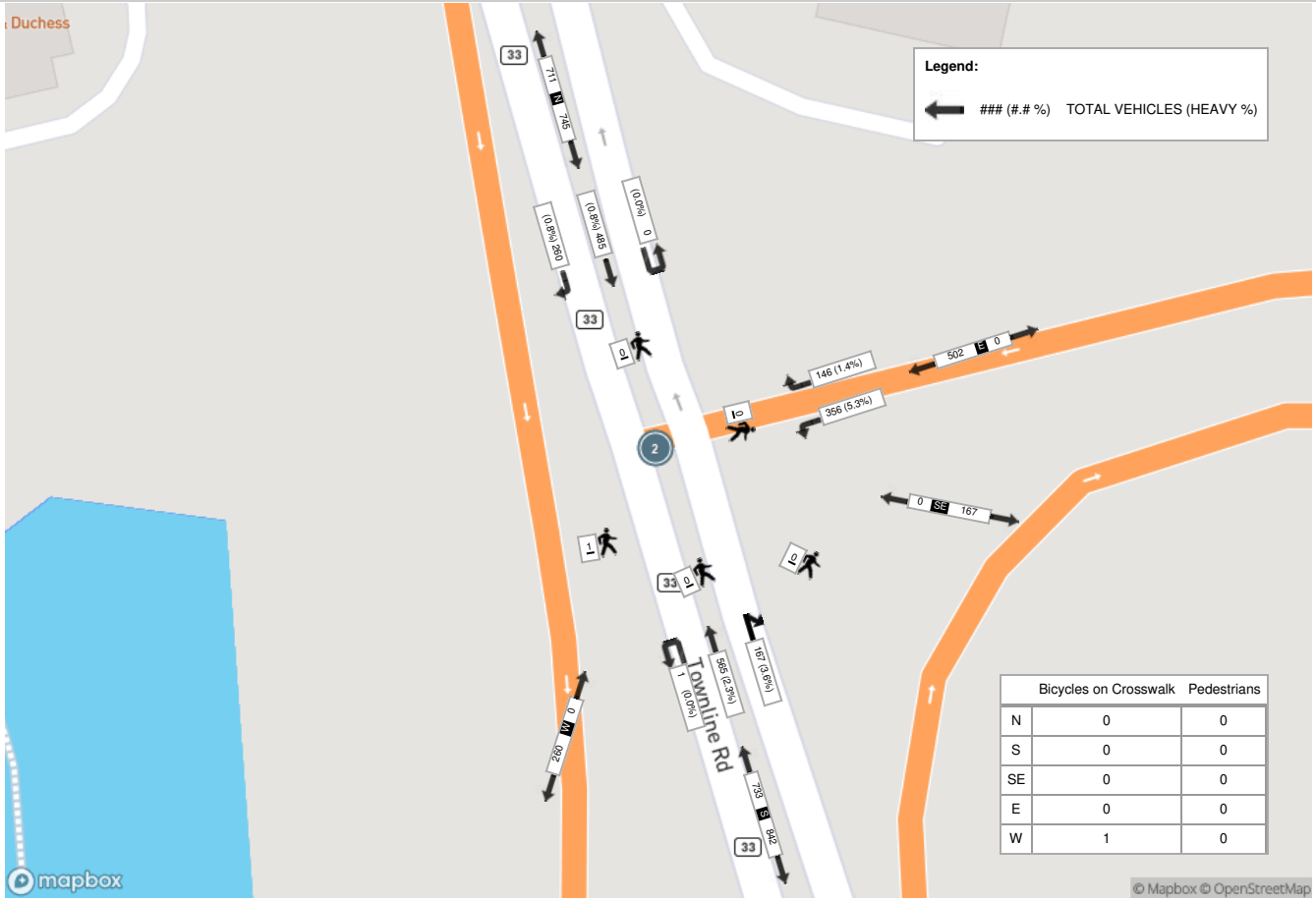
GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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%		**-**

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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 %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

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

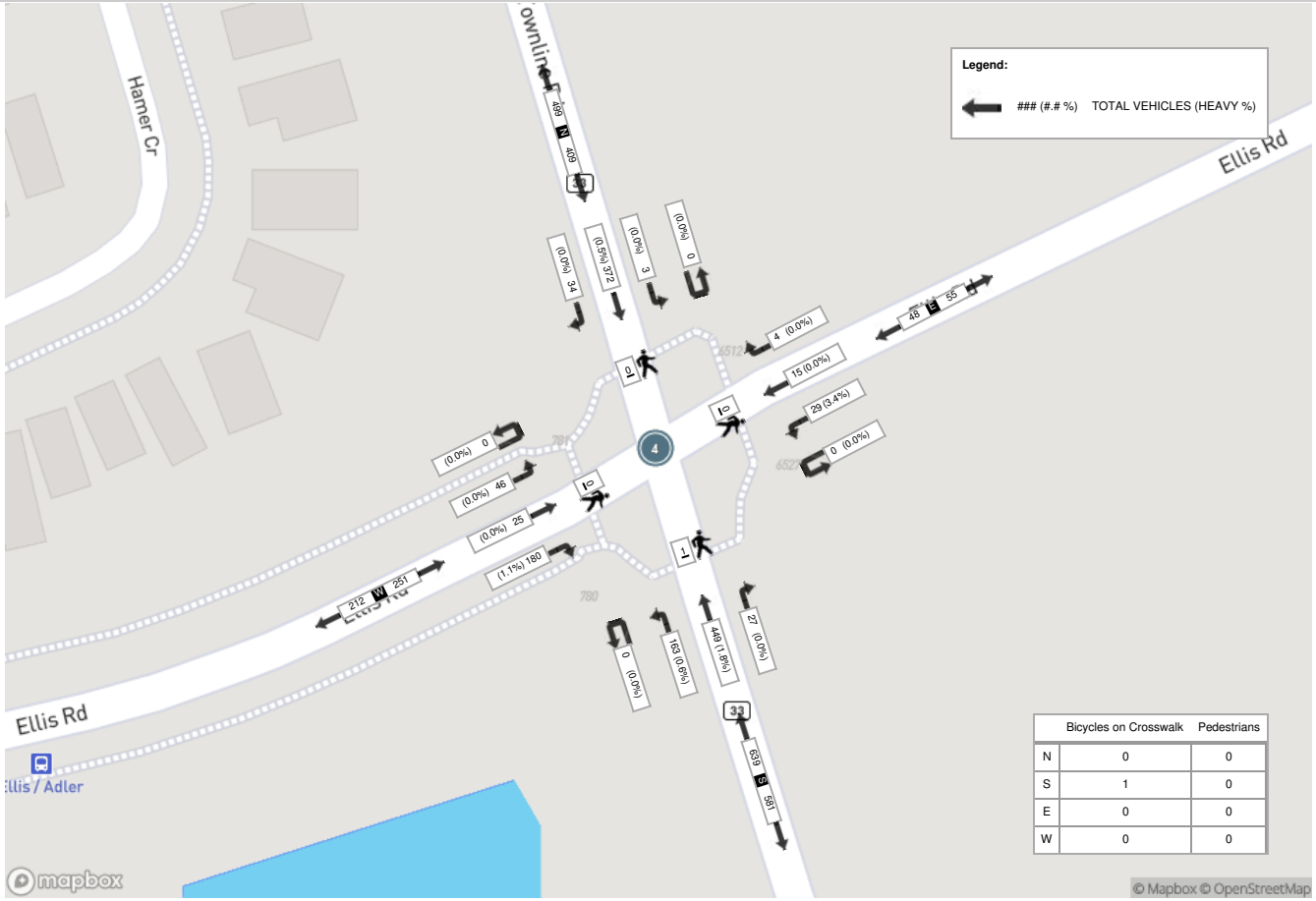
GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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%		**-**

GHD
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MARKHAM ONTARIO, L3R
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CANADA

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

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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

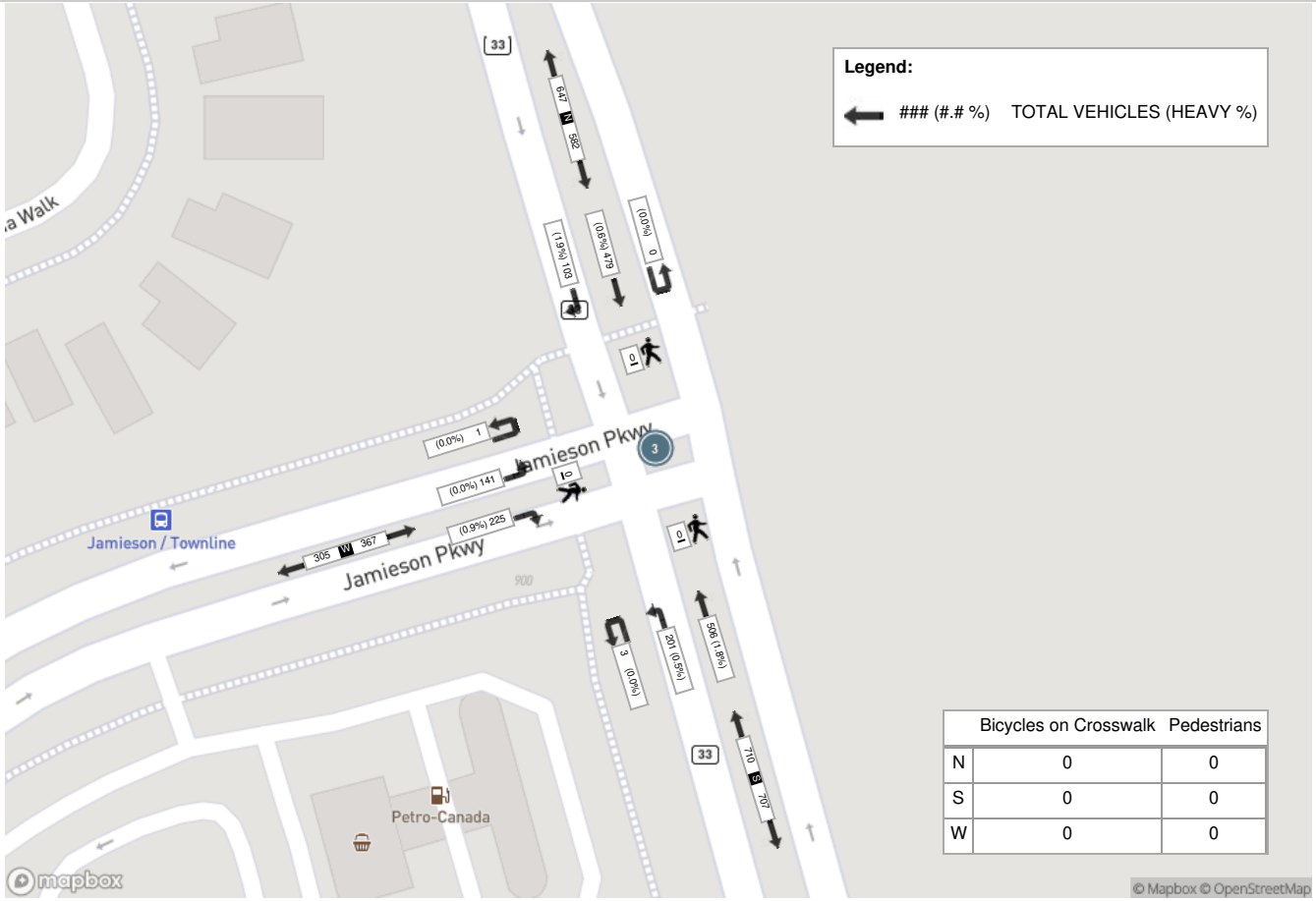
Start Time	N Approach TOWNLINE RD					S Approach TOWNLINE RD					W Approach JAMIESON PKWY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-01 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 %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

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%		**-**

GHD
210 140 ALLSTATE PARKWAY
MARKHAM ONTARIO, L3R
578
CANADA

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.

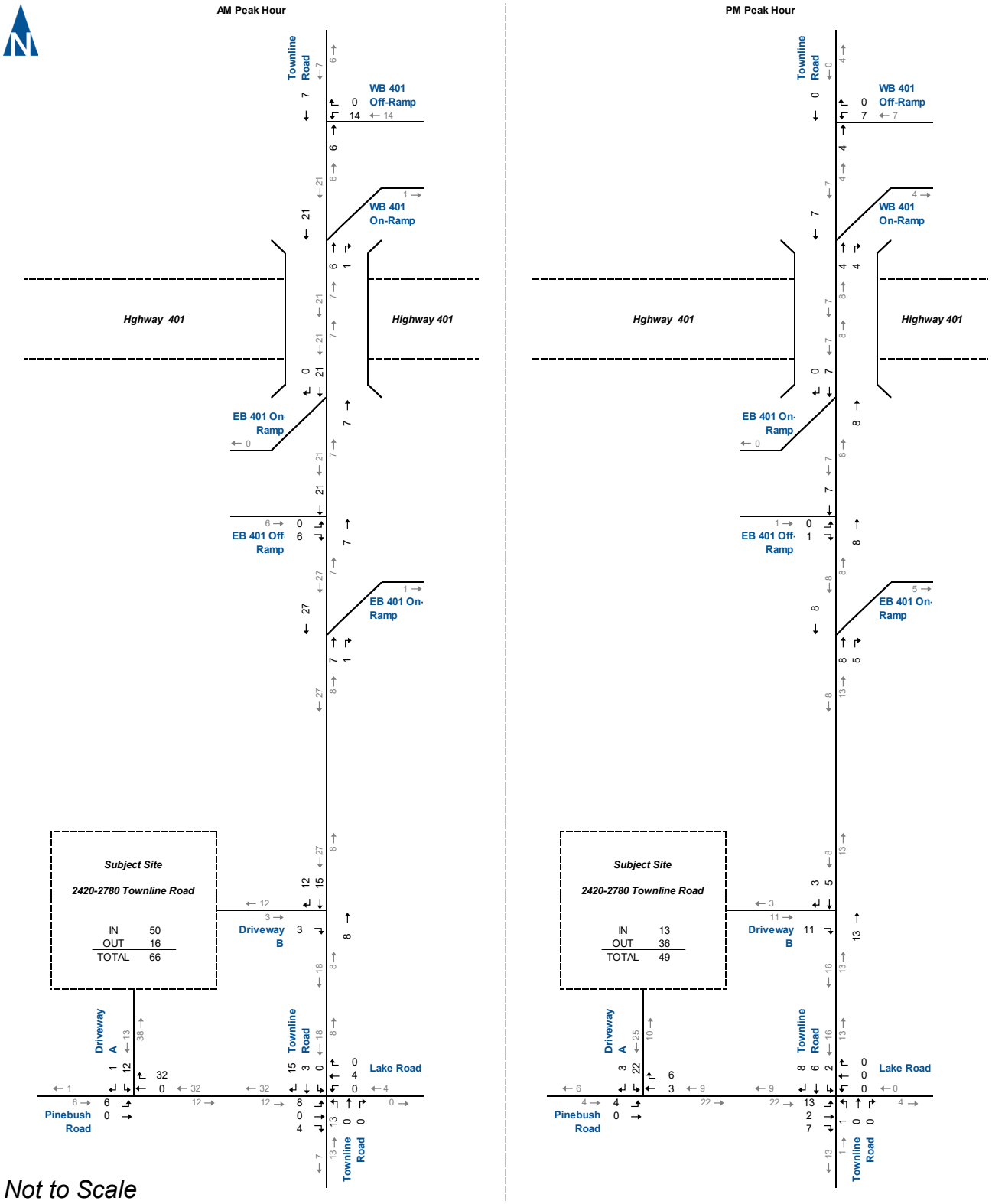


TABLE 4.4: ESTIMATED TRIP DISTRIBUTION (TRUCKS)

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.

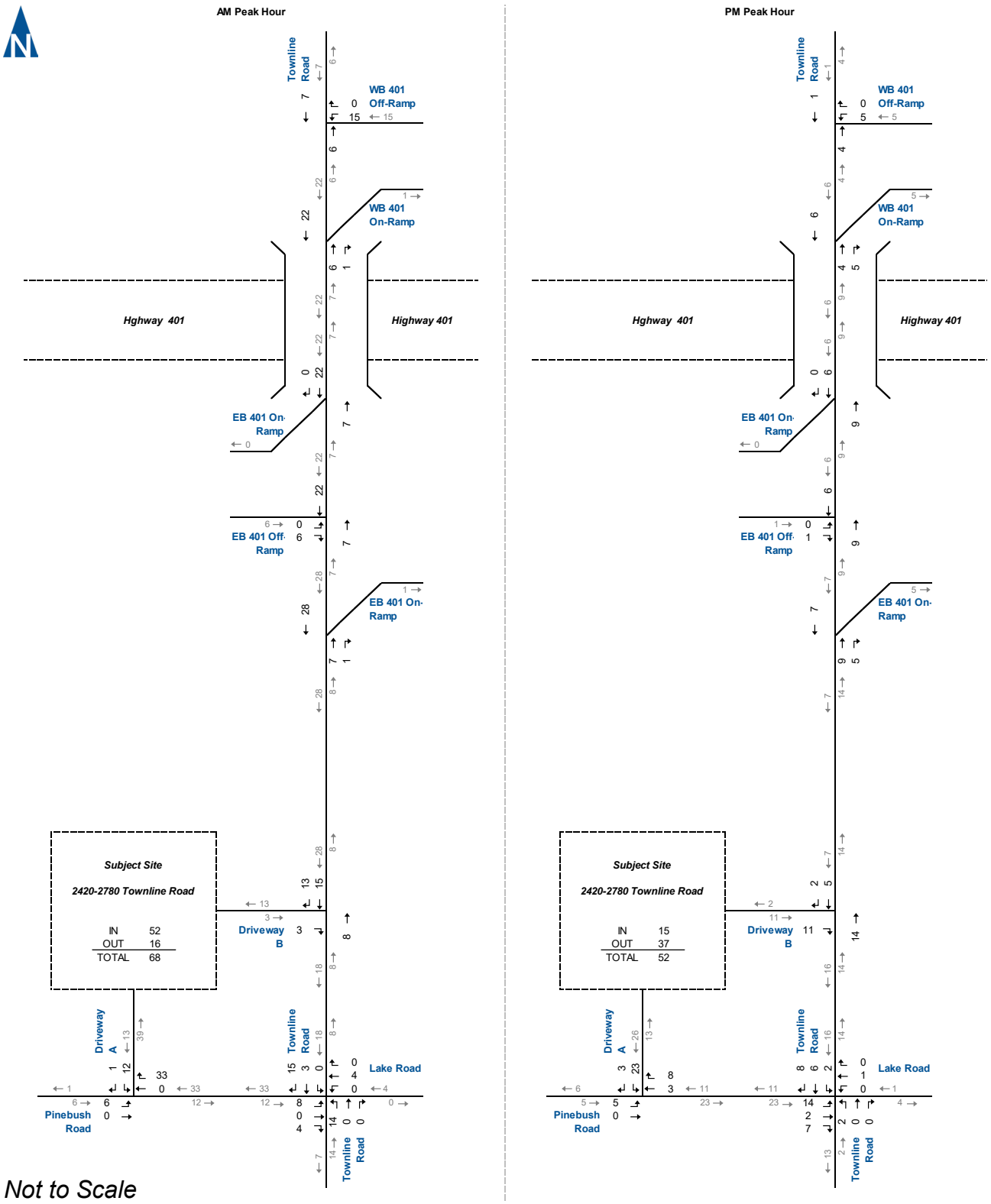


Not to Scale

Site Generated Traffic Volumes Phase 1

2420-2780 Townline Road TIS
240656

Figure 4.4

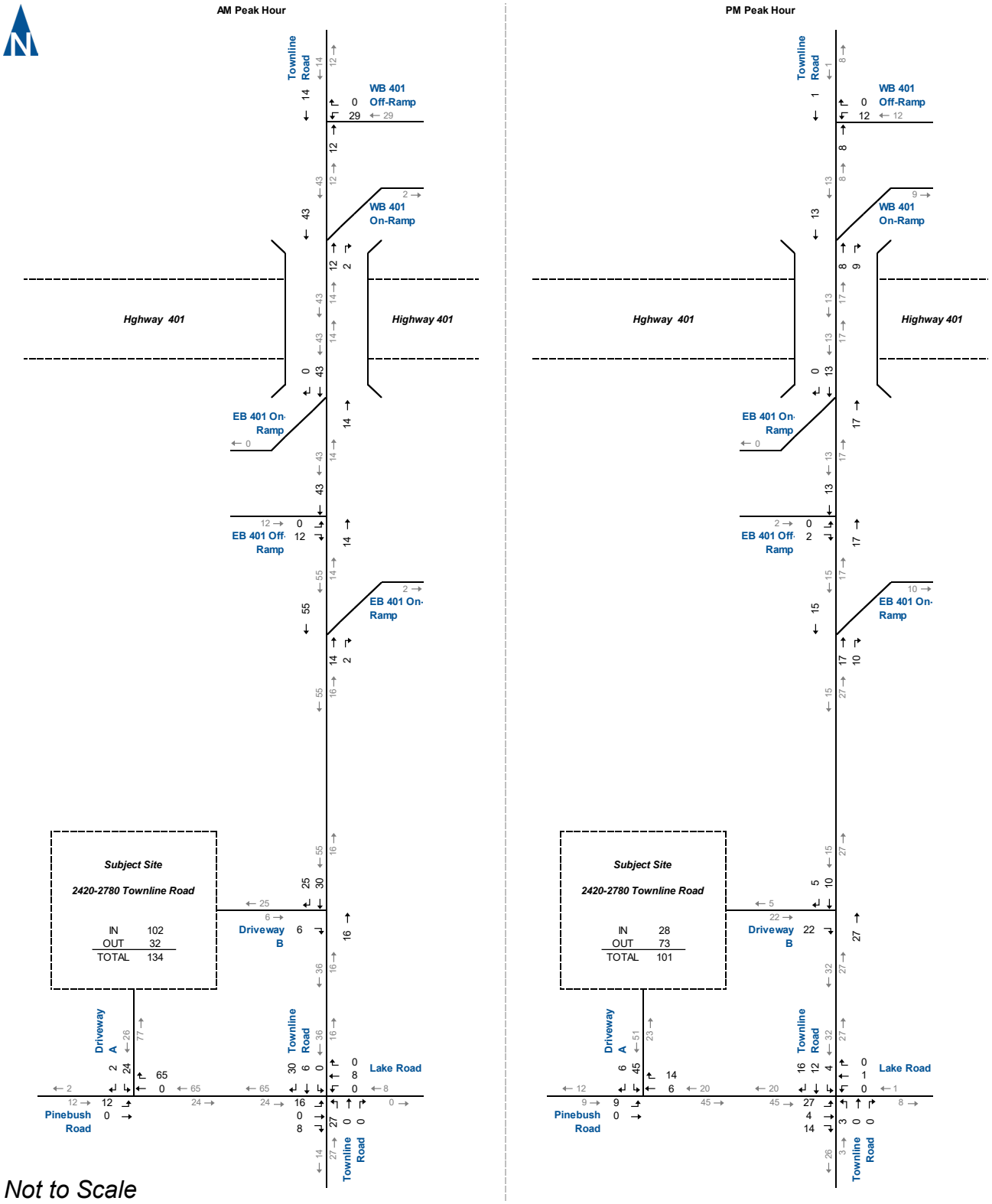


Not to Scale

Site Generated Traffic Volumes Phase 2

2420-2780 Townline Road TIS
240656

Figure 4.5

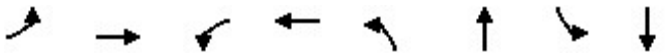


Not to Scale

Site Generated Traffic Volumes Phases 1 & 2

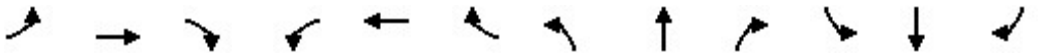
Appendix E

Synchro Outputs



Lane Group	EBL	EBT	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		497.3		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
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			261.4	497.3
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	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)	93.7		387.0	261.4
Turn Bay Length (m)				
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

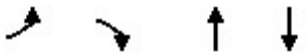
Intersection Summary



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	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	335	425	746	1076
v/c Ratio	0.73	0.89	0.38	0.57
Control Delay	37.1	43.1	11.8	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.1	43.1	11.8	13.9
Queue Length 50th (m)	48.7	51.0	36.7	59.7
Queue Length 95th (m)	77.2	#99.1	50.8	81.1
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	557	559	1940	1878
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	0.57

Intersection Summary

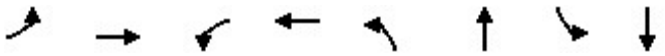
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	335	425	0	746	945	131
Future Volume (vph)	335	425	0	746	945	131
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3302	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3302	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	335	425	0	746	945	131
RTOR Reduction (vph)	0	74	0	0	11	0
Lane Group Flow (vph)	335	351	0	746	1065	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	1868	
v/s Ratio Prot	0.21			0.22	c0.32	
v/s Ratio Perm		c0.25				
v/c Ratio	0.73	0.86		0.38	0.57	
Uniform Delay, d1	27.4	28.8		10.3	11.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.7	17.1		0.6	1.3	
Delay (s)	33.0	45.9		10.8	13.1	
Level of Service	C	D		B	B	
Approach Delay (s)	40.2			10.8	13.1	
Approach LOS	D			B	B	

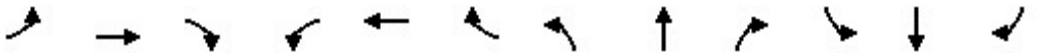
Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



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		497.3		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
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			261.4	497.3
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	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)	93.7		387.0	261.4
Turn Bay Length (m)				
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

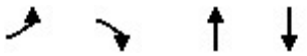
Intersection Summary



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	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	358	433	978	1114
v/c Ratio	0.70	0.86	0.51	0.61
Control Delay	34.0	41.8	15.5	17.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.0	41.8	15.5	17.0
Queue Length 50th (m)	52.9	59.3	53.9	65.5
Queue Length 95th (m)	81.1	96.0	88.1	106.7
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	722	679	1916	1832
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	0.61

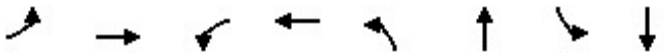
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	358	433	0	978	1014	100
Future Volume (vph)	358	433	0	978	1014	100
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	0.99	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3369	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3369	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	358	433	0	978	1014	100
RTOR Reduction (vph)	0	44	0	0	6	0
Lane Group Flow (vph)	358	389	0	978	1108	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	1828	
v/s Ratio Prot	0.22			0.28	c0.33	
v/s Ratio Perm		c0.27				
v/c Ratio	0.70	0.85		0.51	0.61	
Uniform Delay, d1	26.7	28.5		12.9	13.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	14.1		1.0	1.5	
Delay (s)	30.8	42.5		13.9	15.4	
Level of Service	C	D		B	B	
Approach Delay (s)	37.2			13.9	15.4	
Approach LOS	D			B	B	

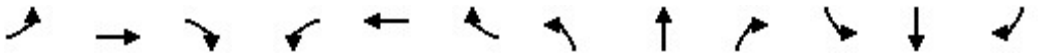
Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



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		497.3		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
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			261.4	497.3
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	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)	93.7		387.0	261.4
Turn Bay Length (m)				
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

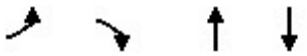
Intersection Summary



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	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	274	397	461	838
v/c Ratio	0.62	0.79	0.24	0.44
Control Delay	28.1	26.8	9.8	11.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.1	26.8	9.8	11.1
Queue Length 50th (m)	30.9	30.4	14.5	29.2
Queue Length 95th (m)	51.6	59.6	30.5	57.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	694	700	1915	1895
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	0.44

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	274	397	0	461	732	106
Future Volume (vph)	274	397	0	461	732	106
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3442	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3442	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	274	397	0	461	732	106
RTOR Reduction (vph)	0	104	0	0	12	0
Lane Group Flow (vph)	274	293	0	461	826	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	1885	
v/s Ratio Prot	0.17			0.13	c0.24	
v/s Ratio Perm		c0.20				
v/c Ratio	0.61	0.74		0.24	0.44	
Uniform Delay, d1	22.2	23.1		8.2	9.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	7.0		0.3	0.7	
Delay (s)	24.7	30.1		8.5	10.1	
Level of Service	C	C		A	B	
Approach Delay (s)	27.9			8.5	10.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

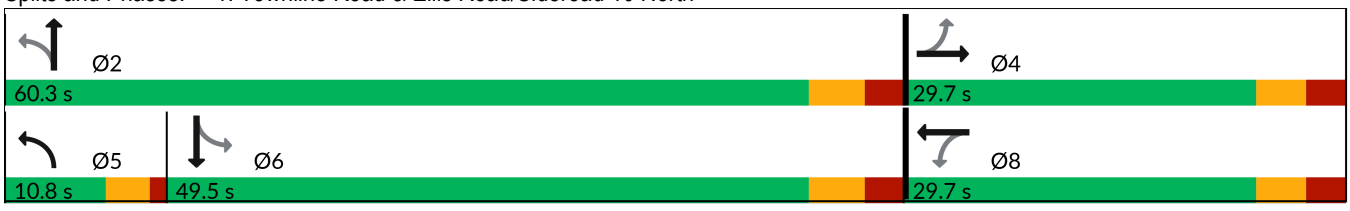
c Critical Lane Group

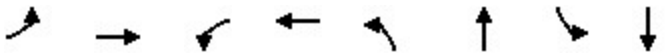
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Future Volume (vph)	85	30	218	15	11	4	107	547	44	4	616	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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

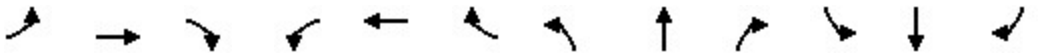




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	248	15	15	107	591	4	645
v/c Ratio	0.47	0.65	0.16	0.07	0.24	0.54	0.01	0.69
Control Delay (s/veh)	39.3	15.4	32.7	24.5	5.0	8.5	9.3	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.3	15.4	32.7	24.5	5.0	8.5	9.3	18.0
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		120.0		161.7		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

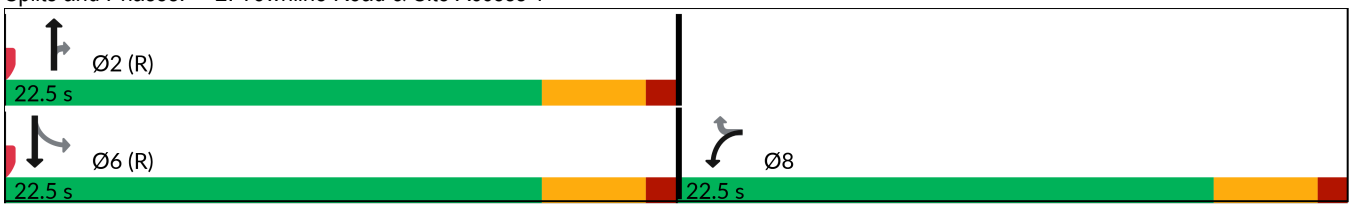


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	698	0	0	848
Future Volume (vph)	0	0	698	0	0	848
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.41			0.46
Control Delay (s/veh)			0.7			0.8
Queue Delay			0.0			0.0
Total Delay (s/veh)			0.7			0.8
LOS			A			A
Approach Delay (s/veh)			0.7			0.8
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 0.8		Intersection LOS: A	
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	698	848
v/c Ratio	0.41	0.46
Control Delay (s/veh)	0.7	0.8
Queue Delay	0.0	0.0
Total Delay (s/veh)	0.7	0.8
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.46

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	698	0	0	848
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	698	0	0	848
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			0.41			c0.46
v/s Ratio Perm						
v/c Ratio			0.41			0.46
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			0.7			0.8
Delay (s)			0.7			0.8
Level of Service			A			A
Approach Delay (s/veh)	0.0		0.7			0.8
Approach LOS	A		A			A

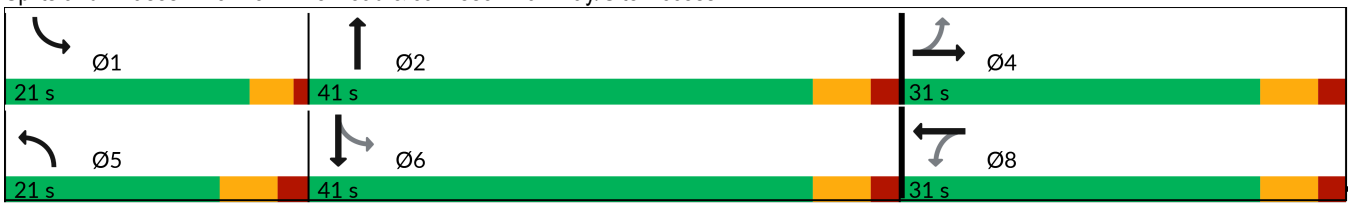
Intersection Summary			
HCM 2000 Control Delay (s/veh)	0.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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)		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	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			

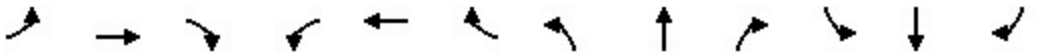
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





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)		90.3		261.4	311.6
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			

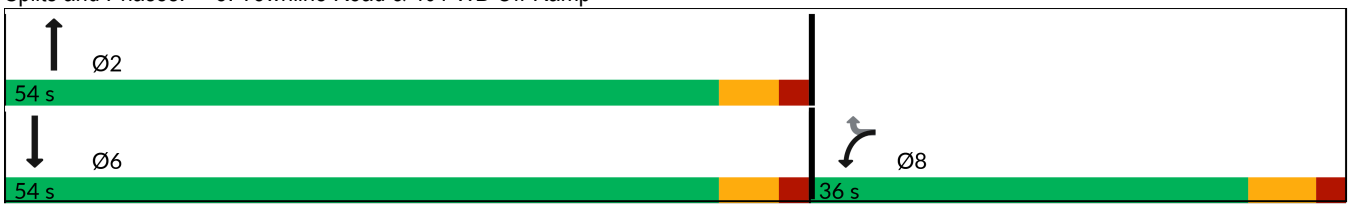


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	125	745	0	0	676
Future Volume (vph)	513	125	745	0	0	676
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 46.7%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

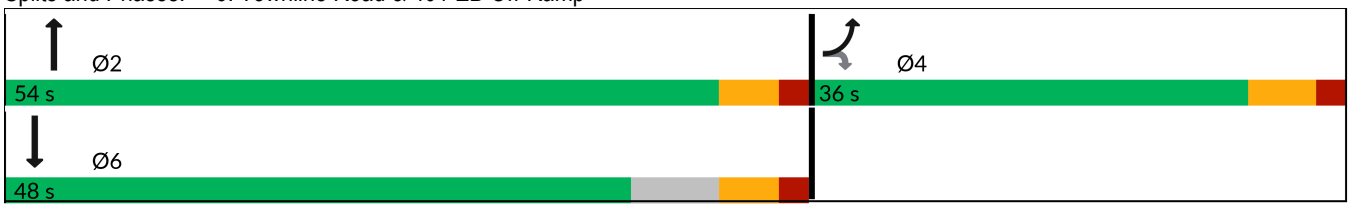


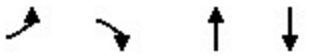
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	355	463	0	806	1046	139
Future Volume (vph)	355	463	0	806	1046	139
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.982	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3302	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3302	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		80			25	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	463	0	806	1185	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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 Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.65	
Control Delay (s/veh)	35.5	52.4		13.1	16.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.5	52.4		13.1	16.4	
LOS	D	D		B	B	
Approach Delay (s/veh)	45.1			13.1	16.4	
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): 23.8		Intersection LOS: C	
Intersection Capacity Utilization 74.9%		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)	355	463	806	1185
v/c Ratio	0.71	0.93	0.43	0.65
Control Delay (s/veh)	35.5	52.4	13.1	16.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	52.4	13.1	16.4
Queue Length 50th (m)	52.5	64.0	42.1	72.2
Queue Length 95th (m)	82.7	#121.2	55.7	94.0
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	537	527	1873	1813
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	0.65

Intersection Summary

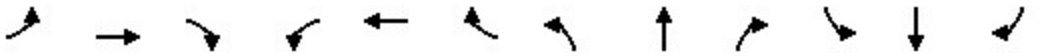
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	355	463	0	806	1046	139
Future Volume (vph)	355	463	0	806	1046	139
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3303	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	355	463	0	806	1046	139
RTOR Reduction (vph)	0	55	0	0	11	0
Lane Group Flow (vph)	355	408	0	806	1174	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	1803	
v/s Ratio Prot	0.22			0.23	c0.36	
v/s Ratio Perm		c0.29				
v/c Ratio	0.71	0.93		0.43	0.65	
Uniform Delay, d1	26.8	29.3		11.9	14.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	25.2		0.7	1.8	
Delay (s)	31.5	54.5		12.6	15.9	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	44.5			12.6	15.9	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

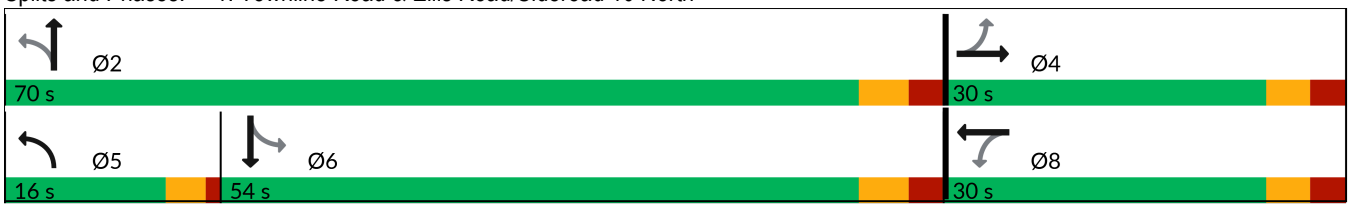


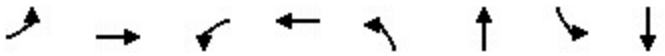
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Future Volume (vph)	40	21	138	69	39	10	337	860	35	8	488	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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	1.3		0.0	0.0	
Total Delay (s/veh)	37.3	15.4		50.9	30.7		8.1	15.0		10.8	17.8	
LOS	D	B		D	C		A	B		B	B	
Approach Delay (s/veh)		19.8			42.5			13.2			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): 16.6		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	1.3	0.0	0.0
Total Delay (s/veh)	37.3	15.4	50.9	30.7	8.1	15.0	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		120.0		161.7		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	118	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	0.85	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

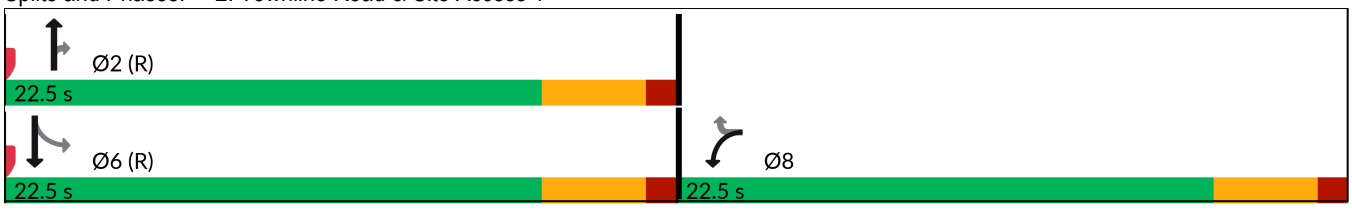


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1233	0	0	695
Future Volume (vph)	0	0	1233	0	0	695
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.72			0.38
Control Delay (s/veh)			2.6			0.6
Queue Delay			0.0			0.0
Total Delay (s/veh)			2.6			0.6
LOS			A			A
Approach Delay (s/veh)			2.6			0.6
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 1.9		Intersection LOS: A	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



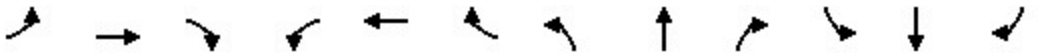
Lane Group	NBT	SBT
Lane Group Flow (vph)	1233	695
v/c Ratio	0.72	0.38
Control Delay (s/veh)	2.6	0.6
Queue Delay	0.0	0.0
Total Delay (s/veh)	2.6	0.6
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.72	0.38

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1233	0	0	695
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1233	0	0	695
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.72			0.38
v/s Ratio Perm						
v/c Ratio			0.72			0.38
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			2.6			0.6
Delay (s)			2.6			0.6
Level of Service			A			A
Approach Delay (s/veh)	0.0		2.6			0.6
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	1.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

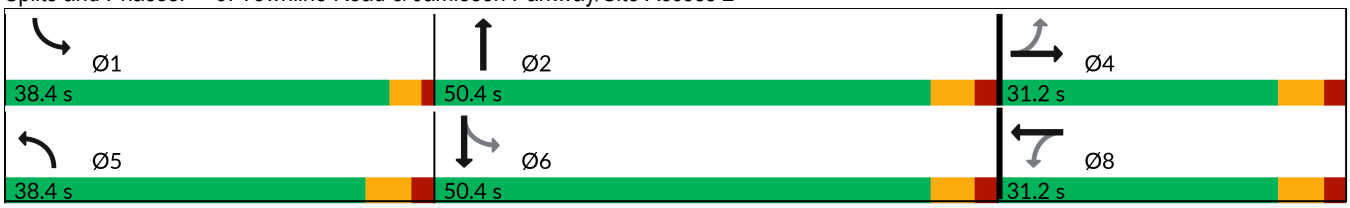


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Future Volume (vph)	222	0	375	0	0	0	424	979	0	0	540	148
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	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)		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	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

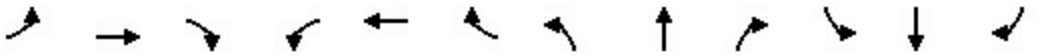




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	222	375	424	979	688
v/c Ratio	0.80	0.52	0.73	0.44	0.50
Control Delay (s/veh)	60.6	2.6	47.9	9.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.6	2.6	47.9	9.0	23.0
Queue Length 50th (m)	42.5	0.0	43.0	47.3	51.8
Queue Length 95th (m)	#80.7	0.0	59.5	60.6	75.7
Internal Link Dist (m)		90.3		261.4	311.6
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



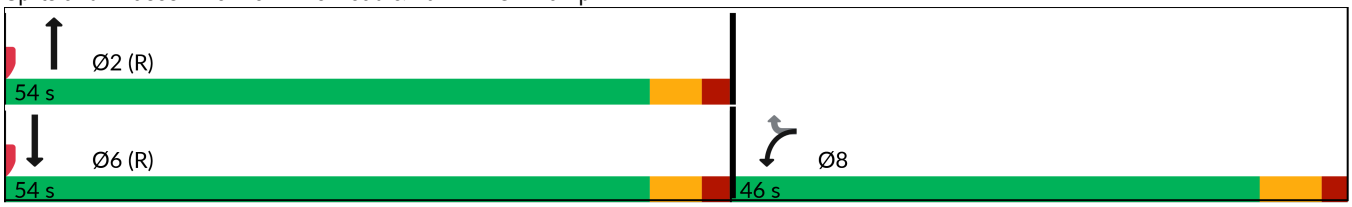
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	325	1185	0	0	646
Future Volume (vph)	512	325	1185	0	0	646
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.44	0.54	0.71			0.38
Control Delay (s/veh)	23.7	24.4	23.3			17.4



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	23.7	24.4	23.3			17.4
LOS	C	C	C			B
Approach Delay (s/veh)	24.0		23.3			17.4
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 22.1		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		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	0.44	0.54	0.71	0.38
Control Delay (s/veh)	23.7	24.4	23.3	17.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.7	24.4	23.3	17.4
Queue Length 50th (m)	36.7	41.7	91.7	40.5
Queue Length 95th (m)	50.6	68.4	115.5	53.5
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	598	1680	1680
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	0.54	0.71	0.38

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	24	0	0	0	0
Lane Group Flow (vph)	512	301	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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.17		c0.34			0.18
v/s Ratio Perm		c0.21				
v/c Ratio	0.44	0.52	0.71			0.38
Uniform Delay, d1	22.2	23.1	20.4			16.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.2	3.4	2.5			0.7
Delay (s)	23.4	26.5	23.0			17.2
Level of Service	C	C	C			B
Approach Delay (s/veh)	24.6		23.0			17.2
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

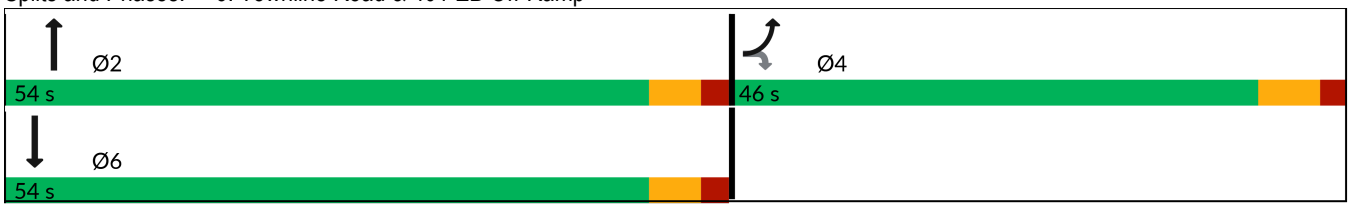


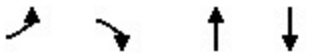
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	379	461	0	1055	1089	106
Future Volume (vph)	379	461	0	1055	1089	106
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3370	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3370	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		52			14	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	379	461	0	1055	1195	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.67	
Control Delay (s/veh)	33.1	44.5		17.6	19.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.1	44.5		17.6	19.6	
LOS	C	D		B	B	
Approach Delay (s/veh)	39.3			17.6	19.6	
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): 24.3		Intersection LOS: C	
Intersection Capacity Utilization 74.9%		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)	379	461	1055	1195
v/c Ratio	0.69	0.88	0.57	0.67
Control Delay (s/veh)	33.1	44.5	17.6	19.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.1	44.5	17.6	19.6
Queue Length 50th (m)	56.9	68.3	66.7	81.0
Queue Length 95th (m)	86.8	#110.8	97.4	118.4
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	699	652	1854	1774
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	0.67

Intersection Summary

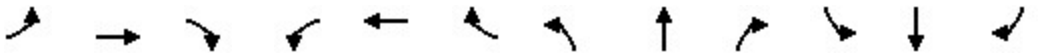
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	379	461	0	1055	1089	106
Future Volume (vph)	379	461	0	1055	1089	106
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	0.99	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3369	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3369	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	379	461	0	1055	1089	106
RTOR Reduction (vph)	0	34	0	0	7	0
Lane Group Flow (vph)	379	427	0	1055	1188	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	1770	
v/s Ratio Prot	0.23			0.30	c0.35	
v/s Ratio Perm		c0.30				
v/c Ratio	0.69	0.87		0.57	0.67	
Uniform Delay, d1	26.3	28.6		14.8	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	15.9		1.3	2.0	
Delay (s)	30.1	44.5		16.0	18.1	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	38.0			16.0	18.1	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

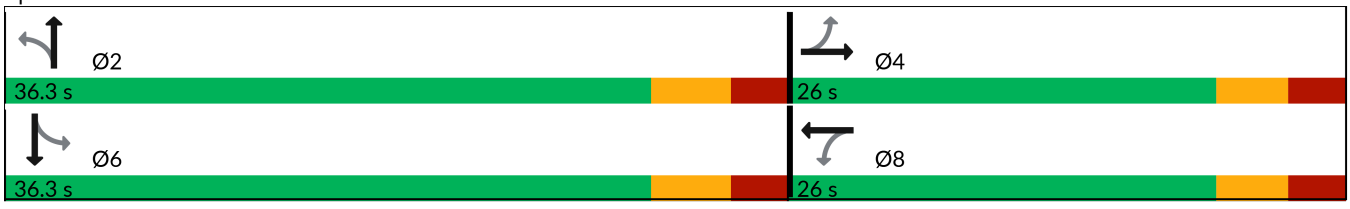


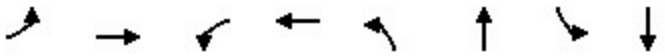
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Future Volume (vph)	49	27	191	31	16	4	173	476	29	3	395	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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		120.0		161.7		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		

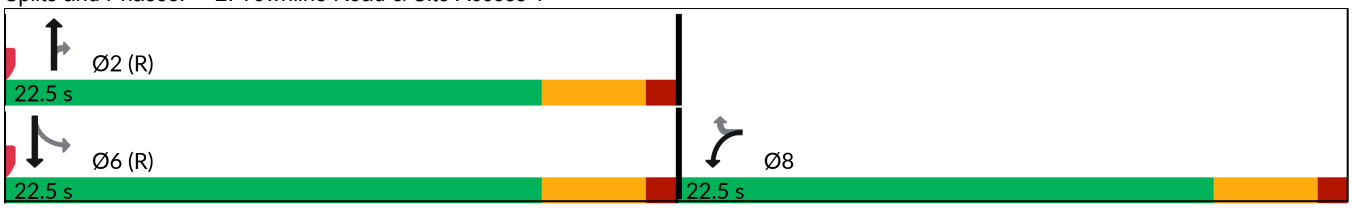
c Critical Lane Group

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	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.39			0.33
Control Delay (s/veh)			0.7			0.5
Queue Delay			0.0			0.0
Total Delay (s/veh)			0.7			0.5
LOS			A			A
Approach Delay (s/veh)			0.7			0.5
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay (s/veh): 0.6		Intersection LOS: A	
Intersection Capacity Utilization 41.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	678	617
v/c Ratio	0.39	0.33
Control Delay (s/veh)	0.7	0.5
Queue Delay	0.0	0.0
Total Delay (s/veh)	0.7	0.5
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.39	0.33

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	678	0	0	617
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	678	0	0	617
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.39			0.33
v/s Ratio Perm						
v/c Ratio			0.39			0.33
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			0.7			0.5
Delay (s)			0.7			0.5
Level of Service			A			A
Approach Delay (s/veh)	0.0		0.7			0.5
Approach LOS	A		A			A

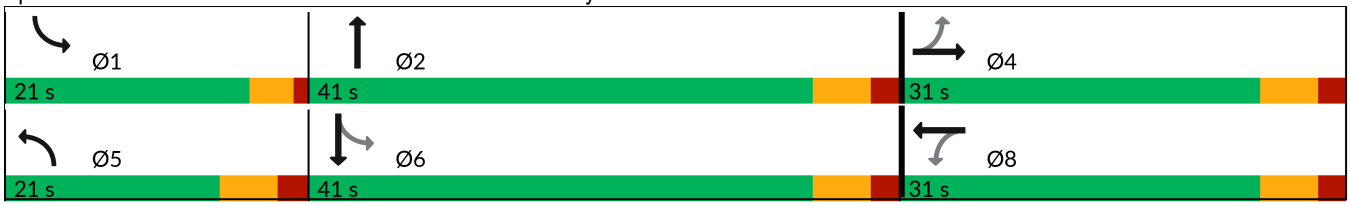
Intersection Summary			
HCM 2000 Control Delay (s/veh)	0.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	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)		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	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			

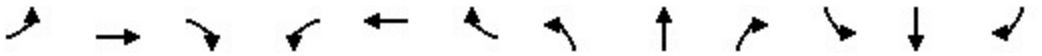
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





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)		90.3		261.4	311.6
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

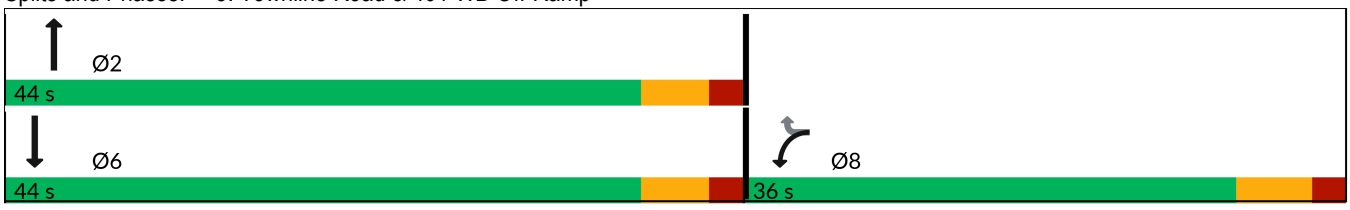


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	155	601	0	0	515
Future Volume (vph)	377	155	601	0	0	515
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 38.5%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

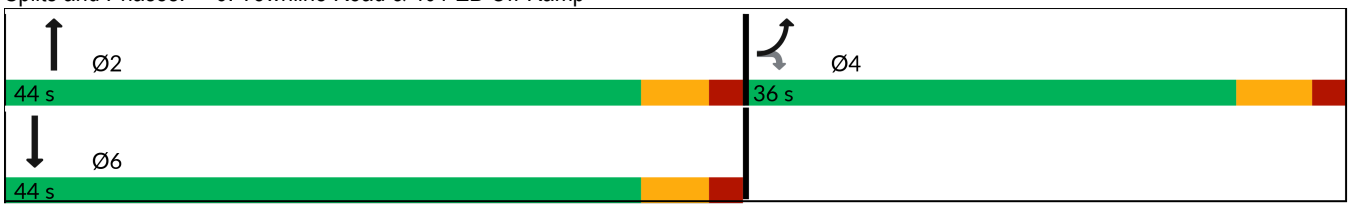


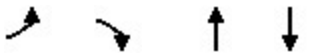
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	290	421	0	489	777	112
Future Volume (vph)	290	421	0	489	777	112
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.981	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3442	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3442	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		126			27	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	421	0	489	889	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.48	
Control Delay (s/veh)	27.7	30.8		10.5	12.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	27.7	30.8		10.5	12.2	
LOS	C	C		B	B	
Approach Delay (s/veh)	29.5			10.5	12.2	
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): 17.7		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		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	889
v/c Ratio	0.62	0.83	0.26	0.48
Control Delay (s/veh)	27.7	30.8	10.5	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.7	30.8	10.5	12.2
Queue Length 50th (m)	33.1	36.7	17.1	34.7
Queue Length 95th (m)	54.9	68.8	32.5	62.5
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	680	679	1876	1858
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	0.48

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	290	421	0	489	777	112
Future Volume (vph)	290	421	0	489	777	112
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3442	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3442	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	290	421	0	489	777	112
RTOR Reduction (vph)	0	90	0	0	12	0
Lane Group Flow (vph)	290	331	0	489	877	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	1848	
v/s Ratio Prot	0.18			0.14	c0.25	
v/s Ratio Perm		c0.23				
v/c Ratio	0.62	0.79		0.26	0.47	
Uniform Delay, d1	22.0	23.4		8.9	10.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	9.9		0.3	0.9	
Delay (s)	24.4	33.3		9.2	11.1	
Level of Service	C	C		A	B	
Approach Delay (s/veh)	29.7			9.2	11.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

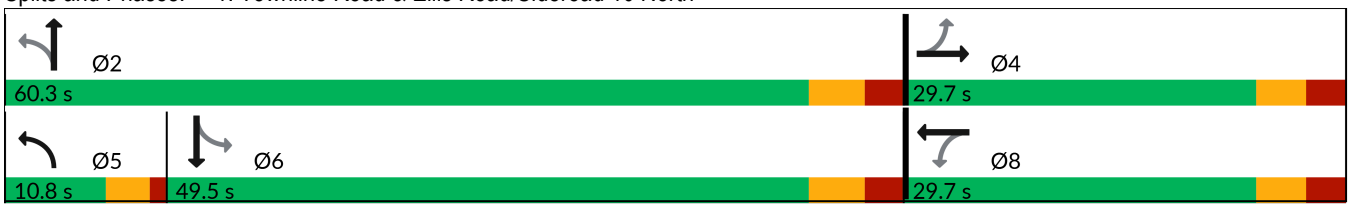
c Critical Lane Group

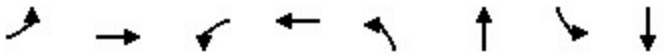
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Future Volume (vph)	94	33	241	17	12	4	118	603	49	4	679	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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	0.2		0.0	0.0	
Total Delay (s/veh)	39.9	15.3		33.4	24.4		5.8	10.0		9.5	21.7	
LOS	D	B		C	C		A	A		A	C	
Approach Delay (s/veh)		21.5			29.0			9.4			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

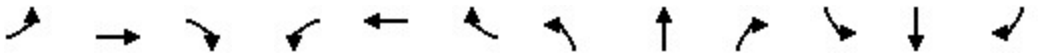




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	274	17	16	118	652	4	711
v/c Ratio	0.50	0.67	0.19	0.07	0.30	0.60	0.01	0.77
Control Delay (s/veh)	39.9	15.3	33.4	24.4	5.8	9.8	9.5	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	39.9	15.3	33.4	24.4	5.8	10.0	9.5	21.7
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		120.0		161.7		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	55	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	0.63	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

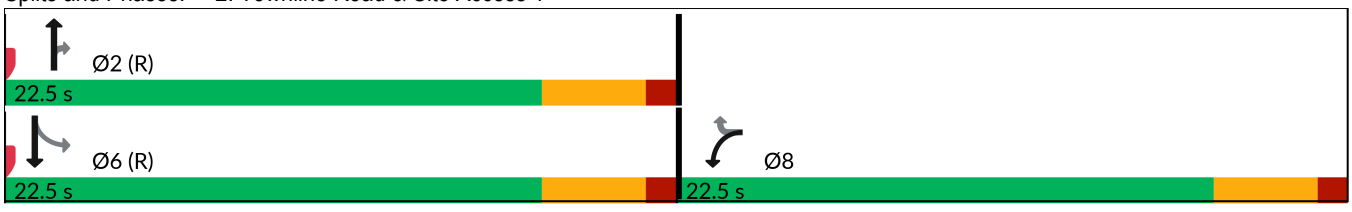


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	769	0	0	935
Future Volume (vph)	0	0	769	0	0	935
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.45			0.51
Control Delay (s/veh)			0.8			1.0
Queue Delay			0.0			0.0
Total Delay (s/veh)			0.8			1.0
LOS			A			A
Approach Delay (s/veh)			0.8			1.0
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay (s/veh): 0.9		Intersection LOS: A	
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	769	935
v/c Ratio	0.45	0.51
Control Delay (s/veh)	0.8	1.0
Queue Delay	0.0	0.0
Total Delay (s/veh)	0.8	1.0
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.45	0.51

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	769	0	0	935
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	769	0	0	935
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			0.45			c0.51
v/s Ratio Perm						
v/c Ratio			0.45			0.51
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			0.8			1.0
Delay (s)			0.8			1.0
Level of Service			A			A
Approach Delay (s/veh)	0.0		0.8			1.0
Approach LOS	A		A			A

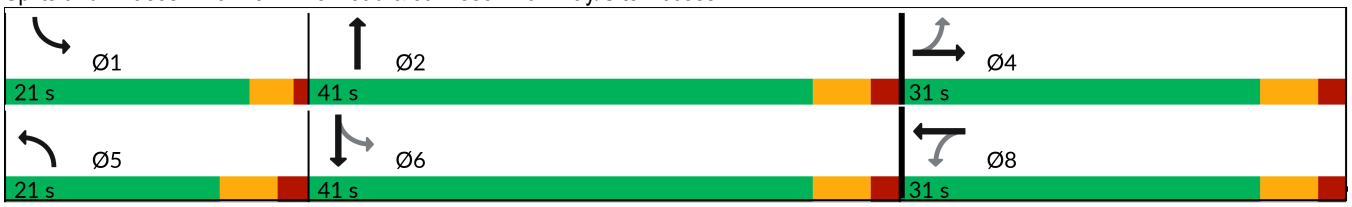
Intersection Summary			
HCM 2000 Control Delay (s/veh)	0.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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)		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	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			

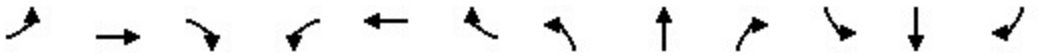
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





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)		90.3		261.4	311.6
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
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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 50.2%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

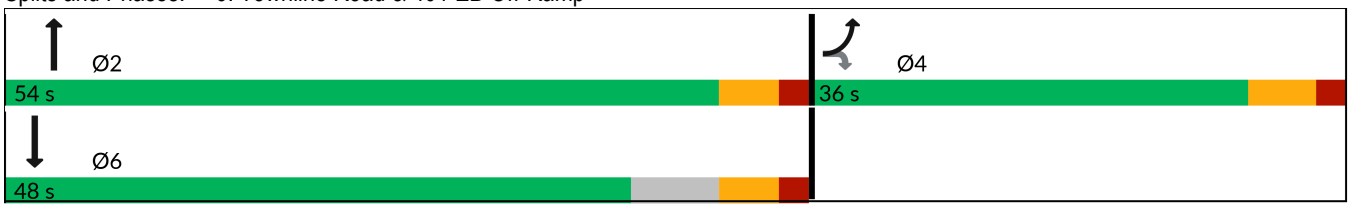


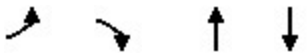
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	389	505	0	888	1150	153
Future Volume (vph)	389	505	0	888	1150	153
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.982	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3302	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3302	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		61			25	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	389	505	0	888	1303	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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 Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.74	
Control Delay (s/veh)	37.0	69.3		14.4	18.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	69.3		14.4	18.9	
LOS	D	E		B	B	
Approach Delay (s/veh)	55.3			14.4	18.9	
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): 28.1		Intersection LOS: C	
Intersection Capacity Utilization 81.0%		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)	389	505	888	1303
v/c Ratio	0.74	1.00	0.49	0.74
Control Delay (s/veh)	37.0	69.3	14.4	18.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	69.3	14.4	18.9
Queue Length 50th (m)	59.1	~78.5	47.8	84.2
Queue Length 95th (m)	#94.9	#143.5	62.9	109.3
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	504	1830	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	0.74	1.00	0.49	0.74

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	153
Future Volume (vph)	389	505	0	888	1150	153
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3303	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	389	505	0	888	1150	153
RTOR Reduction (vph)	0	41	0	0	12	0
Lane Group Flow (vph)	389	464	0	888	1291	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	1761	
v/s Ratio Prot	0.24			0.26	c0.39	
v/s Ratio Perm		c0.33				
v/c Ratio	0.74	1.00		0.49	0.73	
Uniform Delay, d1	26.9	30.3		13.2	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	42.4		0.9	2.7	
Delay (s)	32.4	72.6		14.1	18.8	
Level of Service	C	E		B	B	
Approach Delay (s/veh)	55.1			14.1	18.8	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

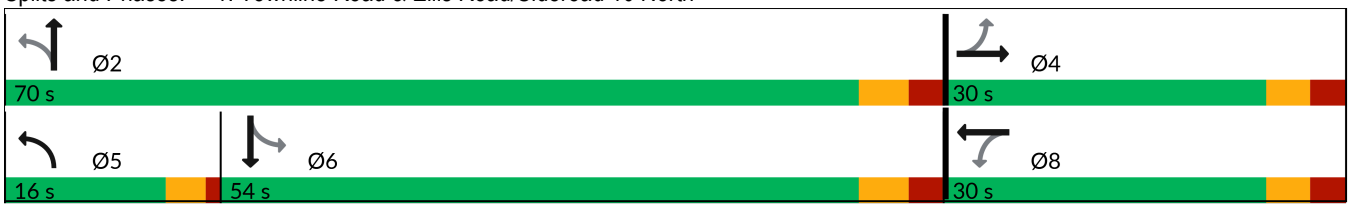
c Critical Lane Group

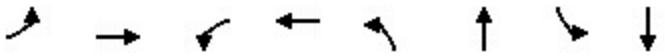
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Future Volume (vph)	44	23	152	76	43	11	372	949	39	9	539	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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	3.2		0.0	0.0	
Total Delay (s/veh)	37.0	14.9		55.7	30.3		12.6	22.5		11.7	21.9	
LOS	D	B		E	C		B	C		B	C	
Approach Delay (s/veh)		19.3			45.2			19.8			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): 21.7		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

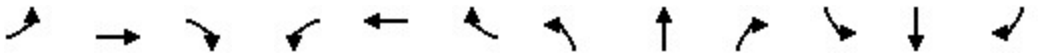




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	175	76	54	372	988	9	604
v/c Ratio	0.25	0.54	0.60	0.24	0.70	0.85	0.04	0.72
Control Delay (s/veh)	37.0	14.9	55.7	30.3	12.6	19.3	11.7	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0
Total Delay (s/veh)	37.0	14.9	55.7	30.3	12.6	22.5	11.7	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		120.0		161.7		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	99	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	0.93	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

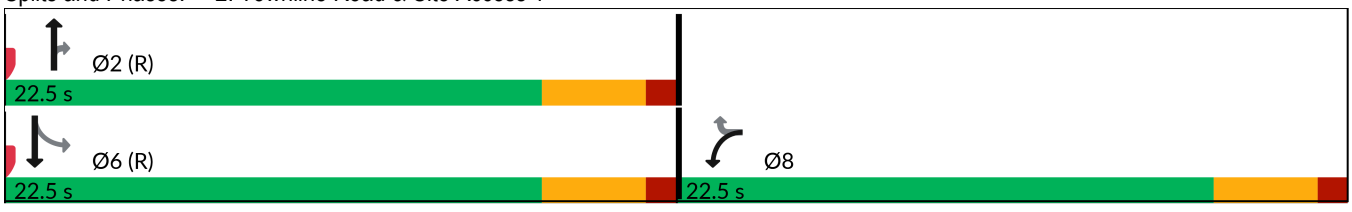


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1360	0	0	767
Future Volume (vph)	0	0	1360	0	0	767
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.79			0.42
Control Delay (s/veh)			4.3			0.7
Queue Delay			0.0			0.0
Total Delay (s/veh)			4.3			0.7
LOS			A			A
Approach Delay (s/veh)			4.3			0.7
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 3.0		Intersection LOS: A	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	1360	767
v/c Ratio	0.79	0.42
Control Delay (s/veh)	4.3	0.7
Queue Delay	0.0	0.0
Total Delay (s/veh)	4.3	0.7
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.79	0.42

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1360	0	0	767
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1360	0	0	767
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.79			0.42
v/s Ratio Perm						
v/c Ratio			0.79			0.42
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			3.8			0.7
Delay (s)			3.8			0.7
Level of Service			A			A
Approach Delay (s/veh)	0.0		3.8			0.7
Approach LOS	A		A			A

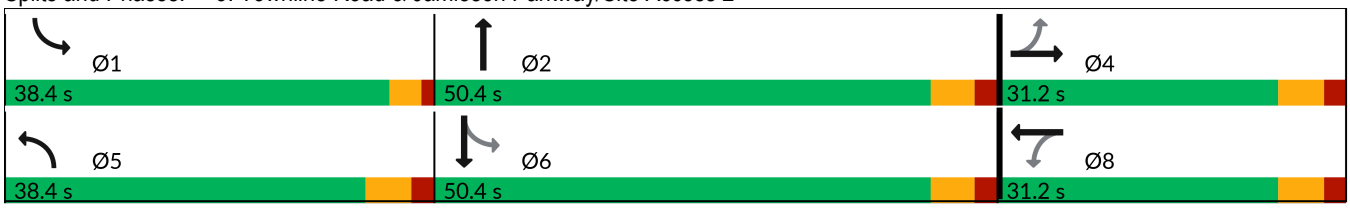
Intersection Summary			
HCM 2000 Control Delay (s/veh)	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	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)		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	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

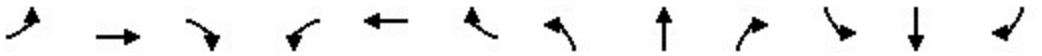




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	245	414	468	1080	759
v/c Ratio	0.84	0.57	0.75	0.49	0.57
Control Delay (s/veh)	66.4	3.7	49.0	9.8	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.4	3.7	49.0	9.8	25.8
Queue Length 50th (m)	49.0	0.0	48.6	55.6	61.6
Queue Length 95th (m)	#95.4	1.1	65.5	69.3	88.4
Internal Link Dist (m)		90.3		261.4	311.6
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



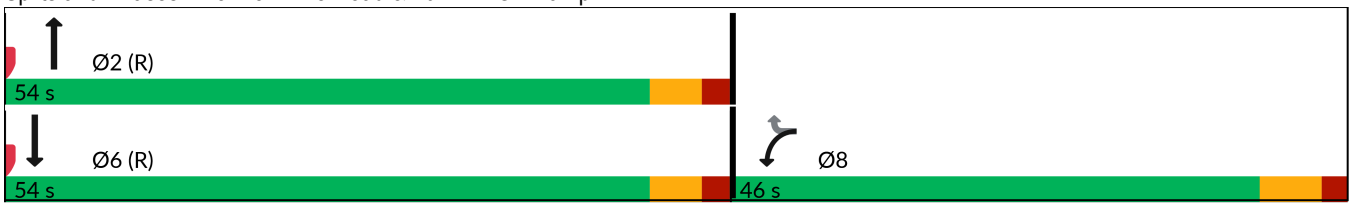
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	356	1308	0	0	713
Future Volume (vph)	560	356	1308	0	0	713
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.48	0.60	0.78			0.42
Control Delay (s/veh)	24.4	27.2	25.6			18.0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	24.4	27.2	25.6			18.0
LOS	C	C	C			B
Approach Delay (s/veh)	25.5		25.6			18.0
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
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: 5: Townline Road & 401 WB Off-Ramp





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	560	356	1308	713
v/c Ratio	0.48	0.60	0.78	0.42
Control Delay (s/veh)	24.4	27.2	25.6	18.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.4	27.2	25.6	18.0
Queue Length 50th (m)	41.0	49.7	106.8	45.8
Queue Length 95th (m)	56.0	79.3	134.0	60.0
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	591	1680	1680
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	0.48	0.60	0.78	0.42

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	16	0	0	0	0
Lane Group Flow (vph)	560	340	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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.19		c0.37			0.20
v/s Ratio Perm		c0.23				
v/c Ratio	0.48	0.59	0.78			0.42
Uniform Delay, d1	22.6	23.9	21.6			17.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	4.4	3.6			0.8
Delay (s)	24.0	28.3	25.2			17.8
Level of Service	C	C	C			B
Approach Delay (s/veh)	25.7		25.2			17.8
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

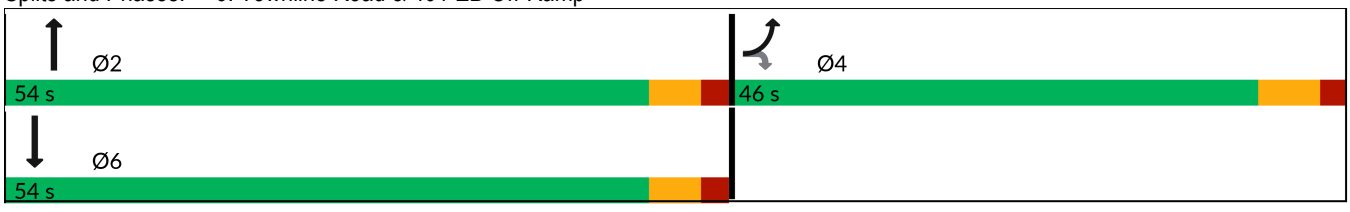


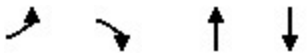
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	415	504	0	1163	1201	117
Future Volume (vph)	415	504	0	1163	1201	117
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3370	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3370	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		37			14	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	504	0	1163	1318	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.77	
Control Delay (s/veh)	32.9	50.0		20.6	24.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.9	50.0		20.6	24.0	
LOS	C	D		C	C	
Approach Delay (s/veh)	42.3			20.6	24.0	
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): 27.8		Intersection LOS: C	
Intersection Capacity Utilization 81.2%		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)	415	504	1163	1318
v/c Ratio	0.70	0.92	0.65	0.77
Control Delay (s/veh)	32.9	50.0	20.6	24.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.9	50.0	20.6	24.0
Queue Length 50th (m)	64.3	81.9	88.5	109.3
Queue Length 95th (m)	96.9	#140.6	111.6	138.1
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	670	618	1779	1703
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	0.77

Intersection Summary

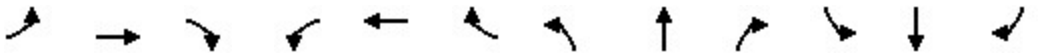
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	415	504	0	1163	1201	117
Future Volume (vph)	415	504	0	1163	1201	117
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	0.99	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3369	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3369	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	415	504	0	1163	1201	117
RTOR Reduction (vph)	0	23	0	0	7	0
Lane Group Flow (vph)	415	481	0	1163	1311	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	1696	
v/s Ratio Prot	0.26			0.33	c0.39	
v/s Ratio Perm		c0.33				
v/c Ratio	0.70	0.91		0.65	0.77	
Uniform Delay, d1	25.9	28.9		17.6	19.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	20.1		1.9	3.5	
Delay (s)	29.6	49.0		19.5	22.8	
Level of Service	C	D		B	C	
Approach Delay (s/veh)	40.2			19.5	22.8	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

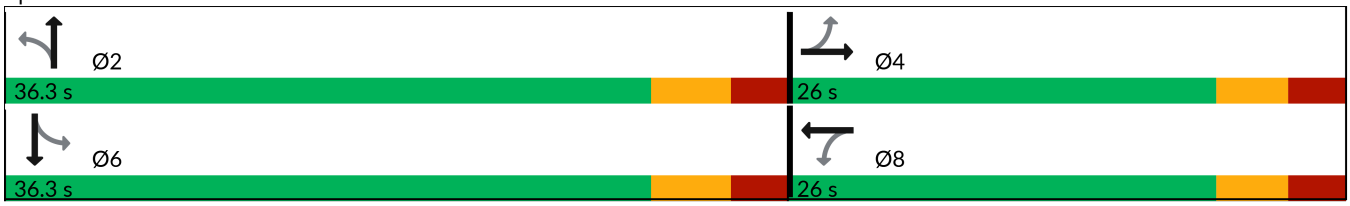


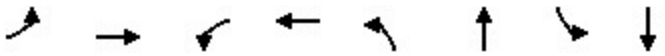
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Future Volume (vph)	54	30	211	34	18	4	191	526	32	3	436	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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			

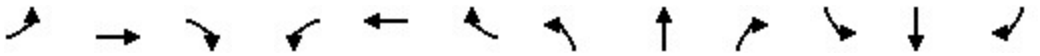
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





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		120.0		161.7		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

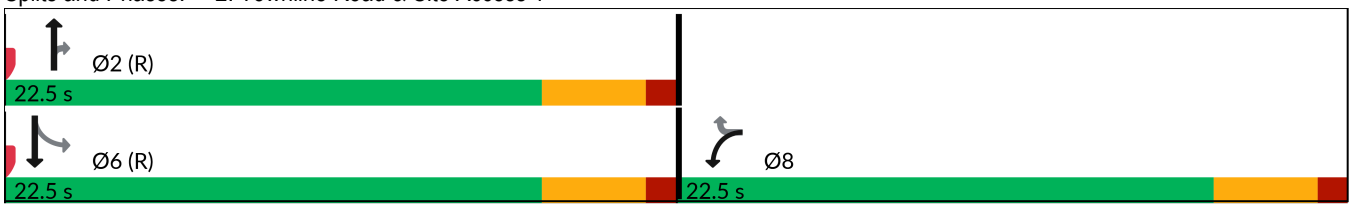


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	749	0	0	681
Future Volume (vph)	0	0	749	0	0	681
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.44			0.37
Control Delay (s/veh)			0.8			0.6
Queue Delay			0.0			0.0
Total Delay (s/veh)			0.8			0.6
LOS			A			A
Approach Delay (s/veh)			0.8			0.6
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay (s/veh): 0.7		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



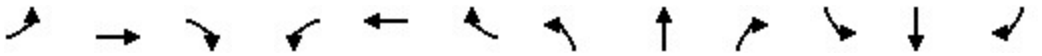
Lane Group	NBT	SBT
Lane Group Flow (vph)	749	681
v/c Ratio	0.44	0.37
Control Delay (s/veh)	0.8	0.6
Queue Delay	0.0	0.0
Total Delay (s/veh)	0.8	0.6
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.37

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	749	0	0	681
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	749	0	0	681
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.44			0.37
v/s Ratio Perm						
v/c Ratio			0.44			0.37
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			0.8			0.6
Delay (s)			0.8			0.6
Level of Service			A			A
Approach Delay (s/veh)	0.0		0.8			0.6
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	0.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

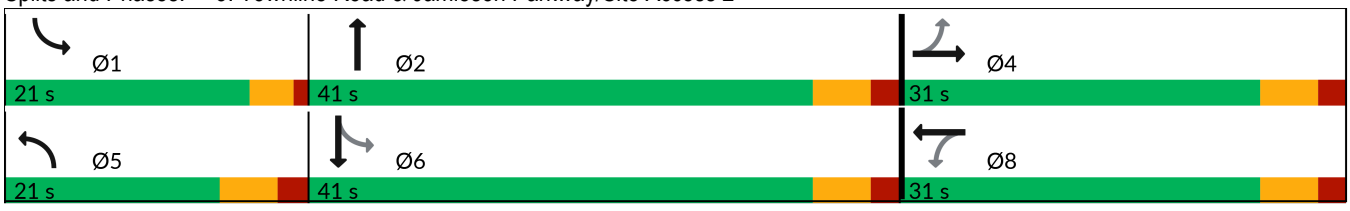


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Future Volume (vph)	167	0	264	0	0	0	238	593	0	0	561	120
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	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	2		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	0.97	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	3405	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	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)		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	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			

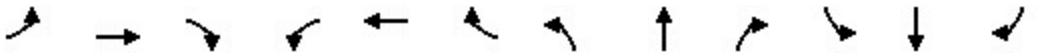
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





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)		90.3		261.4	311.6
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

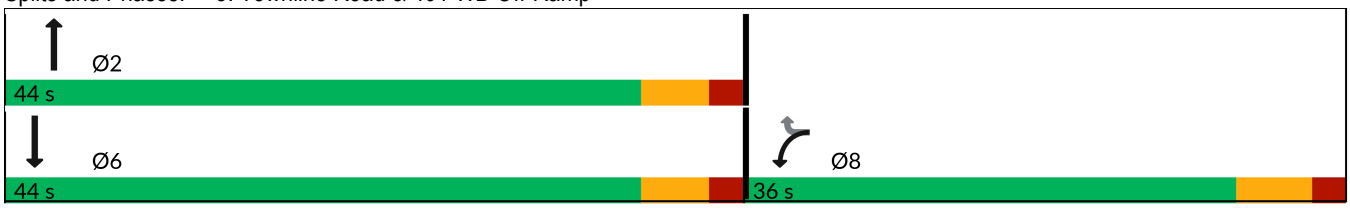


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	169	664	0	0	569
Future Volume (vph)	413	169	664	0	0	569
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 41.4%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

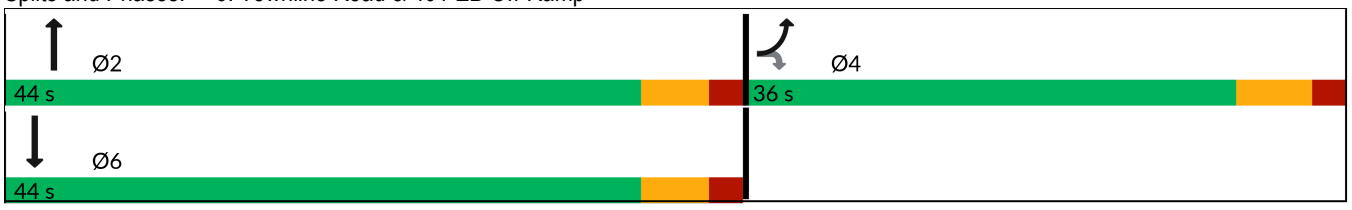


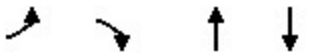
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	318	461	0	540	858	124
Future Volume (vph)	318	461	0	540	858	124
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.981	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3442	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3442	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		99			27	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	461	0	540	982	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.55	
Control Delay (s/veh)	26.6	36.6		12.0	14.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	26.6	36.6		12.0	14.4	
LOS	C	D		B	B	
Approach Delay (s/veh)	32.5			12.0	14.4	
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): 20.0		Intersection LOS: B	
Intersection Capacity Utilization 69.1%		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	982
v/c Ratio	0.61	0.87	0.30	0.55
Control Delay (s/veh)	26.6	36.6	12.0	14.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.6	36.6	12.0	14.4
Queue Length 50th (m)	37.1	48.0	23.5	49.1
Queue Length 95th (m)	60.9	#95.1	36.1	71.4
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	650	639	1795	1778
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	0.55

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	124
Future Volume (vph)	318	461	0	540	858	124
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3442	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3442	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	318	461	0	540	858	124
RTOR Reduction (vph)	0	68	0	0	13	0
Lane Group Flow (vph)	318	393	0	540	969	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	1769	
v/s Ratio Prot	0.19			0.15	c0.28	
v/s Ratio Perm		c0.27				
v/c Ratio	0.61	0.85		0.30	0.55	
Uniform Delay, d1	21.5	23.7		10.4	12.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	13.6		0.4	1.2	
Delay (s)	23.6	37.4		10.8	13.5	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	31.8			10.8	13.5	
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	0.66		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

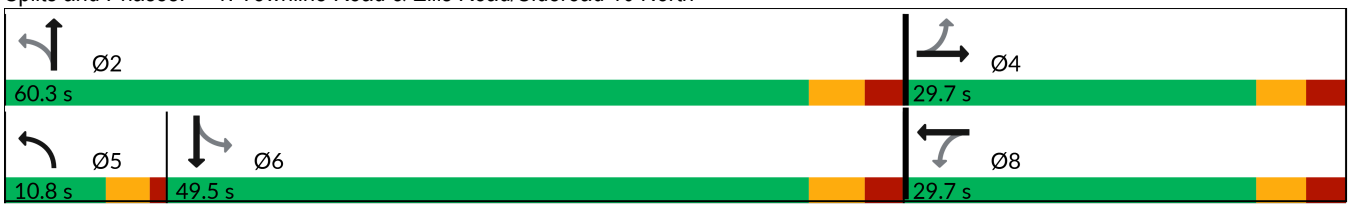
c Critical Lane Group

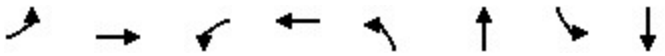
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Future Volume (vph)	104	36	266	19	13	4	130	665	54	4	748	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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	0.2		0.0	0.0	
Total Delay (s/veh)	39.9	14.9		34.1	23.9		7.9	12.2		10.0	32.4	
LOS	D	B		C	C		A	B		A	C	
Approach Delay (s/veh)		21.3			29.3			11.6			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): 21.6		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

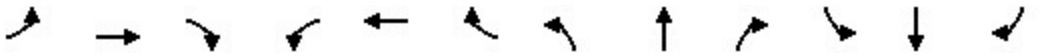




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	302	19	17	130	719	4	783
v/c Ratio	0.52	0.69	0.21	0.07	0.40	0.67	0.01	0.90
Control Delay (s/veh)	39.9	14.9	34.1	23.9	7.9	12.0	10.0	32.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	39.9	14.9	34.1	23.9	7.9	12.2	10.0	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		120.0		161.7		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	50	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	0.70	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

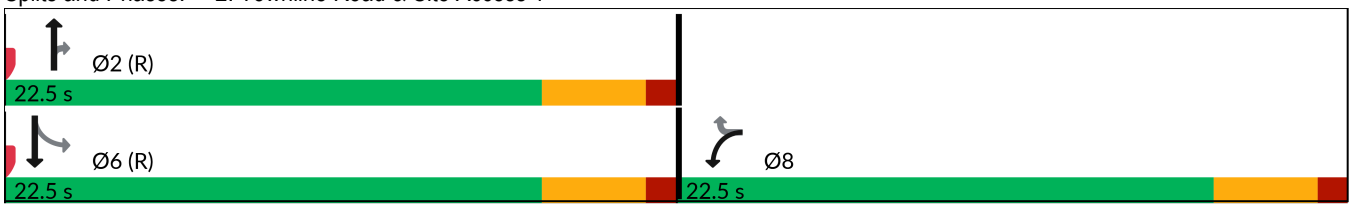


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	848	0	0	1031
Future Volume (vph)	0	0	848	0	0	1031
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.49			0.56
Control Delay (s/veh)			1.0			1.2
Queue Delay			0.0			0.0
Total Delay (s/veh)			1.0			1.2
LOS			A			A
Approach Delay (s/veh)			1.0			1.2
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay (s/veh): 1.1		Intersection LOS: A	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



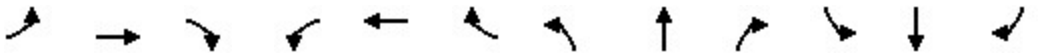
Lane Group	NBT	SBT
Lane Group Flow (vph)	848	1031
v/c Ratio	0.49	0.56
Control Delay (s/veh)	1.0	1.2
Queue Delay	0.0	0.0
Total Delay (s/veh)	1.0	1.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	0.56

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	848	0	0	1031
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	848	0	0	1031
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			0.49			c0.56
v/s Ratio Perm						
v/c Ratio			0.49			0.56
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			1.0			1.2
Delay (s)			1.0			1.2
Level of Service			A			A
Approach Delay (s/veh)	0.0		1.0			1.2
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	1.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

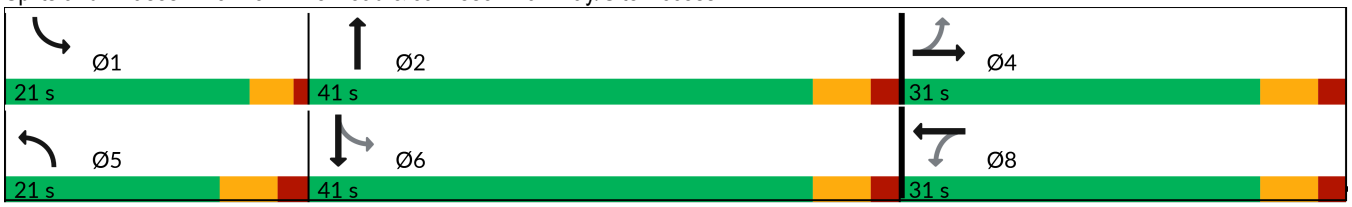


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Future Volume (vph)	167	0	357	0	0	0	359	677	0	0	856	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (m)	3.5	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3168	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1303	1347	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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)		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	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

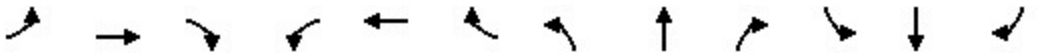




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	167	357	359	677	1047
v/c Ratio	0.65	0.64	0.70	0.31	0.77
Control Delay (s/veh)	43.3	8.9	41.9	7.3	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.3	8.9	41.9	7.3	26.0
Queue Length 50th (m)	24.9	0.0	28.0	21.6	72.8
Queue Length 95th (m)	44.4	20.2	46.1	39.3	#123.3
Internal Link Dist (m)		90.3		261.4	311.6
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			

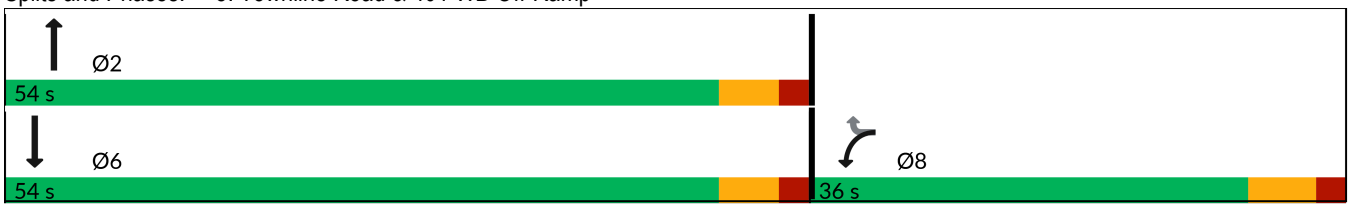


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	149	905	0	0	821
Future Volume (vph)	605	149	905	0	0	821
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 53.9%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

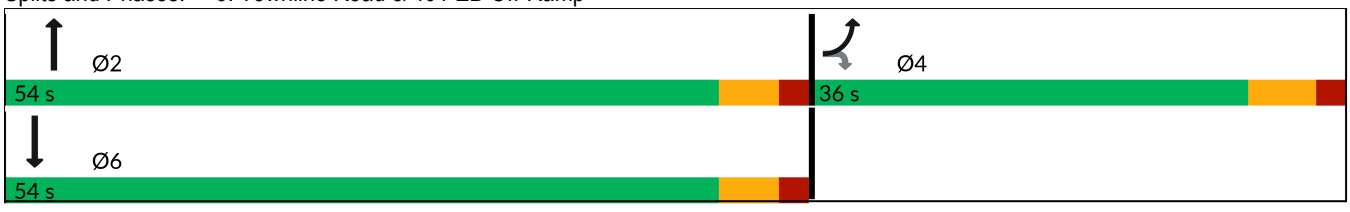


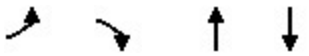
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	422	548	0	979	1265	169
Future Volume (vph)	422	548	0	979	1265	169
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.982	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3302	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3302	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		45			25	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	169
Shared Lane Traffic (%)						
Lane Group Flow (vph)	422	548	0	979	1434	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.81	
Control Delay (s/veh)	41.3	103.3		15.1	21.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	41.3	103.3		15.1	21.5	
LOS	D	F		B	C	
Approach Delay (s/veh)	76.3			15.1	21.5	
Approach LOS	E			B	C	

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): 35.4		Intersection LOS: D	
Intersection Capacity Utilization 87.6%		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)	422	548	979	1434
v/c Ratio	0.80	1.11	0.53	0.81
Control Delay (s/veh)	41.3	103.3	15.1	21.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.3	103.3	15.1	21.5
Queue Length 50th (m)	66.0	~104.1	54.7	99.4
Queue Length 95th (m)	#112.4	#165.4	71.4	128.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	493	1830	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	0.80	1.11	0.53	0.81

Intersection Summary

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

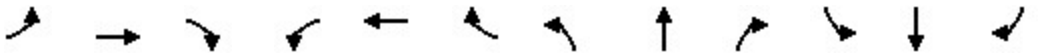
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	422	548	0	979	1265	169
Future Volume (vph)	422	548	0	979	1265	169
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3303	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3303	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	422	548	0	979	1265	169
RTOR Reduction (vph)	0	30	0	0	12	0
Lane Group Flow (vph)	422	518	0	979	1422	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	1761	
v/s Ratio Prot	0.26			0.29	c0.43	
v/s Ratio Perm		c0.37				
v/c Ratio	0.80	1.12		0.53	0.81	
Uniform Delay, d1	27.6	30.3		13.7	17.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.7	78.2		1.1	4.1	
Delay (s)	36.3	108.5		14.8	21.3	
Level of Service	D	F		B	C	
Approach Delay (s/veh)	77.1			14.8	21.3	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

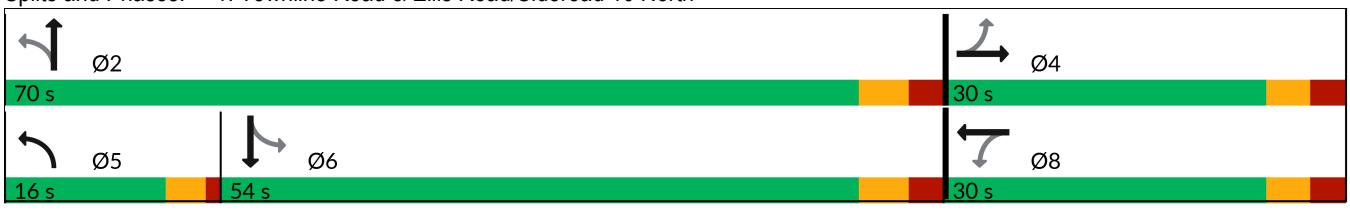


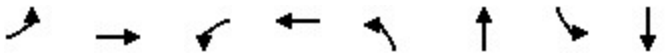
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Future Volume (vph)	49	25	168	84	47	12	411	1047	43	10	595	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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	13.8		0.0	0.0	
Total Delay (s/veh)	36.5	14.1		61.6	29.7		29.1	45.6		13.2	27.4	
LOS	D	B		E	C		C	D		B	C	
Approach Delay (s/veh)		18.6			48.4			41.1			27.2	
Approach LOS		B			D			D			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): 35.7		Intersection LOS: D	
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	13.8	0.0	0.0
Total Delay (s/veh)	36.5	14.1	61.6	29.7	29.1	45.6	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		120.0		161.7		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	78	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	1.02	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

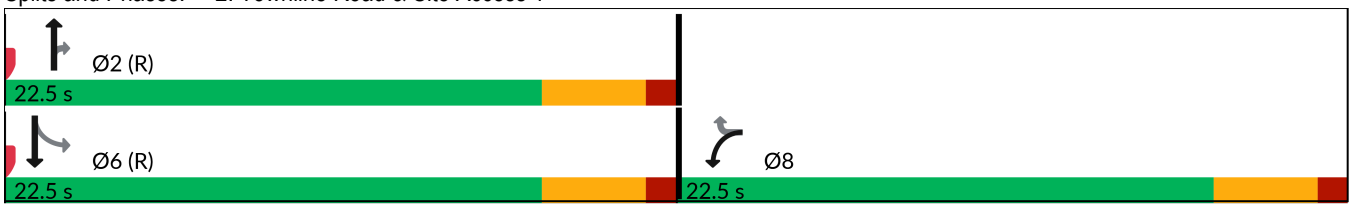


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1501	0	0	847
Future Volume (vph)	0	0	1501	0	0	847
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.87			0.46
Control Delay (s/veh)			8.2			0.8
Queue Delay			0.0			0.0
Total Delay (s/veh)			8.2			0.8
LOS			A			A
Approach Delay (s/veh)			8.2			0.8
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 5.5		Intersection LOS: A	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	1501	847
v/c Ratio	0.87	0.46
Control Delay (s/veh)	8.2	0.8
Queue Delay	0.0	0.0
Total Delay (s/veh)	8.2	0.8
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	#24.8	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.87	0.46

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)	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1501	0	0	847
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1501	0	0	847
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.87			0.46
v/s Ratio Perm						
v/c Ratio			0.87			0.46
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			6.4			0.8
Delay (s)			6.4			0.8
Level of Service			A			A
Approach Delay (s/veh)	0.0		6.4			0.8
Approach LOS	A		A			A

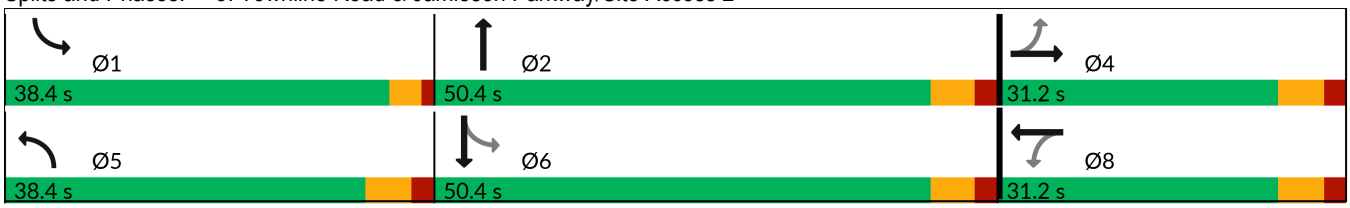
Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3302	0	1755	3117	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	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)		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	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

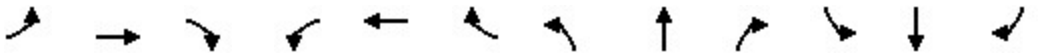




Lane Group	EBL	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	270	457	517	1192	838
v/c Ratio	0.90	0.64	0.78	0.54	0.66
Control Delay (s/veh)	74.3	5.9	50.2	10.8	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	5.9	50.2	10.8	29.3
Queue Length 50th (m)	56.7	0.0	54.7	64.8	73.1
Queue Length 95th (m)	#112.4	12.8	72.6	79.9	104.1
Internal Link Dist (m)		90.3		133.4	311.6
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



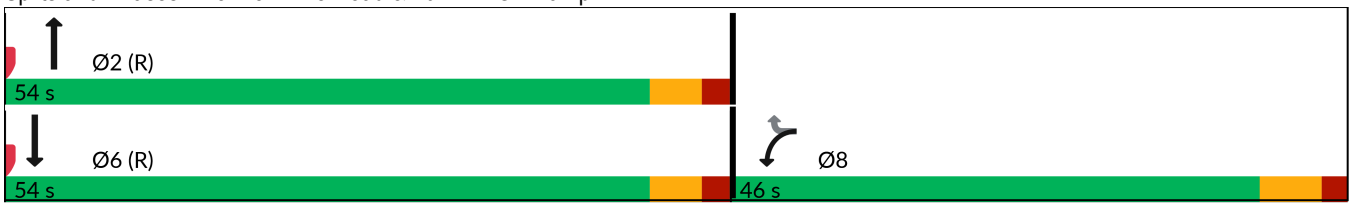
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	387	1443	0	0	787
Future Volume (vph)	607	387	1443	0	0	787
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			128.0
Travel Time (s)	8.5		24.7			7.7
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)	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		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		14	24	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.52	0.66	0.86			0.47
Control Delay (s/veh)	25.1	30.1	29.6			18.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	25.1	30.1	29.6			18.6
LOS	C	C	C			B
Approach Delay (s/veh)	27.0		29.6			18.6
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 26.1		Intersection LOS: C	
Intersection Capacity Utilization 76.3%		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	387	1443	787
v/c Ratio	0.52	0.66	0.86	0.47
Control Delay (s/veh)	25.1	30.1	29.6	18.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	30.1	29.6	18.6
Queue Length 50th (m)	45.4	57.5	125.4	51.8
Queue Length 95th (m)	61.3	90.4	156.9	67.4
Internal Link Dist (m)	93.7		387.0	104.0
Turn Bay Length (m)				
Base Capacity (vph)	1161	586	1680	1680
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	0.66	0.86	0.47

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	11	0	0	0	0
Lane Group Flow (vph)	607	376	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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.21		c0.41			0.22
v/s Ratio Perm		c0.26				
v/c Ratio	0.52	0.65	0.86			0.47
Uniform Delay, d1	23.1	24.7	23.0			17.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	5.7	6.0			0.9
Delay (s)	24.7	30.4	29.0			18.4
Level of Service	C	C	C			B
Approach Delay (s/veh)	26.9		29.0			18.4
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

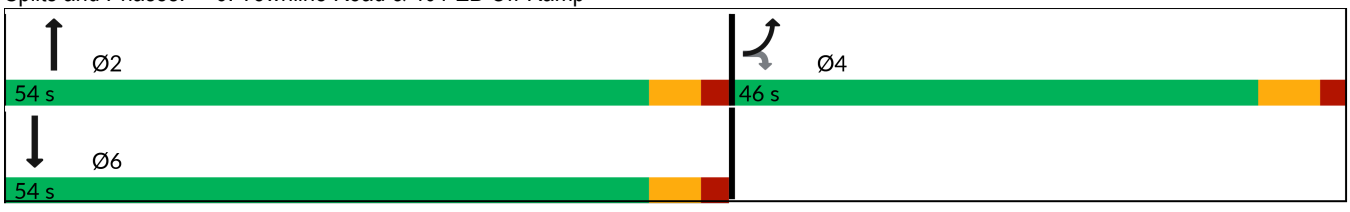


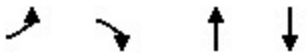
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	451	548	0	1282	1325	129
Future Volume (vph)	451	548	0	1282	1325	129
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.987	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3370	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3370	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		26			14	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	451	548	0	1282	1454	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.88	
Control Delay (s/veh)	33.5	58.2		24.0	30.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.5	58.2		24.0	30.7	
LOS	C	E		C	C	
Approach Delay (s/veh)	47.1			24.0	30.7	
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): 32.8		Intersection LOS: C	
Intersection Capacity Utilization 88.0%		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	1454
v/c Ratio	0.72	0.96	0.74	0.88
Control Delay (s/veh)	33.5	58.2	24.0	30.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5	58.2	24.0	30.7
Queue Length 50th (m)	71.9	96.5	102.7	129.3
Queue Length 95th (m)	108.2	#163.3	129.1	#168.1
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	649	594	1723	1649
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	0.88

Intersection Summary

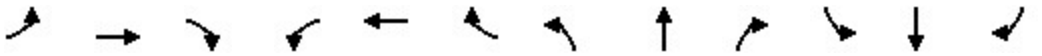
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	451	548	0	1282	1325	129
Future Volume (vph)	451	548	0	1282	1325	129
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	0.99	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3369	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3369	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	451	548	0	1282	1325	129
RTOR Reduction (vph)	0	16	0	0	7	0
Lane Group Flow (vph)	451	532	0	1282	1447	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	1641	
v/s Ratio Prot	0.28			0.36	c0.43	
v/s Ratio Perm		c0.37				
v/c Ratio	0.72	0.96		0.74	0.88	
Uniform Delay, d1	25.8	29.5		20.3	22.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	27.4		3.0	7.2	
Delay (s)	29.9	56.9		23.3	29.9	
Level of Service	C	E		C	C	
Approach Delay (s/veh)	44.7			23.3	29.9	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

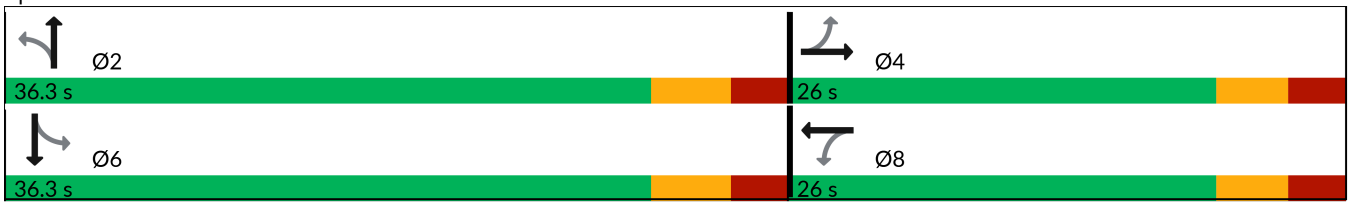


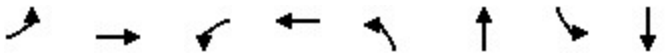
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Future Volume (vph)	60	33	233	38	20	4	211	581	35	3	481	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	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		120.0		161.7		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

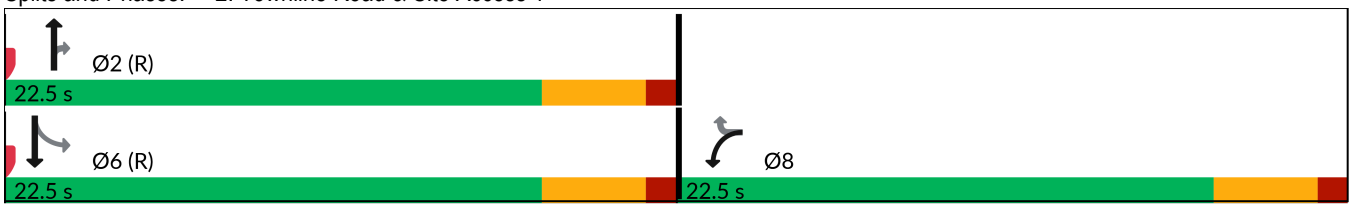


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	827	0	0	752
Future Volume (vph)	0	0	827	0	0	752
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1711	1711	1721	1721	1842	1842
Flt Permitted						
Satd. Flow (perm)	1711	1711	1721	1721	1842	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
v/c Ratio			0.48			0.41
Control Delay (s/veh)			1.0			0.7
Queue Delay			0.0			0.0
Total Delay (s/veh)			1.0			0.7
LOS			A			A
Approach Delay (s/veh)			1.0			0.7
Approach LOS			A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay (s/veh): 0.8		Intersection LOS: A	
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1



Lane Group	NBT	SBT
Lane Group Flow (vph)	827	752
v/c Ratio	0.48	0.41
Control Delay (s/veh)	1.0	0.7
Queue Delay	0.0	0.0
Total Delay (s/veh)	1.0	0.7
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	311.6	161.7
Turn Bay Length (m)		
Base Capacity (vph)	1721	1842
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.41

Intersection Summary



Movement	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	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)			4.5			4.5
Lane Util. Factor			1.00			1.00
Frt			1.00			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			1721			1842
Flt Permitted			1.00			1.00
Satd. Flow (perm)			1721			1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	827	0	0	752
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	827	0	0	752
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)			45.0			45.0
Effective Green, g (s)			45.0			45.0
Actuated g/C Ratio			1.00			1.00
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1721			1842
v/s Ratio Prot			c0.48			0.41
v/s Ratio Perm						
v/c Ratio			0.48			0.41
Uniform Delay, d1			0.0			0.0
Progression Factor			1.00			1.00
Incremental Delay, d2			1.0			0.7
Delay (s)			1.0			0.7
Level of Service			A			A
Approach Delay (s/veh)	0.0		1.0			0.7
Approach LOS	A		A			A

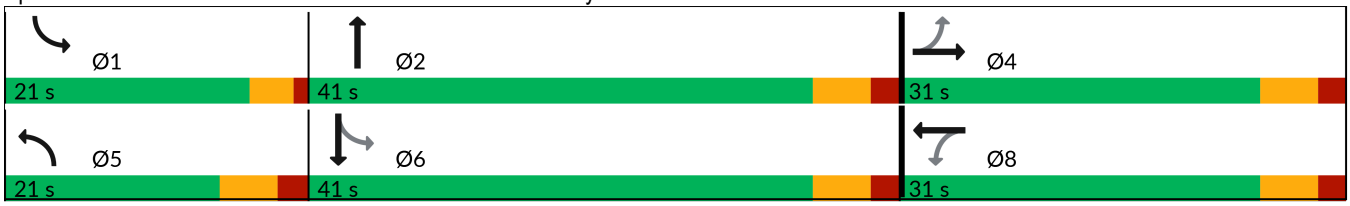
Intersection Summary			
HCM 2000 Control Delay (s/veh)	0.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	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	2		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	0.97	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	3405	1632	0	3203	3270	0	1755	3211	0
Flt Permitted	0.757						0.950					
Satd. Flow (perm)	1329	1387	0	3405	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)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	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)		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	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			

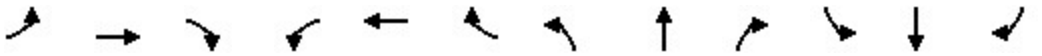
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





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)		90.3		261.4	311.6
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

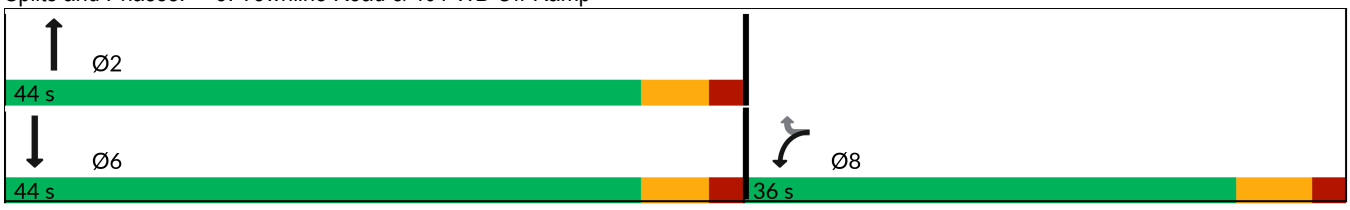


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	184	733	0	0	628
Future Volume (vph)	449	184	733	0	0	628
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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 44.4%		ICU Level of Service A	
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)	93.7		387.0	261.4
Turn Bay Length (m)				
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	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

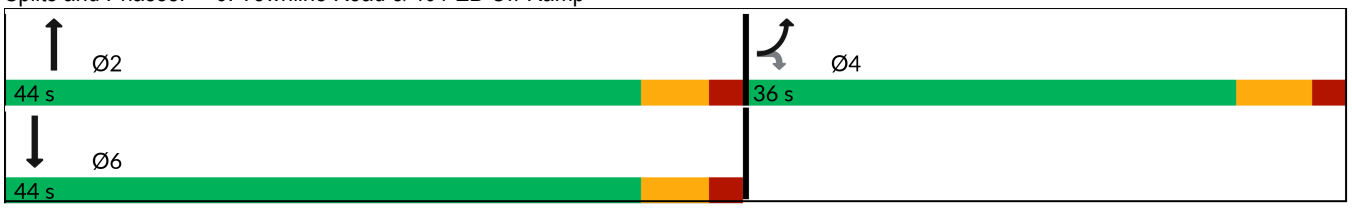


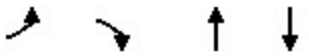
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	401	581	0	596	947	137
Future Volume (vph)	401	581	0	596	947	137
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.981	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3442	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3442	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		77			27	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	401	581	0	596	1084	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.66	
Control Delay (s/veh)	27.6	60.0		14.1	18.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	27.6	60.0		14.1	18.0	
LOS	C	E		B	B	
Approach Delay (s/veh)	46.8			14.1	18.0	
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): 27.7		Intersection LOS: C	
Intersection Capacity Utilization 80.0%		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)	401	581	596	1084
v/c Ratio	0.67	0.99	0.36	0.66
Control Delay (s/veh)	27.6	60.0	14.1	18.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.6	60.0	14.1	18.0
Queue Length 50th (m)	50.0	77.2	28.7	61.5
Queue Length 95th (m)	80.1	#144.0	40.1	81.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	602	585	1662	1649
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	0.66

Intersection Summary

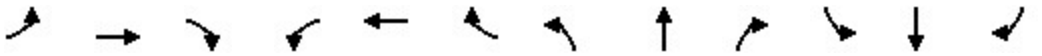
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	401	581	0	596	947	137
Future Volume (vph)	401	581	0	596	947	137
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3442	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3442	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	401	581	0	596	947	137
RTOR Reduction (vph)	0	49	0	0	14	0
Lane Group Flow (vph)	401	532	0	596	1070	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	1634	
v/s Ratio Prot	0.25			0.17	c0.31	
v/s Ratio Perm		c0.37				
v/c Ratio	0.67	0.99		0.36	0.65	
Uniform Delay, d1	21.1	25.2		13.3	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	36.9		0.6	2.1	
Delay (s)	23.9	62.1		13.9	18.1	
Level of Service	C	E		B	B	
Approach Delay (s/veh)	46.5			13.9	18.1	
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	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

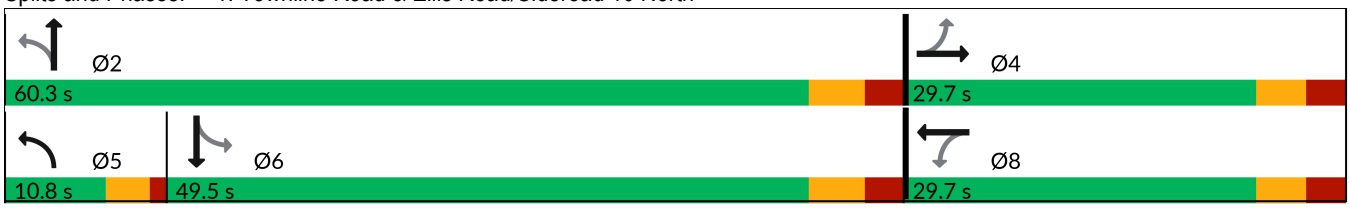


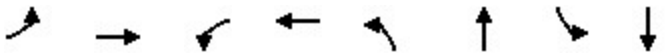
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	30	251	62	11	4	117	581	66	4	689	29
Future Volume (vph)	85	30	251	62	11	4	117	581	66	4	689	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.960			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1566	0	1603	1544	0	1334	1576	0
Flt Permitted	0.748			0.339			0.236			0.419		
Satd. Flow (perm)	1300	1388	0	595	1566	0	398	1544	0	588	1576	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		251			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	251	62	11	4	117	581	66	4	689	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	281	0	62	15	0	117	647	0	4	718	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)	11.8	11.8		11.8	11.8		56.5	54.2		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.69		0.58	0.58	
v/c Ratio	0.44	0.67		0.70	0.06		0.30	0.60		0.01	0.78	
Control Delay (s/veh)	36.7	14.2		68.5	23.7		6.2	10.3		10.0	22.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay (s/veh)	36.7	14.2		68.5	23.7		6.2	10.4		10.0	22.9	
LOS	D	B		E	C		A	B		A	C	
Approach Delay (s/veh)		19.5			59.7			9.8			22.8	
Approach LOS		B			E			A			C	

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: 0.78			
Intersection Signal Delay (s/veh): 18.5		Intersection LOS: B	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

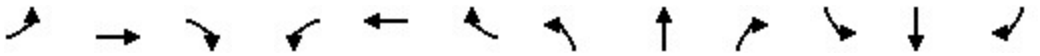




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	281	62	15	117	647	4	718
v/c Ratio	0.44	0.67	0.70	0.06	0.30	0.60	0.01	0.78
Control Delay (s/veh)	36.7	14.2	68.5	23.7	6.2	10.3	10.0	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (s/veh)	36.7	14.2	68.5	23.7	6.2	10.4	10.0	22.9
Queue Length 50th (m)	11.6	3.9	8.8	1.4	4.2	41.2	0.2	79.7
Queue Length 95th (m)	24.1	25.1	21.4	6.0	11.8	94.3	1.8	#174.5
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	394	596	180	478	391	1071	343	921
Starvation Cap Reductn	0	0	0	0	0	52	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	0.22	0.47	0.34	0.03	0.30	0.63	0.01	0.78

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	251	62	11	4	117	581	66	4	689	29
Future Volume (vph)	85	30	251	62	11	4	117	581	66	4	689	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	0.98		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	1388		1668	1566		1603	1543		1334	1576	
Flt Permitted	0.75	1.00		0.34	1.00		0.24	1.00		0.42	1.00	
Satd. Flow (perm)	1299	1388		595	1566		397	1543		588	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	251	62	11	4	117	581	66	4	689	29
RTOR Reduction (vph)	0	214	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	85	67	0	62	12	0	117	644	0	4	717	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)	11.8	11.8		11.8	11.8		55.0	55.0		45.7	45.7	
Effective Green, g (s)	11.8	11.8		11.8	11.8		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		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)	193	207		88	233		356	1072		339	910	
v/s Ratio Prot		0.05			0.01		0.02	c0.42			c0.45	
v/s Ratio Perm	0.07			c0.10			0.21			0.01		
v/c Ratio	0.44	0.33		0.70	0.05		0.33	0.60		0.01	0.79	
Uniform Delay, d1	30.6	30.1		32.0	28.8		7.0	6.3		7.1	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.9		22.5	0.1		0.5	2.5		0.1	6.8	
Delay (s)	32.2	31.0		54.5	28.9		7.5	8.8		7.2	19.8	
Level of Service	C	C		D	C		A	A		A	B	
Approach Delay (s/veh)		31.3			49.5			8.6			19.7	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	16.3
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

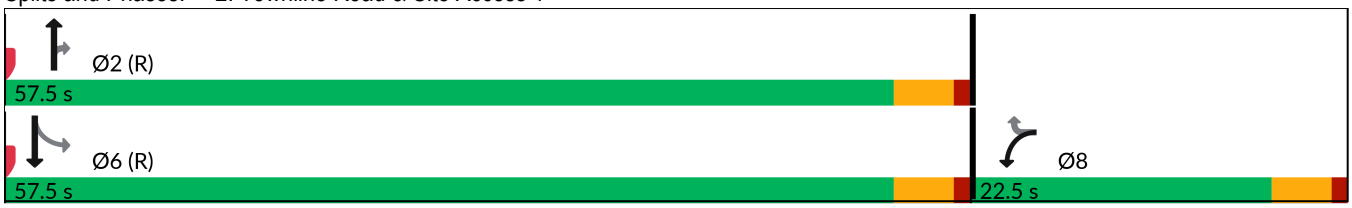


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	758	75	100	901
Future Volume (vph)	15	7	758	75	100	901
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.355	
Satd. Flow (perm)	1626	1454	1721	1463	654	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		7		75		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	758	75	100	901
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	7	758	75	100	901
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	73.5	73.5	73.5	73.5
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.12	0.06	0.48	0.06	0.17	0.53
Control Delay (s/veh)	35.7	21.0	2.8	0.6	2.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	21.0	2.8	0.6	2.0	3.2
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.0		2.6			3.1
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 3.2		Intersection LOS: A	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





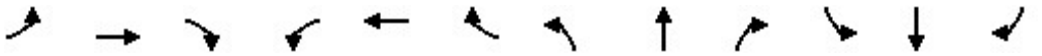
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	7	758	75	100	901
v/c Ratio	0.12	0.06	0.48	0.06	0.17	0.53
Control Delay (s/veh)	35.7	21.0	2.8	0.6	2.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	21.0	2.8	0.6	2.0	3.2
Queue Length 50th (m)	2.2	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	7.5	3.6	48.7	1.9	6.0	63.3
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	332	1581	1350	601	1692
Starvation Cap Reductn	0	0	0	0	0	63
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.48	0.06	0.17	0.55

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	758	75	100	901
Future Volume (vph)	15	7	758	75	100	901
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.35	1.00
Satd. Flow (perm)	1626	1454	1721	1463	654	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	758	75	100	901
RTOR Reduction (vph)	0	7	0	11	0	0
Lane Group Flow (vph)	15	0	758	64	100	901
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.9	2.9	68.1	68.1	68.1	68.1
Effective Green, g (s)	2.9	2.9	68.1	68.1	68.1	68.1
Actuated g/C Ratio	0.04	0.04	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	58	52	1465	1245	556	1568
v/s Ratio Prot	c0.01		0.44			c0.49
v/s Ratio Perm		0.00		0.04	0.15	
v/c Ratio	0.26	0.00	0.52	0.05	0.18	0.57
Uniform Delay, d1	37.5	37.2	1.6	0.9	1.0	1.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.0	1.3	0.1	0.7	1.5
Delay (s)	39.9	37.2	2.9	1.0	1.8	3.3
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	39.0		2.7			3.1
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

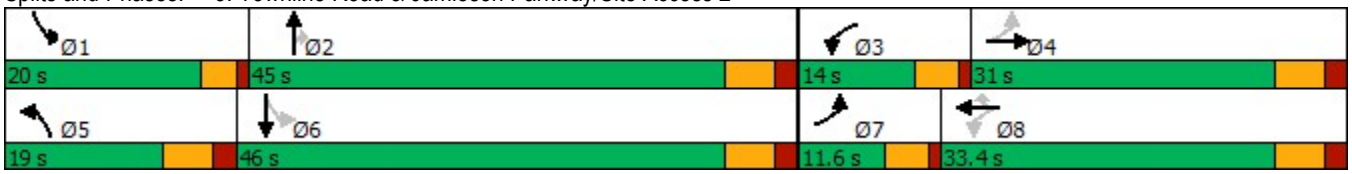


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	20	293	111	53	152	256	540	413	53	720	157
Future Volume (vph)	137	20	293	111	53	152	256	540	413	53	720	157
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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	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		0.860				0.850			0.850		0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1365	0	3235	1632	1387	3203	3302	1492	1668	3168	0
Flt Permitted	0.722			0.339			0.950			0.451		
Satd. Flow (perm)	1242	1365	0	1154	1632	1387	3201	3302	1492	792	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		293				152			413		26	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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	20	293	111	53	152	256	540	413	53	720	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	313	0	111	53	152	256	540	413	53	877	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	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)	19.7	11.1		21.1	11.8	11.8	11.7	49.3	49.3	48.8	40.2	
Actuated g/C Ratio	0.21	0.12		0.23	0.13	0.13	0.13	0.53	0.53	0.52	0.43	
v/c Ratio	0.47	0.75		0.26	0.26	0.50	0.64	0.31	0.42	0.11	0.64	
Control Delay	34.0	17.9		27.3	39.5	11.9	47.5	14.6	3.1	8.7	23.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.0	17.9		27.3	39.5	11.9	47.5	14.6	3.1	8.7	23.8	
LOS	C	B		C	D	B	D	B	A	A	C	
Approach Delay		22.8			21.9			17.6			22.9	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 93.4			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 82.0%		ICU Level of Service D	
Analysis Period (min) 15			

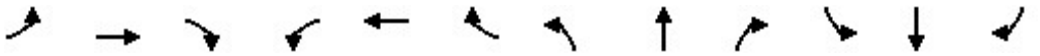
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	137	313	111	53	152	256	540	413	53	877
v/c Ratio	0.47	0.75	0.26	0.26	0.50	0.64	0.31	0.42	0.11	0.64
Control Delay	34.0	17.9	27.3	39.5	11.9	47.5	14.6	3.1	8.7	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.9	27.3	39.5	11.9	47.5	14.6	3.1	8.7	23.8
Queue Length 50th (m)	19.9	3.3	7.8	8.8	0.0	21.9	26.3	0.0	2.8	58.5
Queue Length 95th (m)	35.0	29.6	14.1	19.3	15.9	38.8	50.2	16.4	9.5	99.2
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	292	581	494	480	516	447	1742	982	643	1378
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	0.47	0.54	0.22	0.11	0.29	0.57	0.31	0.42	0.08	0.64

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	20	293	111	53	152	256	540	413	53	720	157
Future Volume (vph)	137	20	293	111	53	152	256	540	413	53	720	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	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	1364		3235	1632	1387	3203	3302	1492	1668	3169	
Flt Permitted	0.72	1.00		0.34	1.00	1.00	0.95	1.00	1.00	0.45	1.00	
Satd. Flow (perm)	1243	1364		1154	1632	1387	3203	3302	1492	791	3169	
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	20	293	111	53	152	256	540	413	53	720	157
RTOR Reduction (vph)	0	258	0	0	0	133	0	0	197	0	15	0
Lane Group Flow (vph)	137	55	0	111	53	19	256	540	216	53	862	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	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)	18.2	11.1		19.6	11.8	11.8	11.7	49.3	49.3	46.6	41.1	
Effective Green, g (s)	18.2	11.1		19.6	11.8	11.8	11.7	49.3	49.3	46.6	41.1	
Actuated g/C Ratio	0.19	0.12		0.21	0.13	0.13	0.12	0.52	0.52	0.49	0.44	
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)	269	160		412	204	173	397	1728	780	442	1382	
v/s Ratio Prot	c0.04	0.04		0.02	0.03		c0.08	0.16		0.01	c0.27	
v/s Ratio Perm	c0.06			0.03		0.01			0.14	0.05		
v/c Ratio	0.51	0.34		0.27	0.26	0.11	0.64	0.31	0.28	0.12	0.62	
Uniform Delay, d1	33.5	38.2		30.9	37.3	36.5	39.3	12.8	12.5	12.4	20.6	
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	1.5	1.3		0.4	0.7	0.3	3.6	0.5	0.9	0.1	2.1	
Delay (s)	35.0	39.5		31.3	37.9	36.8	42.8	13.3	13.4	12.5	22.7	
Level of Service	C	D		C	D	D	D	B	B	B	C	
Approach Delay (s)		38.1			35.1			19.6			22.1	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	94.2	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	192	1037	0	0	770
Future Volume (vph)	513	192	1037	0	0	770
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
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)		82				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	192	1037	0	0	770
Shared Lane Traffic (%)						
Lane Group Flow (vph)	513	192	1037	0	0	770
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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	0.48	0.49			0.37
Control Delay (s/veh)	34.5	18.8	10.8			9.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.5	18.8	10.8			9.5
LOS	C	B	B			A
Approach Delay (s/veh)	30.3		10.8			9.5
Approach LOS	C		B			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): 15.9		Intersection LOS: B	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
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	192	1037	770
v/c Ratio	0.73	0.48	0.49	0.37
Control Delay (s/veh)	34.5	18.8	10.8	9.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.5	18.8	10.8	9.5
Queue Length 50th (m)	37.1	13.8	42.1	28.2
Queue Length 95th (m)	52.6	31.5	70.8	48.6
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1055	558	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	0.34	0.49	0.37

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	513	192	1037	0	0	770
Future Volume (vph)	513	192	1037	0	0	770
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	192	1037	0	0	770
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	513	130	1037	0	0	770
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		c0.30			0.22
v/s Ratio Perm		0.09				
v/c Ratio	0.73	0.39	0.49			0.37
Uniform Delay, d1	28.0	25.3	9.1			8.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.0	0.7	0.8			0.5
Delay (s)	32.0	26.1	10.0			8.7
Level of Service	C	C	A			A
Approach Delay (s/veh)	30.4		10.0			8.7
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	0.56		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

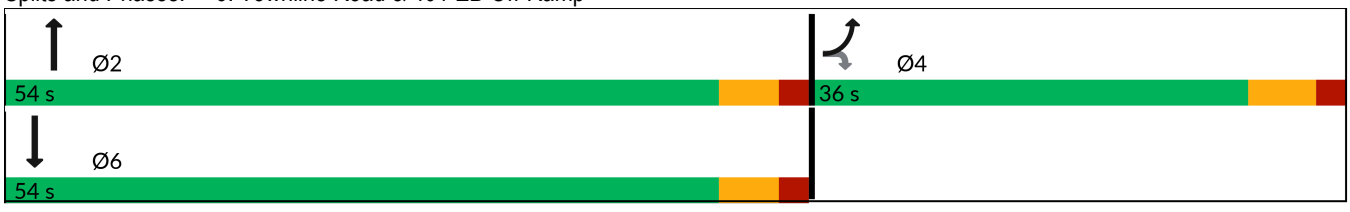


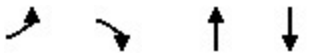
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	448	463	0	1006	1107	172
Future Volume (vph)	448	463	0	1006	1107	172
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3299	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3299	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		68			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	448	463	0	1006	1107	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	448	463	0	1006	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	27.9	27.9		48.0	48.0	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.89	0.94		0.54	0.71	
Control Delay (s/veh)	49.9	54.6		14.7	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	49.9	54.6		14.7	17.7	
LOS	D	D		B	B	
Approach Delay (s/veh)	52.3			14.7	17.7	
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 (s/veh): 26.6		Intersection LOS: C	
Intersection Capacity Utilization 77.6%		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)	448	463	1006	1279
v/c Ratio	0.89	0.94	0.54	0.71
Control Delay (s/veh)	49.9	54.6	14.7	17.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.9	54.6	14.7	17.7
Queue Length 50th (m)	71.6	66.3	56.9	81.2
Queue Length 95th (m)	#122.9	#124.3	74.0	105.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	534	517	1863	1804
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	0.84	0.90	0.54	0.71

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)	448	463	0	1006	1107	172
Future Volume (vph)	448	463	0	1006	1107	172
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3298	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3298	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	448	463	0	1006	1107	172
RTOR Reduction (vph)	0	47	0	0	13	0
Lane Group Flow (vph)	448	416	0	1006	1266	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	1792	
v/s Ratio Prot	0.28			0.29	c0.38	
v/s Ratio Perm		c0.29				
v/c Ratio	0.89	0.94		0.54	0.71	
Uniform Delay, d1	28.8	29.4		13.0	15.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.0	27.0		1.1	2.4	
Delay (s)	45.8	56.5		14.2	17.3	
Level of Service	D	E		B	B	
Approach Delay (s/veh)	51.2			14.2	17.3	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

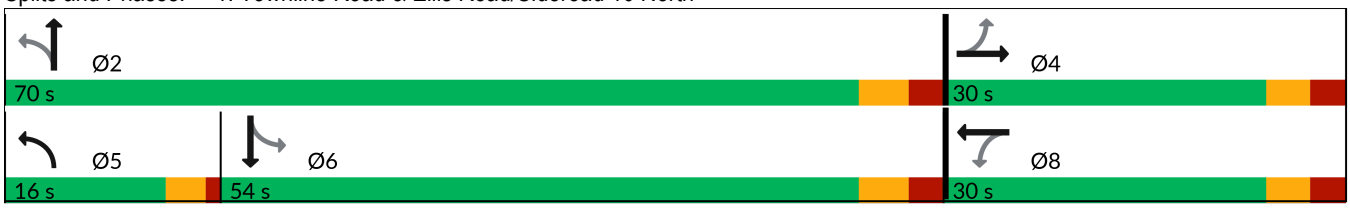
c Critical Lane Group

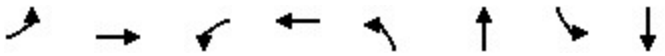
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	21	159	97	39	10	368	978	103	8	556	59
Future Volume (vph)	40	21	159	97	39	10	368	978	103	8	556	59
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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		0.867			0.969			0.986			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1390	0	1635	1581	0	1668	1594	0	1668	1550	0
Flt Permitted	0.725			0.532			0.269			0.176		
Satd. Flow (perm)	1273	1390	0	915	1581	0	472	1594	0	309	1550	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		159			10			10			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	159	97	39	10	368	978	103	8	556	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	180	0	97	49	0	368	1081	0	8	615	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)	14.2	14.2		14.2	14.2		66.2	63.9		48.1	48.1	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.73	0.71		0.53	0.53	
v/c Ratio	0.20	0.51		0.68	0.19		0.73	0.96		0.05	0.74	
Control Delay (s/veh)	34.7	13.0		59.0	28.6		15.6	33.4		13.4	24.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	14.8		0.0	0.0	
Total Delay (s/veh)	34.7	13.0		59.0	28.6		15.6	48.2		13.4	24.5	
LOS	C	B		E	C		B	D		B	C	
Approach Delay (s/veh)		17.0			48.8			39.9			24.3	
Approach LOS		B			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.4			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay (s/veh): 34.4		Intersection LOS: C	
Intersection Capacity Utilization 109.5%		ICU Level of Service H	
Analysis Period (min) 15			

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

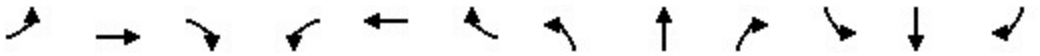




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	180	97	49	368	1081	8	615
v/c Ratio	0.20	0.51	0.68	0.19	0.73	0.96	0.05	0.74
Control Delay (s/veh)	34.7	13.0	59.0	28.6	15.6	33.4	13.4	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0
Total Delay (s/veh)	34.7	13.0	59.0	28.6	15.6	48.2	13.4	24.5
Queue Length 50th (m)	6.1	3.2	16.1	5.9	17.8	142.0	0.6	77.0
Queue Length 95th (m)	14.8	20.5	32.2	15.3	#49.0	#298.3	3.3	#157.1
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	338	486	243	428	505	1129	164	827
Starvation Cap Reductn	0	0	0	0	0	76	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	0.40	0.11	0.73	1.03	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)	40	21	159	97	39	10	368	978	103	8	556	59
Future Volume (vph)	40	21	159	97	39	10	368	978	103	8	556	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	0.99	
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	1594		1668	1549	
Flt Permitted	0.73	1.00		0.53	1.00		0.27	1.00		0.18	1.00	
Satd. Flow (perm)	1273	1391		915	1582		472	1594		309	1549	
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	159	97	39	10	368	978	103	8	556	59
RTOR Reduction (vph)	0	134	0	0	8	0	0	3	0	0	3	0
Lane Group Flow (vph)	40	46	0	97	41	0	368	1078	0	8	612	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)	14.2	14.2		14.2	14.2		63.9	63.9		48.1	48.1	
Effective Green, g (s)	14.2	14.2		14.2	14.2		63.9	63.9		48.1	48.1	
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)	199	218		143	248		489	1126		164	824	
v/s Ratio Prot		0.03			0.03		0.10	c0.68			0.39	
v/s Ratio Perm	0.03			c0.11			0.43			0.03		
v/c Ratio	0.20	0.21		0.68	0.16		0.75	0.96		0.05	0.74	
Uniform Delay, d1	33.2	33.2		35.9	33.0		9.1	12.0		10.2	16.4	
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		12.1	0.3		6.5	18.4		0.6	6.0	
Delay (s)	33.7	33.7		48.0	33.3		15.6	30.4		10.7	22.3	
Level of Service	C	C		D	C		B	C		B	C	
Approach Delay (s/veh)		33.7			43.1			26.6			22.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	16.3
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

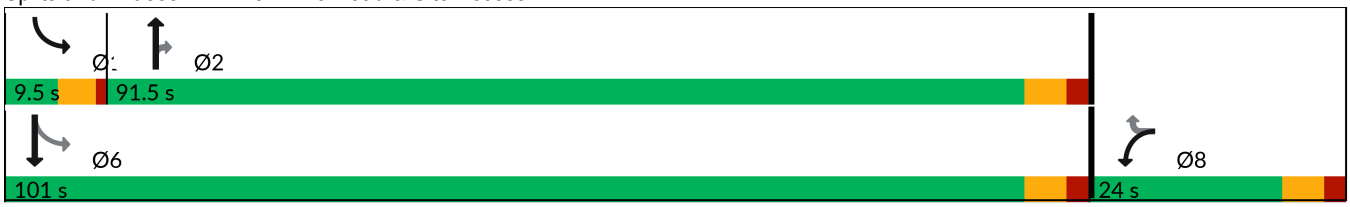


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1426	25	36	776
Future Volume (vph)	55	25	1426	25	36	776
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.041	
Satd. Flow (perm)	1626	1454	1721	1463	76	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25		18		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1426	25	36	776
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	25	1426	25	36	776
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.5	24.0
Total Split (s)	24.0	24.0	91.5	91.5	9.5	101.0
Total Split (%)	19.2%	19.2%	73.2%	73.2%	7.6%	80.8%
Maximum Green (s)	18.0	18.0	85.5	85.5	5.0	95.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	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
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	9.4	9.4	95.0	95.0	100.9	100.7
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.85	0.85
v/c Ratio	0.43	0.18	1.03	0.02	0.27	0.50
Control Delay (s/veh)	61.6	20.8	50.1	2.6	7.4	4.6
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.8
Total Delay (s/veh)	61.6	20.8	50.7	2.6	7.4	5.4
LOS	E	C	D	A	A	A
Approach Delay (s/veh)	48.9		49.8			5.5
Approach LOS	D		D			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 118.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay (s/veh): 34.4		Intersection LOS: C	
Intersection Capacity Utilization 94.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	25	1426	25	36	776
v/c Ratio	0.43	0.18	1.03	0.02	0.27	0.50
Control Delay (s/veh)	61.6	20.8	50.1	2.6	7.4	4.6
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.8
Total Delay (s/veh)	61.6	20.8	50.7	2.6	7.4	5.4
Queue Length 50th (m)	12.4	0.0	~381.6	0.4	1.1	43.7
Queue Length 95th (m)	25.2	8.3	#478.8	2.8	4.2	74.8
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	247	242	1380	1177	135	1566
Starvation Cap Reductn	0	0	2	0	0	466
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.10	1.03	0.02	0.27	0.71

Intersection Summary

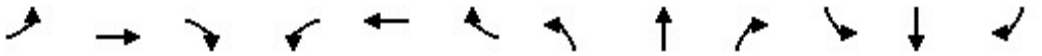
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1426	25	36	776
Future Volume (vph)	55	25	1426	25	36	776
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	4.5	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.04	1.00
Satd. Flow (perm)	1626	1454	1721	1463	75	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1426	25	36	776
RTOR Reduction (vph)	0	23	0	4	0	0
Lane Group Flow (vph)	55	2	1426	21	36	776
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.2	8.2	93.8	93.8	101.3	101.3
Effective Green, g (s)	8.2	8.2	93.8	93.8	101.3	101.3
Actuated g/C Ratio	0.07	0.07	0.77	0.77	0.83	0.83
Clearance Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	98	1328	1129	103	1535
v/s Ratio Prot	c0.03		c0.83		0.01	c0.42
v/s Ratio Perm		0.00		0.01	0.28	
v/c Ratio	0.50	0.02	1.07	0.02	0.35	0.51
Uniform Delay, d1	54.7	52.9	13.9	3.2	39.0	2.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	47.1	0.0	2.1	1.2
Delay (s)	58.3	53.0	61.0	3.2	41.1	4.1
Level of Service	E	D	E	A	D	A
Approach Delay (s/veh)	56.7		60.0			5.7
Approach LOS	E		E			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

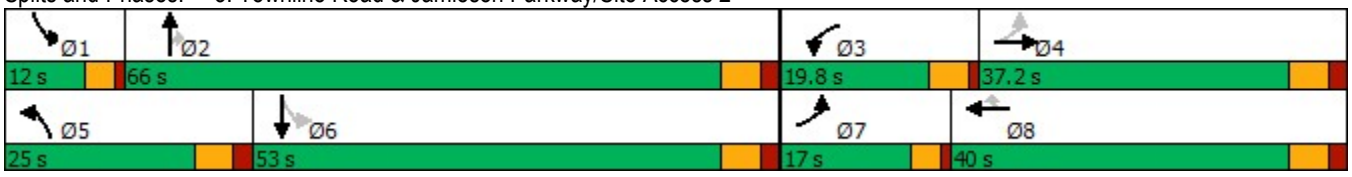


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	27	375	310	147	338	362	859	453	113	570	141
Future Volume (vph)	222	27	375	310	147	338	362	859	453	113	570	141
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		0.860				0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1403	0	3235	1632	1387	3203	3302	1492	1668	3122	0
Flt Permitted	0.645			0.950			0.950			0.313		
Satd. Flow (perm)	1132	1403	0	3235	1632	1387	3203	3302	1492	549	3122	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		301				240			453		25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	222	27	375	310	147	338	362	859	453	113	570	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	402	0	310	147	338	362	859	453	113	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)		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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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		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		5.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		10.0	31.0	31.0	11.0	50.4	50.4	9.0	50.4	
Total Split (s)	17.0	37.2		19.8	40.0	40.0	25.0	66.0	66.0	12.0	53.0	
Total Split (%)	12.6%	27.6%		14.7%	29.6%	29.6%	18.5%	48.9%	48.9%	8.9%	39.3%	
Maximum Green (s)	13.0	31.2		14.8	34.0	34.0	19.0	60.0	60.0	8.0	47.0	
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		23.4	23.4		23.4	
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	17.2		14.4	19.8	19.8	17.4	60.4	60.4	58.2	48.6	
Actuated g/C Ratio	0.27	0.14		0.12	0.16	0.16	0.14	0.50	0.50	0.48	0.40	
v/c Ratio	0.62	0.88		0.80	0.55	0.79	0.79	0.52	0.47	0.34	0.56	
Control Delay	40.8	34.1		69.1	53.5	28.1	63.7	23.2	3.6	15.7	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	40.8	34.1		69.1	53.5	28.1	63.7	23.2	3.6	15.7	30.6	
LOS	D	C		E	D	C	E	C	A	B	C	
Approach Delay		36.5			48.8			26.7			28.6	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 120.7			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 89.7%		ICU Level of Service E	
Analysis Period (min) 15			

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

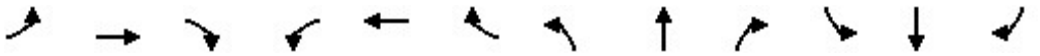




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	222	402	310	147	338	362	859	453	113	711
v/c Ratio	0.62	0.88	0.80	0.55	0.79	0.79	0.52	0.47	0.34	0.56
Control Delay	40.8	34.1	69.1	53.5	28.1	63.7	23.2	3.6	15.7	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	34.1	69.1	53.5	28.1	63.7	23.2	3.6	15.7	30.6
Queue Length 50th (m)	41.1	23.9	37.0	32.4	22.0	42.2	69.6	0.0	10.3	65.9
Queue Length 95th (m)	62.1	63.8	#67.5	52.4	56.1	#70.3	109.5	18.7	23.9	102.1
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	360	587	398	462	564	507	1651	972	341	1271
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	0.62	0.68	0.78	0.32	0.60	0.71	0.52	0.47	0.33	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	27	375	310	147	338	362	859	453	113	570	141
Future Volume (vph)	222	27	375	310	147	338	362	859	453	113	570	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		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		3235	1632	1387	3203	3302	1492	1668	3123	
Flt Permitted	0.65	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1133	1403		3235	1632	1387	3203	3302	1492	550	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	27	375	310	147	338	362	859	453	113	570	141
RTOR Reduction (vph)	0	258	0	0	0	201	0	0	226	0	15	0
Lane Group Flow (vph)	222	144	0	310	147	137	362	859	227	113	696	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	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)	30.2	17.3		14.4	19.8	19.8	17.4	60.4	60.4	56.2	48.6	
Effective Green, g (s)	30.2	17.3		14.4	19.8	19.8	17.4	60.4	60.4	56.2	48.6	
Actuated g/C Ratio	0.25	0.14		0.12	0.16	0.16	0.14	0.50	0.50	0.47	0.40	
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)	340	201		385	267	227	461	1652	746	326	1257	
v/s Ratio Prot	0.07	c0.10		c0.10	0.09		c0.11	0.26		0.02	c0.22	
v/s Ratio Perm	0.09					0.10			0.15	0.14		
v/c Ratio	0.65	0.72		0.81	0.55	0.61	0.79	0.52	0.30	0.35	0.55	
Uniform Delay, d1	39.2	49.4		51.8	46.4	46.8	49.8	20.4	17.8	18.5	27.7	
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	4.5	11.5		11.6	2.4	4.5	8.6	1.2	1.0	0.6	1.8	
Delay (s)	43.6	60.9		63.4	48.8	51.3	58.4	21.5	18.8	19.2	29.5	
Level of Service	D	E		E	D	D	E	C	B	B	C	
Approach Delay (s)		54.8			55.6			28.8			28.1	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.7	Sum of lost time (s)	23.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



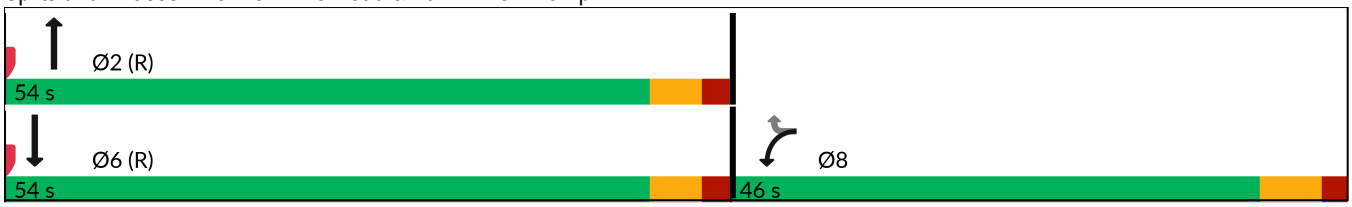
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	374	1407	0	0	893
Future Volume (vph)	512	374	1407	0	0	893
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		20				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	512	374	1407	0	0	893
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	374	1407	0	0	893
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.44	0.64	0.84			0.53
Control Delay (s/veh)	23.7	29.0	28.3			19.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	23.7	29.0	28.3			19.6
LOS	C	C	C			B
Approach Delay (s/veh)	25.9		28.3			19.6
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 25.2		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		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)	512	374	1407	893
v/c Ratio	0.44	0.64	0.84	0.53
Control Delay (s/veh)	23.7	29.0	28.3	19.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.7	29.0	28.3	19.6
Queue Length 50th (m)	36.7	54.4	120.3	61.3
Queue Length 95th (m)	50.6	86.2	150.5	78.6
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	587	1680	1680
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	0.64	0.84	0.53

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	512	374	1407	0	0	893
Future Volume (vph)	512	374	1407	0	0	893
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	374	1407	0	0	893
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	512	362	1407	0	0	893
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.17		c0.40			0.26
v/s Ratio Perm		c0.25				
v/c Ratio	0.44	0.63	0.84			0.53
Uniform Delay, d1	22.2	24.4	22.6			18.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.2	5.2	5.2			1.2
Delay (s)	23.4	29.5	27.8			19.4
Level of Service	C	C	C			B
Approach Delay (s/veh)	26.0		27.8			19.4
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

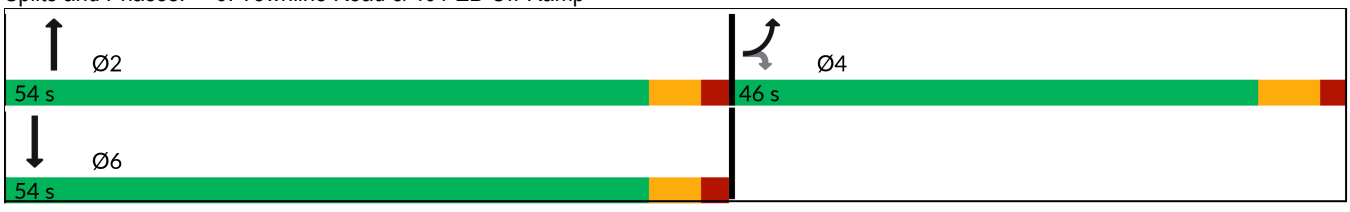


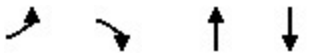
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	449	461	0	1208	1248	193
Future Volume (vph)	449	461	0	1208	1248	193
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3353	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3353	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32			24	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	449	461	0	1208	1248	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	461	0	1208	1441	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	32.4	32.4		48.3	48.3	
Actuated g/C Ratio	0.35	0.35		0.52	0.52	
v/c Ratio	0.80	0.88		0.66	0.82	
Control Delay (s/veh)	38.8	46.3		19.8	25.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.8	46.3		19.8	25.1	
LOS	D	D		B	C	
Approach Delay (s/veh)	42.6			19.8	25.1	
Approach LOS	D			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 93.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 27.8		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		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)	449	461	1208	1441
v/c Ratio	0.80	0.88	0.66	0.82
Control Delay (s/veh)	38.8	46.3	19.8	25.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.8	46.3	19.8	25.1
Queue Length 50th (m)	71.5	72.0	84.6	114.4
Queue Length 95th (m)	107.4	#122.4	117.9	#163.1
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	689	632	1830	1747
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	0.65	0.73	0.66	0.82

Intersection Summary

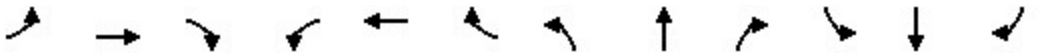
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	449	461	0	1208	1248	193
Future Volume (vph)	449	461	0	1208	1248	193
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3353	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3353	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	449	461	0	1208	1248	193
RTOR Reduction (vph)	0	21	0	0	12	0
Lane Group Flow (vph)	449	440	0	1208	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)	32.4	32.4		48.3	48.3	
Effective Green, g (s)	32.4	32.4		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)	562	501		1831	1737	
v/s Ratio Prot	0.28			0.34	c0.43	
v/s Ratio Perm		c0.31				
v/c Ratio	0.80	0.88		0.66	0.82	
Uniform Delay, d1	27.5	28.6		16.4	18.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.8	15.9		1.9	4.6	
Delay (s)	35.3	44.5		18.3	23.4	
Level of Service	D	D		B	C	
Approach Delay (s/veh)	39.9			18.3	23.4	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

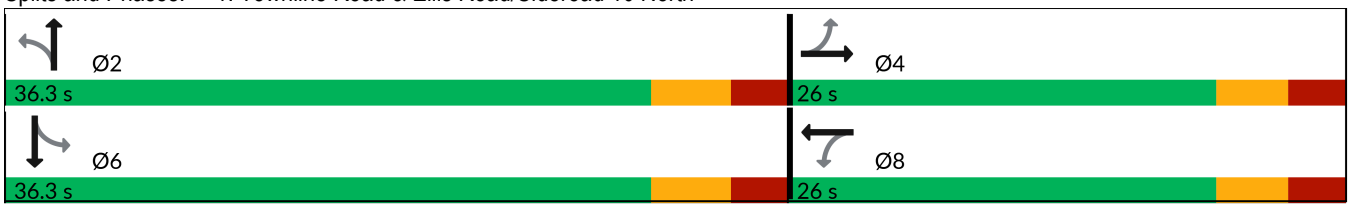


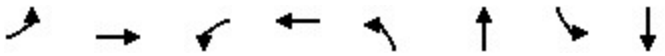
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	224	68	16	4	208	629	78	3	520	36
Future Volume (vph)	49	27	224	68	16	4	208	629	78	3	520	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1413	0	1668	1573	0	1651	1576	0	1668	1600	0
Flt Permitted	0.744			0.550			0.402			0.291		
Satd. Flow (perm)	1293	1413	0	965	1573	0	699	1576	0	511	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		224			4			14			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	224	68	16	4	208	629	78	3	520	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	251	0	68	20	0	208	707	0	3	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		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)	9.8	9.8		9.8	9.8		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		0.38	0.07		0.52	0.77		0.01	0.60	
Control Delay (s/veh)	19.6	9.7		24.6	15.7		13.4	17.4		6.0	11.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	19.6	9.7		24.6	15.7		13.4	17.4		6.0	11.2	
LOS	B	A		C	B		B	B		A	B	
Approach Delay (s/veh)		11.3			22.6			16.5			11.1	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 14.4		Intersection LOS: B	
Intersection Capacity Utilization 95.0%		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)	49	251	68	20	208	707	3	556
v/c Ratio	0.20	0.56	0.38	0.07	0.52	0.77	0.01	0.60
Control Delay (s/veh)	19.6	9.7	24.6	15.7	13.4	17.4	6.0	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.6	9.7	24.6	15.7	13.4	17.4	6.0	11.2
Queue Length 50th (m)	3.9	2.1	5.6	1.3	9.4	39.6	0.1	26.5
Queue Length 95th (m)	10.8	16.7	14.5	5.4	32.1	#118.5	1.1	65.9
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	496	680	370	606	402	913	293	924
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	0.18	0.03	0.52	0.77	0.01	0.60

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	27	224	68	16	4	208	629	78	3	520	36
Future Volume (vph)	49	27	224	68	16	4	208	629	78	3	520	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	1413		1668	1573		1651	1577		1668	1601	
Flt Permitted	0.74	1.00		0.55	1.00		0.40	1.00		0.29	1.00	
Satd. Flow (perm)	1294	1413		965	1573		698	1577		511	1601	
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	224	68	16	4	208	629	78	3	520	36
RTOR Reduction (vph)	0	182	0	0	3	0	0	6	0	0	3	0
Lane Group Flow (vph)	49	69	0	68	17	0	208	701	0	3	553	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)	9.8	9.8		9.8	9.8		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.8	9.8		9.8	9.8		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)	242	265		181	295		402	909		294	923	
v/s Ratio Prot		0.05			0.01			c0.44			0.35	
v/s Ratio Perm	0.04			c0.07			0.30			0.01		
v/c Ratio	0.20	0.26		0.38	0.06		0.52	0.77		0.01	0.60	
Uniform Delay, d1	17.9	18.1		18.5	17.4		6.7	8.4		4.7	7.1	
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		1.3	0.1		4.7	6.3		0.1	2.9	
Delay (s)	18.3	18.6		19.8	17.5		11.4	14.7		4.8	10.0	
Level of Service	B	B		B	B		B	B		A	B	
Approach Delay (s/veh)		18.6			19.3			14.0			10.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.3
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

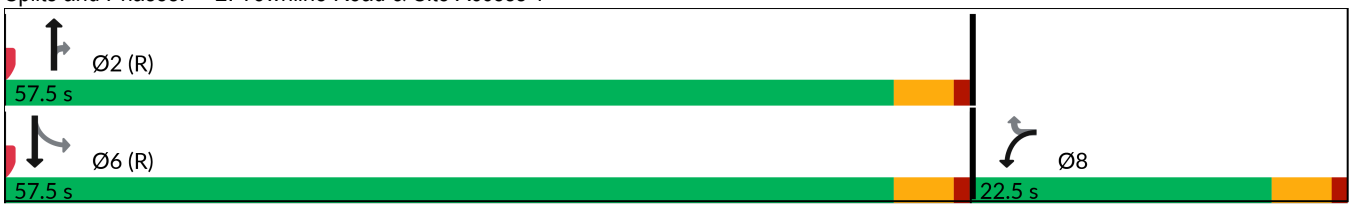


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	911	12	21	792
Future Volume (vph)	11	5	911	12	21	792
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.291	
Satd. Flow (perm)	1626	1454	1721	1463	536	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5		12		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	911	12	21	792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	5	911	12	21	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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.2	6.2	73.6	73.6	73.6	73.6
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.09	0.04	0.58	0.01	0.04	0.47
Control Delay (s/veh)	35.4	22.2	3.7	0.9	1.6	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	3.7	0.9	1.6	2.6
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.3		3.7			2.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 3.4		Intersection LOS: A	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





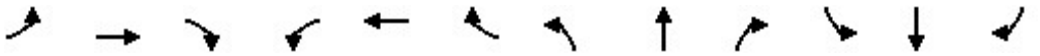
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	5	911	12	21	792
v/c Ratio	0.09	0.04	0.58	0.01	0.04	0.47
Control Delay (s/veh)	35.4	22.2	3.7	0.9	1.6	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	3.7	0.9	1.6	2.6
Queue Length 50th (m)	1.6	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.2	3.2	70.8	0.7	1.6	47.5
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	331	1584	1347	493	1695
Starvation Cap Reductn	0	0	0	0	0	76
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.58	0.01	0.04	0.49

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	911	12	21	792
Future Volume (vph)	11	5	911	12	21	792
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.29	1.00
Satd. Flow (perm)	1626	1454	1721	1463	536	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	911	12	21	792
RTOR Reduction (vph)	0	5	0	2	0	0
Lane Group Flow (vph)	11	0	911	10	21	792
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.8	2.8	68.2	68.2	68.2	68.2
Effective Green, g (s)	2.8	2.8	68.2	68.2	68.2	68.2
Actuated g/C Ratio	0.03	0.03	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	50	1467	1247	456	1570
v/s Ratio Prot	c0.01		c0.53			0.43
v/s Ratio Perm		0.00		0.01	0.04	
v/c Ratio	0.20	0.00	0.62	0.01	0.05	0.50
Uniform Delay, d1	37.5	37.3	1.8	0.9	0.9	1.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.0	2.0	0.0	0.2	1.2
Delay (s)	39.2	37.3	3.8	0.9	1.1	2.7
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	38.6		3.8			2.6
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

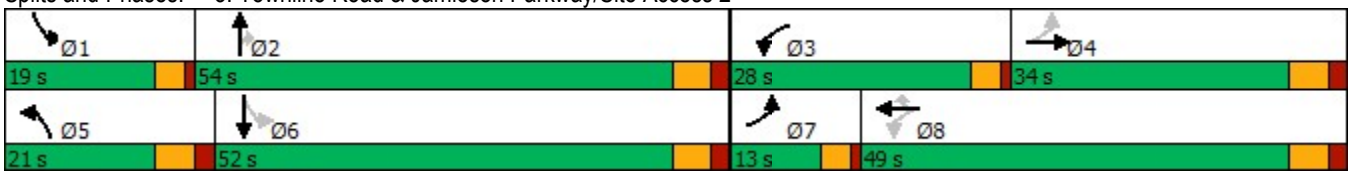


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	58	239	315	156	247	209	535	420	188	509	106
Future Volume (vph)	151	58	239	315	156	247	209	535	420	188	509	106
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		0.879				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1434	0	3235	1632	1387	3203	3270	1492	1668	3211	0
Flt Permitted	0.658			0.178			0.950			0.425		
Satd. Flow (perm)	1155	1434	0	606	1632	1387	3203	3270	1492	746	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		139				247			420		20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	151	58	239	315	156	247	209	535	420	188	509	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	297	0	315	156	247	209	535	420	188	615	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	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)	29.5	18.5		37.2	23.0	23.0	12.3	49.5	49.5	59.9	46.5	
Actuated g/C Ratio	0.26	0.16		0.33	0.20	0.20	0.11	0.44	0.44	0.53	0.41	
v/c Ratio	0.44	0.85		0.61	0.47	0.52	0.60	0.37	0.47	0.39	0.46	
Control Delay	32.6	46.3		32.6	43.8	8.5	57.1	24.4	4.4	15.0	26.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.6	46.3		32.6	43.8	8.5	57.1	24.4	4.4	15.0	26.6	
LOS	C	D		C	D	A	E	C	A	B	C	
Approach Delay		41.7			26.7			23.1			23.9	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 113.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

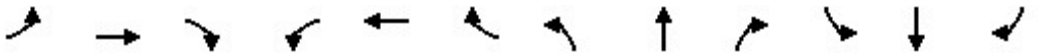
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	297	315	156	247	209	535	420	188	615
v/c Ratio	0.44	0.85	0.61	0.47	0.52	0.60	0.37	0.47	0.39	0.46
Control Delay	32.6	46.3	32.6	43.8	8.5	57.1	24.4	4.4	15.0	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	46.3	32.6	43.8	8.5	57.1	24.4	4.4	15.0	26.6
Queue Length 50th (m)	24.1	35.0	26.1	30.5	0.0	23.0	41.4	0.0	18.2	50.1
Queue Length 95th (m)	40.4	70.3	37.5	50.8	19.8	38.9	68.6	21.0	37.2	80.3
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	343	463	768	627	685	429	1431	889	543	1333
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	0.44	0.64	0.41	0.25	0.36	0.49	0.37	0.47	0.35	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	58	239	315	156	247	209	535	420	188	509	106
Future Volume (vph)	151	58	239	315	156	247	209	535	420	188	509	106
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	1435		3235	1632	1387	3203	3270	1492	1668	3211	
Flt Permitted	0.66	1.00		0.18	1.00	1.00	0.95	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	1155	1435		605	1632	1387	3203	3270	1492	746	3211	
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	58	239	315	156	247	209	535	420	188	509	106
RTOR Reduction (vph)	0	116	0	0	0	197	0	0	236	0	12	0
Lane Group Flow (vph)	151	181	0	315	156	50	209	535	184	188	603	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)	27.5	18.5		36.0	23.0	23.0	12.3	49.5	49.5	58.0	46.6	
Effective Green, g (s)	27.5	18.5		36.0	23.0	23.0	12.3	49.5	49.5	58.0	46.6	
Actuated g/C Ratio	0.24	0.16		0.32	0.20	0.20	0.11	0.44	0.44	0.51	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)	322	235		507	332	282	348	1433	654	476	1325	
v/s Ratio Prot	0.04	c0.13		c0.07	0.10		c0.07	c0.16		0.04	c0.19	
v/s Ratio Perm	0.08			0.12		0.04			0.12	0.16		
v/c Ratio	0.47	0.77		0.62	0.47	0.18	0.60	0.37	0.28	0.39	0.46	
Uniform Delay, d1	35.5	45.2		30.4	39.6	37.1	48.0	21.3	20.3	15.1	24.0	
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	1.1	14.0		2.4	1.1	0.3	2.9	0.7	1.1	0.5	1.1	
Delay (s)	36.6	59.2		32.8	40.6	37.4	50.9	22.0	21.4	15.6	25.1	
Level of Service	D	E		C	D	D	D	C	C	B	C	
Approach Delay (s)		51.6			36.1			27.0			22.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	112.9	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

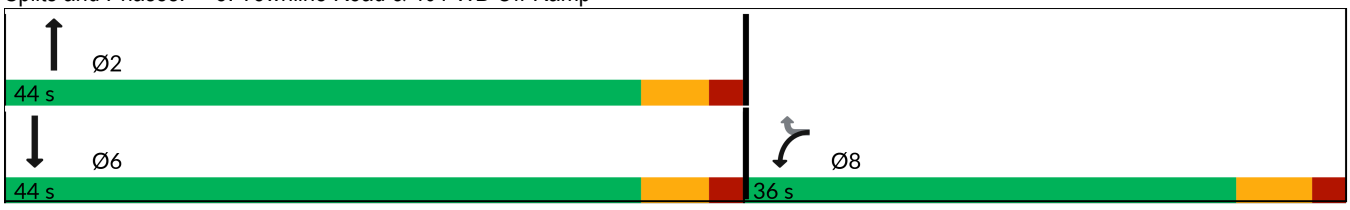


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	225	942	0	0	774
Future Volume (vph)	377	225	942	0	0	774
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		78				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	225	942	0	0	774
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	225	942	0	0	774
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	13.5	13.5	38.1			38.1
Actuated g/C Ratio	0.21	0.21	0.59			0.59
v/c Ratio	0.58	0.61	0.45			0.37
Control Delay (s/veh)	26.4	22.2	8.6			7.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	26.4	22.2	8.6			7.9
LOS	C	C	A			A
Approach Delay (s/veh)	24.8		8.6			7.9
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay (s/veh): 12.6		Intersection LOS: B	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
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	225	942	774
v/c Ratio	0.58	0.61	0.45	0.37
Control Delay (s/veh)	26.4	22.2	8.6	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.4	22.2	8.6	7.9
Queue Length 50th (m)	20.8	15.4	27.5	21.2
Queue Length 95th (m)	32.0	34.2	51.3	40.4
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1420	713	2099	2078
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	0.27	0.32	0.45	0.37

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	377	225	942	0	0	774
Future Volume (vph)	377	225	942	0	0	774
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	225	942	0	0	774
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	377	163	942	0	0	774
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)	13.5	13.5	38.1			38.1
Effective Green, g (s)	13.5	13.5	38.1			38.1
Actuated g/C Ratio	0.21	0.21	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)	648	306	2101			2080
v/s Ratio Prot	c0.12		c0.27			0.22
v/s Ratio Perm		0.11				
v/c Ratio	0.58	0.53	0.45			0.37
Uniform Delay, d1	22.8	22.5	7.2			6.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.3	1.8	0.7			0.5
Delay (s)	24.1	24.3	7.9			7.3
Level of Service	C	C	A			A
Approach Delay (s/veh)	24.2		7.9			7.3
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	0.48		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	12.5
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

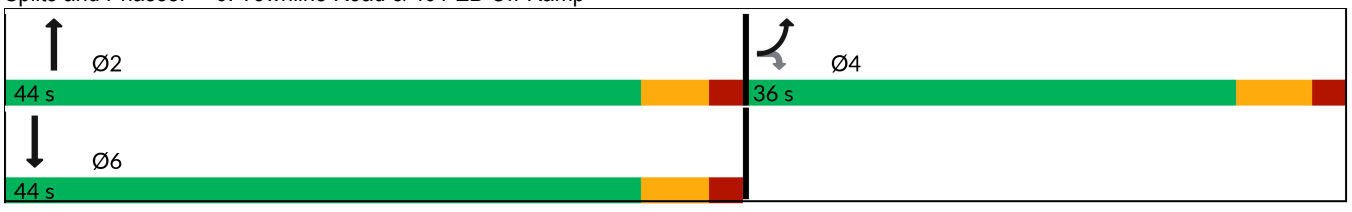


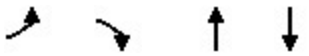
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	421	0	726	980	169
Future Volume (vph)	393	421	0	726	980	169
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.978	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3433	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3433	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		69			33	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	393	421	0	726	980	169
Shared Lane Traffic (%)						
Lane Group Flow (vph)	393	421	0	726	1149	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	23.0	23.0		38.3	38.3	
Actuated g/C Ratio	0.31	0.31		0.52	0.52	
v/c Ratio	0.77	0.84		0.40	0.64	
Control Delay (s/veh)	33.8	35.5		12.7	15.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.8	35.5		12.7	15.6	
LOS	C	D		B	B	
Approach Delay (s/veh)	34.7			12.7	15.6	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 73.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 20.6		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		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)	393	421	726	1149
v/c Ratio	0.77	0.84	0.40	0.64
Control Delay (s/veh)	33.8	35.5	12.7	15.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.8	35.5	12.7	15.6
Queue Length 50th (m)	48.6	45.3	31.8	58.0
Queue Length 95th (m)	78.1	#79.4	50.0	88.7
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	657	627	1813	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	0.60	0.67	0.40	0.64

Intersection Summary

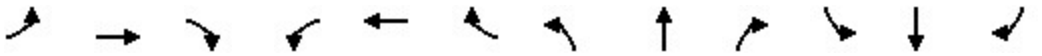
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	421	0	726	980	169
Future Volume (vph)	393	421	0	726	980	169
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3433	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3433	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	393	421	0	726	980	169
RTOR Reduction (vph)	0	47	0	0	16	0
Lane Group Flow (vph)	393	374	0	726	1133	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)	23.0	23.0		38.3	38.3	
Effective Green, g (s)	23.0	23.0		38.3	38.3	
Actuated g/C Ratio	0.31	0.31		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)	509	453		1816	1781	
v/s Ratio Prot	0.24			0.21	c0.33	
v/s Ratio Perm		c0.26				
v/c Ratio	0.77	0.82		0.40	0.64	
Uniform Delay, d1	23.0	23.5		10.8	12.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	11.6		0.7	1.7	
Delay (s)	30.2	35.1		11.4	14.5	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	32.7			11.4	14.5	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

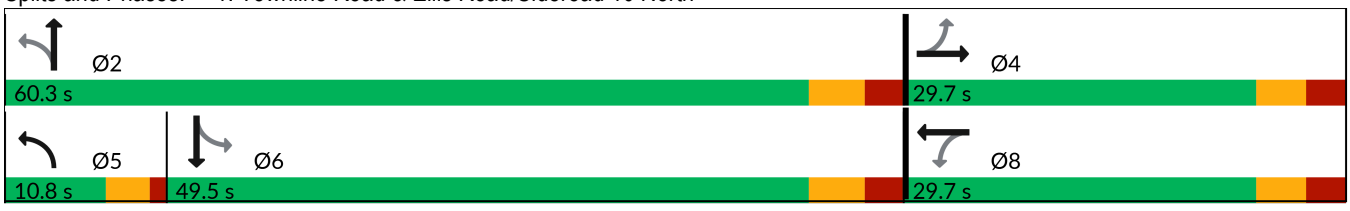


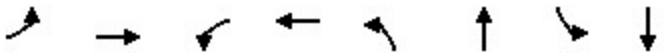
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	33	274	64	12	4	128	637	71	4	752	32
Future Volume (vph)	94	33	274	64	12	4	128	637	71	4	752	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.962			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1570	0	1603	1544	0	1334	1577	0
Flt Permitted	0.747			0.310			0.189			0.390		
Satd. Flow (perm)	1298	1388	0	544	1570	0	319	1544	0	548	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		268			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	274	64	12	4	128	637	71	4	752	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	307	0	64	16	0	128	708	0	4	784	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)	12.9	12.9		12.9	12.9		56.6	54.3		45.8	45.8	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.68		0.58	0.58	
v/c Ratio	0.45	0.68		0.73	0.06		0.38	0.67		0.01	0.86	
Control Delay (s/veh)	36.3	14.5		73.7	23.2		8.0	12.6		10.8	29.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	36.3	14.5		73.7	23.2		8.0	12.8		10.8	29.4	
LOS	D	B		E	C		A	B		B	C	
Approach Delay (s/veh)		19.6			63.6			12.1			29.3	
Approach LOS		B			E			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 21.9		Intersection LOS: C	
Intersection Capacity Utilization 99.6%		ICU Level of Service F	
Analysis Period (min) 15			

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

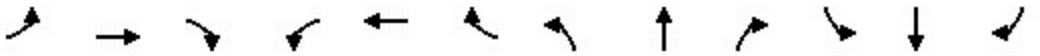




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	307	64	16	128	708	4	784
v/c Ratio	0.45	0.68	0.73	0.06	0.38	0.67	0.01	0.86
Control Delay (s/veh)	36.3	14.5	73.7	23.2	8.0	12.6	10.8	29.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	36.3	14.5	73.7	23.2	8.0	12.8	10.8	29.4
Queue Length 50th (m)	12.9	5.1	9.2	1.5	4.9	51.2	0.3	97.3
Queue Length 95th (m)	25.9	27.7	22.4	6.3	13.9	121.3	2.0	#207.5
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	388	603	162	473	337	1057	315	910
Starvation Cap Reductn	0	0	0	0	0	47	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	0.51	0.40	0.03	0.38	0.70	0.01	0.86

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	274	64	12	4	128	637	71	4	752	32
Future Volume (vph)	94	33	274	64	12	4	128	637	71	4	752	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	0.98		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	1388		1668	1570		1603	1544		1334	1576	
Flt Permitted	0.75	1.00		0.31	1.00		0.19	1.00		0.39	1.00	
Satd. Flow (perm)	1298	1388		544	1570		319	1544		547	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	274	64	12	4	128	637	71	4	752	32
RTOR Reduction (vph)	0	225	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	94	82	0	64	13	0	128	705	0	4	783	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)	12.9	12.9		12.9	12.9		55.1	55.1		45.8	45.8	
Effective Green, g (s)	12.9	12.9		12.9	12.9		55.1	55.1		45.8	45.8	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.69	0.69		0.57	0.57	
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)	208	222		87	252		303	1059		311	898	
v/s Ratio Prot		0.06			0.01		0.03	c0.46			c0.50	
v/s Ratio Perm	0.07			c0.12			0.26			0.01		
v/c Ratio	0.45	0.37		0.74	0.05		0.42	0.67		0.01	0.87	
Uniform Delay, d1	30.5	30.1		32.1	28.5		8.9	7.3		7.5	14.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.0		27.3	0.1		1.0	3.3		0.1	11.4	
Delay (s)	32.1	31.1		59.3	28.6		9.9	10.6		7.5	26.1	
Level of Service	C	C		E	C		A	B		A	C	
Approach Delay (s/veh)		31.3			53.2			10.5			26.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

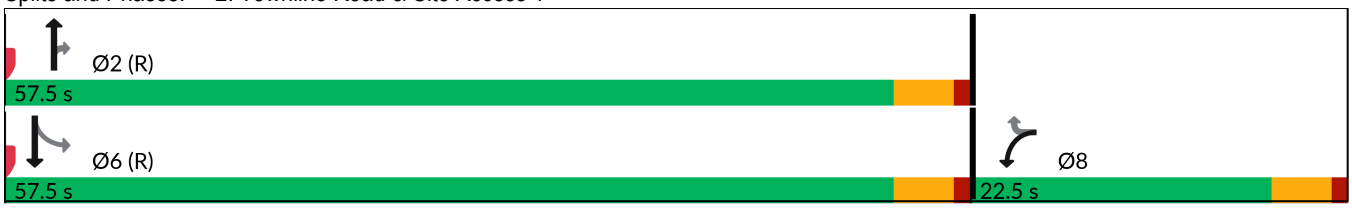
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	829	75	100	988
Future Volume (vph)	15	7	829	75	100	988
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		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.324	
Satd. Flow (perm)	1626	1454	1721	1463	597	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		7		75		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	829	75	100	988
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	7	829	75	100	988
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	73.5	73.5	73.5	73.5
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.12	0.06	0.52	0.06	0.18	0.58
Control Delay (s/veh)	35.7	21.0	3.2	0.6	2.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	35.7	21.0	3.2	0.6	2.2	3.8
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.0		3.0			3.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 3.7		Intersection LOS: A	
Intersection Capacity Utilization 67.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	7	829	75	100	988
v/c Ratio	0.12	0.06	0.52	0.06	0.18	0.58
Control Delay (s/veh)	35.7	21.0	3.2	0.6	2.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	35.7	21.0	3.2	0.6	2.2	3.8
Queue Length 50th (m)	2.2	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	7.5	3.6	58.5	1.9	6.3	78.3
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	332	1581	1350	548	1692
Starvation Cap Reductn	0	0	0	0	0	54
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.52	0.06	0.18	0.60

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	829	75	100	988
Future Volume (vph)	15	7	829	75	100	988
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.32	1.00
Satd. Flow (perm)	1626	1454	1721	1463	597	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	829	75	100	988
RTOR Reduction (vph)	0	7	0	11	0	0
Lane Group Flow (vph)	15	0	829	64	100	988
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.9	2.9	68.1	68.1	68.1	68.1
Effective Green, g (s)	2.9	2.9	68.1	68.1	68.1	68.1
Actuated g/C Ratio	0.04	0.04	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	58	52	1465	1245	508	1568
v/s Ratio Prot	c0.01		0.48			c0.54
v/s Ratio Perm		0.00		0.04	0.17	
v/c Ratio	0.26	0.00	0.57	0.05	0.20	0.63
Uniform Delay, d1	37.5	37.2	1.7	0.9	1.1	1.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.0	1.6	0.1	0.9	1.9
Delay (s)	39.9	37.2	3.3	1.0	1.9	3.8
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	39.0		3.1			3.7
Approach LOS	D		A			A

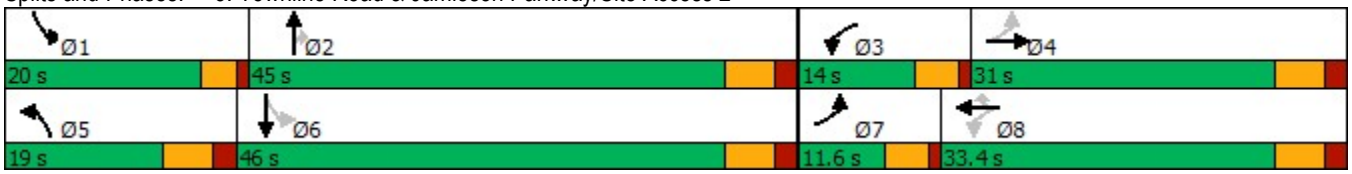
Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	20	323	111	53	152	287	597	413	53	792	173
Future Volume (vph)	151	20	323	111	53	152	287	597	413	53	792	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	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		0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1363	0	3235	1632	1387	3203	3302	1492	1668	3168	0
Flt Permitted	0.722			0.325			0.950			0.426		
Satd. Flow (perm)	1242	1363	0	1107	1632	1387	3202	3302	1492	748	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		323				152			413		27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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	20	323	111	53	152	287	597	413	53	792	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	343	0	111	53	152	287	597	413	53	965	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	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)	20.2	11.5		21.6	12.3	12.3	12.2	49.8	49.8	48.9	40.2	
Actuated g/C Ratio	0.21	0.12		0.23	0.13	0.13	0.13	0.53	0.53	0.52	0.43	
v/c Ratio	0.51	0.76		0.26	0.25	0.49	0.69	0.34	0.42	0.12	0.71	
Control Delay	35.3	17.6		27.2	39.1	11.6	49.9	15.2	3.2	9.1	26.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.3	17.6		27.2	39.1	11.6	49.9	15.2	3.2	9.1	26.2	
LOS	D	B		C	D	B	D	B	A	A	C	
Approach Delay		23.0			21.7			19.1			25.3	
Approach LOS		C			C			B			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: 0.76			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 85.3%		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)	151	343	111	53	152	287	597	413	53	965
v/c Ratio	0.51	0.76	0.26	0.25	0.49	0.69	0.34	0.42	0.12	0.71
Control Delay	35.3	17.6	27.2	39.1	11.6	49.9	15.2	3.2	9.1	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	17.6	27.2	39.1	11.6	49.9	15.2	3.2	9.1	26.2
Queue Length 50th (m)	22.3	3.3	7.9	8.9	0.0	24.8	29.8	0.0	2.8	67.7
Queue Length 95th (m)	37.9	30.6	14.0	19.1	15.8	#46.9	58.4	16.8	9.9	116.8
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	294	599	488	475	512	443	1741	981	618	1364
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	0.23	0.11	0.30	0.65	0.34	0.42	0.09	0.71

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	20	323	111	53	152	287	597	413	53	792	173
Future Volume (vph)	151	20	323	111	53	152	287	597	413	53	792	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	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		3235	1632	1387	3203	3302	1492	1668	3169	
Flt Permitted	0.72	1.00		0.33	1.00	1.00	0.95	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	1243	1363		1107	1632	1387	3203	3302	1492	748	3169	
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	20	323	111	53	152	287	597	413	53	792	173
RTOR Reduction (vph)	0	284	0	0	0	132	0	0	197	0	15	0
Lane Group Flow (vph)	151	59	0	111	53	20	287	597	216	53	950	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	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)	18.6	11.5		20.2	12.3	12.3	12.2	49.8	49.8	46.6	41.1	
Effective Green, g (s)	18.6	11.5		20.2	12.3	12.3	12.2	49.8	49.8	46.6	41.1	
Actuated g/C Ratio	0.20	0.12		0.21	0.13	0.13	0.13	0.52	0.52	0.49	0.43	
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)	272	164		411	210	179	410	1727	780	419	1368	
v/s Ratio Prot	c0.04	0.04		0.02	0.03		c0.09	0.18		0.01	c0.30	
v/s Ratio Perm	c0.07			0.03		0.01			0.14	0.05		
v/c Ratio	0.56	0.36		0.27	0.25	0.11	0.70	0.35	0.28	0.13	0.69	
Uniform Delay, d1	34.0	38.5		31.0	37.3	36.6	39.7	13.2	12.7	12.8	22.0	
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	2.4	1.4		0.4	0.6	0.3	5.2	0.5	0.9	0.1	2.9	
Delay (s)	36.4	39.8		31.3	37.9	36.9	44.9	13.8	13.5	12.9	24.9	
Level of Service	D	D		C	D	D	D	B	B	B	C	
Approach Delay (s)		38.8			35.1			20.6			24.3	
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	0.65		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	22.5
Intersection Capacity Utilization	85.3%	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)	559	204	1113	0	0	839
Future Volume (vph)	559	204	1113	0	0	839
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
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)		67				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	204	1113	0	0	839
Shared Lane Traffic (%)						
Lane Group Flow (vph)	559	204	1113	0	0	839
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	21.5	21.5	48.2			48.2
Actuated g/C Ratio	0.26	0.26	0.59			0.59
v/c Ratio	0.75	0.50	0.54			0.41
Control Delay (s/veh)	34.4	21.0	12.4			10.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.4	21.0	12.4			10.7
LOS	C	C	B			B
Approach Delay (s/veh)	30.9		12.4			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 (s/veh): 17.1		Intersection LOS: B	
Intersection Capacity Utilization 58.3%		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)	559	204	1113	839
v/c Ratio	0.75	0.50	0.54	0.41
Control Delay (s/veh)	34.4	21.0	12.4	10.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.4	21.0	12.4	10.7
Queue Length 50th (m)	41.2	17.5	51.1	34.5
Queue Length 95th (m)	57.6	36.5	84.1	58.1
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1031	538	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	0.38	0.54	0.41

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	559	204	1113	0	0	839
Future Volume (vph)	559	204	1113	0	0	839
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	204	1113	0	0	839
RTOR Reduction (vph)	0	49	0	0	0	0
Lane Group Flow (vph)	559	155	1113	0	0	839
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		c0.32			0.24
v/s Ratio Perm		0.11				
v/c Ratio	0.75	0.43	0.54			0.41
Uniform Delay, d1	27.9	25.3	10.3			9.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.1	0.8	1.0			0.6
Delay (s)	32.0	26.1	11.3			9.9
Level of Service	C	C	B			A
Approach Delay (s/veh)	30.4		11.3			9.9
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

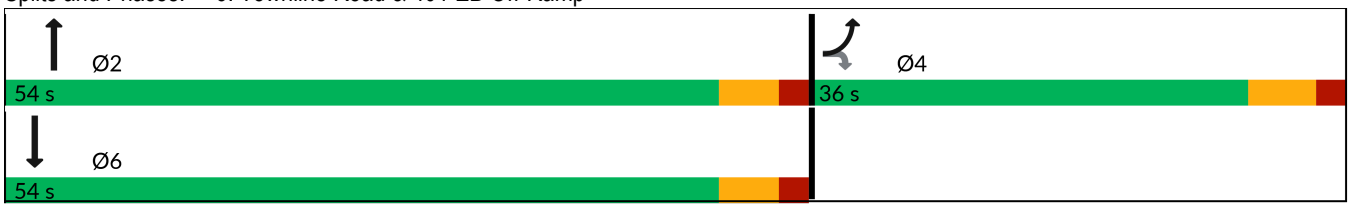


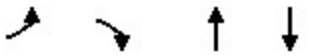
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	482	505	0	1088	1211	186
Future Volume (vph)	482	505	0	1088	1211	186
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3298	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		52			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	482	505	0	1088	1211	186
Shared Lane Traffic (%)						
Lane Group Flow (vph)	482	505	0	1088	1397	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.92	1.01		0.59	0.79	
Control Delay (s/veh)	54.4	73.0		16.0	20.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	54.4	73.0		16.0	20.6	
LOS	D	E		B	C	
Approach Delay (s/veh)	63.9			16.0	20.6	
Approach LOS	E			B	C	

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 (s/veh): 31.5		Intersection LOS: C	
Intersection Capacity Utilization 83.8%		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)	482	505	1088	1397
v/c Ratio	0.92	1.01	0.59	0.79
Control Delay (s/veh)	54.4	73.0	16.0	20.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.4	73.0	16.0	20.6
Queue Length 50th (m)	79.3	~82.1	63.7	94.6
Queue Length 95th (m)	#136.7	#145.8	82.5	122.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	498	1830	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	0.92	1.01	0.59	0.79

Intersection Summary

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

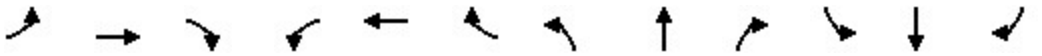
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	482	505	0	1088	1211	186
Future Volume (vph)	482	505	0	1088	1211	186
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3298	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3298	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	482	505	0	1088	1211	186
RTOR Reduction (vph)	0	35	0	0	14	0
Lane Group Flow (vph)	482	470	0	1088	1383	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	1758	
v/s Ratio Prot	0.30			0.32	c0.42	
v/s Ratio Perm		c0.33				
v/c Ratio	0.92	1.02		0.59	0.79	
Uniform Delay, d1	29.1	30.3		14.4	16.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.0	45.7		1.4	3.6	
Delay (s)	50.1	76.0		15.8	20.5	
Level of Service	D	E		B	C	
Approach Delay (s/veh)	63.3			15.8	20.5	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.2	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	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

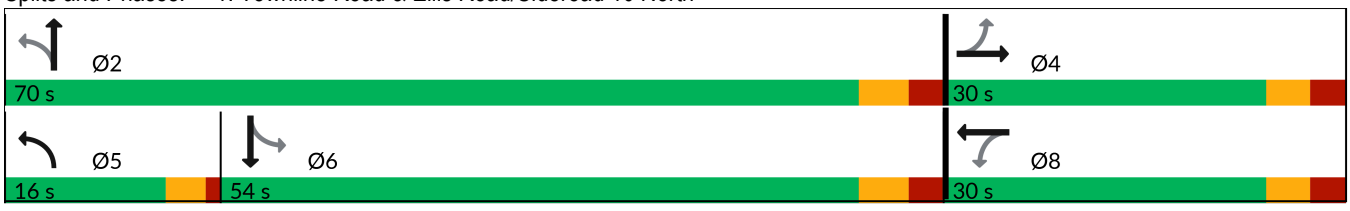


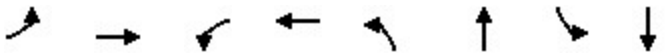
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	173	104	43	11	403	1067	107	9	607	65
Future Volume (vph)	44	23	173	104	43	11	403	1067	107	9	607	65
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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			0.986			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	1594	0	1668	1548	0
Flt Permitted	0.722			0.497			0.223			0.098		
Satd. Flow (perm)	1267	1392	0	855	1581	0	391	1594	0	172	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		173			11			10			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	173	104	43	11	403	1067	107	9	607	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	196	0	104	54	0	403	1174	0	9	672	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)	15.3	15.3		15.3	15.3		66.3	64.0		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.72	0.70		0.52	0.52	
v/c Ratio	0.21	0.52		0.73	0.20		0.90	1.05		0.10	0.83	
Control Delay (s/veh)	34.2	12.5		64.3	28.1		34.4	59.1		17.0	30.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	19.2		0.0	0.0	
Total Delay (s/veh)	34.2	12.5		64.3	28.1		34.4	78.4		17.0	30.3	
LOS	C	B		E	C		C	E		B	C	
Approach Delay (s/veh)		16.5			51.9			67.1			30.1	
Approach LOS		B			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 91.6			
Natural Cycle: 125			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay (s/veh): 52.1		Intersection LOS: D	
Intersection Capacity Utilization 116.7%		ICU Level of Service H	
Analysis Period (min) 15			

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



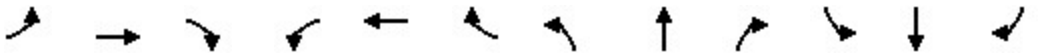


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	196	104	54	403	1174	9	672
v/c Ratio	0.21	0.52	0.73	0.20	0.90	1.05	0.10	0.83
Control Delay (s/veh)	34.2	12.5	64.3	28.1	34.4	59.1	17.0	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.2	0.0	0.0
Total Delay (s/veh)	34.2	12.5	64.3	28.1	34.4	78.4	17.0	30.3
Queue Length 50th (m)	6.7	3.5	17.5	6.5	23.4	~226.8	0.8	92.9
Queue Length 95th (m)	15.7	21.3	34.9	16.3	#80.8	#347.4	4.3	#188.2
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	333	493	225	423	450	1116	89	812
Starvation Cap Reductn	0	0	0	0	0	58	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	0.40	0.46	0.13	0.90	1.11	0.10	0.83

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	23	173	104	43	11	403	1067	107	9	607	65
Future Volume (vph)	44	23	173	104	43	11	403	1067	107	9	607	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	0.99	
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	1595		1668	1549	
Flt Permitted	0.72	1.00		0.50	1.00		0.22	1.00		0.10	1.00	
Satd. Flow (perm)	1267	1391		856	1582		391	1595		173	1549	
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	173	104	43	11	403	1067	107	9	607	65
RTOR Reduction (vph)	0	144	0	0	9	0	0	3	0	0	3	0
Lane Group Flow (vph)	44	52	0	104	45	0	403	1171	0	9	669	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)	15.3	15.3		15.3	15.3		63.9	63.9		47.9	47.9	
Effective Green, g (s)	15.3	15.3		15.3	15.3		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.70	0.70		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)	211	232		143	264		440	1113		90	810	
v/s Ratio Prot		0.04			0.03		0.12	c0.73			0.43	
v/s Ratio Perm	0.03			c0.12			0.52			0.05		
v/c Ratio	0.21	0.22		0.73	0.17		0.92	1.05		0.10	0.83	
Uniform Delay, d1	32.9	33.0		36.1	32.7		13.1	13.8		11.0	18.3	
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		16.8	0.3		23.5	41.8		2.2	9.4	
Delay (s)	33.4	33.5		52.9	33.0		36.6	55.6		13.2	27.7	
Level of Service	C	C		D	C		D	E		B	C	
Approach Delay (s/veh)		33.4			46.1			50.7			27.5	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	116.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

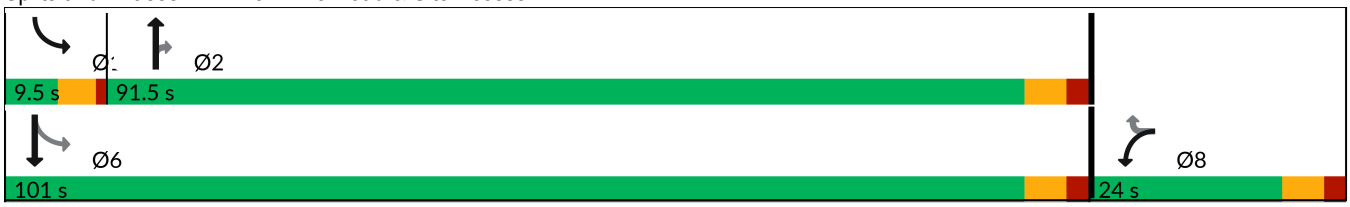


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1553	25	36	848
Future Volume (vph)	55	25	1553	25	36	848
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.041	
Satd. Flow (perm)	1626	1454	1721	1463	76	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25		16		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1553	25	36	848
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	25	1553	25	36	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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.5	24.0
Total Split (s)	24.0	24.0	91.5	91.5	9.5	101.0
Total Split (%)	19.2%	19.2%	73.2%	73.2%	7.6%	80.8%
Maximum Green (s)	18.0	18.0	85.5	85.5	5.0	95.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	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
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	9.4	9.4	95.0	95.0	100.9	100.7
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.85	0.85
v/c Ratio	0.43	0.18	1.13	0.02	0.27	0.54
Control Delay (s/veh)	61.6	20.8	83.9	2.8	7.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0
Total Delay (s/veh)	61.6	20.8	83.9	2.8	7.4	6.1
LOS	E	C	F	A	A	A
Approach Delay (s/veh)	48.9		82.6			6.1
Approach LOS	D		F			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 118.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay (s/veh): 55.0		Intersection LOS: D	
Intersection Capacity Utilization 101.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	25	1553	25	36	848
v/c Ratio	0.43	0.18	1.13	0.02	0.27	0.54
Control Delay (s/veh)	61.6	20.8	83.9	2.8	7.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0
Total Delay (s/veh)	61.6	20.8	83.9	2.8	7.4	6.1
Queue Length 50th (m)	12.4	0.0	~442.9	0.5	1.1	51.3
Queue Length 95th (m)	25.2	8.3	#541.6	2.9	4.2	88.1
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	247	242	1380	1177	135	1566
Starvation Cap Reductn	0	0	1	0	0	431
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.10	1.13	0.02	0.27	0.75

Intersection Summary

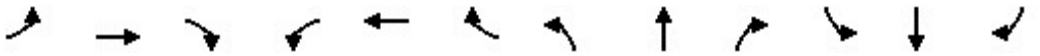
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1553	25	36	848
Future Volume (vph)	55	25	1553	25	36	848
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	4.5	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.04	1.00
Satd. Flow (perm)	1626	1454	1721	1463	75	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1553	25	36	848
RTOR Reduction (vph)	0	23	0	4	0	0
Lane Group Flow (vph)	55	2	1553	21	36	848
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.2	8.2	93.8	93.8	101.3	101.3
Effective Green, g (s)	8.2	8.2	93.8	93.8	101.3	101.3
Actuated g/C Ratio	0.07	0.07	0.77	0.77	0.83	0.83
Clearance Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	98	1328	1129	103	1535
v/s Ratio Prot	c0.03		c0.90		0.01	c0.46
v/s Ratio Perm		0.00		0.01	0.28	
v/c Ratio	0.50	0.02	1.17	0.02	0.35	0.55
Uniform Delay, d1	54.7	52.9	13.9	3.2	39.0	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	84.7	0.0	2.1	1.4
Delay (s)	58.3	53.0	98.5	3.2	41.1	4.6
Level of Service	E	D	F	A	D	A
Approach Delay (s/veh)	56.7		97.0			6.0
Approach LOS	E		F			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	64.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

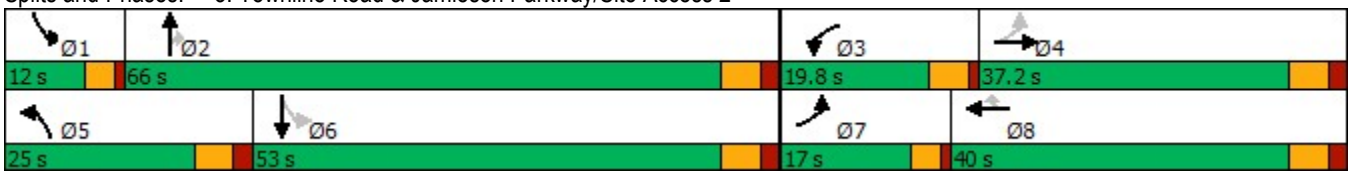


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	27	414	310	147	338	406	960	453	113	626	156
Future Volume (vph)	245	27	414	310	147	338	406	960	453	113	626	156
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		0.859				0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1402	0	3235	1632	1387	3203	3302	1492	1668	3123	0
Flt Permitted	0.645			0.950			0.950			0.256		
Satd. Flow (perm)	1132	1402	0	3235	1632	1387	3203	3302	1492	449	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		285				217			453		25	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	245	27	414	310	147	338	406	960	453	113	626	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	441	0	310	147	338	406	960	453	113	782	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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		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		5.0	8.0	8.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		10.0	31.0	31.0	11.0	50.4	50.4	9.0	50.4	
Total Split (s)	17.0	37.2		19.8	40.0	40.0	25.0	66.0	66.0	12.0	53.0	
Total Split (%)	12.6%	27.6%		14.7%	29.6%	29.6%	18.5%	48.9%	48.9%	8.9%	39.3%	
Maximum Green (s)	13.0	31.2		14.8	34.0	34.0	19.0	60.0	60.0	8.0	47.0	
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		23.4	23.4		23.4	
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)	37.0	21.9		14.5	24.3	24.3	18.4	60.4	60.4	57.3	47.7	
Actuated g/C Ratio	0.29	0.17		0.12	0.19	0.19	0.15	0.48	0.48	0.46	0.38	
v/c Ratio	0.63	0.92		0.83	0.47	0.76	0.87	0.60	0.48	0.41	0.65	
Control Delay	40.2	42.9		74.9	48.9	28.3	72.3	27.3	3.8	19.2	35.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.2	42.9		74.9	48.9	28.3	72.3	27.3	3.8	19.2	35.7	
LOS	D	D		E	D	C	E	C	A	B	D	
Approach Delay		41.9			50.3			31.5			33.6	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 125.6			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 37.2		Intersection LOS: D	
Intersection Capacity Utilization 96.0%		ICU Level of Service F	
Analysis Period (min) 15			

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

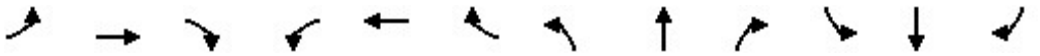




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	245	441	310	147	338	406	960	453	113	782
v/c Ratio	0.63	0.92	0.83	0.47	0.76	0.87	0.60	0.48	0.41	0.65
Control Delay	40.2	42.9	74.9	48.9	28.3	72.3	27.3	3.8	19.2	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	42.9	74.9	48.9	28.3	72.3	27.3	3.8	19.2	35.7
Queue Length 50th (m)	46.1	41.8	39.9	32.4	28.5	51.9	92.9	0.0	12.3	83.7
Queue Length 95th (m)	68.6	#95.6	#67.5	52.4	63.3	#83.7	126.6	18.7	23.9	115.0
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	389	564	383	445	535	487	1588	952	284	1200
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	0.63	0.78	0.81	0.33	0.63	0.83	0.60	0.48	0.40	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)	245	27	414	310	147	338	406	960	453	113	626	156
Future Volume (vph)	245	27	414	310	147	338	406	960	453	113	626	156
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	1402		3235	1632	1387	3203	3302	1492	1668	3123	
Flt Permitted	0.65	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.26	1.00	
Satd. Flow (perm)	1133	1402		3235	1632	1387	3203	3302	1492	450	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)	245	27	414	310	147	338	406	960	453	113	626	156
RTOR Reduction (vph)	0	235	0	0	0	175	0	0	235	0	15	0
Lane Group Flow (vph)	245	206	0	310	147	163	406	960	218	113	767	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	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)	35.0	21.9		14.5	24.3	24.3	18.4	60.4	60.4	55.4	47.7	
Effective Green, g (s)	35.0	21.9		14.5	24.3	24.3	18.4	60.4	60.4	55.4	47.7	
Actuated g/C Ratio	0.28	0.17		0.12	0.19	0.19	0.15	0.48	0.48	0.44	0.38	
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)	371	244		373	315	268	469	1589	718	273	1186	
v/s Ratio Prot	0.07	c0.15		c0.10	0.09		c0.13	0.29		0.03	c0.25	
v/s Ratio Perm	0.12					0.12			0.15	0.16		
v/c Ratio	0.66	0.84		0.83	0.47	0.61	0.87	0.60	0.30	0.41	0.65	
Uniform Delay, d1	38.4	50.1		54.3	44.9	46.2	52.3	23.8	19.8	21.2	32.0	
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	4.4	22.4		14.5	1.1	3.9	15.3	1.7	1.1	1.0	2.7	
Delay (s)	42.8	72.5		68.8	46.0	50.1	67.7	25.5	20.9	22.2	34.7	
Level of Service	D	E		E	D	D	E	C	C	C	C	
Approach Delay (s)		61.9			56.6			33.8			33.1	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	125.5	Sum of lost time (s)	23.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



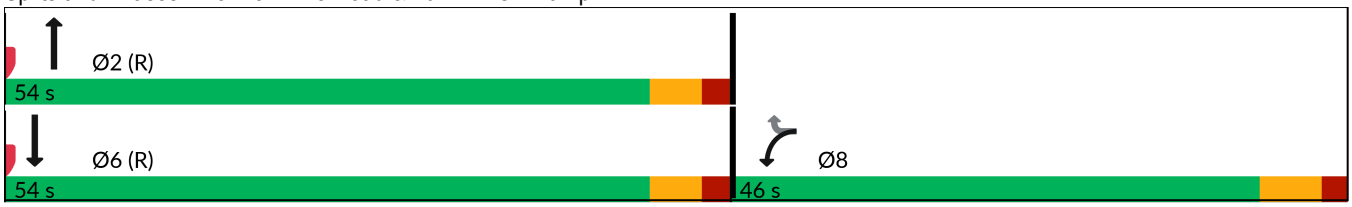
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	560	405	1530	0	0	960
Future Volume (vph)	560	405	1530	0	0	960
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		14				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	560	405	1530	0	0	960
Shared Lane Traffic (%)						
Lane Group Flow (vph)	560	405	1530	0	0	960
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.48	0.69	0.91			0.57
Control Delay (s/veh)	24.4	31.9	33.7			20.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	24.4	31.9	33.7			20.3
LOS	C	C	C			C
Approach Delay (s/veh)	27.5		33.7			20.3
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 28.2		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		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	405	1530	960
v/c Ratio	0.48	0.69	0.91	0.57
Control Delay (s/veh)	24.4	31.9	33.7	20.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.4	31.9	33.7	20.3
Queue Length 50th (m)	41.0	62.1	139.0	67.6
Queue Length 95th (m)	56.0	97.2	#188.6	86.2
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	583	1680	1680
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	0.48	0.69	0.91	0.57

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	405	1530	0	0	960
Future Volume (vph)	560	405	1530	0	0	960
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	405	1530	0	0	960
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	560	397	1530	0	0	960
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.19		c0.44			0.27
v/s Ratio Perm		c0.27				
v/c Ratio	0.48	0.69	0.91			0.57
Uniform Delay, d1	22.6	25.2	24.0			18.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	6.6	8.9			1.4
Delay (s)	24.0	31.8	33.0			20.0
Level of Service	C	C	C			C
Approach Delay (s/veh)	27.3		33.0			20.0
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

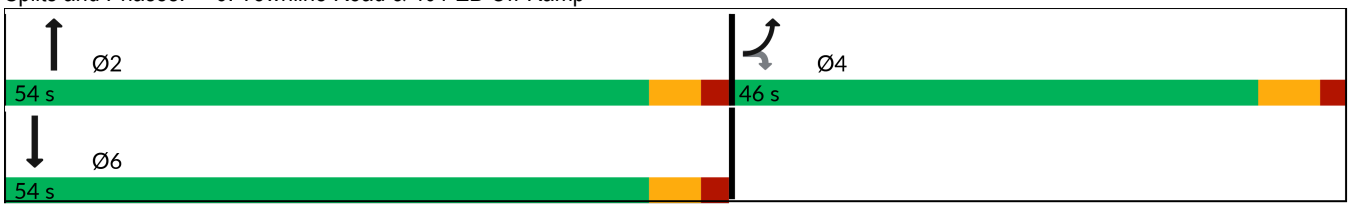


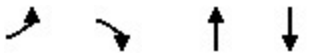
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	485	504	0	1316	1360	204
Future Volume (vph)	485	504	0	1316	1360	204
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3353	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3353	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23			23	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	485	504	0	1316	1360	204
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	504	0	1316	1564	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	35.6	35.6		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
v/c Ratio	0.81	0.92		0.74	0.93	
Control Delay (s/veh)	39.2	51.8		23.2	34.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	39.2	51.8		23.2	34.0	
LOS	D	D		C	C	
Approach Delay (s/veh)	45.6			23.2	34.0	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 96.3			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 33.3		Intersection LOS: C	
Intersection Capacity Utilization 88.4%		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)	485	504	1316	1564
v/c Ratio	0.81	0.92	0.74	0.93
Control Delay (s/veh)	39.2	51.8	23.2	34.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.2	51.8	23.2	34.0
Queue Length 50th (m)	79.7	84.7	107.2	147.3
Queue Length 95th (m)	119.3	#144.2	134.3	#201.6
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	666	607	1768	1688
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	0.73	0.83	0.74	0.93

Intersection Summary

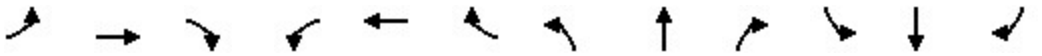
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	485	504	0	1316	1360	204
Future Volume (vph)	485	504	0	1316	1360	204
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3354	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3354	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	485	504	0	1316	1360	204
RTOR Reduction (vph)	0	14	0	0	11	0
Lane Group Flow (vph)	485	490	0	1316	1553	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)	35.6	35.6		48.2	48.2	
Effective Green, g (s)	35.6	35.6		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)	598	533		1769	1678	
v/s Ratio Prot	0.30			0.37	c0.46	
v/s Ratio Perm		c0.34				
v/c Ratio	0.81	0.92		0.74	0.93	
Uniform Delay, d1	27.3	29.0		19.1	22.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.2	20.8		2.9	10.2	
Delay (s)	35.5	49.7		22.0	32.6	
Level of Service	D	D		C	C	
Approach Delay (s/veh)	42.8			22.0	32.6	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

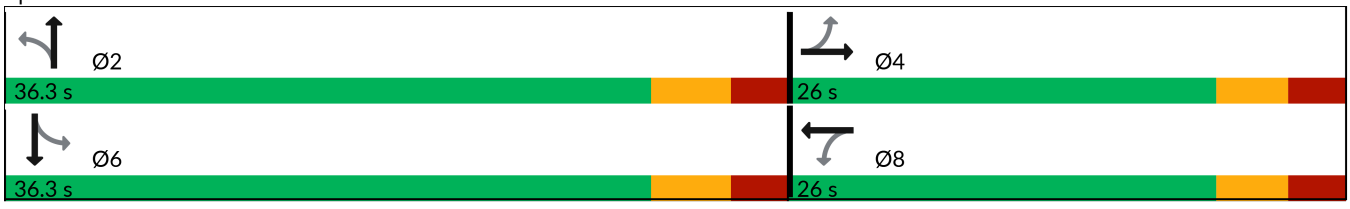


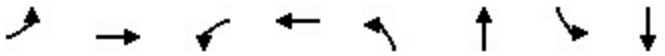
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	30	244	71	18	4	226	679	81	3	561	40
Future Volume (vph)	54	30	244	71	18	4	226	679	81	3	561	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.973			0.984			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1413	0	1668	1579	0	1651	1577	0	1668	1600	0
Flt Permitted	0.743			0.497			0.365			0.250		
Satd. Flow (perm)	1291	1413	0	872	1579	0	634	1577	0	439	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		238			4			13			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	244	71	18	4	226	679	81	3	561	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	274	0	71	22	0	226	760	0	3	601	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)	10.2	10.2		10.2	10.2		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	0.59		0.42	0.07		0.62	0.84		0.01	0.65	
Control Delay (s/veh)	19.6	10.1		26.5	15.5		19.5	21.6		6.3	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	19.6	10.1		26.5	15.5		19.5	21.6		6.3	12.8	
LOS	B	B		C	B		B	C		A	B	
Approach Delay (s/veh)		11.7			23.9			21.1			12.8	
Approach LOS		B			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.6			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 17.2		Intersection LOS: B	
Intersection Capacity Utilization 99.8%		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)	54	274	71	22	226	760	3	601
v/c Ratio	0.22	0.59	0.42	0.07	0.62	0.84	0.01	0.65
Control Delay (s/veh)	19.6	10.1	26.5	15.5	19.5	21.6	6.3	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.6	10.1	26.5	15.5	19.5	21.6	6.3	12.8
Queue Length 50th (m)	4.3	2.8	5.9	1.4	11.4	46.3	0.1	30.6
Queue Length 95th (m)	11.4	18.1	15.3	5.7	#48.8	#135.7	1.1	77.8
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	492	686	332	604	362	907	250	918
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	0.40	0.21	0.04	0.62	0.84	0.01	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)	54	30	244	71	18	4	226	679	81	3	561	40
Future Volume (vph)	54	30	244	71	18	4	226	679	81	3	561	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	1577		1668	1600	
Flt Permitted	0.74	1.00		0.50	1.00		0.37	1.00		0.25	1.00	
Satd. Flow (perm)	1291	1414		873	1579		634	1577		439	1600	
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	244	71	18	4	226	679	81	3	561	40
RTOR Reduction (vph)	0	192	0	0	3	0	0	6	0	0	3	0
Lane Group Flow (vph)	54	82	0	71	19	0	226	754	0	3	598	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)	10.2	10.2		10.2	10.2		30.1	30.1		30.1	30.1	
Effective Green, g (s)	10.2	10.2		10.2	10.2		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)	250	274		169	306		362	902		251	915	
v/s Ratio Prot		0.06			0.01			c0.48			0.37	
v/s Ratio Perm	0.04			c0.08			0.36			0.01		
v/c Ratio	0.22	0.30		0.42	0.06		0.62	0.84		0.01	0.65	
Uniform Delay, d1	17.8	18.1		18.6	17.3		7.5	9.2		4.8	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		1.7	0.1		7.9	9.1		0.1	3.6	
Delay (s)	18.3	18.8		20.3	17.4		15.4	18.3		4.9	11.3	
Level of Service	B	B		C	B		B	B		A	B	
Approach Delay (s/veh)		18.7			19.6			17.6			11.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	12.3
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

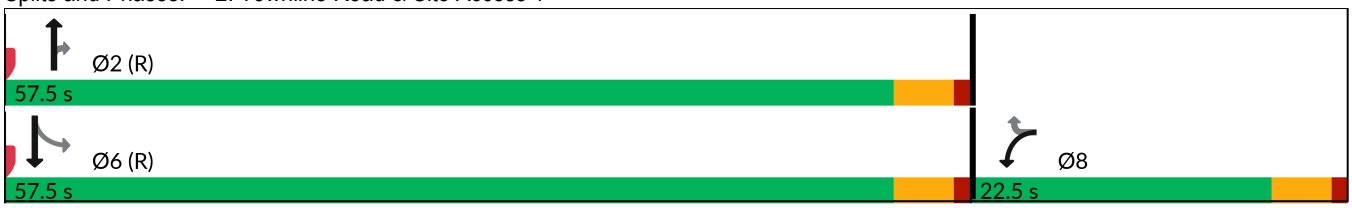


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	982	12	21	856
Future Volume (vph)	11	5	982	12	21	856
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.263	
Satd. Flow (perm)	1626	1454	1721	1463	484	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5		12		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	982	12	21	856
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	5	982	12	21	856
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.2	6.2	73.6	73.6	73.6	73.6
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.09	0.04	0.62	0.01	0.05	0.51
Control Delay (s/veh)	35.4	22.2	4.3	0.9	1.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	4.3	0.9	1.6	2.9
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.3		4.3			2.9
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 3.9		Intersection LOS: A	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





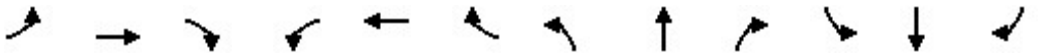
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	5	982	12	21	856
v/c Ratio	0.09	0.04	0.62	0.01	0.05	0.51
Control Delay (s/veh)	35.4	22.2	4.3	0.9	1.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	4.3	0.9	1.6	2.9
Queue Length 50th (m)	1.6	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.2	3.2	86.2	0.7	1.7	55.2
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	331	1584	1347	445	1695
Starvation Cap Reductn	0	0	0	0	0	69
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.62	0.01	0.05	0.53

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	982	12	21	856
Future Volume (vph)	11	5	982	12	21	856
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.26	1.00
Satd. Flow (perm)	1626	1454	1721	1463	484	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	982	12	21	856
RTOR Reduction (vph)	0	5	0	2	0	0
Lane Group Flow (vph)	11	0	982	10	21	856
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.8	2.8	68.2	68.2	68.2	68.2
Effective Green, g (s)	2.8	2.8	68.2	68.2	68.2	68.2
Actuated g/C Ratio	0.03	0.03	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	50	1467	1247	412	1570
v/s Ratio Prot	c0.01		c0.57			0.46
v/s Ratio Perm		0.00		0.01	0.04	
v/c Ratio	0.20	0.00	0.67	0.01	0.05	0.55
Uniform Delay, d1	37.5	37.3	2.0	0.9	0.9	1.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.0	2.4	0.0	0.2	1.4
Delay (s)	39.2	37.3	4.5	0.9	1.1	3.0
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	38.6		4.4			2.9
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

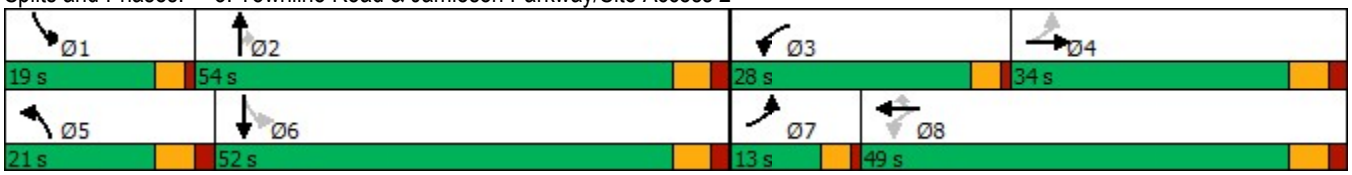


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	58	264	315	156	247	231	591	420	188	562	117
Future Volume (vph)	167	58	264	315	156	247	231	591	420	188	562	117
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		0.877				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1431	0	3235	1632	1387	3203	3270	1492	1668	3211	0
Flt Permitted	0.658			0.167			0.950			0.389		
Satd. Flow (perm)	1155	1431	0	569	1632	1387	3203	3270	1492	683	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		153				247			420		20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	167	58	264	315	156	247	231	591	420	188	562	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	322	0	315	156	247	231	591	420	188	679	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	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)	31.0	19.9		38.7	24.4	24.4	12.9	49.8	49.8	60.1	46.5	
Actuated g/C Ratio	0.27	0.17		0.34	0.21	0.21	0.11	0.43	0.43	0.52	0.40	
v/c Ratio	0.47	0.86		0.62	0.45	0.51	0.65	0.42	0.48	0.41	0.52	
Control Delay	33.7	46.5		32.8	43.1	8.2	59.2	25.8	4.5	16.0	28.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.7	46.5		32.8	43.1	8.2	59.2	25.8	4.5	16.0	28.6	
LOS	C	D		C	D	A	E	C	A	B	C	
Approach Delay		42.1			26.5			24.8			25.9	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 115.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 28.0		Intersection LOS: C	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

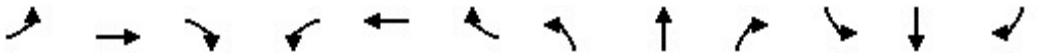
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	322	315	156	247	231	591	420	188	679
v/c Ratio	0.47	0.86	0.62	0.45	0.51	0.65	0.42	0.48	0.41	0.52
Control Delay	33.7	46.5	32.8	43.1	8.2	59.2	25.8	4.5	16.0	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	46.5	32.8	43.1	8.2	59.2	25.8	4.5	16.0	28.6
Queue Length 50th (m)	27.3	38.7	26.4	30.9	0.0	26.2	48.7	0.0	19.2	59.9
Queue Length 95th (m)	44.5	76.1	37.5	50.8	19.8	42.5	76.5	21.0	37.2	90.2
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	352	467	757	615	677	421	1415	884	507	1309
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	0.47	0.69	0.42	0.25	0.36	0.55	0.42	0.48	0.37	0.52

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	58	264	315	156	247	231	591	420	188	562	117
Future Volume (vph)	167	58	264	315	156	247	231	591	420	188	562	117
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	1431		3235	1632	1387	3203	3270	1492	1668	3211	
Flt Permitted	0.66	1.00		0.17	1.00	1.00	0.95	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	1155	1431		570	1632	1387	3203	3270	1492	683	3211	
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	58	264	315	156	247	231	591	420	188	562	117
RTOR Reduction (vph)	0	127	0	0	0	195	0	0	238	0	12	0
Lane Group Flow (vph)	167	195	0	315	156	52	231	591	182	188	667	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)	29.0	19.9		37.5	24.4	24.4	12.9	49.8	49.8	58.1	46.5	
Effective Green, g (s)	29.0	19.9		37.5	24.4	24.4	12.9	49.8	49.8	58.1	46.5	
Actuated g/C Ratio	0.25	0.17		0.33	0.21	0.21	0.11	0.43	0.43	0.51	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	247		501	346	294	359	1417	646	444	1299	
v/s Ratio Prot	0.04	c0.14		c0.07	0.10		c0.07	c0.18		0.04	c0.21	
v/s Ratio Perm	0.09			0.13		0.04			0.12	0.17		
v/c Ratio	0.50	0.79		0.63	0.45	0.18	0.64	0.42	0.28	0.42	0.51	
Uniform Delay, d1	35.7	45.5		30.6	39.4	37.0	48.8	22.5	21.0	15.9	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	1.2	15.8		2.5	0.9	0.3	3.9	0.9	1.1	0.7	1.5	
Delay (s)	36.9	61.3		33.1	40.4	37.3	52.7	23.4	22.1	16.6	27.2	
Level of Service	D	E		C	D	D	D	C	C	B	C	
Approach Delay (s)		53.0			36.1			28.4			24.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	114.9	Sum of lost time (s)	22.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

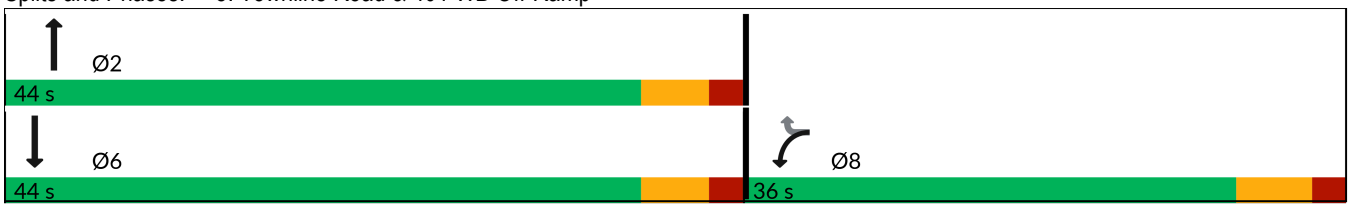


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	239	1005	0	0	828
Future Volume (vph)	413	239	1005	0	0	828
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	239	1005	0	0	828
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	239	1005	0	0	828
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	14.6	14.6	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.58			0.58
v/c Ratio	0.60	0.64	0.49			0.41
Control Delay (s/veh)	26.3	24.4	9.6			8.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	26.3	24.4	9.6			8.8
LOS	C	C	A			A
Approach Delay (s/veh)	25.6		9.6			8.8
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 13.5		Intersection LOS: B	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
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	239	1005	828
v/c Ratio	0.60	0.64	0.49	0.41
Control Delay (s/veh)	26.3	24.4	9.6	8.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.3	24.4	9.6	8.8
Queue Length 50th (m)	23.1	18.6	31.6	24.4
Queue Length 95th (m)	34.9	38.5	59.3	46.5
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1397	695	2064	2044
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	0.30	0.34	0.49	0.41

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	413	239	1005	0	0	828
Future Volume (vph)	413	239	1005	0	0	828
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	239	1005	0	0	828
RTOR Reduction (vph)	0	50	0	0	0	0
Lane Group Flow (vph)	413	189	1005	0	0	828
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)	14.6	14.6	38.1			38.1
Effective Green, g (s)	14.6	14.6	38.1			38.1
Actuated g/C Ratio	0.22	0.22	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)	689	326	2065			2045
v/s Ratio Prot	c0.13		c0.28			0.24
v/s Ratio Perm		0.13				
v/c Ratio	0.60	0.58	0.49			0.40
Uniform Delay, d1	22.7	22.6	7.9			7.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	2.5	0.8			0.6
Delay (s)	24.1	25.0	8.7			8.0
Level of Service	C	C	A			A
Approach Delay (s/veh)	24.4		8.7			8.0
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

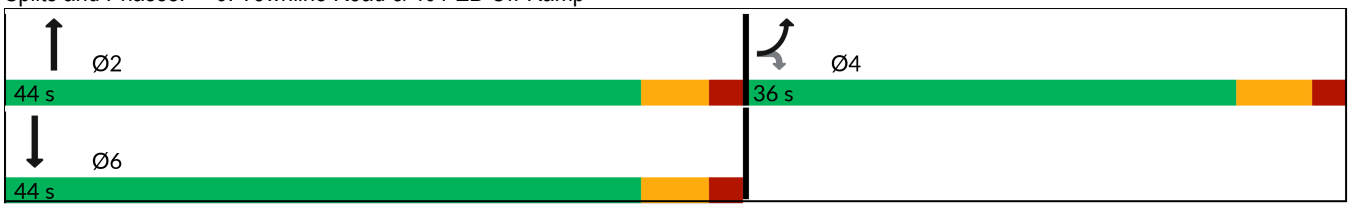


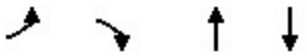
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	461	0	777	1061	181
Future Volume (vph)	421	461	0	777	1061	181
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.978	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3433	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3433	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		55			33	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	421	461	0	777	1061	181
Shared Lane Traffic (%)						
Lane Group Flow (vph)	421	461	0	777	1242	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	25.6	25.6		38.2	38.2	
Actuated g/C Ratio	0.34	0.34		0.50	0.50	
v/c Ratio	0.77	0.88		0.44	0.72	
Control Delay (s/veh)	32.9	40.5		14.0	18.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.9	40.5		14.0	18.2	
LOS	C	D		B	B	
Approach Delay (s/veh)	36.9			14.0	18.2	
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: 0.88			
Intersection Signal Delay (s/veh): 22.8		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)	421	461	777	1242
v/c Ratio	0.77	0.88	0.44	0.72
Control Delay (s/veh)	32.9	40.5	14.0	18.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.9	40.5	14.0	18.2
Queue Length 50th (m)	53.4	54.9	39.9	75.4
Queue Length 95th (m)	85.0	#104.5	54.2	100.0
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	634	598	1750	1733
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	0.77	0.44	0.72

Intersection Summary

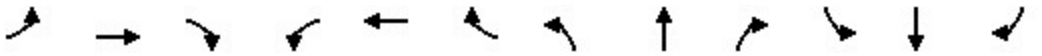
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	421	461	0	777	1061	181
Future Volume (vph)	421	461	0	777	1061	181
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3433	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3433	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	421	461	0	777	1061	181
RTOR Reduction (vph)	0	37	0	0	16	0
Lane Group Flow (vph)	421	424	0	777	1226	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)	25.6	25.6		38.2	38.2	
Effective Green, g (s)	25.6	25.6		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)	548	488		1752	1718	
v/s Ratio Prot	0.26			0.22	c0.36	
v/s Ratio Perm		c0.29				
v/c Ratio	0.77	0.87		0.44	0.71	
Uniform Delay, d1	22.7	23.8		12.2	14.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.4	15.2		0.8	2.6	
Delay (s)	29.1	39.0		13.0	17.4	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	34.3			13.0	17.4	
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)	76.3	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

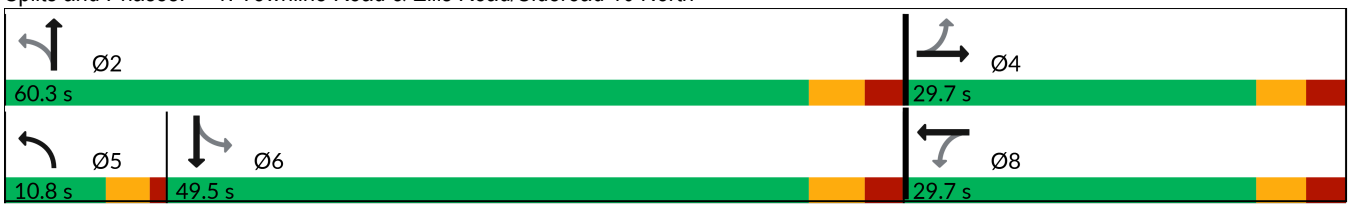


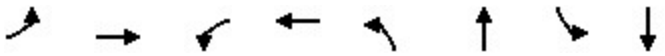
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	35
Future Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.965			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1575	0	1603	1544	0	1334	1577	0
Flt Permitted	0.746			0.284			0.117			0.348		
Satd. Flow (perm)	1296	1388	0	498	1575	0	197	1544	0	489	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		246			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	299	66	13	4	140	699	76	4	821	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	335	0	66	17	0	140	775	0	4	856	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)	14.1	14.1		14.1	14.1		56.6	54.3		43.5	43.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.70	0.67		0.54	0.54	
v/c Ratio	0.46	0.75		0.76	0.06		0.55	0.74		0.02	1.01	
Control Delay (s/veh)	35.8	20.4		78.5	22.7		15.6	16.2		11.5	54.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.3		0.0	0.0	
Total Delay (s/veh)	35.8	20.4		78.5	22.7		15.6	16.5		11.5	54.8	
LOS	D	C		E	C		B	B		B	D	
Approach Delay (s/veh)		24.0			67.0			16.4			54.6	
Approach LOS		C			E			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay (s/veh): 34.0		Intersection LOS: C	
Intersection Capacity Utilization 106.7%		ICU Level of Service G	
Analysis Period (min) 15			

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



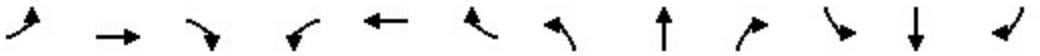


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	335	66	17	140	775	4	856
v/c Ratio	0.46	0.75	0.76	0.06	0.55	0.74	0.02	1.01
Control Delay (s/veh)	35.8	20.4	78.5	22.7	15.6	16.2	11.5	54.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay (s/veh)	35.8	20.4	78.5	22.7	15.6	16.5	11.5	54.8
Queue Length 50th (m)	14.4	12.1	9.7	1.7	5.8	65.2	0.3	~124.2
Queue Length 95th (m)	28.2	39.1	#25.6	6.6	#23.9	#178.8	2.1	#243.6
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	382	582	147	467	256	1041	263	850
Starvation Cap Reductn	0	0	0	0	0	42	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	0.58	0.45	0.04	0.55	0.78	0.02	1.01

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)	104	36	299	66	13	4	140	699	76	4	821	35
Future Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	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	1388		1668	1574		1603	1544		1334	1576	
Flt Permitted	0.75	1.00		0.28	1.00		0.12	1.00		0.35	1.00	
Satd. Flow (perm)	1297	1388		498	1574		197	1544		488	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	299	66	13	4	140	699	76	4	821	35
RTOR Reduction (vph)	0	203	0	0	3	0	0	4	0	0	1	0
Lane Group Flow (vph)	104	132	0	66	14	0	140	771	0	4	855	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)	14.1	14.1		14.1	14.1		54.3	54.3		43.5	43.5	
Effective Green, g (s)	14.1	14.1		14.1	14.1		54.3	54.3		43.5	43.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.67	0.67		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)	226	242		87	275		251	1038		263	849	
v/s Ratio Prot		0.10			0.01		0.05	c0.50			c0.54	
v/s Ratio Perm	0.08			c0.13			0.33			0.01		
v/c Ratio	0.46	0.55		0.76	0.05		0.56	0.74		0.02	1.01	
Uniform Delay, d1	29.9	30.4		31.7	27.7		12.8	8.6		8.6	18.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.5		30.9	0.1		2.7	4.8		0.1	32.5	
Delay (s)	31.4	32.9		62.6	27.8		15.5	13.5		8.8	51.1	
Level of Service	C	C		E	C		B	B		A	D	
Approach Delay (s/veh)		32.5			55.4			13.8			50.9	
Approach LOS		C			E			B			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	16.3
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

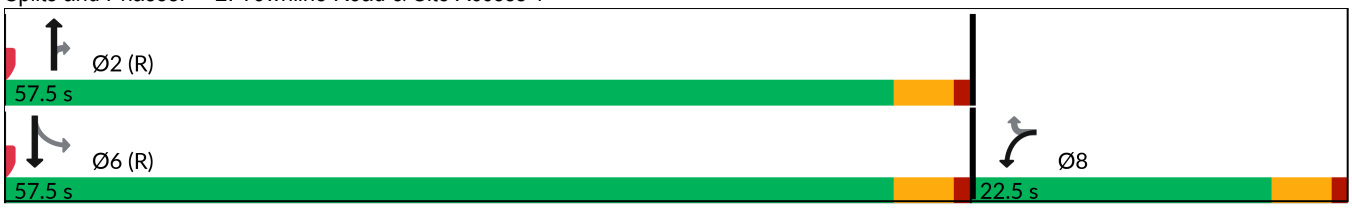
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	908	75	100	1084
Future Volume (vph)	15	7	908	75	100	1084
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		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.292	
Satd. Flow (perm)	1626	1454	1721	1463	538	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		7		75		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	908	75	100	1084
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	7	908	75	100	1084
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.3	6.3	73.5	73.5	73.5	73.5
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.12	0.06	0.57	0.06	0.20	0.64
Control Delay (s/veh)	35.7	21.0	3.8	0.6	2.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	35.7	21.0	3.8	0.6	2.5	4.6
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.0		3.5			4.4
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 4.3		Intersection LOS: A	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





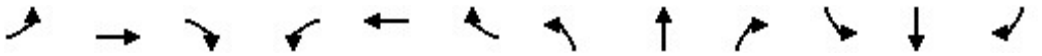
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	7	908	75	100	1084
v/c Ratio	0.12	0.06	0.57	0.06	0.20	0.64
Control Delay (s/veh)	35.7	21.0	3.8	0.6	2.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	35.7	21.0	3.8	0.6	2.5	4.6
Queue Length 50th (m)	2.2	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	7.5	3.6	72.3	1.9	6.6	101.0
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	332	1581	1350	494	1692
Starvation Cap Reductn	0	0	0	0	0	44
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.57	0.06	0.20	0.66

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	908	75	100	1084
Future Volume (vph)	15	7	908	75	100	1084
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.29	1.00
Satd. Flow (perm)	1626	1454	1721	1463	537	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	908	75	100	1084
RTOR Reduction (vph)	0	7	0	11	0	0
Lane Group Flow (vph)	15	0	908	64	100	1084
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.9	2.9	68.1	68.1	68.1	68.1
Effective Green, g (s)	2.9	2.9	68.1	68.1	68.1	68.1
Actuated g/C Ratio	0.04	0.04	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	58	52	1465	1245	457	1568
v/s Ratio Prot	c0.01		0.53			c0.59
v/s Ratio Perm		0.00		0.04	0.19	
v/c Ratio	0.26	0.00	0.62	0.05	0.22	0.69
Uniform Delay, d1	37.5	37.2	1.9	0.9	1.1	2.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.0	2.0	0.1	1.1	2.5
Delay (s)	39.9	37.2	3.9	1.0	2.2	4.7
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	39.0		3.6			4.5
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

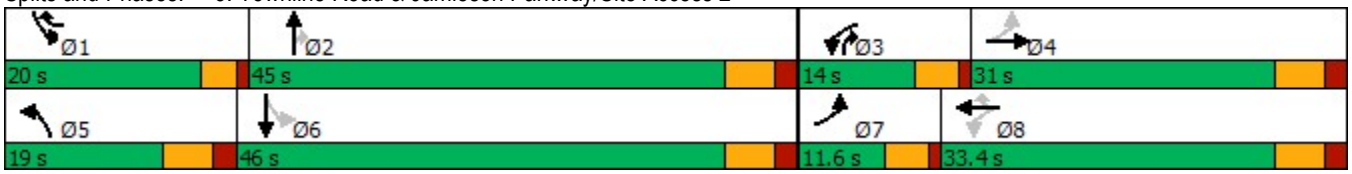


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	20	357	111	53	152	321	660	413	53	871	191
Future Volume (vph)	167	20	357	111	53	152	321	660	413	53	871	191
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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	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		0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1361	0	3235	1632	1387	3203	3302	1492	1668	3168	0
Flt Permitted	0.614			0.320			0.950			0.401		
Satd. Flow (perm)	1057	1361	0	1090	1632	1387	3202	3302	1492	704	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		326				141			413		27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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	20	357	111	53	152	321	660	413	53	871	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	377	0	111	53	152	321	660	413	53	1062	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	pm+ov	Prot	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases	4			8		8			2	6		
Detector Phase	7	4		3	8	1	5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		9.5	31.0	9.0	11.0	41.0	9.5	9.0	41.0	
Total Split (s)	11.6	31.0		14.0	33.4	20.0	19.0	45.0	14.0	20.0	46.0	
Total Split (%)	10.5%	28.2%		12.7%	30.4%	18.2%	17.3%	40.9%	12.7%	18.2%	41.8%	
Maximum Green (s)	7.1	25.0		9.5	27.4	16.0	13.0	39.0	9.5	16.0	40.0	
Yellow Time (s)	3.5	4.0		3.5	4.0	3.0	4.0	4.0	3.5	3.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0	1.0	2.0	2.0	1.0	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	4.0	6.0	6.0	4.5	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	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	None	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)	22.9	13.4		21.6	14.3	24.0	12.7	48.2	62.2	49.1	40.3	
Actuated g/C Ratio	0.24	0.14		0.22	0.15	0.25	0.13	0.50	0.64	0.51	0.42	
v/c Ratio	0.54	0.81		0.27	0.22	0.34	0.76	0.40	0.37	0.13	0.80	
Control Delay	35.8	21.3		27.2	37.3	7.1	54.9	17.6	2.1	10.2	31.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.8	21.3		27.2	37.3	7.1	54.9	17.6	2.1	10.2	31.0	
LOS	D	C		C	D	A	D	B	A	B	C	
Approach Delay		25.8			19.3			21.6			30.0	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 96.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 24.8		Intersection LOS: C	
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			

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

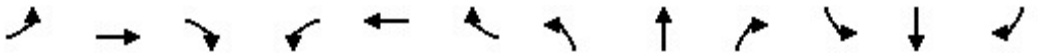




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	377	111	53	152	321	660	413	53	1062
v/c Ratio	0.54	0.81	0.27	0.22	0.34	0.76	0.40	0.37	0.13	0.80
Control Delay	35.8	21.3	27.2	37.3	7.1	54.9	17.6	2.1	10.2	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	21.3	27.2	37.3	7.1	54.9	17.6	2.1	10.2	31.0
Queue Length 50th (m)	24.9	8.7	7.9	8.9	1.5	29.2	36.5	0.0	3.2	83.5
Queue Length 95th (m)	41.5	40.6	13.8	19.1	14.1	#58.0	69.2	12.8	10.7	#150.7
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	309	594	473	464	570	432	1642	1123	584	1332
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	0.54	0.63	0.23	0.11	0.27	0.74	0.40	0.37	0.09	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)	167	20	357	111	53	152	321	660	413	53	871	191
Future Volume (vph)	167	20	357	111	53	152	321	660	413	53	871	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	4.0	6.0	6.0	4.5	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		3235	1632	1387	3203	3302	1492	1668	3169	
Flt Permitted	0.61	1.00		0.32	1.00	1.00	0.95	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	1057	1361		1090	1632	1387	3203	3302	1492	704	3169	
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	20	357	111	53	152	321	660	413	53	871	191
RTOR Reduction (vph)	0	277	0	0	0	113	0	0	177	0	16	0
Lane Group Flow (vph)	167	100	0	111	53	39	321	660	236	53	1046	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	3%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)	24.8	14.7		20.4	12.5	19.3	12.7	48.2	56.1	47.1	40.3	
Effective Green, g (s)	24.8	14.7		20.4	12.5	19.3	12.7	48.2	56.1	47.1	40.3	
Actuated g/C Ratio	0.25	0.15		0.21	0.13	0.20	0.13	0.49	0.57	0.48	0.41	
Clearance Time (s)	4.5	6.0		4.5	6.0	4.0	6.0	6.0	4.5	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)	326	203		399	207	272	414	1622	853	404	1301	
v/s Ratio Prot	c0.05	0.07		0.02	0.03	0.01	c0.10	0.20	0.02	0.01	c0.33	
v/s Ratio Perm	c0.08			0.04		0.02			0.14	0.05		
v/c Ratio	0.51	0.49		0.28	0.26	0.14	0.78	0.41	0.28	0.13	0.80	
Uniform Delay, d1	30.5	38.3		32.2	38.6	32.6	41.3	15.9	10.7	13.7	25.4	
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	1.4	1.9		0.4	0.7	0.2	8.8	0.8	0.2	0.1	5.4	
Delay (s)	31.9	40.1		32.6	39.3	32.8	50.1	16.6	10.9	13.8	30.8	
Level of Service	C	D		C	D	C	D	B	B	B	C	
Approach Delay (s)		37.6			33.8			22.6			30.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	22.5
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

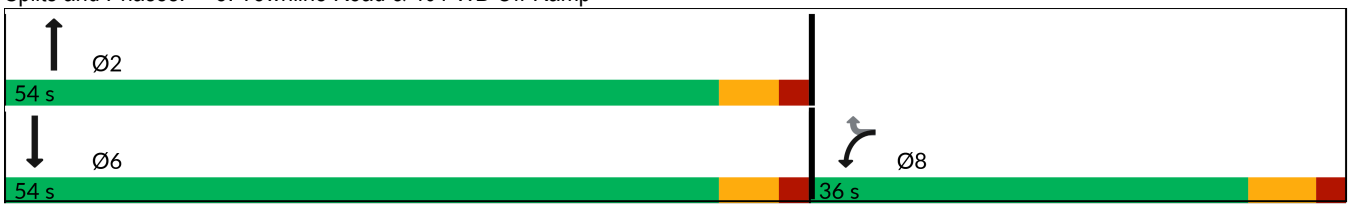


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	216	1197	0	0	915
Future Volume (vph)	605	216	1197	0	0	915
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		54				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	216	1197	0	0	915
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	216	1197	0	0	915
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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	0.52	0.59			0.45
Control Delay (s/veh)	35.4	23.6	13.6			11.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	35.4	23.6	13.6			11.7
LOS	D	C	B			B
Approach Delay (s/veh)	32.3		13.6			11.7
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): 18.2		Intersection LOS: B	
Intersection Capacity Utilization 62.0%		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)	605	216	1197	915
v/c Ratio	0.78	0.52	0.59	0.45
Control Delay (s/veh)	35.4	23.6	13.6	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	23.6	13.6	11.7
Queue Length 50th (m)	45.5	21.3	60.3	41.0
Queue Length 95th (m)	63.0	41.3	93.6	64.8
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1016	522	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	0.41	0.59	0.45

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	216	1197	0	0	915
Future Volume (vph)	605	216	1197	0	0	915
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	216	1197	0	0	915
RTOR Reduction (vph)	0	39	0	0	0	0
Lane Group Flow (vph)	605	177	1197	0	0	915
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		c0.34			0.26
v/s Ratio Perm		0.13				
v/c Ratio	0.78	0.47	0.59			0.45
Uniform Delay, d1	28.0	25.3	11.3			10.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.9	0.9	1.3			0.7
Delay (s)	32.9	26.3	12.6			10.8
Level of Service	C	C	B			B
Approach Delay (s/veh)	31.2		12.6			10.8
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



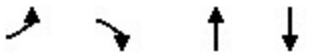
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	515	548	0	1179	1326	202
Future Volume (vph)	515	548	0	1179	1326	202
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3298	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		38			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	515	548	0	1179	1326	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	515	548	0	1179	1528	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.98	1.12		0.64	0.86	
Control Delay (s/veh)	66.8	107.0		17.0	24.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	66.8	107.0		17.0	24.3	
LOS	E	F		B	C	
Approach Delay (s/veh)	87.5			17.0	24.3	
Approach LOS	F			B	C	

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 (s/veh): 39.8		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		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)	515	548	1179	1528
v/c Ratio	0.98	1.12	0.64	0.86
Control Delay (s/veh)	66.8	107.0	17.0	24.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.8	107.0	17.0	24.3
Queue Length 50th (m)	87.4	~105.9	71.8	111.4
Queue Length 95th (m)	#150.2	#167.2	92.6	144.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	489	1830	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	0.98	1.12	0.64	0.86

Intersection Summary

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

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	515	548	0	1179	1326	202
Future Volume (vph)	515	548	0	1179	1326	202
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3299	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	515	548	0	1179	1326	202
RTOR Reduction (vph)	0	26	0	0	14	0
Lane Group Flow (vph)	515	522	0	1179	1514	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	1759	
v/s Ratio Prot	0.32			0.34	c0.46	
v/s Ratio Perm		c0.37				
v/c Ratio	0.98	1.13		0.64	0.86	
Uniform Delay, d1	30.0	30.3		14.9	18.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	34.2	81.9		1.8	5.8	
Delay (s)	64.2	112.1		16.7	23.9	
Level of Service	E	F		B	C	
Approach Delay (s/veh)	88.9			16.7	23.9	
Approach LOS	F			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

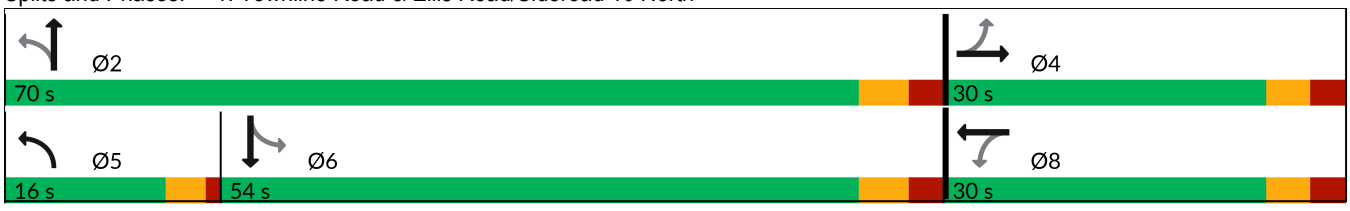
c Critical Lane Group

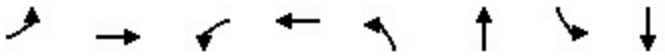
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	72
Future Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane 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			0.987			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	1596	0	1668	1548	0
Flt Permitted	0.719			0.460			0.174			0.084		
Satd. Flow (perm)	1262	1392	0	792	1581	0	305	1596	0	147	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		189			12			9			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	189	112	47	12	442	1165	111	10	663	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	214	0	112	59	0	442	1276	0	10	735	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)	16.3	16.3		16.3	16.3		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.71	0.69		0.52	0.52	
v/c Ratio	0.22	0.54		0.81	0.20		1.12	1.16		0.13	0.92	
Control Delay (s/veh)	34.1	12.2		74.3	27.9		100.2	99.0		19.4	40.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	34.1	12.2		74.3	27.9		100.2	99.2		19.4	40.0	
LOS	C	B		E	C		F	F		B	D	
Approach Delay (s/veh)		16.3			58.3			99.5			39.7	
Approach LOS		B			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.6			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay (s/veh): 74.1		Intersection LOS: E	
Intersection Capacity Utilization 124.6%		ICU Level of Service H	
Analysis Period (min) 15			

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



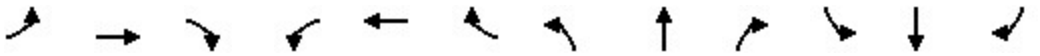


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	214	112	59	442	1276	10	735
v/c Ratio	0.22	0.54	0.81	0.20	1.12	1.16	0.13	0.92
Control Delay (s/veh)	34.1	12.2	74.3	27.9	100.2	99.0	19.4	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	34.1	12.2	74.3	27.9	100.2	99.2	19.4	40.0
Queue Length 50th (m)	7.5	3.8	19.3	7.2	~36.6	~273.6	0.9	114.2
Queue Length 95th (m)	17.1	22.5	#39.0	17.5	#112.4	#390.7	4.8	#216.3
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	328	502	206	420	395	1104	76	803
Starvation Cap Reductn	0	0	0	0	0	40	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	0.43	0.54	0.14	1.12	1.20	0.13	0.92

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	189	112	47	12	442	1165	111	10	663	72
Future Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	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	0.99	
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	1596		1668	1549	
Flt Permitted	0.72	1.00		0.46	1.00		0.17	1.00		0.08	1.00	
Satd. Flow (perm)	1261	1391		792	1582		306	1596		147	1549	
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	189	112	47	12	442	1165	111	10	663	72
RTOR Reduction (vph)	0	156	0	0	10	0	0	3	0	0	3	0
Lane Group Flow (vph)	49	58	0	112	49	0	442	1273	0	10	732	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)	16.3	16.3		16.3	16.3		63.9	63.9		47.9	47.9	
Effective Green, g (s)	16.3	16.3		16.3	16.3		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		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)	222	245		139	278		388	1102		76	802	
v/s Ratio Prot		0.04			0.03		0.15	c0.80			0.47	
v/s Ratio Perm	0.04			c0.14			0.64			0.07		
v/c Ratio	0.22	0.24		0.81	0.18		1.14	1.16		0.13	0.91	
Uniform Delay, d1	32.7	32.8		36.6	32.4		19.8	14.3		11.5	20.4	
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		27.7	0.3		89.3	80.5		3.6	16.5	
Delay (s)	33.2	33.3		64.3	32.7		109.0	94.8		15.1	36.8	
Level of Service	C	C		E	C		F	F		B	D	
Approach Delay (s/veh)		33.2			53.4			98.4			36.6	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	73.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	124.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

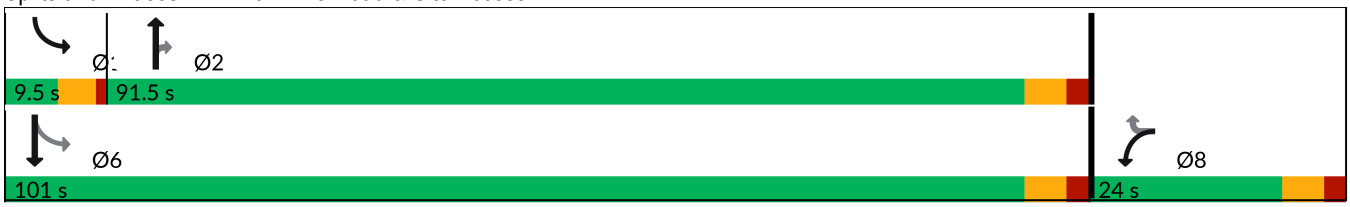


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1694	25	36	928
Future Volume (vph)	55	25	1694	25	36	928
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.041	
Satd. Flow (perm)	1626	1454	1721	1463	76	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25		15		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1694	25	36	928
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	25	1694	25	36	928
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.5	24.0
Total Split (s)	24.0	24.0	91.5	91.5	9.5	101.0
Total Split (%)	19.2%	19.2%	73.2%	73.2%	7.6%	80.8%
Maximum Green (s)	18.0	18.0	85.5	85.5	5.0	95.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	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
Total Lost Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	None	Max
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	9.4	9.4	95.0	95.0	100.9	100.7
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.85	0.85
v/c Ratio	0.43	0.18	1.23	0.02	0.27	0.59
Control Delay (s/veh)	61.6	20.8	127.0	2.8	7.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay (s/veh)	61.6	20.8	127.0	2.8	7.4	7.0
LOS	E	C	F	A	A	A
Approach Delay (s/veh)	48.9		125.2			7.0
Approach LOS	D		F			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 118.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay (s/veh): 81.8		Intersection LOS: F	
Intersection Capacity Utilization 109.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	25	1694	25	36	928
v/c Ratio	0.43	0.18	1.23	0.02	0.27	0.59
Control Delay (s/veh)	61.6	20.8	127.0	2.8	7.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay (s/veh)	61.6	20.8	127.0	2.8	7.4	7.0
Queue Length 50th (m)	12.4	0.0	~510.9	0.5	1.1	61.0
Queue Length 95th (m)	25.2	8.3	#611.3	3.0	4.2	105.9
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	247	242	1380	1176	135	1566
Starvation Cap Reductn	0	0	0	0	0	393
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.10	1.23	0.02	0.27	0.79

Intersection Summary

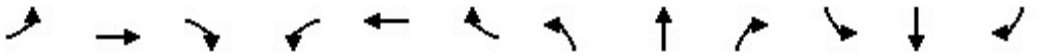
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1694	25	36	928
Future Volume (vph)	55	25	1694	25	36	928
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	4.5	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.04	1.00
Satd. Flow (perm)	1626	1454	1721	1463	75	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1694	25	36	928
RTOR Reduction (vph)	0	23	0	3	0	0
Lane Group Flow (vph)	55	2	1694	22	36	928
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.2	8.2	93.8	93.8	101.3	101.3
Effective Green, g (s)	8.2	8.2	93.8	93.8	101.3	101.3
Actuated g/C Ratio	0.07	0.07	0.77	0.77	0.83	0.83
Clearance Time (s)	6.0	6.0	6.0	6.0	4.5	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	98	1328	1129	103	1535
v/s Ratio Prot	c0.03		c0.98		0.01	c0.50
v/s Ratio Perm		0.00		0.01	0.28	
v/c Ratio	0.50	0.02	1.28	0.02	0.35	0.60
Uniform Delay, d1	54.7	52.9	13.9	3.2	39.0	3.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	130.0	0.0	2.1	1.8
Delay (s)	58.3	53.0	143.9	3.2	41.1	5.2
Level of Service	E	D	F	A	D	A
Approach Delay (s/veh)	56.7		141.8			6.5
Approach LOS	E		F			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	92.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

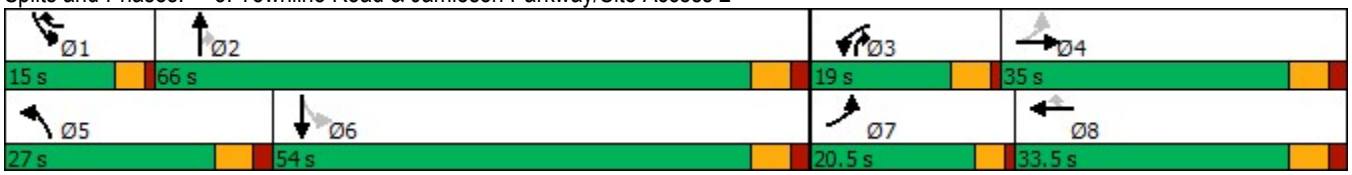


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	27	457	310	147	338	455	1072	453	113	688	173
Future Volume (vph)	270	27	457	310	147	338	455	1072	453	113	688	173
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	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	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		0.858				0.850			0.850		0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1400	0	3235	1632	1387	3203	3302	1492	1668	3123	0
Flt Permitted	0.544			0.950			0.950			0.197		
Satd. Flow (perm)	955	1400	0	3235	1632	1387	3203	3302	1492	346	3123	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		289				113			453		26	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	270	27	457	310	147	338	455	1072	453	113	688	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	270	484	0	310	147	338	455	1072	453	113	861	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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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		Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases	4					8			2	6		
Detector Phase	7	4		3	8	1	5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	31.0		10.0	31.0	9.0	11.0	50.4	10.0	9.0	50.4	
Total Split (s)	20.5	35.0		19.0	33.5	15.0	27.0	66.0	19.0	15.0	54.0	
Total Split (%)	15.2%	25.9%		14.1%	24.8%	11.1%	20.0%	48.9%	14.1%	11.1%	40.0%	
Maximum Green (s)	16.5	29.0		14.0	27.5	11.0	21.0	60.0	14.0	11.0	48.0	
Yellow Time (s)	3.0	4.0		4.0	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	1.0	2.0	2.0	1.0	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	4.0	6.0	6.0	5.0	4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	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	None	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)	43.6	25.5		14.0	24.5	39.7	20.5	61.4	81.4	59.4	48.1	
Actuated g/C Ratio	0.33	0.19		0.11	0.19	0.30	0.16	0.47	0.62	0.45	0.37	
v/c Ratio	0.67	0.96		0.90	0.48	0.68	0.91	0.69	0.41	0.45	0.74	
Control Delay	42.0	52.3		86.6	53.5	33.3	78.2	31.4	2.3	20.7	40.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	42.0	52.3		86.6	53.5	33.3	78.2	31.4	2.3	20.7	40.4	
LOS	D	D		F	D	C	E	C	A	C	D	
Approach Delay		48.6			57.8			35.5			38.1	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 131.2			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 42.2		Intersection LOS: D	
Intersection Capacity Utilization 103.0%		ICU Level of Service G	
Analysis Period (min) 15			

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

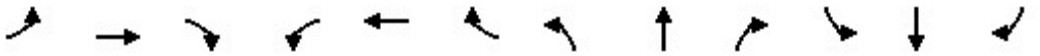




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	270	484	310	147	338	455	1072	453	113	861
v/c Ratio	0.67	0.96	0.90	0.48	0.68	0.91	0.69	0.41	0.45	0.74
Control Delay	42.0	52.3	86.6	53.5	33.3	78.2	31.4	2.3	20.7	40.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	52.3	86.6	53.5	33.3	78.2	31.4	2.3	20.7	40.4
Queue Length 50th (m)	53.8	57.4	42.9	34.6	52.0	62.3	119.5	0.0	13.3	103.5
Queue Length 95th (m)	79.0	#124.2	#70.2	55.9	85.1	#92.1	147.4	13.3	22.6	128.5
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	410	535	346	343	515	514	1544	1097	272	1162
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	0.66	0.90	0.90	0.43	0.66	0.89	0.69	0.41	0.42	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)	270	27	457	310	147	338	455	1072	453	113	688	173
Future Volume (vph)	270	27	457	310	147	338	455	1072	453	113	688	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)	4.0	6.0		5.0	6.0	4.0	6.0	6.0	5.0	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	1401		3235	1632	1387	3203	3302	1492	1668	3122	
Flt Permitted	0.54	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	956	1401		3235	1632	1387	3203	3302	1492	346	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	27	457	310	147	338	455	1072	453	113	688	173
RTOR Reduction (vph)	0	233	0	0	0	84	0	0	193	0	16	0
Lane Group Flow (vph)	270	251	0	310	147	254	455	1072	260	113	845	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Turn Type	pm+pt	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases	4					8			2	6		
Actuated Green, G (s)	41.7	25.6		14.0	24.5	33.7	20.5	61.4	75.4	57.3	48.1	
Effective Green, g (s)	41.7	25.6		14.0	24.5	33.7	20.5	61.4	75.4	57.3	48.1	
Actuated g/C Ratio	0.32	0.20		0.11	0.19	0.26	0.16	0.47	0.57	0.44	0.37	
Clearance Time (s)	4.0	6.0		5.0	6.0	4.0	6.0	6.0	5.0	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)	391	273		345	304	356	500	1545	857	243	1144	
v/s Ratio Prot	0.08	c0.18		c0.10	0.09	0.05	c0.14	0.32	0.03	0.03	c0.27	
v/s Ratio Perm	0.13					0.13			0.14	0.17		
v/c Ratio	0.69	0.92		0.90	0.48	0.71	0.91	0.69	0.30	0.47	0.74	
Uniform Delay, d1	36.8	51.8		57.9	47.7	44.4	54.4	27.5	14.4	23.1	36.1	
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	5.2	34.1		24.7	1.2	6.6	20.6	2.6	0.2	1.4	4.3	
Delay (s)	42.0	86.0		82.6	48.9	51.0	75.1	30.1	14.6	24.5	40.4	
Level of Service	D	F		F	D	D	E	C	B	C	D	
Approach Delay (s)		70.2			62.9			36.9			38.5	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	131.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



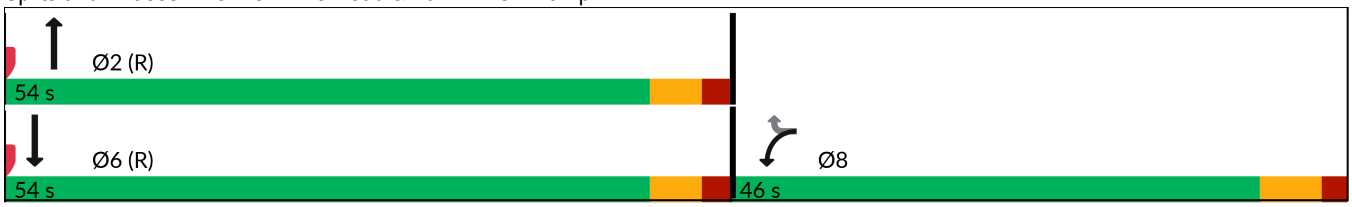
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	607	436	1665	0	0	1034
Future Volume (vph)	607	436	1665	0	0	1034
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt 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)		9				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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	436	1665	0	0	1034
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	436	1665	0	0	1034
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.52	0.75	0.99			0.62
Control Delay (s/veh)	25.1	35.2	46.6			21.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	25.1	35.2	46.6			21.2
LOS	C	D	D			C
Approach Delay (s/veh)	29.3		46.6			21.2
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 34.7		Intersection LOS: C	
Intersection Capacity Utilization 85.8%		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	436	1665	1034
v/c Ratio	0.52	0.75	0.99	0.62
Control Delay (s/veh)	25.1	35.2	46.6	21.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	35.2	46.6	21.2
Queue Length 50th (m)	45.4	70.1	162.3	75.1
Queue Length 95th (m)	61.3	108.5	#217.9	95.2
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	580	1680	1680
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	0.75	0.99	0.62

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	436	1665	0	0	1034
Future Volume (vph)	607	436	1665	0	0	1034
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	436	1665	0	0	1034
RTOR Reduction (vph)	0	5	0	0	0	0
Lane Group Flow (vph)	607	431	1665	0	0	1034
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.21		c0.48			0.30
v/s Ratio Perm		c0.30				
v/c Ratio	0.52	0.75	0.99			0.62
Uniform Delay, d1	23.1	26.0	25.8			19.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	8.7	19.9			1.7
Delay (s)	24.7	34.7	45.7			20.9
Level of Service	C	C	D			C
Approach Delay (s/veh)	28.9		45.7			20.9
Approach LOS	C		D			C

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

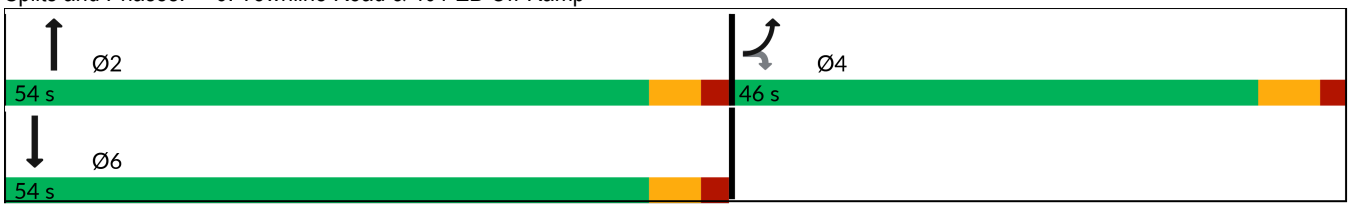


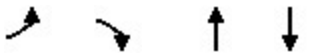
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	548	0	1435	1484	216
Future Volume (vph)	521	548	0	1435	1484	216
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.981	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3356	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3356	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		16			22	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	521	548	0	1435	1484	216
Shared Lane Traffic (%)						
Lane Group Flow (vph)	521	548	0	1435	1700	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	38.3	38.3		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.49	0.49	
v/c Ratio	0.83	0.96		0.84	1.04	
Control Delay (s/veh)	40.5	60.0		27.8	58.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	40.5	60.0		27.8	58.1	
LOS	D	E		C	E	
Approach Delay (s/veh)	50.5			27.8	58.1	
Approach LOS	D			C	E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.8			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay (s/veh): 45.8		Intersection LOS: D	
Intersection Capacity Utilization 95.2%		ICU Level of Service F	
Analysis Period (min) 15			

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





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	521	548	1435	1700
v/c Ratio	0.83	0.96	0.84	1.04
Control Delay (s/veh)	40.5	60.0	27.8	58.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.5	60.0	27.8	58.1
Queue Length 50th (m)	88.5	98.6	123.4	~188.7
Queue Length 95th (m)	#142.5	#165.8	154.4	#231.4
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	647	586	1717	1642
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	0.81	0.94	0.84	1.04

Intersection Summary

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

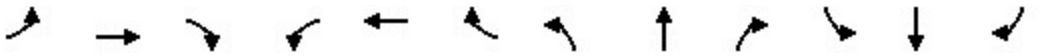
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	548	0	1435	1484	216
Future Volume (vph)	521	548	0	1435	1484	216
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3355	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3355	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	521	548	0	1435	1484	216
RTOR Reduction (vph)	0	10	0	0	11	0
Lane Group Flow (vph)	521	538	0	1435	1689	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)	38.3	38.3		48.0	48.0	
Effective Green, g (s)	38.3	38.3		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)	627	558		1717	1629	
v/s Ratio Prot	0.32			0.41	c0.50	
v/s Ratio Perm		c0.37				
v/c Ratio	0.83	0.96		0.84	1.04	
Uniform Delay, d1	27.3	29.6		22.0	25.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2	29.1		5.0	32.4	
Delay (s)	36.5	58.7		27.0	57.8	
Level of Service	D	E		C	E	
Approach Delay (s/veh)	47.9			27.0	57.8	
Approach LOS	D			C	E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

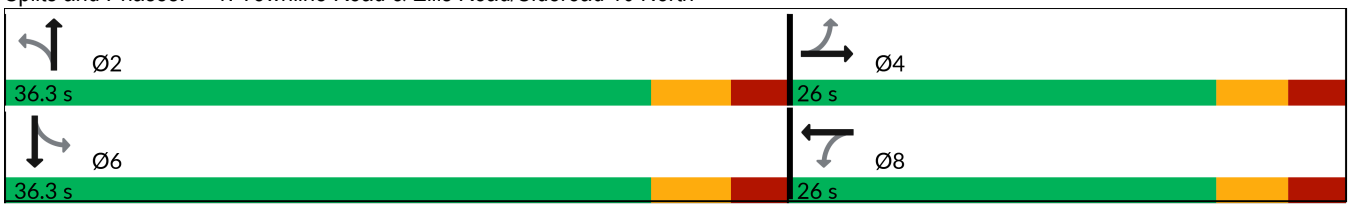


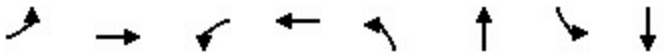
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	44
Future Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1415	0	1668	1583	0	1651	1579	0	1668	1600	0
Flt Permitted	0.742			0.449			0.322			0.201		
Satd. Flow (perm)	1290	1415	0	788	1583	0	560	1579	0	353	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		210			4			13			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	266	75	20	4	246	734	84	3	606	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	299	0	75	24	0	246	818	0	3	650	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)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.56	0.56		0.56	0.56	
v/c Ratio	0.23	0.65		0.46	0.07		0.78	0.91		0.02	0.72	
Control Delay (s/veh)	19.2	13.7		27.9	15.0		33.4	30.5		7.3	16.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	19.2	13.7		27.9	15.0		33.4	30.5		7.3	16.3	
LOS	B	B		C	B		C	C		A	B	
Approach Delay (s/veh)		14.6			24.8			31.2			16.3	
Approach LOS		B			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 53.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 23.7		Intersection LOS: C	
Intersection Capacity Utilization 105.1%		ICU Level of Service G	
Analysis Period (min) 15			

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

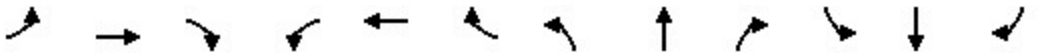




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	299	75	24	246	818	3	650
v/c Ratio	0.23	0.65	0.46	0.07	0.78	0.91	0.02	0.72
Control Delay (s/veh)	19.2	13.7	27.9	15.0	33.4	30.5	7.3	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.2	13.7	27.9	15.0	33.4	30.5	7.3	16.3
Queue Length 50th (m)	4.8	7.3	6.4	1.6	14.8	55.8	0.1	36.2
Queue Length 95th (m)	12.3	25.4	16.1	5.9	#63.2	#162.7	1.3	#115.7
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	483	662	295	596	314	894	198	903
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	0.45	0.25	0.04	0.78	0.91	0.02	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)	60	33	266	75	20	4	246	734	84	3	606	44
Future Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	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	0.98		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	1600	
Flt Permitted	0.74	1.00		0.45	1.00		0.32	1.00		0.20	1.00	
Satd. Flow (perm)	1289	1414		789	1583		560	1578		353	1600	
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	266	75	20	4	246	734	84	3	606	44
RTOR Reduction (vph)	0	167	0	0	3	0	0	6	0	0	3	0
Lane Group Flow (vph)	60	132	0	75	21	0	246	812	0	3	647	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)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Effective Green, g (s)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.56	0.56		0.56	0.56	
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)	266	292		163	327		315	889		198	901	
v/s Ratio Prot		0.09			0.01			c0.51			0.40	
v/s Ratio Perm	0.05			c0.10			0.44			0.01		
v/c Ratio	0.23	0.45		0.46	0.06		0.78	0.91		0.02	0.72	
Uniform Delay, d1	17.7	18.6		18.6	17.1		9.1	10.5		5.2	8.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.1	0.1		17.3	15.4		0.1	4.9	
Delay (s)	18.1	19.7		20.7	17.2		26.4	25.9		5.3	13.5	
Level of Service	B	B		C	B		C	C		A	B	
Approach Delay (s/veh)		19.4			19.8			26.0			13.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.3
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

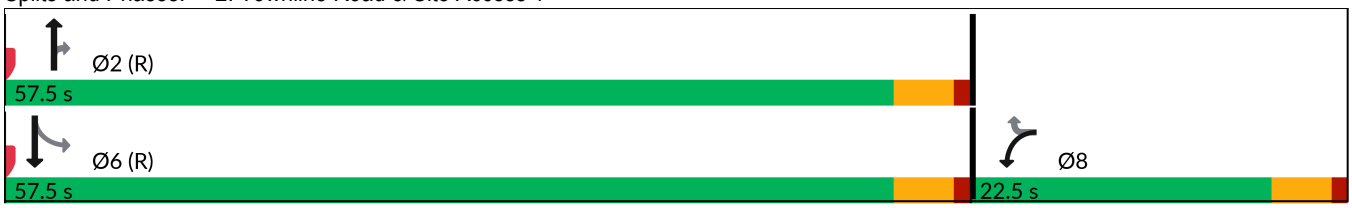


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	1060	12	21	927
Future Volume (vph)	11	5	1060	12	21	927
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.233	
Satd. Flow (perm)	1626	1454	1721	1463	429	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5		12		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	1060	12	21	927
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	5	1060	12	21	927
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	57.5	57.5	57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%	71.9%	71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0	53.0	53.0	53.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.2	6.2	73.6	73.6	73.6	73.6
Actuated g/C Ratio	0.08	0.08	0.92	0.92	0.92	0.92
v/c Ratio	0.09	0.04	0.67	0.01	0.05	0.55
Control Delay (s/veh)	35.4	22.2	5.2	0.9	1.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	5.2	0.9	1.7	3.3
LOS	D	C	A	A	A	A
Approach Delay (s/veh)	31.3		5.2			3.3
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 4.5		Intersection LOS: A	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

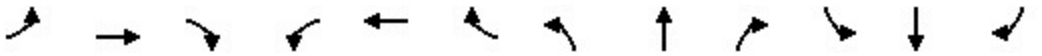
Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	5	1060	12	21	927
v/c Ratio	0.09	0.04	0.67	0.01	0.05	0.55
Control Delay (s/veh)	35.4	22.2	5.2	0.9	1.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	5.2	0.9	1.7	3.3
Queue Length 50th (m)	1.6	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.2	3.2	109.1	0.7	1.7	65.7
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	365	331	1584	1347	395	1695
Starvation Cap Reductn	0	0	0	0	0	61
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.67	0.01	0.05	0.57

Intersection Summary

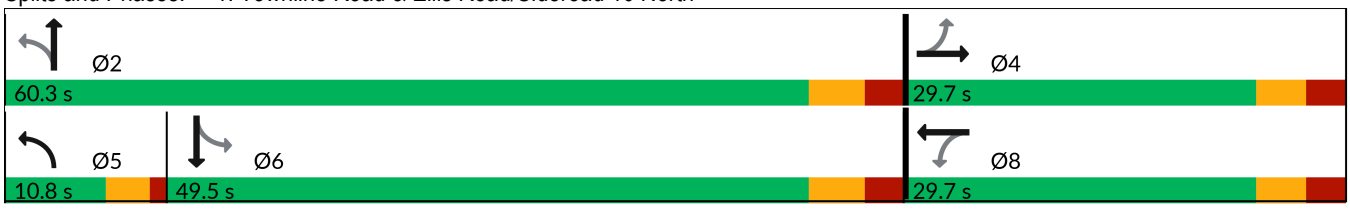


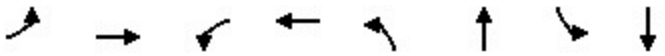
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	29	244	61	10	4	118	574	66	4	680	29
Future Volume (vph)	82	29	244	61	10	4	118	574	66	4	680	29
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.957			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1562	0	1603	1544	0	1334	1577	0
Flt Permitted	0.748			0.348			0.243			0.422		
Satd. Flow (perm)	1300	1388	0	611	1562	0	410	1544	0	593	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		244			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	82	29	244	61	10	4	118	574	66	4	680	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	273	0	61	14	0	118	640	0	4	709	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)	11.5	11.5		11.5	11.5		56.5	54.2		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.69		0.59	0.59	
v/c Ratio	0.43	0.66		0.69	0.06		0.30	0.60		0.01	0.77	
Control Delay (s/veh)	36.8	14.4		67.0	23.9		6.0	9.9		9.8	21.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay (s/veh)	36.8	14.4		67.0	23.9		6.0	10.0		9.8	21.9	
LOS	D	B		E	C		A	B		A	C	
Approach Delay (s/veh)		19.6			59.0			9.4			21.9	
Approach LOS		B			E			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 17.9		Intersection LOS: B	
Intersection Capacity Utilization 92.1%		ICU Level of Service F	
Analysis Period (min) 15			

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

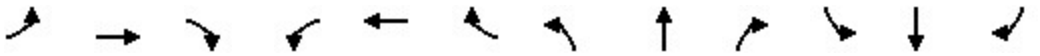




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	273	61	14	118	640	4	709
v/c Ratio	0.43	0.66	0.69	0.06	0.30	0.60	0.01	0.77
Control Delay (s/veh)	36.8	14.4	67.0	23.9	6.0	9.9	9.8	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (s/veh)	36.8	14.4	67.0	23.9	6.0	10.0	9.8	21.9
Queue Length 50th (m)	11.1	3.8	8.6	1.3	4.1	39.8	0.2	76.9
Queue Length 95th (m)	23.4	24.6	21.2	5.9	11.5	89.9	1.8	#168.6
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	396	592	186	478	401	1075	347	925
Starvation Cap Reductn	0	0	0	0	0	52	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	0.46	0.33	0.03	0.29	0.63	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)	82	29	244	61	10	4	118	574	66	4	680	29
Future Volume (vph)	82	29	244	61	10	4	118	574	66	4	680	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	0.98		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	1388		1668	1562		1603	1543		1334	1576	
Flt Permitted	0.75	1.00		0.35	1.00		0.24	1.00		0.42	1.00	
Satd. Flow (perm)	1301	1388		611	1562		410	1543		592	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)	82	29	244	61	10	4	118	574	66	4	680	29
RTOR Reduction (vph)	0	208	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	82	65	0	61	11	0	118	637	0	4	708	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)	11.5	11.5		11.5	11.5		55.0	55.0		45.7	45.7	
Effective Green, g (s)	11.5	11.5		11.5	11.5		55.0	55.0		45.7	45.7	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		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)	189	202		89	227		366	1076		343	914	
v/s Ratio Prot		0.05			0.01		0.02	c0.41			c0.45	
v/s Ratio Perm	0.06			c0.10			0.20			0.01		
v/c Ratio	0.43	0.32		0.69	0.05		0.32	0.59		0.01	0.77	
Uniform Delay, d1	30.7	30.1		31.9	28.9		6.7	6.1		7.0	12.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.9		19.7	0.1		0.5	2.4		0.1	6.4	
Delay (s)	32.3	31.1		51.6	29.0		7.2	8.5		7.1	19.0	
Level of Service	C	C		D	C		A	A		A	B	
Approach Delay (s/veh)		31.3			47.4			8.3			18.9	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	16.3
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

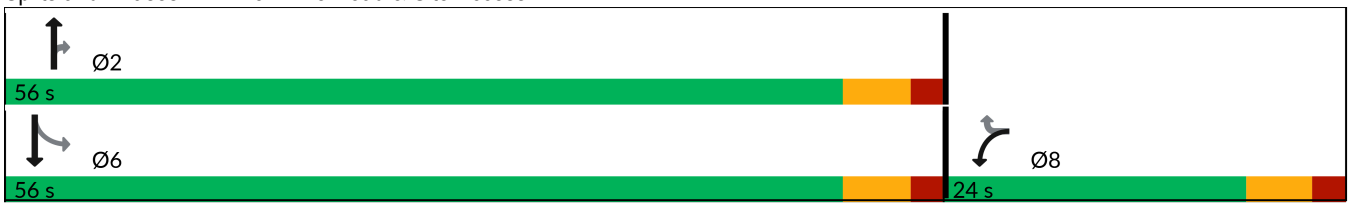


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	715	112	58	896
Future Volume (vph)	26	23	715	112	58	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.364	
Satd. Flow (perm)	1626	1454	1721	1463	671	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		23		112		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	715	112	58	896
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	23	715	112	58	896
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	29.0	29.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.9	6.9	66.0	66.0	66.0	66.0
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.18	0.15	0.49	0.09	0.10	0.57
Control Delay (s/veh)	36.0	16.2	4.5	0.8	3.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.0	16.2	4.5	0.8	3.0	5.7
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	26.7		4.0			5.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 5.4		Intersection LOS: A	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





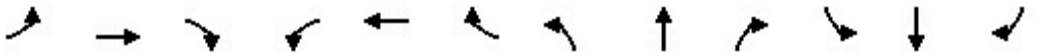
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	26	23	715	112	58	896
v/c Ratio	0.18	0.15	0.49	0.09	0.10	0.57
Control Delay (s/veh)	36.0	16.2	4.5	0.8	3.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.0	16.2	4.5	0.8	3.0	5.7
Queue Length 50th (m)	4.0	0.0	32.8	0.0	1.7	47.0
Queue Length 95th (m)	10.3	6.1	60.6	3.2	5.0	86.7
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	381	358	1470	1266	573	1573
Starvation Cap Reductn	0	0	0	0	0	223
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.49	0.09	0.10	0.66

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	715	112	58	896
Future Volume (vph)	26	23	715	112	58	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.36	1.00
Satd. Flow (perm)	1626	1454	1721	1463	670	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	715	112	58	896
RTOR Reduction (vph)	0	22	0	23	0	0
Lane Group Flow (vph)	26	1	715	89	58	896
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.4	4.4	63.4	63.4	63.4	63.4
Effective Green, g (s)	4.4	4.4	63.4	63.4	63.4	63.4
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	80	1367	1162	532	1463
v/s Ratio Prot	c0.02		0.42			c0.49
v/s Ratio Perm		0.00		0.06	0.09	
v/c Ratio	0.29	0.02	0.52	0.08	0.11	0.61
Uniform Delay, d1	36.2	35.7	2.9	1.8	1.8	3.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	1.4	0.1	0.4	1.9
Delay (s)	38.0	35.7	4.3	1.9	2.3	5.2
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	37.0		4.0			5.0
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

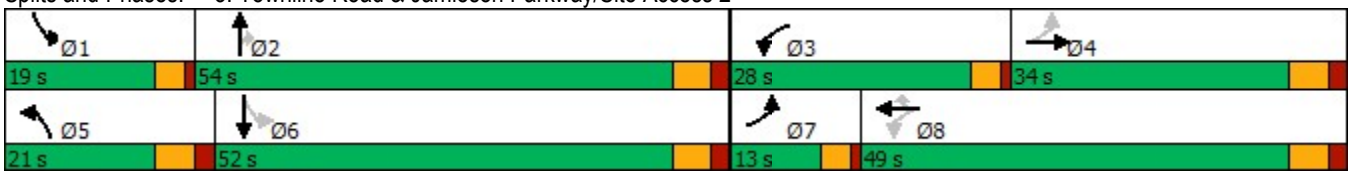


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Future Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		0.875				0.850			0.850		0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1428	0	3235	1632	1387	3203	3270	1492	1668	3211	0
Flt Permitted	0.658			0.159			0.950			0.352		
Satd. Flow (perm)	1155	1428	0	541	1632	1387	3203	3270	1492	618	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		169				247			420		20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	349	0	315	156	247	256	653	420	188	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)		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	30.5		6.1	30.5	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	1.8		6.1	1.8	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)		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	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)	32.3	21.2		40.0	25.7	25.7	13.5	50.2	50.2	60.1	46.4	
Actuated g/C Ratio	0.28	0.18		0.34	0.22	0.22	0.12	0.43	0.43	0.51	0.40	
v/c Ratio	0.51	0.88		0.63	0.43	0.50	0.69	0.46	0.48	0.44	0.58	
Control Delay	35.1	47.4		33.0	42.5	8.0	61.6	27.1	4.5	17.0	30.8	
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	47.4		33.0	42.5	8.0	61.6	27.1	4.5	17.0	30.8	
LOS	D	D		C	D	A	E	C	A	B	C	
Approach Delay		43.1			26.4			26.6			28.0	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 116.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 82.7%		ICU Level of Service E	
Analysis Period (min) 15			

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

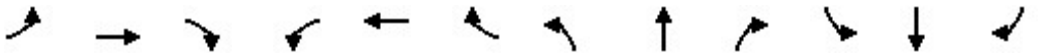




Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	184	349	315	156	247	256	653	420	188	749
v/c Ratio	0.51	0.88	0.63	0.43	0.50	0.69	0.46	0.48	0.44	0.58
Control Delay	35.1	47.4	33.0	42.5	8.0	61.6	27.1	4.5	17.0	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	47.4	33.0	42.5	8.0	61.6	27.1	4.5	17.0	30.8
Queue Length 50th (m)	31.0	42.9	27.0	31.3	0.0	30.0	57.5	0.0	20.2	71.8
Queue Length 95th (m)	48.7	#89.9	37.5	50.8	19.8	46.8	85.6	21.0	37.2	101.5
Internal Link Dist (m)		90.3		111.6			133.4			311.6
Turn Bay Length (m)	45.0		45.0			115.0			115.0	
Base Capacity (vph)	358	473	747	605	670	414	1405	880	471	1286
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	0.42	0.26	0.37	0.62	0.46	0.48	0.40	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	58	291	315	156	247	256	653	420	188	620	129
Future Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
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	1428		3235	1632	1387	3203	3270	1492	1668	3211	
Flt Permitted	0.66	1.00		0.16	1.00	1.00	0.95	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	1155	1428		541	1632	1387	3203	3270	1492	619	3211	
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	58	291	315	156	247	256	653	420	188	620	129
RTOR Reduction (vph)	0	138	0	0	0	193	0	0	239	0	12	0
Lane Group Flow (vph)	184	211	0	315	156	54	256	653	181	188	737	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)	30.3	21.2		38.8	25.7	25.7	13.5	50.2	50.2	58.1	46.4	
Effective Green, g (s)	30.3	21.2		38.8	25.7	25.7	13.5	50.2	50.2	58.1	46.4	
Actuated g/C Ratio	0.26	0.18		0.33	0.22	0.22	0.12	0.43	0.43	0.50	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)	339	259		493	359	305	370	1406	641	413	1276	
v/s Ratio Prot	0.04	c0.15		c0.07	0.10		c0.08	c0.20		0.05	c0.23	
v/s Ratio Perm	0.10			0.14		0.04			0.12	0.18		
v/c Ratio	0.54	0.81		0.64	0.43	0.18	0.69	0.46	0.28	0.46	0.58	
Uniform Delay, d1	36.0	45.9		30.9	39.2	36.9	49.6	23.7	21.6	16.8	27.5	
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	1.8	17.5		2.7	0.8	0.3	5.5	1.1	1.1	0.8	1.9	
Delay (s)	37.8	63.3		33.6	40.1	37.2	55.1	24.8	22.7	17.6	29.4	
Level of Service	D	E		C	D	D	E	C	C	B	C	
Approach Delay (s)		54.5			36.3			30.0			27.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	116.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

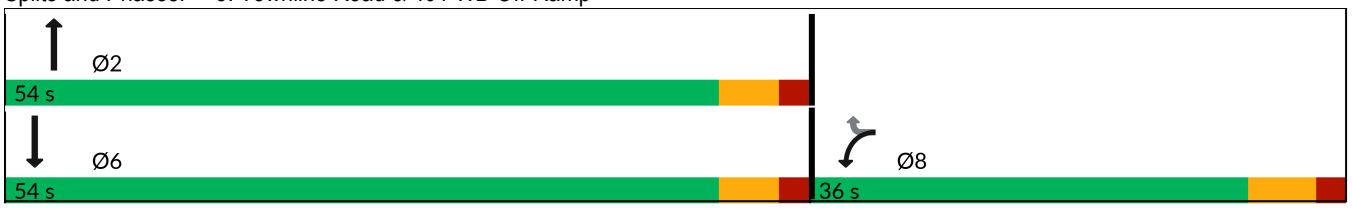


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	485	193	1012	0	0	721
Future Volume (vph)	485	193	1012	0	0	721
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		88				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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)	485	193	1012	0	0	721
Shared Lane Traffic (%)						
Lane Group Flow (vph)	485	193	1012	0	0	721
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	18.7	18.7	48.1			48.1
Actuated g/C Ratio	0.24	0.24	0.61			0.61
v/c Ratio	0.72	0.49	0.48			0.34
Control Delay (s/veh)	34.3	18.6	10.2			8.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.3	18.6	10.2			8.9
LOS	C	B	B			A
Approach Delay (s/veh)	29.8		10.2			8.9
Approach LOS	C		B			A

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: 0.72			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

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





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	485	193	1012	721
v/c Ratio	0.72	0.49	0.48	0.34
Control Delay (s/veh)	34.3	18.6	10.2	8.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.3	18.6	10.2	8.9
Queue Length 50th (m)	34.6	13.1	39.3	25.0
Queue Length 95th (m)	49.5	31.1	66.2	43.4
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1067	567	2122	2122
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	0.34	0.48	0.34

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	485	193	1012	0	0	721
Future Volume (vph)	485	193	1012	0	0	721
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)	485	193	1012	0	0	721
RTOR Reduction (vph)	0	67	0	0	0	0
Lane Group Flow (vph)	485	126	1012	0	0	721
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)	18.7	18.7	48.1			48.1
Effective Green, g (s)	18.7	18.7	48.1			48.1
Actuated g/C Ratio	0.24	0.24	0.61			0.61
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)	675	324	2122			2122
v/s Ratio Prot	c0.17		c0.29			0.21
v/s Ratio Perm		0.09				
v/c Ratio	0.72	0.39	0.48			0.34
Uniform Delay, d1	27.9	25.5	8.6			7.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.7	0.8	0.8			0.4
Delay (s)	31.5	26.3	9.4			8.2
Level of Service	C	C	A			A
Approach Delay (s/veh)	30.0		9.4			8.2
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

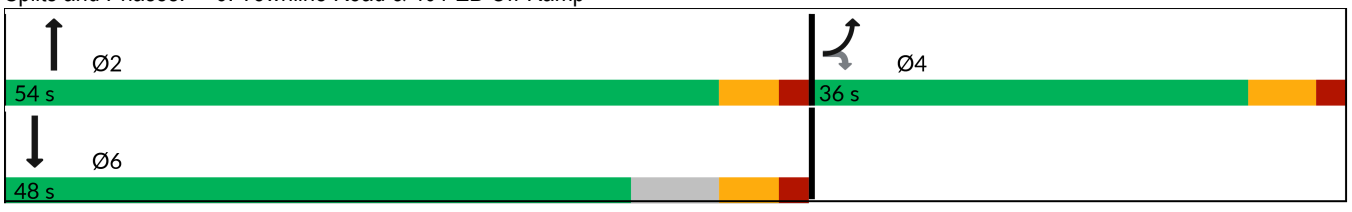


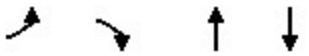
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	492	451	0	935	1045	160
Future Volume (vph)	492	451	0	935	1045	160
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3298	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		80			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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	451	0	935	1045	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	492	451	0	935	1205	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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 Don't Walk (s)	19.5	19.5		6.0	19.5	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	28.8	28.8		48.0	48.0	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.95	0.88		0.51	0.67	
Control Delay (s/veh)	60.7	44.6		14.5	17.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	60.7	44.6		14.5	17.1	
LOS	E	D		B	B	
Approach Delay (s/veh)	53.0			14.5	17.1	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 89.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 27.3		Intersection LOS: C	
Intersection Capacity Utilization 74.7%		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)	492	451	935	1205
v/c Ratio	0.95	0.88	0.51	0.67
Control Delay (s/veh)	60.7	44.6	14.5	17.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.7	44.6	14.5	17.1
Queue Length 50th (m)	81.7	61.2	51.4	73.8
Queue Length 95th (m)	#141.1	#116.4	67.2	96.1
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	529	520	1844	1786
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	0.93	0.87	0.51	0.67

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	451	0	935	1045	160
Future Volume (vph)	492	451	0	935	1045	160
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3299	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	492	451	0	935	1045	160
RTOR Reduction (vph)	0	54	0	0	13	0
Lane Group Flow (vph)	492	397	0	935	1192	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)	28.8	28.8		48.0	48.0	
Effective Green, g (s)	28.8	28.8		48.0	48.0	
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)	516	456		1845	1773	
v/s Ratio Prot	c0.31			0.27	c0.36	
v/s Ratio Perm		0.28				
v/c Ratio	0.95	0.87		0.51	0.67	
Uniform Delay, d1	29.6	28.5		13.1	15.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.1	16.4		1.0	2.1	
Delay (s)	57.7	44.9		14.1	17.0	
Level of Service	E	D		B	B	
Approach Delay (s/veh)	51.6			14.1	17.0	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	89.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

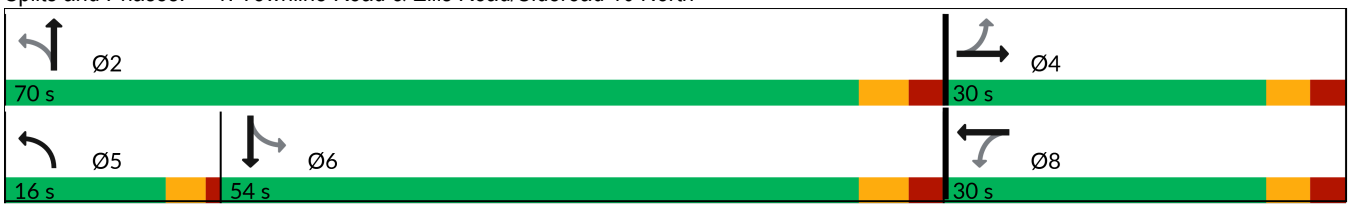
c Critical Lane Group

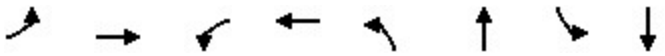
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	21	134	92	38	9	362	903	121	9	508	60
Future Volume (vph)	39	21	134	92	38	9	362	903	121	9	508	60
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.982			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1584	0	1668	1588	0	1668	1547	0
Flt Permitted	0.726			0.600			0.310			0.222		
Satd. Flow (perm)	1274	1395	0	1033	1584	0	544	1588	0	390	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		134			9			13			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	39	21	134	92	38	9	362	903	121	9	508	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	155	0	92	47	0	362	1024	0	9	568	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)	13.1	13.1		13.1	13.1		66.1	63.8		48.6	48.6	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.74	0.72		0.54	0.54	
v/c Ratio	0.21	0.49		0.61	0.20		0.67	0.90		0.04	0.67	
Control Delay (s/veh)	35.5	14.0		52.8	29.6		11.0	24.2		12.3	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	6.0		0.0	0.0	
Total Delay (s/veh)	35.5	14.0		52.8	29.6		11.0	30.1		12.3	20.5	
LOS	D	B		D	C		B	C		B	C	
Approach Delay (s/veh)		18.3			45.0			25.1			20.4	
Approach LOS		B			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.2			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 24.6		Intersection LOS: C	
Intersection Capacity Utilization 104.1%		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)	39	155	92	47	362	1024	9	568
v/c Ratio	0.21	0.49	0.61	0.20	0.67	0.90	0.04	0.67
Control Delay (s/veh)	35.5	14.0	52.8	29.6	11.0	24.2	12.3	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Total Delay (s/veh)	35.5	14.0	52.8	29.6	11.0	30.1	12.3	20.5
Queue Length 50th (m)	6.0	3.2	14.9	5.8	16.5	114.7	0.7	65.5
Queue Length 95th (m)	14.7	19.4	30.1	14.9	35.7	#264.3	3.4	120.1
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	343	473	278	433	554	1139	212	846
Starvation Cap Reductn	0	0	0	0	0	85	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	0.33	0.11	0.65	0.97	0.04	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)	39	21	134	92	38	9	362	903	121	9	508	60
Future Volume (vph)	39	21	134	92	38	9	362	903	121	9	508	60
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	0.98		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	1396		1635	1585		1668	1589		1668	1547	
Flt Permitted	0.73	1.00		0.60	1.00		0.31	1.00		0.22	1.00	
Satd. Flow (perm)	1275	1396		1032	1585		544	1589		389	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)	39	21	134	92	38	9	362	903	121	9	508	60
RTOR Reduction (vph)	0	114	0	0	8	0	0	4	0	0	4	0
Lane Group Flow (vph)	39	41	0	92	39	0	362	1020	0	9	564	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		48.6	48.6	
Effective Green, g (s)	13.1	13.1		13.1	13.1		63.8	63.8		48.6	48.6	
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)	187	205		151	232		530	1136		211	842	
v/s Ratio Prot		0.03			0.02		0.09	c0.64			0.36	
v/s Ratio Perm	0.03			c0.09			0.40			0.02		
v/c Ratio	0.21	0.20		0.61	0.17		0.68	0.90		0.04	0.67	
Uniform Delay, d1	33.5	33.4		35.7	33.3		7.4	10.1		9.5	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		6.8	0.3		3.6	11.2		0.4	4.2	
Delay (s)	34.0	33.9		42.5	33.6		11.0	21.3		9.8	18.8	
Level of Service	C	C		D	C		B	C		A	B	
Approach Delay (s/veh)		33.9			39.5			18.6			18.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	16.3
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

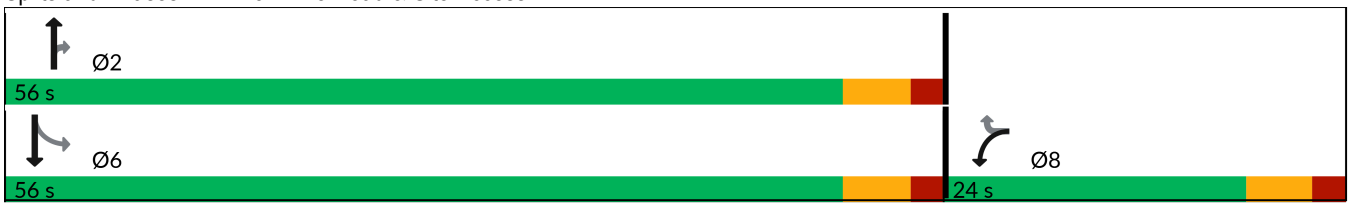


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1318	54	24	718
Future Volume (vph)	85	68	1318	54	24	718
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.071	
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		65		54		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1318	54	24	718
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	68	1318	54	24	718
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	9.3	9.3	57.6	57.6	57.6	57.6
Actuated g/C Ratio	0.12	0.12	0.77	0.77	0.77	0.77
v/c Ratio	0.43	0.29	1.00	0.05	0.24	0.51
Control Delay (s/veh)	36.2	11.9	40.0	1.4	12.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.2	11.9	40.0	1.4	12.0	6.8
LOS	D	B	D	A	B	A
Approach Delay (s/veh)	25.4		38.5			7.0
Approach LOS	C		D			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.2			
Natural Cycle: 120			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay (s/veh): 27.3		Intersection LOS: C	
Intersection Capacity Utilization 89.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	85	68	1318	54	24	718
v/c Ratio	0.43	0.29	1.00	0.05	0.24	0.51
Control Delay (s/veh)	36.2	11.9	40.0	1.4	12.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.2	11.9	40.0	1.4	12.0	6.8
Queue Length 50th (m)	11.1	0.4	~208.2	0.0	1.0	37.8
Queue Length 95th (m)	22.6	10.2	#294.0	2.9	6.3	72.9
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	390	398	1318	1134	100	1411
Starvation Cap Reductn	0	0	0	0	0	154
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.17	1.00	0.05	0.24	0.57

Intersection Summary

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

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1318	54	24	718
Future Volume (vph)	85	68	1318	54	24	718
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.07	1.00
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1318	54	24	718
RTOR Reduction (vph)	0	58	0	14	0	0
Lane Group Flow (vph)	85	10	1318	40	24	718
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.1	8.1	56.4	56.4	56.4	56.4
Effective Green, g (s)	8.1	8.1	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.11	0.11	0.74	0.74	0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	153	1268	1078	96	1358
v/s Ratio Prot	c0.05		c0.77			0.39
v/s Ratio Perm		0.01		0.03	0.18	
v/c Ratio	0.49	0.06	1.04	0.04	0.25	0.53
Uniform Delay, d1	32.3	30.8	10.1	2.7	3.2	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.2	36.1	0.1	6.1	1.5
Delay (s)	34.5	31.0	46.2	2.8	9.4	5.8
Level of Service	C	C	D	A	A	A
Approach Delay (s/veh)	32.9		44.5			5.9
Approach LOS	C		D			A

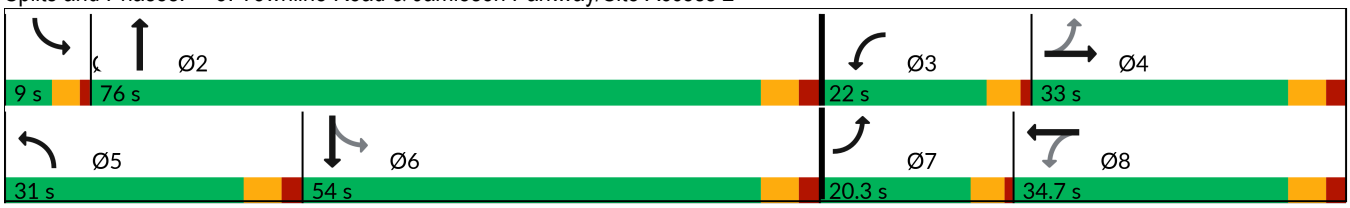
Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

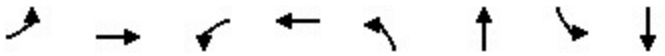
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	0	364	173	22	83	428	1034	72	18	629	149
Future Volume (vph)	215	0	364	173	22	83	428	1034	72	18	629	149
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane 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			0.881			0.990			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1437	0	3203	3271	0	1668	3125	0
Flt Permitted	0.628			0.345			0.950			0.258		
Satd. Flow (perm)	1102	1387	0	606	1437	0	3203	3271	0	453	3125	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		392			83			7			22	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	215	0	364	173	22	83	428	1034	72	18	629	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	364	0	173	105	0	428	1106	0	18	778	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)	20.3	33.0		22.0	34.7		31.0	76.0		9.0	54.0	
Total Split (%)	14.5%	23.6%		15.7%	24.8%		22.1%	54.3%		6.4%	38.6%	
Maximum Green (s)	15.8	27.0		17.5	28.7		25.0	70.0		5.0	48.0	
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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.4	11.9		27.8	11.6		20.2	71.9		56.0	48.9	
Actuated g/C Ratio	0.24	0.10		0.23	0.10		0.17	0.61		0.47	0.41	
v/c Ratio	0.64	0.74		0.63	0.49		0.78	0.56		0.07	0.60	
Control Delay (s/veh)	45.7	13.3		45.7	23.6		58.5	16.7		11.9	30.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	45.7	13.3		45.7	23.6		58.5	16.7		11.9	30.1	
LOS	D	B		D	C		E	B		B	C	
Approach Delay (s/veh)		25.4			37.4			28.3			29.7	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 118.4			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 28.9		Intersection LOS: C	
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			

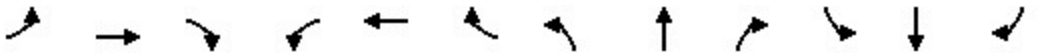
Splits and Phases: 3: Townline Road & Jamieson Parkway/Site Access 2





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	215	364	173	105	428	1106	18	778
v/c Ratio	0.64	0.74	0.63	0.49	0.78	0.56	0.07	0.60
Control Delay (s/veh)	45.7	13.3	45.7	23.6	58.5	16.7	11.9	30.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.7	13.3	45.7	23.6	58.5	16.7	11.9	30.1
Queue Length 50th (m)	41.1	0.0	32.2	4.8	47.5	63.5	1.3	67.8
Queue Length 95th (m)	66.1	20.3	53.6	21.6	73.7	130.5	5.1	112.4
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	345	620	314	413	680	1987	265	1303
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	0.62	0.59	0.55	0.25	0.63	0.56	0.07	0.60

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	0	364	173	22	83	428	1034	72	18	629	149
Future Volume (vph)	215	0	364	173	22	83	428	1034	72	18	629	149
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	0.88		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	1438		3203	3272		1668	3126	
Flt Permitted	0.63	1.00		0.34	1.00		0.95	1.00		0.26	1.00	
Satd. Flow (perm)	1102	1387		605	1438		3203	3272		453	3126	
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)	215	0	364	173	22	83	428	1034	72	18	629	149
RTOR Reduction (vph)	0	328	0	0	75	0	0	3	0	0	13	0
Lane Group Flow (vph)	215	36	0	173	30	0	428	1103	0	18	765	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	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)	26.9	11.9		26.3	11.6		20.2	71.8		53.2	51.4	
Effective Green, g (s)	26.9	11.9		26.3	11.6		20.2	71.8		53.2	51.4	
Actuated g/C Ratio	0.22	0.10		0.22	0.10		0.17	0.59		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)	315	136		261	138		536	1946		217	1331	
v/s Ratio Prot	c0.08	0.03		0.08	0.02		c0.13	c0.34		0.00	0.24	
v/s Ratio Perm	c0.07			0.06						0.04		
v/c Ratio	0.68	0.26		0.66	0.22		0.80	0.57		0.08	0.58	
Uniform Delay, d1	41.8	50.3		41.5	50.4		48.3	14.9		19.1	26.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.0	1.0		6.2	0.8		8.1	1.2		0.2	1.8	
Delay (s)	47.8	51.4		47.7	51.2		56.4	16.1		19.2	28.2	
Level of Service	D	D		D	D		E	B		B	C	
Approach Delay (s/veh)		50.1			49.0			27.4			28.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.7	Sum of lost time (s)	22.5
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



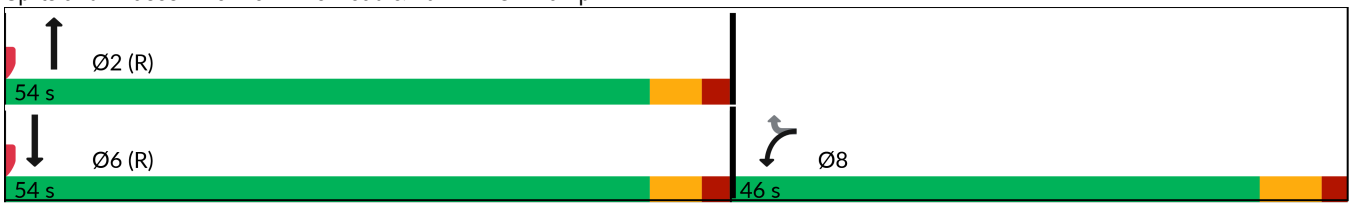
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	501	351	1288	0	0	823
Future Volume (vph)	501	351	1288	0	0	823
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		29				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	501	351	1288	0	0	823
Shared Lane Traffic (%)						
Lane Group Flow (vph)	501	351	1288	0	0	823
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.43	0.59	0.77			0.49
Control Delay (s/veh)	23.5	26.8	25.2			18.9



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	23.5	26.8	25.2			18.9
LOS	C	C	C			B
Approach Delay (s/veh)	24.9		25.2			18.9
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 23.4		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		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)	501	351	1288	823
v/c Ratio	0.43	0.59	0.77	0.49
Control Delay (s/veh)	23.5	26.8	25.2	18.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.5	26.8	25.2	18.9
Queue Length 50th (m)	35.8	48.4	104.2	55.0
Queue Length 95th (m)	49.4	77.4	131.0	71.0
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	592	1680	1680
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	0.59	0.77	0.49

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	501	351	1288	0	0	823
Future Volume (vph)	501	351	1288	0	0	823
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)	501	351	1288	0	0	823
RTOR Reduction (vph)	0	18	0	0	0	0
Lane Group Flow (vph)	501	333	1288	0	0	823
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.17		c0.37			0.24
v/s Ratio Perm		c0.23				
v/c Ratio	0.43	0.58	0.77			0.49
Uniform Delay, d1	22.1	23.7	21.4			17.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.2	4.2	3.4			1.0
Delay (s)	23.2	28.0	24.8			18.7
Level of Service	C	C	C			B
Approach Delay (s/veh)	25.2		24.8			18.7
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

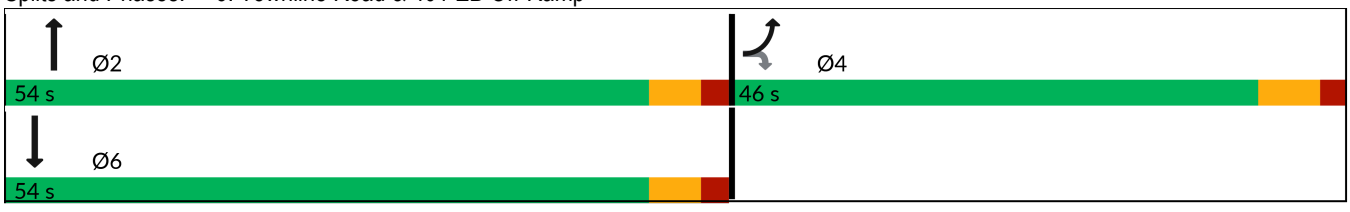


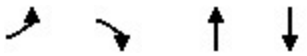
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	430	460	0	1097	1194	172
Future Volume (vph)	430	460	0	1097	1194	172
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.981	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3355	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3355	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		38			22	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	430	460	0	1097	1194	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	430	460	0	1097	1366	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	32.0	32.0		48.3	48.3	
Actuated g/C Ratio	0.34	0.34		0.52	0.52	
v/c Ratio	0.77	0.88		0.60	0.78	
Control Delay (s/veh)	37.0	45.5		18.4	23.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	45.5		18.4	23.0	
LOS	D	D		B	C	
Approach Delay (s/veh)	41.4			18.4	23.0	
Approach LOS	D			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.9			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 26.4		Intersection LOS: C	
Intersection Capacity Utilization 79.8%		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)	430	460	1097	1366
v/c Ratio	0.77	0.88	0.60	0.78
Control Delay (s/veh)	37.0	45.5	18.4	23.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	45.5	18.4	23.0
Queue Length 50th (m)	67.3	70.6	72.3	102.8
Queue Length 95th (m)	101.9	#120.5	102.7	146.4
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	692	638	1837	1754
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	0.72	0.60	0.78

Intersection Summary

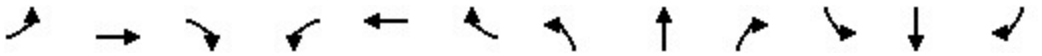
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	430	460	0	1097	1194	172
Future Volume (vph)	430	460	0	1097	1194	172
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3356	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3356	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	430	460	0	1097	1194	172
RTOR Reduction (vph)	0	25	0	0	11	0
Lane Group Flow (vph)	430	435	0	1097	1355	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)	32.0	32.0		48.3	48.3	
Effective Green, g (s)	32.0	32.0		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)	558	497		1839	1746	
v/s Ratio Prot	0.27			0.31	c0.40	
v/s Ratio Perm		c0.30				
v/c Ratio	0.77	0.88		0.60	0.78	
Uniform Delay, d1	27.1	28.5		15.5	17.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	15.7		1.4	3.5	
Delay (s)	33.6	44.3		16.9	21.4	
Level of Service	C	D		B	C	
Approach Delay (s/veh)	39.1			16.9	21.4	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	92.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

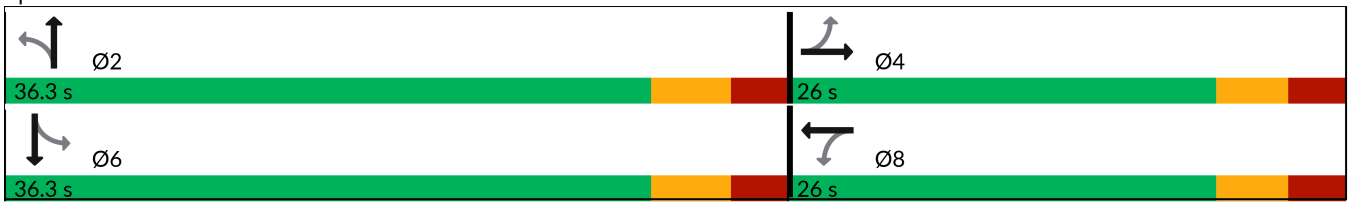


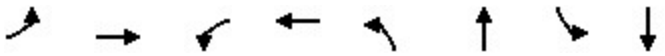
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	26	185	44	15	4	183	496	59	3	408	36
Future Volume (vph)	47	26	185	44	15	4	183	496	59	3	408	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.968			0.984			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1570	0	1651	1577	0	1668	1597	0
Flt Permitted	0.745			0.626			0.495			0.410		
Satd. Flow (perm)	1295	1416	0	1099	1570	0	860	1577	0	720	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		185			4			13			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	47	26	185	44	15	4	183	496	59	3	408	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	211	0	44	19	0	183	555	0	3	444	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)	9.0	9.0		9.0	9.0		31.2	31.2		31.2	31.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.59	0.59		0.59	0.59	
v/c Ratio	0.21	0.53		0.23	0.07		0.36	0.59		0.01	0.47	
Control Delay (s/veh)	20.4	10.3		21.3	16.2		8.6	10.2		5.3	8.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.4	10.3		21.3	16.2		8.6	10.2		5.3	8.3	
LOS	C	B		C	B		A	B		A	A	
Approach Delay (s/veh)		12.2			19.7			9.8			8.3	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 52.5			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 10.2		Intersection LOS: B	
Intersection Capacity Utilization 82.7%		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)	47	211	44	19	183	555	3	444
v/c Ratio	0.21	0.53	0.23	0.07	0.36	0.59	0.01	0.47
Control Delay (s/veh)	20.4	10.3	21.3	16.2	8.6	10.2	5.3	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.4	10.3	21.3	16.2	8.6	10.2	5.3	8.3
Queue Length 50th (m)	3.8	2.0	3.5	1.2	7.0	25.1	0.1	18.0
Queue Length 95th (m)	10.5	15.8	10.2	5.2	21.0	60.3	0.9	43.0
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	494	654	419	601	509	941	427	951
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	0.32	0.11	0.03	0.36	0.59	0.01	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	26	185	44	15	4	183	496	59	3	408	36
Future Volume (vph)	47	26	185	44	15	4	183	496	59	3	408	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	1417		1668	1570		1651	1577		1668	1597	
Flt Permitted	0.75	1.00		0.63	1.00		0.49	1.00		0.41	1.00	
Satd. Flow (perm)	1295	1417		1099	1570		860	1577		719	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)	47	26	185	44	15	4	183	496	59	3	408	36
RTOR Reduction (vph)	0	153	0	0	3	0	0	5	0	0	4	0
Lane Group Flow (vph)	47	58	0	44	16	0	183	550	0	3	440	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		31.2	31.2		31.2	31.2	
Effective Green, g (s)	9.0	9.0		9.0	9.0		31.2	31.2		31.2	31.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		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)	222	242		188	269		511	937		427	949	
v/s Ratio Prot		c0.04			0.01			c0.35			0.28	
v/s Ratio Perm	0.04			0.04			0.21			0.00		
v/c Ratio	0.21	0.24		0.23	0.06		0.36	0.59		0.01	0.46	
Uniform Delay, d1	18.7	18.8		18.8	18.2		5.5	6.6		4.3	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		0.6	0.1		2.0	2.7		0.0	1.6	
Delay (s)	19.2	19.3		19.4	18.3		7.4	9.3		4.4	7.6	
Level of Service	B	B		B	B		A	A		A	A	
Approach Delay (s/veh)		19.3			19.1			8.9			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	12.3
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

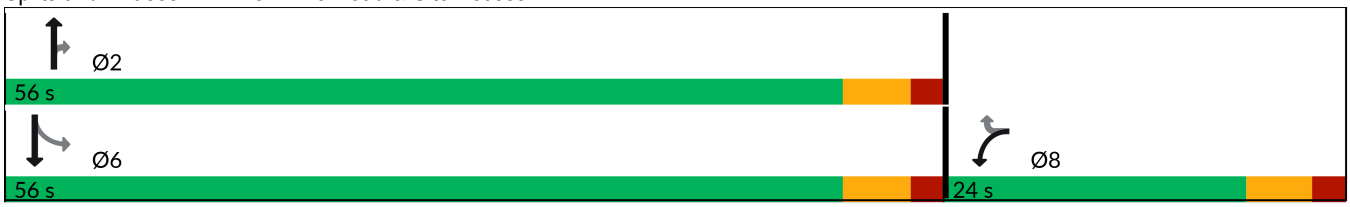


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	713	31	14	632
Future Volume (vph)	30	24	713	31	14	632
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.364	
Satd. Flow (perm)	1626	1454	1721	1463	671	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		24		31		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	713	31	14	632
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	24	713	31	14	632
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	7.0	7.0	65.6	65.6	65.6	65.6
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.20	0.16	0.49	0.02	0.02	0.40
Control Delay (s/veh)	36.0	15.9	4.6	1.2	2.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.0	15.9	4.6	1.2	2.9	3.8
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	27.1		4.5			3.8
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay (s/veh): 5.0		Intersection LOS: A	
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	24	713	31	14	632
v/c Ratio	0.20	0.16	0.49	0.02	0.02	0.40
Control Delay (s/veh)	36.0	15.9	4.6	1.2	2.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.0	15.9	4.6	1.2	2.9	3.8
Queue Length 50th (m)	4.6	0.0	33.2	0.0	0.4	26.2
Queue Length 95th (m)	11.2	6.3	61.8	1.8	1.8	47.4
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	382	360	1466	1250	571	1569
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.07	0.49	0.02	0.02	0.40

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	713	31	14	632
Future Volume (vph)	30	24	713	31	14	632
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.36	1.00
Satd. Flow (perm)	1626	1454	1721	1463	670	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	713	31	14	632
RTOR Reduction (vph)	0	23	0	6	0	0
Lane Group Flow (vph)	30	1	713	25	14	632
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.5	4.5	62.9	62.9	62.9	62.9
Effective Green, g (s)	4.5	4.5	62.9	62.9	62.9	62.9
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	92	82	1363	1158	530	1459
v/s Ratio Prot	c0.02		c0.41			0.34
v/s Ratio Perm		0.00		0.02	0.02	
v/c Ratio	0.33	0.02	0.52	0.02	0.03	0.43
Uniform Delay, d1	36.0	35.4	2.9	1.7	1.8	2.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	1.4	0.0	0.1	0.9
Delay (s)	38.1	35.4	4.4	1.8	1.8	3.5
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	36.9		4.3			3.5
Approach LOS	D		A			A

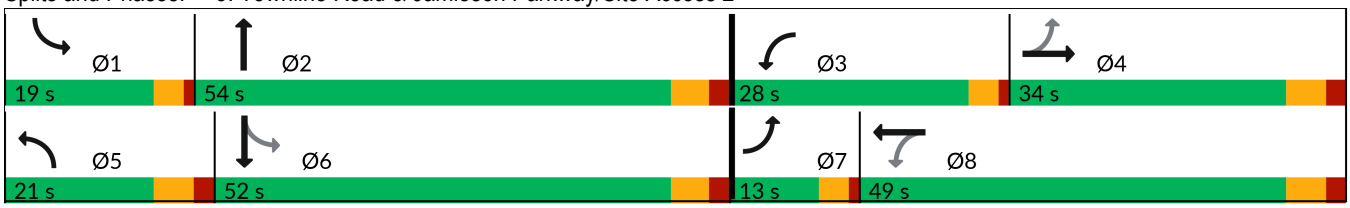
Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

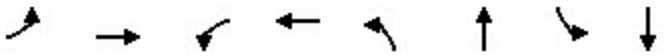
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	0	232	61	8	29	218	573	41	10	543	110
Future Volume (vph)	146	0	232	61	8	29	218	573	41	10	543	110
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (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			0.882			0.990			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1439	0	3203	3241	0	1668	3214	0
Flt Permitted	0.494			0.976			0.950			0.419		
Satd. Flow (perm)	867	1387	0	1713	1439	0	3203	3241	0	735	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		503			29			6			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	146	0	232	61	8	29	218	573	41	10	543	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	232	0	61	37	0	218	614	0	10	653	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.0	6.5		13.6	6.6		11.6	62.1		54.1	46.3	
Actuated g/C Ratio	0.17	0.07		0.15	0.07		0.13	0.67		0.58	0.50	
v/c Ratio	0.60	0.41		0.25	0.29		0.55	0.28		0.02	0.40	
Control Delay (s/veh)	44.1	2.2		34.3	25.6		44.2	7.7		6.0	16.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	44.1	2.2		34.3	25.6		44.2	7.7		6.0	16.1	
LOS	D	A		C	C		D	A		A	B	
Approach Delay (s/veh)		18.4			31.0			17.3			16.0	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 92.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 17.7		Intersection LOS: B	
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

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

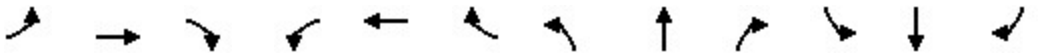




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	146	232	61	37	218	614	10	653
v/c Ratio	0.60	0.41	0.25	0.29	0.55	0.28	0.02	0.40
Control Delay (s/veh)	44.1	2.2	34.3	25.6	44.2	7.7	6.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	44.1	2.2	34.3	25.6	44.2	7.7	6.0	16.1
Queue Length 50th (m)	22.9	0.0	9.1	1.4	19.5	20.7	0.5	37.6
Queue Length 95th (m)	#45.1	0.0	20.1	11.0	31.5	42.3	2.1	57.5
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	247	772	438	688	522	2176	654	1618
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	0.59	0.30	0.14	0.05	0.42	0.28	0.02	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)	146	0	232	61	8	29	218	573	41	10	543	110
Future Volume (vph)	146	0	232	61	8	29	218	573	41	10	543	110
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	0.88		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	1440		3203	3241		1668	3213	
Flt Permitted	0.49	1.00		0.98	1.00		0.95	1.00		0.42	1.00	
Satd. Flow (perm)	867	1387		1712	1440		3203	3241		736	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)	146	0	232	61	8	29	218	573	41	10	543	110
RTOR Reduction (vph)	0	213	0	0	28	0	0	2	0	0	9	0
Lane Group Flow (vph)	146	19	0	61	9	0	218	612	0	10	644	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)	19.1	8.2		11.0	4.1		11.6	62.1		50.7	49.6	
Effective Green, g (s)	19.1	8.2		11.0	4.1		11.6	62.1		50.7	49.6	
Actuated g/C Ratio	0.19	0.08		0.11	0.04		0.12	0.63		0.52	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)	258	115		188	60		377	2047		390	1621	
v/s Ratio Prot	c0.06	0.01		0.02	0.01		c0.07	0.19		0.00	c0.20	
v/s Ratio Perm	c0.05			0.01						0.01		
v/c Ratio	0.57	0.17		0.32	0.15		0.58	0.30		0.03	0.40	
Uniform Delay, d1	35.1	41.9		40.2	45.4		41.0	8.2		11.6	15.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	0.7		1.0	1.2		2.1	0.4		0.0	0.7	
Delay (s)	37.9	42.6		41.2	46.6		43.2	8.6		11.6	15.8	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s/veh)		40.8			43.3			17.7			15.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

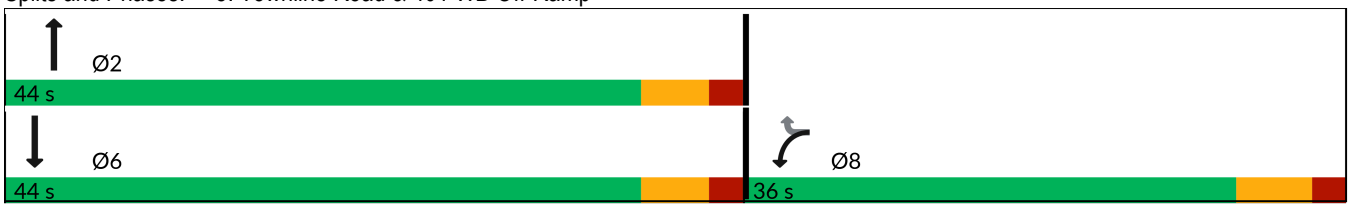


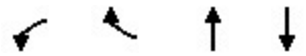
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	378	169	664	0	0	579
Future Volume (vph)	378	169	664	0	0	579
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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)	378	169	664	0	0	579
Shared Lane Traffic (%)						
Lane Group Flow (vph)	378	169	664	0	0	579
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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	0.39	0.31			0.28
Control Delay (s/veh)	26.9	6.8	7.3			7.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	26.9	6.8	7.3			7.0
LOS	C	A	A			A
Approach Delay (s/veh)	20.7		7.3			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 (s/veh): 11.3		Intersection LOS: B	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

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





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	378	169	664	579
v/c Ratio	0.59	0.39	0.31	0.28
Control Delay (s/veh)	26.9	6.8	7.3	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.9	6.8	7.3	7.0
Queue Length 50th (m)	20.8	0.0	17.5	14.9
Queue Length 95th (m)	32.3	12.6	31.4	27.0
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1427	765	2109	2088
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	0.31	0.28

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	378	169	664	0	0	579
Future Volume (vph)	378	169	664	0	0	579
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)	378	169	664	0	0	579
RTOR Reduction (vph)	0	134	0	0	0	0
Lane Group Flow (vph)	378	35	664	0	0	579
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		c0.19			0.17
v/s Ratio Perm		0.02				
v/c Ratio	0.59	0.12	0.31			0.28
Uniform Delay, d1	22.9	20.6	6.4			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)	24.4	20.7	6.8			6.5
Level of Service	C	C	A			A
Approach Delay (s/veh)	23.2		6.8			6.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

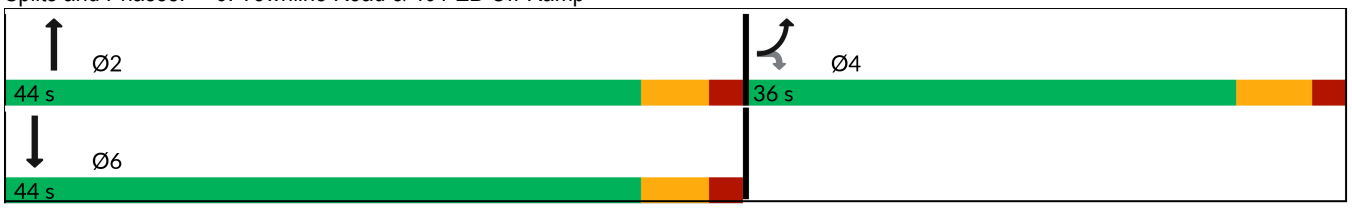


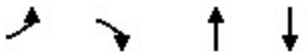
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	421	0	523	822	136
Future Volume (vph)	320	421	0	523	822	136
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.979	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3436	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3436	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		110			32	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	320	421	0	523	822	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	320	421	0	523	958	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	21.2	21.2		38.3	38.3	
Actuated g/C Ratio	0.29	0.29		0.53	0.53	
v/c Ratio	0.67	0.83		0.28	0.52	
Control Delay (s/veh)	29.1	32.0		11.0	13.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.1	32.0		11.0	13.0	
LOS	C	C		B	B	
Approach Delay (s/veh)	30.8			11.0	13.0	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 72.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 18.4		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		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)	320	421	523	958
v/c Ratio	0.67	0.83	0.28	0.52
Control Delay (s/veh)	29.1	32.0	11.0	13.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.1	32.0	11.0	13.0
Queue Length 50th (m)	37.4	39.2	19.7	40.9
Queue Length 95th (m)	61.1	71.6	34.8	68.7
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	673	665	1858	1839
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	0.48	0.63	0.28	0.52

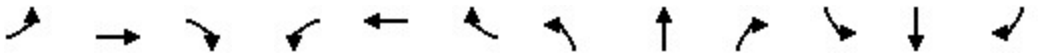
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	320	421	0	523	822	136
Future Volume (vph)	320	421	0	523	822	136
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3435	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	320	421	0	523	822	136
RTOR Reduction (vph)	0	78	0	0	15	0
Lane Group Flow (vph)	320	343	0	523	943	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)	21.2	21.2		38.3	38.3	
Effective Green, g (s)	21.2	21.2		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)	481	428		1861	1827	
v/s Ratio Prot	0.20			0.15	c0.27	
v/s Ratio Perm		c0.24				
v/c Ratio	0.67	0.80		0.28	0.52	
Uniform Delay, d1	22.3	23.5		9.3	10.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	10.4		0.4	1.0	
Delay (s)	25.7	33.9		9.7	11.9	
Level of Service	C	C		A	B	
Approach Delay (s/veh)	30.4			9.7	11.9	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

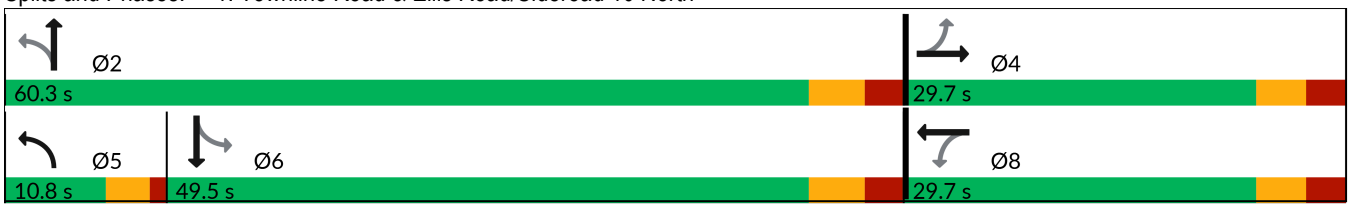


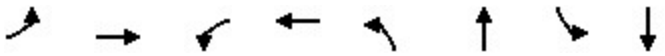
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	30	255	62	11	4	131	639	71	4	753	32
Future Volume (vph)	86	30	255	62	11	4	131	639	71	4	753	32
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.960			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1566	0	1603	1544	0	1334	1577	0
Flt Permitted	0.748			0.336			0.178			0.395		
Satd. Flow (perm)	1300	1388	0	590	1566	0	300	1544	0	555	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		255			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	86	30	255	62	11	4	131	639	71	4	753	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	285	0	62	15	0	131	710	0	4	785	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)	11.9	11.9		11.9	11.9		56.5	54.2		43.5	43.5	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.69		0.55	0.55	
v/c Ratio	0.44	0.67		0.70	0.06		0.40	0.66		0.01	0.90	
Control Delay (s/veh)	36.7	14.2		68.7	23.7		7.9	11.8		10.0	32.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	36.7	14.2		68.7	23.7		7.9	12.0		10.0	32.3	
LOS	D	B		E	C		A	B		A	C	
Approach Delay (s/veh)		19.4			59.9			11.4			32.2	
Approach LOS		B			E			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 78.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 22.5		Intersection LOS: C	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

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

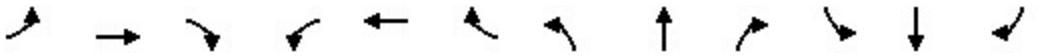




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	285	62	15	131	710	4	785
v/c Ratio	0.44	0.67	0.70	0.06	0.40	0.66	0.01	0.90
Control Delay (s/veh)	36.7	14.2	68.7	23.7	7.9	11.8	10.0	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	36.7	14.2	68.7	23.7	7.9	12.0	10.0	32.3
Queue Length 50th (m)	11.7	3.9	8.8	1.4	4.8	49.1	0.3	94.7
Queue Length 95th (m)	24.4	25.3	21.4	6.0	13.1	113.9	1.9	#200.7
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	394	598	178	477	329	1069	308	877
Starvation Cap Reductn	0	0	0	0	0	48	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	0.22	0.48	0.35	0.03	0.40	0.70	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)	86	30	255	62	11	4	131	639	71	4	753	32
Future Volume (vph)	86	30	255	62	11	4	131	639	71	4	753	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	1388		1668	1566		1603	1544		1334	1576	
Flt Permitted	0.75	1.00		0.34	1.00		0.18	1.00		0.40	1.00	
Satd. Flow (perm)	1299	1388		590	1566		300	1544		555	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)	86	30	255	62	11	4	131	639	71	4	753	32
RTOR Reduction (vph)	0	216	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	86	69	0	62	12	0	131	707	0	4	784	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)	11.9	11.9		11.9	11.9		54.2	54.2		43.6	43.6	
Effective Green, g (s)	11.9	11.9		11.9	11.9		54.2	54.2		43.6	43.6	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.69	0.69		0.56	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)	197	210		89	237		317	1067		308	876	
v/s Ratio Prot		0.05			0.01		0.03	c0.46			c0.50	
v/s Ratio Perm	0.07			c0.11			0.25			0.01		
v/c Ratio	0.44	0.33		0.70	0.05		0.41	0.66		0.01	0.89	
Uniform Delay, d1	30.2	29.7		31.5	28.4		9.0	6.9		7.8	15.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.9		21.1	0.1		0.9	3.2		0.1	13.6	
Delay (s)	31.8	30.6		52.6	28.5		9.8	10.1		7.9	28.9	
Level of Service	C	C		D	C		A	B		A	C	
Approach Delay (s/veh)		30.9			47.9			10.1			28.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	16.3
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

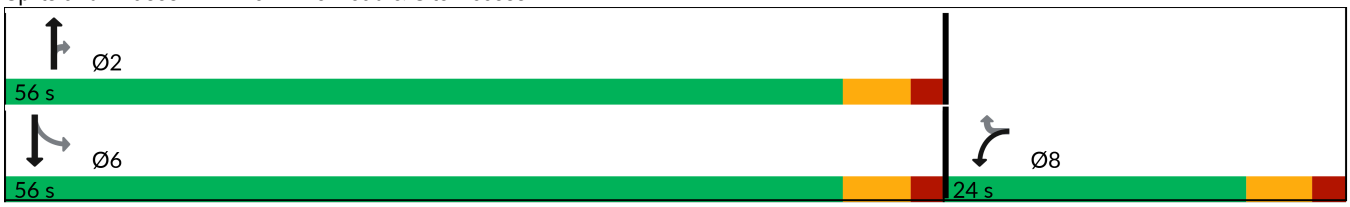


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	798	112	58	997
Future Volume (vph)	26	23	798	112	58	997
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.324	
Satd. Flow (perm)	1626	1454	1721	1463	597	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		23		112		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	798	112	58	997
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	23	798	112	58	997
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	29.0	29.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.9	6.9	66.0	66.0	66.0	66.0
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.18	0.15	0.54	0.09	0.11	0.63
Control Delay (s/veh)	36.0	16.2	5.2	0.8	3.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay (s/veh)	36.0	16.2	5.2	0.8	3.1	6.9
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	26.7		4.6			6.7
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 6.3		Intersection LOS: A	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	26	23	798	112	58	997
v/c Ratio	0.18	0.15	0.54	0.09	0.11	0.63
Control Delay (s/veh)	36.0	16.2	5.2	0.8	3.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay (s/veh)	36.0	16.2	5.2	0.8	3.1	6.9
Queue Length 50th (m)	4.0	0.0	40.0	0.0	1.8	58.4
Queue Length 95th (m)	10.3	6.1	74.7	3.2	5.1	111.9
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	381	358	1470	1266	510	1573
Starvation Cap Reductn	0	0	0	0	0	197
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.54	0.09	0.11	0.72

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	798	112	58	997
Future Volume (vph)	26	23	798	112	58	997
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.32	1.00
Satd. Flow (perm)	1626	1454	1721	1463	596	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	798	112	58	997
RTOR Reduction (vph)	0	22	0	23	0	0
Lane Group Flow (vph)	26	1	798	89	58	997
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.4	4.4	63.4	63.4	63.4	63.4
Effective Green, g (s)	4.4	4.4	63.4	63.4	63.4	63.4
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	80	1367	1162	473	1463
v/s Ratio Prot	c0.02		0.46			c0.54
v/s Ratio Perm		0.00		0.06	0.10	
v/c Ratio	0.29	0.02	0.58	0.08	0.12	0.68
Uniform Delay, d1	36.2	35.7	3.1	1.8	1.9	3.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	1.8	0.1	0.5	2.6
Delay (s)	38.0	35.7	5.0	1.9	2.4	6.3
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	37.0		4.6			6.0
Approach LOS	D		A			A

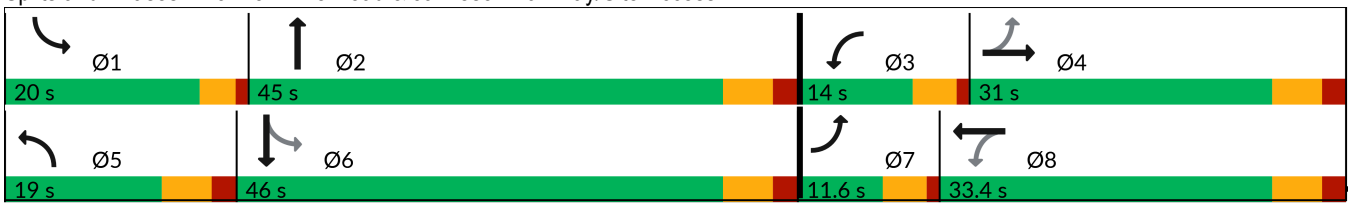
Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

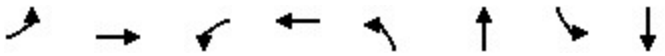
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	0	298	53	7	23	333	728	228	55	807	177
Future Volume (vph)	140	0	298	53	7	23	333	728	228	55	807	177
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (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			0.885			0.964			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1668	1444	0	3203	3191	0	1668	3168	0
Flt Permitted	0.441			0.656			0.950			0.292		
Satd. Flow (perm)	759	1347	0	1151	1444	0	3202	3191	0	513	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		378			23			42			27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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)	140	0	298	53	7	23	333	728	228	55	807	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	298	0	53	30	0	333	956	0	55	984	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.5	8.6		14.6	9.5		12.7	50.5		48.8	40.2	
Actuated g/C Ratio	0.18	0.10		0.16	0.11		0.14	0.56		0.55	0.45	
v/c Ratio	0.58	0.63		0.23	0.17		0.74	0.53		0.15	0.68	
Control Delay (s/veh)	40.9	7.8		30.8	20.8		48.6	14.6		7.7	23.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	40.9	7.8		30.8	20.8		48.6	14.6		7.7	23.0	
LOS	D	A		C	C		D	B		A	C	
Approach Delay (s/veh)		18.4			27.2			23.4			22.2	
Approach LOS		B			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: 0.74			
Intersection Signal Delay (s/veh): 22.3		Intersection LOS: C	
Intersection Capacity Utilization 84.3%		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	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	298	53	30	333	956	55	984
v/c Ratio	0.58	0.63	0.23	0.17	0.74	0.53	0.15	0.68
Control Delay (s/veh)	40.9	7.8	30.8	20.8	48.6	14.6	7.7	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.9	7.8	30.8	20.8	48.6	14.6	7.7	23.0
Queue Length 50th (m)	20.5	0.0	7.3	1.1	29.1	52.8	2.9	69.4
Queue Length 95th (m)	#39.1	8.1	16.3	9.1	#49.8	81.3	7.8	100.8
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	242	650	267	460	467	1820	542	1439
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	0.58	0.46	0.20	0.07	0.71	0.53	0.10	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)	140	0	298	53	7	23	333	728	228	55	807	177
Future Volume (vph)	140	0	298	53	7	23	333	728	228	55	807	177
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	0.89		1.00	0.96		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		1668	1444		3203	3191		1668	3169	
Flt Permitted	0.44	1.00		0.66	1.00		0.95	1.00		0.29	1.00	
Satd. Flow (perm)	759	1347		1151	1444		3203	3191		512	3169	
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)	140	0	298	53	7	23	333	728	228	55	807	177
RTOR Reduction (vph)	0	265	0	0	21	0	0	19	0	0	15	0
Lane Group Flow (vph)	140	33	0	53	9	0	333	937	0	55	969	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	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)	20.7	10.2		12.5	6.1		12.7	50.5		46.4	41.1	
Effective Green, g (s)	20.7	10.2		12.5	6.1		12.7	50.5		46.4	41.1	
Actuated g/C Ratio	0.22	0.11		0.13	0.07		0.14	0.54		0.50	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)	268	147		190	94		437	1734		321	1402	
v/s Ratio Prot	c0.06	0.02		0.02	0.01		c0.10	0.29		0.01	c0.31	
v/s Ratio Perm	c0.06			0.02						0.08		
v/c Ratio	0.52	0.22		0.28	0.09		0.76	0.54		0.17	0.69	
Uniform Delay, d1	30.8	37.7		36.0	40.8		38.6	13.7		12.0	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.8		0.8	0.4		7.7	1.2		0.3	2.8	
Delay (s)	32.6	38.5		36.8	41.2		46.3	14.9		12.3	23.6	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s/veh)		36.6			38.4			23.0			23.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	22.5
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

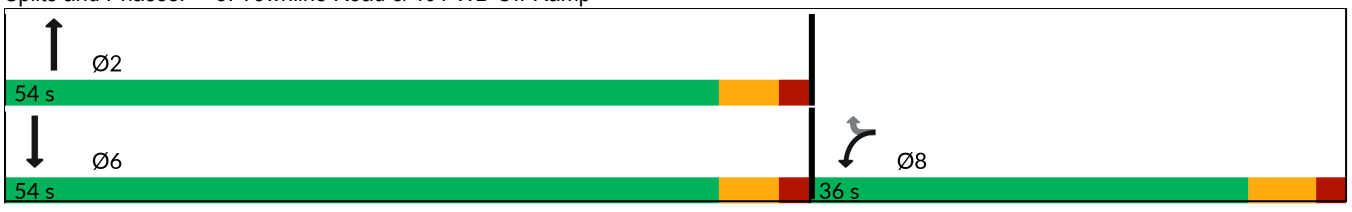


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	535	206	1101	0	0	801
Future Volume (vph)	535	206	1101	0	0	801
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		69				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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)	535	206	1101	0	0	801
Shared Lane Traffic (%)						
Lane Group Flow (vph)	535	206	1101	0	0	801
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	20.7	20.7	48.2			48.2
Actuated g/C Ratio	0.25	0.25	0.59			0.59
v/c Ratio	0.73	0.51	0.53			0.39
Control Delay (s/veh)	34.2	21.4	11.9			10.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	34.2	21.4	11.9			10.2
LOS	C	C	B			B
Approach Delay (s/veh)	30.6		11.9			10.2
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 16.6		Intersection LOS: B	
Intersection Capacity Utilization 57.2%		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)	535	206	1101	801
v/c Ratio	0.73	0.51	0.53	0.39
Control Delay (s/veh)	34.2	21.4	11.9	10.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	21.4	11.9	10.2
Queue Length 50th (m)	39.0	17.5	49.0	31.6
Queue Length 95th (m)	54.8	36.5	81.3	53.7
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1041	543	2070	2070
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.38	0.53	0.39

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	535	206	1101	0	0	801
Future Volume (vph)	535	206	1101	0	0	801
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)	535	206	1101	0	0	801
RTOR Reduction (vph)	0	51	0	0	0	0
Lane Group Flow (vph)	535	155	1101	0	0	801
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)	20.7	20.7	48.2			48.2
Effective Green, g (s)	20.7	20.7	48.2			48.2
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)	728	349	2072			2072
v/s Ratio Prot	c0.19		c0.31			0.23
v/s Ratio Perm		0.11				
v/c Ratio	0.73	0.44	0.53			0.39
Uniform Delay, d1	27.8	25.5	9.9			8.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.9	0.9	1.0			0.5
Delay (s)	31.7	26.4	10.9			9.3
Level of Service	C	C	B			A
Approach Delay (s/veh)	30.2		10.9			9.3
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

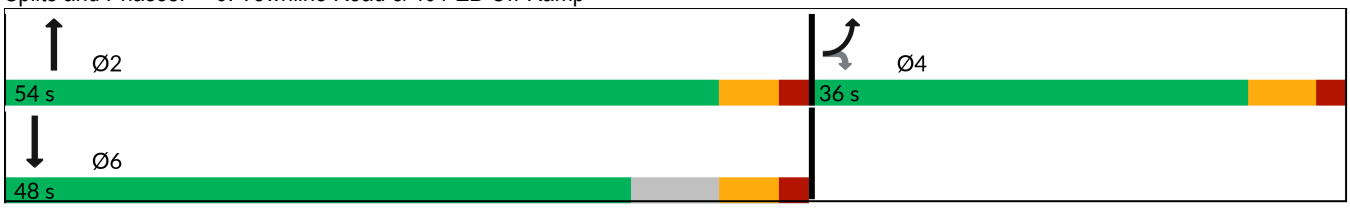


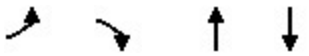
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	529	498	0	1031	1167	177
Future Volume (vph)	529	498	0	1031	1167	177
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3298	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		58			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	529	498	0	1031	1167	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	529	498	0	1031	1344	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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 Don't Walk (s)	19.5	19.5		6.0	19.5	
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	0.99		0.56	0.76	
Control Delay (s/veh)	73.3	67.0		15.5	19.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	73.3	67.0		15.5	19.6	
LOS	E	E		B	B	
Approach Delay (s/veh)	70.3			15.5	19.6	
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 (s/veh): 33.6		Intersection LOS: C	
Intersection Capacity Utilization 81.8%		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)	529	498	1031	1344
v/c Ratio	1.01	0.99	0.56	0.76
Control Delay (s/veh)	73.3	67.0	15.5	19.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	73.3	67.0	15.5	19.6
Queue Length 50th (m)	~91.9	77.1	58.9	88.4
Queue Length 95th (m)	#155.6	#141.3	76.6	114.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	502	1830	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	1.01	0.99	0.56	0.76

Intersection Summary

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

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	529	498	0	1031	1167	177
Future Volume (vph)	529	498	0	1031	1167	177
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3299	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	529	498	0	1031	1167	177
RTOR Reduction (vph)	0	39	0	0	14	0
Lane Group Flow (vph)	529	459	0	1031	1330	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	1759	
v/s Ratio Prot	c0.33			0.30	c0.40	
v/s Ratio Perm		0.32				
v/c Ratio	1.01	0.99		0.56	0.76	
Uniform Delay, d1	30.3	30.1		14.0	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	41.2	39.4		1.3	3.1	
Delay (s)	71.4	69.5		15.3	19.5	
Level of Service	E	E		B	B	
Approach Delay (s/veh)	70.5			15.3	19.5	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

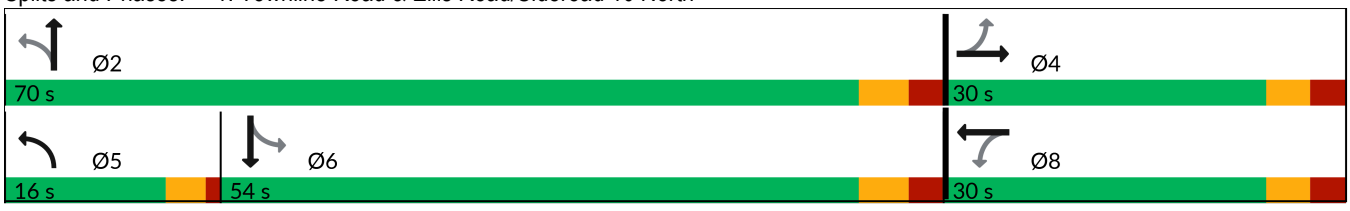
c Critical Lane Group

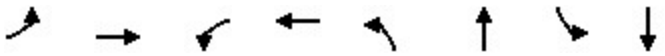
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	22	141	95	40	9	403	1007	125	10	567	67
Future Volume (vph)	41	22	141	95	40	9	403	1007	125	10	567	67
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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			0.972			0.983			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1586	0	1668	1590	0	1668	1547	0
Flt Permitted	0.725			0.577			0.257			0.147		
Satd. Flow (perm)	1273	1395	0	993	1586	0	451	1590	0	258	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		141			9			12			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	41	22	141	95	40	9	403	1007	125	10	567	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	163	0	95	49	0	403	1132	0	10	634	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)	13.5	13.5		13.5	13.5		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	0.21	0.49		0.64	0.20		0.81	1.00		0.07	0.77	
Control Delay (s/veh)	35.3	13.7		54.9	29.6		21.5	41.8		13.9	25.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	19.6		0.0	0.0	
Total Delay (s/veh)	35.3	13.7		54.9	29.6		21.5	61.4		13.9	25.2	
LOS	D	B		D	C		C	E		B	C	
Approach Delay (s/veh)		18.1			46.3			51.0			25.0	
Approach LOS		B			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.7			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay (s/veh): 41.4		Intersection LOS: D	
Intersection Capacity Utilization 111.4%		ICU Level of Service H	
Analysis Period (min) 15			

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

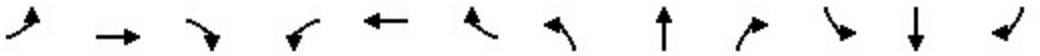




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	163	95	49	403	1132	10	634
v/c Ratio	0.21	0.49	0.64	0.20	0.81	1.00	0.07	0.77
Control Delay (s/veh)	35.3	13.7	54.9	29.6	21.5	41.8	13.9	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.6	0.0	0.0
Total Delay (s/veh)	35.3	13.7	54.9	29.6	21.5	61.4	13.9	25.2
Queue Length 50th (m)	6.3	3.3	15.5	6.1	19.4	160.8	0.8	79.7
Queue Length 95th (m)	15.2	19.8	31.2	15.5	#63.0	#313.1	4.0	#161.4
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	341	477	266	431	495	1135	137	828
Starvation Cap Reductn	0	0	0	0	0	66	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	0.36	0.11	0.81	1.06	0.07	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)	41	22	141	95	40	9	403	1007	125	10	567	67
Future Volume (vph)	41	22	141	95	40	9	403	1007	125	10	567	67
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	0.98		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	1396		1635	1587		1668	1590		1668	1547	
Flt Permitted	0.73	1.00		0.58	1.00		0.26	1.00		0.15	1.00	
Satd. Flow (perm)	1273	1396		993	1587		451	1590		258	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)	41	22	141	95	40	9	403	1007	125	10	567	67
RTOR Reduction (vph)	0	120	0	0	8	0	0	3	0	0	4	0
Lane Group Flow (vph)	41	43	0	95	41	0	403	1129	0	10	630	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)	13.5	13.5		13.5	13.5		63.9	63.9		47.9	47.9	
Effective Green, g (s)	13.5	13.5		13.5	13.5		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)	191	210		149	238		484	1132		137	826	
v/s Ratio Prot		0.03			0.03		0.11	c0.71			0.41	
v/s Ratio Perm	0.03			c0.10			0.48			0.04		
v/c Ratio	0.21	0.21		0.64	0.17		0.83	1.00		0.07	0.76	
Uniform Delay, d1	33.4	33.4		35.8	33.2		10.0	12.8		10.1	16.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		8.6	0.3		11.7	26.0		1.0	6.6	
Delay (s)	34.0	33.9		44.4	33.6		21.6	38.8		11.2	23.0	
Level of Service	C	C		D	C		C	D		B	C	
Approach Delay (s/veh)		33.9			40.7			34.3			22.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	16.3
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

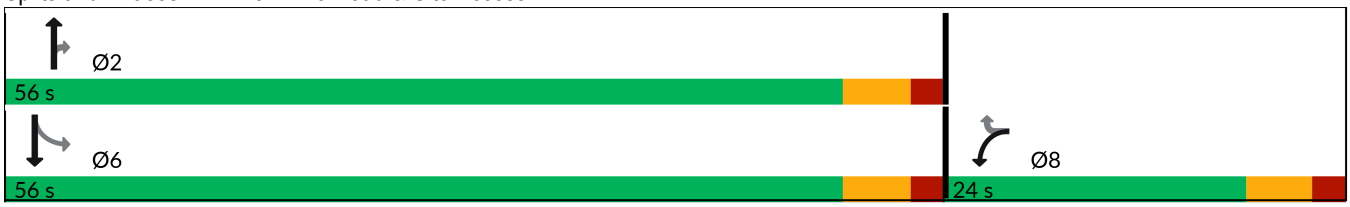


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1467	54	24	802
Future Volume (vph)	85	68	1467	54	24	802
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.071	
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		47		49		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1467	54	24	802
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	68	1467	54	24	802
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	9.3	9.3	57.6	57.6	57.6	57.6
Actuated g/C Ratio	0.12	0.12	0.77	0.77	0.77	0.77
v/c Ratio	0.43	0.31	1.11	0.05	0.24	0.57
Control Delay (s/veh)	36.2	16.9	78.3	1.6	12.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.2	16.9	78.3	1.6	12.0	7.7
LOS	D	B	E	A	B	A
Approach Delay (s/veh)	27.6		75.5			7.8
Approach LOS	C		E			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay (s/veh): 50.2		Intersection LOS: D	
Intersection Capacity Utilization 97.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	85	68	1467	54	24	802
v/c Ratio	0.43	0.31	1.11	0.05	0.24	0.57
Control Delay (s/veh)	36.2	16.9	78.3	1.6	12.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.2	16.9	78.3	1.6	12.0	7.7
Queue Length 50th (m)	11.1	2.7	~252.3	0.2	1.0	45.6
Queue Length 95th (m)	22.6	12.6	#340.0	3.1	6.3	88.9
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	390	385	1318	1132	100	1411
Starvation Cap Reductn	0	0	0	0	0	142
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.18	1.11	0.05	0.24	0.63

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	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1467	54	24	802
Future Volume (vph)	85	68	1467	54	24	802
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.07	1.00
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1467	54	24	802
RTOR Reduction (vph)	0	42	0	13	0	0
Lane Group Flow (vph)	85	26	1467	41	24	802
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.1	8.1	56.4	56.4	56.4	56.4
Effective Green, g (s)	8.1	8.1	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.11	0.11	0.74	0.74	0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	153	1268	1078	96	1358
v/s Ratio Prot	c0.05		c0.85			0.44
v/s Ratio Perm		0.02		0.03	0.18	
v/c Ratio	0.49	0.17	1.16	0.04	0.25	0.59
Uniform Delay, d1	32.3	31.1	10.1	2.7	3.2	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.5	79.9	0.1	6.1	1.9
Delay (s)	34.5	31.7	89.9	2.8	9.4	6.6
Level of Service	C	C	F	A	A	A
Approach Delay (s/veh)	33.2		86.8			6.7
Approach LOS	C		F			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

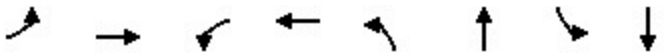
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	0	383	173	22	83	480	1152	72	18	695	167
Future Volume (vph)	226	0	383	173	22	83	480	1152	72	18	695	167
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane 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			0.881			0.991			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1437	0	3203	3274	0	1668	3125	0
Flt Permitted	0.581			0.323			0.950			0.229		
Satd. Flow (perm)	1020	1387	0	567	1437	0	3203	3274	0	402	3125	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		375			83			7			23	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	226	0	383	173	22	83	480	1152	72	18	695	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	383	0	173	105	0	480	1224	0	18	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												
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)	20.4	32.0		20.0	31.6		32.0	79.0		9.0	56.0	
Total Split (%)	14.6%	22.9%		14.3%	22.6%		22.9%	56.4%		6.4%	40.0%	
Maximum Green (s)	15.9	26.0		15.5	25.6		26.0	73.0		5.0	50.0	
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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	30.3	13.5		28.0	12.3		22.5	75.6		57.4	50.4	
Actuated g/C Ratio	0.25	0.11		0.23	0.10		0.18	0.61		0.47	0.41	
v/c Ratio	0.68	0.79		0.68	0.48		0.82	0.61		0.08	0.67	
Control Delay (s/veh)	49.4	18.1		50.4	23.4		61.4	18.0		12.6	33.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	49.4	18.1		50.4	23.4		61.4	18.0		12.6	33.4	
LOS	D	B		D	C		E	B		B	C	
Approach Delay (s/veh)		29.7			40.2			30.3			33.0	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 123.2			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 31.7		Intersection LOS: C	
Intersection Capacity Utilization 97.2%		ICU Level of Service F	
Analysis Period (min) 15			

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

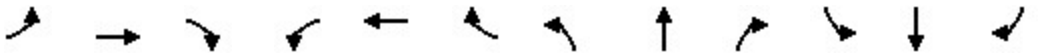




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	226	383	173	105	480	1224	18	862
v/c Ratio	0.68	0.79	0.68	0.48	0.82	0.61	0.08	0.67
Control Delay (s/veh)	49.4	18.1	50.4	23.4	61.4	18.0	12.6	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.4	18.1	50.4	23.4	61.4	18.0	12.6	33.4
Queue Length 50th (m)	46.2	1.8	34.1	5.0	55.5	74.2	1.3	81.6
Queue Length 95th (m)	71.2	33.7	55.0	21.7	#86.7	157.7	5.2	133.1
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	339	590	275	366	680	2012	238	1290
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	0.67	0.65	0.63	0.29	0.71	0.61	0.08	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)	226	0	383	173	22	83	480	1152	72	18	695	167
Future Volume (vph)	226	0	383	173	22	83	480	1152	72	18	695	167
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	0.88		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	1438		3203	3275		1668	3125	
Flt Permitted	0.58	1.00		0.32	1.00		0.95	1.00		0.23	1.00	
Satd. Flow (perm)	1020	1387		566	1438		3203	3275		402	3125	
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)	226	0	383	173	22	83	480	1152	72	18	695	167
RTOR Reduction (vph)	0	335	0	0	75	0	0	3	0	0	13	0
Lane Group Flow (vph)	226	48	0	173	30	0	480	1221	0	18	849	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	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)	28.8	13.5		26.6	12.4		22.5	75.6		54.7	52.9	
Effective Green, g (s)	28.8	13.5		26.6	12.4		22.5	75.6		54.7	52.9	
Actuated g/C Ratio	0.23	0.11		0.21	0.10		0.18	0.60		0.44	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)	312	149		244	141		573	1971		193	1316	
v/s Ratio Prot	c0.09	0.03		0.08	0.02		c0.15	c0.37		0.00	0.27	
v/s Ratio Perm	c0.08			0.07						0.04		
v/c Ratio	0.72	0.32		0.71	0.21		0.84	0.62		0.09	0.64	
Uniform Delay, d1	43.2	51.8		43.8	52.1		49.8	15.9		20.2	28.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.1	1.3		9.1	0.8		10.3	1.5		0.2	2.4	
Delay (s)	51.3	53.1		52.9	52.9		60.1	17.3		20.4	31.3	
Level of Service	D	D		D	D		E	B		C	C	
Approach Delay (s/veh)		52.4			52.9			29.4			31.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	125.6	Sum of lost time (s)	22.5
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



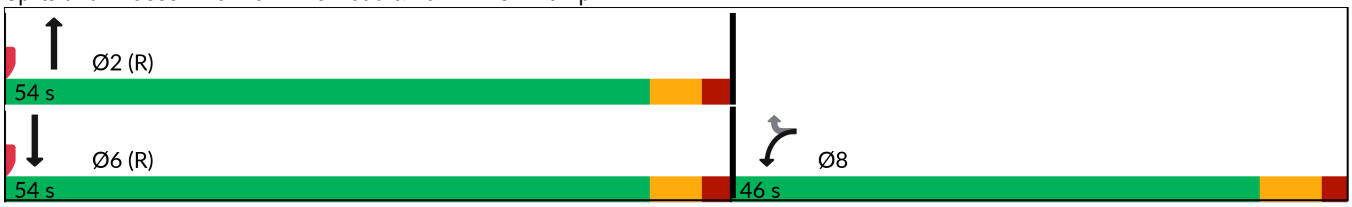
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	553	385	1431	0	0	901
Future Volume (vph)	553	385	1431	0	0	901
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		19				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	553	385	1431	0	0	901
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	385	1431	0	0	901
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.48	0.66	0.85			0.54
Control Delay (s/veh)	24.2	29.9	29.1			19.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	24.2	29.9	29.1			19.7
LOS	C	C	C			B
Approach Delay (s/veh)	26.6		29.1			19.7
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 25.8		Intersection LOS: C	
Intersection Capacity Utilization 75.9%		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)	553	385	1431	901
v/c Ratio	0.48	0.66	0.85	0.54
Control Delay (s/veh)	24.2	29.9	29.1	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.2	29.9	29.1	19.7
Queue Length 50th (m)	40.4	57.0	123.7	62.0
Queue Length 95th (m)	55.2	89.6	155.1	79.6
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	586	1680	1680
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	0.48	0.66	0.85	0.54

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	553	385	1431	0	0	901
Future Volume (vph)	553	385	1431	0	0	901
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)	553	385	1431	0	0	901
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	553	374	1431	0	0	901
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.19		c0.41			0.26
v/s Ratio Perm		c0.26				
v/c Ratio	0.48	0.65	0.85			0.54
Uniform Delay, d1	22.5	24.6	22.9			18.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.4	5.6	5.7			1.2
Delay (s)	23.9	30.2	28.5			19.4
Level of Service	C	C	C			B
Approach Delay (s/veh)	26.5		28.5			19.4
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

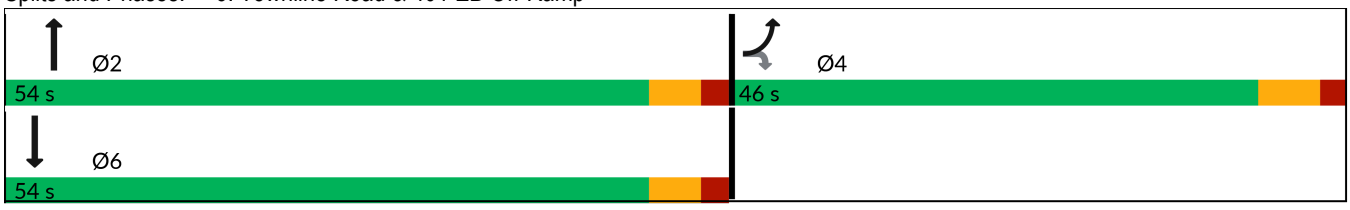


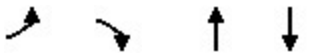
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	470	508	0	1223	1325	185
Future Volume (vph)	470	508	0	1223	1325	185
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.982	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3358	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3358	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		26			21	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	470	508	0	1223	1325	185
Shared Lane Traffic (%)						
Lane Group Flow (vph)	470	508	0	1223	1510	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	35.7	35.7		48.2	48.2	
Actuated g/C Ratio	0.37	0.37		0.50	0.50	
v/c Ratio	0.78	0.92		0.69	0.89	
Control Delay (s/veh)	37.2	51.9		21.8	30.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.2	51.9		21.8	30.9	
LOS	D	D		C	C	
Approach Delay (s/veh)	44.9			21.8	30.9	
Approach LOS	D			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 96.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 31.6		Intersection LOS: C	
Intersection Capacity Utilization 87.1%		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)	470	508	1223	1510
v/c Ratio	0.78	0.92	0.69	0.89
Control Delay (s/veh)	37.2	51.9	21.8	30.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.2	51.9	21.8	30.9
Queue Length 50th (m)	76.3	85.2	95.7	138.1
Queue Length 95th (m)	114.5	#145.0	120.0	#189.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	665	608	1766	1688
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	0.71	0.84	0.69	0.89

Intersection Summary

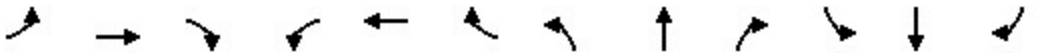
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	470	508	0	1223	1325	185
Future Volume (vph)	470	508	0	1223	1325	185
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3357	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3357	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	470	508	0	1223	1325	185
RTOR Reduction (vph)	0	16	0	0	11	0
Lane Group Flow (vph)	470	492	0	1223	1500	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)	35.7	35.7		48.2	48.2	
Effective Green, g (s)	35.7	35.7		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)	599	534		1767	1678	
v/s Ratio Prot	0.29			0.35	c0.45	
v/s Ratio Perm		c0.34				
v/c Ratio	0.78	0.92		0.69	0.89	
Uniform Delay, d1	26.9	29.0		18.4	21.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	21.3		2.3	7.8	
Delay (s)	33.6	50.3		20.7	29.5	
Level of Service	C	D		C	C	
Approach Delay (s/veh)	42.3			20.7	29.5	
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	0.90		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

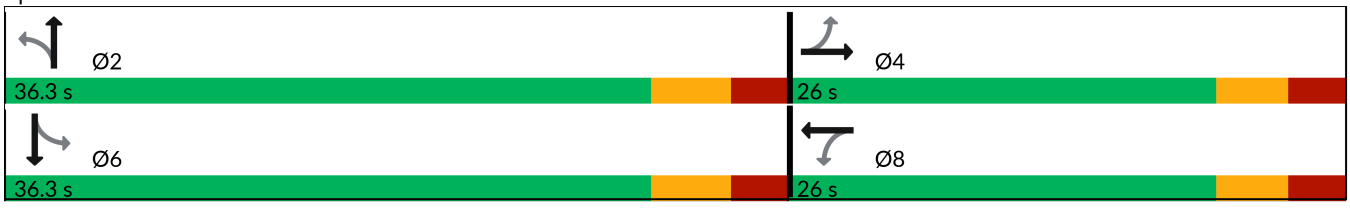


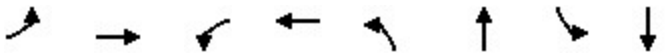
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	27	194	46	16	4	204	554	62	3	456	40
Future Volume (vph)	49	27	194	46	16	4	204	554	62	3	456	40
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.970			0.985			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1573	0	1651	1579	0	1668	1597	0
Flt Permitted	0.744			0.620			0.452			0.361		
Satd. Flow (perm)	1293	1416	0	1088	1573	0	786	1579	0	634	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		194			4			12			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	194	46	16	4	204	554	62	3	456	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	221	0	46	20	0	204	616	0	3	496	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)	9.3	9.3		9.3	9.3		30.5	30.5		30.5	30.5	
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	0.54		0.24	0.07		0.44	0.66		0.01	0.53	
Control Delay (s/veh)	20.2	10.1		21.2	16.1		10.6	12.4		5.7	9.4	
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		21.2	16.1		10.6	12.4		5.7	9.4	
LOS	C	B		C	B		B	B		A	A	
Approach Delay (s/veh)		11.9			19.6			11.9			9.4	
Approach LOS		B			B			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 (s/veh): 11.5		Intersection LOS: B	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			

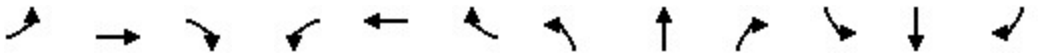
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	221	46	20	204	616	3	496
v/c Ratio	0.21	0.54	0.24	0.07	0.44	0.66	0.01	0.53
Control Delay (s/veh)	20.2	10.1	21.2	16.1	10.6	12.4	5.7	9.4
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	21.2	16.1	10.6	12.4	5.7	9.4
Queue Length 50th (m)	3.9	2.1	3.7	1.3	8.3	29.7	0.1	21.2
Queue Length 95th (m)	10.8	15.9	10.5	5.4	27.2	76.7	1.0	53.3
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	497	663	418	607	460	929	371	939
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	0.11	0.03	0.44	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	194	46	16	4	204	554	62	3	456	40
Future Volume (vph)	49	27	194	46	16	4	204	554	62	3	456	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	1417		1668	1573		1651	1579		1668	1597	
Flt Permitted	0.74	1.00		0.62	1.00		0.45	1.00		0.36	1.00	
Satd. Flow (perm)	1294	1417		1089	1573		785	1579		634	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	194	46	16	4	204	554	62	3	456	40
RTOR Reduction (vph)	0	159	0	0	3	0	0	5	0	0	4	0
Lane Group Flow (vph)	49	62	0	46	17	0	204	611	0	3	492	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		30.5	30.5		30.5	30.5	
Effective Green, g (s)	9.3	9.3		9.3	9.3		30.5	30.5		30.5	30.5	
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)	230	252		194	280		459	924		371	934	
v/s Ratio Prot		c0.04			0.01			c0.39			0.31	
v/s Ratio Perm	0.04			0.04			0.26			0.00		
v/c Ratio	0.21	0.24		0.24	0.06		0.44	0.66		0.01	0.53	
Uniform Delay, d1	18.3	18.4		18.4	17.8		6.1	7.3		4.5	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	0.5		0.6	0.1		3.1	3.7		0.0	2.1	
Delay (s)	18.7	18.9		19.0	17.9		9.2	11.0		4.5	8.6	
Level of Service	B	B		B	B		A	B		A	A	
Approach Delay (s/veh)		18.9			18.6			10.6			8.6	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	12.3
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

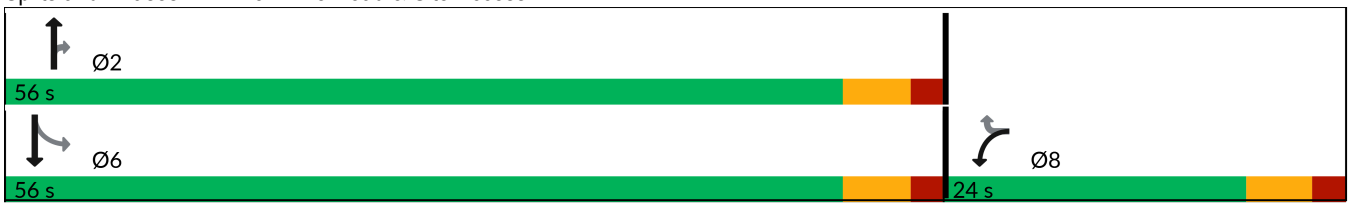


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	795	31	14	707
Future Volume (vph)	30	24	795	31	14	707
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.324	
Satd. Flow (perm)	1626	1454	1721	1463	597	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		24		31		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	795	31	14	707
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	24	795	31	14	707
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	7.0	7.0	65.6	65.6	65.6	65.6
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.20	0.16	0.54	0.02	0.03	0.45
Control Delay (s/veh)	36.0	15.9	5.3	1.2	2.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.0	15.9	5.3	1.2	2.9	4.4
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	27.1		5.1			4.4
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay (s/veh): 5.5		Intersection LOS: A	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	24	795	31	14	707
v/c Ratio	0.20	0.16	0.54	0.02	0.03	0.45
Control Delay (s/veh)	36.0	15.9	5.3	1.2	2.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	36.0	15.9	5.3	1.2	2.9	4.4
Queue Length 50th (m)	4.6	0.0	40.4	0.0	0.4	31.3
Queue Length 95th (m)	11.2	6.3	76.1	1.8	1.8	56.7
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	382	360	1466	1250	508	1569
Starvation Cap Reductn	0	0	0	0	0	267
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.07	0.54	0.02	0.03	0.54

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	795	31	14	707
Future Volume (vph)	30	24	795	31	14	707
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.32	1.00
Satd. Flow (perm)	1626	1454	1721	1463	597	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	795	31	14	707
RTOR Reduction (vph)	0	23	0	6	0	0
Lane Group Flow (vph)	30	1	795	25	14	707
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.5	4.5	62.9	62.9	62.9	62.9
Effective Green, g (s)	4.5	4.5	62.9	62.9	62.9	62.9
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	92	82	1363	1158	472	1459
v/s Ratio Prot	c0.02		c0.46			0.38
v/s Ratio Perm		0.00		0.02	0.02	
v/c Ratio	0.33	0.02	0.58	0.02	0.03	0.48
Uniform Delay, d1	36.0	35.4	3.2	1.7	1.8	2.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	1.8	0.0	0.1	1.2
Delay (s)	38.1	35.4	5.0	1.8	1.9	3.9
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	36.9		4.9			3.9
Approach LOS	D		A			A

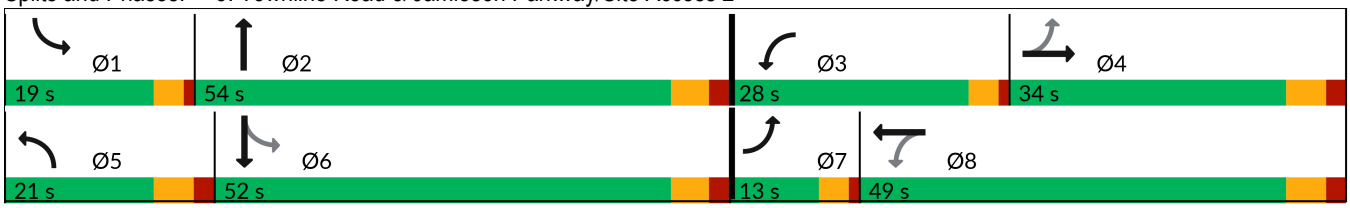
Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

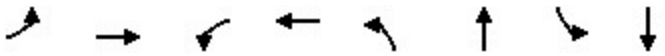
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	0	244	61	8	29	244	638	41	10	605	123
Future Volume (vph)	153	0	244	61	8	29	244	638	41	10	605	123
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (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			0.882			0.991			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1439	0	3203	3244	0	1668	3214	0
Flt Permitted	0.488			0.952			0.950			0.393		
Satd. Flow (perm)	857	1387	0	1671	1439	0	3203	3244	0	690	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		486			29			5			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	153	0	244	61	8	29	244	638	41	10	605	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	244	0	61	37	0	244	679	0	10	728	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.1	6.5		13.7	6.5		12.2	62.6		54.0	46.3	
Actuated g/C Ratio	0.17	0.07		0.15	0.07		0.13	0.67		0.58	0.50	
v/c Ratio	0.63	0.44		0.25	0.29		0.58	0.31		0.02	0.45	
Control Delay (s/veh)	46.2	2.6		34.6	25.7		45.0	7.9		6.0	17.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	46.2	2.6		34.6	25.7		45.0	7.9		6.0	17.1	
LOS	D	A		C	C		D	A		A	B	
Approach Delay (s/veh)		19.4			31.2			17.7			16.9	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 93.2			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 18.4		Intersection LOS: B	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

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

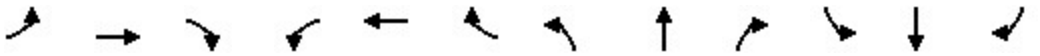




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	153	244	61	37	244	679	10	728
v/c Ratio	0.63	0.44	0.25	0.29	0.58	0.31	0.02	0.45
Control Delay (s/veh)	46.2	2.6	34.6	25.7	45.0	7.9	6.0	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.2	2.6	34.6	25.7	45.0	7.9	6.0	17.1
Queue Length 50th (m)	24.4	0.0	9.2	1.4	22.1	23.6	0.5	44.2
Queue Length 95th (m)	#49.3	0.0	20.1	11.0	35.0	47.5	2.1	65.5
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	244	758	432	683	518	2181	627	1606
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	0.63	0.32	0.14	0.05	0.47	0.31	0.02	0.45

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)	153	0	244	61	8	29	244	638	41	10	605	123
Future Volume (vph)	153	0	244	61	8	29	244	638	41	10	605	123
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	0.88		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	1440		3203	3244		1668	3213	
Flt Permitted	0.49	1.00		0.95	1.00		0.95	1.00		0.39	1.00	
Satd. Flow (perm)	856	1387		1672	1440		3203	3244		691	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)	153	0	244	61	8	29	244	638	41	10	605	123
RTOR Reduction (vph)	0	224	0	0	28	0	0	2	0	0	9	0
Lane Group Flow (vph)	153	20	0	61	9	0	244	677	0	10	719	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)	19.3	8.3		11.2	4.2		12.2	62.7		50.7	49.6	
Effective Green, g (s)	19.3	8.3		11.2	4.2		12.2	62.7		50.7	49.6	
Actuated g/C Ratio	0.19	0.08		0.11	0.04		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)	257	116		188	61		394	2052		364	1608	
v/s Ratio Prot	c0.07	0.01		0.02	0.01		c0.08	0.21		0.00	c0.22	
v/s Ratio Perm	c0.05			0.01						0.01		
v/c Ratio	0.60	0.18		0.32	0.15		0.62	0.33		0.03	0.45	
Uniform Delay, d1	35.5	42.2		40.5	45.7		41.2	8.4		11.9	15.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	0.7		1.0	1.2		2.9	0.4		0.0	0.9	
Delay (s)	39.1	42.9		41.5	46.9		44.1	8.9		11.9	16.8	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s/veh)		41.5			43.5			18.2			16.8	
Approach LOS		D			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	0.53		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	22.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

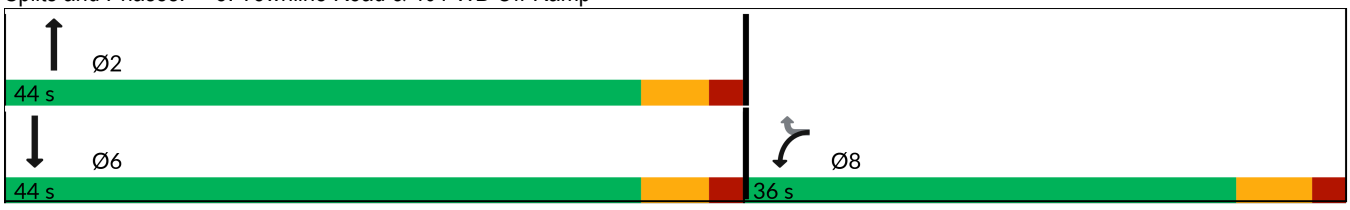


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	417	185	737	0	0	641
Future Volume (vph)	417	185	737	0	0	641
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		141				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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)	417	185	737	0	0	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	417	185	737	0	0	641
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	14.0	14.0	38.1			38.1
Actuated g/C Ratio	0.22	0.22	0.59			0.59
v/c Ratio	0.63	0.44	0.35			0.31
Control Delay (s/veh)	27.3	10.3	7.9			7.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	27.3	10.3	7.9			7.6
LOS	C	B	A			A
Approach Delay (s/veh)	22.1		7.9			7.6
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 12.1		Intersection LOS: B	
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			

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





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	417	185	737	641
v/c Ratio	0.63	0.44	0.35	0.31
Control Delay (s/veh)	27.3	10.3	7.9	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.3	10.3	7.9	7.6
Queue Length 50th (m)	23.4	4.3	20.9	17.6
Queue Length 95th (m)	35.6	18.1	37.1	31.7
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1410	743	2085	2064
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	0.30	0.25	0.35	0.31

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	417	185	737	0	0	641
Future Volume (vph)	417	185	737	0	0	641
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)	417	185	737	0	0	641
RTOR Reduction (vph)	0	111	0	0	0	0
Lane Group Flow (vph)	417	74	737	0	0	641
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	c0.14		c0.21			0.18
v/s Ratio Perm		0.05				
v/c Ratio	0.63	0.24	0.35			0.31
Uniform Delay, d1	23.0	20.9	6.8			6.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.9	0.4	0.5			0.4
Delay (s)	24.8	21.3	7.3			7.0
Level of Service	C	C	A			A
Approach Delay (s/veh)	23.8		7.3			7.0
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

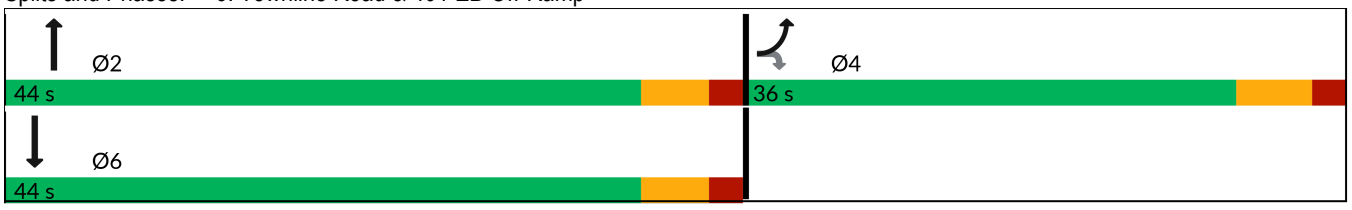


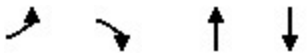
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	350	465	0	582	916	150
Future Volume (vph)	350	465	0	582	916	150
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.979	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3436	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3436	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		84			31	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	350	465	0	582	916	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	350	465	0	582	1066	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	24.5	24.5		38.2	38.2	
Actuated g/C Ratio	0.33	0.33		0.51	0.51	
v/c Ratio	0.66	0.88		0.33	0.61	
Control Delay (s/veh)	28.0	38.5		12.5	15.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	28.0	38.5		12.5	15.5	
LOS	C	D		B	B	
Approach Delay (s/veh)	34.0			12.5	15.5	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 20.9		Intersection LOS: C	
Intersection Capacity Utilization 71.8%		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)	350	465	582	1066
v/c Ratio	0.66	0.88	0.33	0.61
Control Delay (s/veh)	28.0	38.5	12.5	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	38.5	12.5	15.5
Queue Length 50th (m)	41.9	51.1	26.7	57.4
Queue Length 95th (m)	67.7	#99.9	39.0	79.7
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	644	624	1776	1759
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	0.75	0.33	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)	350	465	0	582	916	150
Future Volume (vph)	350	465	0	582	916	150
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3435	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	350	465	0	582	916	150
RTOR Reduction (vph)	0	57	0	0	15	0
Lane Group Flow (vph)	350	408	0	582	1051	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)	24.5	24.5		38.2	38.2	
Effective Green, g (s)	24.5	24.5		38.2	38.2	
Actuated g/C Ratio	0.33	0.33		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)	532	474		1777	1744	
v/s Ratio Prot	0.21			0.17	c0.31	
v/s Ratio Perm		c0.28				
v/c Ratio	0.66	0.86		0.33	0.60	
Uniform Delay, d1	21.8	23.8		10.9	13.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	14.8		0.5	1.6	
Delay (s)	24.7	38.6		11.4	14.7	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	32.6			11.4	14.7	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

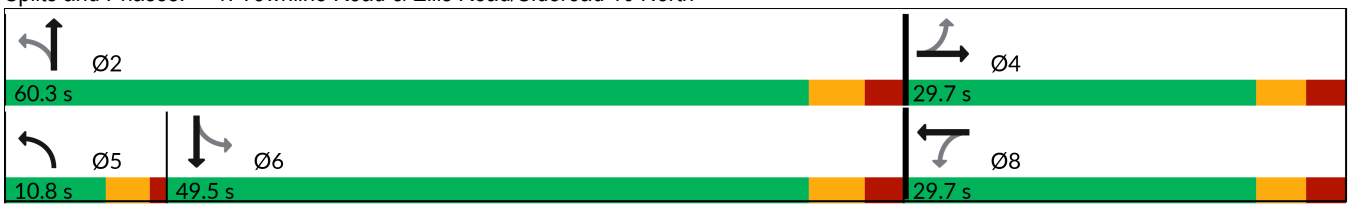
c Critical Lane Group

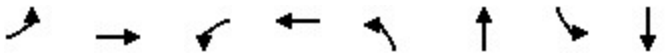
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Future Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.962			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1570	0	1603	1544	0	1334	1577	0
Flt Permitted	0.747			0.323			0.118			0.349		
Satd. Flow (perm)	1298	1388	0	567	1570	0	199	1544	0	490	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		242			4			11			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	90	32	266	63	12	4	146	712	77	4	835	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	298	0	63	16	0	146	789	0	4	871	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)	12.4	12.4		12.4	12.4		56.5	54.2		43.4	43.4	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.72	0.69		0.55	0.55	
v/c Ratio	0.44	0.71		0.71	0.06		0.56	0.74		0.01	1.00	
Control Delay (s/veh)	36.4	17.2		70.3	23.6		15.2	15.0		10.5	52.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.3		0.0	0.0	
Total Delay (s/veh)	36.4	17.2		70.3	23.6		15.2	15.3		10.5	52.7	
LOS	D	B		E	C		B	B		B	D	
Approach Delay (s/veh)		21.6			60.9			15.3			52.5	
Approach LOS		C			E			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay (s/veh): 32.3		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



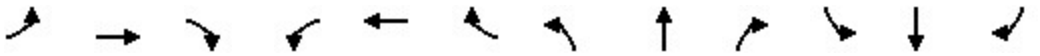


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	298	63	16	146	789	4	871
v/c Ratio	0.44	0.71	0.71	0.06	0.56	0.74	0.01	1.00
Control Delay (s/veh)	36.4	17.2	70.3	23.6	15.2	15.0	10.5	52.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay (s/veh)	36.4	17.2	70.3	23.6	15.2	15.3	10.5	52.7
Queue Length 50th (m)	12.3	7.4	9.0	1.5	5.5	62.0	0.3	~120.8
Queue Length 95th (m)	25.1	30.9	21.9	6.3	#24.0	#156.1	1.9	#237.5
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	390	587	170	475	263	1063	269	868
Starvation Cap Reductn	0	0	0	0	0	42	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	0.23	0.51	0.37	0.03	0.56	0.77	0.01	1.00

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Future Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	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		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	1388		1668	1570		1603	1544		1334	1576	
Flt Permitted	0.75	1.00		0.32	1.00		0.12	1.00		0.35	1.00	
Satd. Flow (perm)	1298	1388		566	1570		199	1544		490	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)	90	32	266	63	12	4	146	712	77	4	835	36
RTOR Reduction (vph)	0	204	0	0	3	0	0	3	0	0	1	0
Lane Group Flow (vph)	90	94	0	63	13	0	146	786	0	4	870	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		43.4	43.4	
Effective Green, g (s)	12.4	12.4		12.4	12.4		54.2	54.2		43.4	43.4	
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	246		257	1060		269	866	
v/s Ratio Prot		0.07			0.01		0.05	c0.51			c0.55	
v/s Ratio Perm	0.07			c0.11			0.34			0.01		
v/c Ratio	0.44	0.43		0.72	0.05		0.57	0.74		0.01	1.00	
Uniform Delay, d1	30.1	30.1		31.6	28.3		12.4	7.9		8.1	17.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.4		24.0	0.1		2.9	4.7		0.1	31.6	
Delay (s)	31.7	31.4		55.6	28.3		15.3	12.5		8.2	49.4	
Level of Service	C	C		E	C		B	B		A	D	
Approach Delay (s/veh)		31.5			50.1			13.0			49.2	
Approach LOS		C			D			B			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	78.9	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

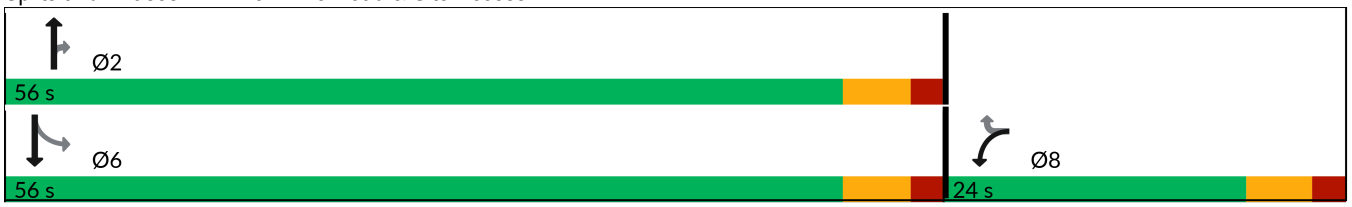


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	891	112	58	1110
Future Volume (vph)	26	23	891	112	58	1110
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.281	
Satd. Flow (perm)	1626	1454	1721	1463	518	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		23		112		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	891	112	58	1110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	23	891	112	58	1110
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	29.0	29.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	6.9	6.9	66.0	66.0	66.0	66.0
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.18	0.15	0.61	0.09	0.13	0.71
Control Delay (s/veh)	36.0	16.2	6.2	0.8	3.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay (s/veh)	36.0	16.2	6.2	0.8	3.4	9.0
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	26.7		5.6			8.8
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 7.7		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	26	23	891	112	58	1110
v/c Ratio	0.18	0.15	0.61	0.09	0.13	0.71
Control Delay (s/veh)	36.0	16.2	6.2	0.8	3.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay (s/veh)	36.0	16.2	6.2	0.8	3.4	9.0
Queue Length 50th (m)	4.0	0.0	49.6	0.0	1.8	75.1
Queue Length 95th (m)	10.3	6.1	95.9	3.2	5.4	152.0
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	381	358	1470	1266	442	1573
Starvation Cap Reductn	0	0	0	0	0	167
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.61	0.09	0.13	0.79

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	891	112	58	1110
Future Volume (vph)	26	23	891	112	58	1110
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.28	1.00
Satd. Flow (perm)	1626	1454	1721	1463	517	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	891	112	58	1110
RTOR Reduction (vph)	0	22	0	23	0	0
Lane Group Flow (vph)	26	1	891	89	58	1110
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.4	4.4	63.4	63.4	63.4	63.4
Effective Green, g (s)	4.4	4.4	63.4	63.4	63.4	63.4
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	80	1367	1162	410	1463
v/s Ratio Prot	c0.02		0.52			c0.60
v/s Ratio Perm		0.00		0.06	0.11	
v/c Ratio	0.29	0.02	0.65	0.08	0.14	0.76
Uniform Delay, d1	36.2	35.7	3.5	1.8	1.9	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.1	2.4	0.1	0.7	3.7
Delay (s)	38.0	35.7	5.9	1.9	2.6	8.0
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	37.0		5.5			7.7
Approach LOS	D		A			A

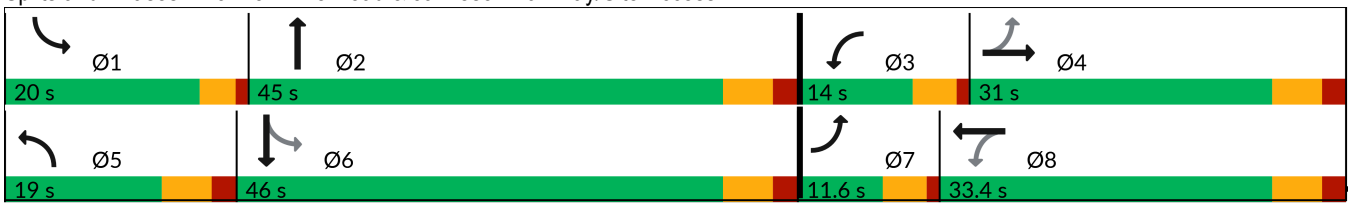
Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

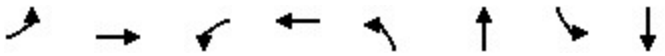
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	0	313	53	7	23	373	802	228	55	901	198
Future Volume (vph)	147	0	313	53	7	23	373	802	228	55	901	198
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (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			0.885			0.967			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1635	1347	0	1668	1444	0	3203	3200	0	1668	3168	0
Flt Permitted	0.455			0.606			0.950			0.260		
Satd. Flow (perm)	783	1347	0	1064	1444	0	3202	3200	0	456	3168	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		366			23			37			27	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			157.4			335.6	
Travel Time (s)		8.2			9.8			9.4			20.1	
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)	147	0	313	53	7	23	373	802	228	55	901	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	313	0	53	30	0	373	1030	0	55	1099	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	17.1	9.2		15.2	10.1		13.1	50.9		48.8	40.2	
Actuated g/C Ratio	0.19	0.10		0.17	0.11		0.14	0.56		0.54	0.44	
v/c Ratio	0.60	0.67		0.23	0.17		0.81	0.57		0.16	0.77	
Control Delay (s/veh)	41.2	9.8		30.5	20.2		53.6	15.9		8.3	26.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	41.2	9.8		30.5	20.2		53.6	15.9		8.3	26.5	
LOS	D	A		C	C		D	B		A	C	
Approach Delay (s/veh)		19.8			26.8			25.9			25.7	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 90.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 24.9		Intersection LOS: C	
Intersection Capacity Utilization 90.1%		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)	147	313	53	30	373	1030	55	1099
v/c Ratio	0.60	0.67	0.23	0.17	0.81	0.57	0.16	0.77
Control Delay (s/veh)	41.2	9.8	30.5	20.2	53.6	15.9	8.3	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.2	9.8	30.5	20.2	53.6	15.9	8.3	26.5
Queue Length 50th (m)	21.6	0.0	7.3	1.1	33.1	59.4	2.9	82.1
Queue Length 95th (m)	37.7	12.9	16.3	8.9	#62.0	97.5	8.5	125.2
Internal Link Dist (m)		90.3		111.6		133.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	246	638	264	455	462	1815	509	1423
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	0.60	0.49	0.20	0.07	0.81	0.57	0.11	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)	147	0	313	53	7	23	373	802	228	55	901	198
Future Volume (vph)	147	0	313	53	7	23	373	802	228	55	901	198
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	0.89		1.00	0.97		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		1668	1444		3203	3199		1668	3168	
Flt Permitted	0.45	1.00		0.61	1.00		0.95	1.00		0.26	1.00	
Satd. Flow (perm)	783	1347		1064	1444		3203	3199		456	3168	
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)	147	0	313	53	7	23	373	802	228	55	901	198
RTOR Reduction (vph)	0	277	0	0	21	0	0	17	0	0	15	0
Lane Group Flow (vph)	147	36	0	53	9	0	373	1013	0	55	1084	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	1%	1%	0%	0%	2%	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	10.7		13.0	6.6		13.1	50.9		46.4	41.1	
Effective Green, g (s)	21.2	10.7		13.0	6.6		13.1	50.9		46.4	41.1	
Actuated g/C Ratio	0.23	0.11		0.14	0.07		0.14	0.54		0.49	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)	272	153		188	101		447	1735		294	1388	
v/s Ratio Prot	c0.06	0.03		0.02	0.01		c0.12	0.32		0.01	c0.34	
v/s Ratio Perm	c0.06			0.02						0.08		
v/c Ratio	0.54	0.23		0.28	0.09		0.83	0.58		0.19	0.78	
Uniform Delay, d1	31.0	37.8		36.0	40.8		39.3	14.4		12.4	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.8		0.8	0.4		12.6	1.4		0.3	4.4	
Delay (s)	33.2	38.6		36.8	41.1		51.9	15.8		12.7	26.9	
Level of Service	C	D		D	D		D	B		B	C	
Approach Delay (s/veh)		36.9			38.4			25.4			26.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	22.5
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

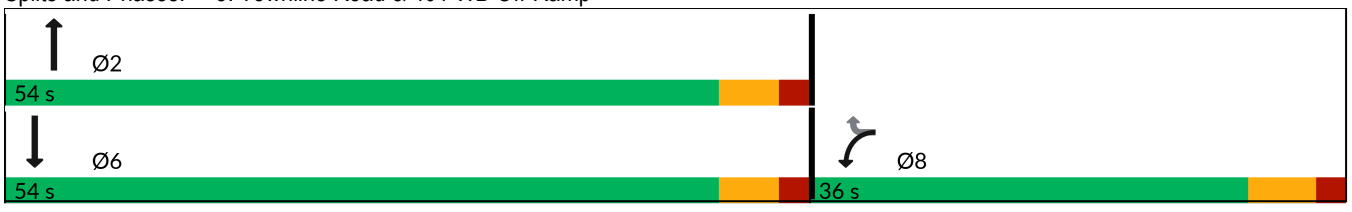


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	591	220	1201	0	0	891
Future Volume (vph)	591	220	1201	0	0	891
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		53				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			128.0
Travel Time (s)	8.5		24.7			7.7
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)	591	220	1201	0	0	891
Shared Lane Traffic (%)						
Lane Group Flow (vph)	591	220	1201	0	0	891
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	22.3	22.3	48.1			48.1
Actuated g/C Ratio	0.27	0.27	0.58			0.58
v/c Ratio	0.77	0.54	0.59			0.44
Control Delay (s/veh)	35.1	24.3	13.5			11.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	35.1	24.3	13.5			11.4
LOS	D	C	B			B
Approach Delay (s/veh)	32.2		13.5			11.4
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 83			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 18.0		Intersection LOS: B	
Intersection Capacity Utilization 61.7%		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)	591	220	1201	891
v/c Ratio	0.77	0.54	0.59	0.44
Control Delay (s/veh)	35.1	24.3	13.5	11.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.1	24.3	13.5	11.4
Queue Length 50th (m)	44.1	22.1	59.5	38.9
Queue Length 95th (m)	61.3	42.4	94.1	62.6
Internal Link Dist (m)	93.7		387.0	104.0
Turn Bay Length (m)				
Base Capacity (vph)	1020	524	2030	2030
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.42	0.59	0.44

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	591	220	1201	0	0	891
Future Volume (vph)	591	220	1201	0	0	891
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)	591	220	1201	0	0	891
RTOR Reduction (vph)	0	39	0	0	0	0
Lane Group Flow (vph)	591	181	1201	0	0	891
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)	22.3	22.3	48.2			48.2
Effective Green, g (s)	22.3	22.3	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)	769	369	2032			2032
v/s Ratio Prot	c0.21		c0.34			0.25
v/s Ratio Perm		0.13				
v/c Ratio	0.77	0.49	0.59			0.44
Uniform Delay, d1	28.0	25.6	11.1			9.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	4.6	1.0	1.3			0.7
Delay (s)	32.6	26.6	12.4			10.5
Level of Service	C	C	B			B
Approach Delay (s/veh)	31.0		12.4			10.5
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

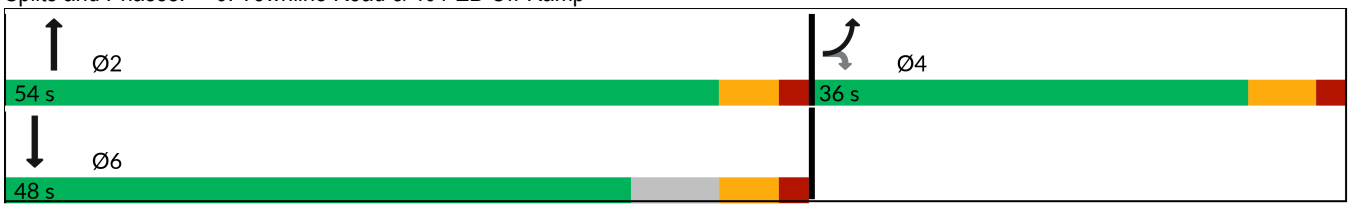


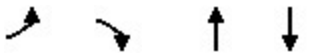
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	570	550	0	1139	1304	196
Future Volume (vph)	570	550	0	1139	1304	196
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.980	
Flt Protected	0.950					
Satd. Flow (prot)	1603	1414	0	3433	3298	0
Flt Permitted	0.950					
Satd. Flow (perm)	1603	1414	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		41			28	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	570	550	0	1139	1304	196
Shared Lane Traffic (%)						
Lane Group Flow (vph)	570	550	0	1139	1500	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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 Don't Walk (s)	19.5	19.5		6.0	19.5	
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	1.09	1.12		0.62	0.85	
Control Delay (s/veh)	95.7	106.6		16.6	23.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	95.7	106.6		16.6	23.3	
LOS	F	F		B	C	
Approach Delay (s/veh)	101.1			16.6	23.3	
Approach LOS	F			B	C	

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 (s/veh): 44.4		Intersection LOS: D	
Intersection Capacity Utilization 89.7%		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)	570	550	1139	1500
v/c Ratio	1.09	1.12	0.62	0.85
Control Delay (s/veh)	95.7	106.6	16.6	23.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	95.7	106.6	16.6	23.3
Queue Length 50th (m)	~111.7	~105.9	68.2	107.6
Queue Length 95th (m)	#172.0	#167.2	88.1	140.0
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	525	491	1830	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	1.09	1.12	0.62	0.85

Intersection Summary

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

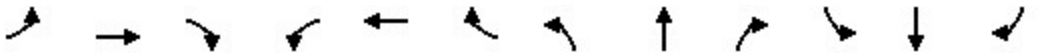
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	570	550	0	1139	1304	196
Future Volume (vph)	570	550	0	1139	1304	196
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1603	1414		3433	3299	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1603	1414		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	570	550	0	1139	1304	196
RTOR Reduction (vph)	0	28	0	0	13	0
Lane Group Flow (vph)	570	522	0	1139	1487	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	1759	
v/s Ratio Prot	0.36			0.33	c0.45	
v/s Ratio Perm		c0.37				
v/c Ratio	1.09	1.13		0.62	0.85	
Uniform Delay, d1	30.3	30.3		14.7	17.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	64.5	81.9		1.6	5.2	
Delay (s)	94.8	112.1		16.3	23.0	
Level of Service	F	F		B	C	
Approach Delay (s/veh)	103.3			16.3	23.0	
Approach LOS	F			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

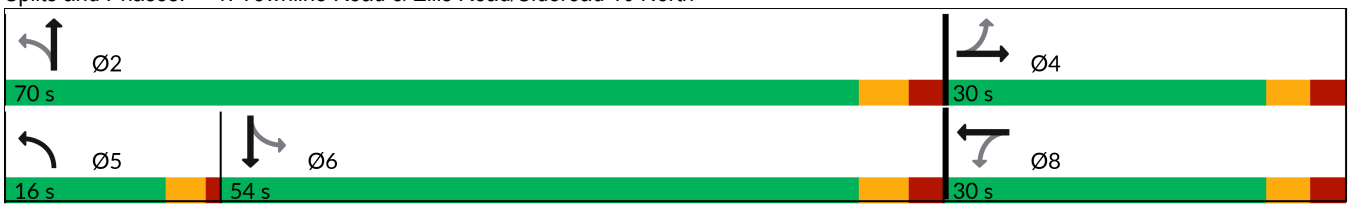


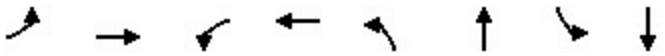
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
Future Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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			0.974			0.984			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1589	0	1668	1591	0	1668	1547	0
Flt Permitted	0.724			0.557			0.204			0.084		
Satd. Flow (perm)	1271	1395	0	959	1589	0	358	1591	0	147	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			9			11			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	43	23	148	99	42	9	449	1123	130	11	633	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	171	0	99	51	0	449	1253	0	11	708	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)	14.1	14.1		14.1	14.1		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	0.22	0.50		0.66	0.20		1.03	1.11		0.14	0.86	
Control Delay (s/veh)	35.1	13.5		57.0	29.5		65.8	79.5		18.5	32.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	35.1	13.5		57.0	29.5		65.8	79.7		18.5	32.1	
LOS	D	B		E	C		E	E		B	C	
Approach Delay (s/veh)		17.8			47.6			76.0			31.9	
Approach LOS		B			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.3			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay (s/veh): 58.6		Intersection LOS: E	
Intersection Capacity Utilization 119.6%		ICU Level of Service H	
Analysis Period (min) 15			

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



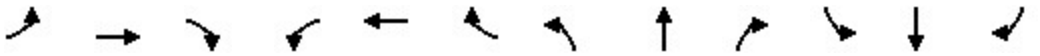


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	171	99	51	449	1253	11	708
v/c Ratio	0.22	0.50	0.66	0.20	1.03	1.11	0.14	0.86
Control Delay (s/veh)	35.1	13.5	57.0	29.5	65.8	79.5	18.5	32.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	35.1	13.5	57.0	29.5	65.8	79.7	18.5	32.1
Queue Length 50th (m)	6.6	3.5	16.3	6.4	~42.6	~249.5	0.9	98.3
Queue Length 95th (m)	15.5	20.5	32.3	16.0	#100.2	#368.5	5.1	#197.0
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	338	480	255	430	437	1129	77	823
Starvation Cap Reductn	0	0	0	0	0	44	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	0.39	0.12	1.03	1.15	0.14	0.86

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
Future Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
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	0.98		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	1396		1635	1588		1668	1592		1668	1547	
Flt Permitted	0.72	1.00		0.56	1.00		0.20	1.00		0.08	1.00	
Satd. Flow (perm)	1270	1396		959	1588		358	1592		147	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)	43	23	148	99	42	9	449	1123	130	11	633	75
RTOR Reduction (vph)	0	125	0	0	8	0	0	3	0	0	4	0
Lane Group Flow (vph)	43	46	0	99	43	0	449	1250	0	11	704	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)	14.1	14.1		14.1	14.1		63.9	63.9		47.9	47.9	
Effective Green, g (s)	14.1	14.1		14.1	14.1		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)	198	217		149	247		427	1126		77	820	
v/s Ratio Prot		0.03			0.03		0.14	c0.79			0.46	
v/s Ratio Perm	0.03			c0.10			0.60			0.08		
v/c Ratio	0.22	0.21		0.66	0.18		1.05	1.11		0.14	0.86	
Uniform Delay, d1	33.3	33.3		35.9	33.1		17.1	13.2		10.8	18.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		10.6	0.3		57.7	62.3		3.9	11.3	
Delay (s)	33.8	33.7		46.5	33.4		74.9	75.5		14.6	29.6	
Level of Service	C	C		D	C		E	E		B	C	
Approach Delay (s/veh)		33.8			42.1			75.3			29.4	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	58.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

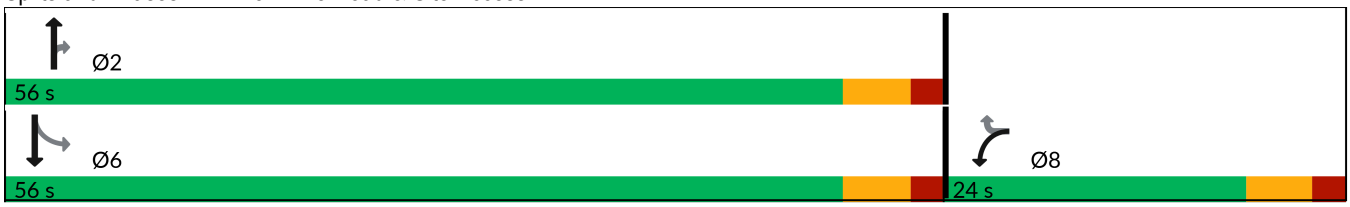


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1634	54	24	896
Future Volume (vph)	85	68	1634	54	24	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.071	
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		32		44		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1634	54	24	896
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	68	1634	54	24	896
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	9.3	9.3	57.6	57.6	57.6	57.6
Actuated g/C Ratio	0.12	0.12	0.77	0.77	0.77	0.77
v/c Ratio	0.43	0.33	1.24	0.05	0.24	0.64
Control Delay (s/veh)	36.2	22.1	131.7	1.8	12.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.2	22.1	131.7	1.8	12.0	9.0
LOS	D	C	F	A	B	A
Approach Delay (s/veh)	29.9		127.6			9.1
Approach LOS	C		F			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay (s/veh): 82.7		Intersection LOS: F	
Intersection Capacity Utilization 107.1%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	85	68	1634	54	24	896
v/c Ratio	0.43	0.33	1.24	0.05	0.24	0.64
Control Delay (s/veh)	36.2	22.1	131.7	1.8	12.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.2	22.1	131.7	1.8	12.0	9.0
Queue Length 50th (m)	11.1	4.6	~301.7	0.3	1.0	56.1
Queue Length 95th (m)	22.6	14.7	#391.4	3.4	6.3	111.4
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	390	373	1318	1131	100	1411
Starvation Cap Reductn	0	0	0	0	0	127
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.18	1.24	0.05	0.24	0.70

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	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1634	54	24	896
Future Volume (vph)	85	68	1634	54	24	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.07	1.00
Satd. Flow (perm)	1626	1454	1721	1463	131	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1634	54	24	896
RTOR Reduction (vph)	0	29	0	12	0	0
Lane Group Flow (vph)	85	39	1634	42	24	896
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	8.1	8.1	56.4	56.4	56.4	56.4
Effective Green, g (s)	8.1	8.1	56.4	56.4	56.4	56.4
Actuated g/C Ratio	0.11	0.11	0.74	0.74	0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	153	1268	1078	96	1358
v/s Ratio Prot	c0.05		c0.95			0.49
v/s Ratio Perm		0.03		0.03	0.18	
v/c Ratio	0.49	0.26	1.29	0.04	0.25	0.66
Uniform Delay, d1	32.3	31.4	10.1	2.7	3.2	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.9	135.9	0.1	6.1	2.5
Delay (s)	34.5	32.3	146.0	2.8	9.4	7.7
Level of Service	C	C	F	A	A	A
Approach Delay (s/veh)	33.5		141.4			7.7
Approach LOS	C		F			A

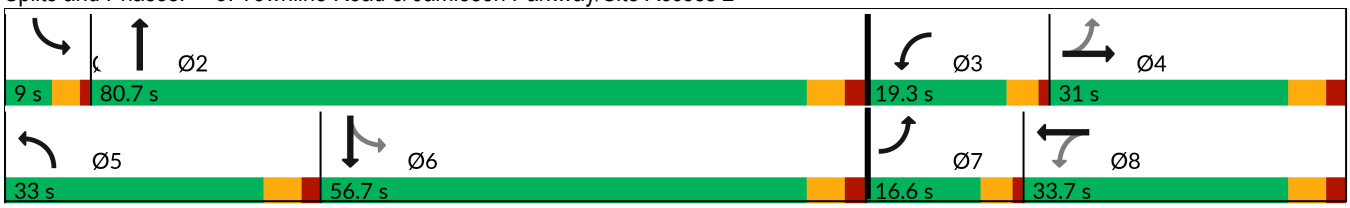
Intersection Summary			
HCM 2000 Control Delay (s/veh)	90.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

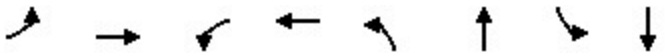
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	0	403	173	22	83	538	1284	72	18	768	187
Future Volume (vph)	238	0	403	173	22	83	538	1284	72	18	768	187
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane 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			0.881			0.992			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1437	0	3203	3277	0	1668	3126	0
Flt Permitted	0.689			0.258			0.950			0.193		
Satd. Flow (perm)	1209	1387	0	453	1437	0	3203	3277	0	339	3126	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		369			83			6			24	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	4%	2%
Adj. Flow (vph)	238	0	403	173	22	83	538	1284	72	18	768	187
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	403	0	173	105	0	538	1356	0	18	955	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)	16.6	31.0		19.3	33.7		33.0	80.7		9.0	56.7	
Total Split (%)	11.9%	22.1%		13.8%	24.1%		23.6%	57.6%		6.4%	40.5%	
Maximum Green (s)	12.1	25.0		14.8	27.7		27.0	74.7		5.0	50.7	
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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	27.4	13.7		30.9	15.5		24.7	78.4		58.1	51.0	
Actuated g/C Ratio	0.22	0.11		0.25	0.12		0.20	0.62		0.46	0.40	
v/c Ratio	0.78	0.84		0.71	0.42		0.86	0.66		0.09	0.75	
Control Delay (s/veh)	59.4	24.1		54.1	20.4		63.8	19.3		13.0	37.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	59.4	24.1		54.1	20.4		63.8	19.3		13.0	37.0	
LOS	E	C		D	C		E	B		B	D	
Approach Delay (s/veh)		37.2			41.4			31.9			36.6	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 126			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 34.7		Intersection LOS: C	
Intersection Capacity Utilization 103.3%		ICU Level of Service G	
Analysis Period (min) 15			

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

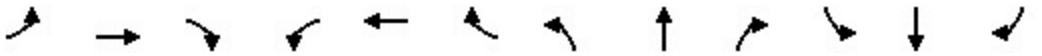




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	238	403	173	105	538	1356	18	955
v/c Ratio	0.78	0.84	0.71	0.42	0.86	0.66	0.09	0.75
Control Delay (s/veh)	59.4	24.1	54.1	20.4	63.8	19.3	13.0	37.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.4	24.1	54.1	20.4	63.8	19.3	13.0	37.0
Queue Length 50th (m)	51.6	8.0	35.8	5.0	65.2	91.8	1.3	102.1
Queue Length 95th (m)	76.6	45.2	56.1	21.2	#103.4	180.7	5.0	151.6
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	307	571	258	382	690	2042	209	1280
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	0.71	0.67	0.27	0.78	0.66	0.09	0.75

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)	238	0	403	173	22	83	538	1284	72	18	768	187
Future Volume (vph)	238	0	403	173	22	83	538	1284	72	18	768	187
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	0.88		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	1438		3203	3277		1668	3124	
Flt Permitted	0.69	1.00		0.26	1.00		0.95	1.00		0.19	1.00	
Satd. Flow (perm)	1210	1387		453	1438		3203	3277		339	3124	
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)	238	0	403	173	22	83	538	1284	72	18	768	187
RTOR Reduction (vph)	0	329	0	0	73	0	0	2	0	0	14	0
Lane Group Flow (vph)	238	74	0	173	32	0	538	1354	0	18	941	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	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)	26.0	13.8		29.4	15.5		24.7	78.4		55.3	53.5	
Effective Green, g (s)	26.0	13.8		29.4	15.5		24.7	78.4		55.3	53.5	
Actuated g/C Ratio	0.20	0.11		0.23	0.12		0.19	0.61		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)	288	149		235	173		616	2000		164	1301	
v/s Ratio Prot	0.08	0.05		c0.08	0.02		c0.17	0.41		0.00	c0.30	
v/s Ratio Perm	0.09			c0.09						0.05		
v/c Ratio	0.83	0.49		0.74	0.19		0.87	0.68		0.11	0.72	
Uniform Delay, d1	47.9	54.0		43.2	50.8		50.3	16.6		21.1	31.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.3	2.6		11.4	0.5		13.0	1.9		0.3	3.5	
Delay (s)	65.2	56.6		54.5	51.3		63.3	18.5		21.3	34.8	
Level of Service	E	E		D	D		E	B		C	C	
Approach Delay (s/veh)		59.8			53.3			31.2			34.5	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	128.4	Sum of lost time (s)	22.5
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



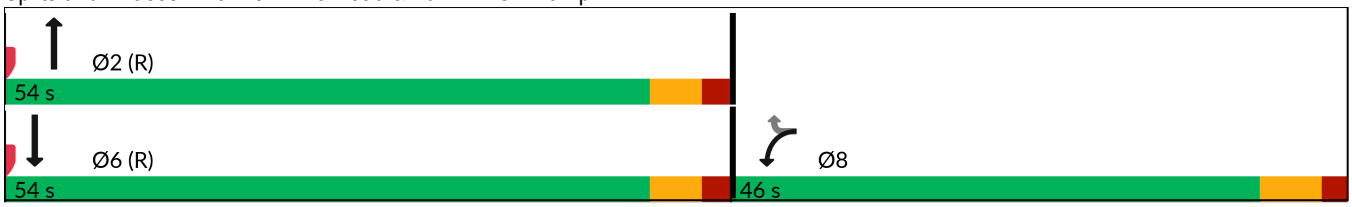
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	611	422	1591	0	0	989
Future Volume (vph)	611	422	1591	0	0	989
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		12				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			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)	611	422	1591	0	0	989
Shared Lane Traffic (%)						
Lane Group Flow (vph)	611	422	1591	0	0	989
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	
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
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?						
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)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
v/c Ratio	0.53	0.73	0.95			0.59
Control Delay (s/veh)	25.1	33.5	38.1			20.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	25.1	33.5	38.1			20.6
LOS	C	C	D			C
Approach Delay (s/veh)	28.5		38.1			20.6
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 30.6		Intersection LOS: C	
Intersection Capacity Utilization 82.8%		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)	611	422	1591	989
v/c Ratio	0.53	0.73	0.95	0.59
Control Delay (s/veh)	25.1	33.5	38.1	20.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	33.5	38.1	20.6
Queue Length 50th (m)	45.7	66.2	149.1	70.5
Queue Length 95th (m)	61.9	103.2	#202.1	89.6
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1161	582	1680	1680
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.73	0.95	0.59

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)	611	422	1591	0	0	989
Future Volume (vph)	611	422	1591	0	0	989
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)	611	422	1591	0	0	989
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	611	415	1591	0	0	989
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)	39.5	39.5	48.0			48.0
Effective Green, g (s)	39.5	39.5	48.0			48.0
Actuated g/C Ratio	0.40	0.40	0.48			0.48
Clearance Time (s)	6.5	6.5	6.0			6.0
Lane Grp Cap (vph)	1161	575	1680			1680
v/s Ratio Prot	0.21		c0.45			0.28
v/s Ratio Perm		c0.28				
v/c Ratio	0.53	0.72	0.95			0.59
Uniform Delay, d1	23.1	25.6	24.8			18.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	7.6	12.5			1.5
Delay (s)	24.8	33.2	37.3			20.4
Level of Service	C	C	D			C
Approach Delay (s/veh)	28.3		37.3			20.4
Approach LOS	C		D			C

Intersection Summary			
HCM 2000 Control Delay (s/veh)	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

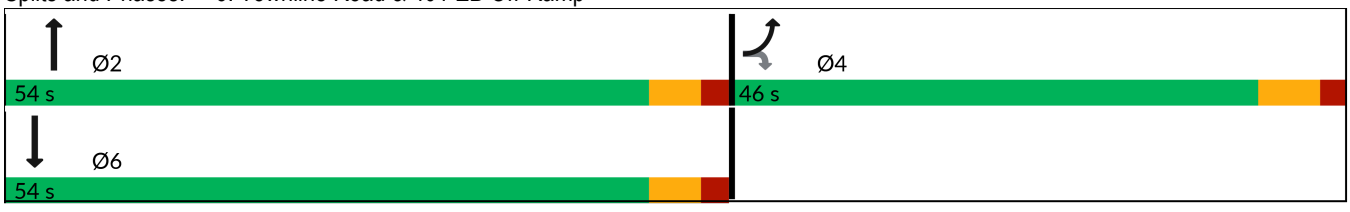


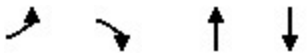
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	514	561	0	1364	1472	199
Future Volume (vph)	514	561	0	1364	1472	199
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.982	
Flt Protected	0.950					
Satd. Flow (prot)	1619	1442	0	3535	3358	0
Flt Permitted	0.950					
Satd. Flow (perm)	1619	1442	0	3535	3358	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17			20	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	514	561	0	1364	1472	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	514	561	0	1364	1671	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	39.1	39.1		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		0.48	0.48	
v/c Ratio	0.81	0.98		0.80	1.03	
Control Delay (s/veh)	38.7	62.3		26.3	55.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	38.7	62.3		26.3	55.5	
LOS	D	E		C	E	
Approach Delay (s/veh)	51.0			26.3	55.5	
Approach LOS	D			C	E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 99.6			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay (s/veh): 44.6		Intersection LOS: D	
Intersection Capacity Utilization 95.2%		ICU Level of Service F	
Analysis Period (min) 15			

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





Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	514	561	1364	1671
v/c Ratio	0.81	0.98	0.80	1.03
Control Delay (s/veh)	38.7	62.3	26.3	55.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.7	62.3	26.3	55.5
Queue Length 50th (m)	86.8	102.1	113.5	~182.5
Queue Length 95th (m)	#139.6	#171.8	142.2	#225.3
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	642	582	1704	1629
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	0.96	0.80	1.03

Intersection Summary

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

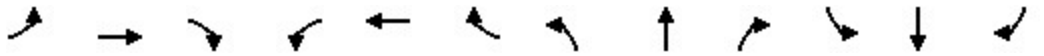
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	514	561	0	1364	1472	199
Future Volume (vph)	514	561	0	1364	1472	199
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1619	1442		3535	3358	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1619	1442		3535	3358	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	514	561	0	1364	1472	199
RTOR Reduction (vph)	0	10	0	0	10	0
Lane Group Flow (vph)	514	551	0	1364	1661	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)	39.1	39.1		48.0	48.0	
Effective Green, g (s)	39.1	39.1		48.0	48.0	
Actuated g/C Ratio	0.39	0.39		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)	635	566		1703	1618	
v/s Ratio Prot	0.32			0.39	c0.49	
v/s Ratio Perm		c0.38				
v/c Ratio	0.81	0.97		0.80	1.03	
Uniform Delay, d1	26.9	29.7		21.8	25.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	30.8		4.1	29.4	
Delay (s)	34.5	60.6		25.8	55.2	
Level of Service	C	E		C	E	
Approach Delay (s/veh)	48.1			25.8	55.2	
Approach LOS	D			C	E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	99.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

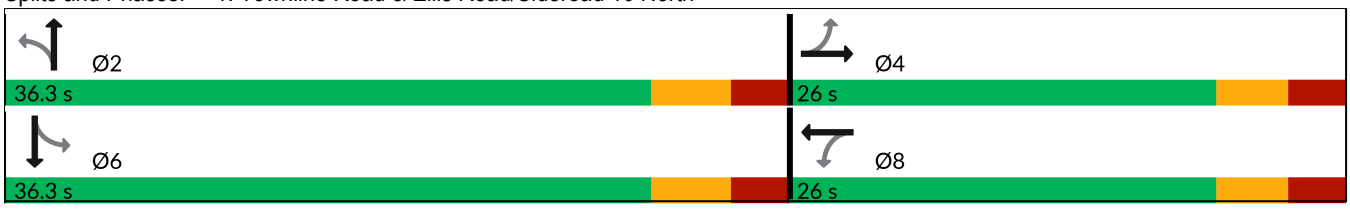


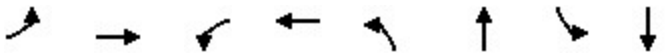
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
Future Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.971			0.986			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1575	0	1651	1580	0	1668	1597	0
Flt Permitted	0.744			0.596			0.406			0.311		
Satd. Flow (perm)	1293	1416	0	1046	1575	0	706	1580	0	546	1597	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		204			4			12			10	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	51	28	204	48	17	4	228	619	66	3	510	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	232	0	48	21	0	228	685	0	3	555	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)	9.3	9.3		9.3	9.3		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	0.22	0.55		0.26	0.07		0.56	0.74		0.01	0.60	
Control Delay (s/veh)	20.2	10.1		21.6	16.0		14.3	15.6		5.7	10.7	
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		21.6	16.0		14.3	15.6		5.7	10.7	
LOS	C	B		C	B		B	B		A	B	
Approach Delay (s/veh)		11.9			19.9			15.3			10.7	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 51.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 13.5		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)	51	232	48	21	228	685	3	555
v/c Ratio	0.22	0.55	0.26	0.07	0.56	0.74	0.01	0.60
Control Delay (s/veh)	20.2	10.1	21.6	16.0	14.3	15.6	5.7	10.7
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	21.6	16.0	14.3	15.6	5.7	10.7
Queue Length 50th (m)	4.1	2.2	3.9	1.3	10.2	35.7	0.1	25.1
Queue Length 95th (m)	11.2	16.3	10.9	5.5	#37.7	#111.4	1.0	64.7
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	501	673	404	612	410	923	317	932
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	0.34	0.12	0.03	0.56	0.74	0.01	0.60

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)	51	28	204	48	17	4	228	619	66	3	510	45
Future Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
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	1416		1668	1576		1651	1580		1668	1597	
Flt Permitted	0.74	1.00		0.60	1.00		0.41	1.00		0.31	1.00	
Satd. Flow (perm)	1292	1416		1046	1576		705	1580		546	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)	51	28	204	48	17	4	228	619	66	3	510	45
RTOR Reduction (vph)	0	167	0	0	3	0	0	5	0	0	4	0
Lane Group Flow (vph)	51	65	0	48	18	0	228	680	0	3	551	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		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.3	9.3		9.3	9.3		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)	232	254		188	283		410	919		317	929	
v/s Ratio Prot		0.05			0.01			c0.43			0.34	
v/s Ratio Perm	0.04			c0.05			0.32			0.01		
v/c Ratio	0.22	0.25		0.26	0.06		0.56	0.74		0.01	0.59	
Uniform Delay, d1	18.1	18.2		18.2	17.6		6.7	7.9		4.5	6.9	
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		0.7	0.1		5.4	5.3		0.1	2.8	
Delay (s)	18.6	18.8		18.9	17.7		12.0	13.3		4.6	9.7	
Level of Service	B	B		B	B		B	B		A	A	
Approach Delay (s/veh)		18.7			18.6			12.9			9.6	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	51.7	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

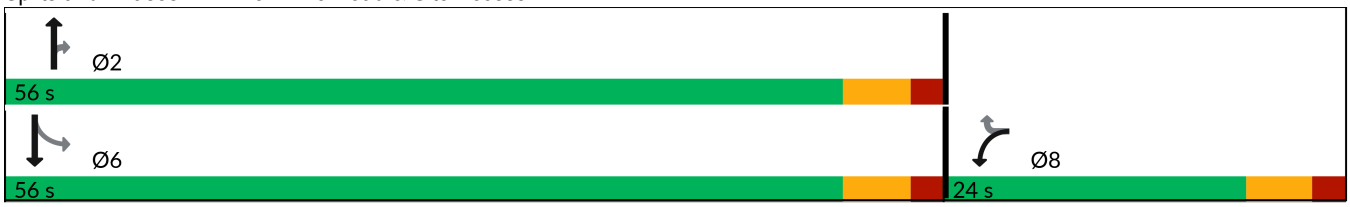


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	887	31	14	791
Future Volume (vph)	30	24	887	31	14	791
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.950				0.282	
Satd. Flow (perm)	1626	1454	1721	1463	519	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		24		31		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	887	31	14	791
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	24	887	31	14	791
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	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	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
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	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
Detector 1 Channel						
Detector 1 Extend (s)	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
Detector 1 Delay (s)	0.0	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	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	24.0	24.0	56.0	56.0	56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0	50.0	50.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	7.0	7.0	65.6	65.6	65.6	65.6
Actuated g/C Ratio	0.09	0.09	0.85	0.85	0.85	0.85
v/c Ratio	0.20	0.16	0.61	0.02	0.03	0.50
Control Delay (s/veh)	36.0	15.9	6.3	1.2	2.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.0	15.9	6.3	1.2	2.9	5.0
LOS	D	B	A	A	A	A
Approach Delay (s/veh)	27.1		6.1			4.9
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay (s/veh): 6.2		Intersection LOS: A	
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





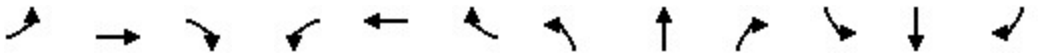
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	30	24	887	31	14	791
v/c Ratio	0.20	0.16	0.61	0.02	0.03	0.50
Control Delay (s/veh)	36.0	15.9	6.3	1.2	2.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.0	15.9	6.3	1.2	2.9	5.0
Queue Length 50th (m)	4.6	0.0	50.1	0.0	0.4	38.0
Queue Length 95th (m)	11.2	6.3	97.1	1.8	1.8	69.2
Internal Link Dist (m)	80.2		311.6			161.7
Turn Bay Length (m)						
Base Capacity (vph)	382	360	1466	1250	442	1569
Starvation Cap Reductn	0	0	0	0	0	246
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.07	0.61	0.02	0.03	0.60

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	887	31	14	791
Future Volume (vph)	30	24	887	31	14	791
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.28	1.00
Satd. Flow (perm)	1626	1454	1721	1463	519	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	887	31	14	791
RTOR Reduction (vph)	0	23	0	6	0	0
Lane Group Flow (vph)	30	1	887	25	14	791
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.5	4.5	62.9	62.9	62.9	62.9
Effective Green, g (s)	4.5	4.5	62.9	62.9	62.9	62.9
Actuated g/C Ratio	0.06	0.06	0.79	0.79	0.79	0.79
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	92	82	1363	1158	411	1459
v/s Ratio Prot	c0.02		c0.52			0.43
v/s Ratio Perm		0.00		0.02	0.03	
v/c Ratio	0.33	0.02	0.65	0.02	0.03	0.54
Uniform Delay, d1	36.0	35.4	3.5	1.7	1.8	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	2.4	0.0	0.2	1.5
Delay (s)	38.1	35.4	6.0	1.8	1.9	4.5
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	36.9		5.8			4.4
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

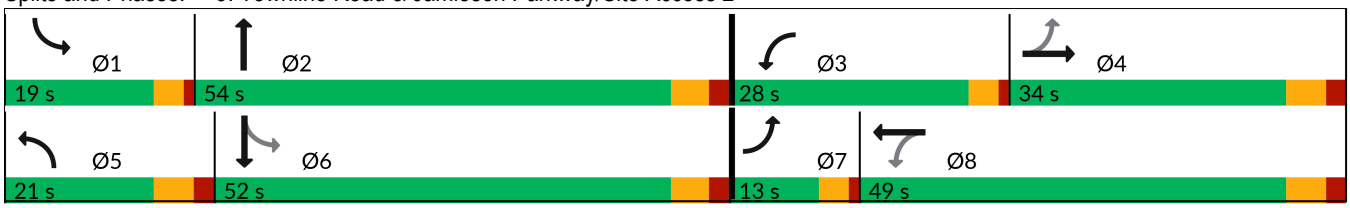


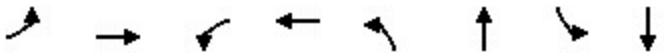
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	0	256	61	8	29	273	711	41	10	674	138
Future Volume (vph)	161	0	256	61	8	29	273	711	41	10	674	138
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
Lane Width (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			0.882			0.992			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1387	0	1668	1439	0	3203	3247	0	1668	3214	0
Flt Permitted	0.488			0.952			0.950			0.366		
Satd. Flow (perm)	857	1387	0	1671	1439	0	3203	3247	0	642	3214	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		471			29			5			19	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	161	0	256	61	8	29	273	711	41	10	674	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	256	0	61	37	0	273	752	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	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	16.1	6.6		13.7	6.6		13.0	63.5		54.0	46.3	
Actuated g/C Ratio	0.17	0.07		0.15	0.07		0.14	0.67		0.57	0.49	
v/c Ratio	0.67	0.48		0.25	0.29		0.62	0.34		0.02	0.51	
Control Delay (s/veh)	48.9	3.1		35.0	25.9		45.5	8.1		6.1	18.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.9	3.1		35.0	25.9		45.5	8.1		6.1	18.3	
LOS	D	A		C	C		D	A		A	B	
Approach Delay (s/veh)		20.7			31.6			18.1			18.2	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 94.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 19.1		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

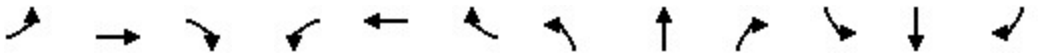




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	161	256	61	37	273	752	10	812
v/c Ratio	0.67	0.48	0.25	0.29	0.62	0.34	0.02	0.51
Control Delay (s/veh)	48.9	3.1	35.0	25.9	45.5	8.1	6.1	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.9	3.1	35.0	25.9	45.5	8.1	6.1	18.3
Queue Length 50th (m)	26.2	0.0	9.3	1.4	25.0	26.9	0.5	52.5
Queue Length 95th (m)	#53.3	0.0	20.1	11.0	38.8	53.7	2.1	75.1
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	242	745	428	677	513	2191	596	1590
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	0.67	0.34	0.14	0.05	0.53	0.34	0.02	0.51

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)	161	0	256	61	8	29	273	711	41	10	674	138
Future Volume (vph)	161	0	256	61	8	29	273	711	41	10	674	138
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	0.88		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	1440		3203	3246		1668	3212	
Flt Permitted	0.49	1.00		0.95	1.00		0.95	1.00		0.37	1.00	
Satd. Flow (perm)	856	1387		1672	1440		3203	3246		643	3212	
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)	161	0	256	61	8	29	273	711	41	10	674	138
RTOR Reduction (vph)	0	235	0	0	28	0	0	2	0	0	10	0
Lane Group Flow (vph)	161	21	0	61	9	0	273	750	0	10	802	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)	19.3	8.3		11.2	4.2		13.0	63.5		50.7	49.6	
Effective Green, g (s)	19.3	8.3		11.2	4.2		13.0	63.5		50.7	49.6	
Actuated g/C Ratio	0.19	0.08		0.11	0.04		0.13	0.64		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)	255	115		187	60		416	2063		337	1594	
v/s Ratio Prot	c0.07	0.02		0.02	0.01		c0.09	0.23		0.00	c0.25	
v/s Ratio Perm	c0.05			0.01						0.01		
v/c Ratio	0.63	0.18		0.33	0.15		0.66	0.36		0.03	0.50	
Uniform Delay, d1	36.1	42.7		40.9	46.1		41.3	8.6		12.2	16.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	0.8		1.0	1.2		3.7	0.5		0.0	1.1	
Delay (s)	41.1	43.4		41.9	47.3		45.0	9.1		12.2	18.0	
Level of Service	D	D		D	D		D	A		B	B	
Approach Delay (s/veh)		42.5			43.9			18.7			18.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

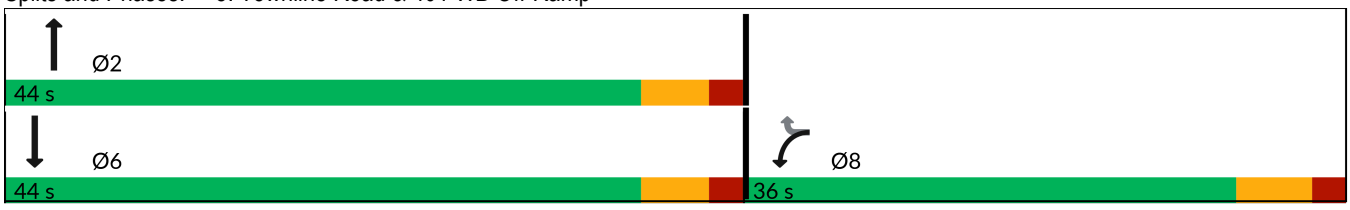


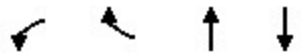
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	460	203	819	0	0	711
Future Volume (vph)	460	203	819	0	0	711
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		111				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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)	460	203	819	0	0	711
Shared Lane Traffic (%)						
Lane Group Flow (vph)	460	203	819	0	0	711
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	15.2	15.2	38.1			38.1
Actuated g/C Ratio	0.23	0.23	0.58			0.58
v/c Ratio	0.65	0.48	0.40			0.35
Control Delay (s/veh)	27.3	14.4	8.9			8.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	27.3	14.4	8.9			8.5
LOS	C	B	A			A
Approach Delay (s/veh)	23.4		8.9			8.5
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 13.1		Intersection LOS: B	
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

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





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	460	203	819	711
v/c Ratio	0.65	0.48	0.40	0.35
Control Delay (s/veh)	27.3	14.4	8.9	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.3	14.4	8.9	8.5
Queue Length 50th (m)	26.2	9.2	25.2	21.1
Queue Length 95th (m)	39.1	25.3	44.1	37.5
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1384	715	2046	2026
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	0.28	0.40	0.35

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	460	203	819	0	0	711
Future Volume (vph)	460	203	819	0	0	711
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)	460	203	819	0	0	711
RTOR Reduction (vph)	0	85	0	0	0	0
Lane Group Flow (vph)	460	118	819	0	0	711
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)	15.2	15.2	38.1			38.1
Effective Green, g (s)	15.2	15.2	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)	711	336	2046			2026
v/s Ratio Prot	c0.15		c0.23			0.20
v/s Ratio Perm		0.08				
v/c Ratio	0.65	0.35	0.40			0.35
Uniform Delay, d1	22.9	21.2	7.6			7.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	2.0	0.6	0.6			0.5
Delay (s)	24.9	21.8	8.2			7.8
Level of Service	C	C	A			A
Approach Delay (s/veh)	24.0		8.2			7.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

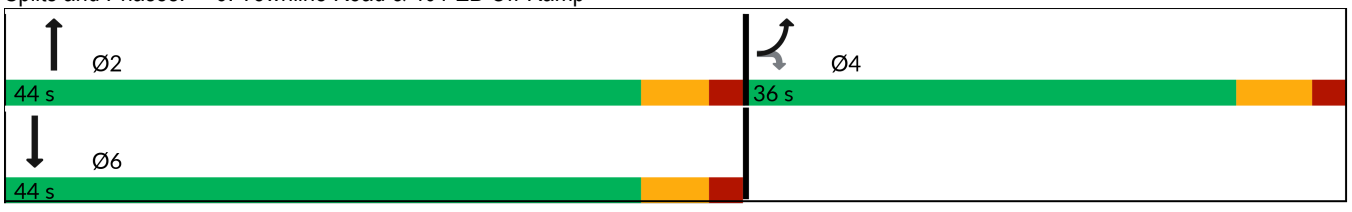


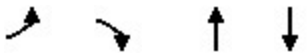
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	383	513	0	649	1022	165
Future Volume (vph)	383	513	0	649	1022	165
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.979	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3436	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3436	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		61			31	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	383	513	0	649	1022	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	513	0	649	1187	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	27.7	27.7		38.1	38.1	
Actuated g/C Ratio	0.35	0.35		0.49	0.49	
v/c Ratio	0.66	0.93		0.38	0.70	
Control Delay (s/veh)	27.7	46.9		13.9	18.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	27.7	46.9		13.9	18.5	
LOS	C	D		B	B	
Approach Delay (s/veh)	38.7			13.9	18.5	
Approach LOS	D			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 78.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 24.0		Intersection LOS: C	
Intersection Capacity Utilization 78.4%		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)	383	513	649	1187
v/c Ratio	0.66	0.93	0.38	0.70
Control Delay (s/veh)	27.7	46.9	13.9	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.7	46.9	13.9	18.5
Queue Length 50th (m)	47.0	64.5	31.8	70.3
Queue Length 95th (m)	75.6	#122.6	44.0	93.2
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	616	587	1702	1686
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	0.87	0.38	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)	383	513	0	649	1022	165
Future Volume (vph)	383	513	0	649	1022	165
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3436	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3436	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	383	513	0	649	1022	165
RTOR Reduction (vph)	0	39	0	0	16	0
Lane Group Flow (vph)	383	474	0	649	1171	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)	27.7	27.7		38.1	38.1	
Effective Green, g (s)	27.7	27.7		38.1	38.1	
Actuated g/C Ratio	0.35	0.35		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)	578	515		1703	1671	
v/s Ratio Prot	0.23			0.19	c0.34	
v/s Ratio Perm		c0.33				
v/c Ratio	0.66	0.92		0.38	0.70	
Uniform Delay, d1	21.4	24.2		12.7	15.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	21.5		0.6	2.5	
Delay (s)	24.2	45.7		13.3	18.1	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	36.5			13.3	18.1	
Approach LOS	D			B	B	

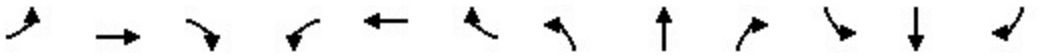
Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	1060	12	21	927
Future Volume (vph)	11	5	1060	12	21	927
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1626	1454	1721	1463	1750	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.23	1.00
Satd. Flow (perm)	1626	1454	1721	1463	429	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	1060	12	21	927
RTOR Reduction (vph)	0	5	0	2	0	0
Lane Group Flow (vph)	11	0	1060	10	21	927
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.8	2.8	68.2	68.2	68.2	68.2
Effective Green, g (s)	2.8	2.8	68.2	68.2	68.2	68.2
Actuated g/C Ratio	0.03	0.03	0.85	0.85	0.85	0.85
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	50	1467	1247	365	1570
v/s Ratio Prot	c0.01		c0.62			0.50
v/s Ratio Perm		0.00		0.01	0.05	
v/c Ratio	0.20	0.00	0.72	0.01	0.06	0.59
Uniform Delay, d1	37.5	37.3	2.3	0.9	0.9	1.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.0	3.1	0.0	0.3	1.6
Delay (s)	39.2	37.3	5.4	0.9	1.2	3.4
Level of Service	D	D	A	A	A	A
Approach Delay (s/veh)	38.6		5.3			3.3
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

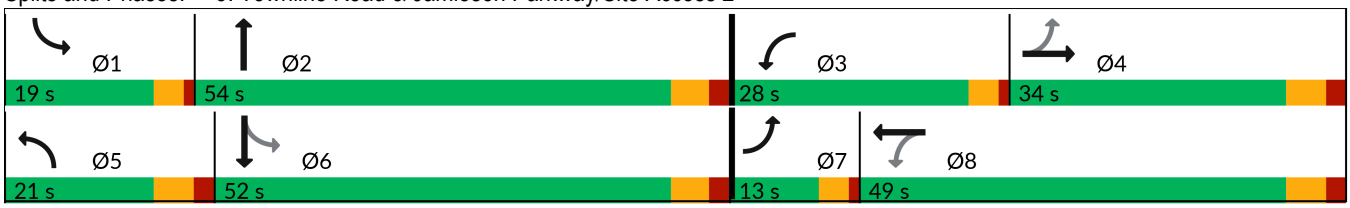


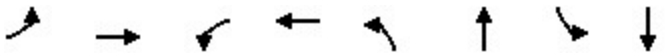
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Future Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1775	1775	1775	1775	1775
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		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	0.97	1.00	1.00	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.875			0.908			0.941			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1428	0	3235	1482	0	3203	3101	0	1668	3211	0
Flt Permitted	0.246			0.208			0.950			0.114		
Satd. Flow (perm)	432	1428	0	708	1482	0	3203	3101	0	200	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		169			62			120			20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		114.3			135.6			285.4			335.6	
Travel Time (s)		8.2			9.8			17.1			20.1	
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 (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	184	58	291	315	156	247	256	653	420	188	620	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	349	0	315	403	0	256	1073	0	188	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)		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	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 Don't Walk (s)		18.0			18.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	40.7	29.6		48.5	34.2		13.7	48.8		61.5	46.3	
Actuated g/C Ratio	0.32	0.24		0.39	0.27		0.11	0.39		0.49	0.37	
v/c Ratio	0.80	0.75		0.57	0.90		0.73	0.84		0.75	0.63	
Control Delay (s/veh)	55.5	33.4		29.7	60.4		68.3	39.2		42.3	35.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	55.5	33.4		29.7	60.4		68.3	39.2		42.3	35.7	
LOS	E	C		C	E		E	D		D	D	
Approach Delay (s/veh)		41.0			46.9			44.8			37.0	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 125.4			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 42.6		Intersection LOS: D	
Intersection Capacity Utilization 99.4%		ICU Level of Service F	
Analysis Period (min) 15			

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

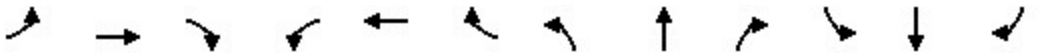




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	184	349	315	403	256	1073	188	749
v/c Ratio	0.80	0.75	0.57	0.90	0.73	0.84	0.75	0.63
Control Delay (s/veh)	55.5	33.4	29.7	60.4	68.3	39.2	42.3	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.5	33.4	29.7	60.4	68.3	39.2	42.3	35.7
Queue Length 50th (m)	31.0	42.9	27.0	84.0	32.4	118.5	24.9	80.1
Queue Length 95th (m)	#60.7	81.2	37.1	#127.0	49.2	#170.8	#60.5	109.6
Internal Link Dist (m)		90.3		111.6		261.4		311.6
Turn Bay Length (m)	45.0		45.0		115.0		115.0	
Base Capacity (vph)	229	486	765	552	385	1279	278	1198
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	0.41	0.73	0.66	0.84	0.68	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)	184	58	291	315	156	247	256	653	420	188	620	129
Future Volume (vph)	184	58	291	315	156	247	256	653	420	188	620	129
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		0.97	1.00		0.97	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.91		1.00	0.94		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	1428		3235	1482		3203	3101		1668	3211	
Flt Permitted	0.25	1.00		0.21	1.00		0.95	1.00		0.11	1.00	
Satd. Flow (perm)	432	1428		708	1482		3203	3101		200	3211	
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	58	291	315	156	247	256	653	420	188	620	129
RTOR Reduction (vph)	0	129	0	0	45	0	0	73	0	0	13	0
Lane Group Flow (vph)	184	220	0	315	358	0	256	1000	0	188	736	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)	38.8	29.7		47.3	34.2		13.7	48.8		59.5	46.3	
Effective Green, g (s)	38.8	29.7		47.3	34.2		13.7	48.8		59.5	46.3	
Actuated g/C Ratio	0.31	0.24		0.38	0.27		0.11	0.39		0.47	0.37	
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)	223	338		541	404		350	1207		249	1186	
v/s Ratio Prot	c0.06	0.15		c0.06	c0.24		c0.08	c0.32		0.08	0.23	
v/s Ratio Perm	0.20			0.16						0.28		
v/c Ratio	0.83	0.65		0.58	0.89		0.73	0.83		0.76	0.62	
Uniform Delay, d1	37.0	43.1		29.0	43.7		54.0	34.5		24.1	32.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.3	4.4		1.6	20.1		7.7	6.6		12.2	2.5	
Delay (s)	58.3	47.6		30.6	63.8		61.7	41.1		36.4	34.8	
Level of Service	E	D		C	E		E	D		D	C	
Approach Delay (s/veh)		51.3			49.2			45.1			35.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.3	Sum of lost time (s)	22.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

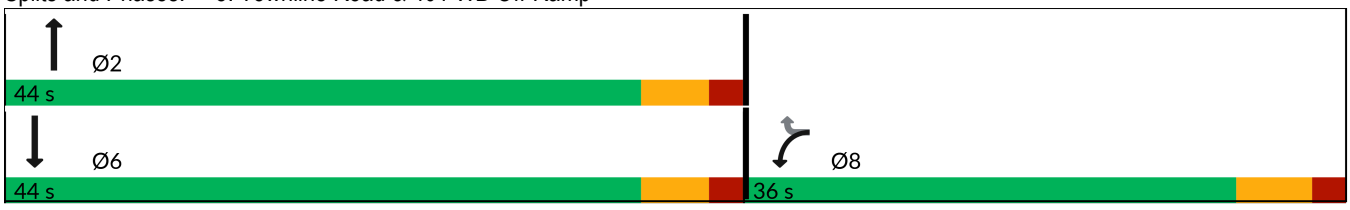


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	254	1074	0	0	887
Future Volume (vph)	449	254	1074	0	0	887
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850				
Flt Protected	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)		53				
Link Speed (k/h)	50		60			60
Link Distance (m)	117.7		411.0			285.4
Travel Time (s)	8.5		24.7			17.1
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	254	1074	0	0	887
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	254	1074	0	0	887
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
Protected Phases	8		2			6
Permitted Phases		8				
Detector Phase	8	8	2			6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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)	15.8	15.8	38.2			38.2
Actuated g/C Ratio	0.24	0.24	0.57			0.57
v/c Ratio	0.61	0.66	0.53			0.44
Control Delay (s/veh)	26.1	26.3	10.7			9.8
Queue Delay	0.0	0.0	0.0			0.0
Total Delay (s/veh)	26.1	26.3	10.7			9.8
LOS	C	C	B			A
Approach Delay (s/veh)	26.2		10.7			9.8
Approach LOS	C		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 66.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay (s/veh): 14.5		Intersection LOS: B	
Intersection Capacity Utilization 57.2%		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)	449	254	1074	887
v/c Ratio	0.61	0.66	0.53	0.44
Control Delay (s/veh)	26.1	26.3	10.7	9.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.1	26.3	10.7	9.8
Queue Length 50th (m)	25.4	22.1	36.0	27.7
Queue Length 95th (m)	37.7	42.6	70.7	55.2
Internal Link Dist (m)	93.7		387.0	261.4
Turn Bay Length (m)				
Base Capacity (vph)	1372	677	2027	2008
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	0.38	0.53	0.44

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	449	254	1074	0	0	887
Future Volume (vph)	449	254	1074	0	0	887
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	254	1074	0	0	887
RTOR Reduction (vph)	0	40	0	0	0	0
Lane Group Flow (vph)	449	214	1074	0	0	887
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)	15.8	15.8	38.2			38.2
Effective Green, g (s)	15.8	15.8	38.2			38.2
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)	732	345	2030			2010
v/s Ratio Prot	0.15		c0.30			0.25
v/s Ratio Perm		c0.15				
v/c Ratio	0.61	0.62	0.53			0.44
Uniform Delay, d1	22.6	22.7	8.7			8.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.5	3.3	1.0			0.7
Delay (s)	24.2	26.0	9.6			8.8
Level of Service	C	C	A			A
Approach Delay (s/veh)	24.8		9.6			8.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

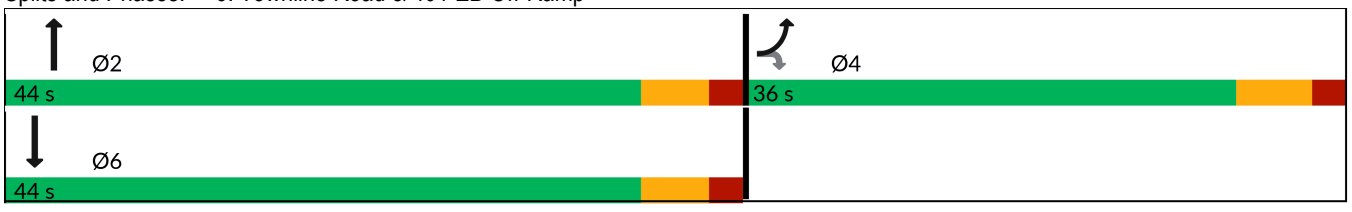


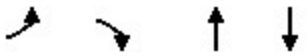
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	504	581	0	833	1150	194
Future Volume (vph)	504	581	0	833	1150	194
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.978	
Flt Protected	0.950					
Satd. Flow (prot)	1635	1456	0	3500	3433	0
Flt Permitted	0.950					
Satd. Flow (perm)	1635	1456	0	3500	3433	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		42			32	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	504	581	0	833	1150	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	504	581	0	833	1344	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	0.84	1.03		0.50	0.82	
Control Delay (s/veh)	37.7	72.3		15.8	22.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.7	72.3		15.8	22.6	
LOS	D	E		B	C	
Approach Delay (s/veh)	56.3			15.8	22.6	
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: 1.03			
Intersection Signal Delay (s/veh): 32.1		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		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)	504	581	833	1344
v/c Ratio	0.84	1.03	0.50	0.82
Control Delay (s/veh)	37.7	72.3	15.8	22.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.7	72.3	15.8	22.6
Queue Length 50th (m)	68.5	~91.8	43.7	85.9
Queue Length 95th (m)	#120.6	#151.4	58.8	113.6
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	602	563	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	0.84	1.03	0.50	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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	504	581	0	833	1150	194
Future Volume (vph)	504	581	0	833	1150	194
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	0.98	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1635	1456		3500	3434	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1635	1456		3500	3434	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	504	581	0	833	1150	194
RTOR Reduction (vph)	0	27	0	0	17	0
Lane Group Flow (vph)	504	554	0	833	1327	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	1631	
v/s Ratio Prot	0.31			0.24	c0.39	
v/s Ratio Perm		c0.38				
v/c Ratio	0.84	1.03		0.50	0.81	
Uniform Delay, d1	23.1	25.3		14.5	18.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	48.1		1.1	4.6	
Delay (s)	32.9	73.3		15.6	22.5	
Level of Service	C	E		B	C	
Approach Delay (s/veh)	54.5			15.6	22.5	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.4	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	87.4%	ICU Level of Service	E
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 Count Date: 2026-02-18

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	723	75	0	0	0	100	901	0	15	0	7	0
PM Peak Hour	0	1,426	25	0	0	0	36	776	0	55	0	25	0
AHV	0	537	25	0	0	0	34	419	0	18	0	8	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	1,016			**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	1041	115.7	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	26	10.0	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	1016	112.8	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	18	23.3	

Justification 7 - Projected Volumes

Intersection: Site Access 1 and Townline Road Alt B Count Date: 2026-02-18

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	721	112	0	0	0	58	903	0	26	0	23	0
PM Peak Hour	0	1,316	54	0	0	0	24	713	0	85	0	68	0
AHV	0	509	42	0	0	0	21	404	0	28	0	23	0
	Main Street AHV Sum			**Minor Street AHV Sum**									
	975			**51**									

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

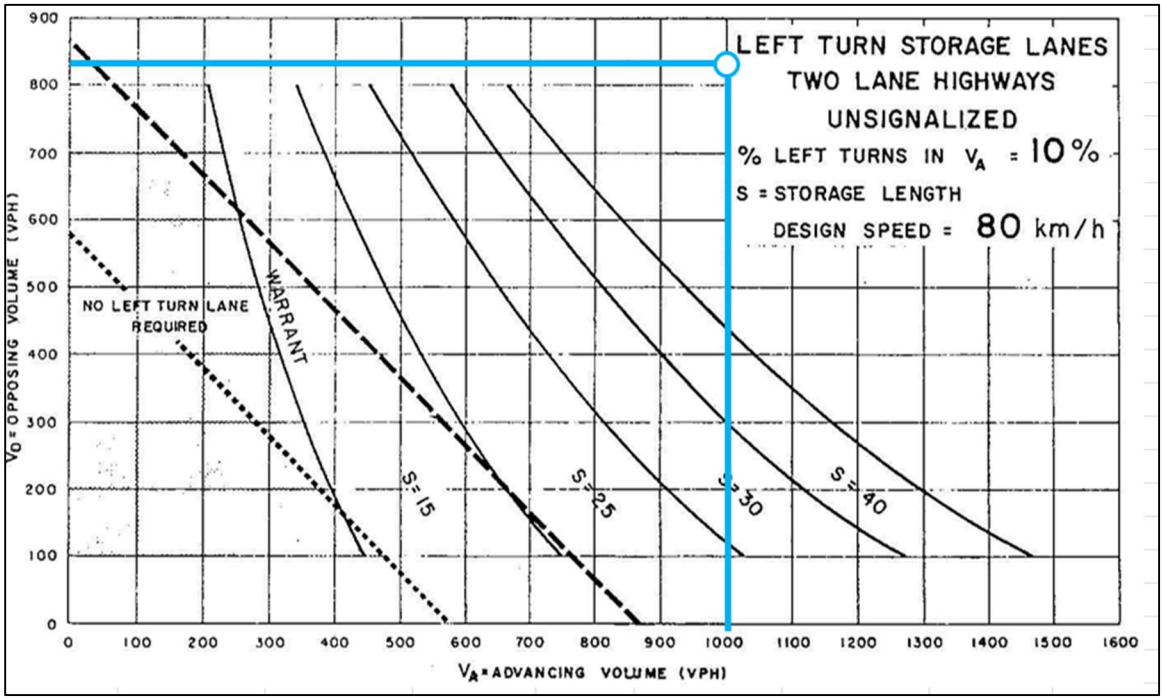
Justification	Description	Minimum Requirement 1 Lane Highways		Minimum Requirement 2 or more lanes		Compliance		Case?
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	-	-	-	900	1026	114.0	**Case 2 - Might be Warranted**
	B. Vehicle volume, along minor streets (average hour)	-	-	-	255	51	19.8	
2. Delay to cross Traffic	A. Vehicle volume, major street (average hour)	-	-	-	900	975	108.4	
	B. Combined vehicle and pedestrian volume crossing	-	-	-	75	28	37.0	

E-2 Site Access 1 and Townline Road Left-Turn Lane Warrant

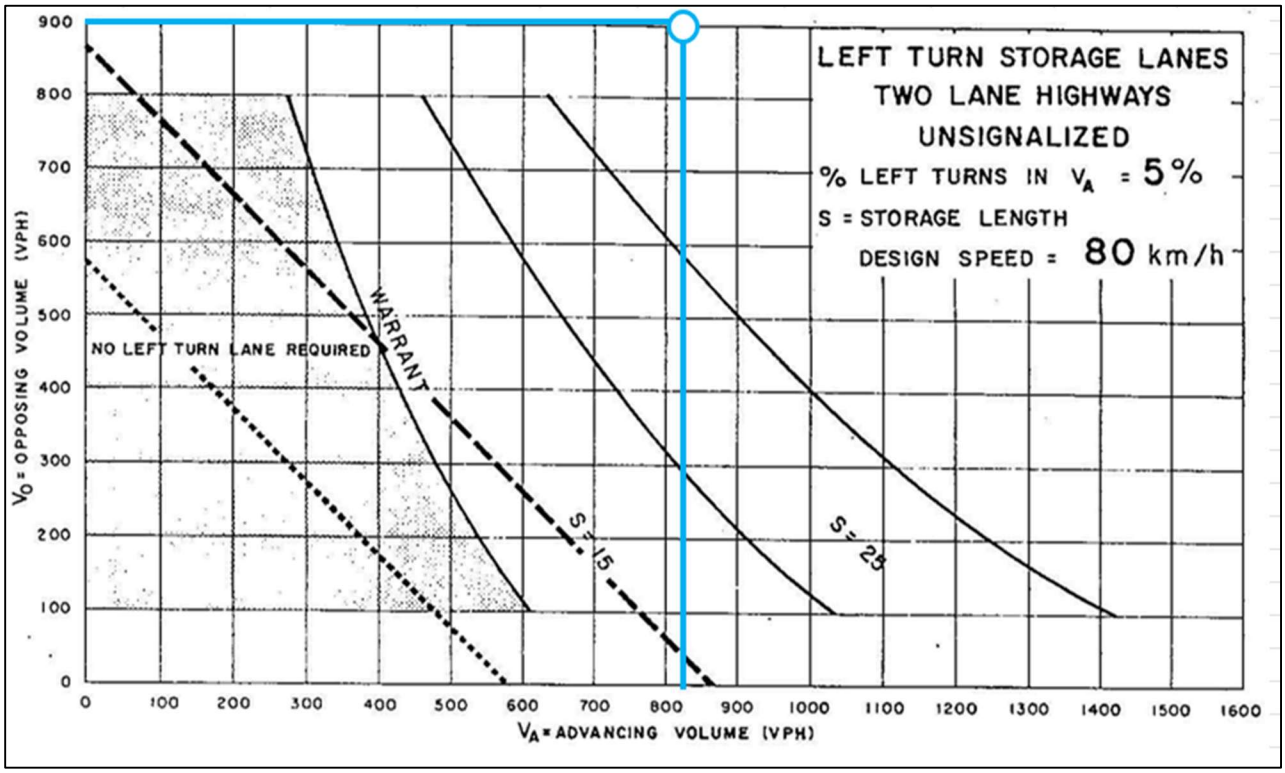
Site Access 1 and Townline Road – Future Total 2028 Site Plan A

Peak Hour	AM	PM	Saturday
Advancing Traffic Volume V_a	1001	812	813
Opposing Traffic Volume V_O	833	1451	923
Left Turn Traffic	100	36	21
Left Turn Traffic Percentage	10%	4.4%	2.6%
Left Turn Warrant	Yes	Yes	Yes

AM PEAK HOUR



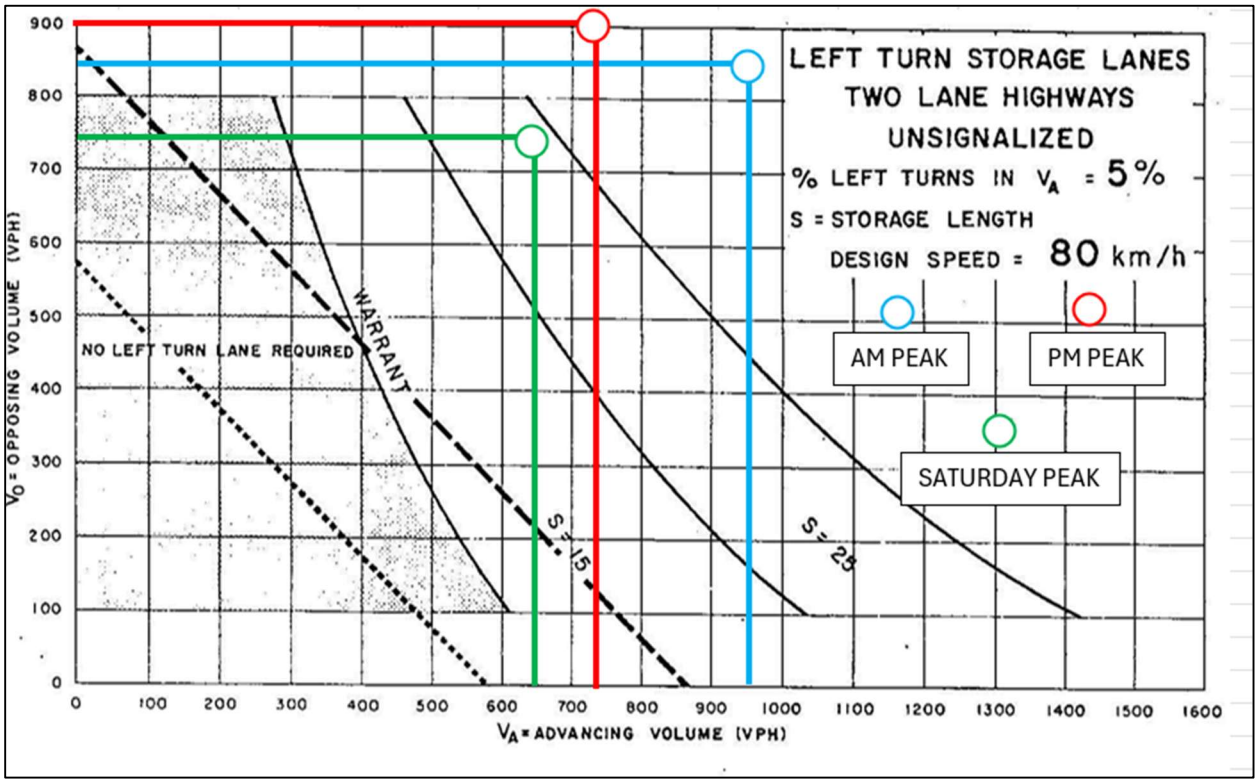
PM PEAK HOUR AND SATURDAY PEAK



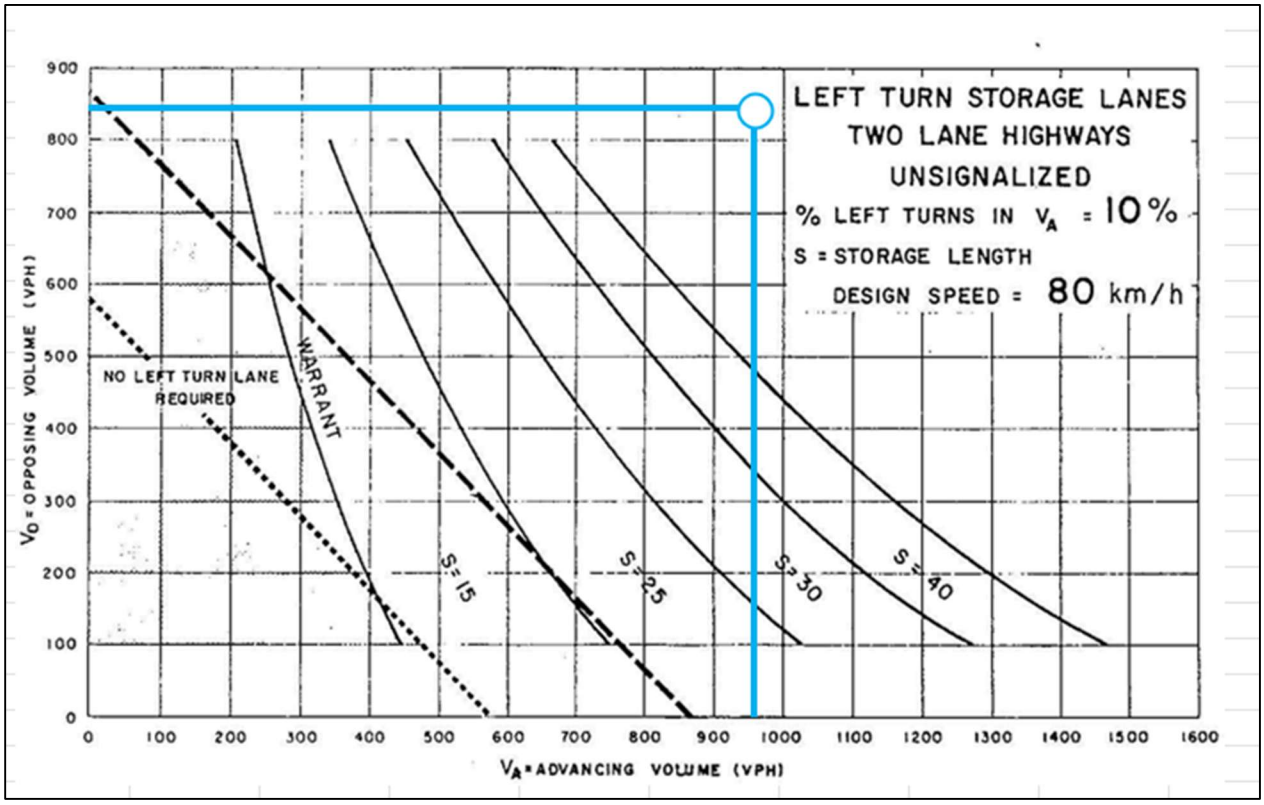
Site Access 1 and Townline Road – Future Total 2028 Site Plan B

Peak Hour	AM	PM	Saturday
Advancing Traffic Volume V_a	961	737	641
Opposing Traffic Volume V_O	833	1370	730
Left Turn Traffic	58	24	14
Left Turn Traffic Percentage	6%	3.3%	2.2%
Left Turn Warrant	Yes	Yes	Yes

AM PEAK, PM PEAK AND SATURDAY PEAK

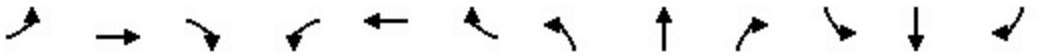


AM PEAK HOUR (10% LEFT TURN GRAPH)



Appendix F

Intersection Improvement Synchro Reports

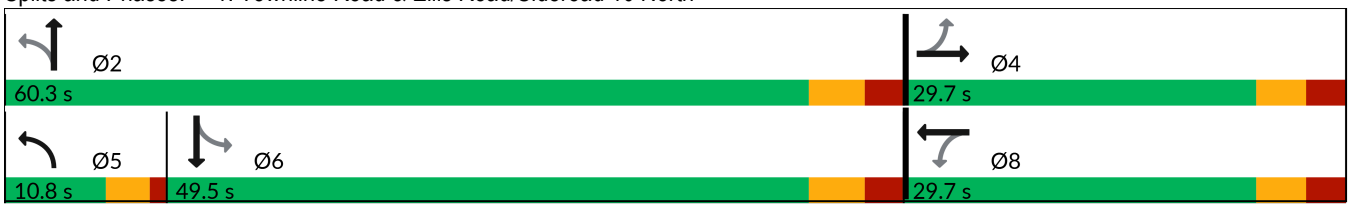


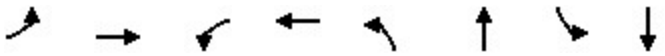
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	35
Future Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	35
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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		0.866			0.965			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1575	0	1603	2933	0	1334	2995	0
Flt Permitted	0.746			0.284			0.261			0.358		
Satd. Flow (perm)	1296	1388	0	498	1575	0	441	2933	0	503	2995	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		246			4			23			6	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	299	66	13	4	140	699	76	4	821	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	335	0	66	17	0	140	775	0	4	856	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)	14.1	14.1		14.1	14.1		56.6	54.3		43.6	43.6	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.70	0.67		0.54	0.54	
v/c Ratio	0.46	0.75		0.76	0.06		0.35	0.39		0.01	0.53	
Control Delay (s/veh)	35.8	20.4		78.5	22.7		7.5	7.3		11.5	14.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.8	20.4		78.5	22.7		7.5	7.3		11.5	14.5	
LOS	D	C		E	C		A	A		B	B	
Approach Delay (s/veh)		24.0			67.0			7.3			14.4	
Approach LOS		C			E			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 80.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

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

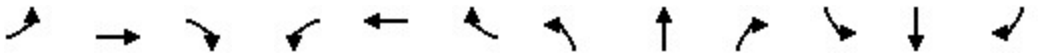




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	335	66	17	140	775	4	856
v/c Ratio	0.46	0.75	0.76	0.06	0.35	0.39	0.01	0.53
Control Delay (s/veh)	35.8	20.4	78.5	22.7	7.5	7.3	11.5	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.8	20.4	78.5	22.7	7.5	7.3	11.5	14.5
Queue Length 50th (m)	14.4	12.1	9.7	1.7	5.8	22.7	0.3	41.0
Queue Length 95th (m)	28.2	39.1	#25.6	6.6	16.3	46.1	2.1	72.2
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	382	582	147	467	407	1979	271	1620
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	0.58	0.45	0.04	0.34	0.39	0.01	0.53

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	299	66	13	4	140	699	76	4	821	35
Future Volume (vph)	104	36	299	66	13	4	140	699	76	4	821	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	1388		1668	1574		1603	2934		1334	2995	
Flt Permitted	0.75	1.00		0.28	1.00		0.26	1.00		0.36	1.00	
Satd. Flow (perm)	1297	1388		498	1574		440	2934		503	2995	
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	299	66	13	4	140	699	76	4	821	35
RTOR Reduction (vph)	0	203	0	0	3	0	0	8	0	0	3	0
Lane Group Flow (vph)	104	132	0	66	14	0	140	767	0	4	853	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)	14.1	14.1		14.1	14.1		54.3	54.3		43.7	43.7	
Effective Green, g (s)	14.1	14.1		14.1	14.1		54.3	54.3		43.7	43.7	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.67	0.67		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)	226	242		87	275		391	1974		272	1621	
v/s Ratio Prot		0.10			0.01		0.03	c0.26			c0.28	
v/s Ratio Perm	0.08			c0.13			0.21			0.01		
v/c Ratio	0.46	0.55		0.76	0.05		0.36	0.39		0.01	0.53	
Uniform Delay, d1	29.9	30.4		31.7	27.7		5.6	5.8		8.6	11.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.5		30.9	0.1		0.6	0.6		0.1	1.2	
Delay (s)	31.4	32.9		62.6	27.8		6.1	6.4		8.6	13.1	
Level of Service	C	C		E	C		A	A		A	B	
Approach Delay (s/veh)		32.5			55.4			6.4			13.1	
Approach LOS		C			E			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	16.3
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

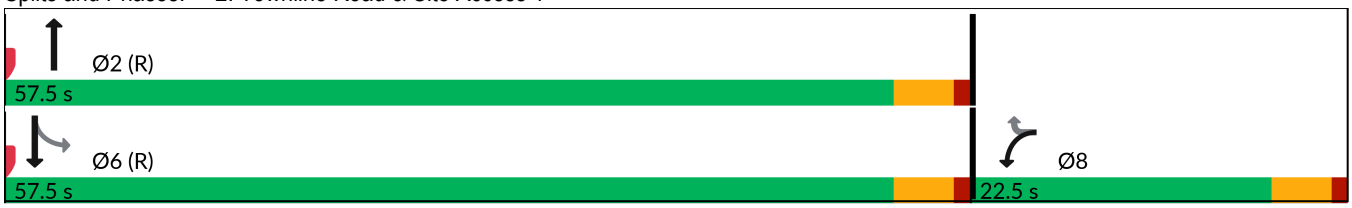


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	908	75	100	1084
Future Volume (vph)	15	7	908	75	100	1084
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.989			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3234	0	1750	1842
Flt Permitted	0.950				0.290	
Satd. Flow (perm)	1626	1454	3234	0	534	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		7	23			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	908	75	100	1084
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	7	983	0	100	1084
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	57.5		57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%		71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0		53.0	53.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	6.3	6.3	73.5		73.5	73.5
Actuated g/C Ratio	0.08	0.08	0.92		0.92	0.92
v/c Ratio	0.12	0.06	0.33		0.20	0.64
Control Delay (s/veh)	35.7	21.0	1.5		2.5	4.6
Queue Delay	0.0	0.0	0.0		0.0	0.1
Total Delay (s/veh)	35.7	21.0	1.5		2.5	4.6
LOS	D	C	A		A	A
Approach Delay (s/veh)	31.0		1.5			4.4
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 3.4		Intersection LOS: A	
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	15	7	983	100	1084
v/c Ratio	0.12	0.06	0.33	0.20	0.64
Control Delay (s/veh)	35.7	21.0	1.5	2.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay (s/veh)	35.7	21.0	1.5	2.5	4.6
Queue Length 50th (m)	2.2	0.0	0.0	0.0	0.0
Queue Length 95th (m)	7.5	3.6	21.9	6.7	101.0
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	365	332	2973	490	1692
Starvation Cap Reductn	0	0	0	0	44
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.33	0.20	0.66

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	7	908	75	100	1084
Future Volume (vph)	15	7	908	75	100	1084
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3232		1750	1842
Flt Permitted	0.95	1.00	1.00		0.29	1.00
Satd. Flow (perm)	1626	1454	3232		535	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	7	908	75	100	1084
RTOR Reduction (vph)	0	7	3	0	0	0
Lane Group Flow (vph)	15	0	980	0	100	1084
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	2.9	2.9	68.1		68.1	68.1
Effective Green, g (s)	2.9	2.9	68.1		68.1	68.1
Actuated g/C Ratio	0.04	0.04	0.85		0.85	0.85
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	58	52	2751		455	1568
v/s Ratio Prot	c0.01		0.30			c0.59
v/s Ratio Perm		0.00			0.19	
v/c Ratio	0.26	0.00	0.36		0.22	0.69
Uniform Delay, d1	37.5	37.2	1.3		1.1	2.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.4	0.0	0.4		1.1	2.5
Delay (s)	39.9	37.2	1.6		2.2	4.7
Level of Service	D	D	A		A	A
Approach Delay (s/veh)	39.0		1.6			4.5
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

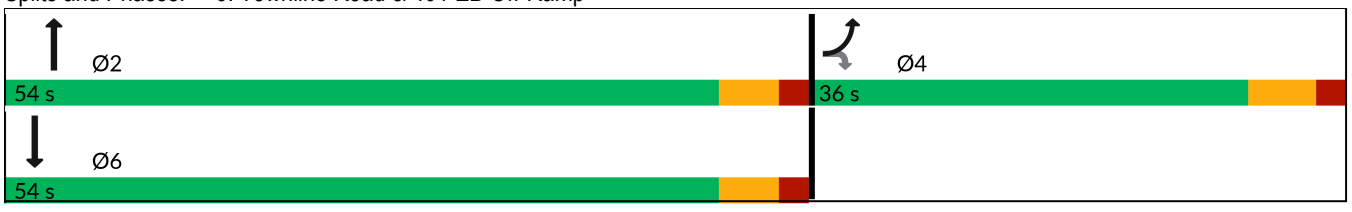


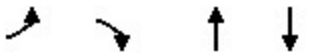
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	515	548	0	1179	1326	202
Future Volume (vph)	515	548	0	1179	1326	202
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.956	0.850			0.980	
Flt Protected	0.966					
Satd. Flow (prot)	3024	1287	0	3433	3298	0
Flt Permitted	0.966					
Satd. Flow (perm)	3024	1287	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	38	38			29	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	515	548	0	1179	1326	202
Shared Lane Traffic (%)		39%				
Lane Group Flow (vph)	729	334	0	1179	1528	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	25.1	25.1		48.2	48.2	
Actuated g/C Ratio	0.29	0.29		0.56	0.56	
v/c Ratio	0.80	0.83		0.61	0.82	
Control Delay (s/veh)	33.8	43.4		15.0	20.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.8	43.4		15.0	20.7	
LOS	C	D		B	C	
Approach Delay (s/veh)	36.8			15.0	20.7	
Approach LOS	D			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 85.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 23.4		Intersection LOS: C	
Intersection Capacity Utilization 78.1%		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)	729	334	1179	1528
v/c Ratio	0.80	0.83	0.61	0.82
Control Delay (s/veh)	33.8	43.4	15.0	20.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.8	43.4	15.0	20.7
Queue Length 50th (m)	53.7	49.7	68.4	106.1
Queue Length 95th (m)	73.6	#94.0	92.6	144.8
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1068	468	1927	1864
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	0.71	0.61	0.82

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)	515	548	0	1179	1326	202
Future Volume (vph)	515	548	0	1179	1326	202
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	0.98	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3023	1287		3433	3299	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3023	1287		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	515	548	0	1179	1326	202
RTOR Reduction (vph)	27	27	0	0	13	0
Lane Group Flow (vph)	702	307	0	1179	1515	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)	25.1	25.1		48.2	48.2	
Effective Green, g (s)	25.1	25.1		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)	884	376		1928	1853	
v/s Ratio Prot	0.23			0.34	c0.46	
v/s Ratio Perm		c0.24				
v/c Ratio	0.79	0.82		0.61	0.82	
Uniform Delay, d1	28.0	28.2		12.6	15.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	12.9		1.5	4.1	
Delay (s)	32.9	41.1		14.0	19.4	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	35.5			14.0	19.4	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

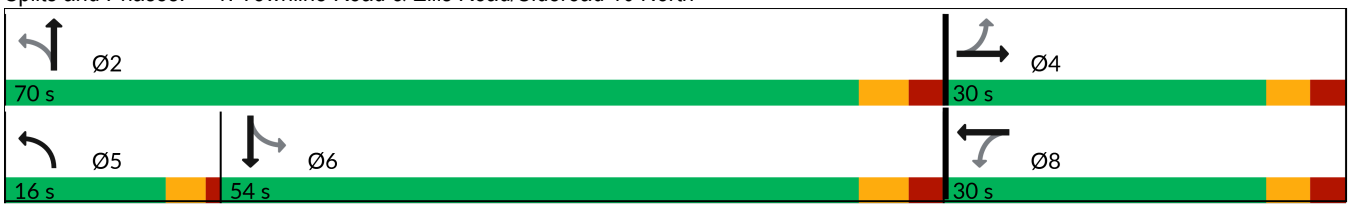
c Critical Lane Group

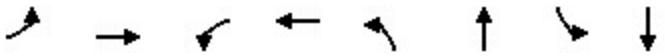
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	72
Future Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	72
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane 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			0.987			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1392	0	1635	1581	0	1668	3032	0	1668	2942	0
Flt Permitted	0.719			0.460			0.301			0.217		
Satd. Flow (perm)	1262	1392	0	792	1581	0	528	3032	0	381	2942	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		189			12			20			16	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	189	112	47	12	442	1165	111	10	663	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	214	0	112	59	0	442	1276	0	10	735	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)	16.3	16.3		16.3	16.3		66.2	63.9		47.9	47.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.71	0.69		0.52	0.52	
v/c Ratio	0.22	0.54		0.81	0.20		0.84	0.61		0.05	0.48	
Control Delay (s/veh)	34.1	12.2		74.3	27.9		24.3	9.9		14.3	16.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	34.1	12.2		74.3	27.9		24.3	10.2		14.3	16.2	
LOS	C	B		E	C		C	B		B	B	
Approach Delay (s/veh)		16.3			58.3			13.8			16.2	
Approach LOS		B			E			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 92.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 17.3		Intersection LOS: B	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

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

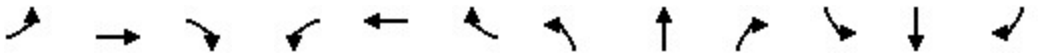




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	214	112	59	442	1276	10	735
v/c Ratio	0.22	0.54	0.81	0.20	0.84	0.61	0.05	0.48
Control Delay (s/veh)	34.1	12.2	74.3	27.9	24.3	9.9	14.3	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	34.1	12.2	74.3	27.9	24.3	10.2	14.3	16.2
Queue Length 50th (m)	7.5	3.8	19.3	7.2	26.5	55.4	0.9	41.4
Queue Length 95th (m)	17.1	22.5	#39.0	17.5	#80.1	94.2	4.0	65.7
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	328	502	206	420	525	2099	196	1528
Starvation Cap Reductn	0	0	0	0	0	242	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	0.43	0.54	0.14	0.84	0.69	0.05	0.48

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	189	112	47	12	442	1165	111	10	663	72
Future Volume (vph)	49	25	189	112	47	12	442	1165	111	10	663	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	0.99	
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	3032		1668	2943	
Flt Permitted	0.72	1.00		0.46	1.00		0.30	1.00		0.22	1.00	
Satd. Flow (perm)	1261	1391		792	1582		529	3032		382	2943	
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	189	112	47	12	442	1165	111	10	663	72
RTOR Reduction (vph)	0	156	0	0	10	0	0	6	0	0	8	0
Lane Group Flow (vph)	49	58	0	112	49	0	442	1270	0	10	727	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)	16.3	16.3		16.3	16.3		63.9	63.9		47.9	47.9	
Effective Green, g (s)	16.3	16.3		16.3	16.3		63.9	63.9		47.9	47.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		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)	222	245		139	278		513	2094		197	1523	
v/s Ratio Prot		0.04			0.03		c0.11	0.42			0.25	
v/s Ratio Perm	0.04			c0.14			c0.48			0.03		
v/c Ratio	0.22	0.24		0.81	0.18		0.86	0.61		0.05	0.48	
Uniform Delay, d1	32.7	32.8		36.6	32.4		7.7	7.6		11.0	14.3	
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		27.7	0.3		13.9	1.3		0.5	1.1	
Delay (s)	33.2	33.3		64.3	32.7		21.5	8.9		11.5	15.4	
Level of Service	C	C		E	C		C	A		B	B	
Approach Delay (s/veh)		33.2			53.4			12.2			15.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.3
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

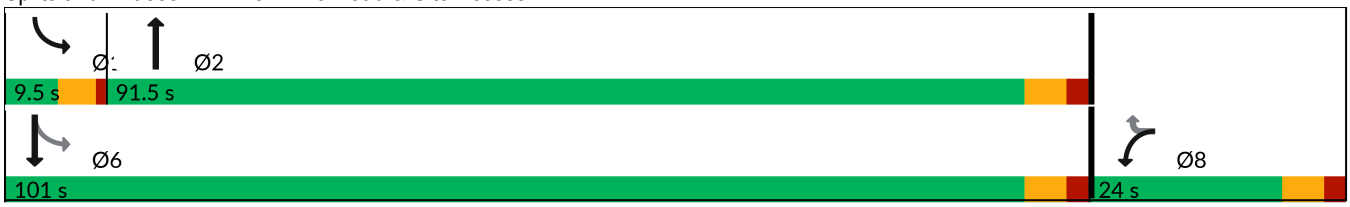


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1694	25	36	928
Future Volume (vph)	55	25	1694	25	36	928
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3263	0	1750	1842
Flt Permitted	0.950				0.101	
Satd. Flow (perm)	1626	1454	3263	0	186	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		25	3			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1694	25	36	928
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	25	1719	0	36	928
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	24.0	24.0	24.0		9.5	24.0
Total Split (s)	24.0	24.0	91.5		9.5	101.0
Total Split (%)	19.2%	19.2%	73.2%		7.6%	80.8%
Maximum Green (s)	18.0	18.0	85.5		5.0	95.0
Yellow Time (s)	4.0	4.0	4.0		3.5	4.0
All-Red Time (s)	2.0	2.0	2.0		1.0	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		4.5	6.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Don't Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	9.4	9.4	95.0		100.9	100.7
Actuated g/C Ratio	0.08	0.08	0.80		0.85	0.85
v/c Ratio	0.43	0.18	0.66		0.16	0.59
Control Delay (s/veh)	61.6	20.8	8.8		3.6	5.8
Queue Delay	0.0	0.0	0.0		0.0	1.2
Total Delay (s/veh)	61.6	20.8	8.8		3.6	7.0
LOS	E	C	A		A	A
Approach Delay (s/veh)	48.9		8.8			6.8
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 118.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay (s/veh): 9.3		Intersection LOS: A	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	55	25	1719	36	928
v/c Ratio	0.43	0.18	0.66	0.16	0.59
Control Delay (s/veh)	61.6	20.8	8.8	3.6	5.8
Queue Delay	0.0	0.0	0.0	0.0	1.2
Total Delay (s/veh)	61.6	20.8	8.8	3.6	7.0
Queue Length 50th (m)	12.4	0.0	100.4	1.1	61.0
Queue Length 95th (m)	25.2	8.3	141.4	3.2	105.9
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	247	242	2618	224	1566
Starvation Cap Reductn	0	0	0	0	393
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.10	0.66	0.16	0.79

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	25	1694	25	36	928
Future Volume (vph)	55	25	1694	25	36	928
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0	6.0		4.5	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3263		1750	1842
Flt Permitted	0.95	1.00	1.00		0.10	1.00
Satd. Flow (perm)	1626	1454	3263		187	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	25	1694	25	36	928
RTOR Reduction (vph)	0	23	1	0	0	0
Lane Group Flow (vph)	55	2	1718	0	36	928
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Actuated Green, G (s)	8.2	8.2	93.8		101.3	101.3
Effective Green, g (s)	8.2	8.2	93.8		101.3	101.3
Actuated g/C Ratio	0.07	0.07	0.77		0.83	0.83
Clearance Time (s)	6.0	6.0	6.0		4.5	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	109	98	2519		194	1535
v/s Ratio Prot	c0.03		c0.53		0.00	c0.50
v/s Ratio Perm		0.00			0.15	
v/c Ratio	0.50	0.02	0.68		0.19	0.60
Uniform Delay, d1	54.7	52.9	6.7		5.1	3.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.6	0.1	1.5		0.5	1.8
Delay (s)	58.3	53.0	8.2		5.5	5.2
Level of Service	E	D	A		A	A
Approach Delay (s/veh)	56.7		8.2			5.2
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

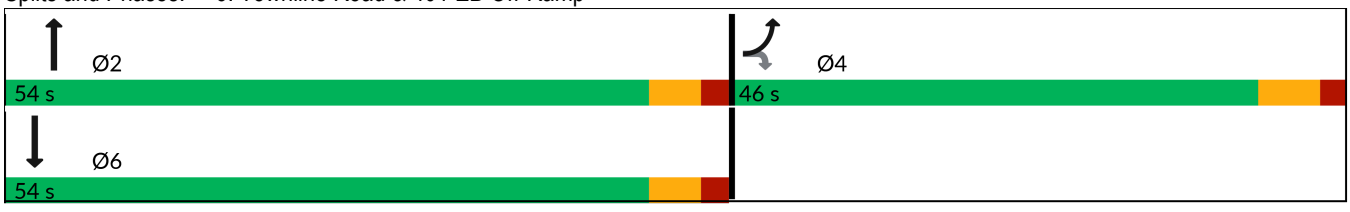


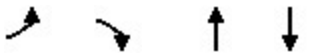
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	548	0	1435	1484	216
Future Volume (vph)	521	548	0	1435	1484	216
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.957	0.850			0.981	
Flt Protected	0.965					
Satd. Flow (prot)	3062	1312	0	3535	3356	0
Flt Permitted	0.965					
Satd. Flow (perm)	3062	1312	0	3535	3356	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16	16			22	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	521	548	0	1435	1484	216
Shared Lane Traffic (%)		38%				
Lane Group Flow (vph)	729	340	0	1435	1700	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	28.1	28.1		48.3	48.3	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.75	0.80		0.75	0.93	
Control Delay (s/veh)	31.4	41.1		20.3	30.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	31.4	41.1		20.3	30.7	
LOS	C	D		C	C	
Approach Delay (s/veh)	34.5			20.3	30.7	
Approach LOS	C			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 28.1		Intersection LOS: C	
Intersection Capacity Utilization 82.9%		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)	729	340	1435	1700
v/c Ratio	0.75	0.80	0.75	0.93
Control Delay (s/veh)	31.4	41.1	20.3	30.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.4	41.1	20.3	30.7
Queue Length 50th (m)	55.4	54.9	94.0	132.0
Queue Length 95th (m)	73.6	89.2	154.4	#231.4
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1377	595	1920	1833
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.57	0.75	0.93

Intersection Summary

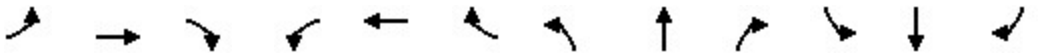
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	521	548	0	1435	1484	216
Future Volume (vph)	521	548	0	1435	1484	216
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	0.98	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3064	1312		3535	3355	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3064	1312		3535	3355	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	521	548	0	1435	1484	216
RTOR Reduction (vph)	11	11	0	0	10	0
Lane Group Flow (vph)	718	329	0	1435	1690	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)	28.1	28.1		48.4	48.4	
Effective Green, g (s)	28.1	28.1		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)	967	414		1922	1824	
v/s Ratio Prot	0.23			0.41	c0.50	
v/s Ratio Perm		c0.25				
v/c Ratio	0.74	0.79		0.75	0.93	
Uniform Delay, d1	27.2	27.8		15.6	18.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	10.1		2.7	9.6	
Delay (s)	30.3	37.9		18.3	28.3	
Level of Service	C	D		B	C	
Approach Delay (s/veh)	32.7			18.3	28.3	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

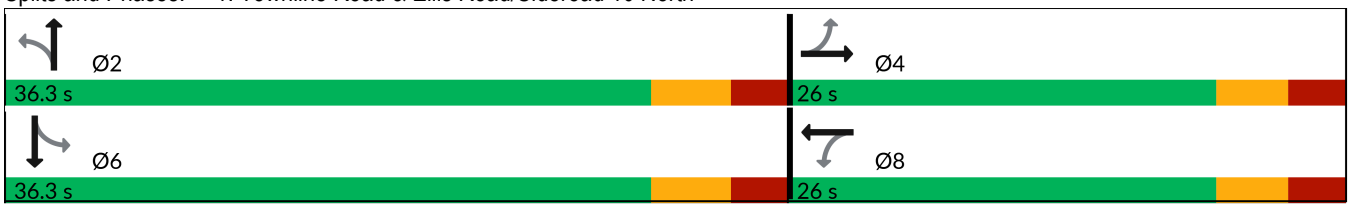


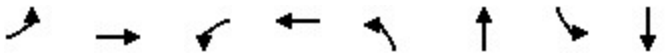
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	44
Future Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	44
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1415	0	1668	1583	0	1651	3000	0	1668	3041	0
Flt Permitted	0.742			0.449			0.405			0.331		
Satd. Flow (perm)	1290	1415	0	788	1583	0	704	3000	0	581	3041	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		210			4			27			16	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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	266	75	20	4	246	734	84	3	606	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	299	0	75	24	0	246	818	0	3	650	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)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.56	0.56		0.56	0.56	
v/c Ratio	0.23	0.65		0.46	0.07		0.62	0.48		0.01	0.38	
Control Delay (s/veh)	19.2	13.7		27.9	15.0		19.4	8.7		7.0	7.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	19.2	13.7		27.9	15.0		19.4	8.7		7.0	7.8	
LOS	B	B		C	B		B	A		A	A	
Approach Delay (s/veh)		14.6			24.8			11.2			7.8	
Approach LOS		B			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 53.6			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

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

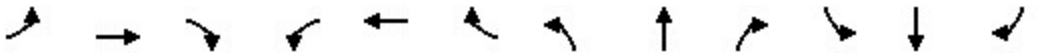




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	299	75	24	246	818	3	650
v/c Ratio	0.23	0.65	0.46	0.07	0.62	0.48	0.01	0.38
Control Delay (s/veh)	19.2	13.7	27.9	15.0	19.4	8.7	7.0	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.2	13.7	27.9	15.0	19.4	8.7	7.0	7.8
Queue Length 50th (m)	4.8	7.3	6.4	1.6	12.7	19.0	0.1	14.2
Queue Length 95th (m)	12.3	25.4	16.1	5.9	#54.7	44.1	1.3	33.3
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	483	662	295	596	395	1699	326	1718
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	0.45	0.25	0.04	0.62	0.48	0.01	0.38

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	266	75	20	4	246	734	84	3	606	44
Future Volume (vph)	60	33	266	75	20	4	246	734	84	3	606	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	0.98		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	3040	
Flt Permitted	0.74	1.00		0.45	1.00		0.40	1.00		0.33	1.00	
Satd. Flow (perm)	1289	1414		789	1583		704	2999		581	3040	
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	266	75	20	4	246	734	84	3	606	44
RTOR Reduction (vph)	0	167	0	0	3	0	0	12	0	0	7	0
Lane Group Flow (vph)	60	132	0	75	21	0	246	806	0	3	643	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)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Effective Green, g (s)	11.1	11.1		11.1	11.1		30.2	30.2		30.2	30.2	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.56	0.56		0.56	0.56	
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)	266	292		163	327		396	1689		327	1712	
v/s Ratio Prot		0.09			0.01			0.27			0.21	
v/s Ratio Perm	0.05			c0.10			c0.35			0.01		
v/c Ratio	0.23	0.45		0.46	0.06		0.62	0.48		0.01	0.38	
Uniform Delay, d1	17.7	18.6		18.6	17.1		7.9	7.0		5.1	6.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.1		2.1	0.1		7.2	1.0		0.1	0.6	
Delay (s)	18.1	19.7		20.7	17.2		15.0	8.0		5.2	7.1	
Level of Service	B	B		C	B		B	A		A	A	
Approach Delay (s/veh)		19.4			19.8			9.6			7.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.3
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

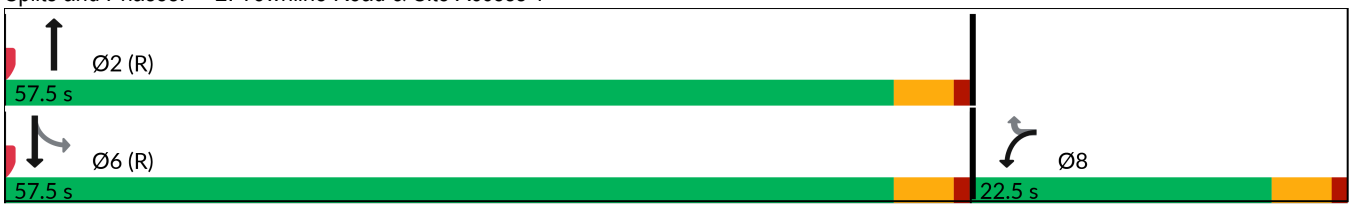


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	1060	12	21	927
Future Volume (vph)	11	5	1060	12	21	927
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3263	0	1750	1842
Flt Permitted	0.950				0.263	
Satd. Flow (perm)	1626	1454	3263	0	484	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5	3			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	1060	12	21	927
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	5	1072	0	21	927
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	22.5	22.5	57.5		57.5	57.5
Total Split (%)	28.1%	28.1%	71.9%		71.9%	71.9%
Maximum Green (s)	18.0	18.0	53.0		53.0	53.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	6.2	6.2	73.6		73.6	73.6
Actuated g/C Ratio	0.08	0.08	0.92		0.92	0.92
v/c Ratio	0.09	0.04	0.36		0.05	0.55
Control Delay (s/veh)	35.4	22.2	1.6		1.6	3.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	35.4	22.2	1.6		1.6	3.3
LOS	D	C	A		A	A
Approach Delay (s/veh)	31.3		1.6			3.3
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 2.6		Intersection LOS: A	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	11	5	1072	21	927
v/c Ratio	0.09	0.04	0.36	0.05	0.55
Control Delay (s/veh)	35.4	22.2	1.6	1.6	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.4	22.2	1.6	1.6	3.3
Queue Length 50th (m)	1.6	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.2	3.2	24.6	1.7	65.7
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	365	331	3003	445	1695
Starvation Cap Reductn	0	0	0	0	61
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.36	0.05	0.57

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	5	1060	12	21	927
Future Volume (vph)	11	5	1060	12	21	927
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width	3.5	3.5	3.5	3.5	3.5	3.5
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3264		1750	1842
Flt Permitted	0.95	1.00	1.00		0.26	1.00
Satd. Flow (perm)	1626	1454	3264		485	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	5	1060	12	21	927
RTOR Reduction (vph)	0	5	0	0	0	0
Lane Group Flow (vph)	11	0	1072	0	21	927
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	2.8	2.8	68.2		68.2	68.2
Effective Green, g (s)	2.8	2.8	68.2		68.2	68.2
Actuated g/C Ratio	0.03	0.03	0.85		0.85	0.85
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	56	50	2782		413	1570
v/s Ratio Prot	c0.01		0.33			c0.50
v/s Ratio Perm		0.00			0.04	
v/c Ratio	0.20	0.00	0.39		0.05	0.59
Uniform Delay, d1	37.5	37.3	1.3		0.9	1.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.0	0.4		0.2	1.6
Delay (s)	39.2	37.3	1.7		1.1	3.4
Level of Service	D	D	A		A	A
Approach Delay (s/veh)	38.6		1.7			3.3
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

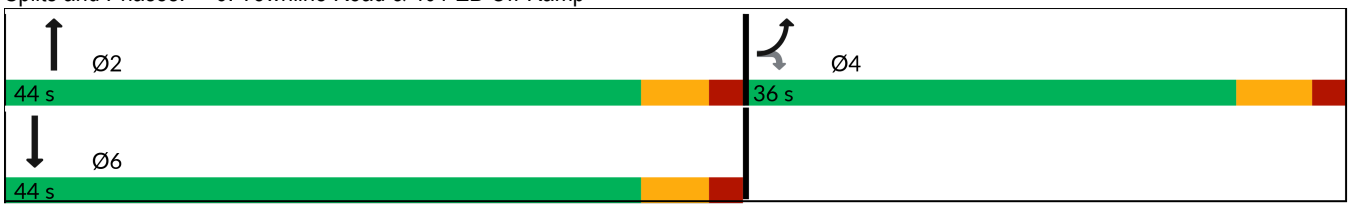


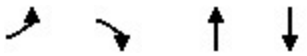
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	504	581	0	833	1150	194
Future Volume (vph)	504	581	0	833	1150	194
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.952	0.850			0.978	
Flt Protected	0.967					
Satd. Flow (prot)	3083	1325	0	3500	3433	0
Flt Permitted	0.967					
Satd. Flow (perm)	3083	1325	0	3500	3433	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	42	42			32	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	504	581	0	833	1150	194
Shared Lane Traffic (%)		41%				
Lane Group Flow (vph)	742	343	0	833	1344	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	23.0	23.0		38.2	38.2	
Actuated g/C Ratio	0.31	0.31		0.52	0.52	
v/c Ratio	0.75	0.78		0.46	0.75	
Control Delay (s/veh)	26.4	32.9		13.2	18.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	26.4	32.9		13.2	18.1	
LOS	C	C		B	B	
Approach Delay (s/veh)	28.5			13.2	18.1	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 73.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 20.3		Intersection LOS: C	
Intersection Capacity Utilization 74.4%		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)	742	343	833	1344
v/c Ratio	0.75	0.78	0.46	0.75
Control Delay (s/veh)	26.4	32.9	13.2	18.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.4	32.9	13.2	18.1
Queue Length 50th (m)	44.3	41.0	36.6	72.1
Queue Length 95th (m)	62.1	72.9	58.8	113.6
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1264	557	1812	1793
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	0.62	0.46	0.75

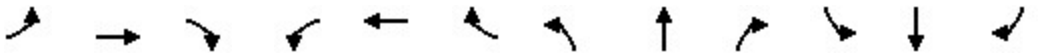
Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	504	581	0	833	1150	194
Future Volume (vph)	504	581	0	833	1150	194
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	0.98	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3083	1325		3500	3434	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3083	1325		3500	3434	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	504	581	0	833	1150	194
RTOR Reduction (vph)	29	29	0	0	15	0
Lane Group Flow (vph)	713	314	0	833	1329	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)	23.0	23.0		38.2	38.2	
Effective Green, g (s)	23.0	23.0		38.2	38.2	
Actuated g/C Ratio	0.31	0.31		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)	962	413		1814	1779	
v/s Ratio Prot	0.23			0.24	c0.39	
v/s Ratio Perm		c0.24				
v/c Ratio	0.74	0.76		0.46	0.75	
Uniform Delay, d1	22.7	22.9		11.2	13.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	8.0		0.8	2.9	
Delay (s)	25.8	30.9		12.1	16.9	
Level of Service	C	C		B	B	
Approach Delay (s/veh)	27.4			12.1	16.9	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	73.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

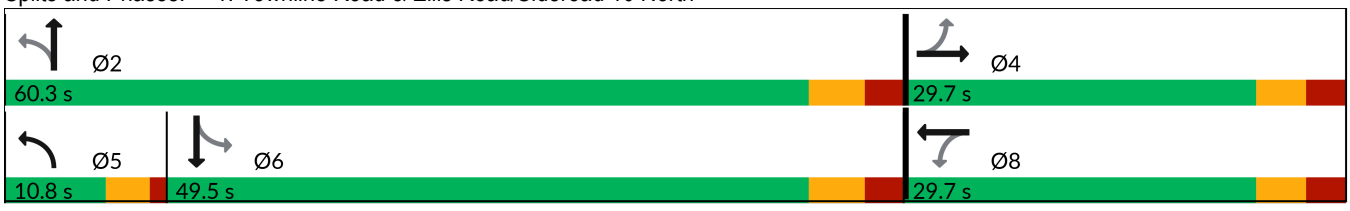


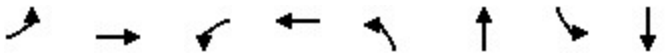
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Future Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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	0.95	0.95	1.00	0.95	0.95
Frt		0.866			0.962			0.985			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1388	0	1668	1570	0	1603	2933	0	1334	2995	0
Flt Permitted	0.747			0.323			0.259			0.353		
Satd. Flow (perm)	1298	1388	0	567	1570	0	437	2933	0	496	2995	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		243			4			23			7	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	90	32	266	63	12	4	146	712	77	4	835	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	298	0	63	16	0	146	789	0	4	871	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)	12.4	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	0.44	0.71		0.71	0.06		0.36	0.39		0.01	0.53	
Control Delay (s/veh)	36.4	17.0		70.3	23.6		6.9	6.5		10.5	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	36.4	17.0		70.3	23.6		6.9	6.5		10.5	13.4	
LOS	D	B		E	C		A	A		B	B	
Approach Delay (s/veh)		21.5			60.9			6.6			13.4	
Approach LOS		C			E			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 79			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 13.6		Intersection LOS: B	
Intersection Capacity Utilization 80.2%		ICU Level of Service D	
Analysis Period (min) 15			

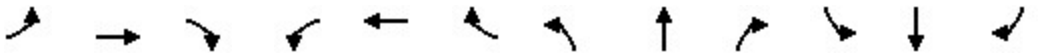
Splits and Phases: 1: Townline Road & Ellis Road/Sideroad 10 North





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	298	63	16	146	789	4	871
v/c Ratio	0.44	0.71	0.71	0.06	0.36	0.39	0.01	0.53
Control Delay (s/veh)	36.4	17.0	70.3	23.6	6.9	6.5	10.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.4	17.0	70.3	23.6	6.9	6.5	10.5	13.4
Queue Length 50th (m)	12.3	7.3	9.0	1.5	5.5	21.3	0.3	39.6
Queue Length 95th (m)	25.1	30.7	21.9	6.3	15.1	42.6	1.9	68.6
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	390	587	170	475	413	2020	273	1655
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	0.23	0.51	0.37	0.03	0.35	0.39	0.01	0.53

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	36
Future Volume (vph)	90	32	266	63	12	4	146	712	77	4	835	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		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	1388		1668	1570		1603	2935		1334	2995	
Flt Permitted	0.75	1.00		0.32	1.00		0.26	1.00		0.35	1.00	
Satd. Flow (perm)	1298	1388		566	1570		437	2935		496	2995	
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)	90	32	266	63	12	4	146	712	77	4	835	36
RTOR Reduction (vph)	0	205	0	0	3	0	0	7	0	0	3	0
Lane Group Flow (vph)	90	93	0	63	13	0	146	782	0	4	868	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	246		397	2016		274	1655	
v/s Ratio Prot		0.07			0.01		0.03	c0.27			c0.29	
v/s Ratio Perm	0.07			c0.11			0.22			0.01		
v/c Ratio	0.44	0.43		0.72	0.05		0.37	0.39		0.01	0.52	
Uniform Delay, d1	30.1	30.0		31.6	28.3		5.1	5.3		8.0	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.3		24.0	0.1		0.6	0.6		0.1	1.2	
Delay (s)	31.7	31.4		55.6	28.3		5.7	5.8		8.1	12.3	
Level of Service	C	C		E	C		A	A		A	B	
Approach Delay (s/veh)		31.5			50.1			5.8			12.3	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.3
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

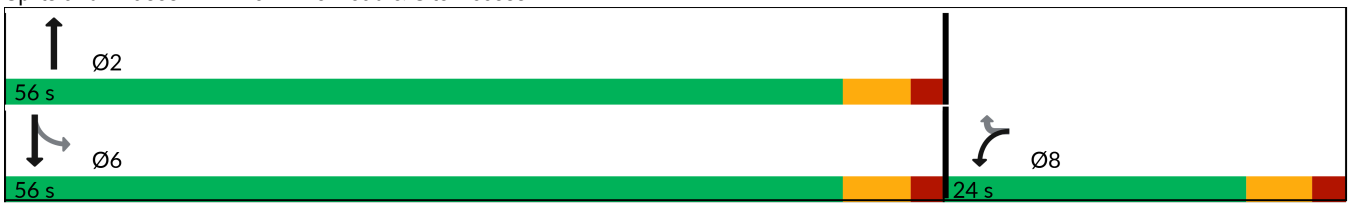


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	891	112	58	1110
Future Volume (vph)	26	23	891	112	58	1110
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.983			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3214	0	1750	1842
Flt Permitted	0.950				0.282	
Satd. Flow (perm)	1626	1454	3214	0	519	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		23	32			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	891	112	58	1110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	23	1003	0	58	1110
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	24.0	24.0	29.0		24.0	24.0
Total Split (s)	24.0	24.0	56.0		56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%		70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0		50.0	50.0
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 Optimize?						
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	7.0		7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	6.9	6.9	66.0		66.0	66.0
Actuated g/C Ratio	0.09	0.09	0.85		0.85	0.85
v/c Ratio	0.18	0.15	0.36		0.13	0.71
Control Delay (s/veh)	36.0	16.2	2.9		3.4	8.4
Queue Delay	0.0	0.0	0.0		0.0	0.6
Total Delay (s/veh)	36.0	16.2	2.9		3.4	9.0
LOS	D	B	A		A	A
Approach Delay (s/veh)	26.7		2.9			8.8
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay (s/veh): 6.5		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	26	23	1003	58	1110
v/c Ratio	0.18	0.15	0.36	0.13	0.71
Control Delay (s/veh)	36.0	16.2	2.9	3.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay (s/veh)	36.0	16.2	2.9	3.4	9.0
Queue Length 50th (m)	4.0	0.0	19.6	1.8	75.1
Queue Length 95th (m)	10.3	6.1	30.9	5.3	152.0
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	381	358	2750	443	1573
Starvation Cap Reductn	0	0	0	0	167
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.36	0.13	0.79

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	23	891	112	58	1110
Future Volume (vph)	26	23	891	112	58	1110
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	0.95		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3215		1750	1842
Flt Permitted	0.95	1.00	1.00		0.28	1.00
Satd. Flow (perm)	1626	1454	3215		520	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	23	891	112	58	1110
RTOR Reduction (vph)	0	22	7	0	0	0
Lane Group Flow (vph)	26	1	996	0	58	1110
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	4.4	4.4	63.4		63.4	63.4
Effective Green, g (s)	4.4	4.4	63.4		63.4	63.4
Actuated g/C Ratio	0.06	0.06	0.79		0.79	0.79
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)	89	80	2554		413	1463
v/s Ratio Prot	c0.02		0.31			c0.60
v/s Ratio Perm		0.00			0.11	
v/c Ratio	0.29	0.02	0.39		0.14	0.76
Uniform Delay, d1	36.2	35.7	2.4		1.9	4.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.1	0.5		0.7	3.7
Delay (s)	38.0	35.7	2.9		2.6	8.0
Level of Service	D	D	A		A	A
Approach Delay (s/veh)	37.0		2.9			7.7
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

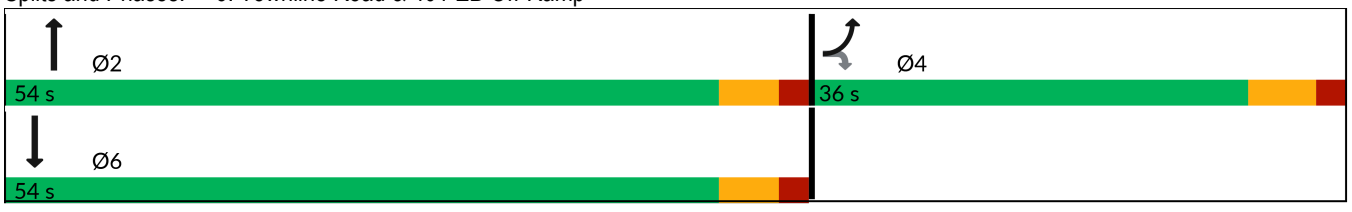


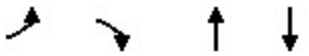
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	570	550	0	1139	1304	196
Future Volume (vph)	570	550	0	1139	1304	196
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.961	0.850			0.980	
Flt Protected	0.964					
Satd. Flow (prot)	3033	1287	0	3433	3298	0
Flt Permitted	0.964					
Satd. Flow (perm)	3033	1287	0	3433	3298	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41	41			28	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	570	550	0	1139	1304	196
Shared Lane Traffic (%)		36%				
Lane Group Flow (vph)	768	352	0	1139	1500	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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	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	10.0	
Flash Don't Walk (s)	19.5	19.5		6.0	19.5	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	26.1	26.1		48.1	48.1	
Actuated g/C Ratio	0.30	0.30		0.55	0.55	
v/c Ratio	0.82	0.85		0.60	0.81	
Control Delay (s/veh)	34.4	44.9		15.1	20.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	34.4	44.9		15.1	20.7	
LOS	C	D		B	C	
Approach Delay (s/veh)	37.7			15.1	20.7	
Approach LOS	D			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.7			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 24.1		Intersection LOS: C	
Intersection Capacity Utilization 77.4%		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)	768	352	1139	1500
v/c Ratio	0.82	0.85	0.60	0.81
Control Delay (s/veh)	34.4	44.9	15.1	20.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.4	44.9	15.1	20.7
Queue Length 50th (m)	57.4	53.2	68.2	107.6
Queue Length 95th (m)	78.1	#101.3	88.1	140.0
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1061	466	1904	1842
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	0.76	0.60	0.81

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)	570	550	0	1139	1304	196
Future Volume (vph)	570	550	0	1139	1304	196
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	0.98	
Flt Protected	0.96	1.00		1.00	1.00	
Satd. Flow (prot)	3035	1287		3433	3299	
Flt Permitted	0.96	1.00		1.00	1.00	
Satd. Flow (perm)	3035	1287		3433	3299	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	570	550	0	1139	1304	196
RTOR Reduction (vph)	29	29	0	0	12	0
Lane Group Flow (vph)	739	323	0	1139	1488	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)	26.1	26.1		48.1	48.1	
Effective Green, g (s)	26.1	26.1		48.1	48.1	
Actuated g/C Ratio	0.30	0.30		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)	913	387		1904	1830	
v/s Ratio Prot	0.24			0.33	c0.45	
v/s Ratio Perm		c0.25				
v/c Ratio	0.81	0.84		0.60	0.81	
Uniform Delay, d1	28.0	28.3		12.9	15.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.4	14.4		1.4	4.1	
Delay (s)	33.4	42.7		14.3	19.7	
Level of Service	C	D		B	B	
Approach Delay (s/veh)	36.3			14.3	19.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

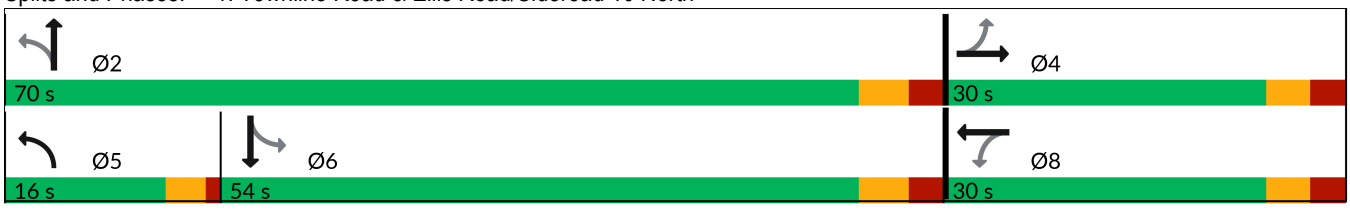
c Critical Lane Group

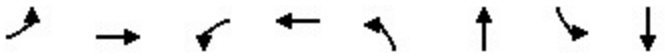
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
Future Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (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		0.870			0.974			0.984			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1395	0	1635	1589	0	1668	3023	0	1668	2939	0
Flt Permitted	0.724			0.557			0.318			0.223		
Satd. Flow (perm)	1271	1395	0	959	1589	0	558	3023	0	391	2939	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			9			24			17	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	43	23	148	99	42	9	449	1123	130	11	633	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	171	0	99	51	0	449	1253	0	11	708	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)	14.1	14.1		14.1	14.1		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	0.22	0.50		0.66	0.20		0.81	0.58		0.05	0.45	
Control Delay (s/veh)	35.1	13.5		57.0	29.5		19.6	8.5		13.2	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay (s/veh)	35.1	13.5		57.0	29.5		19.6	8.7		13.2	14.6	
LOS	D	B		E	C		B	A		B	B	
Approach Delay (s/veh)		17.8			47.6			11.6			14.6	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 90.3			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 14.8		Intersection LOS: B	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

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

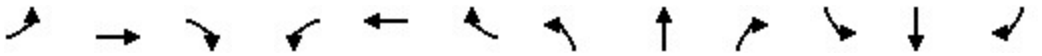




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	171	99	51	449	1253	11	708
v/c Ratio	0.22	0.50	0.66	0.20	0.81	0.58	0.05	0.45
Control Delay (s/veh)	35.1	13.5	57.0	29.5	19.6	8.5	13.2	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay (s/veh)	35.1	13.5	57.0	29.5	19.6	8.7	13.2	14.6
Queue Length 50th (m)	6.6	3.5	16.3	6.4	23.1	46.7	0.9	36.3
Queue Length 95th (m)	15.5	20.5	32.3	16.0	#71.5	84.5	4.1	59.7
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	338	480	255	430	557	2146	207	1565
Starvation Cap Reductn	0	0	0	0	0	250	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	0.39	0.12	0.81	0.66	0.05	0.45

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)	43	23	148	99	42	9	449	1123	130	11	633	75
Future Volume (vph)	43	23	148	99	42	9	449	1123	130	11	633	75
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	0.98		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	1396		1635	1588		1668	3025		1668	2940	
Flt Permitted	0.72	1.00		0.56	1.00		0.32	1.00		0.22	1.00	
Satd. Flow (perm)	1270	1396		959	1588		558	3025		391	2940	
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)	43	23	148	99	42	9	449	1123	130	11	633	75
RTOR Reduction (vph)	0	125	0	0	8	0	0	7	0	0	8	0
Lane Group Flow (vph)	43	46	0	99	43	0	449	1246	0	11	700	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)	14.1	14.1		14.1	14.1		63.9	63.9		47.9	47.9	
Effective Green, g (s)	14.1	14.1		14.1	14.1		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)	198	217		149	247		542	2140		207	1559	
v/s Ratio Prot		0.03			0.03		c0.11	0.41			0.24	
v/s Ratio Perm	0.03			c0.10			c0.48			0.03		
v/c Ratio	0.22	0.21		0.66	0.18		0.83	0.58		0.05	0.45	
Uniform Delay, d1	33.3	33.3		35.9	33.1		6.6	6.6		10.2	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		10.6	0.3		10.1	1.2		0.5	0.9	
Delay (s)	33.8	33.7		46.5	33.4		16.7	7.7		10.7	14.0	
Level of Service	C	C		D	C		B	A		B	B	
Approach Delay (s/veh)		33.8			42.1			10.1			14.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	16.3
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

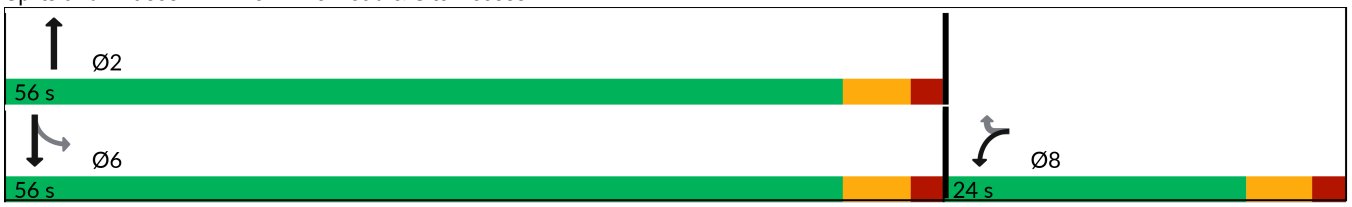


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1634	54	24	896
Future Volume (vph)	85	68	1634	54	24	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3253	0	1750	1842
Flt Permitted	0.950				0.109	
Satd. Flow (perm)	1626	1454	3253	0	201	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		32	8			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1634	54	24	896
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	68	1688	0	24	896
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (s)	24.0	24.0	56.0		56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%		70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0		50.0	50.0
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 Optimize?						
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	7.0		7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	9.3	9.3	57.6		57.6	57.6
Actuated g/C Ratio	0.12	0.12	0.77		0.77	0.77
v/c Ratio	0.43	0.33	0.68		0.16	0.64
Control Delay (s/veh)	36.2	22.1	8.0		7.2	8.7
Queue Delay	0.0	0.0	0.0		0.0	0.3
Total Delay (s/veh)	36.2	22.1	8.0		7.2	9.0
LOS	D	C	A		A	A
Approach Delay (s/veh)	29.9		8.0			9.0
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.2			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 9.5		Intersection LOS: A	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	85	68	1688	24	896
v/c Ratio	0.43	0.33	0.68	0.16	0.64
Control Delay (s/veh)	36.2	22.1	8.0	7.2	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.2	22.1	8.0	7.2	9.0
Queue Length 50th (m)	11.1	4.6	59.0	0.9	56.1
Queue Length 95th (m)	22.6	14.7	99.5	4.4	111.4
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	390	373	2495	154	1411
Starvation Cap Reductn	0	0	0	0	127
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.18	0.68	0.16	0.70

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	68	1634	54	24	896
Future Volume (vph)	85	68	1634	54	24	896
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	0.95		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3254		1750	1842
Flt Permitted	0.95	1.00	1.00		0.11	1.00
Satd. Flow (perm)	1626	1454	3254		200	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	68	1634	54	24	896
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	85	39	1686	0	24	896
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	8.1	8.1	56.4		56.4	56.4
Effective Green, g (s)	8.1	8.1	56.4		56.4	56.4
Actuated g/C Ratio	0.11	0.11	0.74		0.74	0.74
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)	172	153	2399		147	1358
v/s Ratio Prot	c0.05		c0.52			0.49
v/s Ratio Perm		0.03			0.12	
v/c Ratio	0.49	0.26	0.70		0.16	0.66
Uniform Delay, d1	32.3	31.4	5.5		3.0	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.9	1.8		2.4	2.5
Delay (s)	34.5	32.3	7.2		5.4	7.7
Level of Service	C	C	A		A	A
Approach Delay (s/veh)	33.5		7.2			7.6
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

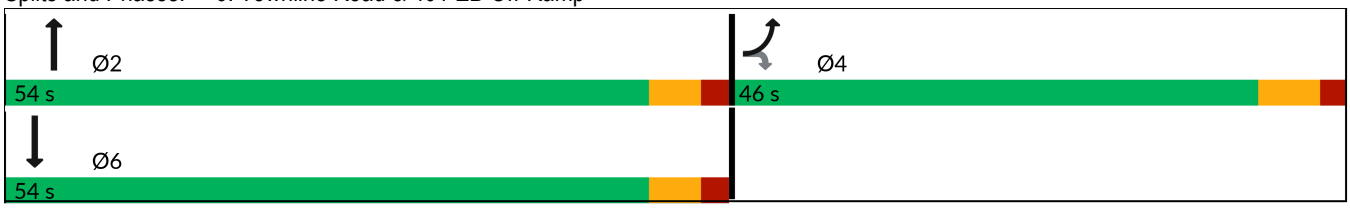


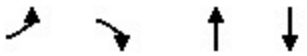
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	514	561	0	1364	1472	199
Future Volume (vph)	514	561	0	1364	1472	199
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.955	0.850			0.982	
Flt Protected	0.966					
Satd. Flow (prot)	3059	1312	0	3535	3358	0
Flt Permitted	0.966					
Satd. Flow (perm)	3059	1312	0	3535	3358	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17	17			20	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	514	561	0	1364	1472	199
Shared Lane Traffic (%)		39%				
Lane Group Flow (vph)	733	342	0	1364	1671	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	28.2	28.2		48.4	48.4	
Actuated g/C Ratio	0.32	0.32		0.54	0.54	
v/c Ratio	0.75	0.80		0.71	0.91	
Control Delay (s/veh)	31.5	41.1		19.2	29.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	31.5	41.1		19.2	29.2	
LOS	C	D		B	C	
Approach Delay (s/veh)	34.5			19.2	29.2	
Approach LOS	C			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 89.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 27.3		Intersection LOS: C	
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)	733	342	1364	1671
v/c Ratio	0.75	0.80	0.71	0.91
Control Delay (s/veh)	31.5	41.1	19.2	29.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.5	41.1	19.2	29.2
Queue Length 50th (m)	55.7	55.2	86.7	128.0
Queue Length 95th (m)	74.0	89.8	142.2	#225.3
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1375	595	1918	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	0.53	0.57	0.71	0.91

Intersection Summary

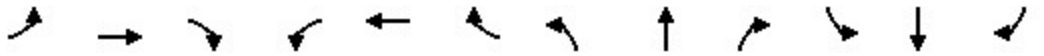
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	514	561	0	1364	1472	199
Future Volume (vph)	514	561	0	1364	1472	199
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	0.98	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3060	1312		3535	3358	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3060	1312		3535	3358	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	514	561	0	1364	1472	199
RTOR Reduction (vph)	12	12	0	0	9	0
Lane Group Flow (vph)	721	330	0	1364	1662	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)	28.2	28.2		48.4	48.4	
Effective Green, g (s)	28.2	28.2		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)	968	415		1920	1824	
v/s Ratio Prot	0.24			0.39	c0.49	
v/s Ratio Perm		c0.25				
v/c Ratio	0.75	0.80		0.71	0.91	
Uniform Delay, d1	27.2	27.8		15.1	18.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	10.2		2.3	8.4	
Delay (s)	30.4	38.0		17.4	26.8	
Level of Service	C	D		B	C	
Approach Delay (s/veh)	32.8			17.4	26.8	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	89.1	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

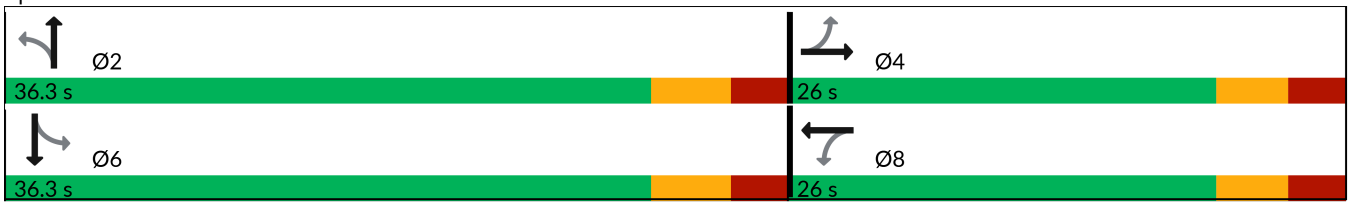


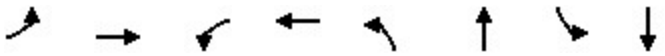
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
Future Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
Ideal Flow (vphpl)	1775	1650	1650	1775	1650	1650	1775	1650	1650	1775	1650	1650
Lane Width (m)	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			0.971			0.986			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1651	1416	0	1668	1575	0	1651	3003	0	1668	3035	0
Flt Permitted	0.744			0.596			0.444			0.391		
Satd. Flow (perm)	1293	1416	0	1046	1575	0	772	3003	0	686	3035	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		204			4			25			20	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		137.8			144.0			185.7			162.4	
Travel Time (s)		9.9			10.4			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)	51	28	204	48	17	4	228	619	66	3	510	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	232	0	48	21	0	228	685	0	3	555	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)	9.3	9.3		9.3	9.3		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	0.22	0.55		0.26	0.07		0.51	0.39		0.01	0.31	
Control Delay (s/veh)	20.2	10.1		21.6	16.0		12.3	6.8		5.7	6.3	
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		21.6	16.0		12.3	6.8		5.7	6.3	
LOS	C	B		C	B		B	A		A	A	
Approach Delay (s/veh)		11.9			19.9			8.1			6.3	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 62.3			
Actuated Cycle Length: 51.7			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 8.6		Intersection LOS: A	
Intersection Capacity Utilization 74.8%		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)	51	232	48	21	228	685	3	555
v/c Ratio	0.22	0.55	0.26	0.07	0.51	0.39	0.01	0.31
Control Delay (s/veh)	20.2	10.1	21.6	16.0	12.3	6.8	5.7	6.3
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	21.6	16.0	12.3	6.8	5.7	6.3
Queue Length 50th (m)	4.1	2.2	3.9	1.3	9.8	13.4	0.1	10.3
Queue Length 95th (m)	11.2	16.3	10.9	5.5	32.8	29.2	1.0	23.0
Internal Link Dist (m)		113.8		120.0		161.7		138.4
Turn Bay Length (m)	30.0		40.0		55.0		50.0	
Base Capacity (vph)	501	673	404	612	448	1756	398	1772
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	0.34	0.12	0.03	0.51	0.39	0.01	0.31

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
Future Volume (vph)	51	28	204	48	17	4	228	619	66	3	510	45
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	1416		1668	1576		1651	3001		1668	3035	
Flt Permitted	0.74	1.00		0.60	1.00		0.44	1.00		0.39	1.00	
Satd. Flow (perm)	1292	1416		1046	1576		772	3001		687	3035	
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)	51	28	204	48	17	4	228	619	66	3	510	45
RTOR Reduction (vph)	0	167	0	0	3	0	0	10	0	0	8	0
Lane Group Flow (vph)	51	65	0	48	18	0	228	675	0	3	547	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		30.1	30.1		30.1	30.1	
Effective Green, g (s)	9.3	9.3		9.3	9.3		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)	232	254		188	283		449	1747		399	1766	
v/s Ratio Prot		0.05			0.01			0.22			0.18	
v/s Ratio Perm	0.04			c0.05			c0.30			0.00		
v/c Ratio	0.22	0.25		0.26	0.06		0.51	0.39		0.01	0.31	
Uniform Delay, d1	18.1	18.2		18.2	17.6		6.4	5.8		4.5	5.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		0.7	0.1		4.1	0.6		0.0	0.5	
Delay (s)	18.6	18.8		18.9	17.7		10.5	6.5		4.6	6.0	
Level of Service	B	B		B	B		B	A		A	A	
Approach Delay (s/veh)		18.7			18.6			7.5			6.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	12.3
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

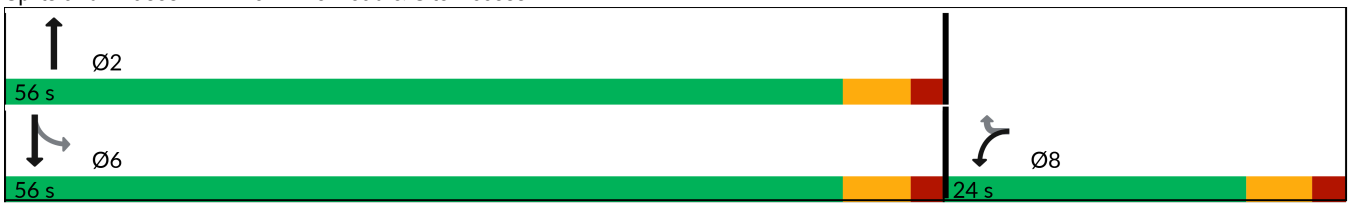


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	887	31	14	791
Future Volume (vph)	30	24	887	31	14	791
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1454	3253	0	1750	1842
Flt Permitted	0.950				0.311	
Satd. Flow (perm)	1626	1454	3253	0	573	1842
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		24	8			
Link Speed (k/h)	50		60			60
Link Distance (m)	104.2		335.6			185.7
Travel Time (s)	7.5		20.1			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	887	31	14	791
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	24	918	0	14	791
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	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	6.1	30.5		6.1	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	1.8		6.1	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	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (s)	24.0	24.0	56.0		56.0	56.0
Total Split (%)	30.0%	30.0%	70.0%		70.0%	70.0%
Maximum Green (s)	18.0	18.0	50.0		50.0	50.0
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 Optimize?						
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	7.0		7.0	7.0
Flash Don't Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	7.0	7.0	65.6		65.6	65.6
Actuated g/C Ratio	0.09	0.09	0.85		0.85	0.85
v/c Ratio	0.20	0.16	0.33		0.03	0.50
Control Delay (s/veh)	36.0	15.9	2.8		2.9	4.7
Queue Delay	0.0	0.0	0.0		0.0	0.3
Total Delay (s/veh)	36.0	15.9	2.8		2.9	5.0
LOS	D	B	A		A	A
Approach Delay (s/veh)	27.1		2.8			4.9
Approach LOS	C		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 4.5		Intersection LOS: A	
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Townline Road & Site Access 1





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	30	24	918	14	791
v/c Ratio	0.20	0.16	0.33	0.03	0.50
Control Delay (s/veh)	36.0	15.9	2.8	2.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.3
Total Delay (s/veh)	36.0	15.9	2.8	2.9	5.0
Queue Length 50th (m)	4.6	0.0	18.1	0.4	38.0
Queue Length 95th (m)	11.2	6.3	28.6	1.8	69.2
Internal Link Dist (m)	80.2		311.6		161.7
Turn Bay Length (m)					
Base Capacity (vph)	382	360	2772	488	1569
Starvation Cap Reductn	0	0	0	0	246
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.07	0.33	0.03	0.60

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	24	887	31	14	791
Future Volume (vph)	30	24	887	31	14	791
Ideal Flow (vphpl)	1765	1765	1775	1775	1900	1900
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	0.95		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1454	3253		1750	1842
Flt Permitted	0.95	1.00	1.00		0.31	1.00
Satd. Flow (perm)	1626	1454	3253		572	1842
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	24	887	31	14	791
RTOR Reduction (vph)	0	23	2	0	0	0
Lane Group Flow (vph)	30	1	916	0	14	791
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	4.5	4.5	62.9		62.9	62.9
Effective Green, g (s)	4.5	4.5	62.9		62.9	62.9
Actuated g/C Ratio	0.06	0.06	0.79		0.79	0.79
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)	92	82	2576		453	1459
v/s Ratio Prot	c0.02		0.28			c0.43
v/s Ratio Perm		0.00			0.02	
v/c Ratio	0.33	0.02	0.36		0.03	0.54
Uniform Delay, d1	36.0	35.4	2.4		1.8	3.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.1	0.4		0.1	1.5
Delay (s)	38.1	35.4	2.8		1.9	4.5
Level of Service	D	D	A		A	A
Approach Delay (s/veh)	36.9		2.8			4.4
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

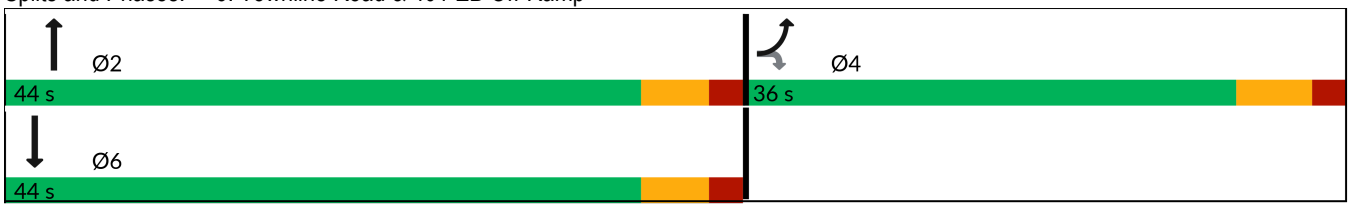


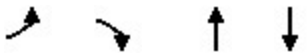
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	383	513	0	649	1022	165
Future Volume (vph)	383	513	0	649	1022	165
Ideal Flow (vphpl)	1775	1750	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	0.95
Frt	0.944	0.850			0.979	
Flt Protected	0.970					
Satd. Flow (prot)	3068	1325	0	3500	3436	0
Flt Permitted	0.970					
Satd. Flow (perm)	3068	1325	0	3500	3436	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	61	61			31	
Link Speed (k/h)	50			60	60	
Link Distance (m)	147.9			97.7	411.0	
Travel Time (s)	10.6			5.9	24.7	
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)	383	513	0	649	1022	165
Shared Lane Traffic (%)		44%				
Lane Group Flow (vph)	609	287	0	649	1187	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	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
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)	19.4	19.4		38.3	38.3	
Actuated g/C Ratio	0.28	0.28		0.54	0.54	
v/c Ratio	0.68	0.70		0.34	0.63	
Control Delay (s/veh)	24.1	27.1		10.6	13.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	24.1	27.1		10.6	13.8	
LOS	C	C		B	B	
Approach Delay (s/veh)	25.1			10.6	13.8	
Approach LOS	C			B	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70.3			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 16.7		Intersection LOS: B	
Intersection Capacity Utilization 66.9%		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)	609	287	649	1187
v/c Ratio	0.68	0.70	0.34	0.63
Control Delay (s/veh)	24.1	27.1	10.6	13.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.1	27.1	10.6	13.8
Queue Length 50th (m)	32.6	28.6	21.9	48.4
Queue Length 95th (m)	47.2	54.5	44.0	93.2
Internal Link Dist (m)	123.9		73.7	387.0
Turn Bay Length (m)				
Base Capacity (vph)	1332	595	1906	1885
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	0.48	0.34	0.63

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	383	513	0	649	1022	165
Future Volume (vph)	383	513	0	649	1022	165
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	0.98	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	3068	1325		3500	3436	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	3068	1325		3500	3436	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	383	513	0	649	1022	165
RTOR Reduction (vph)	44	44	0	0	14	0
Lane Group Flow (vph)	565	243	0	649	1173	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)	19.4	19.4		38.3	38.3	
Effective Green, g (s)	19.4	19.4		38.3	38.3	
Actuated g/C Ratio	0.28	0.28		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)	847	366		1909	1874	
v/s Ratio Prot	c0.18			0.19	c0.34	
v/s Ratio Perm		0.18				
v/c Ratio	0.67	0.66		0.34	0.63	
Uniform Delay, d1	22.5	22.5		8.9	11.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	4.5		0.5	1.6	
Delay (s)	24.5	27.0		9.4	12.6	
Level of Service	C	C		A	B	
Approach Delay (s/veh)	25.3			9.4	12.6	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
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
Kitchener	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
Cambridg	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%

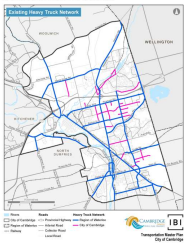
TTS

		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%**

Exhibit 2.5: Existing Cambridge Goods Movement Network




GHD