January 19, 2022

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RE: Silvercreek Junction, City of Guelph
Transportation Update and Response to City Comments

Dear Carlo:

1.0 INTRODUCTION

BA Group is retained by Silvercreek Guelph Developments Limited to provide transportation advisory services for the proposed plan of subdivision (the "Proposal") for the lands located at 35 & 40 Silvercreek Parkway South (the "Site").

An application was previously submitted to the City of Guelph in November 2019 (the "2019 Proposal"). BA Group prepared a Traffic Impact Study, dated November 14, 2019, which accompanied the application (the "2019 TIS").

Comments were received from the City of Guelph in July 2020 (the "July 2020 City comments") and an amended application was submitted (the "2020 Proposal"), accompanied by an updated Traffic Impact Study prepared by BA Group, dated October 9, 2020 (the "2020 TIS").

Subsequent to the above resubmission, further comments were received from the City of Guelph in March 2021 (the "March 2021 City comments"). Comments were also received from MTO in April 2021 (the "April 2021 MTO comments").

Further to discussions with the City of Guelph following receipt of the abovementioned comments, a Traffic Impact Study Addendum was prepared by BA Group, dated August 9, 2021 (the "2021 TIS") which:

- Assessed the need for a grade separation of Silvercreek Parkway North and the rail line to the north of the Site (Metrolinx Guelph Subdivision's Principal Main Line); and
- Examined the traffic impact for a smaller initial phase ("Phase 1") of development of the Site.

Comments were received from the City of Guelph in relation to the 2021 TIS in September 2021 (the "September 2021 City comments").

This letter provides an update to the transportation considerations where applicable, as well as responses to the transportation related comments in the March 2021 City comments, the April 2021 MTO comments, and the September 2021 City comments and will serve as an addendum to the 2019 TIS and the subsequent traffic studies mentioned above. Should additional background information on the transportation considerations of the proposal be required, reference should be made to the 2019 TIS and the subsequent traffic studies where relevant.

2.0 BACKGROUND

2.1 SILVERCREEK PARKWAY CLASS EA

In June 2012, the City issued their notice of completion for the *Silvercreek Parkway South Improvements Class Environmental Assessment* study (herein referred to as the Silvercreek EA). The traffic forecasting and analysis work for the EA study relied upon the *Traffic Impact Study Update (April 2012)* for the Silvercreek Guelph site prepared by BA Consulting Group (herein referred to as the 2012 TIS).

In addition to establishing a design for Silvercreek Parkway, the recommended solution also included:

- An underpass at the CNR mainline;
- Reconnecting Silvercreek Parkway between the two CN rail lines – two through lanes, bike lanes, and sidewalks throughout;
- Identifying development driveway locations and intersection control;
- Improvements at the intersection of Silvercreek Parkway and Paisley Road; and
- Safety improvements for the Fergus subdivision at the CNR secondary line.

The safety improvements recommended by the *Detailed Safety Assessment (March 1, 2012)* completed as part of the EA Study for the level crossing of Silvercreek Parkway at the CNR secondary line at Fergus subdivision level crossing at the CNR included:

- Crossing warning system including lights, bells, and gates;
- Active “Prepare to Stop at Railway Crossing” signage for the north approach of the crossing;
- “No Train Whistles at this Crossing” signage;
- “Railway Advance Warning” signage indicating a skewed crossing; and
- “Pedestrians Stop Here When Lights Are Flashing” signage.

Reduced scale design drawings and cross sections from the EA Study are attached for reference in **Appendix A**.

3.0 DEVELOPMENT PROPOSAL

The development statistics of the current Proposal are compared against the 2019 and 2020 Proposals in **Table 1**.

Following further discussions with the City, access arrangements have been modified slightly from the previous proposals, with a two-way stop controlled intersections proposed with Silvercreek Parkway for the South Driveway and a traffic calming circle proposed with Silvercreek Parkway for the North Driveway. A reduced copy of the plan (not to scale) is provided in **Appendix B**.

TABLE 1 COMPARISON OF DEVELOPMENT STATS

		2019 Proposal	2020 Proposal	Current Proposal
Residential	Apartments	575 units	590 units	543 units
	Townhouses	202 units	163 units	172 units
	Total	**777 units**	**753 units**	**715 units**
Commercial		6,500 m^2 (69,965 ft^2)	6,500 m^2 (69,965 ft^2)	6,500 m^2 (69,965 ft^2)

4.0 TRAFFIC ANALYSIS UPDATE

4.1 TRAFFIC VOLUMES

4.1.1 Overview

Based on the updated development stats and comments received from the City of Guelph and MTO, an update has been undertaken to the traffic analysis. Proposed lane configurations and traffic control remains generally consistent with the 2019 and 2020 Proposals, with the exception of the North Driveway now being proposed as a traffic calming circle, as discussed in **Section 2.0**. The existing and proposed lane configurations and traffic control are illustrated in **Figure 1** and **Figure 2** respectively.

Existing traffic volumes are provided in **Figure 3**.

4.1.2 Future Background Traffic

Future background traffic volumes remain generally consistent with 2019 TIS and 2020 TIS, with the addition of some assumptions relating to diversions of traffic along Silvercreek Parkway following construction. The traffic analysis included in the Silvercreek EA and the 2012 TIS assumed a diversion of 100 vehicles in the AM peak and 60 vehicles in the PM peak from Highway 6 to Silvercreek Parkway in the southbound direction. The Silvercreek EA and the 2012 TIS did not assume any northbound diversions. The diversions assumed for the purpose of this study have been increased to 100 vehicles from Highway 6 to Silvercreek Parkway in both the northbound and southbound directions, as requested by the City of Guelph.

The future background traffic volumes are provided in **Figure 4**, **Figure 5** and **Figure 6** for the 2021, 2026 and 2031 analysis horizon-years respectively.

4.1.3 Site Vehicle Trip Generation

The updated site vehicle trip generation for the Proposal is provided in **Table 2** and a comparison with the projected trip generation associated with the 2019 and 2020 Proposals is provided in **Table 3**. The vehicle trip generation rates remain consistent with those adopted in the 2019 TIS and 2020 TIS.

Based on the foregoing, the site is expected to generate 465, 620, and 700 net new trips, two-way, in the weekday AM and PM peak hours and the Saturday midday peak hour, respectively. This represents an approximate 50% and 55% reduction in the net new trips generated from the previous 2012 concept plan in the weekday PM peak hour and Saturday mid-day peak hour, respectively. Compared with the 2019 proposal, the current proposal is projected to generate in the order of 20-35 less net new two-way vehicle trips and compared with the 2020 proposal, the current proposal is projected to generate in the order of 5-15 less net new two-way vehicle trips.

TABLE 2 SITE TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			Sat. Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)[1]	*Rate (trips per unit)*	*0.11*	*0.35*	*0.46*	*0.35*	*0.21*	*0.56*	*0.34*	*0.36*	*0.70*
	172 units	20	60	80	60	35	95	60	60	120
Multifamily Housing (Mid-Rise)[2, 4]	*Rate (trips per unit)*	*0.09*	*0.27*	*0.36*	*0.27*	*0.17*	*0.44*	*0.22*	*0.22*	*0.44*
	543 units	50	150	200	150	90	240	120	120	240
Commercial[3]	*Rate (trips per 1,000 ft^2)*	*1.66*	*1.01*	*2.67*	*2.86*	*3.10*	*5.96*	*3.47*	*3.20*	*6.67*
	6,500 m^2 GFA (69,965 ft^2)	115	70	185	200	215	415	240	225	465
Commercial Interactions	10% reduction	--	--	--	-20	-20	-40	-25	-20	-45
Net Commercial		115	70	185	180	195	375	215	205	420
Pass-by	25% PM 20% Sat.	--	--	--	-45	-45	-90	-40	-40	-80
Net New Trips		**185**	**280**	**465**	**345**	**275**	**620**	**355**	**345**	**700**
Silvercreek (2012) Phase 1, 2 & 3 (Option 1) Net New Trips		--	--	--	610	635	1,245	835	775	1,610
Difference					-265	-360	-625	-480	-430	-910

Notes:
1. ITE Land Use Code 220. Sat Inbound/Outbound split is as per ITE Land Use Code 221
2. ITE Land Use Code 221
3. ITE Land Use Code 820 Fitted Curve
4. Mid-rise residential trip generation is conservatively based on a slightly higher number of units (551 units).

TABLE 3 SITE TRIP GENERATION COMPARISON

Proposal	Net New Two-way Vehicle Trips		
	AM Peak Hour	PM Peak Hour	Sat. Peak Hour
2019 Proposal	485	655	735
2020 Proposal	470	635	715
Current Proposal	465	620	700

4.1.4 Site Vehicle Trip Distribution

The adopted site trip distribution remains consistent with the 2019 TIS and 2020 TIS and is reproduced in **Table 4**. The updated residential, primary retail and pass-by retail Site traffic are shown in **Figure 7**, **Figure 8** and **Figure 9** respectively. The total Site traffic volumes are shown in **Figure 10**.

TABLE 4 TRIP DISTRIBUTION

Direction	Road	Commercial	Residential
North	Hanlon Expressway	10%	15%
	Silvercreek Parkway	10%	10%
	Edinburgh Road	15%	15%
East	Paisley Road	10%	10%
	Waterloo Avenue	5%	5%
	Wellington Street	5%	5%
South	Hanlon Expressway	15%	15%
	Edinburgh Road	5%	5%
West	Wellington Street	15%	15%
	Paisley Road	10%	5%
Total		**100%**	**100%**

4.1.5 Future Total Traffic Volumes

The updated future total traffic volumes are shown in **Figure 11**, **Figure 12** and **Figure 13** for the 2021, 2026 and 2031 analysis horizon-years respectively.

4.1.6 Westwood Road Interchange Scenario

Consistent with the 2019 TIS and 2020 TIS and as requested by the City, an additional scenario for the 2031 horizon year has been analyzed assuming the grade separation of the Hanlon Expressway and Paisley Road and a full interchange provided at Westwood Road with the Hanlon Expressway.

The analysis focuses on the changes expected at the Silvercreek Parkway / Paisley Road intersection as a result, with the 2031 future background, site, and future total traffic volumes illustrated in **Figure 13**.

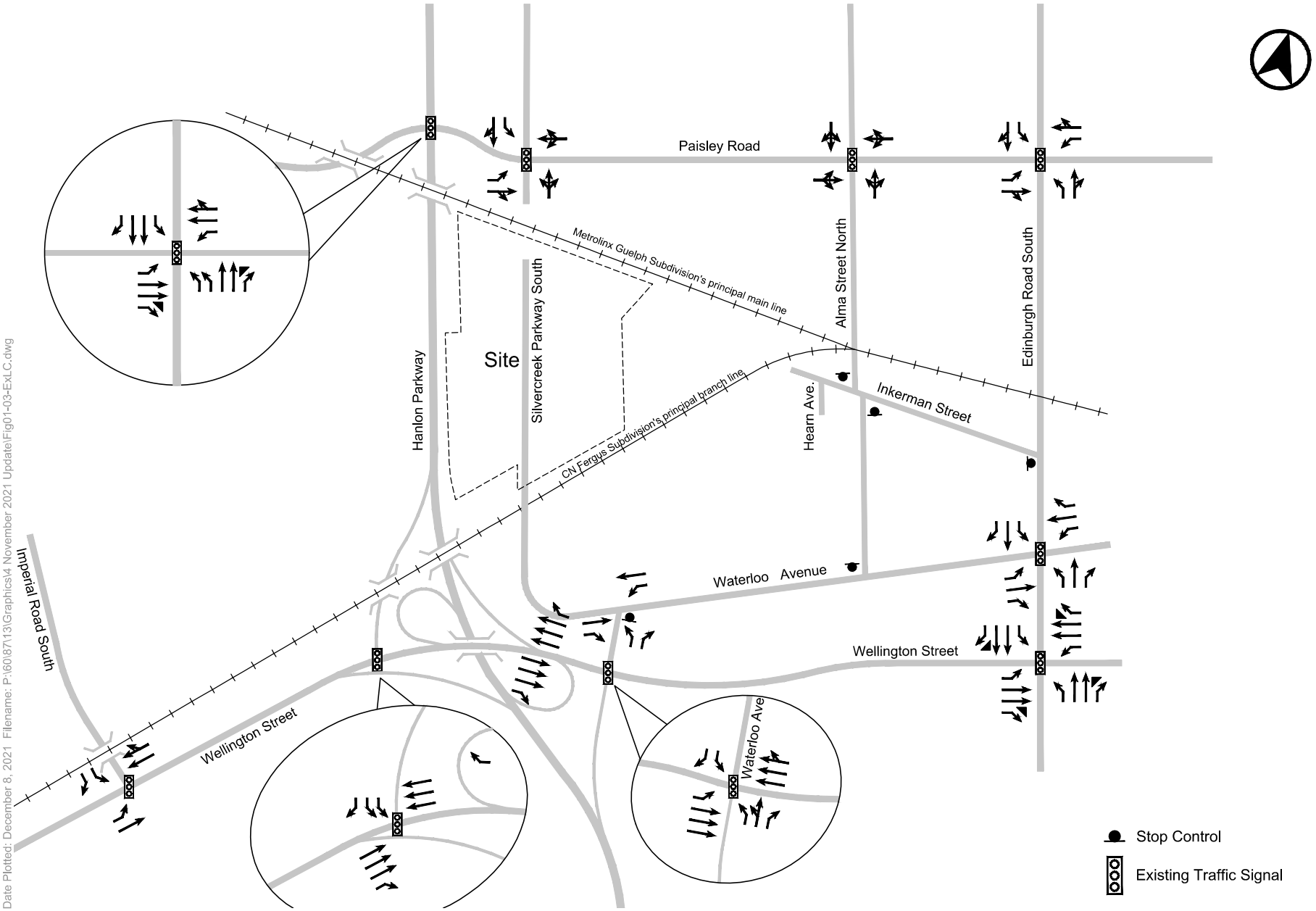


FIGURE 1 EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL

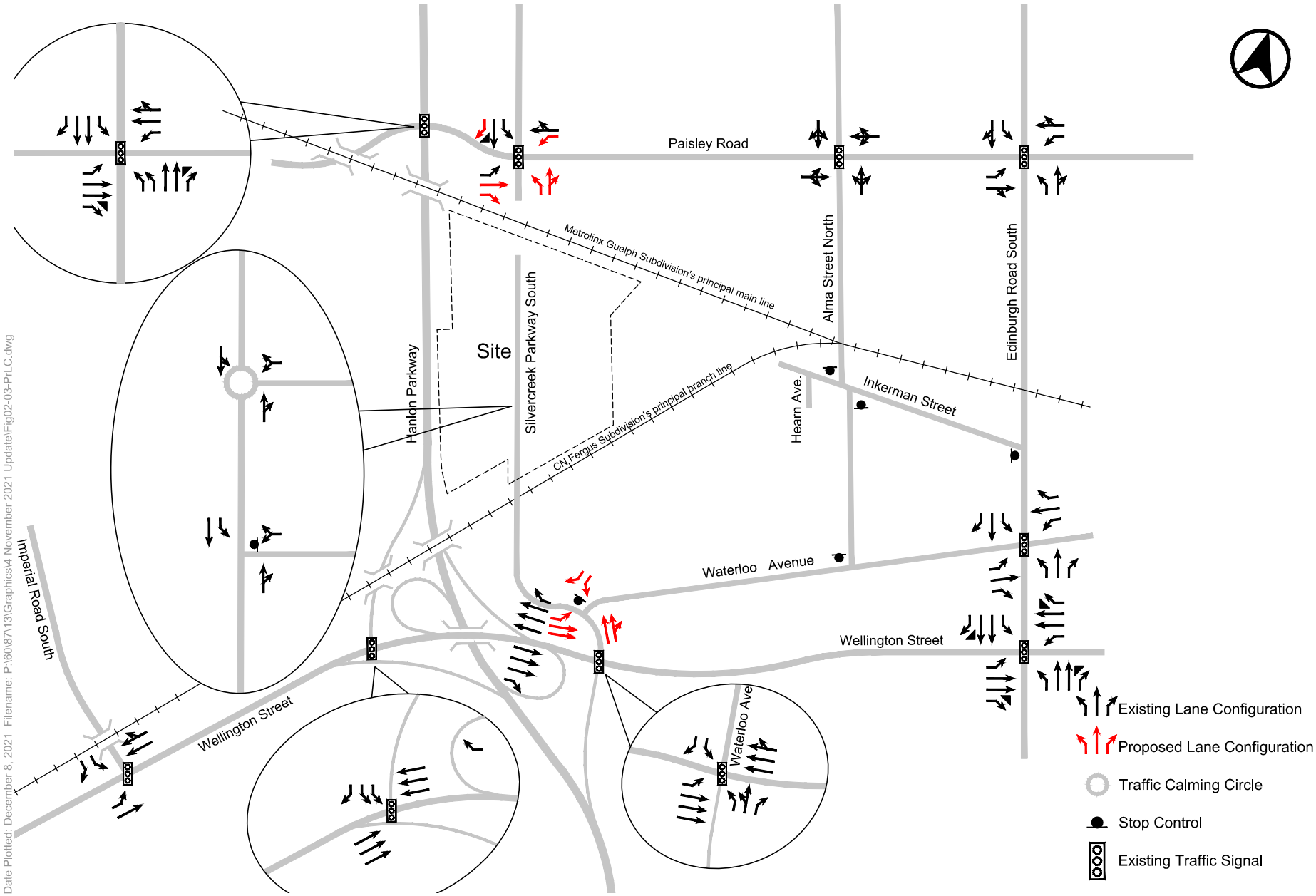


FIGURE 2 PROPOSED LANE CONFIGURATIONS AND TRAFFIC CONTROL

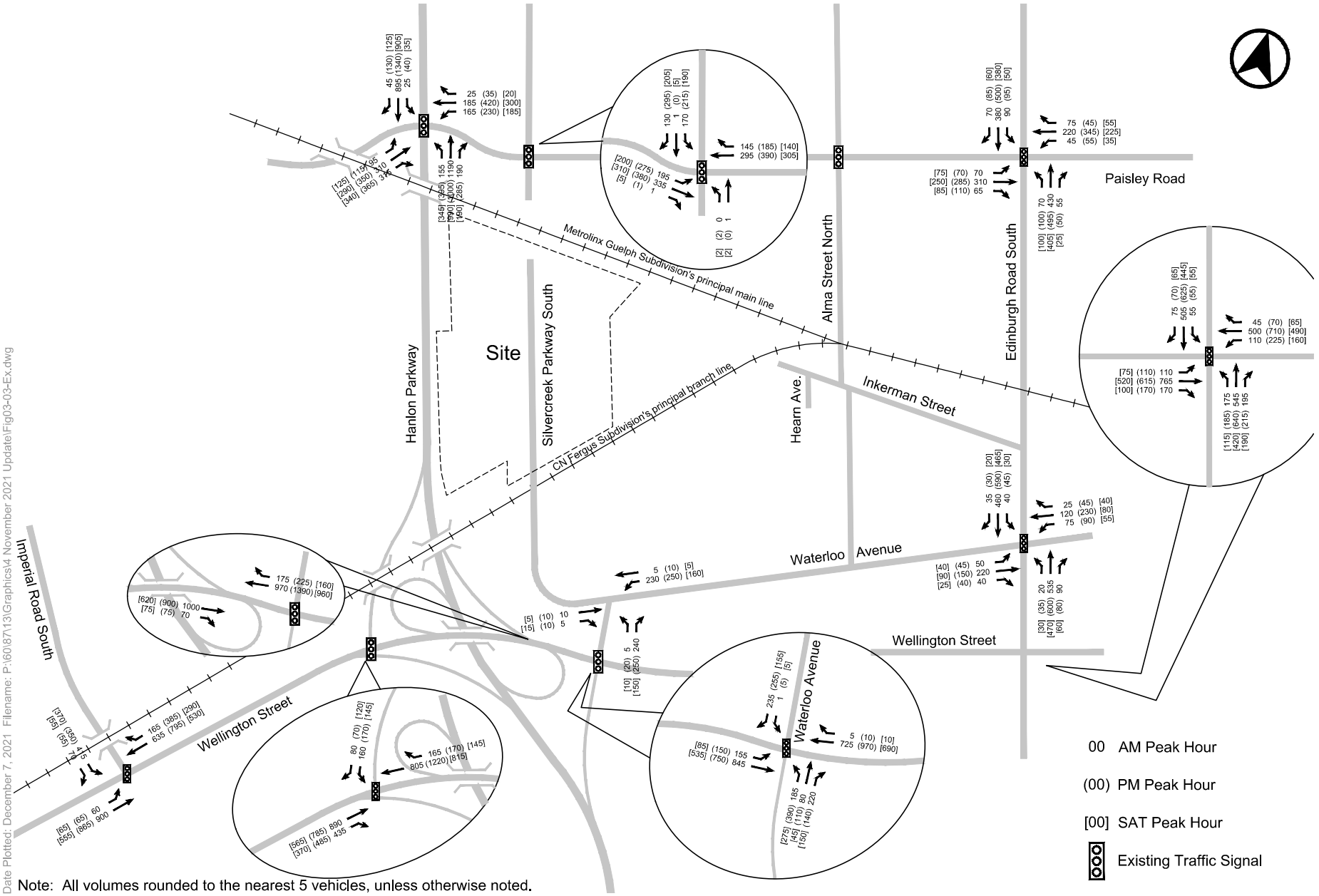
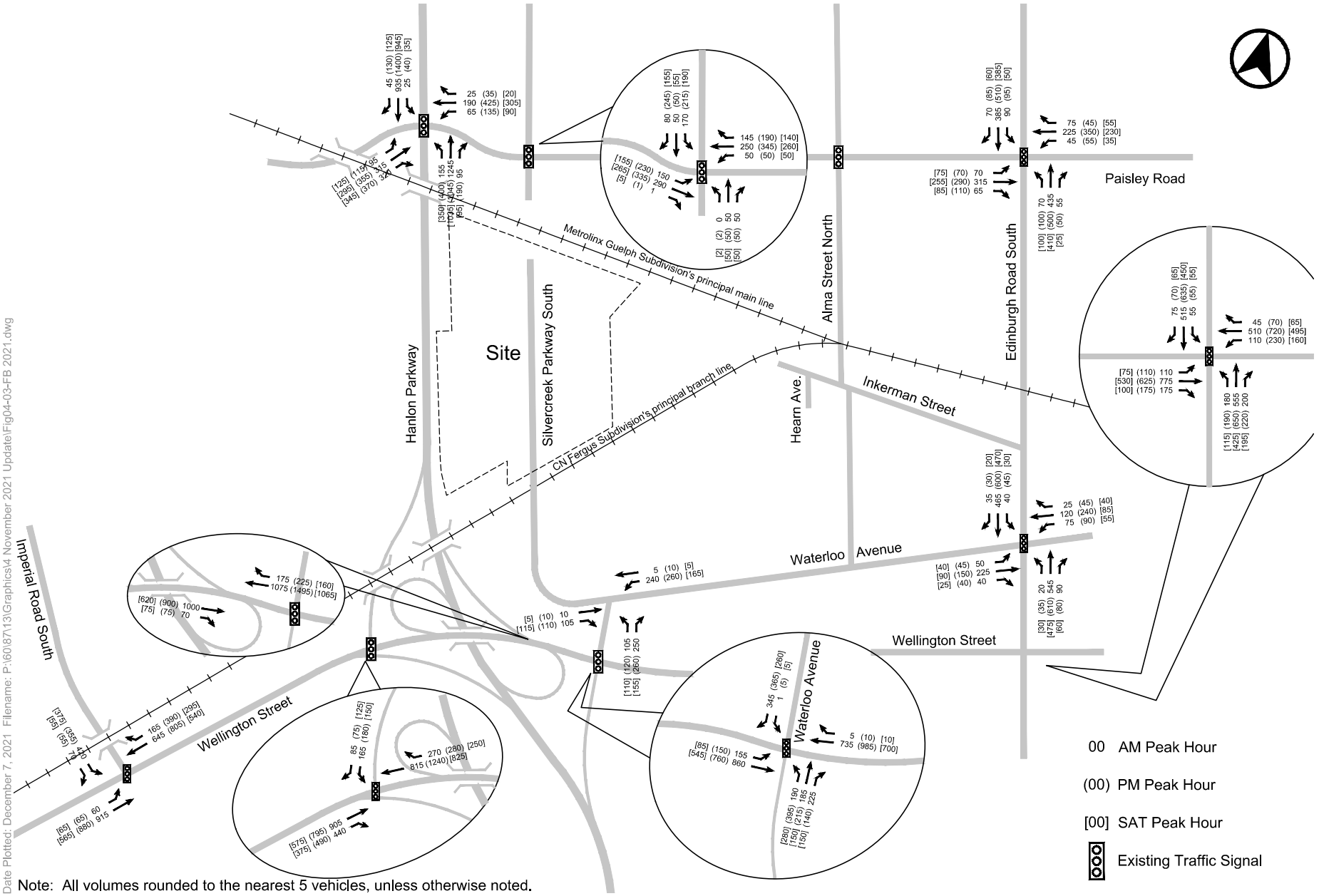


FIGURE 3 EXISTING TRAFFIC VOLUMES



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

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FIGURE 4 2021 FUTURE BACKGROUND TRAFFIC VOLUMES

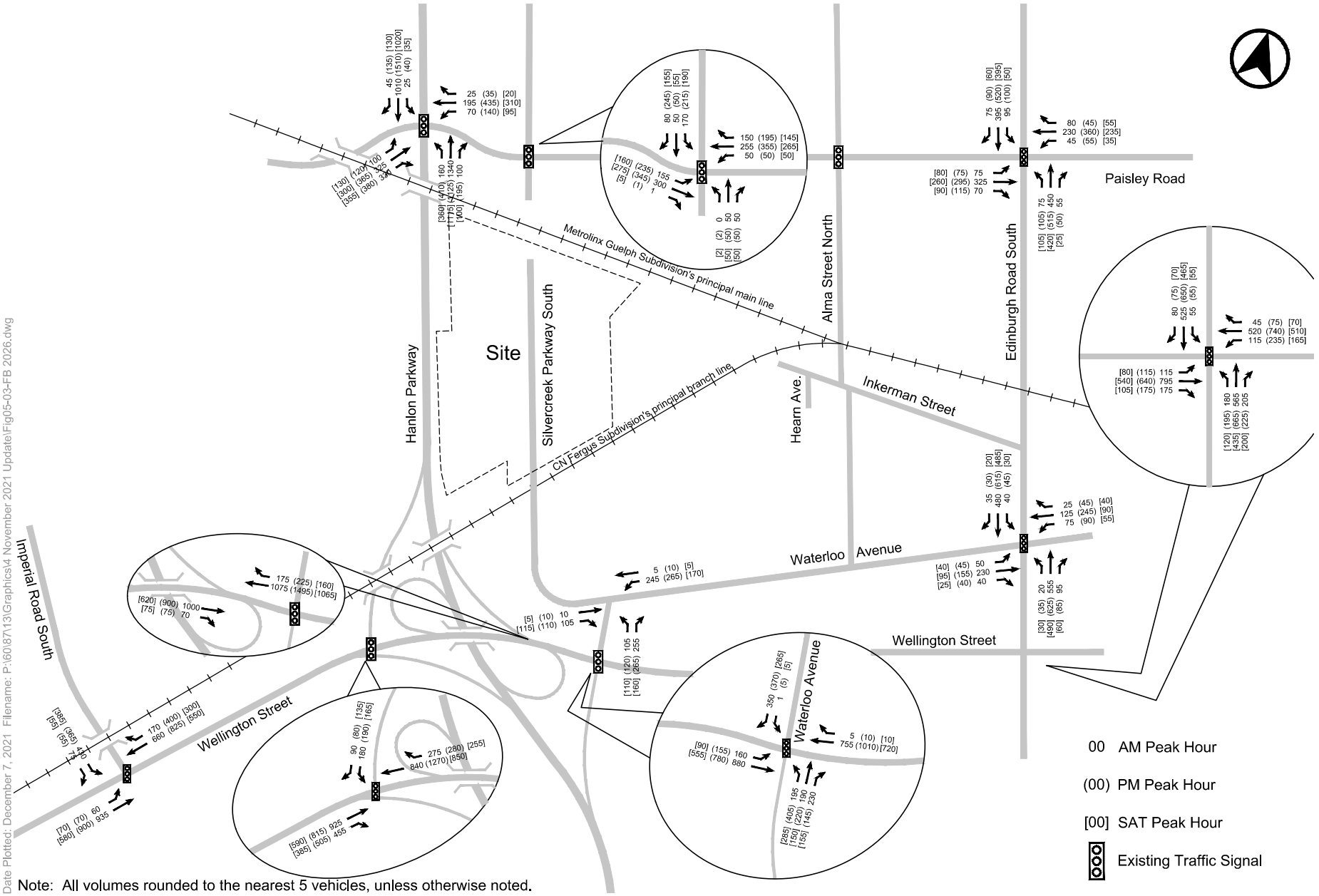
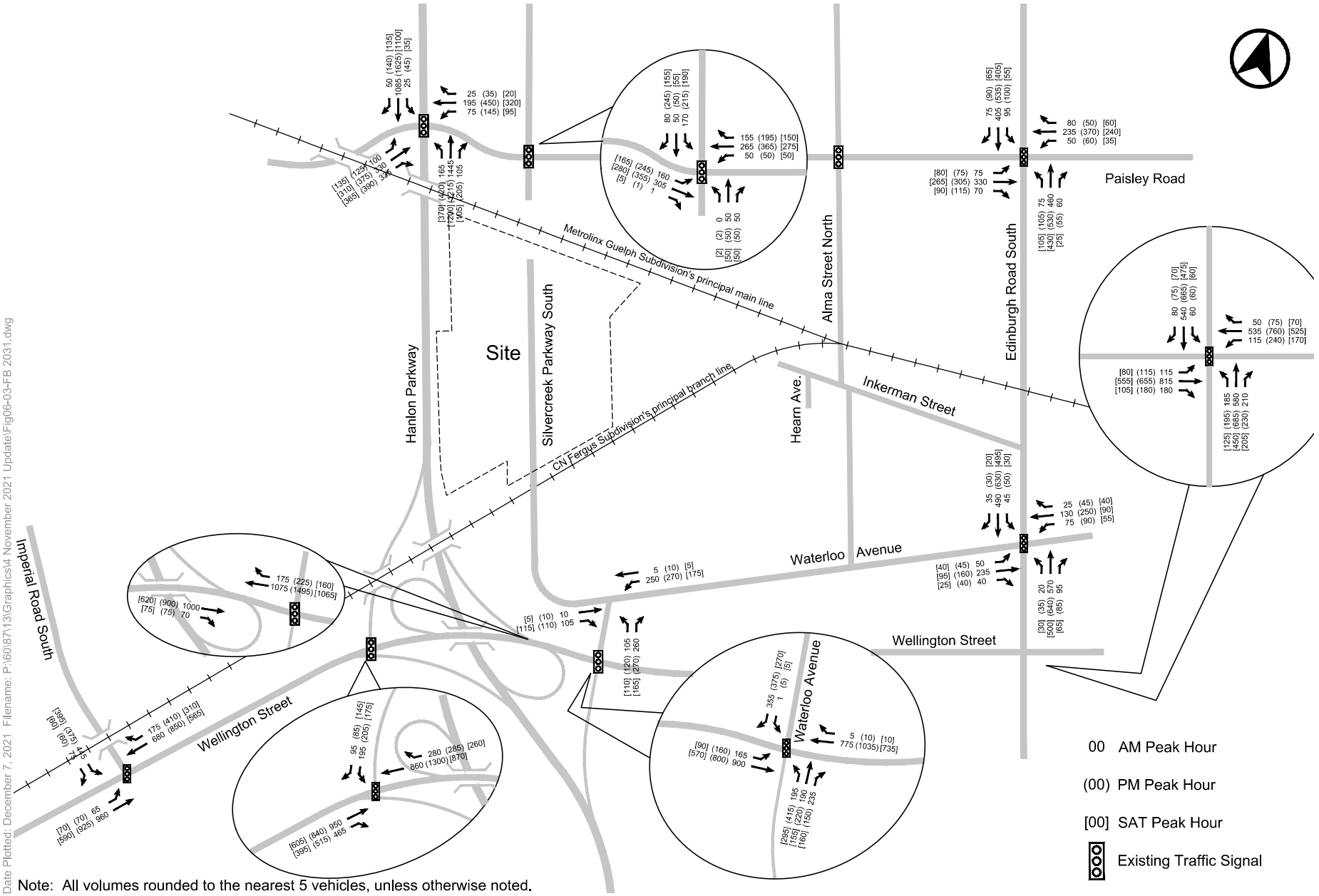


FIGURE 5 2026 FUTURE BACKGROUND TRAFFIC VOLUMES



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

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FIGURE 6 2031 FUTURE BACKGROUND TRAFFIC VOLUMES

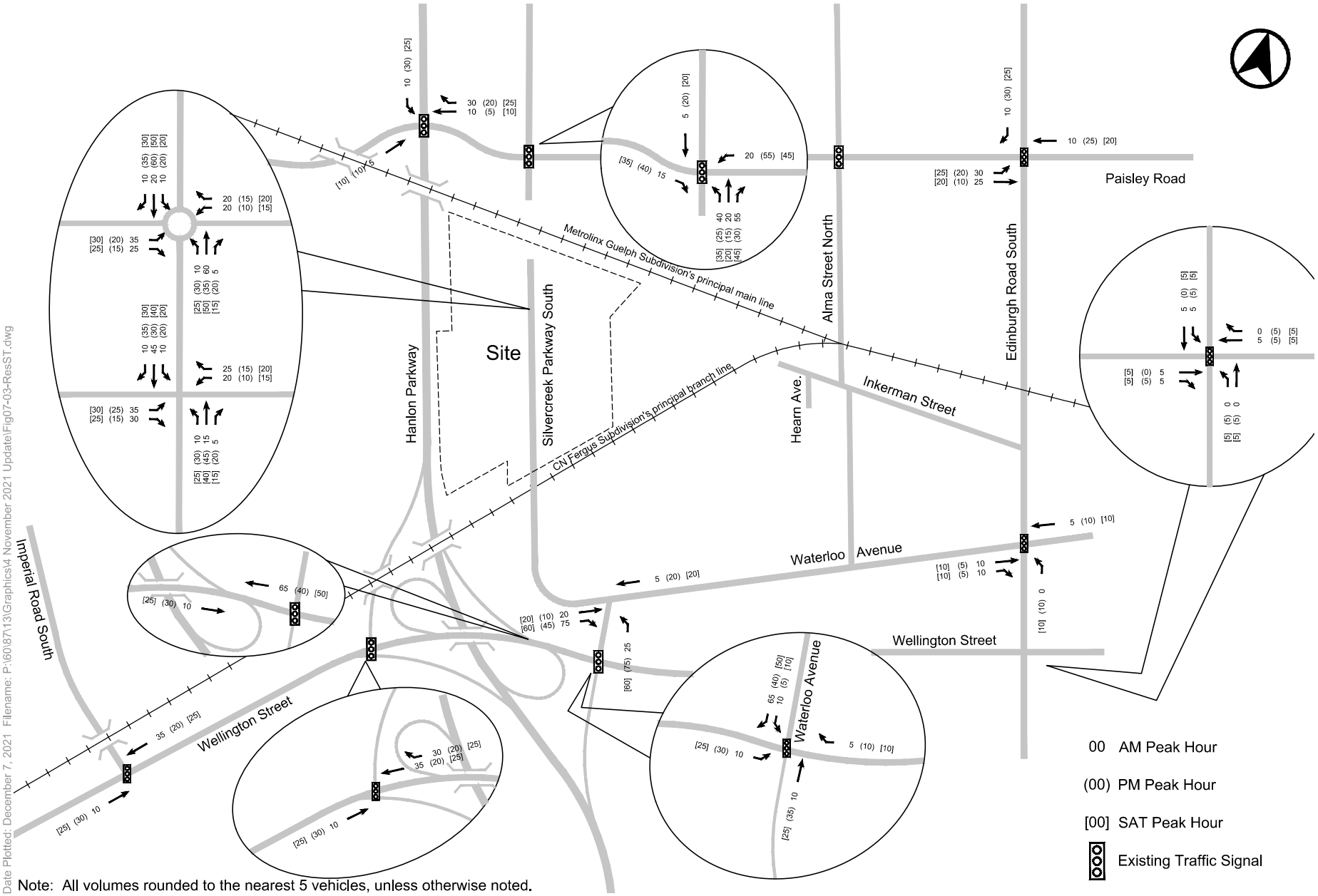


FIGURE 7 RESIDENTIAL SITE TRAFFIC VOLUMES

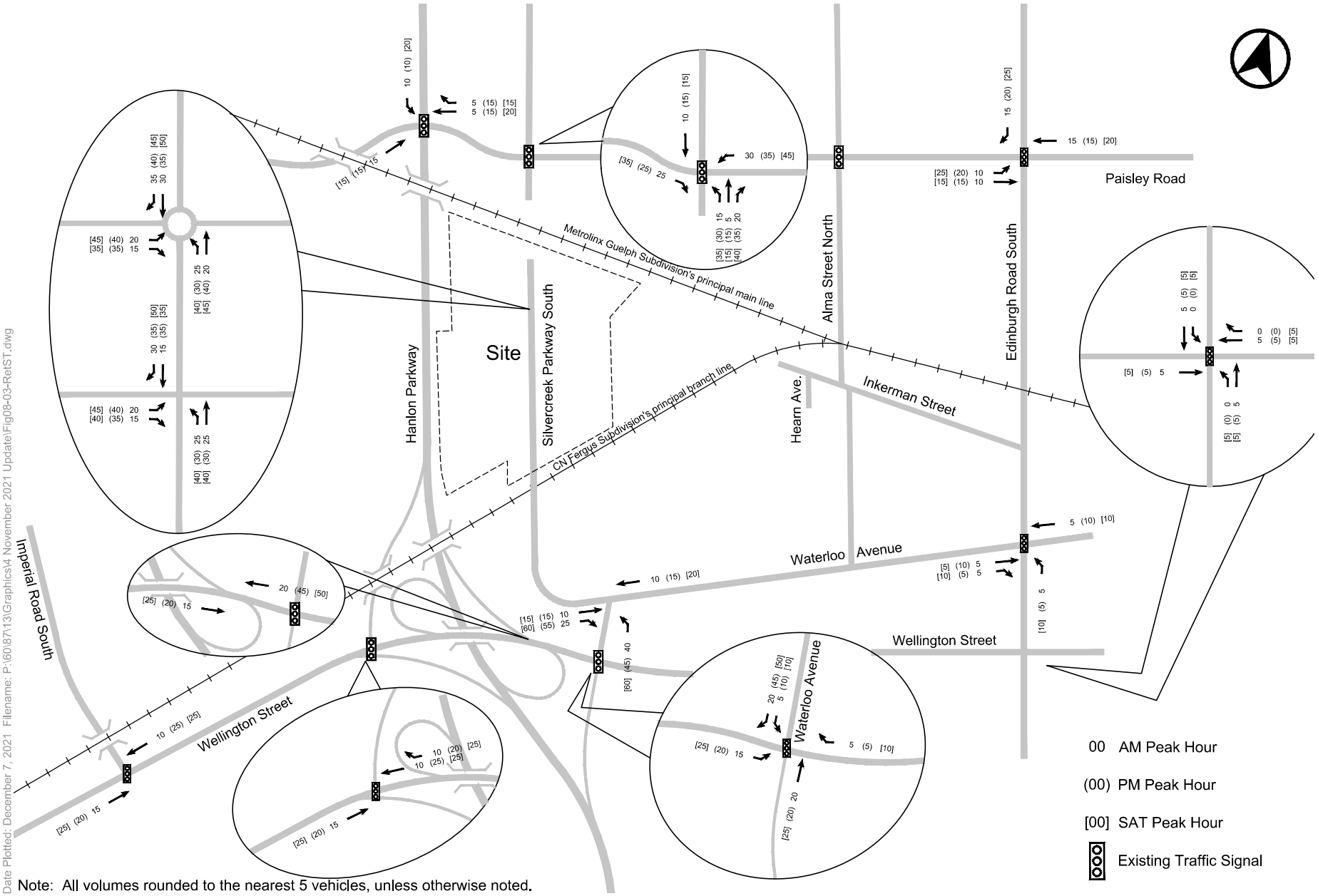
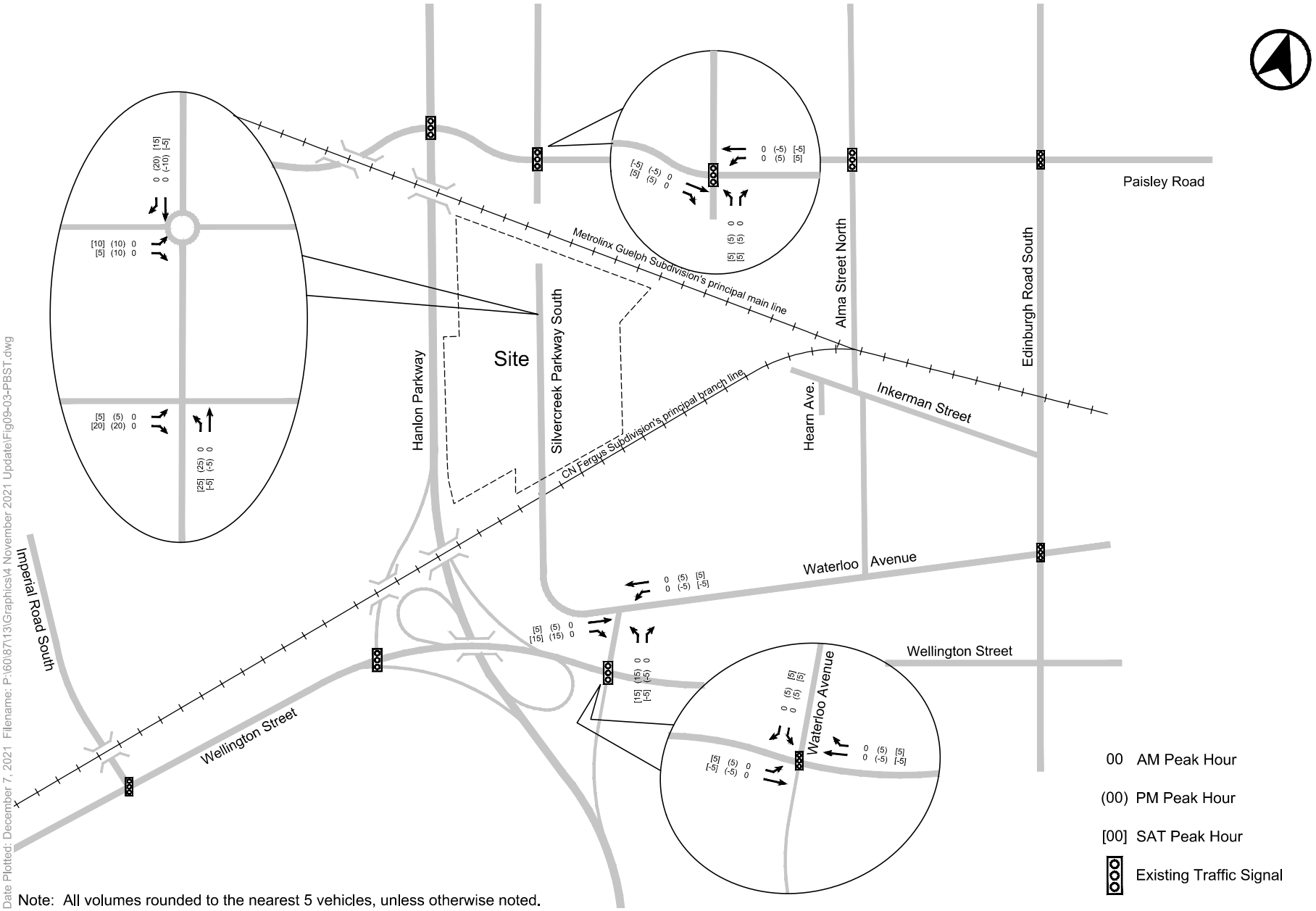


FIGURE 8 PRIMARY RETAIL SITE TRAFFIC VOLUMES



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

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FIGURE 9 PASS-BY RETAIL SITE TRAFFIC VOLUMES

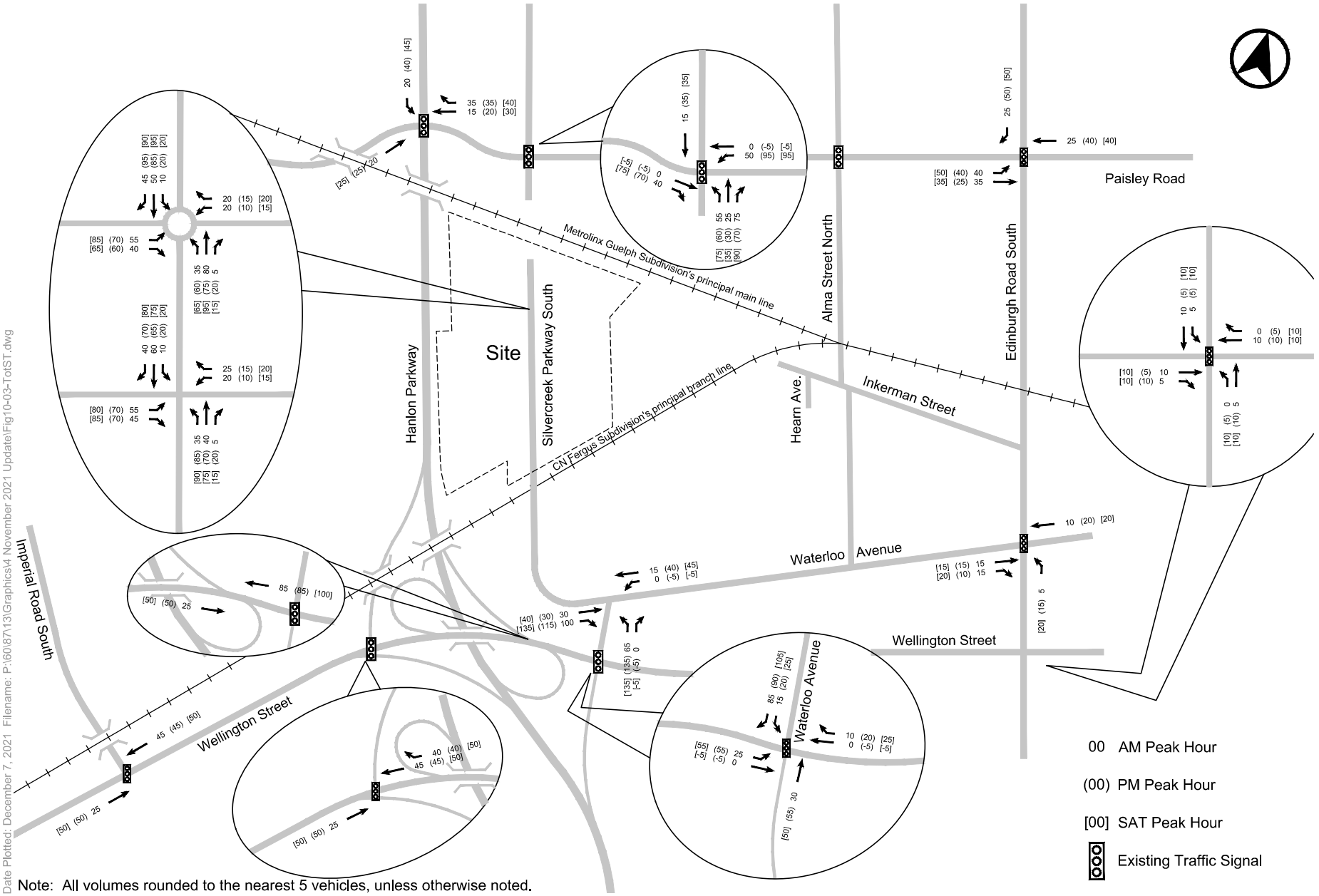


FIGURE 10 TOTAL SITE TRAFFIC VOLUMES

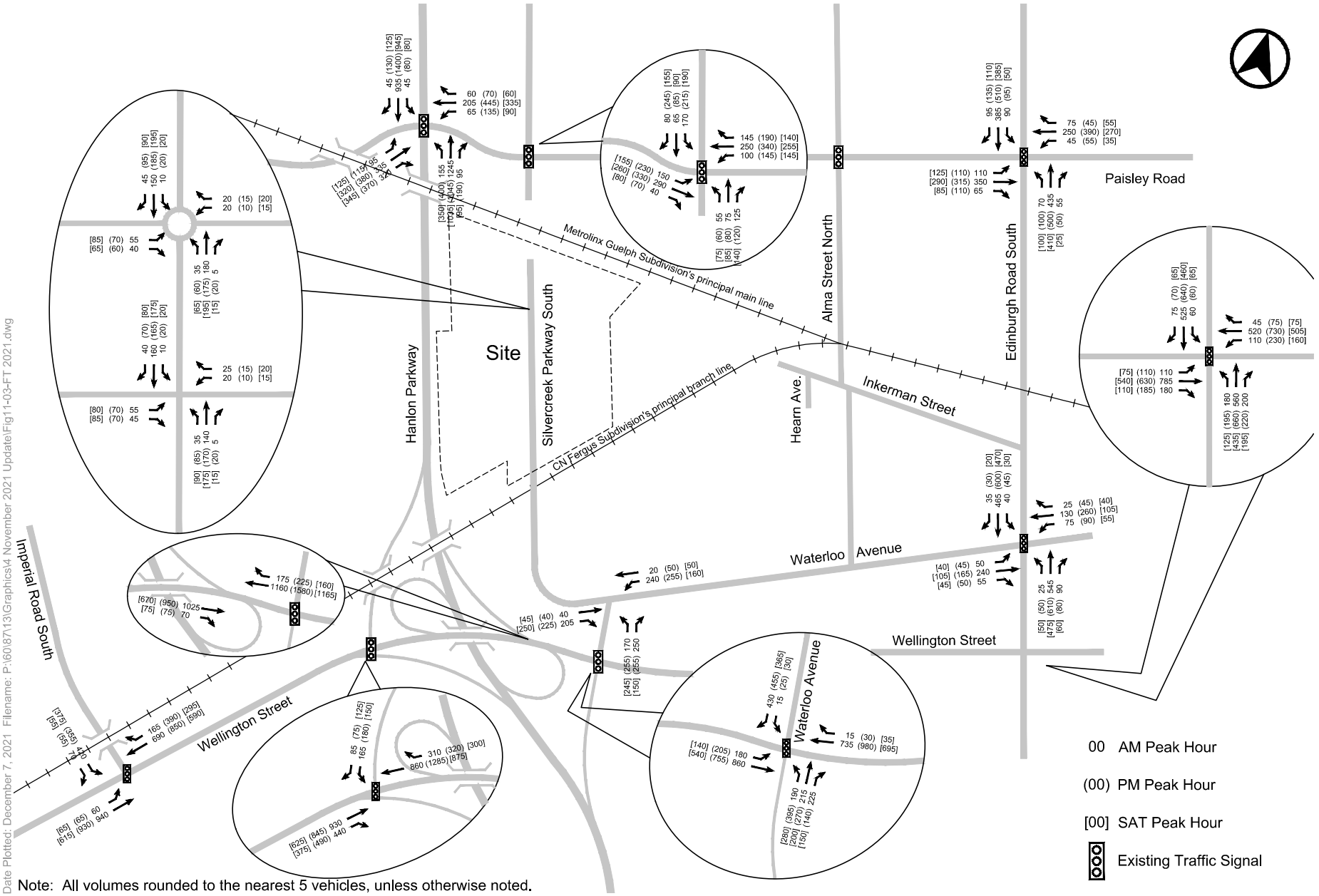
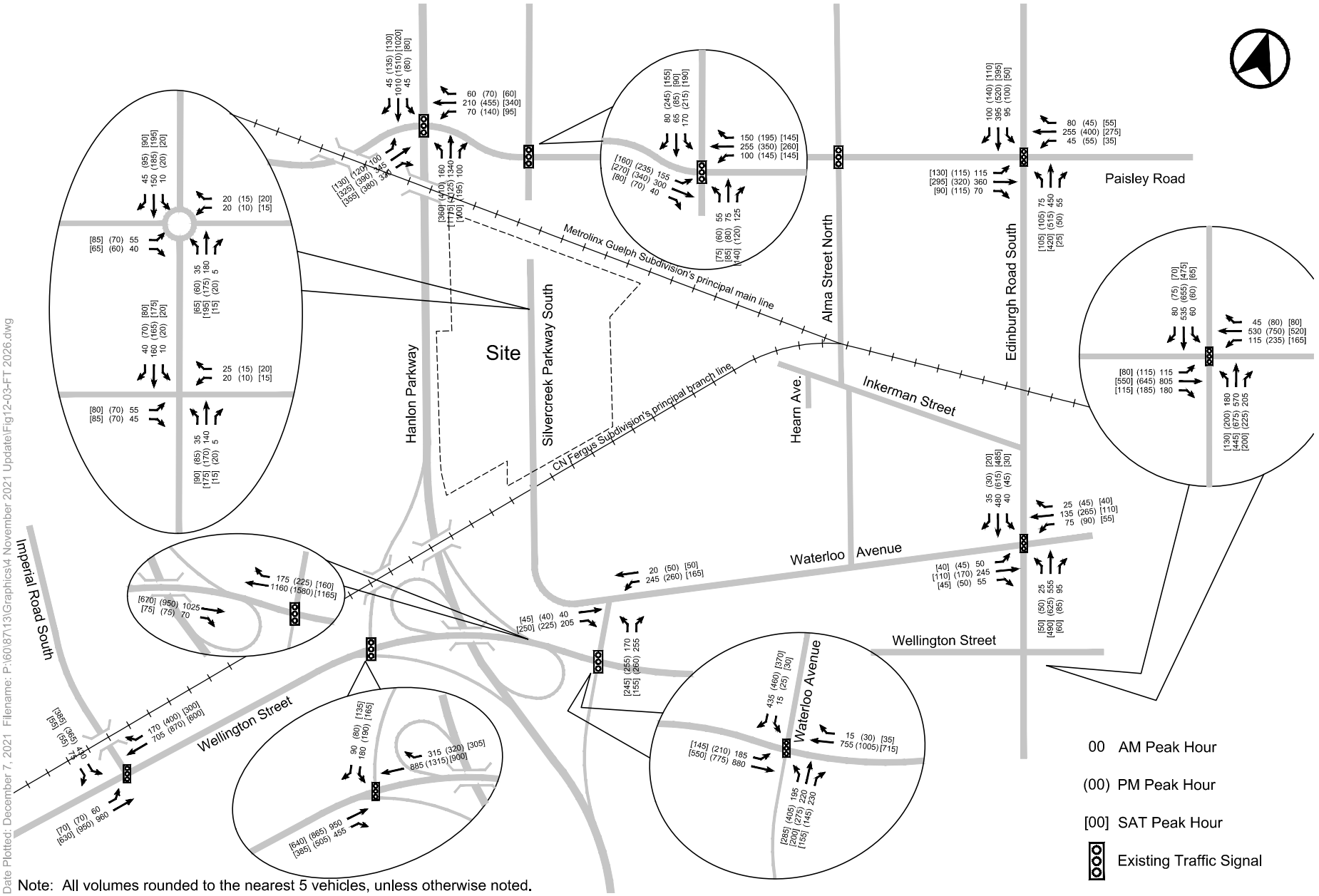


FIGURE 11 2021 FUTURE TOTAL TRAFFIC VOLUMES



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

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FIGURE 12 2026 FUTURE TOTAL TRAFFIC VOLUMES

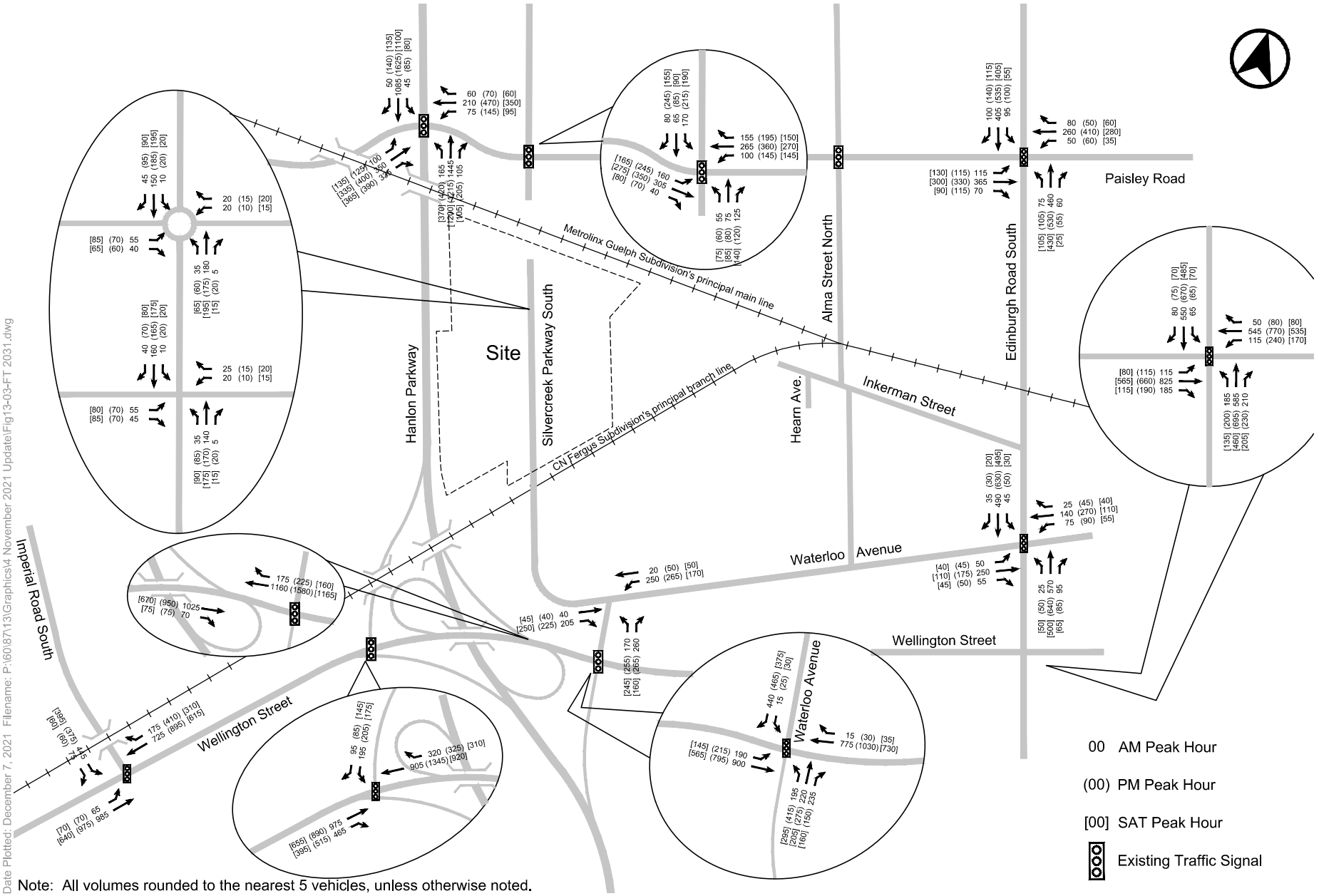


FIGURE 13 2031 FUTURE TOTAL TRAFFIC VOLUMES

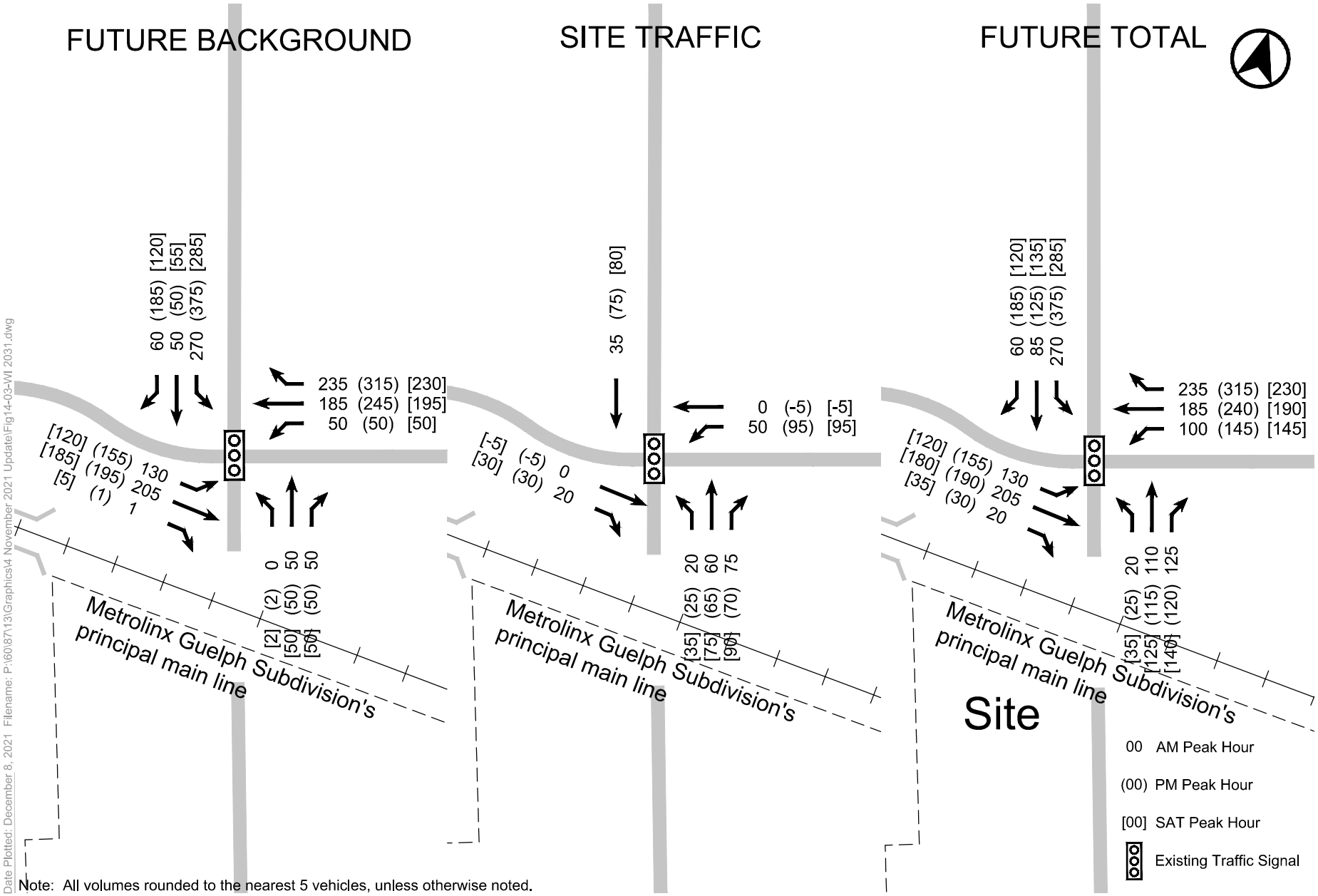


FIGURE 14 WESTWOOD INTERCHANGE SCENARIO - 2031 SILVERCREEK & PAISLEY TRAFFIC VOLUMES

4.2 OPERATIONS ANALYSIS

4.2.1 Overview

Based on the updated future total traffic volumes, an updated traffic operations analysis has been undertaken. The methodology remains generally consistent with the 2019 TIS and 2020 TIS and overall, the results of the updated analysis remain generally consistent with those previously reported. For the traffic calming circle analysis, Arcady was utilized.

The complete Synchro and Arcady results for the updated future total scenarios are attached in **Appendix C**.

4.2.2 Signalized Intersections

4.2.2.1 Base Scenario

The operations analysis results for the signalized intersections within the study area are provided in **Table 5** through to **Table 7** for the existing and 2021 horizon-year, 2026 horizon-year and 2031 horizon-year scenarios respectively.

The results remain generally consistent with those reported in the 2019 TIS and 2020 TIS, with all intersections projected to operate at acceptable levels of service and within capacity.

At the Hanlon Expressway / Paisley Road intersection, signal timings were optimized based on the projected future volumes. With the optimized timings in place, during the PM peak hour for future scenarios, the overall intersection, the eastbound left movement, the northbound left movement and the southbound through movement are projected to operate with a v/c ratio greater than the “critical” threshold defined by MTO for signalized intersections of 0.85, although within capacity. During the Saturday peak hour, the eastbound left movement is projected to operate with a v/c ratio greater than 0.85, although within capacity, during this 2031.

At the Hanlon Parkway Northbound Off Ramp / Waterloo Avenue / Wellington Street West intersection, some movements, including the northbound movements and the southbound right movement are projected to operate with a v/c ratio greater than the “critical” threshold defined by MTO for ramp terminals of 0.75, although within capacity.

Generally, the above conditions are either an existing condition, or projected to occur under future background conditions as a result of projected growth, and are not directly attributed to Site traffic. It is recommended that operations at these intersections be monitored over time and signal timings be reviewed and adjusted as necessary.

At the Hanlon Expressway / Paisley Road intersection, all approaches have left turn lanes and three of the four approaches have right turn lanes. The physical improvement that would provide the most benefit to intersection operations would be the addition of a southbound through lane which would allow additional green time to be allocated to the eastbound left and northbound left movements. As noted above, these conditions are generally either an existing condition, or projected to occur under future background conditions as a result of projected growth, and are not directly attributed to Site traffic.

At the Hanlon Parkway Northbound Off Ramp / Waterloo Avenue / Wellington Street West intersection, consideration could potentially be given to adjusting the northbound approach lane configurations and removing the split phasing, which would allow time to be spread more efficiently for the movements at the intersection and reduce the red time for the north-south movements in particular.

Notwithstanding the above, MTO has advised that Highway 6 through the study area is classified as a Provincial Stage Freeway and designated as a Controlled Access Highway, with MTO protecting for the ultimate design and upgrade to a Provincial Freeway, including interchanges and / or grade separated requirements. In September 2020, MTO also advised that they would be scheduling a meeting with the City to further discuss future Highway 6 improvements as these discussions have been ongoing in this vicinity for a number of years, with no set timeline for design or construction currently determined.

At the time of writing, no additional information has been provided by MTO or the City on the interim or ultimate design of the Highway 6 corridor. Once this information is available, additional details with respect to the level of traffic impact created by the proposed development can be provided and the appropriate phasing of improvements that may be necessary. The triggering of improvements and contributions will need to take into account the relative scale of the proposed development to projected future background traffic growth along the Highway 6 corridor. Moreover, it should be noted that the analysis results indicate that with the proposed development, the study area intersections operate within capacity albeit above the MTO's "critical" threshold.

TABLE 5 OPERATIONS ANALYSIS RESULTS – SIGNALIZED INTERSECTIONS – EXISTING AND 2021 HORIZON YEAR

Intersection	Movement	Existing		Future Background – 2021		Future Total – 2021	
		LOS	v/c	LOS	v/c	LOS	v/c
Wellington St W / Edinburgh Rd S	Overall	C (C) [C]	0.65 (0.67) [0.44]	C (C) [C]	0.66 (0.69) [0.45]	C (C) [C]	0.67 (0.70) [0.46]
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave		C (D) [C]	0.41 (0.52) [0.30]	D (D) [D]	0.51 (0.65) [0.34]	D (E) [D]	0.66 (0.84) [0.53]
Hanlon Pkwy SB Ramps / Wellington St W		A (A) [A]	0.32 (0.35) [0.26]	A (A) [A]	0.32 (0.36) [0.27]	A (A) [A]	0.32 (0.37) [0.27]
Wellington St W / Imperial Rd S		B (B) [B]	0.70 (0.67) [0.55]	B (B) [B]	0.71 (0.68) [0.56]	B (B) [B]	0.72 (0.71) [0.58]
Hanlon Pkwy / Paisley Rd		C (D) [D]	0.63 (0.86) [0.64]	C (D) [D]	0.61 (0.82) [0.61]	C (D) [D]	0.63 (0.85) [0.63]
Edinburgh Rd S / Waterloo Ave		C (C) [B]	0.60 (0.60) [0.43]	C (C) [B]	0.61 (0.62) [0.43]	C (C) [B]	0.63 (0.63) [0.45]
Edinburgh Rd N / Paisley Rd		B (C) [B]	0.61 (0.67) [0.53]	B (C) [B]	0.61 (0.68) [0.53]	C (C) [B]	0.64 (0.74) [0.59]
Silvercreek Pkwy N / Paisley Rd		B (C) [B]	0.65 (0.75) [0.55]	B (C) [B]	0.60 (0.70) [0.50]	C (C) [C]	0.67 (0.74) [0.56]

Notes:
1. AM (PM) [SAT]

TABLE 6 OPERATIONS ANALYSIS RESULTS – SIGNALIZED INTERSECTIONS – 2026 HORIZON YEAR

Intersection	Movement	Future Background – 2026		Future Total – 2026	
		LOS	v/c	LOS	v/c
Wellington St W / Edinburgh Rd S	Overall	C (C) [C]	0.68 (0.72) [0.46]	C (C) [C]	0.69 (0.73) [0.47]
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave		D (D) [D]	0.54 (0.68) [0.35]	D (E) [D]	0.68 (0.86) [0.55]
Hanlon Pkwy SB Ramps / Wellington St W		A (A) [A]	0.34 (0.37) [0.28]	A (A) [A]	0.34 (0.38) [0.28]
Wellington St W / Imperial Rd S		B (B) [B]	0.73 (0.72) [0.58]	B (B) [B]	0.74 (0.75) [0.61]
Hanlon Pkwy / Paisley Rd		C (D) [D]	0.65 (0.88) [0.65]	C (D) [D]	0.67 (0.90) [0.67]
Edinburgh Rd S / Waterloo Ave		C (C) [B]	0.63 (0.63) [0.45]	C (C) [B]	0.65 (0.65) [0.46]
Edinburgh Rd N / Paisley Rd		B (C) [B]	0.63 (0.70) [0.55]	C (C) [B]	0.66 (0.76) [0.61]
Silvercreek Pkwy N / Paisley Rd		B (C) [B]	0.61 (0.72) [0.51]	C (C) [C]	0.68 (0.76) [0.57]

Notes:
1. AM (PM) [SAT]

TABLE 7 OPERATIONS ANALYSIS RESULTS – SIGNALIZED INTERSECTIONS – 2031 HORIZON YEAR

Intersection	Movement	Future Background – 2031		Future Total – 2031	
		LOS	v/c	LOS	v/c
Wellington St W / Edinburgh Rd S	Overall	C (C) [C]	0.70 (0.75) [0.48]	C (C) [C]	0.71 (0.76) [0.49]
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave		D (D) [D]	0.56 (0.70) [0.36]	D (E) [D]	0.70 (0.89) [0.56]
Hanlon Pkwy SB Ramps / Wellington St W		A (A) [A]	0.35 (0.38) [0.29]	A (A) [A]	0.35 (0.39) [0.28]
Wellington St W / Imperial Rd S		B (B) [B]	0.76 (0.75) [0.60]	B (B) [B]	0.78 (0.78) [0.63]
Hanlon Pkwy / Paisley Rd		C (D) [D]	0.69 (0.94) [0.69]	C (D) [D]	0.71 (0.97) [0.70]
Edinburgh Rd S / Waterloo Ave		C (C) [B]	0.64 (0.65) [0.46]	C (C) [B]	0.66 (0.66) [0.47]
Edinburgh Rd N / Paisley Rd		B (C) [B]	0.65 (0.72) [0.56]	C (C) [B]	0.67 (0.80) [0.62]
Silvercreek Pkwy N / Paisley Rd		C (C) [B]	0.63 (0.73) [0.53]	C (C) [C]	0.69 (0.78) [0.58]

Notes:
1. AM (PM) [SAT]

4.2.2.2 Westwood Road Interchange Scenario

The results for the updated Westwood Road Interchange scenario at the Silvercreek Parkway / Paisley Road intersection are provided in **Table 8**.

In the 2031 future background and total traffic scenarios, all movements and the intersection overall operate at acceptable levels of service and within capacity. From a capacity perspective, the changes in traffic volumes due to a full movement interchange at Westwood Road with the Hanlon Expressway as projected by this study could be accommodated at the Silvercreek Parkway / Paisley Road intersection. However, additional information about the interchange design would be required to confirm the traffic assignments.

TABLE 8 OPERATIONS ANALYSIS RESULTS – SIGNALIZED INTERSECTIONS – 2031 HORIZON YEAR – WESTWOOD INTERCHANGE SCENARIO

Movement	Future Background – 2031		Future Total – 2031	
	LOS	v/c	LOS	v/c
Silvercreek Pkwy N / Paisley Rd	C (C) [C]	0.71 (0.83) [0.58]	C (D) [C]	0.82 (0.93) [0.67]

Notes:
1. AM (PM) [SAT]

4.2.3 Unsignalized Intersections

4.2.3.1 Existing Intersection Configurations

The operations analysis results for the unsignalized intersections within the study area are provided within **Table 9** through to **Table 11** for the existing and 2021 horizon-year, 2026 horizon-year and 2031 horizon-year scenarios respectively.

The results remain generally consistent with those reported in the 2019 TIS and 2020 TIS, with intersections generally projected to operate at acceptable levels of service and within capacity.

TABLE 9 OPERATIONS ANALYSIS RESULTS – UNSIGNALIZED INTERSECTIONS – EXISTING AND 2021 HORIZON YEAR

Intersection	Movement	Existing		Future Background – 2021		Future Total – 2021	
		LOS	v/c	LOS	v/c	LOS	v/c
Silvercreek Pkwy S / Waterloo Ave	WBL	A (A) [A]	0.16 (0.19) [0.11]	A (A) [A]	0.18 (0.19) [0.12]	A (A) [A]	0.20 (0.22) [0.14]
	NBL	A (B) [A]	0.26 (0.29) [0.16]	B (B) [B]	0.28 (0.34) [0.22]	C (D) [C]	0.50 (0.82) [0.55]
Silvercreek Pkwy S / Street A / Street C (traffic calming circle)	WBLTR (Leg 1)	-		-		A (A) [A]	0.04 (0.02) [0.04]
	SBLTR (Leg 2)	-		-		A (A) [A]	0.17 (0.25) [0.26]
	EBLTR (Leg 3)	-		-		A (A) [A]	0.09 (0.12) [0.14]
	NBLTR (Leg 4)	-		-		A (A) [A]	0.18 (0.21) [0.23]
Silvercreek Pkwy S / Street D / Street E	EBLTR					B (C) [C]	0.18 (0.31) [0.38]
	WBLTR	-		-		B (B) [B]	0.08 (0.05) [0.08]
	NBL					A (A) [A]	0.03 (0.07) [0.08]
	SBL					A (A) [A]	0.01 (0.02) [0.02]
Hanlon Pkwy NB On Ramps / Wellington St W	No Results – Operates free flow						

Notes:
1. AM (PM) [SAT]

TABLE 10 OPERATIONS ANALYSIS RESULTS – UNSIGNALIZED INTERSECTIONS – 2026 HORIZON YEAR

Intersection	Movement	Future Background – 2026		Future Total – 2026	
		LOS	v/c	LOS	v/c
Silvercreek Pkwy S / Waterloo Ave	WBL	A (A) [A]	0.18 (0.20) [0.13]	A (A) [A]	0.21 (0.22) [0.14]
	NBL	B (B) [B]	0.28 (0.35) [0.22]	C (D) [C]	0.51 (0.83) [0.56]
Silvercreek Pkwy S / Street A / Street C (traffic calming circle)	WBLTR (Leg 1)	-		A (A) [A]	0.04 (0.02) [0.04]
	SBLTR (Leg 2)	-		A (A) [A]	0.17 (0.25) [0.26]
	EBLTR (Leg 3)	-		A (A) [A]	0.09 (0.12) [0.14]
	NBLTR (Leg 4)	-		A (A) [A]	0.18 (0.21) [0.23]
Silvercreek Pkwy S / Street D / Street E	EBLTR			B (C) [C]	0.18 (0.31) [0.38]
	WBLTR	-		B (B) [B]	0.08 (0.05) [0.08]
	NBL			A (A) [A]	0.03 (0.07) [0.08]
	SBL			A (A) [A]	0.01 (0.02) [0.02]
Hanlon Pkwy NB On Ramps / Wellington St W	No Results – Operates free flow				

Notes:
1. AM (PM) [SAT]

TABLE 11 OPERATIONS ANALYSIS RESULTS – UNSIGNALIZED INTERSECTIONS – 2031 HORIZON YEAR

Intersection	Movement	Future Background – 2031		Future Total – 2031	
		LOS	v/c	LOS	v/c
Silvercreek Pkwy S / Waterloo Ave	WBL	A (A) [A]	0.19 (0.20) [0.13]	A (A) [A]	0.21 (0.23) [0.15]
	NBL	B (B) [B]	0.29 (0.35) [0.22]	C (D) [C]	0.52 (0.85) [0.57]
Silvercreek Pkwy S / Street A / Street C (traffic calming circle)	WBLTR (Leg 1)	-		A (A) [A]	0.04 (0.02) [0.04]
	SBLTR (Leg 2)	-		A (A) [A]	0.17 (0.25) [0.26]
	EBLTR (Leg 3)	-		A (A) [A]	0.09 (0.12) [0.14]
	NBLTR (Leg 4)	-		A (A) [A]	0.18 (0.21) [0.23]
Silvercreek Pkwy S / Street D / Street E	EBLTR			B (C) [C]	0.18 (0.31) [0.38]
	WBLTR	-		B (B) [B]	0.08 (0.05) [0.08]
	NBL			A (A) [A]	0.03 (0.07) [0.08]
	SBL			A (A) [A]	0.01 (0.02) [0.02]
Hanlon Pkwy NB On Ramps / Wellington St W	No Results – Operates free flow				

Notes:
1. AM (PM) [SAT]

4.2.3.2 Silvercreek Parkway at Waterloo Avenue Intersection Realignment

Consistent with the 2019 TIS and 2020 TIS, an analysis has been undertaken which considers a potential reconfiguration of the Silvercreek Parkway at Waterloo Avenue intersection such that the northbound and eastbound approaches are free-flowing and only the westbound approach is under stop control. The results of the analysis are summarized in **Table 12**. For the purposes of the analysis, the eastbound Silvercreek Parkway approach has been renamed as the southbound approach.

As shown, all movements are expected to operate at acceptable levels of service and within capacity under this potential reconfiguration, consistent with the results reported in the 2019 TIS and 2020 TIS.

TABLE 12 OPERATIONS ANALYSIS RESULTS – UNSIGNALIZED INTERSECTIONS – REALIGNED SILVERCREEK PARKWAY / WATERLOO AVENUE INTERSECTION

Movement	Future Total – 2021		Future Total – 2026		Future Total – 2031	
	LOS	v/c	LOS	v/c	LOS	v/c
WBL	C (D) [C]	0.52 (0.63) [0.41]	C (D) [C]	0.53 (0.65) [0.42]	C (D) [C]	0.54 (0.66) [0.44]
WBR	A (B) [A]	0.03 (0.07) [0.07]	A (B) [A]	0.03 (0.07) [0.07]	A (B) [A]	0.03 (0.07) [0.07]
SBLT	A (A) [A]	0.04 (0.04) [0.04]	A (A) [A]	0.04 (0.04) [0.04]	A (A) [A]	0.04 (0.04) [0.04]

Notes:
1. AM (PM) [SAT]
2. Silvercreek Parkway eastbound approach renamed to the southbound approach for purposes of analysis.

4.2.4 Queue Lengths

The key queue lengths at critical study area intersections, along with the available storage are summarized in **Table 21**.

In comments received from MTO, it was requested that queue lengths have be calculated using the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads and TAC Geometric Design Guide for Canadian Roads.

BA Group is concerned that these methodologies are not properly representative in determining queue lengths given some of the inherent static assumptions in these analyses which do not allow for the full context of the intersection, for example, actuated signal timings. Notwithstanding, queue lengths for the Hanlon Parkway intersections have been calculated using the following methodologies:

- **Left and through lanes:** MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, dated April 20, which subsequently directed to MTO Traffic Signal Operating & Timing Policy, dated October 1, 2012 (Section 6.2)
- **Right lanes:** TAC Geometric Design Guide for Canadian Roads, dated June 2017 (Chapter 9, Section 9.14.4)

TABLE 13 EXISTING AND 2021 HORIZON YEAR QUEUE LENGTHS

Intersection	Movement	Existing	Future Background – 2021	Future Total – 2021	Available Storage (m)
		95%ile Queue (m)	95%ile Queue (m)	95%ile Queue (m)	
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave[2]	SBL	8 (8) [8]	8 (8) [8]	15 (23) [30]	90 m
	SBR	59 (64) [39]	86 (91) [65]	108 (114) [91]	90 m
Hanlon Pkwy / Paisley Rd[2]	WBL	90 (120) [105]	45 (83) [60]	45 (83) [60]	40 m
	WBTR	68 (120) [90]	68 (120) [90]	75 (135) [105]	160 m
Silvercreek Pkwy N / Paisley Rd[3]	EBL	23 (#48) [23]	18 (27) [18]	18 (27) [18]	30 m
	EBTR	46 (52) [40]	39 (45) [34]	39 (44) [33]	160 m
	EBR	-- (--) [--]	0 (0) [0]	4 (5) [6]	160 m
	WBL	-- (--) [--]	m15 (m12) [m15]	29 (m31) [40]	650 m
	WBLTR	101 (#151) [99]	89 (#135) [88]	89 (#133) [87]	650 m
	NBL	-- (--) [--]	0 (2) [2]	15 (17) [19]	120 m
	NBLTR	1 (2) [3]	16 (17) [17]	29 (30) [33]	120 m
	SBL	-- (--) [--]	42 (53) [45]	#52 (#65) [#56]	800 m
	SBLT	42 (51) [45]	14 (14) [15]	17 (21) [21]	800 m
	SBR	10 (17) [15]	8 (16) [13]	8 (16) [13]	800 m
Waterloo Avenue and Silvercreek Parkway[3]	WBL	5 (6) [3]	5 (6) [3]	6 (7) [4]	100m
	NBL	8 (10) [5]	9 (12) [7]	23 (69) [27]	60m

Notes:
1. AM (PM) [SAT]
2. Intersection queues based on MTO Traffic Signal Operating & Timing Policy and TAC Geometric Design Guide for Canadian Roads, as requested by MTO.
3. Intersection queues based on Synchro queue reports.
4. # 95th percentile queue volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
5. m Volume for 95th percentile queue is metered by upstream signal.

TABLE 14 2026 HORIZON YEAR QUEUE LENGTHS

Intersection	Movement	Future Background – 2026	Future Total – 2026	Available Storage (m)
		95%ile Queue (m)	95%ile Queue (m)	
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave[2]	SBL	8 (8) [8]	15 (23) [30]	90 m
	SBR	88 (93) [66]	109 (115) [93]	90 m
Hanlon Pkwy / Paisley Rd[2]	WBL	45 (83) [60]	45 (83) [60]	40 m
	WBTR	68 (120) [90]	83 (135) [105]	160 m
Silvercreek Pkwy N / Paisley Rd[3]	EBL	19 (28) [19]	19 (28) [19]	30 m
	EBTR	41 (46) [35]	41 (45) [34]	160 m
	EBR	0 (0) [0]	4 (5) [6]	160 m
	WBL	m15 (m11) [m15]	m29 (m30) [40]	650 m
	WBLTR	92 (#141) [91]	92 (m#137) [89]	650 m
	NBL	0 (2) [2]	15 (17) [19]	120 m
	NBLTR	16 (17) [17]	29 (30) [33]	120 m
	SBL	42 (53) [45]	#52 (#65) [#56]	800 m
	SBLT	14 (14) [15]	17 (21) [21]	800 m
	SBR	8 (16) [13]	8 (16) [13]	800 m
Waterloo Avenue and Silvercreek Parkway[3]	WBL	5 (6) [4]	6 (7) [4]	100m
	NBL	9 (13) [7]	23 (73) [28]	60m

Notes:
1. AM (PM) [SAT]
2. Intersection queues based on MTO Traffic Signal Operating & Timing Policy and TAC Geometric Design Guide for Canadian Roads, as requested by MTO.
3. Intersection queues based on Synchro queue reports.
4. #95th percentile queue volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
5. m Volume for 95th percentile queue is metered by upstream signal.

TABLE 15 2031 HORIZON YEAR QUEUE LENGTHS

Intersection	Movement	Future Background – 2031	Future Total – 2031	Available Storage (m)
		95%ile Queue (m)	95%ile Queue (m)	
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave[2]	SBL	8 (8) [8]	15 (23) [30]	90 m
	SBR	89 (94) [68]	110 (116) [94]	90 m
Hanlon Pkwy / Paisley Rd[2]	WBL	53 (83) [60]	53 (83) [60]	40 m
	WBTR	68 (128) [98]	83 (135) [113]	160 m
Silvercreek Pkwy N / Paisley Rd[3]	EBL	19 (29) [19]	19 (31) [19]	30 m
	EBTR	41 (48) [36]	41 (47) [35]	160 m
	EBR	0 (0) [0]	4 (5) [6]	160 m
	WBL	m15 (m11) [m15]	m28 (m30) [m38]	650 m
	WBLTR	96 (#146) [94]	96 (m#135) [92]	650 m
	NBL	0 (2) [2]	15 (17) [19]	120 m
	NBLTR	16 (17) [17]	29 (30) [33]	120 m
	SBL	42 (53) [45]	#52 (#65) [#56]	800 m
	SBLT	14 (14) [15]	17 (21) [21]	800 m
	SBR	8 (16) [13]	8 (16) [13]	800 m
Waterloo Avenue and Silvercreek Parkway[3]	WBL	6 (6) [4]	6 (7) [4]	100m
	NBL	10 (13) [7]	24 (77) [29]	60m

Notes:
1. AM (PM) [SAT]
2. Intersection queues based on MTO Traffic Signal Operating & Timing Policy and TAC Geometric Design Guide for Canadian Roads, as requested by MTO.
3. Intersection queues based on Synchro queue reports.
4. #95th percentile queue volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
5. m Volume for 95th percentile queue is metered by upstream signal.

At the Hanlon Expressway at Paisley Road intersection, in all of the peak hours, the westbound left turn movement 95th percentile queue exceeds the available storage length in all of the peak hours. However, it should be noted that this condition is experienced in the existing conditions and all future background traffic scenarios and is therefore, not a result of the proposed development.

The shared westbound through/right turn movement queue extends short of Silvercreek Parkway in the 2026 and 2031 future total traffic scenarios in the PM peak hour. Given that this intersection is effectively operating at capacity, no meaningful changes to the signal timings can be made to reduce these queue lengths. This is consistent with the conclusions of the analysis within the 2019 TIS.

Under the existing configuration at Silvercreek Parkway / Waterloo Avenue, northbound queues are projected to exceed the available storage space during the PM peak. This is partially associated with Site traffic and partially associated with the projected diversions along Silvercreek Parkway.

Under the potential realigned configuration, northbound would operate free flow and therefore, no queues are expected.

As discussed above, it is suggested that any potential improvements for these intersections be reviewed once future plans for the Hanlon Parkway corridor and the surrounding area are resolved, for example, the future Silvercreek Parkway North / Paisley Road intersection layout and a potential interchange.

Overall, the Site-generated traffic impact is minimal and is not expected to substantially alter the existing intersection operations.

4.2.5 Signal Warrants

Signal justification warrants have been completed for the 2031 total traffic scenario for the two driveways to Silvercreek Parkway and the Silvercreek Parkway / Waterloo Avenue intersection. The results are summarized in **Table 16** with the detailed worksheets attached for reference in **Appendix D**.

Based on the below analysis, a signal is not warranted at any of the intersections reviewed.

TABLE 16 2031 TOTAL TRAFFIC – SIGNAL JUSTIFICATION

Intersection	Justification 1A	Justification 1B	Justification 2A	Justification 2B	Justification 3	Justified?
Silvercreek Pkwy S / Street A / Street C	77%	72%	60%	84%	NO	NO
Silvercreek Pkwy S / Street D / Street E	75%	77%	57%	84%	NO	NO
Silvercreek Pkwy S / Waterloo Ave	77%	89%	47%	98%	NO	NO

5.0 PHASED DEVELOPMENT TRAFFIC ANALYSIS

5.1 OVERVIEW

A traffic operations analysis has been undertaken to review whether part of the Silvercreek Junction development (i.e. a first phase of development) could reasonably be serviced from a capacity perspective by a single access to / from the south on Silvercreek Parkway. The analysis remains generally consistent with that outlined in the 2021 TIS.

Only the 2031 horizon year has been assessed as any nearer-term horizon years (e.g. 2026) would operate better than the 2031 horizon year given the smaller traffic volumes as fewer years of corridor growth would have been applied.

5.2 ASSUMED PHASE 1 DEVELOPMENT

For the purpose of analysis, it has been assumed that a first phase of development would include all of the development on the east side of Silvercreek Parkway. The assumed phase 1 development stats are summarized in **Table 17.**

Access to Silvercreek Parkway for the first phase of development is assumed to be via two, three-leg intersections on Silvercreek Parkway, with a two-way stop controlled intersections proposed with Silvercreek Parkway for the South Driveway (Street D) and a traffic calming circle proposed with Silvercreek Parkway for the North Driveway (Street C). Street A and Street E are assumed to not yet be built. For context, a reduced copy of the overall plan (not to scale) is provided in **Appendix B**.

TABLE 17 ASSUMED PHASE 1 DEVELOPMENT STATS

Land Use		Number
Residential	Apartments	136 units
	Townhouses	144 units
	Total	**280 units**

5.3 ASSUMED PHASE 1 ROAD NETWORK

For the purposes of this analysis, it has been assumed that no changes have been made to the Highway 6 / Paisley Avenue intersection or at the Silvercreek Parkway South / Waterloo Avenue intersection, i.e. that the study area intersection lane configurations and traffic control would remain unchanged from existing conditions except for the addition of Street C and Street D for Site access. The North Rail Crossing is assumed to remain closed, with all Site access to / from the south on Silvercreek Parkway. The assumed future Phase 1 lane configurations and traffic control are shown in **Figure 15**.

5.4 PHASE 1 TRAFFIC VOLUMES

5.4.1 Existing and Future Background Traffic Volumes

The phased analysis assumes existing traffic volumes consistent with those outlined in **Section 4.0**. Future background traffic volumes do not assume any diversions due to Silvercreek Parkway not yet being constructed, and are shown in **Figure 16**.

5.4.2 Phase 1 Site Vehicle Trip Generation

The site vehicle trip generation for the assumed phase 1 development is provided in **Table 2**. The vehicle trip generation rates remain consistent with those outlined in **Section 4.0**.

TABLE 18 PHASE 1 DEVELOPMENT SITE TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			Sat. Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)[1]	*Rate (trips per unit)*	*0.11*	*0.35*	*0.46*	*0.35*	*0.21*	*0.56*	*0.34*	*0.36*	*0.70*
	144 units	15	50	65	50	30	80	50	50	100
Multifamily Housing (Mid-Rise)[2]	*Rate (trips per unit)*	*0.09*	*0.27*	*0.36*	*0.27*	*0.17*	*0.44*	*0.22*	*0.22*	*0.44*
	136 units	10	40	50	35	25	60	30	30	60
Total Trips		**25**	**90**	**115**	**85**	**55**	**140**	**80**	**80**	**160**

Based on the foregoing, the phase 1 development is expected to generate in the order of 115, 140 and 160 two-way vehicle movements during the AM, PM and Saturday peak hours respectively. All vehicle trips will be to / from the south on Silvercreek Parkway.

For context, the analysis outlined in **Section 4.0** estimates in the order of 210, 320 and 355 two-way vehicle movements to / from the south on Silvercreek Parkway (including pass-by trips) during the AM, PM and Saturday peak hours respectively.

Accordingly, despite not having access available to / from Paisley Avenue to the north under this scenario, the Phase 1 development would still represent a reduction (45%-55% reduction) in traffic volumes projected to / from the south on Silvercreek Parkway compared with the full build-out of the development.

5.4.3 Site Vehicle Trip Distribution

The adopted Site vehicle trip distribution remains consistent with the distribution outlined in **Section 4.0**. The Phase 1 Site traffic volumes are shown in **Figure 16**.

5.4.4 Phase 1 Future Total Traffic Volumes

The Phase 1 development future total traffic volumes for the 2031 analysis horizon-year are shown in **Figure 18.**

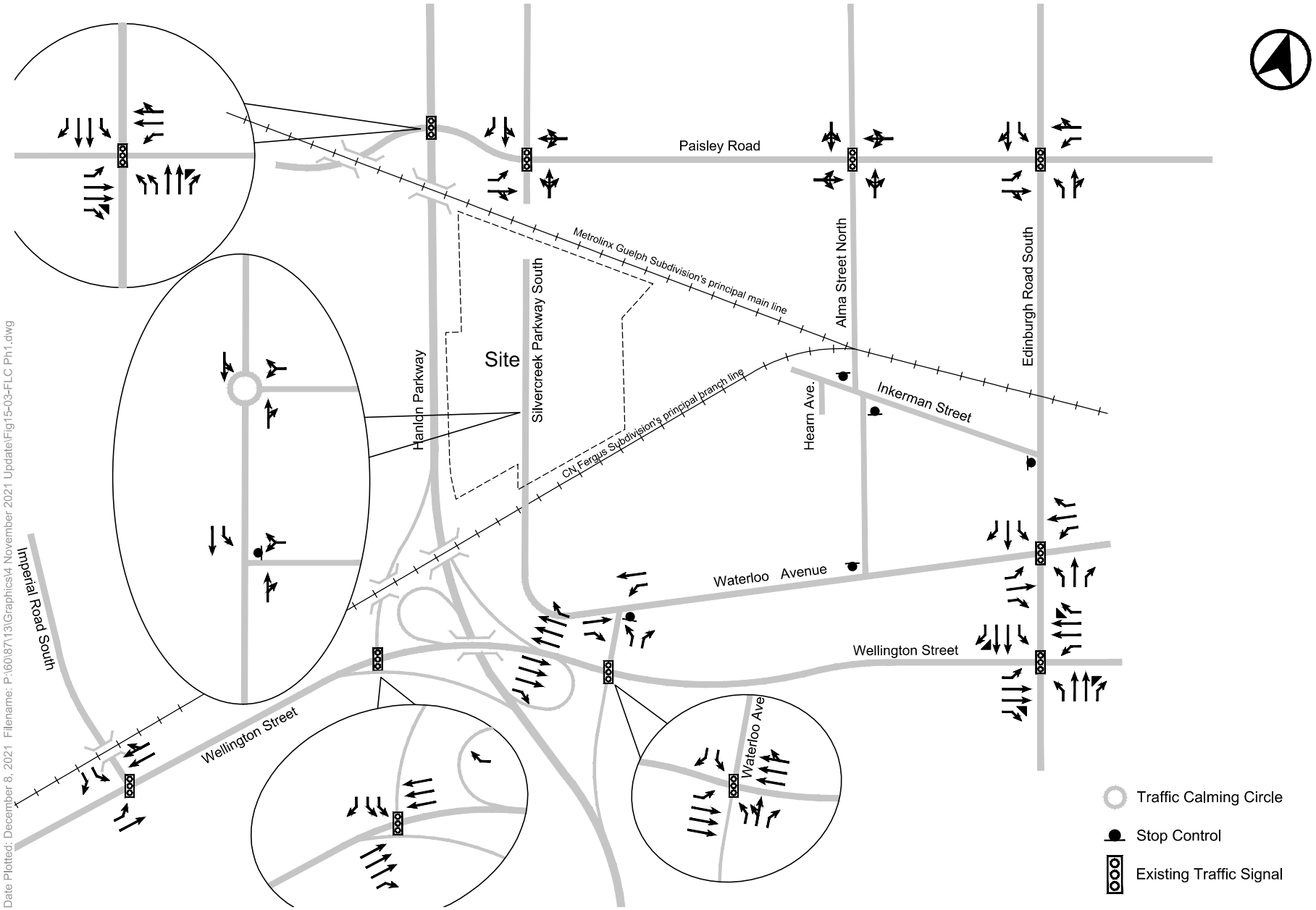


FIGURE 15 ASSUMED PHASE 1 LANE CONFIGURATIONS AND TRAFFIC CONTROL

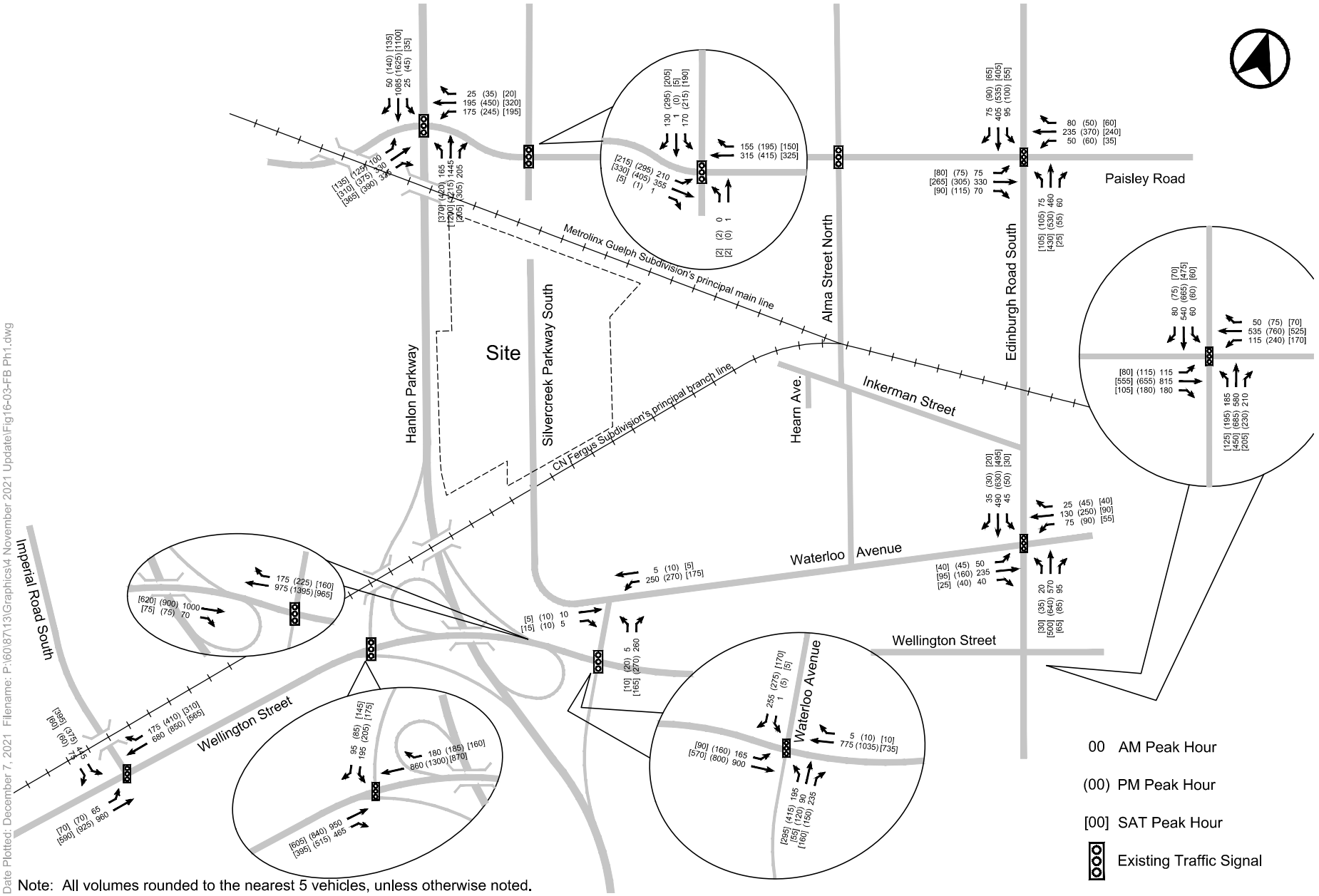
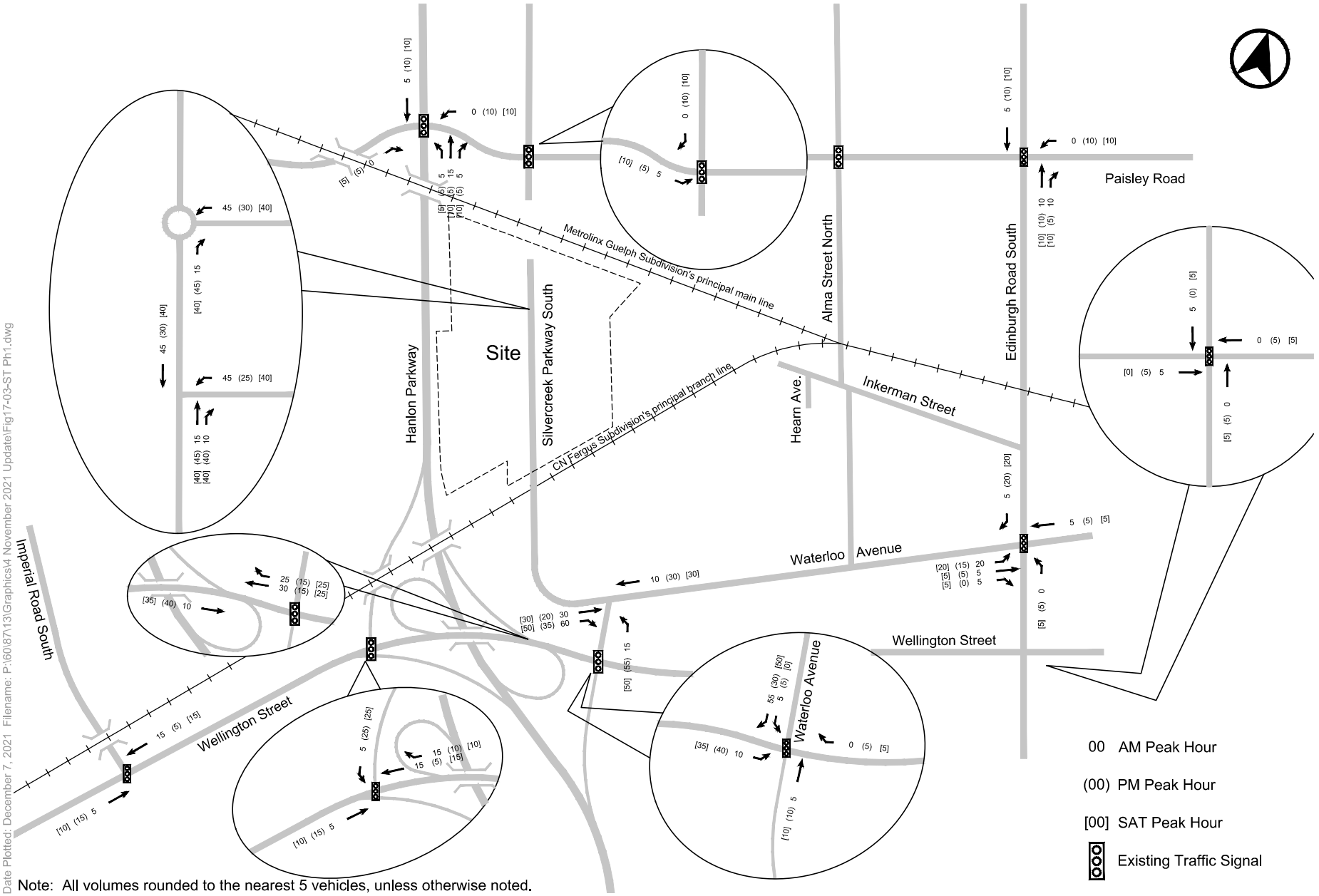


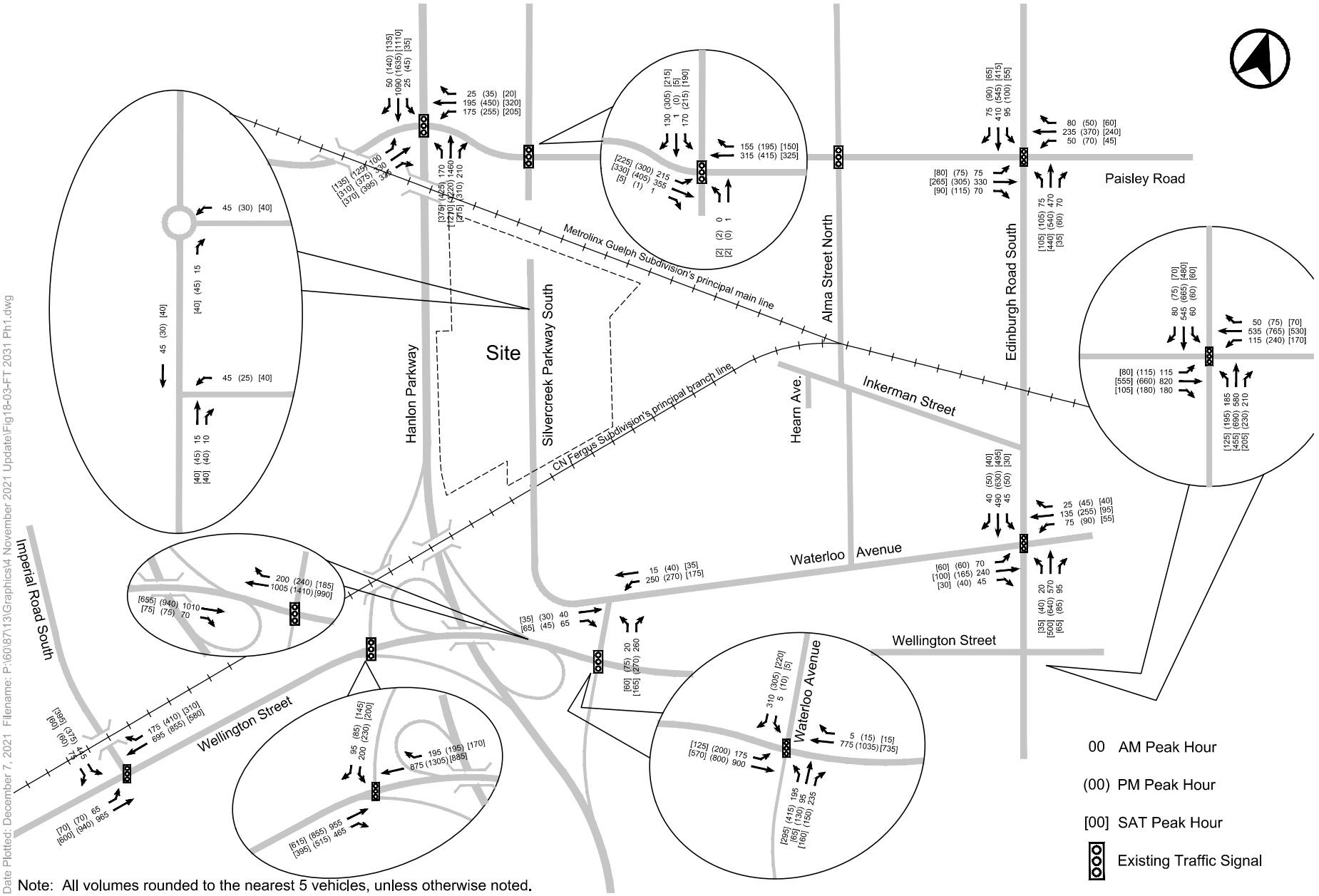
FIGURE 16 2031 FUTURE BACKGROUND TRAFFIC VOLUMES - PHASE 1



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

Date Plotted: December 7, 2021 Filename: P:\60\87\13\Graphics\4 November 2021 Update\Fig17-03-ST Ph1.dwg

FIGURE 17 SITE TRAFFIC VOLUMES - PHASE 1



Note: All volumes rounded to the nearest 5 vehicles, unless otherwise noted.

Date Plotted: December 7, 2021 Filename: P:\60\87\13\Graphics\4 November 2021 Update\Fig18-03-FT 2031 Ph1.dwg

FIGURE 18 2031 FUTURE TOTAL TRAFFIC VOLUMES - PHASE 1

5.5 PHASE 1 OPERATIONS ANALYSIS

5.5.1 Overview

The methodology for the operations analysis remains consistent with the analysis outlined in **Section 4.0**.

Analysis results for the 2031 horizon-year are summarized in **Table 7** and **Table 20**. Complete Synchro results are attached in **Appendix C**.

5.5.2 Phase 1 Capacity Analysis

The results indicate that from a traffic operations perspective, Phase 1 of the Silvercreek Junction development as assumed in this analysis could be accommodated by a single access to / from the south on Silvercreek Parkway.

At the Hanlon Parkway / Paisley Road intersection, the westbound left, combined westbound through/right, northbound left and southbound through movements are projected to exceed during the PM peak hour. It is noted that the northbound left and southbound through movements already exceed this threshold under existing conditions and that all four movements are projected to exceed this threshold under future background, regardless of any development on the Site. The Site impact on these movements is minimal. It is also noted that at the Hanlon Parkway / Paisley Road intersection under future total, while Synchro reports the overall intersection v/c ratio as over capacity at 1.01, this is illogical as all individual movements operate within capacity.

At the Hanlon Parkway Northbound Off Ramp / Wellington Street West / Waterloo Avenue intersection the northbound left and combined northbound left / through movements are projected to exceed 0.75 during the PM and Saturday peak hours. Similar to the Hanlon Parkway / Paisley Road intersection, these movements already exceed this threshold under existing conditions and/or future background conditions, and the projected Site impact on these movements is minimal.

It is expected that if and when MTO chooses to make improvements to these intersections in order to reduce the v/c ratios below “critical” thresholds, the relatively small volumes of traffic associated with the Phase 1 development would not trigger the need for any additional improvements or mitigation measures.

In the case of the Phase 1 development, the Site-generated traffic impact is minimal and is not expected to substantially alter existing intersection operations.

TABLE 19 PHASE 1 2031 HORIZON YEAR SIGNALIZED INTERSECTION ANALYSIS

Intersection	Movement	Future Background – 2031 (Phase 1)		Future Total – 2031 (Phase 1)	
		LOS	v/c	LOS	v/c
Wellington St W / Edinburgh Rd S	Overall	C (C) [C]	0.70 (0.75) [0.48]	C (C) [C]	0.71 (0.75) [0.48]
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave		C (D) [C]	0.45 (0.59) [0.32]	C (D) [D]	0.50 (0.69) [0.36]
Hanlon Pkwy SB Ramps / Wellington St W		A (A) [A]	0.35 (0.38) [0.29]	A (A) [A]	0.35 (0.39) [0.29]
Wellington St W / Imperial Rd S		B (B) [B]	0.76 (0.75) [0.60]	B (B) [B]	0.76 (0.75) [0.61]
Hanlon Pkwy / Paisley Rd		C (D) [D]	0.75 (0.99) [0.70]	D (D) [D]	0.75 (1.01) [0.72]
Edinburgh Rd S / Waterloo Ave		C (C) [B]	0.64 (0.65) [0.46]	C (C) [B]	0.65 (0.65) [0.46]
Edinburgh Rd N / Paisley Rd		C (C) [B]	0.65 (0.72) [0.56]	C (C) [B]	0.66 (0.72) [0.57]
Silvercreek Pkwy N / Paisley Rd		C (C) [B]	0.69 (0.80) [0.58]	C (C) [B]	0.69 (0.80) [0.58]

Notes:
1. AM (PM) [SAT]

TABLE 20 PHASE 1 2031 HORIZON YEAR UNSIGNALIZED INTERSECTION ANALYSIS

Intersection	Movement	Future Background – 2031 (Phase 1)		Future Total – 2031 (Phase 1)	
		LOS	v/c	LOS	v/c
Silvercreek Pkwy S / Waterloo Ave	WBL	A (A) [A]	0.17 (0.18) [0.12]	A (A) [A]	0.19 (0.19) [0.13]
	NBL	A (B) [A]	0.27 (0.27) [0.17]	B (B) [B]	0.28 (0.28) [0.17]
Silvercreek Pkwy S / Street C	N/A – No opposing movements without connection through to north				
Silvercreek Pkwy S / Street D	WBLR	-- (--) [--]		A (A) [A]	0.05 (0.03) [0.05]
Hanlon Pkwy NB On Ramps / Wellington St W	No Results – Operates free flow				

Notes:
1. AM (PM) [SAT]

5.5.3 Phase 1 Queue Lengths

The key queue lengths at critical study area intersections, along with the available storage are summarized in **Table 21**.

TABLE 21 QUEUE LENGTHS

Intersection	Movement	Future Background – 2031 (Phase 1)	Future Total – 2031 (Phase 1)	Available Storage (m)
		95%ile Queue (m)	95%ile Queue (m)	
Hanlon Pkwy NB Off Ramp / Wellington St W / Waterloo Ave[2]	SBL	8 (8) [8]	8 (15) [8]	90 m
	SBR	64 (69) [43]	78 (76) [55]	90 m
Hanlon Pkwy / Paisley Rd[2]	WBL	98 (128) [105]	98 (135) [113]	40 m
	WBTR	68 (128) [98]	68 (128) [98]	160 m
Silvercreek Pkwy N / Paisley Rd[3]	EBL	25 (#69) [25]	26 (#73) [26]	30 m
	EBTR	49 (56) [43]	49 (56) [43]	160 m
	WBLTR	#115 (#165) [106]	#115 (#165) [106]	650 m
	NBLTR	1 (2) [3]	1 (2) [3]	120 m
	SBLT	42 (51) [45]	42 (51) [45]	800 m
	SBR	10 (17) [15]	10 (18) [15]	800 m
Waterloo Avenue and Silvercreek Parkway[3]	WBL	5 (5) [3]	6 (6) [4]	100m
	NBL	9 (9) [5]	9 (9) [5]	60m

Notes:
1. AM (PM) [SAT]
2. Intersection queues based on MTO Traffic Signal Operating & Timing Policy and TAC Geometric Design Guide for Canadian Roads, as requested by MTO.
3. Intersection queues based on Synchro queue reports.
4. #95th percentile queue volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
5. m Volume for 95th percentile queue is metered by upstream signal.

At the Hanlon Parkway / Paisley Road intersection, in all of the peak hours, the westbound left turn movement 95th percentile queue exceeds the available storage length in all of the peak hours. However, it should be noted that this condition is experienced in the existing conditions and future background traffic scenarios and is therefore, not a result of the proposed development.

As discussed above, it is suggested that any potential improvements for these intersections be reviewed once future plans for the Hanlon Parkway corridor and the surrounding area are resolved, for example, the future Silvercreek Parkway North / Paisley Road intersection layout and a potential interchange.

In the case of the Phase 1 development, the Site-generated traffic impact is minimal and is not expected to substantially alter the existing intersection operations.

5.5.4 Signal Warrant

A signal warrant was undertaken for the Silvercreek Parkway South / Waterloo Avenue intersection under the Future Total – 2031 conditions for the Phase 1 development. The results are summarized in **Table 16** with the detailed worksheets attached for reference in **Appendix D**.

Based on the analysis, signals are not warranted at the Silvercreek Parkway South / Waterloo Avenue intersection under the Future Total – 2031 conditions for the Phase 1 development.

TABLE 22 SIGNAL WARRANT – FUTURE TOTAL – 2031 (PHASE 1)

Intersection	Justification 1A	Justification 1B	Justification 2A	Justification 2B	Justification 3	Justified?
Silvercreek Pkwy S / Waterloo Ave	61%	72%	33%	39%	NO	NO

6.0 GRADE SEPARATION

6.1 OVERVIEW

An assessment has been undertaken to determine the estimated relative impact on the grade separation assessment criteria outlined in the *Grade Separation Assessment Guidelines* prepared by Transport Canada that can be attributed to the development.

The Grade Separation Assessment Guidelines discussed above provide guidelines to help railway companies and road authorities assess when to consider grade crossings for grade separation or otherwise eliminate them, thereby removing a road/rail conflict zone.

6.2 GRADE SEPARATION ASSESSMENT GUIDELINES

The *Grade Separation Assessment Guidelines* outline a number of qualitative criteria thresholds for grade separation candidates and are attached in **Appendix E** for reference. The criteria are outlined in **Table 23** and applied based on the current proposal in **Table 24**.

Analysis was undertaken for two scenarios, with the first scenario considering existing conditions plus the development of the Site only, and the second scenario considering future conditions, including potential diversions of existing traffic along Silvercreek Parkway and expected future train volumes. In assessing this criteria, reference is made to existing train data collected at the North Rail Crossing and information provided by Metrolinx, attached in **Appendix F** and **Appendix G** respectively.

TABLE 23 GRADE SEPARATION QUALITATIVE CRITERIA

Criteria	Threshold
Traffic Volume	AADT exceeds 100,000
Train Volume	Average of 150 or more trains per day
Vehicle Speed	Posted/Unposted highway speed equals or exceeds 90 km/h
Cross Product[2] / Exposure Index	Cross product exceeds 1 million
Queuing	Existing crossings where there are known queuing issues and an entranceway or intersection is within 30 m of the nearest rail of the proposed crossing
Maximum train speed	Train speeds exceed 177 km/h (100 mph)
Vehicle Delay	Exceeds 40 vehicle hours per day
Level of Service	If the highway/roadway facility is performing at a level of service below its intended minimum design level 10 percent or more of the time.

Notes:
1. Source: *Grade Separation Assessment Guidelines* prepared by Transport Canada
2. A product of the average number of trains per day multiplied by the AADT at a grade crossing.

TABLE 24 GRADE SEPARATION QUALITATIVE ASSESSMENT

Criteria	Existing Conditions + Development Only		Future Conditions incl. Development	
	Projected	Met/Not Met	Projected	Met/Not Met
Traffic Volume[1]	3,600	Not Met	5,600	Not Met
Train Volume[2]	13	Not Met	52	Not Met
Vehicle Speed[3]	60 km/h	Not Met	60 km/h	Not Met
Cross Product[4] / Exposure Index	46,800	Not Met	291,200	Not Met
Queuing	Not an existing crossing	Not Met	Not an existing crossing	Not Met
Maximum train speed[5]	113 km/h	Not Met	113 km/h	Not Met
Vehicle Delay[6]	< 1 hr	Not Met	Approx 3.5 hrs	Not Met
Level of Service[7]	Not an existing crossing	N/A	Not an existing crossing	N/A

Notes:
1. AADT assumed to be equivalent to daily traffic volume. Daily traffic volume assumed to be 10 times the two-way PM peak hour traffic volume. Existing based on site traffic projections. Future assumes additional 200 two-way diverted vehicle trips as per the City of Guelph's request.
2. Existing based on existing train volume data attached in **Appendix F**. Future based on advice provided by Metrolinx attached in **Appendix G,** plus 2 VIA rail trains and 5 cargo trains (based on existing schedule and train data).
3. Design speed used in the 2012 Silvercreek EA
4. AADT x train volume
5. Based on information provided by Metrolinx attached in **Appendix G**.
6. Existing train delays based on existing train delay data attached in **Appendix F** and site traffic AADT outlined above. Future extrapolates existing train delay data for future train volumes and assumes future AADT with diversions as outlined above. Calculations are outlined in **Appendix H**.
7. Not applicable as this is not an existing crossing.

6.3 GRADE SEPARATION RESULTS SUMMARY

Based on the foregoing and the proposal for the Site, the North Rail Crossing does not meet the criteria for grade separation as outlined by Transport Canada.

However, while there is no mandated cross product or exposure index level at which grade separation is required, many agencies consider a cross product of 200,000 as indicative of when grade separation should start to be considered. For context, the *Grade Crossings Standards* prepared by Transport Canada (dated January 1, 2019), specifies cross product thresholds for other rail crossing treatments as follows:

- A warning system without gates is required where the forecast cross product is 2,000 or more; and
- A public grade crossing at which a warning system with gates is required where the forecast cross product is 50,000 or more.

Based on the foregoing analysis, the cross product does not meet the abovementioned value of 200,000 for the existing conditions plus development only scenario. Under the future conditions scenario, the calculated cross product of 291,200 exceeds this value, which according to this criteria, would suggest a grade separation should start to be considered.

A summary of the individual criteria on a relative percentage basis, is provided in **Table 25**.

TABLE 25 RELATIVE ACHIEVEMENT OF GRADE SEPARATION CRITERIA

Criteria	Threshold	Existing Conditions + Development Only		Future Conditions	
		Projected	% Achieved	Projected	% Achieved
Traffic Volume[1]	100,000	3,600	3.6%	5,600	5.6%
Train Volume[2]	150	13	8.7%	52	34.7%
Vehicle Speed[3]	90 km/h	60 km/h	66.7%	60 km/h	66.7%
Cross Product[4] / Exposure Index	1,000,000 200,000	46,800	4.7% 23.4%	291,200	29.1% 145.6%
Maximum train speed[5]	177 km/h	113 km/h	63.8%	113 km/h	63.8%
Vehicle Delay[6]	40 vehicle hours	< 1 hr	2.5%	3.5 hrs	8.8%

Notes:
1. AADT assumed to be equivalent to daily traffic volume. Daily traffic volume assumed to be 10 times the two-way PM peak hour traffic volume. Existing based on site traffic projections. Future assumes additional 200 two-way diverted vehicle trips as per the City of Guelph's request.
2. Existing based on existing train volume data attached in **Appendix F**. Future based on advice provided by Metrolinx attached in **Appendix G,** plus 2 VIA rail trains and 5 cargo trains (based on existing schedule and train data).
3. Design speed used in the 2012 Silvercreek EA
4. AADT x train volume
5. Based on information provided by Metrolinx attached in **Appendix G**.
6. Existing train delays based on existing train delay data attached in **Appendix F** and site traffic AADT outlined above. Future extrapolates existing train delay data for future train volumes and assumes future AADT with diversions as outlined above. Calculations are outlined in **Appendix H**.

6.4 GRADE SEPARATION ASSESSMENT SUMMARY

Based on the foregoing analysis, the following is concluded:

- For existing conditions, with the additional traffic associated with the development of the Site, none of the grade separation criteria are met and the exposure index is 46,800, only 23.4% of the 200,000 threshold;
- In the future, the City of Guelph has suggested that an additional 2,000 vehicles per day would divert to Silvercreek Parkway across the North Rail Crossing and Metrolinx has advised that an additional 32 trains per day would use this section of railway;
- These additional vehicles and trains would result in a future exposure index of 291,200, exceeding the 200,000 threshold, but only 29.1% of the 1,000,000 threshold;
- The future exposure index exceeding 200,000 is a threshold that many agencies would consider as indicative of when grade separation should start to be considered;
- The existing plus Site-generated traffic exposure index of 46,800 comprises only 16.1% of the future 291,200 exposure index; and
- The remaining 244,400 component of the exposure index is generated by the additional trains forecast by Metrolinx and vehicle traffic on adjacent roads diverting to Silvercreek Parkway as per the City's suggestion.

6.5 SOUTH RAIL CROSSING

The Transport Canada *Grade Crossing Standards (July 2014)* identifies the need for a warning system with gates at a public grade crossing when the forecast cross-product is 50,000 or more.

The *2012 Detailed Safety Assessment* completed as part of the *2012 Silvercreek Parkway Class EA* study identified a volume of rail traffic of 8 freight trains per week, whilst based on the existing data (attached in **Appendix F**), there is currently up to 2 trains per day at this location. In the 2031 total traffic scenario, it is expected that Silvercreek Parkway will carry in the order of 5,700 vehicles per day, including the projected diversions along Silvercreek Parkway. Assuming 2 trains per weekday, the resultant cross-product would be 11,400 which falls short of the threshold cross-product of 50,000.

In order to reach the cross-product of 50,000 with 5,700 vehicles per day, there would need to be approximately 9 trains per day operating on this line. While the forecast cross-product does not currently meet the threshold (barring any major changes in rail traffic), the recommendations of the *2012 Silvercreek Parkway Class EA* study, including the *2012 Detailed Safety Assessment* should still be implemented:

- Crossing warning system including lights, bells, and gates;
- Active "Prepare to Stop at Railway Crossing" signage for the north approach of the crossing;
- "No Train Whistles at this Crossing" signage;
- "Railway Advance Warning" signage indicating a skewed crossing; and
- "Pedestrians Stop Here When Lights Are Flashing" signage.

7.0 SIGHT DISTANCE ASSESSMENT OF STREET A / STREET C

7.1 ROAD LAYOUT AND PROFILE

The Site is bound by the north rail crossing associated with the Metrolinx Guelph Subdivision, Kitchener Line to the north and by the south rail crossing associated with the Canadian National Railway (CN) Fergus Subdivision Line to the south.

A rail underpass is proposed at the north rail crossing in the Silvercreek EA. As a result, the vertical profile of Silvercreek Parkway South in the vicinity of and through the site is proposed to be altered, as illustrated in the recommended solution for Silvercreek Parkway South from Paisley Road to Waterloo Street in the Silvercreek EA.

The centre of the Silvercreek Parkway South / Street A / Street C intersection is located in the order of 194 metres south of the railway right-of-way.

7.2 SIGHT DISTANCE REQUIREMENTS

7.2.1 Two-Way Stop Control

Sight distance requirements for intersections are detailed in Section 9.9 of the *Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads*. It outlines adjustment factors for sight distance based on approach grade. For a grade of 3% or less, no adjustment factor should be applied. As the grade of Silvercreek Parkway South in the vicinity of Street A / Street C is proposed to be less than 3%, no adjustment factor was applied. A design speed of 60 kilometres per hour was assumed, as per the 2012 Silvercreek EA.

The critical sight distance requirement is for Case B1 (left turn from the minor road at intersections with stop control on the minor road) with a required sight distance of 130 metres. This information is summarized below **Table 26** with the sight distance figures in plan and profile attached in **Appendix I**.

TABLE 26 TAC SIGHT DISTANCE ASSESSMENT

Case		Required Sight Distance	Satisfied?
Case B – Intersections with stop control on the minor road	B1 – Left turn from the minor road	130 m	YES

Notes:
1, Based on approach grade of less than 3% (as per the design for Silvercreek Parkway S), design speed of 60 km/h (as per the 2012 Silvercreek EA).
2. Sight distances shown graphically in **Appendix I**.

The sight distance assessment concludes that the required sight distance for the critical condition of 130 metres given a two-way stop control is provided.

Notwithstanding the above, it is noted that the intersection is currently proposed as a traffic calming circle as requested by the City.

7.2.2 Traffic Signal Control

The City has requested that an additional sight distance assessment be undertaken in the event that the intersection of Silvercreek Parkway South / Street A / Street C was under traffic signal control. The minimum distance requirements from which signals must be clearly visible are detailed in Table 25 of the Ministry of Transportation's *Ontario Traffic Manual (OTM) Book 12 – Traffic Signals*. Based on an assumed 85th percentile speed of 60 kilometres per hour, the signal must be clearly visible from a minimum of 110 metres.

As illustrated in the sight distance figure in **Appendix I**, a signal head located at a minimum height of 2.75 metres would clearly be visible from beyond 110 metres. Moreover, if the traffic signal head was located higher at 5.0 metres or a stop sign was provided with standard height between 1.5 and 2.5 metres, the sight distance would still be provided as there are no visual obstructions.

Consequently, the sight distance assessment concludes that the required sight distance of 110 metres to the traffic signal head is provided if the intersection was to operate under traffic signal control.

8.0 ROAD AND INTERSECTION DESIGN

8.1 SILVERCREEK PARKWAY SOUTH DESIGN

A reduced plan (not to scale) is attached in **Appendix B**. The functional design of the Silvercreek Parkway South / Street A intersection is attached in **Appendix J**. These plans illustrate a number of important features along Silvercreek Parkway South that will ensure that it safely accommodates travel for all modes of travel including cyclists, pedestrians and motor vehicles. These include:

- **Bicycle Lanes** – Bicycle lanes are provided on both sides of Silvercreek Parkway South which will accommodate cyclists. The Silvercreek EA showed 1.5 metre wide bicycle lanes, however based on current standards, a 1.8 metre wide bicycle lane is recommended.

- **Sidewalks** – Sidewalks with a width of 1.5 metres are provided on both sides of Silvercreek Parkway South which will accommodate pedestrians.

- **On-Street Parking** – A modest amount of indented on-street parking is provided in the vicinity of the Neighbourhood Park and the Urban Square such that it does not interfere with the operation of bus stops and traffic operations at intersections. Drivers will drive more slowly in the presence of on-street parking as they watch for vehicles making parking manoeuvers.

- **Traffic Calming Circle** – At the intersection of Street A / Street C, a traffic calming circle is proposed as requested by the City of Guelph, with appropriate refinements made to accommodate truck movements. The intersection will operate similar to a roundabout and will provide traffic calming for north-south traffic on Silvercreek Parkway.

- **Two-Way Stop Control with Left Turn Lanes** – At the intersection of Street E / Street D, two-way stop control is proposed where the minor streets operate under stop control and Silvercreek Parkway South is free-flowing. Auxiliary left turn lanes are provided in the northbound and southbound directions.

Additionally, there are opportunities for pavement treatments, gateway features and signage along Silvercreek Parkway South as motorists enter the community.

These features communicate to drivers that they are entering an urban community that provides facilities for and accommodates pedestrians, cyclists and motor vehicles. This creates a traffic calming effect where motor vehicles reduce their speeds and become more conscientious of other road users.

It is important to recognize that the primary purpose of these plans is to demonstrate that these critical features can fit within the road right-of-ways proposed and sufficient space has been allocated. These designs are conceptual in nature and subject to further refinement and discussion with the City.

9.0 TRANSPORTATION DEMAND MANAGEMENT

9.1 TDM PLAN OBJECTIVES

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

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

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

9.2 SITE TRANSPORTATION CONTEXT

The Site is well served by transit services operated by Guelph Transit, with bus routes operating along Paisley Road (10 – Imperial), Waterloo Avenue (9 – Waterloo) and Wellington Street West (17 – Woodlawn Watson and 18 – Watson Woodlawn).

Pedestrian movements in the vicinity of the Site are generally accommodated by sidewalks, with pedestrian crossings provided at signalized intersections, albeit there are no existing facilities along Silvercreek Parkway. There is no existing bicycle infrastructure in the vicinity of the Site.

9.3 TDM PLAN STRATEGIES

Based upon the Site context and proposed land uses, potential TDM strategies to be considered are summarized in **Table 27**, with further detail to be outlined at the relevant SPA stages.

TABLE 27: POTENTIAL TDM MEASURES

Measure	Description
General Non-Auto Incentives	Integration of residential and commercial land uses, allowing for interaction between land uses without requiring a vehicle trip.
	Opportunities to provide car share will be investigated, supporting residents who only require a car occasionally, without the need to own their own vehicle. For the proposed development, a provision of 1 car share space may be appropriate, subject to interest from car share providers.
Transit Incentives	Provide transit information packages to new employees to demonstrate the transit options available and increase the visibility of transit as an option.
	Provide convenient, high-quality, and accessible pedestrian connections oriented towards adjacent transit stop facilities to improve the convenience of the first/last mile of a transit trip.
Bicycle Incentives	Provide active transportation information packages to new employees to demonstrate the active transportation options available and landmarks within convenient distance, increasing the visibility of cycling as an option.
	Construction of bicycle lanes along Silvercreek Parkway, accommodating cycling as a mode adjacent to the Site.
	Provision of bicycle parking spaces for residents, staff and visitors in the apartment and mixed-use blocks, allowing cyclists to store their bicycles when not in use and improve the viability of cycling as an option.
	Provision of a bicycle repair station within any bicycle storage rooms, allowing cyclists to repair their bikes when required and improving the viability of cycling as an option.
Walking Incentives	Provide active transportation information packages to new employees to demonstrate the active transportation options available and landmarks within convenient distance, increasing the visibility of walking as an option
	Construction of sidewalks along both sides of Silvercreek Parkway, accommodating walking as a mode adjacent to the Site.
	Provide internal pedestrian connections within the Site and connecting to Silvercreek Parkway, accommodating walking as a mode within the Site.
	Maintain on-site pedestrian facilities to enable year-round pedestrian access and usage
	Enhance the quality of the public realm through provision of pedestrian-scale landscaping and appropriate sidewalk widths to improve the attractiveness of walking as a mode.

10.0 COMMENT RESPONSES

10.1 TRANSPORTATION PLANNING MEMO – JANUARY 15, 2021

Railway Crossing

The total traffic volumes were underestimated at the intersection of Paisley Road and Silvercreek Parkway due to the following assumptions and calculations:

1. **Under the future background scenario, the diverted traffic to Silvercreek Parkway from adjacent roadways was not considered. It is expected that some background traffic would switch to Silvercreek Parkway to reach Hanlon Expressway or the Silvercreek Parkway intensification area north of the subject site. The amount of diverted traffic to Silvercreek Parkway is assumed to be 100 vph per direction which is in line with the assumption from the 2012 Traffic Impact Study;**

Response: Diverted traffic has been added to the assessment. It is noted that the traffic analysis included in the Silvercreek EA and the 2012 TIS assumed a diversion of 100 vehicles in the AM peak and 60 vehicles in the PM peak from Highway 6 to Silvercreek Parkway in the southbound direction. The Silvercreek EA and the 2012 TIS did not assume any northbound diversions. The diversions assumed for the purpose of this study have been increased to 100 vehicles from Highway 6 to Silvercreek Parkway in both the northbound and southbound directions, as requested in the comment above.

2. **Under the "Westwood Road Interchange Scenario," the extremely heavy traffic volumes in the southbound left-turn (up to 430 vph) and westbound right-turn (up to 365 vph) would lead to very long traffic queues (i.e., 130.7m and 175.7m respectively). This unstable traffic condition suggests some traffic could be deterred and thus switch to use Silvercreek Parkway. As such, additional diverted traffic should be considered and included in calculations in both directions on Silvercreek Parkway. We recommend 200 vph in the southbound direction and 100 in the northbound direction; and**

Response: Noted. Since the timing of the Westwood Road Interchange Scenario is currently unknown as well as details with respect to lane configurations, it was not utilized as the basis of the grade separation assessment. In any case, the conclusions outlined in **Section 6.0** states that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered. As such, inclusion of the additional diverted traffic as outlined above does not alter these conclusions.

3. **Not all pass-by trips are included in the total traffic calculations.**

Response: Pass-by trips have been added to/from the north and are included in the updated calculations. Please see updated grade separation assessment in **Section 6.0**.

With all foregoing adjustments to the total traffic forecasting and anticipated frequency of future rail services (37 per day as per Metrolinx's Traffic Impact Study for the Dublin Street closure), the cross product/exposure index is anticipated to exceed the threshold of 200,000 for the provision of a grade separation. This threshold was acknowledged by the consultant and was included in the study.

Response: Noted. Please see updated grade separation assessment in **Section 6.0**. The assessment the concludes that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered.

In addition, the projected heavy eastbound left-turn traffic (up to 290 vph in year 2031) would require allocating adequate exclusive green time so as to avoid traffic queue spillbacks to Hanlon Expressway. This could be done at the expense of reduced green time in the conflict phasing, resulting in long traffic queues in the northbound and southbound directions. To accommodate the traffic queues in the northbound direction, the storage for the left-turn traffic and associated taper length is expected to extend beyond the north rail crossing. It is also worth noting that long traffic queues could build up at both sides of the north rail crossing if the crossing remains at grade.

Response: Noted. Please see updated grade separation assessment in **Section 6.0**. The assessment the concludes that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered.

Furthermore, the railway has the potential to become a future high speed rail with an operating speed over 200 km/h. Please confirm the ultimate operating speed with Metrolinx.

The future train speed has been confirmed with Metrolinx to be 113 kilometres per hour. Please see correspondence in **Appendix G**.

In combination of the cross product/exposure index with other variables such as the anticipated traffic queues and future rail speed, City staff believe a grade separation is the safest and preferred solution at the north rail crossing.

Response: Noted. Please see updated grade separation assessment in **Section 6.0**. The assessment the concludes that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered.

Traffic Calming Measures

The traffic calming features at the intersection of Street A/C, as identified in Section 6.1, are not considered as viable solutions for slowing traffic traveling down on a steep slope (up to -8%) from Paisley Road. Many of these features are located downstream from this intersection and have minimum effect in reducing speed.

Response: Based on the proposed Silvercreek Parkway vertical profile, it is noted that the 8% grade is between the underpass and Paisley Street. Vehicles will be driving uphill (2.5% grade) when approaching the Street A / Street C intersection from the north, after going through the underpass. When approaching the Street A / Street C intersection from the south, vehicles will be driving on a relatively flat grade. As such, the previously discussed traffic calming options are considered appropriate. Notwithstanding, a traffic calming circle has been incorporated at the Silvercreek Parkway / Street A / Street C intersection as requested.

Other features including a two-way stop control and on-street parking on the west side of Silvercreek Parkway and north of Street A/C do not have a sufficient decision sight distance of 235m as per Table 2.5.6 in TAC, when considering the grade effect and vertical clearance of a future underpass. In addition, a steep slope of -8% is not suitable for on-street parking.

Response: Section 2.5.5 of TAC Chapter 2 states that decision sight distance allows drivers to manoeuvre their vehicles or vary their operating speed when drivers must make complex decisions, when information is difficult to find, when information is unusual, or when unusual manoeuvres are required. Section 2.5.5 of TAC Chapter 2 provides the following specific examples:

- Complex interchanges and intersections;
- Locations where unusual or unexpected manoeuvres occur;
- Locations where significant changes to the roadway cross section are made;
- Areas where there are multiple demands on the driver's decision-making capabilities from road elements, traffic control devices, advertising, traffic, etc.; and
- Construction zones.

The design of Silvercreek Parkway and intersections in the vicinity of the Site are not considered to be complex or unusual. The above examples do not apply in this instance and as such, the provision of decision sight distance is not considered to be required. Parking is not proposed on the section of road with the 8% grade.

As such, a previously recommended small roundabout should be implemented with pedestrian signals and audible and/or vibration/tactile indications to assist visually impaired pedestrians. Roundabouts have been identified in the City's "Community Road Safety Strategy" as one of the physical measures that mainly address speeding concerns but have positive effects on pedestrian safety.

Response: A traffic calming circle has been incorporated at the Silvercreek Parkway / Street A / Street C intersection, with appropriate refinements made to accommodate truck movements. The intersection will operate similar to a roundabout and provide traffic calming as requested. The design details of the traffic circle will be further developed as this application progresses.

Paisley Road and Silvercreek Parkway Intersection

Together with the design of the future underpass, the intersection geometries should be modified to include exclusive turning lanes and provide driveways to residences on the west side of Silvercreek Parkway. The modifications and driveways must be illustrated in the functional design plans.

Response: The proposed intersection configuration of Silvercreek Parkway / Paisley Road and access to the residences is consistent with the Silvercreek Parkway EA. Given that the proposed development now generates substantially fewer trips than the previous proposal, it is unclear as to why these modifications are necessary.

TDM

Please see previously submitted TDM comments.

Response: It is assumed this is referring to the TDM comments received in the terms of reference comments (email dated March 8, 2018). The relevant comments are reproduced and addressed below:

> **To provide a review of opportunities for TDM measures to support reduced trip generation and private vehicle ownership within the development with typical measures such as carshare, transit promotion, supportive bicycle storage, etc**
>
> **Response:** Please see **Section 9.0** for the proposed TDM plan.
>
> **To refer to the Cycling Master Plan and Active Transportation Network (Guelph.ca/bike and Guelph.ca/atn), particularly regarding the proposed ATN connection north along Silvercreek Parkway from the Speed River corridor and bike facilities along Paisley Road and Silvercreek Parkway;**
>
> **Response:** Noted. Bicycle lanes are proposed along both sides of Silvercreek Parkway along the Site frontage.

To provide Electric Vehicle charging stations as per future Ontario Building Code updates (the January 1, 2018 draft proposes 20% of residential parking spaces to have EV charging equipment installed at construction and 80% of spaces to be EV-ready);

Response: Our understanding is that this is no longer a requirement of the Ontario Building Code. Notwithstanding, consideration will be given to the provision of EV charging spaces in the mixed use and apartment blocks.

To be fairly rigorous for this mixed-use residential-commercial development, given its proximity and transit service to nearby commercial and recreational facilities (Downtown, Paisley/Imperial node and Silvercreek/Willow node) as well as being well-connected to active transportation facilities

Response: Noted. Transit and active transportation access will be leveraged appropriately through the proposed TDM measures outlined in **Section 9.0**.

Others

1. **The study should indicate whether any upgrade is warranted for rail crossing control measures at the spur line location;**

Response: Noted. Please see **Section 6.5**. It is concluded that the recommendations of the *2012 Silvercreek Parkway Class EA* study, including the *2012 Detailed Safety Assessment* should be implemented:

- Crossing warning system including lights, bells, and gates;
- Active “Prepare to Stop at Railway Crossing” signage for the north approach of the crossing;
- “No Train Whistles at this Crossing” signage;
- “Railway Advance Warning” signage indicating a skewed crossing; and
- “Pedestrians Stop Here When Lights Are Flashing” signage.

2. **Table 13 Queue Length should include all approaches at the intersection of Paisley Road and Silvercreek Parkway;**

Response: Noted. Queue length tables have been updated to include all movements at Paisley Road / Silvercreek Parkway.

3. **The consultant should submit the original Synchro files for review and approval;**

Response: Noted.

4. **At the intersection of Silvercreek Parkway and Waterloo Avenue, the southbound does not warrant an exclusive left-turn lane; and**

Response: It is assumed that this comment refers to the proposed realigned configuration. The exclusive left turn lane has been removed from the analysis.

5. **It is incorrect to state that all intersections within the study area would operate at acceptable levels of service and within capacities.**

Response: For the signalized intersection evaluations, the key performance indicator is the volume to capacity (v/c) ratio, where a v/c of 1.00 or less indicates the intersection is operating within capacity (i.e. volume is equal to or less than the available capacity). For the unsignalized intersection evaluations, the key performance indicator is the average delay and it's associated level of service (LOS) designation, ranging from LOS A (minimal delay) to LOS F (extended delay), where LOS A to E is generally considered to represent an acceptable delay. Please see updated analysis in **Section 4.0**.

10.2 ENGINEERING AND TRANSPORTATION SERVICES – SEPTEMBER 14, 2021

Grade Separation Assessment

As a long term solution to address growth in traffic and connectivity for active transportation, staff continue to ascertain that a grade separation should be considered at the North Rail Crossing for the following reasons.

1. **When the subject site is fully built out and occupied, it was acknowledged in the addendum that the exposure index would exceed 200,000 which is the threshold for agencies to start considering grade separation.**

Response: Noted.

In review of the addendum, staff have noted that the exposure index value could be much higher due to the following reasons:

- **BA Group's calculation has incorporated diverted traffic of 100 vph in both directions on Silvercreek as per City's memorandum dated January 15, 2021, however it did not include the following traffic components as:**
    - **the additional diverted traffic of 200 vph in the southbound direction and 100 vph in the northbound direction under the "Westwood Road Interchange Scenario";**

Response: Noted. As discussed above, since the timing of the Westwood Road Interchange Scenario is currently unknown, it was not utilized as the basis of the grade separation assessment. In any case, the conclusions outlined in **Section 6.0** states that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered. As such, inclusion of the additional diverted traffic as outlined above does not alter these conclusions.

- **the missing pass-by trips in the northbound direction along Silvercreek Parkway;**

Response: Pass-by trips have been added to/from the north and are included in the updated calculations. Please see updated grade separation assessment in **Section 6.0**.

- **BA Group's calculation did not consider other non-Metrolinx services such as VIA and the future potential High Speed Rail train services.**

Response: Noted. In the absence of future projections for these services, an additional 2 trains per day have been added for VIA Rail (based on existing service) and an additional 5 trains per day have been added for cargo services (based on existing data collected). As discussed above, it is noted that the conclusions outlined in **Section 6.0** states that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered. As such, should the number of trains associated with VIA Rail and cargo services differ slightly from the above in the future, this does not alter these conclusions.

2. **With adjustment to include the above traffic components, the exposure index value could exceed 500,000. This high level of exposure index is indicative of the need for a grade separation.**

Response: Noted. As discussed above, the conclusions outlined in **Section 6.0** states that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered. As such, the above does not alter these conclusions.

3. **At the full build-out of the development, the queuing issues at the North Rail Crossing with potential blockage are not addressed in this addendum. The queuing issues have safety implications that were identified in City's memorandum dated January 15, 2021.**

Response: As discussed above, the conclusions outlined in **Section 6.0** states that a grade separation should start to be considered based on the calculated exposure index exceeding the threshold of 200,000 which many agencies would consider as indicative of when grade separation should start to be considered. Under this scenario, queuing would not be an issue.

Phase 1 Development

The proposed Phase 1 Development is anticipated to comprise 121 apartment units and 138 townhouse units. The capacity analysis was carried out under the assumption that Phase 1 Development would be accessed through two access points to/from on Silvercreek Parkway. The North Rail Crossing is assumed to remain closed for all modes of traffic.

The capacity analysis demonstrated the site related traffic for Phase 1 Development would be well within the roadway capacity. However with Phase 1 Development in place ahead of construction of the grade separation, it would create connectivity problems at the North Rail Crossing for pedestrians and cyclists who want to reach some major destinations to the north of Paisley Road. The addendum did not offer any mitigation measures to address this problem.

Response: Additional discussions with Metrolinx would be required to determine what potential interim crossings might be possible at the North Rail Crossing until the grade separation is implemented.

10.3 MTO EMAIL – APRIL 21, 2021

When evaluating the impacts to a signalized intersection, please calculate the queues/storage lengths for through and left turn movements as per the methodology outlined in the MTO Design Supplement for TAC's Geometric Design Guide for Canadian Roads. For queues/storage lengths for right turn movements please refer to TAC's Geometric Design Guide for Canadian Roads.

Response: BA Group is concerned that these methodologies are not properly representative in determining queue lengths given some of the inherent static assumptions in these analyses which do not allow for the full context of the intersection, for example, actuated signal timings. Notwithstanding, queue lengths for the Hanlon Parkway intersections have been calculated using these methodologies, as outlined in **Section 4.2.4** and **Section 5.5.3** for the full build-out and Phase 1 scenarios respectively.

- **Westbound approach at the intersection of Highway 6 and Paisley Road:**
    - **Existing left turn queues exceed the available storage length.**

Response: Noted. Based on the Synchro analysis, the above is an existing condition and is not a result of the proposed development. Overall, the Site-generated traffic impact is minimal and is not expected to substantially alter the existing intersection operations.

    - **Through queues prevent vehicles from accessing the left turn lane. The inaccessibility of the turn lanes requires turning vehicles to be stored within the through lanes, making intersection operations inefficient.**

Response: Noted. Based on the Synchro analysis, the above is an existing condition and is not a result of the proposed development. Overall, the Site-generated traffic impact is minimal and is not expected to substantially alter the existing intersection operations.

- **Do not include the taper when estimating the existing storage lengths for auxiliary lanes.**

Response: Noted. The taper has not been included when estimating the existing storage lengths.

Proposed future conditions may not be feasible:

- **The study assumes that the interchange at Highway 6 and Paisley will be done by 2031.**
- **Widening of Paisley Rd between Highway 6 and Silvercreek Parkway - This has several issues: grading, utilities, property, and access to those properties.**
  - **If the widening is not possible then the eastbound queues will extend beyond the available storage between Highway 6 and Silvercreek Parkway for 2031 Total Traffic conditions. In addition, they will prevent northbound right turning vehicles at Highway 6 – Paisley Road from accessing Paisley Road.**
  - **The ministry is concerned about the weaving movements that will be introduced by the implementation of the proposed right turn lane at Paisley Road and Silvercreek Parkway.**

Response: The study assumes that the future configuration of Paisley Road at Silvercreek Parkway will be constructed in accordance with the recommended solution in the Silvercreek EA (note: the study does not assume that an interchange at Highway 6 / Paisley Road will be constructed by 2031 as referenced in the first bullet point). Consideration of the interchange scenario has been undertaken as an alternative scenario at the request of the City. The aforementioned concerns were not identified as barriers to implementation of the recommended design as part of the EA Study. Additionally, the proposed development generates substantially fewer trips than what was originally considered as part of the EA Study.

- **Realignment of Silvercreek Parkway at Waterloo Avenue. What is the timeline for this improvement? Please provide the signal warrant analysis for this intersection.**

Response: It is expected that such an improvement would be constructed with the buildout of the proposed development. The analysis has indicated that it is not necessary for Phase 1. A signal warrant has been undertaken and is outlined in **Section 4.2.5** and **Section 5.5.4** for the full build-out and phase 1 scenarios respectively. As shown, signals are not warranted at this location.

Movements that experience a v/c ratio of 0.85 or greater should be evaluated for possible operational improvements.

Response: Analysis and potential improvements for consideration are outlined in **Section 4.2** and **Section 5.5** for the full build-out and phase 1 scenarios respectively.

Generally, constrained conditions identified in the analysis are either an existing condition, or projected to occur under future background conditions as a result of projected growth, and are not directly attributed to Site traffic.

Further to the above, MTO has advised that Highway 6 through the study area is classified as a Provincial Stage Freeway and designated as a Controlled Access Highway, with MTO protecting for the ultimate design and upgrade to a Provincial Freeway, including interchanges and / or grade separated requirements. In September 2020, MTO also advised that they would be scheduling a meeting with the City to further discuss future Highway 6 improvements as these discussions have been ongoing in this vicinity for a number of years, with no set timeline for design or construction currently determined.

At the time of writing, no additional information has been provided by MTO or the City on the interim or ultimate design of the Highway 6 corridor. Once this information is available, additional details with respect to the level of traffic impact created by the proposed development can be provided and the appropriate phasing of improvements that may be necessary. The triggering of improvements and contributions will need to take into account the relative scale of the proposed development to projected future background traffic growth along the Highway 6 corridor. Moreover, it should be noted that the analysis results indicate that with the proposed development, the study area intersections operate within capacity albeit above the MTO's "critical" threshold.

Please use the latest edition of the Traffic Impact Study Guidelines (2014).

Response: Noted. Reference was made to the current MTO TIS Guidelines, dated February 2021.

Synchro model does not reflect existing or future conditions. Some of the discrepancies include but are not limited to:

- **Highway 6 – Paisley Road:**
    - **South approach does not have the right turn lane or volume.**

Response: The right turn lane and volume has been added into the updated analysis.

- **West approach has one receiving lane instead of two and did not include the right turn volume.**

Response: A second receiving lane has also been added and the right turn lane and volume has been added into the updated analysis.

- **Pedestrian volume and phases were not included.**

Response: Pedestrian volume and phases are both included. Existing traffic counts indicate minimal (in some cases zero) pedestrian activity at this intersection.

- **Signal timing plan for existing conditions does not match what is currently implemented on the field.**

Response: Signal timings were implemented based on signal timing plans received from MTO in 2018, and at a similar time to when the traffic counts were undertaken.

- **Paisley Road – Silvercreek Parkway:**
  - **Pedestrian volume and phases were not included.**

Response: Pedestrian volume and phases are both included.

- **Highway 6 – Wellington Street Interchange:**
  - **Free flow ramps were not included in the model.**

Response: The free flow ramps have been added to the model.

- **Pedestrian volume and phases were not included.**

Response: Pedestrian volume and phases are both included. Existing traffic counts indicate minimal (in some cases zero) pedestrian activity at this intersection.

- **Signal timing plan for existing conditions does not match what is currently implemented on the field.**

Response: Signal timings were implemented based on signal timing plans received from MTO in 2018, and at a similar time to when the traffic counts were undertaken.

- **Silvercreek Parkway – Waterloo Avenue: In the Summary and Conclusions section the report stated that "with the implementation of the 2012 Silvercreek Parkway Class EA study recommendations and a realigned Silvercreek Parkway at Waterloo Avenue intersection, for the 2021, 2026 and 2031 future total traffic conditions, all intersections generally operate at acceptable levels of service and within capacity including the proposed development driveways". However, the Synchro model did not reflect the change in realignment for that intersection.**

Response: The realignment of the Silvercreek Parkway / Waterloo Avenue intersection was reviewed as a sensitivity analysis and implemented in a separate Synchro file.

The results indicate operational issues. The "#" footnote indicates that the volume of the 95th percentile cycle exceeds capacity and queues may be longer. These results are generally not acceptable.

Response: The "#" footnote is only applicable in the 95th percentile case. In other words, this would only occur 5% of the time during the peak hours, which would typically equate to 1-2 cycles for a signalized intersection, depending on the cycle length. In these cases, any additional vehicles would clear in the next cycle, which is not an unusual circumstance to occur occasionally in urban conditions. Based on the analysis, the base v/c ratios are within capacity. Furthermore, generally these conditions are either an existing condition, or projected to occur under future background conditions as a result of projected growth, and are not directly attributed to Site traffic.

Given the complexity of the study area the ministry recommends the use of microsimulation to assess the operations of the network. For guidance on the ministry standards for microsimulation models please contact Jeanne-Marie.Deletsu@ontario.ca

Response: Noted. The assessment outlined in **Section 4.2** and **Section 5.5** is considered sufficient for the purpose of assessing the relative impact of the proposed Site development.

The analysis indicates that the constrained conditions identified are either an existing condition, or projected to occur under future background conditions as a result of projected growth, and are not directly attributed to Site traffic. In this respect, the relative impact of the proposed Site development is minor.

11.0 CONCLUSIONS

Based on the preceding technical analysis, the follow conclusions have been reached:

1. The Proposal contemplates 30 fewer residential units than the previous 2020 Proposal but maintains the same amount of commercial gross floor area.

2. The Proposal generates 5 fewer trips in the weekday morning peak hour and 15 fewer trips in the weekday afternoon and Saturday mid-day peak hours than the previous 2020 Proposal. Compared with the 2012 TIS, the proposal is projected to generate 625 and 910 fewer trips in the weerkday afternoon and Saturday mid-day peak hours respectively.

3. Study Area intersections are expected to continue to operate at acceptable levels of service and within capacity for the 2021, 2026 and 2031 horizon years, subject to the implementation of the proposed realignment at the Silvercreek Parkway / Waterloo Avenue intersection.

4. The traffic analysis assumes future lane configurations at the Silvercreek Parkway / Paisley Street intersection to be consistent with those outlined in the Silvercreek EA. Given the proposal is projected to generate substantially fewer vehicle trips compared with the 2012 TIS, this is considered to be appropriate.

5. For a phased scenario where development on the east side of Silvercreek Parkway (280 units) could potentially be constructed prior to the grade separation to the north, with access only to the south, study Area intersections are expected to continue to operate at acceptable levels of service and within capacity for the 2031 horizon year.

6. In reviewing the grade separation criteria for the Metrolinx Guelph Subdivision, Kitchener Line rail crossing across Silvercreek Parkway South at the north end of the Site, the grade separation criteria are not met for existing conditions plus Site traffic only, however with the addition of future diversions along Silvercreek Parkway and future train schedules, the future exposure index is projected to exceed the threshold that many agencies would consider as indicative of when grade separation should start to be considered.

7. A sight distance assessment for the Silvercreek Parkway South / Street A / Street C intersection finds that the required sight distances are provided for a two-way stop control and if the intersection were to operate under traffic signal control or all-way stop control. Notwithstanding, a traffic calming circle is proposed, as requested by the City of Guelph.

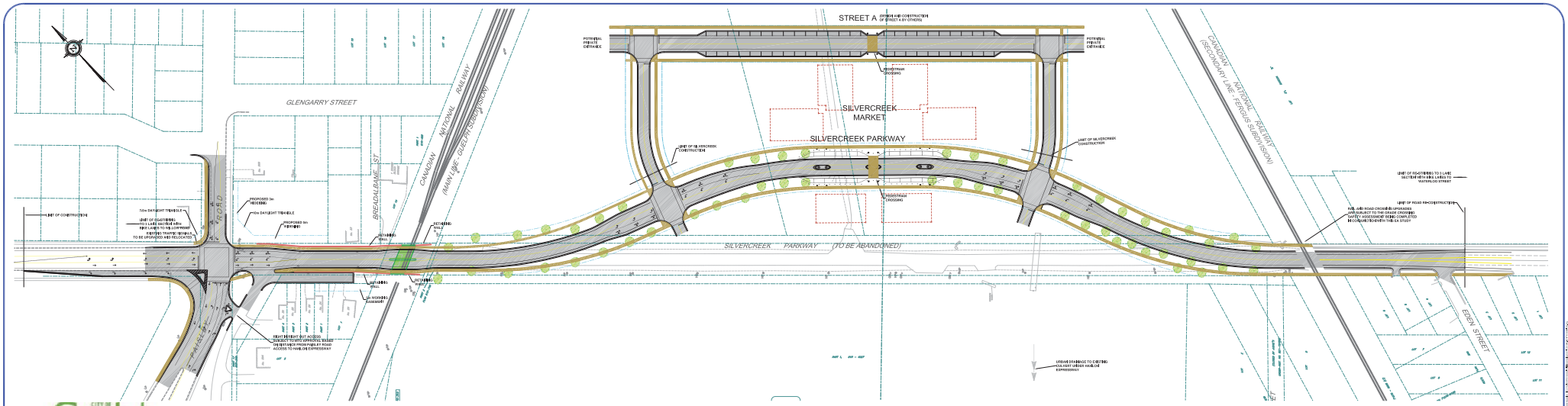
8. A conceptual design for Silvercreek Parkway South has been prepared which incorporates a number of features that provide for all modes of travel including pedestrians, cyclists and motor vehicles and create a traffic calming effect.

Sincerely,
BA Consulting Group Ltd.

Steven Kwan, P.Eng.
Senior Associate

APPENDIX A:
Reduced Silvercreek EA Plan (Not to Scale)

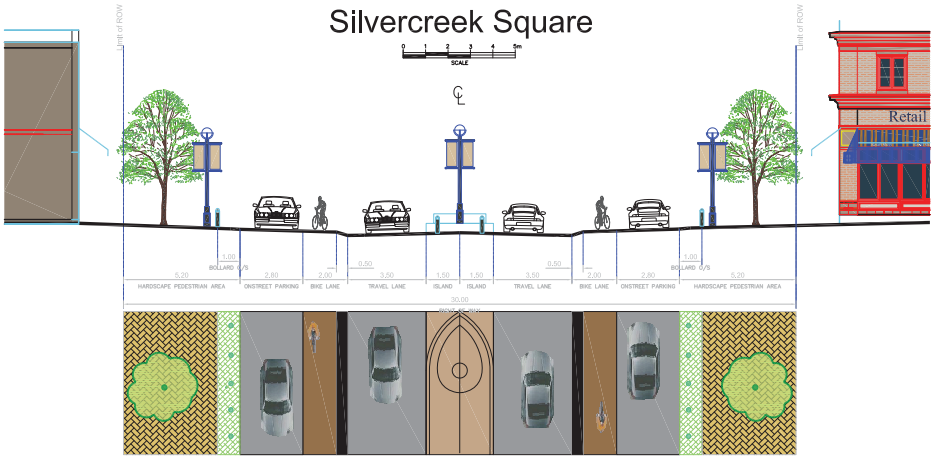
BA Consulting Group Ltd.
300 – 45 St. Clair Ave. W
Toronto ON M4V 1K9
TEL 416 961 7110
EMAIL bagroup@bagroup.com



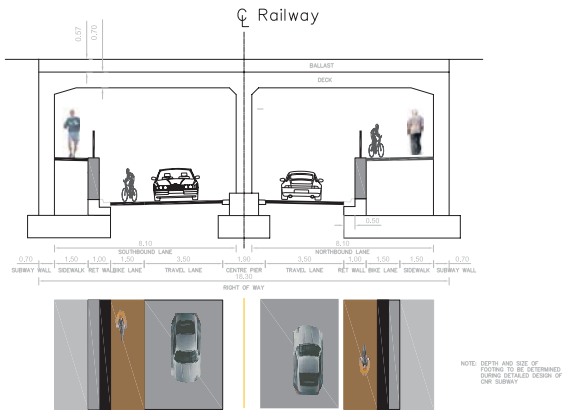
SILVERCREEK PARKWAY EA STUDY
RECOMMENDED SOLUTION - CONCEPT PLAN TO TAC STANDARDS
FROM PAISLEY ROAD TO WATERLOO STREET

SCALE: 1:500 DATE: FEBRUARY 15, 2012

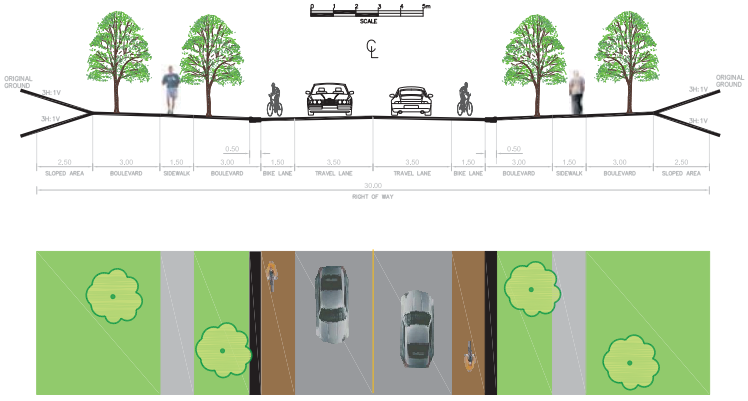
Silvercreek Square



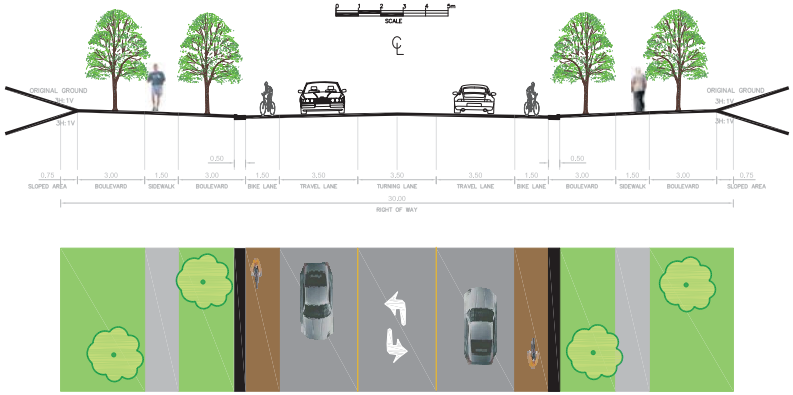
CNR Subway



Outside Silvercreek Square



Outside Silvercreek Square with Turning Lane



SILVERCREEK PARKWAY EA STUDY
TYPICAL CROSS-SECTIONS

SCALE: 1:100 DATE: FEBRUARY 15, 2012

APPENDIX B:
Reduced Plan of Subdivision (Not to Scale)

BA Consulting Group Ltd.
300 – 45 St. Clair Ave. W
Toronto ON M4V 1K9
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EMAIL bagroup@bagroup.com

MOVEMENT
IN URBAN
ENVIRONMENTS BAGRO

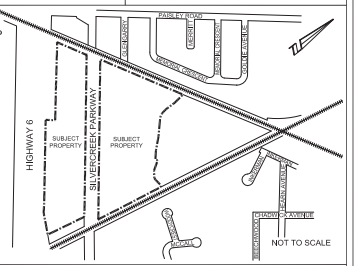
ASTRID J. CLOS
PLANNING CONSULTANTS

423 Woolwich Street, Suite 201
Guelph, Ontario N1H 3X3
Email: astrid.clos@ajcplanning.ca
Phone: (519) 836-7526 (836-PLAN)

DRAFT PLAN OF SUBDIVISION 23T-19001 SILVERCREEK JUNCTION

DATE: JANUARY 11, 2022	SCALE 1:1,000
PROJECT No. 1016	DRAWN BY : G.K.S. / A.R.N.

KEY MAP



LEGAL DESCRIPTION

PART OF LOTS 21 AND 22, DIVISION 'A'
PART OF LOTS 2 AND 3, CONCESSION 1, DIVISION 'E'
ALL OF LOT 10 AND PART OF LOTS 7,8,9,11,12, D & E WEST SIDE OF GUELPH & GALT RAILWAY AND PART OF
NAPOLEON STREET (CLOSED BY INSTRUMENT BS12480), REGISTERED PLAN 52
CITY OF GUELPH

NOTES

1. TOPOGRAPHIC INFORMATION PROVIDED BY BURNSIDE.

LAND USE SCHEDULE

DESCRIPTION	BLOCKS	UNITS	AREA (ha.)
Apartment	1-3	327	2.77
Townhouse	4-17	172	3.88
Mixed Use	18-20	216	2.17
Park	21-23	-	2.483
Open Space	24,25	-	0.41
Stormwater Management	26	-	1.72
Walkway	27-30	-	0.13
Roads	-	-	2.96
TOTAL	30	715	16.52

ADDITIONAL INFORMATION

(UNDER SECTION 51(17) OF THE PLANNING ACT)

INFORMATION REQUIRED BY CLAUSES a,b,c,d,e,f,g,j and l ARE AS SHOWN ON DRAFT PLAN.

h) Municipal Water
i) Silty Sand
k) Municipal Sewer

OWNER'S CERTIFICATE

I AUTHORIZE ASTRID J. CLOS, PLANNING CONSULTANTS TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION.

JACK EISENBERGER, ASO
SILVERCREEK GUELPH DEVELOPMENTS LIMITED

NOVEMBER 18, 2019
DATE

JACK EISENBERGER, ASO
2089248 ONTARIO INC.

NOVEMBER 18, 2019
DATE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

JEFFREY E. BUISMAN O.L.S.
Van Harten Surveying Inc.

NOVEMBER 12, 2019
DATE

Jan 11, 2022 8:52:29 AM (19342-10)
H:\10-19\19342-10\pcad\Draft Plan Subdivision Silvercreek (AU).dwg

APPENDIX C:
Synchro and Arcady Summary Tables and Outputs

BA Consulting Group Ltd.
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MOVEMENT
IN URBAN
ENVIRONMENTS BAGRO

EXISTING & 2021 SIGNALIZED INTERSECTIONS CAPACITY RESULTS

Edinburgh Rd S & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.34 (0.46) [0.25]	B (C) [C]	0.35 (0.46) [0.25]	B (C) [C]	0.35 (0.46) [0.25]	B (C) [C]
EBT	0.76 (0.65) [0.67]	C (C) [C]	0.76 (0.65) [0.68]	C (C) [C]	0.76 (0.65) [0.67]	C (C) [C]
EBR	0.13 (0.11) [0.06]	C (C) [C]	0.13 (0.11) [0.06]	C (C) [C]	0.13 (0.12) [0.07]	C (C) [C]
WBL	0.52 (0.76) [0.50]	C (C) [C]	0.53 (0.78) [0.51]	C (C) [C]	0.53 (0.78) [0.51]	C (C) [C]
WBT	0.50 (0.67) [0.55]	C (C) [C]	0.50 (0.68) [0.55]	C (C) [C]	0.50 (0.68) [0.55]	C (C) [C]
WBR	0.03 (0.05) [0.04]	C (C) [C]	0.03 (0.05) [0.04]	C (C) [C]	0.03 (0.05) [0.05]	C (C) [C]
NBL	0.55 (0.48) [0.24]	B (B) [B]	0.57 (0.50) [0.25]	B (B) [B]	0.58 (0.51) [0.27]	C (B) [B]
NBT	0.53 (0.49) [0.30]	C (C) [B]	0.54 (0.50) [0.30]	C (C) [B]	0.56 (0.52) [0.31]	C (C) [B]
NBR	0.22 (0.21) [0.12]	C (C) [B]	0.23 (0.22) [0.13]	C (C) [B]	0.23 (0.22) [0.13]	C (C) [B]
SBL	0.21 (0.17) [0.12]	B (B) [B]	0.21 (0.17) [0.12]	B (B) [B]	0.24 (0.19) [0.14]	B (B) [B]
SBT	0.58 (0.57) [0.33]	C (C) [B]	0.60 (0.59) [0.33]	C (C) [B]	0.62 (0.61) [0.36]	C (C) [B]
SBR	0.05 (0.05) [0.04]	B (B) [C]	0.05 (0.05) [0.04]	B (B) [C]	0.05 (0.05) [0.04]	B (B) [C]
Overall	**0.65 (0.67) [0.44]**	**C (C) [C]**	**0.66 (0.69) [0.45]**	**C (C) [C]**	**0.67 (0.70) [0.46]**	**C (C) [C]**

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.37 (0.44) [0.19]	B (B) [B]	0.41 (0.51) [0.20]	B (C) [B]	0.53 (0.74) [0.38]	C (D) [C]
EBT	0.28 (0.25) [0.16]	B (B) [B]	0.31 (0.29) [0.17]	B (C) [B]	0.35 (0.32) [0.20]	C (C) [C]
WBTR	0.27 (0.38) [0.24]	B (C) [B]	0.32 (0.47) [0.25]	C (C) [B]	0.38 (0.58) [0.33]	C (D) [C]
NBL	0.73 (0.82) [0.75]	F (E) [F]	0.72 (0.88) [0.79]	E (F) [F]	0.66 (0.94) [0.83]	E (F) [F]
NBLT	0.71 (0.82) [0.74]	F (F) [F]	0.79 (0.87) [0.79]	F (F) [F]	0.83 (0.92) [0.82]	F (F) [F]
NBR	0.15 (0.09) [0.10]	E (E) [E]	0.15 (0.09) [0.10]	E (D) [E]	0.15 (0.09) [0.10]	E (D) [E]
SBL	0.02 (0.11) [0.11]	E (E) [E]	0.02 (0.11) [0.11]	E (E) [E]	0.36 (0.57) [0.69]	E (E) [F]
SBR	0.16 (0.32) [0.10]	E (E) [E]	0.58 (0.78) [0.17]	E (F) [E]	0.86 (0.92) [0.49]	F (F) [E]
Overall	**0.41 (0.52) [0.30]**	**C (D) [C]**	**0.51 (0.65) [0.34]**	**D (D) [D]**	**0.66 (0.84) [0.53]**	**D (E) [D]**

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBT	0.25 (0.22) [0.15]	A (A) [A]	0.26 (0.22) [0.16]	A (A) [A]	0.27 (0.23) [0.17]	A (A) [A]
EBR	0.30 (0.33) [0.24]	A (A) [A]	0.30 (0.33) [0.25]	A (A) [A]	0.30 (0.33) [0.25]	A (A) [A]
WBT	0.23 (0.33) [0.22]	A (A) [A]	0.23 (0.34) [0.22]	A (A) [A]	0.24 (0.35) [0.24]	A (A) [A]
WBR	0.12 (0.13) [0.10]	A (A) [A]	0.19 (0.22) [0.18]	A (A) [A]	0.23 (0.25) [0.21]	A (A) [A]
SBL	0.46 (0.46) [0.40]	D (D) [D]	0.47 (0.48) [0.41]	D (D) [D]	0.47 (0.48) [0.41]	D (D) [D]
SBR	0.06 (0.21) [0.10]	D (D) [D]	0.06 (0.24) [0.15]	D (D) [D]	0.06 (0.24) [0.22]	D (D) [D]
Overall	**0.32 (0.35) [0.26]**	**A (A) [A]**	**0.32 (0.36) [0.27]**	**A (A) [A]**	**0.32 (0.37) [0.27]**	**A (A) [A]**

Wellington St W & Imperial Rd S						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBLT	0.64 (0.63) [0.44]	B (B) [B]	0.65 (0.65) [0.45]	B (B) [B]	0.67 (0.69) [0.48]	B (B) [B]
WBTR	0.44 (0.59) [0.43]	B (B) [B]	0.45 (0.60) [0.44]	B (B) [B]	0.48 (0.63) [0.47]	B (B) [B]
SBL	0.81 (0.76) [0.78]	D (C) [C]	0.82 (0.76) [0.78]	D (C) [C]	0.82 (0.76) [0.78]	D (C) [C]
SBR	0.05 (0.04) [0.04]	B (C) [C]	0.05 (0.04) [0.04]	B (C) [C]	0.05 (0.04) [0.04]	B (C) [C]
Overall	**0.70 (0.67) [0.55]**	**B (B) [B]**	**0.71 (0.68) [0.56]**	**B (B) [B]**	**0.72 (0.71) [0.58]**	**B (B) [B]**

Hanlon Pkwy & Paisley Rd						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.69 (0.84) [0.75]	F (F) [F]	0.69 (0.83) [0.80]	F (F) [F]	0.69 (0.88) [0.81]	F (F) [F]
EBT	0.72 (0.65) [0.51]	E (E) [E]	0.72 (0.63) [0.55]	E (E) [E]	0.73 (0.62) [0.56]	E (E) [E]
EBR	0.20 (0.24) [0.22]	A (A) [A]	0.21 (0.24) [0.22]	A (A) [A]	0.21 (0.24) [0.22]	A (A) [A]
WBL	0.61 (0.69) [0.57]	E (D) [D]	0.33 (0.67) [0.37]	E (E) [D]	0.34 (0.66) [0.38]	D (E) [D]
WBTR	0.24 (0.43) [0.31]	D (D) [D]	0.30 (0.56) [0.39]	E (E) [D]	0.35 (0.60) [0.45]	E (E) [D]
NBL	0.45 (0.91) [0.61]	E (F) [E]	0.39 (0.82) [0.73]	E (E) [E]	0.36 (0.87) [0.76]	E (F) [E]
NBT	0.61 (0.58) [0.53]	C (C) [C]	0.60 (0.54) [0.51]	B (C) [C]	0.62 (0.58) [0.55]	C (C) [C]
NBR	0.12 (0.18) [0.12]	A (A) [A]	0.06 (0.12) [0.06]	A (A) [A]	0.06 (0.12) [0.06]	A (A) [A]
SBL	0.47 (0.59) [0.49]	F (F) [F]	0.47 (0.47) [0.44]	F (F) [F]	0.54 (0.61) [0.60]	F (F) [F]
SBT	0.53 (0.90) [0.62]	C (D) [D]	0.53 (0.84) [0.55]	C (D) [C]	0.55 (0.84) [0.56]	C (D) [C]
SBR	0.03 (0.08) [0.08]	B (C) [C]	0.03 (0.10) [0.08]	B (C) [C]	0.03 (0.10) [0.08]	B (C) [C]
Overall	**0.63 (0.86) [0.64]**	**C (D) [D]**	**0.61 (0.82) [0.61]**	**C (D) [D]**	**0.63 (0.85) [0.63]**	**C (D) [D]**

Edinburgh Rd S & Waterloo Ave						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.22 (0.33) [0.26]	C (C) [D]	0.21 (0.32) [0.27]	C (C) [D]	0.20 (0.32) [0.28]	C (C) [D]
EBTR	0.70 (0.47) [0.44]	D (C) [D]	0.70 (0.45) [0.44]	D (C) [D]	0.72 (0.48) [0.52]	D (C) [D]
WBL	0.56 (0.43) [0.36]	D (C) [D]	0.56 (0.41) [0.36]	D (C) [D]	0.55 (0.42) [0.40]	C (C) [D]
WBTR	0.37 (0.70) [0.41]	C (D) [D]	0.37 (0.70) [0.43]	C (D) [D]	0.36 (0.71) [0.52]	C (D) [D]
NBL	0.04 (0.08) [0.05]	B (B) [A]	0.05 (0.09) [0.05]	B (B) [A]	0.06 (0.13) [0.09]	B (B) [A]
NBTR	0.57 (0.57) [0.43]	C (B) [A]	0.58 (0.59) [0.43]	C (C) [A]	0.60 (0.60) [0.44]	C (C) [A]
SBL	0.11 (0.12) [0.06]	A (A) [A]	0.12 (0.13) [0.06]	A (A) [A]	0.13 (0.14) [0.06]	A (A) [A]
SBTR	0.45 (0.52) [0.39]	A (A) [A]	0.45 (0.53) [0.39]	A (B) [A]	0.47 (0.54) [0.39]	B (B) [A]
Overall	**0.60 (0.60) [0.43]**	**C (C) [B]**	**0.61 (0.62) [0.43]**	**C (C) [B]**	**0.63 (0.63) [0.45]**	**C (C) [B]**

Edinburgh Rd N & Paisley Rd/Paisley St						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.29 (0.37) [0.27]	C (C) [C]	0.29 (0.37) [0.27]	C (C) [B]	0.50 (0.71) [0.51]	C (D) [C]
EBTR	0.68 (0.68) [0.57]	C (C) [C]	0.69 (0.69) [0.58]	C (C) [C]	0.75 (0.74) [0.65]	C (C) [C]
WBL	0.23 (0.29) [0.15]	C (C) [B]	0.23 (0.30) [0.15]	C (C) [B]	0.27 (0.34) [0.17]	C (C) [B]
WBTR	0.52 (0.67) [0.48]	C (C) [C]	0.53 (0.68) [0.49]	C (C) [C]	0.58 (0.75) [0.56]	C (C) [C]
NBL	0.23 (0.42) [0.28]	B (B) [B]	0.23 (0.43) [0.29]	B (B) [B]	0.24 (0.51) [0.32]	B (C) [B]
NBTR	0.56 (0.61) [0.48]	B (B) [B]	0.57 (0.62) [0.49]	B (B) [B]	0.57 (0.62) [0.49]	B (B) [B]
SBL	0.32 (0.36) [0.15]	B (B) [B]	0.32 (0.37) [0.15]	B (B) [B]	0.32 (0.37) [0.15]	B (B) [B]
SBTR	0.53 (0.66) [0.50]	B (B) [B]	0.53 (0.67) [0.50]	B (B) [B]	0.56 (0.73) [0.56]	B (B) [B]
Overall	**0.61 (0.67) [0.53]**	**B (C) [B]**	**0.61 (0.68) [0.53]**	**B (C) [B]**	**0.64 (0.74) [0.59]**	**C (C) [B]**

Silvercreek Pkwy N & Paisley Rd						
	Existing		Future Background 2021		Future Total 2021	
	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.50 (0.68) [0.37]	A (B) [A]	0.36 (0.56) [0.27]	A (B) [A]	0.39 (0.59) [0.29]	A (B) [A]
EBTR	0.37 (0.35) [0.28]	A (A) [A]	0.32 (0.32) [0.24]	A (A) [A]	0.34 (0.32) [0.24]	A (A) [A]
EBR	-- (--) [--]	-- (--) [--]	0.00 (0.00) [0.00]	A (A) [A]	0.03 (0.05) [0.05]	A (A) [A]
WBL	-- (--) [--]	-- (--) [--]	0.13 (0.12) [0.10]	B (C) [B]	0.27 (0.35) [0.30]	C (C) [B]
WBLTR	0.66 (0.78) [0.53]	C (D) [C]	0.59 (0.70) [0.47]	C (C) [B]	0.62 (0.73) [0.49]	C (C) [C]
NBL	-- (--) [--]	-- (--) [--]	0.00 (0.01) [0.01]	A (C) [C]	0.20 (0.19) [0.25]	C (C) [C]
NBLTR	0.00 (0.01) [0.01]	C (C) [C]	0.19 (0.16) [0.17]	C (C) [C]	0.38 (0.32) [0.37]	C (C) [C]
SBL	-- (--) [--]	-- (--) [--]	0.74 (0.76) [0.70]	D (D) [C]	0.86 (0.85) [0.82]	D (D) [D]
SBLT	0.72 (0.72) [0.69]	D (C) [C]	0.14 (0.12) [0.14]	C (C) [C]	0.16 (0.19) [0.21]	C (C) [C]
SBR	0.10 (0.20) [0.14]	C (C) [C]	0.06 (0.17) [0.10]	C (C) [C]	0.06 (0.17) [0.10]	C (C) [C]
Overall	**0.65 (0.75) [0.55]**	**B (C) [B]**	**0.60 (0.70) [0.50]**	**B (C) [B]**	**0.67 (0.74) [0.56]**	**C (C) [C]**

Existing & 2021 UNSIGNALIZED INTERSECTIONS CAPACITY RESULTS

Waterloo Ave & Silvercreek Pkwy S						
	Existing		Future Background 2021		Future Total 2021	
	Delay	LOS	Delay	LOS	Delay	LOS
WBL	7.7 (7.8) [7.5]	A (A) [A]	8.0 (8.1) [7.8]	A (A) [A]	8.5 (8.6) [8.4]	A (A) [A]
NBL	9.7 (10.2) [9.1]	A (B) [A]	11.9 (12.6) [10.8]	B (B) [B]	15.5 (29.4) [16.4]	C (D) [C]

Silvercreek Pkwy S & Street D/Street E						
	Existing		Future Background 2021		Future Total 2021	
	Delay	LOS	Delay	LOS	Delay	LOS
EBLTR	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]	12.5 (15.5) [17.2]	B (C) [C]
WBLR	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]	11.2 (12.7) [13.5]	B (B) [B]
NBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]	7.7 (8.0) [8.0]	A (A) [A]
SBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]	7.5 (7.7) [7.7]	A (A) [A]

Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	Delay	LOS	Delay	LOS	Delay	LOS

2021 TRAFFIC CALMING CIRCLE CAPACITY RESULTS (ARCADY)

Silvercreek Pkwy S & Street A/Street C			
	Future Total 2021		
	V/C	LOS	Delay
EBLTR (Leg 3)	0.09 (0.12) [0.14]	A (A) [A]	3 (4) [4]
WBLTR (Leg 1)	0.04 (0.02) [0.04]	A (A) [A]	3 (3) [4]
NBLTR (Leg 4)	0.18 (0.21) [0.23]	A (A) [A]	3 (3) [4]
SBLTR (Leg 2)	0.17 (0.25) [0.26]	A (A) [A]	3 (4) [4]

EXISTING & 2021 SIGNALIZED INTERSECTIONS QUEUE RESULTS

Edinburgh Rd S & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	11.7 (11.7) [8.5]	19.3 (20.5) [16.2]	11.7 (11.7) [8.5]	19.2 (20.3) [16.1]	11.7 (11.7) [8.4]	19.1 (20.2) [15.9]
EBT	72.6 (52.7) [47.4]	82.7 (63.9) [59.8]	73.6 (53.4) [48.3]	83.5 (64.7) [60.6]	74.6 (53.7) [49.1]	84.4 (64.8) [60.7]
EBR	0.0 (0.0) [0.0]	12.2 (13.4) [10.7]	0.0 (0.0) [0.0]	12.3 (13.4) [10.6]	0.0 (0.0) [0.0]	12.5 (13.8) [12.0]
WBL	11.7 (25.8) [19.1]	19.5 (#52.8) [30.7]	11.7 (26.5) [19.0]	19.4 (#55.2) [30.5]	11.7 (26.6) [18.8]	19.2 (#54.6) [30.3]
WBT	42.7 (62.8) [42.1]	50.8 (75.2) [56.4]	43.5 (63.7) [42.4]	51.7 (75.9) [56.6]	44.3 (64.5) [43.2]	52.4 (76.7) [56.8]
WBR	0.0 (0.0) [0.0]	0.2 (4.1) [3.6]	0.0 (0.0) [0.0]	0.2 (4.1) [3.6]	0.0 (0.0) [0.0]	0.2 (5.0) [5.6]
NBL	22.1 (18.8) [10.1]	#41.3 (34.3) [20.8]	22.6 (19.3) [10.2]	#46.1 (35.4) [20.9]	22.6 (19.8) [11.3]	#49.0 (36.5) [22.8]
NBT	50.2 (49.4) [28.0]	71.7 (72.7) [44.2]	51.2 (50.3) [28.4]	73.4 (74.4) [45.0]	51.8 (51.2) [29.5]	74.0 (76.5) [46.6]
NBR	6.4 (7.2) [0.0]	25.7 (26.4) [14.5]	6.9 (7.7) [0.0]	26.7 (27.4) [14.7]	7.3 (8.0) [0.0]	27.1 (28.1) [14.9]
SBL	4.6 (3.5) [3.6]	9.4 (m6.2) [6.6]	4.4 (3.4) [3.6]	9.2 (m6.0) [6.6]	4.8 (3.8) [4.5]	9.3 (m6.7) [7.8]
SBT	52.0 (55.4) [33.4]	68.4 (75.4) [50.6]	53.5 (56.7) [33.9]	70.0 (73.5) [52.1]	55.0 (57.8) [35.5]	66.5 (69.7) [54.4]
SBR	1.7 (1.4) [0.6]	5.0 (m3.7) [3.7]	1.7 (1.4) [0.6]	4.6 (m3.2) [4.0]	1.8 (1.3) [0.7]	3.2 (m2.5) [4.4]

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	17.6 (19.6) [8.8]	35.9 (40.8) [21.0]	21.4 (26.8) [9.8]	47.1 (47.2) [23.0]	33.5 (43.6) [25.6]	59.6 (63.3) [44.0]
EBT	42.7 (41.5) [23.6]	66.0 (65.6) [39.4]	52.4 (56.4) [26.6]	87.1 (76.3) [43.7]	67.9 (64.2) [39.1]	94.7 (75.7) [52.9]
WBTR	46.3 (71.7) [39.4]	73.5 (111.7) [63.3]	55.0 (94.5) [43.6]	93.9 (128.7) [69.5]	71.7 (112.8) [65.8]	102.7 (132.8) [89.5]
NBL	51.4 (89.7) [58.2]	74.7 (118.2) [82.8]	66.1 (107.6) [76.2]	91.4 (#165.8) [102.7]	64.2 (122.5) [85.3]	91.4 (#189.2) [116.1]
NBLT	52.4 (93.1) [58.4]	75.7 (121.3) [83.0]	79.7 (111.3) [80.1]	106.9 (#168.2) [107.1]	90.8 (125.1) [88.6]	123.0 (#190.0) [119.3]
NBR	0.0 (0.0) [0.0]	26.4 (18.9) [21.1]	0.0 (0.0) [0.0]	25.1 (19.6) [20.1]	0.0 (0.0) [0.0]	25.1 (19.6) [20.2]
SBL	0.3 (1.7) [1.7]	2.6 (6.4) [6.4]	0.3 (1.5) [1.7]	2.4 (5.9) [6.4]	5.0 (8.0) [9.8]	13.4 (#23.5) [#26.7]
SBR	0.0 (7.1) [0.0]	29.9 (38.3) [23.7]	19.5 (49.8) [0.0]	58.4 (86.4) [29.8]	58.3 (84.4) [24.6]	103.9 (#151.0) [63.5]

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBT	16.9 (14.5) [9.4]	24.8 (21.3) [14.0]	17.5 (14.8) [9.6]	25.6 (22.0) [14.4]	18.1 (16.1) [10.5]	26.5 (23.4) [16.1]
EBR	0.0 (0.0) [0.0]	7.6 (7.8) [6.7]	0.0 (0.0) [0.0]	7.7 (8.0) [6.8]	0.4 (0.0) [0.0]	8.2 (8.0) [7.0]
WBT	15.0 (25.1) [14.3]	22.0 (35.3) [20.5]	15.4 (26.0) [14.6]	22.6 (36.8) [21.0]	16.3 (27.3) [15.6]	24.2 (38.6) [23.1]
WBR	1.2 (3.4) [1.0]	6.6 (9.6) [5.7]	2.1 (6.0) [1.8]	9.3 (14.8) [8.1]	3.0 (7.3) [2.7]	11.0 (17.0) [10.2]
SBL	16.7 (17.7) [14.7]	26.3 (27.7) [24.0]	17.2 (18.7) [15.3]	27.1 (28.9) [24.8]	17.2 (18.7) [15.3]	27.1 (28.9) [24.6]
SBR	0.0 (5.8) [0.6]	13.7 (19.1) [17.2]	0.0 (6.7) [2.2]	14.0 (20.2) [19.2]	0.0 (6.7) [5.1]	14.0 (20.2) [22.2]

Wellington St W & Imperial Rd S						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBLT	55.6 (48.8) [30.1]	86.8 (85.0) [52.4]	57.3 (50.6) [31.1]	89.0 (87.8) [53.9]	59.7 (55.6) [34.5]	92.9 (96.7) [59.4]
WBTR	36.8 (52.8) [30.8]	57.7 (89.6) [54.6]	37.8 (54.5) [32.2]	58.9 (92.0) [56.7]	41.2 (58.8) [37.0]	63.6 (99.0) [63.7]
SBL	62.5 (52.8) [58.0]	89.7 (73.5) [79.3]	63.4 (53.4) [58.5]	91.3 (74.2) [80.4]	63.4 (53.4) [58.5]	91.3 (74.2) [80.4]
SBR	0.0 (0.0) [0.0]	8.1 (7.3) [7.3]	0.0 (0.0) [0.0]	8.1 (7.3) [7.3]	0.0 (0.0) [0.0]	8.1 (7.3) [7.3]

Hanlon Pkwy & Paisley Rd						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	32.9 (39.5) [42.5]	53.0 (#86.0) [66.7]	32.8 (39.8) [43.4]	52.9 (#69.8) [65.5]	32.7 (40.0) [43.3]	52.9 (#78.6) [65.5]
EBT	56.5 (61.0) [49.5]	70.7 (83.3) [63.6]	57.4 (62.1) [51.5]	71.4 (79.1) [63.5]	61.1 (65.6) [55.6]	75.6 (84.6) [67.6]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
WBL	46.9 (60.9) [49.1]	62.2 (86.8) [68.3]	18.4 (38.6) [24.6]	29.9 (58.1) [37.6]	18.2 (37.6) [24.2]	29.7 (58.1) [37.0]
WBTR	30.2 (65.6) [45.3]	38.5 (83.1) [56.7]	33.2 (76.0) [50.1]	42.8 (93.7) [60.7]	39.1 (84.1) [60.4]	49.4 (105.0) [71.5]
NBL	27.2 (~85.0) [60.1]	38.4 (#129.0) [77.6]	26.5 (71.2) [62.4]	38.0 (#107.6) [78.6]	26.2 (72.5) [62.4]	37.2 (#107.6) [78.6]
NBT	140.9 (132.6) [121.3]	204.9 (155.6) [153.1]	134.7 (116.1) [112.5]	196.6 (149.4) [159.0]	141.9 (128.0) [122.9]	206.5 (154.7) [174.3]
NBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
SBL	8.9 (14.1) [12.3]	20.2 (28.5) [26.0]	8.9 (14.0) [12.3]	20.2 (27.7) [25.3]	15.7 (28.0) [28.0]	30.1 (47.2) [46.4]
SBT	105.4 (228.9) [131.6]	160.1 (257.4) [168.6]	106.7 (231.1) [120.3]	156.0 (257.3) [168.6]	110.6 (232.3) [122.8]	162.7 (257.3) [171.3]
SBR	0.0 (0.0) [0.0]	0.0 (13.0) [14.9]	0.0 (5.8) [0.0]	0.0 (18.2) [14.1]	0.0 (5.8) [0.0]	0.0 (18.2) [14.3]

Edinburgh Rd S & Waterloo Ave						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.1 (7.1) [7.4]	16.6 (16.1) [15.6]	8.1 (7.1) [7.4]	16.5 (15.9) [15.6]	7.9 (7.0) [7.3]	15.7 (15.6) [15.8]
EBTR	45.3 (27.6) [17.8]	65.5 (44.0) [30.9]	46.2 (27.4) [17.8]	66.5 (43.3) [30.9]	50.7 (31.0) [21.9]	70.2 (47.1) [37.4]
WBL	13.4 (14.8) [10.3]	26.3 (27.1) [19.8]	13.4 (14.6) [10.3]	26.2 (26.6) [19.8]	13.1 (14.5) [10.2]	25.6 (26.2) [20.2]
WBTR	21.6 (45.2) [15.3]	35.6 (65.7) [29.0]	21.5 (46.9) [16.6]	35.2 (67.3) [30.4]	23.1 (50.4) [21.7]	36.2 (70.5) [37.0]
NBL	1.7 (1.8) [0.9]	m7.5 (m10.5) [4.4]	1.8 (1.8) [0.9]	m7.4 (m10.6) [4.3]	2.4 (2.7) [2.2]	m8.9 (m15.4) [7.1]
NBTR	88.8 (70.6) [28.7]	157.2 (145.6) [82.7]	91.8 (74.7) [29.5]	160.1 (149.5) [86.5]	94.2 (75.9) [28.2]	160.7 (151.9) [91.9]
SBL	2.6 (2.8) [1.3]	8.7 (9.1) [5.7]	2.7 (2.9) [1.3]	8.9 (9.5) [5.7]	2.9 (3.0) [1.4]	9.8 (10.0) [5.7]
SBTR	42.6 (53.7) [27.3]	81.3 (100.9) [65.9]	43.6 (56.5) [27.7]	83.7 (106.4) [66.7]	46.8 (59.1) [29.9]	90.9 (111.9) [66.7]

Edinburgh Rd N & Paisley Rd/Paisley St						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.1 (7.6) [7.4]	m19.1 (m18.3) [m19.0]	7.6 (7.1) [5.5]	m17.2 (m17.0) [m16.8]	11.5 (12.0) [12.7]	m22.7 (m#36.3) [m23.8]
EBTR	43.7 (43.1) [30.6]	73.9 (72.3) [58.0]	47.0 (40.6) [27.0]	67.1 (67.8) [53.7]	42.1 (43.8) [48.7]	m#98.2 (m#75.4) [57.7]
WBL	5.2 (6.4) [3.9]	13.8 (16.5) [10.9]	5.2 (6.4) [3.9]	13.9 (16.6) [10.9]	5.3 (6.5) [3.9]	14.5 (17.3) [11.1]
WBTR	35.1 (51.8) [32.9]	59.6 (82.8) [55.7]	36.0 (52.6) [33.7]	61.0 (84.1) [56.9]	40.3 (60.0) [40.2]	67.1 (#104.0) [66.2]
NBL	5.9 (9.4) [8.7]	14.3 (23.2) [19.1]	5.9 (9.5) [8.7]	14.3 (23.6) [19.2]	6.0 (10.1) [8.9]	14.6 (27.3) [20.2]
NBTR	49.4 (57.7) [41.7]	78.1 (90.3) [65.6]	50.4 (58.6) [42.3]	79.1 (91.4) [66.9]	50.4 (58.6) [42.3]	79.1 (91.4) [66.9]
SBL	8.0 (8.6) [4.0]	19.0 (20.7) [10.4]	8.0 (8.7) [4.0]	19.1 (20.9) [10.4]	8.0 (8.7) [4.0]	19.1 (20.9) [10.4]
SBTR	44.2 (63.8) [42.2]	70.6 (100.2) [67.0]	44.9 (65.2) [42.8]	71.5 (102.2) [67.8]	47.9 (73.6) [48.5]	76.5 (116.4) [77.3]

Silvercreek Pkwy N & Paisley Rd						
	Existing		Future Background 2021		Future Total 2021	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	12.2 (16.1) [10.0]	23.4 (#48.1) [22.9]	9.4 (13.7) [7.6]	18.2 (27.0) [18.0]	11.1 (15.4) [8.8]	18.2 (27.0) [18.0]
EBTR	27.2 (27.3) [19.5]	46.4 (51.9) [40.2]	23.3 (24.3) [16.2]	39.2 (44.5) [33.7]	26.8 (26.5) [17.9]	39.2 (43.9) [33.0]
EBR	-- (--) [--]	-- (--) [--]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	3.7 (5.4) [5.6]
WBL	-- (--) [--]	-- (--) [--]	5.9 (6.9) [5.0]	m15.3 (m12.0) [m15.0]	15.2 (22.5) [14.9]	28.6 (m31.3) [39.6]
WBLTR	72.1 (95.3) [57.9]	101.2 (#150.8) [98.8]	61.4 (85.0) [38.9]	89.4 (#135.3) [88.1]	64.5 (85.9) [46.5]	89.4 (#132.9) [86.8]
NBL	-- (--) [--]	-- (--) [--]	0.0 (0.3) [0.3]	0.0 (1.7) [1.7]	7.5 (7.3) [9.2]	15.2 (16.5) [19.2]
NBLTR	0.1 (0.2) [0.5]	1.1 (1.7) [2.6]	7.2 (6.3) [6.3]	16.2 (17.0) [16.7]	15.0 (12.9) [14.8]	28.7 (30.0) [32.6]
SBL	-- (--) [--]	-- (--) [--]	28.4 (31.6) [27.2]	42.2 (53.0) [44.6]	28.1 (31.3) [27.3]	#52.0 (#65.3) [#55.5]
SBLT	28.6 (31.6) [27.9]	41.5 (51.2) [45.2]	7.2 (6.2) [6.9]	13.7 (13.9) [14.5]	8.7 (10.2) [10.9]	16.8 (20.8) [21.3]
SBR	0.0 (0.0) [0.0]	9.9 (17.4) [14.7]	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]

95th percentile volume exceeds capacity, queue may be longer.

m volume for 95th percentile queue is metered by upstream signal.

2026 SIGNALIZED INTERSECTIONS CAPACITY RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.36 (0.49) [0.27]	B (C) [C]	0.36 (0.49) [0.27]	B (C) [C]
EBT	0.76 (0.65) [0.67]	C (C) [C]	0.76 (0.65) [0.67]	C (C) [C]
EBR	0.13 (0.11) [0.07]	C (C) [C]	0.13 (0.12) [0.07]	C (C) [C]
WBL	0.55 (0.81) [0.53]	C (C) [C]	0.56 (0.81) [0.53]	C (C) [C]
WBT	0.50 (0.68) [0.55]	C (C) [C]	0.51 (0.69) [0.56]	C (C) [C]
WBR	0.03 (0.05) [0.05]	B (C) [C]	0.03 (0.05) [0.06]	B (C) [C]
NBL	0.59 (0.52) [0.26]	C (B) [B]	0.60 (0.54) [0.29]	C (B) [B]
NBT	0.56 (0.52) [0.31]	C (C) [B]	0.58 (0.54) [0.32]	C (C) [B]
NBR	0.24 (0.23) [0.13]	C (C) [B]	0.24 (0.23) [0.13]	C (C) [B]
SBL	0.22 (0.18) [0.12]	B (B) [B]	0.24 (0.20) [0.15]	B (B) [B]
SBT	0.63 (0.62) [0.36]	C (C) [B]	0.64 (0.65) [0.38]	C (C) [B]
SBR	0.06 (0.05) [0.04]	B (B) [B]	0.06 (0.05) [0.04]	B (B) [C]
Overall	**0.68 (0.72) [0.46]**	**C (C) [C]**	**0.69 (0.73) [0.47]**	**C (C) [C]**

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.44 (0.55) [0.21]	B (C) [B]	0.56 (0.77) [0.40]	C (D) [C]
EBT	0.32 (0.30) [0.18]	B (C) [B]	0.36 (0.34) [0.21]	C (C) [C]
WBTR	0.33 (0.49) [0.26]	C (D) [B]	0.40 (0.61) [0.35]	C (D) [C]
NBL	0.71 (0.87) [0.80]	E (F) [F]	0.67 (0.94) [0.83]	E (F) [F]
NBLT	0.78 (0.86) [0.79]	E (E) [E]	0.84 (0.94) [0.82]	F (F) [F]
NBR	0.16 (0.09) [0.10]	E (D) [E]	0.16 (0.09) [0.10]	E (D) [E]
SBL	0.02 (0.11) [0.11]	E (E) [E]	0.36 (0.57) [0.69]	E (E) [F]
SBR	0.62 (0.81) [0.17]	E (F) [E]	0.87 (0.93) [0.53]	F (F) [E]
Overall	**0.54 (0.68) [0.35]**	**D (D) [D]**	**0.68 (0.86) [0.55]**	**D (E) [D]**

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBT	0.26 (0.23) [0.16]	A (A) [A]	0.27 (0.24) [0.18]	A (A) [A]
EBR	0.31 (0.34) [0.25]	A (A) [A]	0.32 (0.34) [0.25]	A (A) [A]
WBT	0.24 (0.35) [0.23]	A (A) [A]	0.25 (0.36) [0.24]	A (A) [A]
WBR	0.20 (0.22) [0.18]	A (A) [A]	0.23 (0.25) [0.22]	A (A) [A]
SBL	0.50 (0.50) [0.44]	D (D) [D]	0.50 (0.50) [0.43]	D (D) [D]
SBR	0.07 (0.26) [0.24]	D (D) [D]	0.07 (0.26) [0.31]	D (D) [D]
Overall	**0.34 (0.37) [0.28]**	**A (A) [A]**	**0.34 (0.38) [0.28]**	**A (A) [A]**

Wellington St W & Imperial Rd S				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBLT	0.67 (0.70) [0.48]	B (B) [B]	0.69 (0.74) [0.52]	B (B) [B]
WBTR	0.47 (0.63) [0.45]	B (B) [B]	0.49 (0.65) [0.49]	B (B) [B]
SBL	0.83 (0.77) [0.79]	D (C) [C]	0.83 (0.77) [0.79]	D (C) [C]
SBR	0.05 (0.04) [0.04]	B (C) [C]	0.05 (0.04) [0.04]	B (C) [C]
Overall	**0.73 (0.72) [0.58]**	**B (B) [B]**	**0.74 (0.75) [0.61]**	**B (B) [B]**

Hanlon Pkwy & Paisley Rd				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.70 (0.87) [0.82]	F (F) [F]	0.71 (0.93) [0.84]	F (F) [F]
EBT	0.72 (0.62) [0.55]	E (E) [E]	0.73 (0.61) [0.57]	E (E) [E]
EBR	0.21 (0.25) [0.23]	A (A) [A]	0.21 (0.25) [0.23]	A (A) [A]
WBL	0.35 (0.71) [0.39]	D (E) [D]	0.37 (0.70) [0.40]	D (E) [D]
WBTR	0.29 (0.57) [0.39]	D (E) [D]	0.35 (0.61) [0.46]	E (E) [D]
NBL	0.40 (0.86) [0.73]	E (F) [E]	0.37 (0.93) [0.76]	E (F) [E]
NBT	0.65 (0.58) [0.55]	C (C) [C]	0.67 (0.62) [0.59]	C (C) [C]
NBR	0.07 (0.13) [0.06]	A (A) [A]	0.07 (0.13) [0.06]	A (A) [A]
SBL	0.47 (0.47) [0.44]	F (F) [F]	0.54 (0.61) [0.63]	F (F) [F]
SBT	0.58 (0.90) [0.60]	C (D) [C]	0.60 (0.91) [0.61]	C (D) [C]
SBR	0.03 (0.11) [0.08]	B (C) [C]	0.03 (0.11) [0.09]	B (C) [C]
Overall	**0.65 (0.88) [0.65]**	**C (D) [D]**	**0.67 (0.90) [0.67]**	**C (D) [D]**

Edinburgh Rd S & Waterloo Ave				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.21 (0.32) [0.28]	C (C) [D]	0.20 (0.32) [0.28]	C (C) [D]
EBTR	0.71 (0.46) [0.46]	D (C) [D]	0.72 (0.49) [0.54]	D (C) [D]
WBL	0.56 (0.41) [0.36]	D (C) [D]	0.55 (0.42) [0.40]	C (C) [D]
WBTR	0.38 (0.71) [0.46]	C (D) [D]	0.37 (0.72) [0.54]	C (D) [D]
NBL	0.05 (0.09) [0.06]	B (B) [A]	0.06 (0.14) [0.10]	B (B) [A]
NBTR	0.60 (0.61) [0.44]	C (C) [A]	0.62 (0.62) [0.45]	C (C) [B]
SBL	0.12 (0.14) [0.06]	A (A) [A]	0.13 (0.14) [0.06]	A (A) [A]
SBTR	0.47 (0.55) [0.40]	A (B) [A]	0.49 (0.56) [0.41]	B (B) [A]
Overall	**0.63 (0.63) [0.45]**	**C (C) [B]**	**0.65 (0.65) [0.46]**	**C (C) [B]**

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.32 (0.42) [0.29]	C (C) [B]	0.54 (0.78) [0.54]	C (D) [C]
EBTR	0.72 (0.71) [0.60]	C (C) [C]	0.78 (0.75) [0.66]	C (C) [C]
WBL	0.25 (0.31) [0.16]	C (C) [B]	0.29 (0.35) [0.18]	C (C) [B]
WBTR	0.55 (0.70) [0.50]	C (C) [C]	0.60 (0.77) [0.57]	C (C) [C]
NBL	0.26 (0.47) [0.31]	B (B) [B]	0.27 (0.57) [0.35]	B (C) [B]
NBTR	0.58 (0.64) [0.50]	B (B) [B]	0.58 (0.64) [0.50]	B (B) [B]
SBL	0.35 (0.41) [0.15]	B (B) [B]	0.35 (0.41) [0.15]	B (B) [B]
SBTR	0.55 (0.69) [0.51]	B (B) [B]	0.58 (0.75) [0.57]	B (C) [B]
Overall	**0.63 (0.70) [0.55]**	**B (C) [B]**	**0.66 (0.76) [0.61]**	**C (C) [B]**

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2026		Future Total 2026	
	V/C	LOS	V/C	LOS
EBL	0.38 (0.59) [0.29]	A (B) [A]	0.41 (0.62) [0.30]	A (B) [A]
EBTR	0.33 (0.33) [0.25]	A (A) [A]	0.35 (0.33) [0.25]	A (A) [A]
EBR	0.00 (0.00) [0.00]	A (A) [A]	0.03 (0.05) [0.05]	A (A) [A]
WBL	0.13 (0.12) [0.10]	B (C) [B]	0.28 (0.36) [0.30]	C (C) [B]
WBLTR	0.61 (0.73) [0.48]	C (C) [C]	0.64 (0.75) [0.50]	C (C) [C]
NBL	0.00 (0.01) [0.01]	A (C) [C]	0.20 (0.19) [0.25]	C (C) [C]
NBLTR	0.19 (0.16) [0.17]	C (C) [C]	0.38 (0.32) [0.37]	C (C) [C]
SBL	0.74 (0.76) [0.70]	D (D) [C]	0.86 (0.85) [0.82]	D (D) [D]
SBLT	0.14 (0.12) [0.14]	C (C) [C]	0.16 (0.19) [0.21]	C (C) [C]
SBR	0.06 (0.17) [0.10]	C (C) [C]	0.06 (0.17) [0.10]	C (C) [C]
Overall	**0.61 (0.72) [0.51]**	**B (C) [B]**	**0.68 (0.76) [0.57]**	**C (C) [C]**

2026 UNSIGNALIZED INTERSECTIONS CAPACITY RESULTS

Waterloo Ave & Silvercreek Pkwy S				
	Future Background 2026		Future Total 2026	
	Delay	LOS	Delay	LOS
WBL	8.1 (8.1) [7.8]	A (A) [A]	8.5 (8.6) [8.4]	A (A) [A]
NBL	11.9 (12.7) [10.8]	B (B) [B]	15.8 (30.8) [16.7]	C (D) [C]

Silvercreek Pkwy S & Street D/Street E				
	Future Background 2026		Future Total 2026	
	Delay	LOS	Delay	LOS
EBLTR	-- (--) [--]	-- (--) [--]	12.5 (15.5) [17.2]	B (C) [C]
WBLR	-- (--) [--]	-- (--) [--]	11.2 (12.7) [13.5]	B (B) [B]
NBL	-- (--) [--]	-- (--) [--]	7.7 (8.0) [8.0]	A (A) [A]
SBL	-- (--) [--]	-- (--) [--]	7.5 (7.7) [7.7]	A (A) [A]

Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W				
	Future Background 2026		Future Total 2026	
	Delay	LOS	Delay	LOS

2026 TRAFFIC CALMING CIRCLE CAPACITY RESULTS (ARCADY)

Silvercreek Pkwy S & Street A/Street C			
	Future Total 2026		
	V/C	LOS	Delay
EBLTR (Leg 3)	0.09 (0.12) [0.14]	A (A) [A]	3 (4) [4]
WBLTR (Leg 1)	0.04 (0.02) [0.04]	A (A) [A]	3 (3) [4]
NBLTR (Leg 4)	0.18 (0.21) [0.23]	A (A) [A]	3 (3) [4]
SBLTR (Leg 2)	0.17 (0.25) [0.26]	A (A) [A]	3 (4) [4]

2026 SIGNALIZED INTERSECTIONS QUEUE RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	12.1 (12.3) [9.0]	19.5 (20.8) [16.7]	12.1 (12.3) [8.8]	19.4 (20.4) [16.8]
EBT	75.4 (54.5) [49.1]	85.3 (65.6) [60.7]	76.2 (54.8) [49.3]	86.2 (65.3) [61.5]
EBR	0.0 (0.0) [0.0]	12.2 (13.3) [11.6]	0.0 (0.0) [0.0]	12.4 (13.5) [12.2]
WBL	12.2 (27.2) [19.4]	19.7 (#56.8) [31.2]	12.2 (27.3) [18.9]	19.6 (#54.9) [31.3]
WBT	44.1 (65.3) [43.8]	52.2 (77.5) [57.3]	45.0 (66.2) [43.9]	53.1 (77.5) [58.4]
WBR	0.0 (0.0) [0.0]	0.2 (5.0) [4.5]	0.0 (0.0) [0.0]	0.2 (5.8) [6.5]
NBL	22.7 (19.8) [10.8]	#41.6 (36.8) [21.8]	22.7 (20.4) [12.2]	#44.1 (38.4) [23.4]
NBT	52.6 (51.6) [29.4]	74.7 (77.3) [46.2]	53.1 (52.6) [31.1]	75.4 (80.0) [47.4]
NBR	7.7 (8.4) [0.0]	28.0 (28.9) [15.1]	7.8 (8.8) [0.0]	28.2 (30.1) [15.2]
SBL	4.5 (3.3) [3.6]	8.9 (m5.9) [6.4]	4.6 (3.6) [4.4]	9.2 (m6.5) [7.6]
SBT	55.0 (58.5) [35.4]	70.6 (73.0) [54.4]	56.4 (59.5) [37.6]	65.3 (69.2) [56.2]
SBR	2.1 (1.8) [0.8]	4.8 (m3.3) [4.8]	2.2 (1.7) [0.9]	3.1 (m2.5) [4.9]

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	23.4 (28.7) [10.5]	50.4 (48.3) [24.2]	35.6 (44.8) [26.6]	61.1 (68.8) [45.2]
EBT	56.4 (60.1) [27.3]	92.4 (78.5) [44.7]	72.0 (66.3) [40.1]	97.2 (77.9) [53.9]
WBTR	59.5 (100.8) [45.5]	100.0 (133.0) [72.3]	76.3 (116.9) [68.4]	105.7 (136.7) [92.6]
NBL	67.3 (110.2) [77.5]	92.8 (#173.4) [104.5]	65.8 (124.8) [86.0]	93.8 (#193.7) [116.9]
NBLT	81.3 (112.8) [80.3]	108.2 (#174.2) [107.3]	92.9 (130.4) [89.7]	126.2 (#200.5) [121.0]
NBR	0.0 (0.0) [0.0]	25.1 (20.2) [20.7]	0.0 (0.0) [0.0]	25.4 (20.2) [20.8]
SBL	0.3 (1.5) [1.7]	2.4 (5.9) [6.4]	5.0 (8.0) [9.8]	13.5 (#24.0) [#26.7]
SBR	23.4 (52.8) [0.0]	62.4 (90.0) [29.9]	61.5 (88.0) [28.5]	108.4 (#156.4) [67.9]

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBT	18.5 (15.6) [9.9]	27.0 (23.0) [15.5]	19.0 (16.8) [10.9]	27.8 (24.6) [17.6]
EBR	0.3 (0.0) [0.0]	8.4 (8.2) [7.2]	0.8 (0.0) [0.0]	9.2 (8.2) [7.5]
WBT	16.3 (27.3) [15.3]	24.1 (38.6) [22.8]	17.5 (28.6) [16.3]	25.6 (40.5) [25.3]
WBR	2.5 (6.3) [2.1]	10.0 (15.4) [9.0]	3.5 (7.6) [3.1]	11.9 (17.7) [11.4]
SBL	18.7 (19.8) [16.9]	28.8 (30.2) [26.5]	18.7 (19.8) [16.9]	28.8 (30.2) [26.2]
SBR	0.0 (7.6) [5.4]	14.3 (21.7) [23.0]	0.0 (7.6) [8.3]	14.3 (21.7) [26.0]

Wellington St W & Imperial Rd S				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBLT	60.1 (55.0) [33.1]	91.9 (96.4) [57.3]	62.7 (60.4) [36.8]	96.1 (#118.3) [63.1]
WBTR	39.6 (57.8) [33.7]	60.8 (97.4) [58.8]	43.1 (62.3) [38.6]	65.6 (104.5) [65.8]
SBL	64.9 (54.9) [60.1]	94.0 (75.8) [82.2]	64.9 (54.9) [60.1]	94.0 (75.8) [82.6]
SBR	0.0 (0.0) [0.0]	8.4 (7.2) [7.2]	0.0 (0.0) [0.0]	8.4 (7.2) [7.3]

Hanlon Pkwy & Paisley Rd				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	34.6 (41.4) [45.1]	54.9 (#76.5) [68.6]	34.5 (42.5) [44.9]	54.8 (#85.1) [#70.9]
EBT	59.4 (62.9) [52.1]	73.5 (81.2) [64.8]	62.9 (67.4) [56.1]	77.0 (86.5) [70.8]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
WBL	19.7 (39.4) [25.7]	31.5 (60.0) [40.1]	19.6 (39.1) [25.3]	32.4 (60.0) [40.7]
WBTR	33.8 (76.5) [50.4]	43.1 (95.7) [62.4]	39.8 (86.0) [60.5]	51.6 (107.2) [75.6]
NBL	27.4 (75.9) [64.0]	38.8 (#112.0) [80.5]	27.1 (76.3) [64.0]	37.8 (#112.0) [80.5]
NBT	154.5 (134.0) [128.0]	225.1 (166.2) [172.9]	162.3 (143.2) [140.2]	225.1 (172.1) [175.8]
NBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
SBL	8.9 (14.0) [12.3]	20.2 (27.7) [25.3]	15.7 (28.0) [28.0]	30.1 (47.2) [47.3]
SBT	121.2 (255.7) [137.1]	177.8 (292.7) [184.8]	125.4 (255.7) [140.4]	178.2 (292.7) [181.5]
SBR	0.0 (6.5) [0.0]	0.0 (19.1) [14.2]	0.0 (6.5) [0.9]	0.0 (19.1) [15.0]

Edinburgh Rd S & Waterloo Ave				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.1 (7.1) [7.4]	16.4 (15.9) [15.6]	7.8 (7.0) [7.3]	15.6 (15.5) [15.8]
EBTR	47.0 (28.3) [18.9]	67.1 (44.3) [32.2]	51.6 (31.9) [23.3]	71.3 (48.2) [39.2]
WBL	13.3 (14.6) [10.2]	26.1 (26.5) [19.8]	13.1 (14.4) [10.1]	25.4 (26.0) [20.3]
WBTR	22.6 (47.9) [18.1]	36.5 (68.3) [32.2]	23.9 (51.3) [23.1]	37.1 (71.5) [38.8]
NBL	2.0 (1.9) [0.9]	m7.2 (m10.7) [4.7]	2.7 (2.9) [2.2]	m8.8 (m16.1) [7.8]
NBTR	97.7 (80.3) [30.9]	163.7 (157.0) [94.5]	100.0 (82.4) [30.1]	164.2 (161.7) [97.1]
SBL	2.7 (2.9) [1.3]	9.1 (9.7) [5.7]	2.9 (3.1) [1.4]	10.0 (10.3) [5.7]
SBTR	46.3 (59.1) [29.5]	88.5 (111.5) [69.7]	49.6 (61.9) [32.0]	96.2 (117.4) [69.7]

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.3 (7.8) [6.3]	m18.7 (m18.3) [m18.2]	12.2 (12.9) [13.8]	m23.7 (m#40.6) [m25.2]
EBTR	44.5 (42.2) [25.2]	#78.0 (73.6) [55.6]	44.6 (45.4) [50.0]	m#104.5 (m#101.6) [59.4]
WBL	5.2 (6.4) [3.9]	14.1 (16.8) [11.0]	5.3 (6.6) [3.9]	14.8 (17.5) [11.2]
WBTR	37.4 (54.4) [34.6]	63.0 (86.9) [58.1]	41.7 (61.9) [41.3]	69.3 (#107.8) [67.7]
NBL	6.5 (10.2) [9.2]	15.7 (26.3) [20.5]	6.6 (10.9) [9.5]	16.0 (#35.2) [21.6]
NBTR	52.5 (61.1) [43.6]	82.5 (95.3) [68.4]	52.5 (61.1) [43.6]	82.5 (95.3) [68.4]
SBL	8.6 (9.4) [4.1]	20.6 (22.9) [10.4]	8.6 (9.4) [4.1]	20.6 (22.9) [10.4]
SBTR	47.0 (67.9) [44.2]	74.8 (106.6) [70.0]	50.1 (76.5) [50.1]	80.0 (121.5) [79.6]

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2026		Future Total 2026	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	9.8 (14.0) [8.0]	18.8 (27.8) [18.7]	11.5 (15.8) [9.1]	18.8 (27.8) [18.7]
EBTR	24.3 (25.2) [16.9]	40.7 (46.3) [34.9]	28.0 (27.5) [18.6]	40.7 (45.4) [34.3]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	3.7 (5.4) [5.6]
WBL	5.8 (6.9) [5.0]	m15.0 (m11.3) [m15.0]	15.2 (22.6) [15.1]	m28.5 (m30.1) [39.7]
WBLTR	63.9 (88.8) [41.2]	92.3 (#141.1) [90.6]	66.9 (89.1) [49.8]	92.2 (m#136.7) [88.8]
NBL	0.0 (0.3) [0.3]	0.0 (1.7) [1.7]	7.5 (7.3) [9.2]	15.2 (16.5) [19.2]
NBLTR	7.2 (6.3) [6.3]	16.2 (17.0) [16.7]	15.0 (12.9) [14.8]	28.7 (30.0) [32.6]
SBL	28.4 (31.6) [27.2]	42.2 (53.0) [44.6]	28.1 (31.3) [27.3]	#52.0 (#65.3) [#55.5]
SBLT	7.2 (6.2) [6.9]	13.7 (13.9) [14.5]	8.7 (10.2) [10.9]	16.8 (20.8) [21.3]
SBR	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]

95th percentile volume exceeds capacity, queue may be longer.

m volume for 95th percentile queue is metered by upstream signal.

2031 SIGNALIZED INTERSECTIONS CAPACITY RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.36 (0.50) [0.27]	B (C) [C]	0.37 (0.51) [0.27]	B (C) [C]
EBT	0.77 (0.65) [0.67]	C (C) [C]	0.77 (0.65) [0.68]	C (C) [C]
EBR	0.13 (0.12) [0.07]	C (C) [C]	0.14 (0.12) [0.07]	C (C) [C]
WBL	0.57 (0.84) [0.54]	C (D) [C]	0.57 (0.84) [0.55]	C (D) [C]
WBT	0.51 (0.69) [0.56]	C (C) [C]	0.51 (0.69) [0.56]	C (C) [C]
WBR	0.04 (0.05) [0.05]	B (C) [C]	0.04 (0.05) [0.06]	B (C) [C]
NBL	0.63 (0.53) [0.28]	C (B) [B]	0.64 (0.55) [0.30]	C (B) [B]
NBT	0.59 (0.55) [0.33]	C (C) [C]	0.60 (0.56) [0.34]	C (C) [C]
NBR	0.25 (0.24) [0.13]	C (C) [B]	0.26 (0.25) [0.13]	C (C) [B]
SBL	0.25 (0.20) [0.14]	B (B) [B]	0.28 (0.22) [0.16]	B (B) [B]
SBT	0.66 (0.65) [0.38]	C (C) [B]	0.67 (0.67) [0.39]	C (C) [B]
SBR	0.06 (0.05) [0.04]	B (B) [C]	0.06 (0.05) [0.04]	B (B) [C]
Overall	**0.70 (0.75) [0.48]**	**C (C) [C]**	**0.71 (0.76) [0.49]**	**C (C) [C]**

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.46 (0.58) [0.22]	B (C) [B]	0.59 (0.81) [0.41]	C (D) [C]
EBT	0.33 (0.32) [0.18]	B (C) [B]	0.37 (0.35) [0.22]	C (C) [C]
WBTR	0.35 (0.52) [0.27]	C (D) [B]	0.42 (0.64) [0.36]	C (D) [C]
NBL	0.71 (0.87) [0.80]	E (F) [F]	0.67 (0.95) [0.84]	E (F) [F]
NBLT	0.78 (0.87) [0.79]	E (F) [E]	0.84 (0.94) [0.83]	F (F) [F]
NBR	0.16 (0.10) [0.10]	E (D) [E]	0.16 (0.10) [0.10]	E (D) [E]
SBL	0.02 (0.11) [0.11]	E (E) [E]	0.35 (0.58) [0.69]	E (E) [F]
SBR	0.65 (0.83) [0.17]	E (F) [E]	0.87 (0.94) [0.56]	F (F) [E]
Overall	**0.56 (0.70) [0.36]**	**D (D) [D]**	**0.70 (0.89) [0.56]**	**D (E) [D]**

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBT	0.27 (0.23) [0.17]	A (A) [A]	0.28 (0.25) [0.18]	A (A) [A]
EBR	0.32 (0.35) [0.26]	A (A) [A]	0.33 (0.35) [0.26]	A (A) [A]
WBT	0.25 (0.36) [0.24]	A (A) [A]	0.26 (0.37) [0.25]	A (A) [A]
WBR	0.21 (0.23) [0.19]	A (A) [A]	0.24 (0.26) [0.23]	A (A) [A]
SBL	0.52 (0.52) [0.45]	D (D) [D]	0.52 (0.52) [0.44]	D (D) [D]
SBR	0.07 (0.28) [0.32]	D (D) [D]	0.12 (0.28) [0.38]	D (D) [D]
Overall	**0.35 (0.38) [0.29]**	**A (A) [A]**	**0.35 (0.39) [0.28]**	**A (A) [A]**

Wellington St W & Imperial Rd S				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBLT	0.71 (0.73) [0.49]	B (B) [B]	0.74 (0.78) [0.53]	B (B) [B]
WBTR	0.49 (0.65) [0.47]	B (B) [B]	0.51 (0.68) [0.50]	B (B) [B]
SBL	0.84 (0.77) [0.79]	D (C) [C]	0.84 (0.77) [0.80]	D (C) [C]
SBR	0.05 (0.04) [0.04]	B (C) [B]	0.05 (0.04) [0.04]	B (C) [C]
Overall	**0.76 (0.75) [0.60]**	**B (B) [B]**	**0.78 (0.78) [0.63]**	**B (B) [B]**

Hanlon Pkwy & Paisley Rd				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.70 (0.91) [0.84]	F (F) [F]	0.70 (0.99) [0.86]	F (F) [F]
EBT	0.73 (0.61) [0.56]	E (E) [E]	0.74 (0.60) [0.57]	E (E) [E]
EBR	0.22 (0.25) [0.24]	A (A) [A]	0.22 (0.25) [0.24]	A (A) [A]
WBL	0.40 (0.73) [0.41]	E (E) [D]	0.41 (0.73) [0.42]	E (E) [D]
WBTR	0.30 (0.57) [0.40]	E (E) [D]	0.35 (0.61) [0.47]	E (E) [D]
NBL	0.41 (0.92) [0.73]	E (F) [E]	0.38 (0.98) [0.77]	E (F) [E]
NBT	0.70 (0.64) [0.59]	C (C) [C]	0.73 (0.68) [0.63]	C (C) [C]
NBR	0.07 (0.13) [0.07]	A (A) [A]	0.07 (0.13) [0.07]	A (A) [A]
SBL	0.47 (0.51) [0.44]	F (F) [F]	0.54 (0.64) [0.63]	F (F) [F]
SBT	0.62 (0.97) [0.65]	C (E) [C]	0.64 (0.98) [0.66]	C (E) [C]
SBR	0.03 (0.12) [0.09]	B (C) [C]	0.03 (0.12) [0.10]	B (C) [C]
Overall	**0.69 (0.94) [0.69]**	**C (D) [D]**	**0.71 (0.97) [0.70]**	**C (D) [D]**

Edinburgh Rd S & Waterloo Ave				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.21 (0.32) [0.28]	C (C) [D]	0.20 (0.32) [0.28]	C (C) [D]
EBTR	0.71 (0.47) [0.46]	D (C) [D]	0.72 (0.49) [0.54]	D (C) [D]
WBL	0.55 (0.41) [0.36]	D (C) [D]	0.55 (0.42) [0.40]	C (C) [D]
WBTR	0.39 (0.71) [0.46]	C (D) [D]	0.38 (0.72) [0.54]	C (D) [D]
NBL	0.05 (0.10) [0.06]	B (B) [A]	0.06 (0.14) [0.10]	B (B) [A]
NBTR	0.62 (0.63) [0.46]	C (C) [B]	0.64 (0.64) [0.46]	C (C) [B]
SBL	0.15 (0.16) [0.06]	A (A) [A]	0.16 (0.17) [0.06]	A (A) [A]
SBTR	0.48 (0.56) [0.41]	A (B) [A]	0.50 (0.57) [0.42]	B (B) [A]
Overall	**0.64 (0.65) [0.46]**	**C (C) [B]**	**0.66 (0.66) [0.47]**	**C (C) [B]**

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.33 (0.45) [0.30]	C (C) [B]	0.55 (0.85) [0.56]	C (E) [C]
EBTR	0.73 (0.73) [0.61]	C (C) [C]	0.79 (0.77) [0.67]	C (C) [C]
WBL	0.28 (0.36) [0.16]	C (C) [B]	0.33 (0.41) [0.19]	C (C) [B]
WBTR	0.56 (0.73) [0.51]	C (C) [C]	0.61 (0.80) [0.59]	C (C) [C]
NBL	0.26 (0.50) [0.32]	B (B) [B]	0.28 (0.61) [0.36]	B (C) [B]
NBTR	0.60 (0.66) [0.51]	B (B) [B]	0.60 (0.66) [0.51]	B (B) [B]
SBL	0.36 (0.43) [0.17]	B (B) [B]	0.36 (0.43) [0.17]	B (B) [B]
SBTR	0.56 (0.71) [0.53]	B (B) [B]	0.59 (0.77) [0.59]	B (C) [B]
Overall	**0.65 (0.72) [0.56]**	**B (C) [B]**	**0.67 (0.80) [0.62]**	**C (C) [B]**

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.40 (0.63) [0.30]	A (B) [A]	0.43 (0.65) [0.32]	A (B) [A]
EBTR	0.34 (0.34) [0.25]	A (A) [A]	0.35 (0.34) [0.26]	A (A) [A]
EBR	0.00 (0.00) [0.00]	A (A) [A]	0.03 (0.05) [0.05]	A (A) [A]
WBL	0.13 (0.12) [0.10]	B (C) [B]	0.28 (0.37) [0.31]	C (C) [B]
WBLTR	0.63 (0.75) [0.50]	C (C) [C]	0.67 (0.77) [0.52]	C (C) [C]
NBL	0.00 (0.01) [0.01]	A (C) [C]	0.20 (0.19) [0.25]	C (C) [C]
NBLTR	0.19 (0.16) [0.17]	C (C) [C]	0.38 (0.32) [0.37]	C (C) [C]
SBL	0.74 (0.76) [0.70]	D (D) [C]	0.86 (0.85) [0.82]	D (D) [D]
SBLT	0.14 (0.12) [0.14]	C (C) [C]	0.16 (0.19) [0.21]	C (C) [C]
SBR	0.06 (0.17) [0.10]	C (C) [C]	0.06 (0.17) [0.10]	C (C) [C]
Overall	**0.63 (0.73) [0.53]**	**C (C) [B]**	**0.69 (0.78) [0.58]**	**C (C) [C]**

2031 UNSIGNALIZED INTERSECTIONS CAPACITY RESULTS

Waterloo Ave & Silvercreek Pkwy S				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS
WBL	8.1 (8.1) [7.8]	A (A) [A]	8.6 (8.7) [8.4]	A (A) [A]
NBL	12.0 (12.8) [10.9]	B (B) [B]	16.1 (32.2) [17.1]	C (D) [C]

Silvercreek Pkwy S & Street D/Street E				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS
EBLTR	-- (--) [--]	-- (--) [--]	12.5 (15.5) [17.2]	B (C) [C]
WBLR	-- (--) [--]	-- (--) [--]	11.2 (12.7) [13.5]	B (B) [B]
NBL	-- (--) [--]	-- (--) [--]	7.7 (8.0) [8.0]	A (A) [A]
SBL	-- (--) [--]	-- (--) [--]	7.5 (7.7) [7.7]	A (A) [A]

Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS

2031 TRAFFIC CALMING CIRCLE CAPACITY RESULTS (ARCADY)

Silvercreek Pkwy S & Street A/Street C			
	Future Total 2031		
	V/C	LOS	Delay
EBLTR (Leg 3)	0.09 (0.12) [0.14]	A (A) [A]	3 (4) [4]
WBLTR (Leg 1)	0.04 (0.02) [0.04]	A (A) [A]	3 (3) [4]
NBLTR (Leg 4)	0.18 (0.21) [0.23]	A (A) [A]	3 (3) [4]
SBLTR (Leg 2)	0.17 (0.25) [0.26]	A (A) [A]	3 (4) [4]

2031 SIGNALIZED INTERSECTIONS QUEUE RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	12.2 (12.4) [8.7]	19.3 (20.2) [16.8]	12.2 (12.4) [8.7]	19.0 (20.0) [16.8]
EBT	77.3 (55.5) [49.7]	87.3 (65.8) [62.2]	78.1 (55.7) [50.7]	87.4 (66.1) [62.9]
EBR	0.0 (0.0) [0.0]	12.3 (13.3) [11.5]	0.0 (0.0) [0.0]	12.3 (13.4) [12.2]
WBL	12.3 (28.2) [19.5]	19.4 (#57.1) [32.0]	12.3 (28.3) [19.4]	19.1 (#56.5) [32.2]
WBT	45.3 (67.0) [44.2]	53.3 (78.3) [58.8]	46.0 (67.8) [45.0]	53.6 (79.0) [59.6]
WBR	0.0 (0.0) [0.0]	1.0 (4.9) [4.5]	0.0 (0.0) [0.0]	1.0 (5.7) [6.5]
NBL	23.4 (19.6) [11.7]	#48.8 (37.7) [22.7]	23.3 (20.1) [12.8]	#61.2 (39.0) [24.1]
NBT	54.2 (53.2) [31.5]	77.0 (81.8) [47.9]	54.8 (54.2) [32.7]	77.6 (84.0) [49.1]
NBR	8.5 (9.1) [0.0]	29.4 (31.1) [15.1]	8.6 (9.5) [0.0]	29.5 (32.0) [15.2]
SBL	4.8 (3.5) [3.8]	9.6 (m6.2) [6.5]	4.9 (3.8) [4.6]	9.9 (m6.8) [7.8]
SBT	56.4 (59.9) [37.3]	71.1 (72.8) [55.7]	57.6 (61.0) [38.8]	66.1 (71.8) [57.2]
SBR	2.1 (1.7) [0.9]	4.3 (m2.9) [5.0]	2.2 (1.7) [0.9]	2.9 (m2.2) [5.1]

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	24.5 (30.2) [10.7]	52.5 (50.1) [24.5]	37.4 (46.2) [27.2]	63.0 (#75.0) [45.2]
EBT	58.8 (63.1) [28.6]	95.9 (80.7) [46.7]	75.2 (68.3) [42.1]	99.8 (80.2) [55.6]
WBTR	62.4 (105.8) [47.2]	104.6 (138.3) [74.8]	80.1 (121.7) [71.3]	108.8 (140.7) [94.4]
NBL	67.3 (111.1) [80.4]	92.8 (#175.6) [107.5]	65.8 (128.4) [88.3]	93.8 (#200.5) [120.9]
NBLT	81.3 (115.5) [82.7]	108.2 (#180.5) [109.7]	92.9 (131.4) [91.5]	126.2 (#201.4) [124.7]
NBR	0.0 (0.0) [0.0]	25.2 (20.5) [20.5]	0.0 (0.0) [0.0]	25.5 (20.5) [20.8]
SBL	0.3 (1.5) [1.7]	2.4 (5.9) [6.4]	4.9 (8.1) [9.8]	13.5 (#24.2) [#26.7]
SBR	25.9 (55.9) [0.0]	65.2 (93.6) [30.8]	64.4 (91.3) [32.3]	#114.7 (#161.1) [72.7]

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBT	19.5 (16.6) [10.4]	28.6 (24.4) [16.9]	20.3 (17.8) [11.4]	29.5 (26.1) [19.1]
EBR	0.8 (0.0) [0.0]	9.5 (8.5) [7.7]	1.4 (0.0) [0.0]	10.3 (8.5) [8.0]
WBT	17.2 (29.1) [15.9]	25.5 (41.0) [24.9]	18.4 (30.4) [17.1]	27.1 (42.8) [27.5]
WBR	2.9 (6.8) [2.4]	10.8 (16.3) [10.0]	4.0 (8.2) [3.4]	12.7 (18.7) [12.5]
SBL	20.3 (21.3) [17.8]	30.7 (32.0) [27.3]	20.3 (21.3) [17.8]	30.7 (32.0) [27.0]
SBR	0.0 (8.5) [8.5]	14.4 (23.0) [26.8]	2.0 (8.5) [11.2]	16.5 (23.0) [29.5]

Wellington St W & Imperial Rd S				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBLT	65.0 (59.2) [34.5]	97.5 (#114.1) [59.4]	68.2 (65.0) [38.3]	102.7 (#125.1) [63.6]
WBTR	42.3 (61.9) [35.8]	63.1 (102.5) [62.2]	45.8 (66.7) [40.9]	68.2 (110.1) [67.1]
SBL	67.0 (56.4) [61.6]	98.4 (78.3) [84.0]	67.0 (56.4) [61.6]	98.4 (78.3) [86.3]
SBR	0.0 (0.0) [0.0]	8.4 (7.5) [7.5]	0.0 (0.0) [0.0]	8.4 (7.5) [7.7]

Hanlon Pkwy & Paisley Rd				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	34.5 (43.5) [46.7]	54.9 (#83.5) [#75.4]	34.5 (45.2) [46.4]	54.8 (#92.2) [#80.3]
EBT	60.3 (64.6) [53.4]	74.5 (83.4) [68.4]	63.8 (69.3) [57.3]	78.2 (88.8) [74.0]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
WBL	21.3 (40.6) [25.5]	35.3 (62.3) [42.4]	21.1 (40.6) [25.1]	35.4 (62.3) [42.4]
WBTR	33.6 (79.0) [51.7]	45.1 (99.1) [68.0]	39.6 (89.1) [62.0]	52.7 (110.5) [81.0]
NBL	28.1 (78.4) [65.9]	39.2 (#116.1) [82.4]	27.7 (78.4) [65.9]	39.1 (#116.1) [82.4]
NBT	177.6 (153.9) [145.2]	237.5 (188.7) [176.3]	187.0 (162.7) [158.0]	247.5 (193.4) [183.7]
NBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
SBL	8.9 (15.7) [12.3]	20.2 (30.0) [25.3]	15.7 (30.0) [28.0]	30.1 (50.2) [47.3]
SBT	137.0 (293.1) [156.3]	189.3 (#351.0) [192.1]	142.4 (293.1) [159.2]	189.6 (#351.0) [192.1]
SBR	0.0 (7.4) [0.0]	0.0 (20.3) [13.3]	0.0 (7.4) [3.2]	0.0 (20.3) [16.9]

Edinburgh Rd S & Waterloo Ave				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.0 (7.0) [7.4]	16.3 (15.8) [15.6]	7.8 (6.9) [7.3]	15.5 (15.4) [15.8]
EBTR	47.9 (29.2) [18.9]	68.1 (45.1) [32.2]	52.5 (32.6) [23.3]	72.2 (48.7) [39.2]
WBL	13.3 (14.5) [10.2]	26.0 (26.3) [19.8]	13.0 (14.4) [10.1]	25.4 (25.9) [20.3]
WBTR	23.5 (48.9) [18.1]	37.6 (69.1) [32.2]	24.8 (52.1) [23.1]	38.0 (72.0) [38.8]
NBL	2.2 (2.1) [0.8]	m7.1 (m11.2) [5.5]	2.9 (3.4) [2.0]	m8.5 (m16.2) [8.6]
NBTR	103.5 (86.9) [33.9]	167.6 (166.6) [101.0]	106.5 (89.0) [32.7]	168.2 (169.2) [103.8]
SBL	3.2 (3.4) [1.3]	10.5 (11.1) [5.7]	3.4 (3.6) [1.4]	11.5 (11.7) [5.7]
SBTR	48.1 (62.0) [30.4]	92.2 (117.2) [71.8]	51.7 (64.8) [33.0]	100.1 (123.1) [71.8]

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.3 (8.0) [6.8]	m18.8 (m18.4) [m18.3]	12.5 (12.9) [13.0]	m23.8 (m#42.9) [m25.1]
EBTR	43.1 (44.3) [27.7]	#84.0 (#85.6) [56.7]	46.1 (47.0) [49.9]	m#106.6 (m#106.2) [60.4]
WBL	5.8 (7.2) [3.9]	15.4 (18.7) [11.0]	6.0 (7.4) [4.0]	16.3 (19.6) [11.3]
WBTR	38.2 (57.2) [36.0]	64.2 (#92.1) [60.2]	42.7 (64.8) [42.6]	70.8 (#114.3) [69.9]
NBL	6.5 (10.4) [9.3]	15.8 (27.5) [20.8]	6.6 (11.2) [9.5]	16.2 (#37.0) [22.0]
NBTR	54.7 (64.3) [44.9]	85.9 (100.4) [70.5]	54.7 (64.3) [44.9]	85.9 (100.4) [70.5]
SBL	8.7 (9.5) [4.5]	21.0 (23.8) [11.3]	8.7 (9.5) [4.5]	21.0 (23.8) [11.3]
SBTR	48.6 (70.6) [46.0]	77.1 (110.7) [72.7]	51.8 (79.4) [52.2]	82.5 (126.1) [82.7]

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	10.1 (14.7) [8.3]	19.3 (28.9) [19.2]	11.9 (16.6) [9.4]	19.3 (31.0) [19.2]
EBTR	24.8 (26.1) [17.3]	41.4 (47.8) [35.7]	28.5 (28.4) [19.0]	41.4 (46.7) [34.9]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	3.7 (5.4) [5.6]
WBL	6.0 (7.0) [5.1]	m15.0 (m10.9) [m14.5]	15.5 (22.7) [15.4]	m28.0 (m29.5) [m38.4]
WBLTR	66.8 (91.2) [46.1]	95.5 (#145.5) [93.6]	70.4 (91.3) [53.3]	95.6 (m#134.8) [92.4]
NBL	0.0 (0.3) [0.3]	0.0 (1.7) [1.7]	7.5 (7.3) [9.2]	15.2 (16.5) [19.2]
NBLTR	7.2 (6.3) [6.3]	16.2 (17.0) [16.7]	15.0 (12.9) [14.8]	28.7 (30.0) [32.6]
SBL	28.4 (31.6) [27.2]	42.2 (53.0) [44.6]	28.1 (31.3) [27.3]	#52.0 (#65.3) [#55.5]
SBLT	7.2 (6.2) [6.9]	13.7 (13.9) [14.5]	8.7 (10.2) [10.9]	16.8 (20.8) [21.3]
SBR	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]	0.0 (0.0) [0.0]	8.3 (16.0) [12.8]

95th percentile volume exceeds capacity, queue may be longer.

m volume for 95th percentile queue is metered by upstream signal.

WESTWOOD ROAD SIGNALIZED INTERSECTION CAPACITY RESULTS

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.42 (0.51) [0.28]	B (B) [B]	0.52 (0.62) [0.33]	B (C) [B]
EBTR	0.26 (0.20) [0.19]	B (B) [B]	0.29 (0.22) [0.21]	B (B) [B]
EBR	0.00 (0.00) [0.00]	A (A) [A]	0.02 (0.02) [0.02]	B (B) [B]
WBL	0.13 (0.11) [0.10]	B (B) [B]	0.30 (0.36) [0.34]	C (C) [C]
WBLTR	0.70 (0.79) [0.55]	C (C) [C]	0.81 (0.90) [0.62]	D (D) [C]
NBL	0.00 (0.01) [0.01]	A (C) [C]	0.10 (0.12) [0.16]	C (C) [C]
NBLTR	0.35 (0.29) [0.28]	D (D) [D]	0.74 (0.69) [0.72]	D (D) [D]
SBL	0.74 (0.89) [0.64]	C (D) [C]	0.84 (0.97) [0.74]	D (E) [C]
SBLT	0.10 (0.09) [0.09]	C (C) [C]	0.14 (0.19) [0.20]	B (B) [B]
SBR	0.05 (0.13) [0.08]	C (C) [C]	0.05 (0.13) [0.08]	B (B) [B]
Overall	**0.71 (0.83) [0.58]**	**C (C) [C]**	**0.82 (0.93) [0.67]**	**C (D) [C]**

REALIGNED SILVERCREEK PARKWAY AT WATERLOO AVENUE UNSIGNALIZED INTERSECTIONS CAPACITY RESULTS

Waterloo Ave & Silvercreek Pkwy S						
	Future Total 2021		Future Total 2026		Future Total 2031	
	Delay	LOS	Delay	LOS	Delay	LOS
WBL	19.5 (26.3) [19.3]	C (D) [C]	19.8 (27.1) [19.6]	C (D) [C]	20.1 (27.7) [20.0]	C (D) [C]
WBR	9.3 (10.1) [10.0]	A (B) [A]	9.3 (10.1) [10.0]	A (B) [A]	9.3 (10.1) [10.0]	A (B) [A]
SBLT	1.7 (1.7) [1.6]	A (A) [A]	1.7 (1.7) [1.6]	A (A) [A]	1.7 (1.7) [1.6]	A (A) [A]

WESTWOOD ROAD SIGNALIZED INTERSECTIONS QUEUE RESULTS

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	11.7 (12.0) [9.3]	26.4 (30.5) [23.6]	15.0 (15.1) [11.6]	26.4 (#42.6) [23.6]
EBTR	21.4 (17.0) [16.3]	42.8 (40.2) [37.1]	26.9 (20.3) [19.4]	42.8 (39.1) [36.3]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.9) [1.6]
WBL	6.5 (5.7) [5.5]	16.1 (16.2) [15.7]	16.7 (21.2) [20.5]	29.1 (40.7) [39.5]
WBLTR	63.7 (79.9) [49.5]	#119.5 (#175.4) [#107.3]	77.2 (93.7) [57.6]	#119.5 (#173.3) [#99.6]
NBL	0.0 (0.3) [0.3]	0.0 (2.1) [2.1]	3.5 (4.1) [5.2]	8.8 (10.6) [12.9]
NBLTR	12.0 (9.6) [9.1]	21.2 (21.2) [20.5]	38.6 (34.2) [37.8]	54.5 (54.0) [61.0]
SBL	48.4 (63.3) [41.8]	51.0 (72.7) [51.1]	40.8 (54.7) [35.8]	51.0 (#83.3) [51.1]
SBLT	8.0 (7.1) [7.3]	12.1 (12.2) [12.8]	11.9 (16.1) [16.4]	18.5 (25.5) [26.7]
SBR	0.0 (0.0) [0.0]	6.1 (11.8) [9.6]	0.0 (0.0) [0.0]	6.1 (11.8) [9.6]

95th percentile volume exceeds capacity, queue may be longer.

m volume for 95th percentile queue is metered by upstream signal.

PHASE 1 SIGNALIZED INTERSECTIONS CAPACITY RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.36 (0.50) [0.27]	B (C) [C]	0.36 (0.50) [0.27]	B (C) [C]
EBT	0.77 (0.65) [0.67]	C (C) [C]	0.77 (0.65) [0.68]	C (C) [C]
EBR	0.13 (0.12) [0.07]	C (C) [C]	0.13 (0.12) [0.07]	C (C) [C]
WBL	0.57 (0.84) [0.54]	C (D) [C]	0.57 (0.84) [0.54]	C (D) [C]
WBT	0.51 (0.69) [0.56]	C (C) [C]	0.50 (0.69) [0.56]	C (C) [C]
WBR	0.04 (0.05) [0.05]	B (C) [C]	0.04 (0.05) [0.05]	B (C) [C]
NBL	0.63 (0.53) [0.28]	C (B) [B]	0.63 (0.54) [0.28]	C (B) [B]
NBT	0.59 (0.55) [0.33]	C (C) [C]	0.59 (0.55) [0.33]	C (C) [B]
NBR	0.25 (0.24) [0.13]	C (C) [B]	0.25 (0.24) [0.13]	C (C) [B]
SBL	0.25 (0.20) [0.14]	B (B) [B]	0.25 (0.20) [0.14]	B (B) [B]
SBT	0.66 (0.65) [0.38]	C (C) [B]	0.66 (0.65) [0.38]	C (C) [B]
SBR	0.06 (0.05) [0.04]	B (B) [C]	0.06 (0.05) [0.04]	B (B) [B]
Overall	**0.70 (0.75) [0.48]**	**C (C) [C]**	**0.71 (0.75) [0.48]**	**C (C) [C]**

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.42 (0.51) [0.21]	B (B) [B]	0.45 (0.64) [0.29]	B (C) [B]
EBT	0.30 (0.28) [0.18]	B (B) [B]	0.30 (0.28) [0.18]	B (B) [B]
WBTR	0.30 (0.43) [0.26]	B (C) [B]	0.31 (0.46) [0.26]	B (C) [B]
NBL	0.74 (0.82) [0.76]	F (E) [F]	0.74 (0.82) [0.76]	F (E) [F]
NBLT	0.72 (0.81) [0.75]	F (E) [F]	0.72 (0.81) [0.77]	E (E) [F]
NBR	0.16 (0.10) [0.10]	E (D) [E]	0.16 (0.10) [0.10]	E (D) [E]
SBL	0.02 (0.11) [0.11]	E (E) [E]	0.11 (0.22) [0.11]	E (E) [E]
SBR	0.18 (0.50) [0.11]	E (E) [E]	0.39 (0.64) [0.14]	E (E) [E]
Overall	**0.45 (0.59) [0.32]**	**C (D) [C]**	**0.50 (0.69) [0.36]**	**C (D) [D]**

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBT	0.27 (0.23) [0.17]	A (A) [A]	0.28 (0.24) [0.17]	A (A) [A]
EBR	0.32 (0.35) [0.26]	A (A) [A]	0.32 (0.35) [0.26]	A (A) [A]
WBT	0.25 (0.36) [0.24]	A (A) [A]	0.25 (0.36) [0.24]	A (A) [A]
WBR	0.13 (0.15) [0.11]	A (A) [A]	0.14 (0.16) [0.12]	A (A) [A]
SBL	0.52 (0.52) [0.45]	D (D) [D]	0.53 (0.55) [0.50]	D (D) [D]
SBR	0.07 (0.28) [0.32]	D (D) [D]	0.08 (0.27) [0.33]	D (D) [D]
Overall	**0.35 (0.38) [0.29]**	**A (A) [A]**	**0.35 (0.39) [0.29]**	**A (A) [A]**

Wellington St W & Imperial Rd S				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBLT	0.71 (0.73) [0.49]	B (B) [B]	0.72 (0.74) [0.50]	B (B) [B]
WBTR	0.49 (0.65) [0.47]	B (B) [B]	0.49 (0.65) [0.48]	B (B) [B]
SBL	0.84 (0.77) [0.79]	D (C) [C]	0.84 (0.77) [0.79]	D (C) [C]
SBR	0.05 (0.04) [0.04]	B (C) [B]	0.05 (0.04) [0.04]	B (C) [B]
Overall	**0.76 (0.75) [0.60]**	**B (B) [B]**	**0.76 (0.75) [0.61]**	**B (B) [B]**

Hanlon Pkwy & Paisley Rd				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.38 (0.62) [0.54]	E (E) [E]	0.38 (0.62) [0.53]	E (E) [E]
EBT	0.78 (0.80) [0.75]	E (E) [E]	0.78 (0.80) [0.75]	E (E) [E]
EBR	0.22 (0.25) [0.24]	A (A) [A]	0.22 (0.26) [0.24]	A (A) [A]
WBL	0.68 (0.94) [0.70]	E (F) [E]	0.68 (0.98) [0.72]	E (F) [E]
WBTR	0.42 (0.88) [0.68]	E (F) [E]	0.42 (0.88) [0.66]	E (F) [E]
NBL	0.41 (0.98) [0.73]	E (F) [E]	0.41 (1.00) [0.73]	E (F) [E]
NBT	0.74 (0.65) [0.60]	C (C) [C]	0.74 (0.65) [0.61]	C (C) [C]
NBR	0.13 (0.20) [0.13]	A (A) [A]	0.14 (0.20) [0.14]	A (A) [A]
SBL	0.51 (0.61) [0.47]	F (F) [F]	0.51 (0.61) [0.47]	F (F) [F]
SBT	0.67 (0.99) [0.67]	C (E) [D]	0.67 (1.00) [0.69]	C (E) [D]
SBR	0.03 (0.10) [0.09]	C (C) [C]	0.03 (0.10) [0.09]	C (C) [C]
Overall	**0.75 (0.99) [0.70]**	**C (D) [D]**	**0.75 (1.01) [0.72]**	**D (D) [D]**

Edinburgh Rd S & Waterloo Ave				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.21 (0.32) [0.28]	C (C) [D]	0.29 (0.43) [0.42]	C (C) [D]
EBTR	0.71 (0.47) [0.46]	D (C) [D]	0.71 (0.47) [0.49]	D (C) [D]
WBL	0.55 (0.41) [0.36]	D (C) [D]	0.55 (0.41) [0.37]	C (C) [D]
WBTR	0.39 (0.71) [0.46]	C (D) [D]	0.39 (0.71) [0.48]	C (D) [D]
NBL	0.05 (0.10) [0.06]	B (B) [A]	0.05 (0.11) [0.07]	B (B) [A]
NBTR	0.62 (0.63) [0.46]	C (C) [B]	0.63 (0.63) [0.46]	C (C) [B]
SBL	0.15 (0.16) [0.06]	A (A) [A]	0.15 (0.16) [0.06]	A (A) [A]
SBTR	0.48 (0.56) [0.41]	A (B) [A]	0.49 (0.59) [0.43]	B (B) [A]
Overall	**0.64 (0.65) [0.46]**	**C (C) [B]**	**0.65 (0.65) [0.46]**	**C (C) [B]**

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.33 (0.45) [0.30]	C (C) [C]	0.33 (0.45) [0.30]	C (C) [C]
EBTR	0.73 (0.73) [0.61]	C (C) [C]	0.73 (0.73) [0.61]	C (C) [C]
WBL	0.28 (0.36) [0.16]	C (C) [B]	0.28 (0.42) [0.20]	C (C) [B]
WBTR	0.56 (0.73) [0.51]	C (C) [C]	0.56 (0.73) [0.51]	C (C) [C]
NBL	0.26 (0.50) [0.32]	B (B) [B]	0.27 (0.52) [0.32]	B (C) [B]
NBTR	0.60 (0.66) [0.51]	B (B) [B]	0.62 (0.68) [0.53]	B (B) [B]
SBL	0.36 (0.43) [0.17]	B (B) [B]	0.38 (0.46) [0.18]	B (B) [B]
SBTR	0.56 (0.71) [0.53]	B (B) [B]	0.57 (0.72) [0.54]	B (B) [B]
Overall	**0.65 (0.72) [0.56]**	**C (C) [B]**	**0.66 (0.72) [0.57]**	**C (C) [B]**

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	V/C	LOS	V/C	LOS
EBL	0.57 (0.77) [0.42]	B (C) [A]	0.58 (0.79) [0.44]	B (C) [A]
EBTR	0.39 (0.38) [0.30]	A (A) [A]	0.39 (0.38) [0.30]	A (A) [A]
EBR	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
WBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
WBLTR	0.71 (0.85) [0.57]	C (D) [C]	0.71 (0.85) [0.57]	C (D) [C]
NBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
NBLTR	0.00 (0.01) [0.01]	C (C) [C]	0.00 (0.01) [0.01]	C (C) [C]
SBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
SBLT	0.72 (0.72) [0.69]	D (C) [C]	0.72 (0.72) [0.69]	D (C) [C]
SBR	0.10 (0.20) [0.14]	C (C) [C]	0.10 (0.21) [0.14]	C (C) [C]
Overall	**0.69 (0.80) [0.58]**	**C (C) [B]**	**0.69 (0.80) [0.58]**	**C (C) [B]**

PHASE 1 UNSIGNALIZED INTERSECTIONS CAPACITY RESULTS

Waterloo Ave & Silvercreek Pkwy S				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS
WBL	7.7 (7.8) [7.6]	A (A) [A]	8.0 (8.0) [7.8]	A (A) [A]
NBL	9.8 (10.0) [9.2]	A (B) [A]	10.3 (11.8) [10.3]	B (B) [B]

Silvercreek Pkwy S & Street D				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS
EBLTR	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
WBLR	-- (--) [--]	-- (--) [--]	9.1 (9.1) [9.3]	A (A) [A]
NBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
SBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]

Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W				
	Future Background 2031		Future Total 2031	
	Delay	LOS	Delay	LOS

PHASE 1 SIGNALIZED INTERSECTIONS QUEUE RESULTS

Edinburgh Rd S & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	12.2 (12.4) [8.7]	19.3 (20.2) [16.8]	12.2 (12.4) [8.7]	19.0 (20.1) [16.8]
EBT	77.3 (55.5) [49.7]	87.3 (65.8) [62.2]	77.6 (56.0) [49.7]	86.7 (66.2) [62.2]
EBR	0.0 (0.0) [0.0]	12.3 (13.3) [11.5]	0.0 (0.0) [0.0]	12.1 (13.2) [11.5]
WBL	12.3 (28.2) [19.5]	19.4 (#57.1) [32.0]	12.3 (28.3) [19.5]	19.1 (#56.7) [32.2]
WBT	45.3 (67.0) [44.2]	53.3 (78.3) [58.8]	45.1 (67.5) [44.7]	52.7 (78.7) [59.4]
WBR	0.0 (0.0) [0.0]	1.0 (4.9) [4.5]	0.0 (0.0) [0.0]	1.0 (4.9) [4.5]
NBL	23.4 (19.6) [11.7]	#48.8 (37.7) [22.7]	23.4 (19.6) [11.7]	#60.7 (37.8) [22.6]
NBT	54.2 (53.2) [31.5]	77.0 (81.8) [47.9]	54.2 (53.6) [31.9]	77.0 (82.7) [48.3]
NBR	8.5 (9.1) [0.0]	29.4 (31.1) [15.1]	8.5 (9.3) [0.0]	29.4 (31.6) [15.1]
SBL	4.8 (3.5) [3.8]	9.6 (m6.2) [6.5]	4.7 (3.4) [3.9]	9.5 (m6.0) [6.8]
SBT	56.4 (59.9) [37.3]	71.1 (72.8) [55.7]	57.0 (59.9) [37.8]	68.6 (71.8) [55.7]
SBR	2.1 (1.7) [0.9]	4.3 (m2.9) [5.0]	2.2 (1.6) [0.9]	3.7 (m2.4) [4.5]

Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	19.3 (22.7) [9.7]	39.5 (47.3) [22.6]	20.7 (31.2) [13.8]	45.4 (61.6) [30.5]
EBT	47.2 (48.2) [26.1]	73.2 (76.4) [43.1]	47.3 (51.4) [26.3]	79.5 (80.7) [43.4]
WBTR	51.4 (83.1) [43.6]	81.9 (131.7) [69.7]	52.0 (90.7) [45.0]	88.9 (139.3) [72.4]
NBL	55.0 (96.5) [63.4]	78.9 (125.5) [88.6]	55.6 (97.6) [64.5]	80.0 (126.8) [90.0]
NBLT	56.6 (97.6) [63.6]	80.7 (126.4) [89.0]	57.6 (99.7) [66.3]	82.1 (128.9) [92.0]
NBR	0.0 (0.0) [0.0]	27.0 (19.3) [21.4]	0.0 (0.0) [0.0]	26.8 (19.3) [21.4]
SBL	0.3 (1.7) [1.7]	2.6 (6.3) [6.4]	1.7 (3.3) [1.7]	6.3 (9.7) [6.4]
SBR	0.0 (16.3) [0.0]	31.1 (49.4) [24.5]	8.4 (27.3) [0.0]	43.9 (62.0) [27.5]

Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBT	19.5 (16.6) [10.4]	28.6 (24.4) [16.9]	19.9 (17.6) [11.1]	29.1 (25.9) [17.4]
EBR	0.8 (0.0) [0.0]	9.5 (8.5) [7.7]	0.9 (0.0) [0.0]	9.7 (8.8) [7.8]
WBT	17.2 (29.1) [15.9]	25.5 (41.0) [24.9]	17.8 (30.3) [17.0]	26.3 (42.8) [25.7]
WBR	1.8 (4.3) [1.4]	8.1 (11.5) [7.3]	2.1 (4.7) [1.7]	8.7 (12.3) [7.7]
SBL	20.3 (21.3) [17.8]	30.7 (32.0) [27.3]	20.9 (23.9) [20.4]	31.4 (35.0) [30.6]
SBR	0.0 (8.5) [8.5]	14.4 (23.0) [26.8]	0.6 (8.5) [9.3]	15.0 (22.8) [27.8]

Wellington St W & Imperial Rd S				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBLT	65.0 (59.2) [34.5]	97.5 (#114.1) [59.4]	65.6 (60.6) [35.2]	98.8 (#116.9) [60.6]
WBTR	42.3 (61.9) [35.8]	63.1 (102.5) [62.2]	43.5 (62.5) [37.4]	64.8 (103.5) [64.3]
SBL	67.0 (56.4) [61.6]	98.4 (78.3) [84.0]	67.0 (56.4) [61.6]	98.4 (78.3) [84.0]
SBR	0.0 (0.0) [0.0]	8.4 (7.5) [7.5]	0.0 (0.0) [0.0]	8.4 (7.5) [7.5]

Hanlon Pkwy & Paisley Rd				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	26.9 (34.1) [36.8]	44.0 (53.4) [56.7]	26.9 (34.1) [36.6]	44.0 (53.4) [56.7]
EBT	60.3 (69.2) [56.6]	78.4 (89.3) [73.2]	60.3 (69.2) [56.6]	78.4 (89.3) [73.2]
EBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
WBL	49.3 (72.2) [55.3]	72.7 (#113.7) [80.1]	49.3 (75.6) [57.9]	72.7 (#120.9) [84.3]
WBTR	36.1 (89.6) [59.7]	52.1 (#134.0) [79.7]	36.1 (89.6) [59.4]	52.1 (#134.0) [79.7]
NBL	27.9 (~82.6) [65.6]	39.7 (#120.0) [82.9]	28.7 (~84.4) [66.3]	41.0 (#121.8) [84.4]
NBT	201.4 (157.1) [146.5]	239.7 (182.5) [171.6]	205.3 (158.1) [150.3]	244.0 (183.5) [174.1]
NBR	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]	0.0 (0.0) [0.0]
SBL	8.9 (15.8) [12.3]	20.5 (30.9) [25.8]	8.9 (15.8) [12.3]	20.5 (30.9) [25.8]
SBT	153.6 (297.1) [158.7]	191.2 (#355.0) [193.1]	155.4 (300.8) [163.3]	192.2 (#359.2) [194.5]
SBR	0.0 (2.6) [0.0]	0.0 (15.3) [13.4]	0.0 (2.8) [0.0]	0.0 (15.5) [13.3]

Edinburgh Rd S & Waterloo Ave				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.0 (7.0) [7.4]	16.3 (15.8) [15.6]	11.4 (9.7) [11.3]	21.2 (20.4) [21.6]
EBTR	47.9 (29.2) [18.9]	68.1 (45.1) [32.2]	49.5 (30.0) [20.2]	69.4 (45.8) [34.2]
WBL	13.3 (14.5) [10.2]	26.0 (26.3) [19.8]	13.2 (14.5) [10.2]	25.8 (26.2) [19.9]
WBTR	23.5 (48.9) [18.1]	37.6 (69.1) [32.2]	24.3 (49.7) [19.3]	38.1 (69.9) [34.0]
NBL	2.2 (2.1) [0.8]	m7.1 (m11.2) [5.5]	2.2 (2.5) [1.0]	m7.1 (m12.6) [6.1]
NBTR	103.5 (86.9) [33.9]	167.6 (166.6) [101.0]	104.6 (87.5) [33.7]	167.7 (167.6) [100.9]
SBL	3.2 (3.4) [1.3]	10.5 (11.1) [5.7]	3.3 (3.4) [1.4]	10.9 (11.2) [5.7]
SBTR	48.1 (62.0) [30.4]	92.2 (117.2) [71.8]	50.0 (65.8) [32.9]	96.2 (124.5) [75.7]

Edinburgh Rd N & Paisley Rd/Paisley St				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	8.7 (8.6) [9.1]	m20.7 (m19.9) [m20.5]	8.7 (8.6) [9.1]	m20.7 (m19.9) [m20.5]
EBTR	48.5 (47.5) [37.8]	#86.2 (#84.9) [62.1]	48.5 (47.5) [37.8]	#86.2 (#84.9) [62.1]
WBL	5.8 (7.2) [3.9]	15.4 (18.7) [11.0]	5.8 (8.5) [5.0]	15.4 (21.6) [13.3]
WBTR	38.2 (57.2) [36.0]	64.2 (#92.1) [60.2]	38.2 (57.2) [36.0]	64.2 (#92.1) [60.2]
NBL	6.5 (10.4) [9.3]	15.8 (27.5) [20.8]	6.5 (10.6) [9.3]	15.9 (28.5) [21.0]
NBTR	54.7 (64.3) [44.9]	85.9 (100.4) [70.5]	57.8 (66.9) [47.6]	90.8 (104.4) [74.5]
SBL	8.7 (9.5) [4.5]	21.0 (23.8) [11.3]	8.8 (9.7) [4.5]	21.7 (24.7) [11.5]
SBTR	48.7 (70.7) [46.1]	77.3 (110.9) [72.7]	49.4 (72.5) [47.6]	78.6 (114.2) [75.2]

Silvercreek Pkwy N & Paisley Rd				
	Future Background 2031		Future Total 2031	
	50th Percentile Queues	95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	13.4 (20.7) [10.9]	25.1 (#69.3) [24.6]	13.7 (22.3) [11.5]	25.7 (#72.5) [25.7]
EBTR	29.3 (29.5) [21.0]	49.4 (55.8) [43.1]	29.3 (29.5) [21.0]	49.4 (55.8) [43.1]
EBR	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
WBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
WBLTR	80.5 (103.4) [64.2]	#114.6 (#164.8) [106.0]	80.8 (103.4) [64.3]	#114.7 (#164.8) [106.0]
NBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
NBLTR	0.1 (0.2) [0.5]	1.1 (1.7) [2.6]	0.1 (0.2) [0.5]	1.1 (1.7) [2.6]
SBL	-- (--) [--]	-- (--) [--]	-- (--) [--]	-- (--) [--]
SBLT	28.6 (31.6) [27.9]	41.5 (51.2) [45.2]	28.6 (31.6) [27.9]	41.5 (51.2) [45.2]
SBR	0.0 (0.0) [0.0]	9.9 (17.4) [14.7]	0.0 (0.0) [0.0]	9.9 (17.7) [15.1]

95th percentile volume exceeds capacity, queue may be longer.

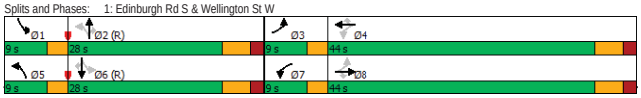
m volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	765	170	110	500	45	175	545	195	55	505	75
Future Volume (vph)	110	765	170	110	500	45	175	545	195	55	505	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.357			0.168			0.284			0.367		
Satd. Flow (perm)	669	3471	1508	301	3438	1570	522	3539	1476	650	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191			109			171			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	124	860	191	124	562	51	197	612	219	62	567	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	860	191	124	562	51	197	612	219	62	567	84
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	39.6	29.5	29.5	39.9	29.6	29.6	40.7	29.9	29.9	35.4	25.2	25.2
Actuated g/C Ratio	0.44	0.33	0.33	0.44	0.33	0.33	0.45	0.33	0.33	0.39	0.28	0.28
v/c Ratio	0.32	0.76	0.31	0.50	0.50	0.09	0.53	0.52	0.36	0.18	0.58	0.16
Control Delay	14.7	31.3	4.3	19.8	25.2	0.3	23.1	28.2	9.5	12.9	28.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	31.3	4.3	19.8	25.2	0.3	23.1	28.2	9.5	12.9	28.0	3.2
LOS	B	C	A	B	C	A	C	C	A	B	C	A
Approach Delay		25.2			22.6			23.2			23.8	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	860	191	124	562	51	197	612	219	62	567	84
v/c Ratio	0.32	0.76	0.31	0.50	0.50	0.09	0.53	0.52	0.36	0.18	0.58	0.16
Control Delay	14.7	31.3	4.3	19.8	25.2	0.3	23.1	28.2	9.5	12.9	28.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	31.3	4.3	19.8	25.2	0.3	23.1	28.2	9.5	12.9	28.0	3.2
Queue Length 50th (m)	11.7	72.6	0.0	11.7	42.7	0.0	22.1	50.2	6.4	4.6	52.0	1.7
Queue Length 95th (m)	19.3	82.7	12.2	19.5	50.8	0.2	#41.3	71.7	25.7	9.4	68.4	5.0
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	382	1465	747	246	1451	725	373	1175	604	339	989	522
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.59	0.26	0.50	0.39	0.07	0.53	0.52	0.36	0.18	0.57	0.16

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)	110	765	170	110	500	45	175	545	195	55	505	75
Future Volume (vph)	110	765	170	110	500	45	175	545	195	55	505	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1785	3471	1508	1703	3438	1570	1751	3539	1476	1694	3505	1573
Flt Permitted	0.36	1.00	1.00	0.17	1.00	1.00	0.28	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	670	3471	1508	302	3438	1570	524	3539	1476	655	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	860	191	124	562	51	197	612	219	62	567	84
RTOR Reduction (vph)	0	0	128	0	0	34	0	0	116	0	0	61
Lane Group Flow (vph)	124	860	63	124	562	17	197	612	103	62	567	23
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	36.6	29.5	29.5	37.0	29.7	29.7	38.2	29.2	29.2	31.1	25.1	25.1
Effective Green, g (s)	36.6	29.5	29.5	37.0	29.7	29.7	38.2	29.2	29.2	31.1	25.1	25.1
Actuated g/C Ratio	0.41	0.33	0.33	0.41	0.33	0.33	0.42	0.32	0.32	0.35	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	360	1137	494	237	1134	518	360	1148	478	295	977	438
v/s Ratio Prot	0.03	c0.25		c0.04	0.16		c0.06	0.17		0.01	0.16	
v/s Ratio Perm	0.11		0.04	0.17		0.01	c0.17		0.07	0.06		0.01
v/c Ratio	0.34	0.76	0.13	0.52	0.50	0.03	0.55	0.53	0.22	0.21	0.58	0.05
Uniform Delay, d1	17.2	27.0	21.2	18.3	24.2	20.4	17.5	24.8	22.1	20.1	27.9	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.88	0.75
Incremental Delay, d2	0.6	2.9	0.1	2.1	0.3	0.0	1.7	1.8	1.0	0.3	2.4	0.2
Delay (s)	17.8	30.0	21.3	20.4	24.5	20.4	19.2	26.6	23.1	15.1	26.8	18.0
Level of Service	B	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		27.3			23.5			24.4			24.8	
Approach LOS		C			C			C			C	

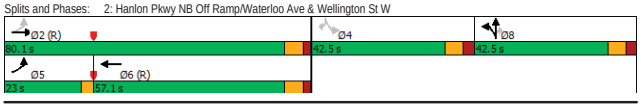
Intersection Summary					
HCM 2000 Control Delay		25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.65			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		67.8%	ICU Level of Service	C	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	845	0	0	725	5	185	80	220	1	0	235
Future Volume (vph)	155	845	0	0	725	5	185	80	220	1	0	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.980		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1724	1599	1805	0	1583
Flt Permitted	0.306						0.950	0.980		0.348		
Satd. Flow (perm)	559	4988	0	0	4983	0	1633	1724	1599	661	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				242			258
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	170	929	0	0	797	5	203	88	242	1	0	258
Shared Lane Traffic (%)							29%					
Lane Group Flow (vph)	170	929	0	0	802	0	144	147	242	1	0	258
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	115.6	111.5			97.3		20.0	20.0	20.0	11.5		11.5
Actuated g/C Ratio	0.70	0.68			0.59		0.12	0.12	0.12	0.07		0.07
v/c Ratio	0.36	0.28			0.27		0.73	0.70	0.60	0.02		0.74
Control Delay	11.6	11.7			18.2		89.9	86.8	13.0	70.0		20.6
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	11.6	11.7			18.2		89.9	86.8	13.0	70.0		20.6
LOS	B	B			B		F	F	B	E		C
Approach Delay		11.7			18.2			54.1			20.8	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.9		Intersection LOS: C	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	170	929	802	144	147	242	1	258
v/c Ratio	0.36	0.28	0.27	0.73	0.70	0.60	0.02	0.74
Control Delay	11.6	11.7	18.2	89.9	86.8	13.0	70.0	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	11.7	18.2	89.9	86.8	13.0	70.0	20.6
Queue Length 50th (m)	17.6	42.7	46.3	51.4	52.4	0.0	0.3	0.0
Queue Length 95th (m)	35.9	66.0	73.5	74.7	75.7	26.4	2.6	29.9
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	533	3367	2937	346	365	529	140	538
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	0.32	0.28	0.27	0.42	0.40	0.46	0.01	0.48

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	845	0	0	725	5	185	80	220	1	0	235
Future Volume (vph)	155	845	0	0	725	5	185	80	220	1	0	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4983		1633	1725	1599	1805		1583
Flt Permitted	0.31	1.00			1.00		0.95	0.98	1.00	0.35		1.00
Satd. Flow (perm)	559	4988			4983		1633	1725	1599	661		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	170	929	0	0	797	5	203	88	242	1	0	258
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	213	0	0	240
Lane Group Flow (vph)	170	929	0	0	802	0	144	147	29	1	0	18
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	111.5	111.5			97.3		20.0	20.0	20.0	11.5		11.5
Effective Green, g (s)	111.5	111.5			97.3		20.0	20.0	20.0	11.5		11.5
Actuated g/C Ratio	0.68	0.68			0.59		0.12	0.12	0.12	0.07		0.07
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	457	3368			2936		197	208	193	46		110
v/s Ratio Prot	c0.03	0.19			0.16		c0.09	0.09				
v/s Ratio Perm	c0.23								0.02	0.00		c0.01
v/c Ratio	0.37	0.28			0.27		0.73	0.71	0.15	0.02		0.16
Uniform Delay, d1	10.0	10.7			16.6		70.0	69.7	65.0	71.6		72.3
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.2			0.2		13.0	10.4	0.4	0.2		0.7
Delay (s)	10.5	10.9			16.8		83.0	80.2	65.3	71.8		73.0
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		10.8			16.8			74.2			73.0	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

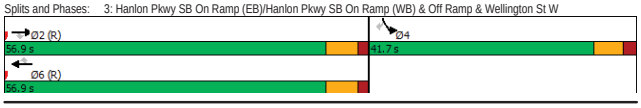
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	890	435	0	805	165	0	0	0	160	0	80
Future Volume (vph)	0	890	435	0	805	165	0	0	0	160	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			458			146						84
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	937	458	0	847	174	0	0	0	168	0	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	937	458	0	847	174	0	0	0	168	0	84
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.9	73.9		73.9	73.9				11.1		11.1
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.25	0.36		0.23	0.15				0.46		0.35
Control Delay		4.1	1.2		4.0	1.2				45.0		13.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.1	1.2		4.0	1.2				45.0		13.3
LOS		A	A		A	A				D		B
Approach Delay		3.2			3.5						34.4	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	937	458	847	174	168	84
v/c Ratio	0.25	0.36	0.23	0.15	0.46	0.35
Control Delay	4.1	1.2	4.0	1.2	45.0	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	1.2	4.0	1.2	45.0	13.3
Queue Length 50th (m)	16.9	0.0	15.0	1.2	16.7	0.0
Queue Length 95th (m)	24.8	7.6	22.0	6.6	26.3	13.7
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3701	1267	3737	1196	1150	570
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	0.25	0.36	0.23	0.15	0.15	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	890	435	0	805	165	0	0	0	160	0	80
Future Volume (vph)	0	890	435	0	805	165	0	0	0	160	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	937	458	0	847	174	0	0	0	168	0	84
RTOR Reduction (vph)	0	0	115	0	0	37	0	0	0	0	0	75
Lane Group Flow (vph)	0	937	343	0	847	137	0	0	0	168	0	9
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.9	73.9		73.9	73.9				11.1		11.1
Effective Green, g (s)		73.9	73.9		73.9	73.9				11.1		11.1
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3702	1152		3738	1160				364		163
v/s Ratio Prot		0.19			0.17					c0.05		
v/s Ratio Perm			c0.22			0.09						0.01
v/c Ratio		0.25	0.30		0.23	0.12				0.46		0.06
Uniform Delay, d1		3.8	4.0		3.7	3.4				41.0		39.1
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.7		0.1	0.2				0.9		0.1
Delay (s)		4.0	4.6		3.9	3.6				41.9		39.2
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.2			3.8			0.0			41.0	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

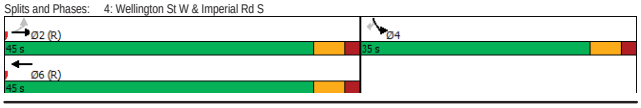
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	900	635	165	415	70
Future Volume (vph)	60	900	635	165	415	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.969			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3310	0	1770	1599
Flt Permitted		0.835			0.950	
Satd. Flow (perm)	0	2845	3310	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			57			73
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	63	938	661	172	432	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1001	833	0	432	73
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.64	0.45		0.82	0.14
Control Delay		15.9	11.7		38.5	5.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		15.9	11.7		38.5	5.4
LOS		B	B		D	A
Approach Delay		15.9	11.7		33.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 89.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1001	833	432	73
v/c Ratio	0.64	0.45	0.82	0.14
Control Delay	15.9	11.7	38.5	5.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.9	11.7	38.5	5.4
Queue Length 50th (m)	55.6	36.8	62.5	0.0
Queue Length 95th (m)	86.8	57.7	89.7	8.1
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1565	1846	641	626
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	0.64	0.45	0.67	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	900	635	165	415	70
Future Volume (vph)	60	900	635	165	415	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3310		1770	1599
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2845	3310		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	938	661	172	432	73
RTOR Reduction (vph)	0	0	26	0	0	51
Lane Group Flow (vph)	0	1001	807	0	432	22
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.0	44.0		24.0	24.0
Effective Green, g (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1564	1820		531	479
v/s Ratio Prot			0.24		c0.24	
v/s Ratio Perm		c0.35				0.01
v/c Ratio		0.64	0.44		0.81	0.05
Uniform Delay, d1		12.5	10.7		25.9	19.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.0	0.8		9.3	0.0
Delay (s)		14.5	11.5		35.2	19.9
Level of Service		B	B		D	B
Approach Delay (s)		14.5	11.5		33.0	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.70		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		89.6%	ICU Level of Service	E
Analysis Period (min)		15		

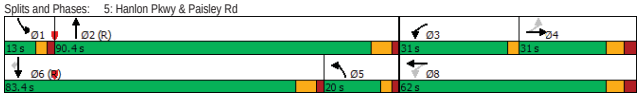
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	310	315	165	185	25	155	1190	190	25	895	45
Future Volume (vph)	95	310	315	165	185	25	155	1190	190	25	895	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3467	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.617			0.336			0.950			0.950		
Satd. Flow (perm)	1096	3438	1583	632	3467	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		10				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	97	316	321	168	189	26	158	1214	194	26	913	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	316	321	168	215	0	158	1214	194	26	913	46
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	31.0	31.0		31.0	62.0		20.0	90.4		13.0	83.4	83.4
Total Split (%)	18.7%	18.7%		18.7%	37.5%		12.1%	54.7%		7.9%	50.4%	50.4%
Maximum Green (s)	23.0	23.0		28.0	54.0		15.0	83.0		8.0	76.0	76.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	21.2	21.2	165.4	46.3	41.3		15.7	100.0	165.4	8.9	88.1	88.1
Actuated g/C Ratio	0.13	0.13	1.00	0.28	0.25		0.09	0.60	1.00	0.05	0.53	0.53
v/c Ratio	0.69	0.72	0.20	0.57	0.25		0.51	0.60	0.12	0.30	0.52	0.06
Control Delay	92.8	78.2	0.3	53.6	46.4		75.8	24.6	0.2	84.1	28.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.8	78.2	0.3	53.6	46.4		75.8	24.6	0.2	84.1	28.7	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		46.1			49.6			26.7			28.8	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 33.5		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	316	321	168	215	158	1214	194	26	913	46
v/c Ratio	0.69	0.72	0.20	0.57	0.25	0.51	0.60	0.12	0.30	0.52	0.06
Control Delay	92.8	78.2	0.3	53.6	46.4	75.8	24.6	0.2	84.1	28.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.8	78.2	0.3	53.6	46.4	75.8	24.6	0.2	84.1	28.7	0.1
Queue Length 50th (m)	32.9	56.5	0.0	46.9	30.2	27.2	140.9	0.0	8.9	105.4	0.0
Queue Length 95th (m)	53.0	70.7	0.0	62.2	38.5	38.4	204.9	0.0	20.2	160.1	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	160	502	1583	372	1138	350	2032	1568	86	1777	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.63	0.20	0.45	0.19	0.45	0.60	0.12	0.30	0.51	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	310	315	165	185	25	155	1190	190	25	895	45
Future Volume (vph)	95	310	315	165	185	25	155	1190	190	25	895	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3467		3303	3343	1568	1597	3282	1482
Flt Permitted	0.62	1.00	1.00	0.34	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1096	3438	1583	632	3467		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	316	321	168	189	26	158	1214	194	26	913	46
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	22
Lane Group Flow (vph)	97	316	321	168	207	0	158	1214	194	26	913	24
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	21.2	21.2	165.4	41.3	41.3		17.6	98.0	165.4	5.7	86.1	86.1
Effective Green, g (s)	21.2	21.2	165.4	41.3	41.3		17.6	98.0	165.4	5.7	86.1	86.1
Actuated g/C Ratio	0.13	0.13	1.00	0.25	0.25		0.11	0.59	1.00	0.03	0.52	0.52
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	140	440	1583	277	865		351	1980	1568	55	1708	771
v/s Ratio Prot		c0.09		c0.06	0.06		0.05	c0.36		0.02	c0.28	
v/s Ratio Perm	0.09		0.20	0.09					0.12			0.02
v/c Ratio	0.69	0.72	0.20	0.61	0.24		0.45	0.61	0.12	0.47	0.53	0.03
Uniform Delay, d1	69.0	69.2	0.0	51.7	49.5		69.4	21.6	0.0	78.4	26.3	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.8	5.5	0.3	3.7	0.1		0.9	1.4	0.2	6.3	1.2	0.1
Delay (s)	82.8	74.8	0.3	55.5	49.7		70.3	23.0	0.2	84.7	27.5	19.4
Level of Service	F	E	A	E	D		E	C	A	F	C	B
Approach Delay (s)		43.3			52.2			24.9			28.7	
Approach LOS		D			D			C			C	

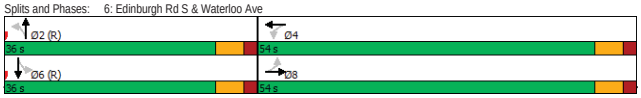
Intersection Summary					
HCM 2000 Control Delay		32.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.63			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)	23.4	
Intersection Capacity Utilization		79.9%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	220	40	75	120	25	20	535	90	40	460	35
Future Volume (vph)	50	220	40	75	120	25	20	535	90	40	460	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		0.99	0.99		1.00	1.00	
Frt		0.977			0.974			0.978			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1784	0	1752	1780	0	1805	1818	0	1770	1840	0
Flt Permitted	0.632			0.371			0.405			0.316		
Satd. Flow (perm)	1161	1784	0	678	1780	0	765	1818	0	587	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			18			10			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	239	43	82	130	27	22	582	98	43	500	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	282	0	82	157	0	22	680	0	43	538	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	19.4	19.4		19.4	19.4		58.6	58.6		58.6	58.6	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
v/c Ratio	0.22	0.71		0.56	0.39		0.04	0.57		0.11	0.45	
Control Delay	28.9	40.3		45.1	28.2		18.6	26.5		8.5	10.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.9	40.3		45.1	28.2		18.6	26.5		8.5	10.2	
LOS	C	D		D	C		B	C		A	B	
Approach Delay		38.5			34.0			26.2			10.1	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	282	82	157	22	680	43	538
v/c Ratio	0.22	0.71	0.56	0.39	0.04	0.57	0.11	0.45
Control Delay	28.9	40.3	45.1	28.2	18.6	26.5	8.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	40.3	45.1	28.2	18.6	26.5	8.5	10.2
Queue Length 50th (m)	8.1	45.3	13.4	21.6	1.7	88.8	2.6	42.6
Queue Length 95th (m)	16.6	65.5	26.3	35.6	m7.5	157.2	8.7	81.3
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	619	958	361	957	497	1186	381	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	0.09	0.29	0.23	0.16	0.04	0.57	0.11	0.45

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	220	40	75	120	25	20	535	90	40	460	35
Future Volume (vph)	50	220	40	75	120	25	20	535	90	40	460	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1746	1784		1737	1780		1793	1819		1762	1841	
Flt Permitted	0.63	1.00		0.37	1.00		0.41	1.00		0.32	1.00	
Satd. Flow (perm)	1162	1784		679	1780		765	1819		586	1841	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	239	43	82	130	27	22	582	98	43	500	38
RTOR Reduction (vph)	0	12	0	0	14	0	0	3	0	0	2	0
Lane Group Flow (vph)	54	270	0	82	143	0	22	677	0	43	536	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	19.4	19.4		19.4	19.4		58.6	58.6		58.6	58.6	
Effective Green, g (s)	19.4	19.4		19.4	19.4		58.6	58.6		58.6	58.6	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	250	384		146	383		498	1184		381	1198	
v/s Ratio Prot		c0.15			0.08			c0.37			0.29	
v/s Ratio Perm	0.05			0.12			0.03			0.07		
v/c Ratio	0.22	0.70		0.56	0.37		0.04	0.57		0.11	0.45	
Uniform Delay, d1	29.0	32.6		31.5	30.1		5.6	8.7		5.9	7.7	
Progression Factor	1.00	1.00		1.00	1.00		2.44	2.43		1.00	1.00	
Incremental Delay, d2	0.4	5.8		4.9	0.6		0.2	1.8		0.6	1.2	
Delay (s)	29.5	38.4		36.4	30.7		13.9	23.0		6.5	8.9	
Level of Service	C	D		D	C		B	C		A	A	
Approach Delay (s)		37.0			32.7			22.7			8.8	
Approach LOS		D			C			C			A	

Intersection Summary					
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	5	230	5	5	240
Future Volume (vph)	10	5	230	5	5	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	11	6	258	6	6	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	6	258	6	6	270
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	5	230	5	5	240
Future Volume (Veh/h)	10	5	230	5	5	240
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	6	258	6	6	270
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			24		541	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			24		541	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		99	74
cM capacity (veh/h)			1582		420	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	6	258	6	276
Volume Left	0	0	258	0	6
Volume Right	0	6	0	0	270
cSH	1700	1700	1582	1700	1073
Volume to Capacity	0.01	0.00	0.16	0.00	0.26
Queue Length 95th (m)	0.0	0.0	4.7	0.0	8.2
Control Delay (s)	0.0	0.0	7.7	0.0	9.7
Lane LOS			A		A
Approach Delay (s)	0.0		7.5		9.7
Approach LOS					A

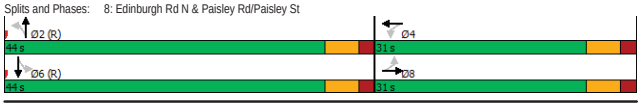
Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	310	65	45	220	75	70	430	55	90	380	70
Future Volume (vph)	70	310	65	45	220	75	70	430	55	90	380	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.97	0.99		0.99	0.98		0.99	1.00		1.00	0.99	
Frt		0.974			0.962			0.983			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1758	0	1805	1747	0	1656	1841	0	1656	1801	0
Flt Permitted	0.456			0.342			0.385			0.354		
Satd. Flow (perm)	797	1758	0	646	1747	0	663	1841	0	615	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25			13			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	76	337	71	49	239	82	76	467	60	98	413	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	408	0	49	321	0	76	527	0	98	489	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.29	0.68		0.23	0.54		0.23	0.56		0.32	0.53	
Control Delay	23.1	27.0		21.5	22.6		12.6	15.3		14.4	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.1	27.0		21.5	22.6		12.6	15.3		14.4	14.6	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		26.4			22.4			15.0			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues a) Existing AM

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	76	408	49	321	76	527	98	489
v/c Ratio	0.29	0.68	0.23	0.54	0.23	0.56	0.32	0.53
Control Delay	23.1	27.0	21.5	22.6	12.6	15.3	14.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	27.0	21.5	22.6	12.6	15.3	14.4	14.6
Queue Length 50th (m)	8.1	43.7	5.2	35.1	5.9	49.4	8.0	44.2
Queue Length 95th (m)	m19.1	73.9	13.8	59.6	14.3	78.1	19.0	70.6
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	265	596	215	599	335	939	311	921
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	0.29	0.68	0.23	0.54	0.23	0.56	0.32	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis a) Existing AM

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	310	65	45	220	75	70	430	55	90	380	70
Future Volume (vph)	70	310	65	45	220	75	70	430	55	90	380	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.97	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1660	1758		1794	1746		1637	1841		1650	1801	
Flt Permitted	0.46	1.00		0.34	1.00		0.39	1.00		0.35	1.00	
Satd. Flow (perm)	797	1758		645	1746		664	1841		614	1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	337	71	49	239	82	76	467	60	98	413	76
RTOR Reduction (vph)	0	10	0	0	17	0	0	6	0	0	9	0
Lane Group Flow (vph)	76	398	0	49	304	0	76	521	0	98	480	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	265	586		215	582		336	932		311	912	
v/s Ratio Prot		c0.23			0.17			c0.28			0.27	
v/s Ratio Perm	0.10			0.08			0.11			0.16		
v/c Ratio	0.29	0.68		0.23	0.52		0.23	0.56		0.32	0.53	
Uniform Delay, d1	18.4	21.5		18.0	20.2		10.3	12.7		10.9	12.4	
Progression Factor	1.06	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	5.8		2.5	3.3		1.6	2.4		2.6	2.2	
Delay (s)	22.0	27.0		20.5	23.5		11.9	15.1		13.5	14.6	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.2			23.1			14.7			14.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings a) Existing AM

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	335	1	0	295	145	0	1	0	170	1	130
Future Volume (vph)	195	335	1	0	295	145	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor	0.99	1.00			0.98						0.97	0.98
Frt					0.956							0.850
Flt Protected	0.950										0.953	
Satd. Flow (prot)	1752	1793	0	0	1726	0	0	1900	0	0	1775	1553
Flt Permitted	0.285										0.727	
Satd. Flow (perm)	521	1793	0	0	1726	0	0	1900	0	0	1313	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					38							159
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	238	409	1	0	360	177	0	1	0	207	1	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	238	410	0	0	537	0	0	1	0	0	208	159
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lanes, Volumes, Timings a) Existing AM

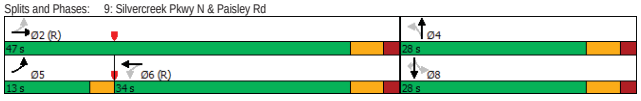
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8		8	8		8	8		8	8	8
Act Effct Green (s)	49.4	46.4			34.2			16.6			16.6	16.6
Actuated g/C Ratio	0.66	0.62			0.46			0.22			0.22	0.22
v/c Ratio	0.48	0.37			0.66			0.00			0.72	0.35
Control Delay	9.4	9.2			28.6			20.0			40.5	6.1
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	9.4	9.2			28.6			20.0			40.5	6.1
LOS	A	A			C			B			D	A
Approach Delay		9.3			28.6			20.0			25.6	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues a) Existing AM

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	238	410	537	1	208	159
v/c Ratio	0.48	0.37	0.66	0.00	0.72	0.35
Control Delay	9.4	9.2	28.6	20.0	40.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	9.2	28.6	20.0	40.5	6.1
Queue Length 50th (m)	12.2	27.2	72.1	0.1	28.6	0.0
Queue Length 95th (m)	23.4	46.4	101.2	1.1	41.5	9.9
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	511	1109	808	557	385	559
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	0.47	0.37	0.66	0.00	0.54	0.28

Intersection Summary

HCM Signalized Intersection Capacity Analysis a) Existing AM

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	335	1	0	295	145	0	1	0	170	1	130
Future Volume (vph)	195	335	1	0	295	145	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.98			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			0.97	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1748	1792			1725			1900			1721	1525
Flt Permitted	0.29	1.00			1.00			1.00			0.73	1.00
Satd. Flow (perm)	525	1792			1725			1900			1314	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	238	409	1	0	360	177	0	1	0	207	1	159
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	124
Lane Group Flow (vph)	238	410	0	0	516	0	0	1	0	0	208	35
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.4	46.4			34.2			16.6			16.6	16.6
Effective Green, g (s)	46.4	46.4			34.2			16.6			16.6	16.6
Actuated g/C Ratio	0.62	0.62			0.46			0.22			0.22	0.22
Clearance Time (s)	3.0	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)	474	1108			786			420			290	337
v/s Ratio Prot	c0.06	0.23			c0.30			0.00				
v/s Ratio Perm	0.25										c0.16	0.02
v/c Ratio	0.50	0.37			0.66			0.00			0.72	0.10
Uniform Delay, d1	8.2	7.1			15.8			22.7			27.0	23.3
Progression Factor	1.00	1.00			1.42			1.00			1.00	1.00
Incremental Delay, d2	0.8	1.0			4.1			0.0			8.2	0.1
Delay (s)	9.1	8.0			26.6			22.8			35.2	23.4
Level of Service	A	A			C			C			D	C
Approach Delay (s)		8.4			26.6			22.8			30.1	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings a) Existing AM

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	70	0	970	175	0	0	0	0	0	0
Future Volume (vph)	0	1000	70	0	970	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1087	76	0	1054	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1087	76	0	1054	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.7%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis a) Existing AM

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1000	70	0	970	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1000	70	0	970	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1087	76	0	1054	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1055			1088			1440	2143	364	1418	2143	353
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	813			1088			1225	1977	364	1202	1977	62
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	769			649			128	59	638	133	59	930

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4				
Volume Total	362	362	362	76	351	351	351	190				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	76	0	0	0	190				
cSH	1700	1700	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.21	0.21	0.21	0.04	0.21	0.21	0.21	0.11				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS												
Approach Delay (s)	0.0				0.0							
Approach LOS												

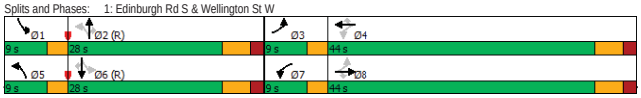
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	22.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	615	170	225	710	70	185	640	215	55	625	70
Future Volume (vph)	110	615	170	225	710	70	185	640	215	55	625	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.252			0.241			0.259			0.372		
Satd. Flow (perm)	478	3539	1577	449	3539	1555	491	3610	1535	690	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173			109			160			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	112	628	173	230	724	71	189	653	219	56	638	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	628	173	230	724	71	189	653	219	56	638	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	34.0	24.0	24.0	36.7	27.3	27.3	45.5	34.2	34.2	38.5	28.3	28.3
Actuated g/C Ratio	0.38	0.27	0.27	0.41	0.30	0.30	0.51	0.38	0.38	0.43	0.31	0.31
v/c Ratio	0.39	0.67	0.32	0.75	0.67	0.13	0.46	0.48	0.32	0.15	0.56	0.13
Control Delay	19.1	32.5	5.2	36.4	31.0	2.2	17.1	24.3	8.8	10.4	24.4	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	32.5	5.2	36.4	31.0	2.2	17.1	24.3	8.8	10.4	24.4	2.1
LOS	B	C	A	D	C	A	B	C	A	B	C	A
Approach Delay		25.7			30.2			19.8			21.3	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	112	628	173	230	724	71	189	653	219	56	638	71
v/c Ratio	0.39	0.67	0.32	0.75	0.67	0.13	0.46	0.48	0.32	0.15	0.56	0.13
Control Delay	19.1	32.5	5.2	36.4	31.0	2.2	17.1	24.3	8.8	10.4	24.4	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	32.5	5.2	36.4	31.0	2.2	17.1	24.3	8.8	10.4	24.4	2.1
Queue Length 50th (m)	11.7	52.7	0.0	25.8	62.8	0.0	18.8	49.4	7.2	3.5	55.4	1.4
Queue Length 95th (m)	20.5	63.9	13.4	#52.8	75.2	4.1	34.3	72.7	26.4	m6.2	75.4	m3.7
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	284	1494	765	308	1494	719	412	1370	682	380	1135	567
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.42	0.23	0.75	0.48	0.10	0.46	0.48	0.32	0.15	0.56	0.13

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	615	170	225	710	70	185	640	215	55	625	70
Future Volume (vph)	110	615	170	225	710	70	185	640	215	55	625	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1766	3610	1565
Flt Permitted	0.25	1.00	1.00	0.24	1.00	1.00	0.26	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	478	3539	1577	448	3539	1555	492	3610	1537	692	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	112	628	173	230	724	71	189	653	219	56	638	71
RTOR Reduction (vph)	0	0	126	0	0	49	0	0	101	0	0	49
Lane Group Flow (vph)	112	628	47	230	724	22	189	653	118	56	638	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	30.4	24.6	24.6	35.8	27.3	27.3	41.9	33.0	33.0	33.6	27.7	27.7
Effective Green, g (s)	30.4	24.6	24.6	35.8	27.3	27.3	41.9	33.0	33.0	33.6	27.7	27.7
Actuated g/C Ratio	0.34	0.27	0.27	0.40	0.30	0.30	0.47	0.37	0.37	0.37	0.31	0.31
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	246	967	431	302	1073	471	392	1323	563	328	1111	481
v/s Ratio Prot	0.03	0.18		c0.07	0.20		c0.06	0.18		0.01	c0.18	
v/s Ratio Perm	0.12		0.03	c0.23		0.01	0.16		0.08	0.05		0.01
v/c Ratio	0.46	0.65	0.11	0.76	0.67	0.05	0.48	0.49	0.21	0.17	0.57	0.05
Uniform Delay, d1	21.5	28.9	24.5	19.8	27.5	22.1	15.3	22.0	19.5	18.3	26.2	21.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.83	0.78
Incremental Delay, d2	1.3	1.5	0.1	10.8	1.7	0.0	0.9	1.3	0.8	0.2	2.0	0.2
Delay (s)	22.8	30.4	24.6	30.6	29.2	22.2	16.2	23.4	20.4	13.5	23.6	17.1
Level of Service	C	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		28.4			29.0			21.5			22.3	
Approach LOS		C			C			C			C	

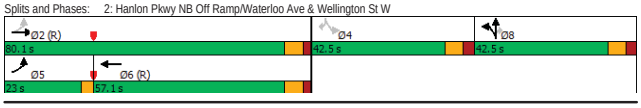
Intersection Summary					
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	73.7%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	750	0	0	970	10	390	110	140	5	0	255
Future Volume (vph)	150	750	0	0	970	10	390	110	140	5	0	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.972		0.950		
Satd. Flow (prot)	1787	5136	0	0	5130	0	1698	1745	1599	1805	0	1599
Flt Permitted	0.221						0.950	0.972		0.320		
Satd. Flow (perm)	416	5136	0	0	5130	0	1698	1745	1599	608	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				144			242
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	155	773	0	0	1000	10	402	113	144	5	0	263
Shared Lane Traffic (%)							37%					
Lane Group Flow (vph)	155	773	0	0	1010	0	253	262	144	5	0	263
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	104.4	100.3			85.7		30.2	30.2	30.2	12.5		12.5
Actuated g/C Ratio	0.63	0.61			0.52		0.18	0.18	0.18	0.08		0.08
v/c Ratio	0.43	0.25			0.38		0.82	0.82	0.35	0.11		0.76
Control Delay	17.9	16.4			26.2		84.6	84.9	9.5	73.6		25.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	17.9	16.4			26.2		84.6	84.9	9.5	73.6		25.7
LOS	B	B			C		F	F	A	E		C
Approach Delay		16.6			26.2			68.3			26.6	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 32.8		Intersection LOS: C	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	155	773	1010	253	262	144	5	263
v/c Ratio	0.43	0.25	0.38	0.82	0.82	0.35	0.11	0.76
Control Delay	17.9	16.4	26.2	84.6	84.9	9.5	73.6	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	16.4	26.2	84.6	84.9	9.5	73.6	25.7
Queue Length 50th (m)	19.6	41.5	71.7	89.7	93.1	0.0	1.7	7.1
Queue Length 95th (m)	40.8	65.6	111.7	118.2	121.3	18.9	6.4	38.3
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	429	3119	2662	368	378	460	128	529
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	0.36	0.25	0.38	0.69	0.69	0.31	0.04	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	750	0	0	970	10	390	110	140	5	0	255
Future Volume (vph)	150	750	0	0	970	10	390	110	140	5	0	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5127		1698	1745	1599	1805		1599
Flt Permitted	0.22	1.00			1.00		0.95	0.97	1.00	0.32		1.00
Satd. Flow (perm)	416	5136			5127		1698	1745	1599	608		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	155	773	0	0	1000	10	402	113	144	5	0	263
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	118	0	0	224
Lane Group Flow (vph)	155	773	0	0	1010	0	253	262	26	5	0	39
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	100.3	100.3			85.7		30.2	30.2	30.2	12.5		12.5
Effective Green, g (s)	100.3	100.3			85.7		30.2	30.2	30.2	12.5		12.5
Actuated g/C Ratio	0.61	0.61			0.52		0.18	0.18	0.18	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	349	3120			2661		310	319	292	46		121
v/s Ratio Prot	c0.03	0.15			0.20		0.15	c0.15				
v/s Ratio Perm	c0.24								0.02	0.01		c0.02
v/c Ratio	0.44	0.25			0.38		0.82	0.82	0.09	0.11		0.32
Uniform Delay, d1	15.1	15.0			23.8		64.8	64.9	56.0	71.1		72.3
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.9	0.2			0.4		15.2	15.5	0.1	1.0		1.6
Delay (s)	16.0	15.2			24.2		79.9	80.3	56.2	72.2		73.9
Level of Service	B	B			C		E	F	E	E		E
Approach Delay (s)		15.3			24.2			74.9			73.8	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

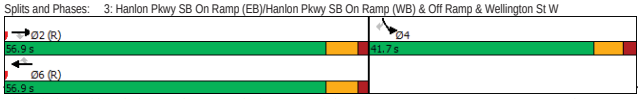
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	785	485	0	1220	170	0	0	0	170	0	70
Future Volume (vph)	0	785	485	0	1220	170	0	0	0	170	0	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			511			99						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	826	511	0	1284	179	0	0	0	179	0	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	826	511	0	1284	179	0	0	0	179	0	74
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.9	73.9		73.9	73.9				11.1		11.1
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.22	0.39		0.33	0.15				0.46		0.35
Control Delay		3.9	1.3		4.5	2.0				44.7		25.1
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.9	1.3		4.5	2.0				44.7		25.1
LOS		A	A		A	A				D		C
Approach Delay		2.9			4.2						39.0	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 43.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	826	511	1284	179	179	74
v/c Ratio	0.22	0.39	0.33	0.15	0.46	0.35
Control Delay	3.9	1.3	4.5	2.0	44.7	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	1.3	4.5	2.0	44.7	25.1
Queue Length 50th (m)	14.5	0.0	25.1	3.4	17.7	5.8
Queue Length 95th (m)	21.3	7.8	35.3	9.6	27.7	19.1
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3811	1300	3849	1182	1230	568
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	0.22	0.39	0.33	0.15	0.15	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	785	485	0	1220	170	0	0	0	170	0	70
Future Volume (vph)	0	785	485	0	1220	170	0	0	0	170	0	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	826	511	0	1284	179	0	0	0	179	0	74
RTOR Reduction (vph)	0	0	128	0	0	25	0	0	0	0	0	38
Lane Group Flow (vph)	0	826	383	0	1284	154	0	0	0	179	0	36
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.9	73.9		73.9	73.9				11.1		11.1
Effective Green, g (s)		73.9	73.9		73.9	73.9				11.1		11.1
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3811	1172		3849	1157				390		171
v/s Ratio Prot		0.16			c0.25					c0.05		
v/s Ratio Perm			0.24			0.10						0.02
v/c Ratio		0.22	0.33		0.33	0.13				0.46		0.21
Uniform Delay, d1		3.7	4.1		4.1	3.4				40.9		39.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.7		0.2	0.2				0.9		0.6
Delay (s)		3.8	4.8		4.4	3.7				41.8		40.4
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.2			4.3			0.0			41.4	
Approach LOS		A			A			A			D	

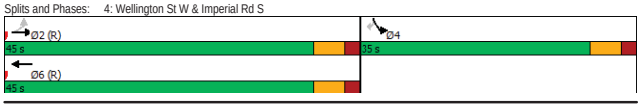
Intersection Summary						
HCM 2000 Control Delay		7.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio		0.35				
Actuated Cycle Length (s)		98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization		43.2%	ICU Level of Service		A	
Analysis Period (min)		15				
c Critical Lane Group						

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	865	795	385	350	55
Future Volume (vph)	65	865	795	385	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3342	0	1787	1615
Flt Permitted		0.737			0.950	
Satd. Flow (perm)	0	2612	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			143			57
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	67	892	820	397	361	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	959	1217	0	361	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		46.6	46.6		21.4	21.4
Actuated g/C Ratio		0.58	0.58		0.27	0.27
v/c Ratio		0.63	0.61		0.76	0.12
Control Delay		14.5	11.8		36.9	6.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.5	11.8		36.9	6.2
LOS		B	B		D	A
Approach Delay		14.5	11.8		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 94.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	959	1217	361	57
v/c Ratio	0.63	0.61	0.76	0.12
Control Delay	14.5	11.8	36.9	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.5	11.8	36.9	6.2
Queue Length 50th (m)	48.8	52.8	52.8	0.0
Queue Length 95th (m)	85.0	89.6	73.5	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1522	2008	647	621
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	0.63	0.61	0.56	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	865	795	385	350	55
Future Volume (vph)	65	865	795	385	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3342		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2612	3342		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	67	892	820	397	361	57
RTOR Reduction (vph)	0	0	60	0	0	42
Lane Group Flow (vph)	0	959	1157	0	361	15
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		46.6	46.6		21.4	21.4
Effective Green, g (s)		46.6	46.6		21.4	21.4
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1521	1946		478	432
v/s Ratio Prot			0.35		c0.20	
v/s Ratio Perm		c0.37				0.01
v/c Ratio		0.63	0.59		0.76	0.04
Uniform Delay, d1		11.0	10.7		26.9	21.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.0	1.3		6.7	0.0
Delay (s)		13.0	12.0		33.6	21.7
Level of Service		B	B		C	C
Approach Delay (s)		13.0	12.0		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

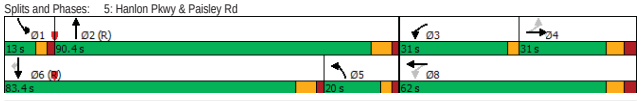
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	350	365	230	420	35	395	1000	285	40	1340	130
Future Volume (vph)	115	350	365	230	420	35	395	1000	285	40	1340	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3563	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.483			0.324			0.950			0.950		
Satd. Flow (perm)	908	3574	1595	615	3563	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			258		6				292			134
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	119	361	376	237	433	36	407	1031	294	41	1381	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	361	376	237	469	0	407	1031	294	41	1381	134
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	31.0	31.0		31.0	62.0		20.0	90.4		13.0	83.4	83.4
Total Split (%)	18.7%	18.7%		18.7%	37.5%		12.1%	54.7%		7.9%	50.4%	50.4%
Maximum Green (s)	23.0	23.0		28.0	54.0		15.0	83.0		8.0	76.0	76.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	25.8	25.8	165.4	55.7	50.7		20.4	88.9	165.4	8.0	73.9	73.9
Actuated g/C Ratio	0.16	0.16	1.00	0.34	0.31		0.12	0.54	1.00	0.05	0.45	0.45
v/c Ratio	0.84	0.65	0.24	0.65	0.43		0.95	0.57	0.18	0.47	0.89	0.17
Control Delay	109.2	71.6	0.3	50.3	46.0		101.4	28.3	0.3	94.5	50.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.2	71.6	0.3	50.3	46.0		101.4	28.3	0.3	94.5	50.4	4.1
LOS	F	E	A	D	D		F	C	A	F	D	A
Approach Delay		45.5			47.4			40.7			47.5	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 44.7		Intersection LOS: D	
Intersection Capacity Utilization 93.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	361	376	237	469	407	1031	294	41	1381	134
v/c Ratio	0.84	0.65	0.24	0.65	0.43	0.95	0.57	0.18	0.47	0.89	0.17
Control Delay	109.2	71.6	0.3	50.3	46.0	101.4	28.3	0.3	94.5	50.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.2	71.6	0.3	50.3	46.0	101.4	28.3	0.3	94.5	50.4	4.1
Queue Length 50th (m)	39.5	61.0	0.0	60.9	65.6	~85.0	132.6	0.0	14.1	228.9	0.0
Queue Length 95th (m)	#86.0	83.3	0.0	86.8	83.1	#129.0	155.6	0.0	28.5	257.4	13.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	142	562	1595	408	1167	428	1814	1599	87	1594	814
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.64	0.24	0.58	0.40	0.95	0.57	0.18	0.47	0.87	0.16

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	350	365	230	420	35	395	1000	285	40	1340	130
Future Volume (vph)	115	350	365	230	420	35	395	1000	285	40	1340	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1804	3565		3467	3374	1599	1805	3471	1615
Flt Permitted	0.48	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	908	3574	1595	615	3565		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	361	376	237	433	36	407	1031	294	41	1381	134
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	75
Lane Group Flow (vph)	119	361	376	237	465	0	407	1031	294	41	1381	59
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	25.9	25.9	165.4	50.7	50.7		21.4	87.9	165.4	6.4	72.9	72.9
Effective Green, g (s)	25.9	25.9	165.4	50.7	50.7		21.4	87.9	165.4	6.4	72.9	72.9
Actuated g/C Ratio	0.16	0.16	1.00	0.31	0.31		0.13	0.53	1.00	0.04	0.44	0.44
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	559	1595	345	1092		448	1793	1599	69	1529	711
v/s Ratio Prot		0.10		c0.09	0.13		c0.12	0.31		0.02	c0.40	
v/s Ratio Perm	c0.13		0.24	0.12					0.18			0.04
v/c Ratio	0.84	0.65	0.24	0.69	0.43		0.91	0.58	0.18	0.59	0.90	0.08
Uniform Delay, d1	67.7	65.4	0.0	46.3	45.7		71.0	26.1	0.0	78.2	43.0	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	32.9	2.6	0.3	5.6	0.3		21.9	1.3	0.3	13.0	9.1	0.2
Delay (s)	100.6	68.0	0.3	51.9	46.0		92.9	27.5	0.3	91.2	52.1	27.1
Level of Service	F	E	A	D	D		F	C	A	F	D	C
Approach Delay (s)		42.8			48.0			38.2			50.9	
Approach LOS		D			D			D			D	

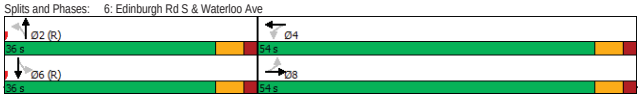
Intersection Summary					
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4		
Intersection Capacity Utilization	93.6%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	150	40	90	230	45	35	600	80	45	590	30
Future Volume (vph)	45	150	40	90	230	45	35	600	80	45	590	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.976			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1805	1826	0	1805	1856	0	1770	1884	0
Flt Permitted	0.363			0.545			0.343			0.306		
Satd. Flow (perm)	667	1811	0	1028	1826	0	651	1856	0	569	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			17			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	155	41	93	237	46	36	619	82	46	608	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	196	0	93	283	0	36	701	0	46	639	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	19.0	19.0		19.0	19.0		59.0	59.0		59.0	59.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.66	0.66		0.66	0.66	
v/c Ratio	0.33	0.49		0.43	0.71		0.08	0.58		0.12	0.52	
Control Delay	34.5	30.5		35.4	40.2		13.4	22.0		8.5	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.5	30.5		35.4	40.2		13.4	22.0		8.5	11.0	
LOS	C	C		D	D		B	C		A	B	
Approach Delay		31.2			39.0			21.6			10.8	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	196	93	283	36	701	46	639
v/c Ratio	0.33	0.49	0.43	0.71	0.08	0.58	0.12	0.52
Control Delay	34.5	30.5	35.4	40.2	13.4	22.0	8.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	30.5	35.4	40.2	13.4	22.0	8.5	11.0
Queue Length 50th (m)	7.1	27.6	14.8	45.2	1.8	70.6	2.8	53.7
Queue Length 95th (m)	16.1	44.0	27.1	65.7	m10.5	145.6	9.1	100.9
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	355	976	548	981	426	1218	372	1235
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.20	0.17	0.29	0.08	0.58	0.12	0.52

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	150	40	90	230	45	35	600	80	45	590	30
Future Volume (vph)	45	150	40	90	230	45	35	600	80	45	590	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1748	1810		1793	1825		1801	1857		1763	1884	
Flt Permitted	0.36	1.00		0.55	1.00		0.34	1.00		0.31	1.00	
Satd. Flow (perm)	667	1810		1029	1825		650	1857		567	1884	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	155	41	93	237	46	36	619	82	46	608	31
RTOR Reduction (vph)	0	18	0	0	13	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	178	0	93	270	0	36	698	0	46	638	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	19.0	19.0		19.0	19.0		59.0	59.0		59.0	59.0	
Effective Green, g (s)	19.0	19.0		19.0	19.0		59.0	59.0		59.0	59.0	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.66	0.66		0.66	0.66	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	140	382		217	385		426	1217		371	1235	
v/s Ratio Prot		0.10			c0.15			c0.38			0.34	
v/s Ratio Perm	0.07			0.09			0.06			0.08		
v/c Ratio	0.33	0.47		0.43	0.70		0.08	0.57		0.12	0.52	
Uniform Delay, d1	30.1	31.1		30.8	32.9		5.7	8.6		5.8	8.1	
Progression Factor	1.00	1.00		1.00	1.00		1.73	2.02		1.00	1.00	
Incremental Delay, d2	1.4	0.9		1.4	5.7		0.4	1.8		0.7	1.5	
Delay (s)	31.5	32.0		32.2	38.5		10.1	19.1		6.5	9.6	
Level of Service	C	C		C	D		B	B		A	A	
Approach Delay (s)		31.9			36.9			18.7			9.4	
Approach LOS		C			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	10	250	10	20	250
Future Volume (vph)	10	10	250	10	20	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	12	12	305	12	24	305
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	12	305	12	24	305
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	10	250	10	20	250
Future Volume (Veh/h)	10	10	250	10	20	250
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	12	12	305	12	24	305
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			25		636	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			25		636	14
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			81		93	71
cM capacity (veh/h)			1588		359	1067

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	12	12	305	12	329
Volume Left	0	0	305	0	24
Volume Right	0	12	0	0	305
cSH	1700	1700	1588	1700	1151
Volume to Capacity	0.01	0.01	0.19	0.01	0.29
Queue Length 95th (m)	0.0	0.0	5.7	0.0	9.5
Control Delay (s)	0.0	0.0	7.8	0.0	10.2
Lane LOS			A		B
Approach Delay (s)	0.0		7.5		10.2
Approach LOS					B

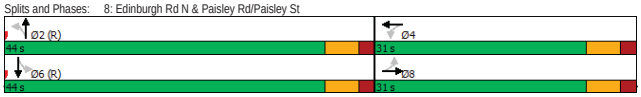
Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	285	110	55	345	45	100	495	50	95	500	85
Future Volume (vph)	70	285	110	55	345	45	100	495	50	95	500	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.958			0.983			0.986			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1790	0	1805	1843	0	1805	1865	0	1736	1847	0
Flt Permitted	0.328			0.321			0.271			0.305		
Satd. Flow (perm)	618	1790	0	606	1843	0	513	1865	0	556	1847	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			9			10			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	75	306	118	59	371	48	108	532	54	102	538	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	424	0	59	419	0	108	586	0	102	629	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.36	0.69		0.29	0.68		0.42	0.62		0.36	0.67	
Control Delay	25.5	25.8		23.4	27.5		17.8	16.6		15.9	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.5	25.8		23.4	27.5		17.8	16.6		15.9	17.7	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		25.7			27.0			16.8			17.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 90.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues a) Existing PM

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	424	59	419	108	586	102	629
v/c Ratio	0.36	0.69	0.29	0.68	0.42	0.62	0.36	0.67
Control Delay	25.5	25.8	23.4	27.5	17.8	16.6	15.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	25.8	23.4	27.5	17.8	16.6	15.9	17.7
Queue Length 50th (m)	7.6	43.1	6.4	51.8	9.4	57.7	8.6	63.8
Queue Length 95th (m)	m18.3	72.3	16.5	82.8	23.2	90.3	20.7	100.2
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	206	615	202	620	259	949	281	943
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	0.36	0.69	0.29	0.68	0.42	0.62	0.36	0.67

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis a) Existing PM

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	285	110	55	345	45	100	495	50	95	500	85
Future Volume (vph)	70	285	110	55	345	45	100	495	50	95	500	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1789	1791		1794	1843		1799	1866		1732	1848	
Flt Permitted	0.33	1.00		0.32	1.00		0.27	1.00		0.31	1.00	
Satd. Flow (perm)	617	1791		607	1843		512	1866		556	1848	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	306	118	59	371	48	108	532	54	102	538	91
RTOR Reduction (vph)	0	19	0	0	6	0	0	5	0	0	8	0
Lane Group Flow (vph)	75	405	0	59	413	0	108	581	0	102	621	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	205	597		202	614		259	945		281	936	
v/s Ratio Prot		c0.23			0.22			0.31			c0.34	
v/s Ratio Perm	0.12			0.10			0.21			0.18		
v/c Ratio	0.37	0.68		0.29	0.67		0.42	0.61		0.36	0.66	
Uniform Delay, d1	19.0	21.5		18.5	21.5		11.6	13.3		11.2	13.7	
Progression Factor	1.03	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	5.6		3.6	5.8		4.9	3.0		3.6	3.7	
Delay (s)	24.1	26.4		22.1	27.3		16.5	16.2		14.8	17.5	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.0			26.6			16.3			17.1	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings a) Existing PM

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	380	1	0	390	185	2	0	0	215	0	295
Future Volume (vph)	275	380	1	0	390	185	2	0	0	215	0	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor	1.00	1.00			0.99			1.00			1.00	0.99
Frt					0.957							0.850
Flt Protected	0.950							0.950			0.950	
Satd. Flow (prot)	1805	1881	0	0	1792	0	0	1805	0	0	1787	1615
Flt Permitted	0.194							0.522			0.757	
Satd. Flow (perm)	368	1881	0	0	1792	0	0	991	0	0	1419	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36							317
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	296	409	1	0	419	199	2	0	0	231	0	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	410	0	0	618	0	0	2	0	0	231	317
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lanes, Volumes, Timings a) Existing PM

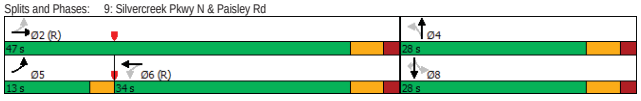
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	49.1	46.1			32.2			16.9			16.9	16.9
Actuated g/C Ratio	0.65	0.61			0.43			0.23			0.23	0.23
v/c Ratio	0.66	0.35			0.78			0.01			0.72	0.52
Control Delay	15.7	9.1			37.4			19.5			39.6	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	15.7	9.1			37.4			19.5			39.6	6.2
LOS	B	A			D			B			D	A
Approach Delay		11.9			37.4			19.5			20.3	
Approach LOS		B			D			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues a) Existing PM

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	296	410	618	2	231	317
v/c Ratio	0.66	0.35	0.78	0.01	0.72	0.52
Control Delay	15.7	9.1	37.4	19.5	39.6	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	9.1	37.4	19.5	39.6	6.2
Queue Length 50th (m)	16.1	27.3	95.3	0.2	31.6	0.0
Queue Length 95th (m)	#48.1	51.9	#150.8	1.7	51.2	17.4
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	455	1156	789	290	416	691
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	0.65	0.35	0.78	0.01	0.56	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis a) Existing PM

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	380	1	0	390	185	2	0	0	215	0	295
Future Volume (vph)	275	380	1	0	390	185	2	0	0	215	0	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.95			0.95	1.00
Satd. Flow (prot)	1805	1880			1792			1804			1781	1594
Flt Permitted	0.19	1.00			1.00			0.52			0.76	1.00
Satd. Flow (perm)	368	1880			1792			991			1418	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	296	409	1	0	419	199	2	0	0	231	0	317
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	246
Lane Group Flow (vph)	296	410	0	0	597	0	0	2	0	0	231	71
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.1	46.1			32.2			16.9			16.9	16.9
Effective Green, g (s)	46.1	46.1			32.2			16.9			16.9	16.9
Actuated g/C Ratio	0.61	0.61			0.43			0.23			0.23	0.23
Clearance Time (s)	3.0	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)	435	1155			769			223			319	359
v/s Ratio Prot	c0.10	0.22			c0.33							
v/s Ratio Perm	0.32							0.00			c0.16	0.04
v/c Ratio	0.68	0.35			0.78			0.01			0.72	0.20
Uniform Delay, d1	10.6	7.1			18.3			22.5			26.9	23.6
Progression Factor	1.00	1.00			1.60			1.00			1.00	1.00
Incremental Delay, d2	4.3	0.9			6.3			0.0			7.9	0.3
Delay (s)	14.9	8.0			35.6			22.6			34.8	23.8
Level of Service	B	A			D			C			C	C
Approach Delay (s)		10.9			35.6			22.6			28.5	
Approach LOS		B			D			C			C	

Intersection Summary

HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings a) Existing PM

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	75	0	1390	225	0	0	0	0	0	0
Future Volume (vph)	0	900	75	0	1390	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	978	82	0	1511	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	978	82	0	1511	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis a) Existing PM

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	900	75	0	1390	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	900	75	0	1390	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	978	82	0	1511	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	1512			979			1484	2491	328	1839	2491	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1150			979			1118	2248	328	1517	2248	22
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	548			713			146	38	673	74	38	942

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	326	326	326	82	504	504	504	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.05	0.30	0.30	0.30	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

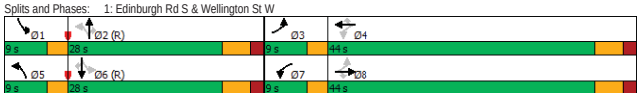
Average Delay	0.0		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	520	100	160	490	65	115	420	190	55	445	65
Future Volume (vph)	75	520	100	160	490	65	115	420	190	55	445	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.427			0.258			0.434			0.500		
Satd. Flow (perm)	798	3574	1575	480	3505	1487	825	3610	1583	950	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			194			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	77	531	102	163	500	66	117	429	194	56	454	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	531	102	163	500	66	117	429	194	56	454	66
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	30.2	19.3	19.3	34.9	23.5	23.5	47.6	37.2	37.2	44.5	35.7	35.7
Actuated g/C Ratio	0.34	0.21	0.21	0.39	0.26	0.26	0.53	0.41	0.41	0.49	0.40	0.40
v/c Ratio	0.22	0.69	0.24	0.49	0.55	0.14	0.22	0.29	0.25	0.10	0.32	0.09
Control Delay	17.4	37.2	6.4	22.3	31.2	2.3	12.7	20.2	4.4	9.4	18.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	37.2	6.4	22.3	31.2	2.3	12.7	20.2	4.4	9.4	18.9	2.1
LOS	B	D	A	C	C	A	B	C	A	A	B	A
Approach Delay		30.7			26.6			14.9			16.0	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	531	102	163	500	66	117	429	194	56	454	66
v/c Ratio	0.22	0.69	0.24	0.49	0.55	0.14	0.22	0.29	0.25	0.10	0.32	0.09
Control Delay	17.4	37.2	6.4	22.3	31.2	2.3	12.7	20.2	4.4	9.4	18.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	37.2	6.4	22.3	31.2	2.3	12.7	20.2	4.4	9.4	18.9	2.1
Queue Length 50th (m)	8.5	47.4	0.0	19.1	42.1	0.0	10.1	28.0	0.0	3.6	33.4	0.6
Queue Length 95th (m)	16.2	59.8	10.7	30.7	56.4	3.6	20.8	44.2	14.5	6.6	50.6	3.7
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	353	1509	727	333	1479	690	529	1492	768	536	1431	706
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.35	0.14	0.49	0.34	0.10	0.22	0.29	0.25	0.10	0.32	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	520	100	160	490	65	115	420	190	55	445	65
Future Volume (vph)	75	520	100	160	490	65	115	420	190	55	445	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.43	1.00	1.00	0.26	1.00	1.00	0.43	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	800	3574	1575	481	3505	1487	825	3610	1583	950	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	531	102	163	500	66	117	429	194	56	454	66
RTOR Reduction (vph)	0	0	79	0	0	49	0	0	116	0	0	41
Lane Group Flow (vph)	77	531	23	163	500	17	117	429	78	56	454	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	26.6	19.9	19.9	33.2	23.5	23.5	43.4	36.0	36.0	40.2	34.4	34.4
Effective Green, g (s)	26.6	19.9	19.9	33.2	23.5	23.5	43.4	36.0	36.0	40.2	34.4	34.4
Actuated g/C Ratio	0.30	0.22	0.22	0.37	0.26	0.26	0.48	0.40	0.40	0.45	0.38	0.38
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	309	790	348	324	915	388	478	1444	633	479	1379	617
v/s Ratio Prot	0.02	c0.15		c0.06	0.14		c0.02	0.12		0.01	c0.13	
v/s Ratio Perm	0.05		0.01	0.13		0.01	0.10		0.05	0.04		0.02
v/c Ratio	0.25	0.67	0.06	0.50	0.55	0.04	0.24	0.30	0.12	0.12	0.33	0.04
Uniform Delay, d1	23.4	32.1	27.7	20.4	28.7	24.9	13.0	18.4	17.0	14.2	19.6	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.86	1.16
Incremental Delay, d2	0.4	2.3	0.1	1.2	0.7	0.0	0.3	0.5	0.4	0.1	0.6	0.1
Delay (s)	23.8	34.3	27.8	21.6	29.3	24.9	13.3	18.9	17.4	11.0	17.5	20.3
Level of Service	C	C	C	C	C	C	B	B	B	B	B	C
Approach Delay (s)		32.2			27.2			17.6			17.2	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay		23.8	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.44			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)		18.0
Intersection Capacity Utilization		58.6%	ICU Level of Service		B
Analysis Period (min)		15			

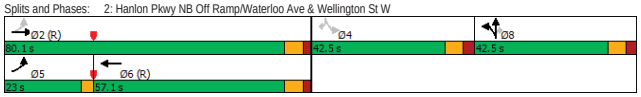
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	535	0	0	690	10	275	45	150	5	0	155
Future Volume (vph)	85	535	0	0	690	10	275	45	150	5	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.965		0.950		
Satd. Flow (prot)	1736	5085	0	0	5126	0	1681	1717	1599	1805	0	1599
Flt Permitted	0.342						0.950	0.965		0.323		
Satd. Flow (perm)	625	5085	0	0	5126	0	1681	1717	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				153			158
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	87	546	0	0	704	10	281	46	153	5	0	158
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	87	546	0	0	714	0	163	164	153	5	0	158
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	113.2	109.1			97.5		21.5	21.5	21.5	12.4		12.4
Actuated g/C Ratio	0.69	0.66			0.59		0.13	0.13	0.13	0.08		0.08
v/c Ratio	0.18	0.16			0.24		0.75	0.74	0.45	0.11		0.59
Control Delay	11.0	11.7			17.5		88.9	87.5	12.3	73.8		18.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	11.0	11.7			17.5		88.9	87.5	12.3	73.8		18.7
LOS	B	B			B		F	F	B	E		B
Approach Delay		11.6			17.5			64.0			20.4	
Approach LOS		B			B			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 27.1		Intersection LOS: C	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	87	546	714	163	164	153	5	158
v/c Ratio	0.18	0.16	0.24	0.75	0.74	0.45	0.11	0.59
Control Delay	11.0	11.7	17.5	88.9	87.5	12.3	73.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	11.7	17.5	88.9	87.5	12.3	73.8	18.7
Queue Length 50th (m)	8.8	23.6	39.4	58.2	58.4	0.0	1.7	0.0
Queue Length 95th (m)	21.0	39.4	63.3	82.8	83.0	21.1	6.4	23.7
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	562	3360	3028	356	363	459	130	463
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.16	0.24	0.46	0.45	0.33	0.04	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	535	0	0	690	10	275	45	150	5	0	155
Future Volume (vph)	85	535	0	0	690	10	275	45	150	5	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5126		1681	1718	1599	1805		1599
Flt Permitted	0.34	1.00			1.00		0.95	0.97	1.00	0.32		1.00
Satd. Flow (perm)	624	5085			5126		1681	1718	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	87	546	0	0	704	10	281	46	153	5	0	158
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	133	0	0	146
Lane Group Flow (vph)	87	546	0	0	714	0	163	164	20	5	0	12
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	109.1	109.1			97.5		21.5	21.5	21.5	12.4		12.4
Effective Green, g (s)	109.1	109.1			97.5		21.5	21.5	21.5	12.4		12.4
Actuated g/C Ratio	0.66	0.66			0.59		0.13	0.13	0.13	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	470	3360			3027		218	223	208	46		120
v/s Ratio Prot	c0.01	0.11			c0.14		c0.10	0.10				
v/s Ratio Perm	0.11								0.01	c0.01		0.01
v/c Ratio	0.19	0.16			0.24		0.75	0.74	0.10	0.11		0.10
Uniform Delay, d1	10.2	10.6			16.1		69.2	69.1	63.2	71.2		71.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2	0.1			0.2		13.1	11.9	0.2	1.0		0.4
Delay (s)	10.4	10.7			16.3		82.3	80.9	63.4	72.2		71.5
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		10.7			16.3			75.8			71.5	
Approach LOS		B			B			E			E	

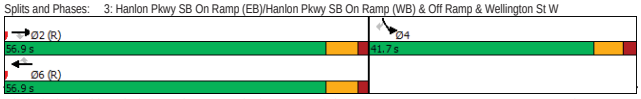
Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	565	370	0	815	145	0	0	0	145	0	120
Future Volume (vph)	0	565	370	0	815	145	0	0	0	145	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			381			125						121
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	582	381	0	840	149	0	0	0	149	0	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	582	381	0	840	149	0	0	0	149	0	124
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		74.4	74.4		74.4	74.4				10.6		10.6
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.15	0.30		0.22	0.12				0.40		0.45
Control Delay		3.5	1.0		3.8	1.2				44.3		13.6
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.5	1.0		3.8	1.2				44.3		13.6
LOS		A	A		A	A				D		B
Approach Delay		2.5			3.4						30.4	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	582	381	840	149	149	124
v/c Ratio	0.15	0.30	0.22	0.12	0.40	0.45
Control Delay	3.5	1.0	3.8	1.2	44.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	1.0	3.8	1.2	44.3	13.6
Queue Length 50th (m)	9.4	0.0	14.3	1.0	14.7	0.6
Queue Length 95th (m)	14.0	6.7	20.5	5.7	24.0	17.2
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3799	1275	3836	1196	1230	634
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	0.15	0.30	0.22	0.12	0.12	0.20

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	565	370	0	815	145	0	0	0	145	0	120
Future Volume (vph)	0	565	370	0	815	145	0	0	0	145	0	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	582	381	0	840	149	0	0	0	149	0	124
RTOR Reduction (vph)	0	0	94	0	0	31	0	0	0	0	0	108
Lane Group Flow (vph)	0	582	287	0	840	118	0	0	0	149	0	16
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		74.4	74.4		74.4	74.4				10.6		10.6
Effective Green, g (s)		74.4	74.4		74.4	74.4				10.6		10.6
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3799	1181		3836	1165				372		168
v/s Ratio Prot		0.12			0.17					c0.04		
v/s Ratio Perm			c0.18			0.08						0.01
v/c Ratio		0.15	0.24		0.22	0.10				0.40		0.10
Uniform Delay, d1		3.4	3.6		3.6	3.2				41.0		39.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.2				0.7		0.2
Delay (s)		3.4	4.1		3.7	3.4				41.7		39.9
Level of Service		A	A		A	A				D		D
Approach Delay (s)		3.7			3.6			0.0			40.9	
Approach LOS		A			A			A			D	

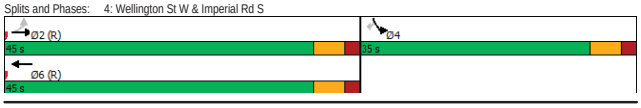
Intersection Summary					
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.26				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	555	530	290	370	55
Future Volume (vph)	65	555	530	290	370	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.947			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3325	0	1787	1615
Flt Permitted		0.772			0.950	
Satd. Flow (perm)	0	2714	3325	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			180			59
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	70	597	570	312	398	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	667	882	0	398	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		45.1	45.1		22.9	22.9
Actuated g/C Ratio		0.56	0.56		0.29	0.29
v/c Ratio		0.44	0.45		0.78	0.12
Control Delay		12.3	9.6		36.6	5.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		12.3	9.6		36.6	5.7
LOS		B	A		D	A
Approach Delay		12.3	9.6		32.6	
Approach LOS		B	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	667	882	398	59
v/c Ratio	0.44	0.45	0.78	0.12
Control Delay	12.3	9.6	36.6	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.3	9.6	36.6	5.7
Queue Length 50th (m)	30.1	30.8	58.0	0.0
Queue Length 95th (m)	52.4	54.6	79.3	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1535	1958	651	626
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	0.45	0.61	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	555	530	290	370	55
Future Volume (vph)	65	555	530	290	370	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3325		1787	1615
Flt Permitted		0.77	1.00		0.95	1.00
Satd. Flow (perm)		2712	3325		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	597	570	312	398	59
RTOR Reduction (vph)	0	0	79	0	0	42
Lane Group Flow (vph)	0	667	803	0	398	17
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		45.1	45.1		22.9	22.9
Effective Green, g (s)		45.1	45.1		22.9	22.9
Actuated g/C Ratio		0.56	0.56		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1528	1874		511	462
v/s Ratio Prot			0.24		c0.22	
v/s Ratio Perm		c0.25				0.01
v/c Ratio		0.44	0.43		0.78	0.04
Uniform Delay, d1		10.1	10.0		26.2	20.6
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	0.7		7.4	0.0
Delay (s)		11.0	10.8		33.6	20.6
Level of Service		B	B		C	C
Approach Delay (s)		11.0	10.8		31.9	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.55		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		77.7%	ICU Level of Service	D
Analysis Period (min)		15		

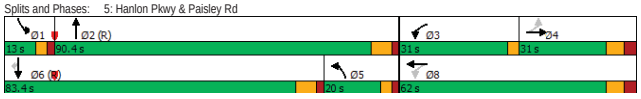
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	290	340	185	300	20	345	990	190	35	905	125
Future Volume (vph)	125	290	340	185	300	20	345	990	190	35	905	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.555			0.416			0.950			0.950		
Satd. Flow (perm)	1054	3574	1579	782	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			290		4				194			128
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	128	296	347	189	306	20	352	1010	194	36	923	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	296	347	189	326	0	352	1010	194	36	923	128
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	31.0	31.0		31.0	62.0		20.0	90.4		13.0	83.4	83.4
Total Split (%)	18.7%	18.7%		18.7%	37.5%		12.1%	54.7%		7.9%	50.4%	50.4%
Maximum Green (s)	23.0	23.0		28.0	54.0		15.0	83.0		8.0	76.0	76.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	26.9	26.9	165.4	52.6	47.6		26.7	91.4	165.4	8.6	70.7	70.7
Actuated g/C Ratio	0.16	0.16	1.00	0.32	0.29		0.16	0.55	1.00	0.05	0.43	0.43
v/c Ratio	0.75	0.51	0.22	0.53	0.32		0.63	0.52	0.12	0.40	0.62	0.17
Control Delay	90.9	65.5	0.3	47.3	45.3		70.6	26.4	0.2	89.0	40.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.9	65.5	0.3	47.3	45.3		70.6	26.4	0.2	89.0	40.2	5.4
LOS	F	E	A	D	D		E	C	A	F	D	A
Approach Delay		40.4			46.0			33.1			37.7	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 37.5		Intersection LOS: D	
Intersection Capacity Utilization 91.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	296	347	189	326	352	1010	194	36	923	128
v/c Ratio	0.75	0.51	0.22	0.53	0.32	0.63	0.52	0.12	0.40	0.62	0.17
Control Delay	90.9	65.5	0.3	47.3	45.3	70.6	26.4	0.2	89.0	40.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.9	65.5	0.3	47.3	45.3	70.6	26.4	0.2	89.0	40.2	5.4
Queue Length 50th (m)	42.5	49.5	0.0	49.1	45.3	60.1	121.3	0.0	12.3	131.6	0.0
Queue Length 95th (m)	66.7	63.6	0.0	68.3	56.7	77.6	153.1	0.0	26.0	168.6	14.9
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	177	603	1579	418	1179	559	1953	1579	91	1632	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.49	0.22	0.45	0.28	0.63	0.52	0.12	0.40	0.57	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	290	340	185	300	20	345	990	190	35	905	125
Future Volume (vph)	125	290	340	185	300	20	345	990	190	35	905	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3574	1579	1786	3574		3467	3505	1579	1752	3505	1615
Flt Permitted	0.55	1.00	1.00	0.42	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1053	3574	1579	782	3574		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	296	347	189	306	20	352	1010	194	36	923	128
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	74
Lane Group Flow (vph)	128	296	347	189	323	0	352	1010	194	36	923	54
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	26.9	26.9	165.4	47.6	47.6		27.7	90.4	165.4	7.0	69.7	69.7
Effective Green, g (s)	26.9	26.9	165.4	47.6	47.6		27.7	90.4	165.4	7.0	69.7	69.7
Actuated g/C Ratio	0.16	0.16	1.00	0.29	0.29		0.17	0.55	1.00	0.04	0.42	0.42
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	171	581	1579	332	1028		580	1915	1579	74	1477	680
v/s Ratio Prot		0.08		c0.06	0.09		c0.10	0.29		0.02	c0.26	
v/s Ratio Perm	c0.12		0.22	0.10					0.12			0.03
v/c Ratio	0.75	0.51	0.22	0.57	0.31		0.61	0.53	0.12	0.49	0.62	0.08
Uniform Delay, d1	66.0	63.2	0.0	47.2	46.1		63.8	23.9	0.0	77.4	37.6	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.3	0.7	0.3	2.2	0.2		1.8	1.0	0.2	5.0	2.0	0.2
Delay (s)	82.3	63.9	0.3	49.4	46.3		65.6	24.9	0.2	82.4	39.6	28.9
Level of Service	F	E	A	D	D		E	C	A	F	D	C
Approach Delay (s)		38.4			47.4			31.0			39.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

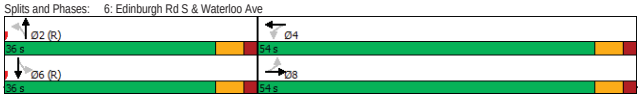
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	90	25	55	80	40	30	470	60	30	465	20
Future Volume (vph)	40	90	25	55	80	40	30	470	60	30	465	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00	1.00		1.00	1.00	
Frt		0.968			0.950			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1799	0	1805	1754	0	1805	1858	0	1805	1883	0
Flt Permitted	0.663			0.676			0.437			0.408		
Satd. Flow (perm)	1253	1799	0	1265	1754	0	828	1858	0	774	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			43			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	99	27	60	88	44	33	516	66	33	511	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	126	0	60	132	0	33	582	0	33	533	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.73	0.73	
v/c Ratio	0.27	0.49		0.36	0.49		0.05	0.43		0.06	0.39	
Control Delay	36.6	34.4		39.4	29.2		3.9	10.5		5.0	6.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.6	34.4		39.4	29.2		3.9	10.5		5.0	6.2	
LOS	D	C		D	C		A	B		A	A	
Approach Delay		35.0			32.3			10.2			6.1	
Approach LOS		C			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	126	60	132	33	582	33	533
v/c Ratio	0.27	0.49	0.36	0.49	0.05	0.43	0.06	0.39
Control Delay	36.6	34.4	39.4	29.2	3.9	10.5	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	34.4	39.4	29.2	3.9	10.5	5.0	6.2
Queue Length 50th (m)	7.4	17.8	10.3	15.3	0.9	28.7	1.3	27.3
Queue Length 95th (m)	15.6	30.9	19.8	29.0	4.4	82.7	5.7	65.9
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	668	970	674	955	607	1365	567	1382
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	0.07	0.13	0.09	0.14	0.05	0.43	0.06	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	90	25	55	80	40	30	470	60	30	465	20
Future Volume (vph)	40	90	25	55	80	40	30	470	60	30	465	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		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)	1795	1798		1778	1754		1799	1858		1800	1882	
Flt Permitted	0.66	1.00		0.68	1.00		0.44	1.00		0.41	1.00	
Satd. Flow (perm)	1253	1798		1265	1754		827	1858		773	1882	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	99	27	60	88	44	33	516	66	33	511	22
RTOR Reduction (vph)	0	20	0	0	37	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	106	0	60	95	0	33	580	0	33	532	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Effective Green, g (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	167	239		168	233		606	1362		566	1380	
v/s Ratio Prot		c0.06			0.05			c0.31			0.28	
v/s Ratio Perm	0.04			0.05			0.04			0.04		
v/c Ratio	0.26	0.44		0.36	0.41		0.05	0.43		0.06	0.39	
Uniform Delay, d1	35.0	35.9		35.5	35.7		3.3	4.7		3.3	4.5	
Progression Factor	1.00	1.00		1.00	1.00		0.79	1.71		1.00	1.00	
Incremental Delay, d2	0.8	1.3		1.3	1.2		0.2	1.0		0.2	0.8	
Delay (s)	35.9	37.2		36.8	36.9		2.8	8.9		3.5	5.3	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		36.9			36.9			8.6			5.2	
Approach LOS		D			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	5	15	160	5	10	150
Future Volume (vph)	5	15	160	5	10	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	6	17	180	6	11	169
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	17	180	6	11	169
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	160	5	10	150
Future Volume (Veh/h)	5	15	160	5	10	150
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	17	180	6	11	169
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			24		374	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			24		374	8
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		98	84
cM capacity (veh/h)			1596		559	1075

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	6	17	180	6	180
Volume Left	0	0	180	0	11
Volume Right	0	17	0	0	169
cSH	1700	1700	1596	1700	1145
Volume to Capacity	0.00	0.01	0.11	0.00	0.16
Queue Length 95th (m)	0.0	0.0	3.0	0.0	4.5
Control Delay (s)	0.0	0.0	7.5	0.0	9.1
Lane LOS			A		A
Approach Delay (s)	0.0		7.3		9.1
Approach LOS					A

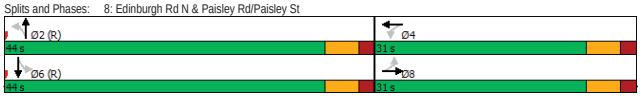
Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	250	85	35	225	55	100	405	25	50	380	60
Future Volume (vph)	75	250	85	35	225	55	100	405	25	50	380	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.962			0.971			0.991			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1800	0	1805	1815	0	1805	1879	0	1671	1855	0
Flt Permitted	0.483			0.404			0.398			0.409		
Satd. Flow (perm)	905	1800	0	763	1815	0	756	1879	0	716	1855	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			18			6			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	81	269	91	38	242	59	108	435	27	54	409	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	360	0	38	301	0	108	462	0	54	474	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.27	0.58		0.15	0.49		0.28	0.48		0.15	0.50	
Control Delay	21.2	22.3		19.5	21.9		13.2	14.1		11.3	14.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.2	22.3		19.5	21.9		13.2	14.1		11.3	14.1	
LOS	C	C		B	C		B	B		B	B	
Approach Delay		22.1			21.6			13.9			13.8	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues a) Existing SAT

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	360	38	301	108	462	54	474
v/c Ratio	0.27	0.58	0.15	0.49	0.28	0.48	0.15	0.50
Control Delay	21.2	22.3	19.5	21.9	13.2	14.1	11.3	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	22.3	19.5	21.9	13.2	14.1	11.3	14.1
Queue Length 50th (m)	7.4	30.6	3.9	32.9	8.7	41.7	4.0	42.2
Queue Length 95th (m)	m19.0	58.0	10.9	55.7	19.1	65.6	10.4	67.0
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	301	616	254	617	383	954	362	947
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	0.15	0.49	0.28	0.48	0.15	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis a) Existing SAT

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	250	85	35	225	55	100	405	25	50	380	60
Future Volume (vph)	75	250	85	35	225	55	100	405	25	50	380	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1780	1800		1795	1814		1804	1880		1662	1855	
Flt Permitted	0.48	1.00		0.40	1.00		0.40	1.00		0.41	1.00	
Satd. Flow (perm)	906	1800		764	1814		756	1880		715	1855	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	269	91	38	242	59	108	435	27	54	409	65
RTOR Reduction (vph)	0	16	0	0	12	0	0	3	0	0	7	0
Lane Group Flow (vph)	81	344	0	38	289	0	108	459	0	54	467	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	302	600		254	604		383	952		362	939	
v/s Ratio Prot		c0.19			0.16			0.24			c0.25	
v/s Ratio Perm	0.09			0.05			0.14			0.08		
v/c Ratio	0.27	0.57		0.15	0.48		0.28	0.48		0.15	0.50	
Uniform Delay, d1	18.3	20.6		17.5	19.8		10.6	12.1		9.9	12.2	
Progression Factor	1.00	0.93		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	3.7		1.2	2.7		1.8	1.7		0.9	1.9	
Delay (s)	20.3	22.9		18.8	22.5		12.5	13.8		10.7	14.1	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		22.4			22.1			13.6			13.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings a) Existing SAT

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	310	5	0	305	140	2	2	0	190	5	205
Future Volume (vph)	200	310	5	0	305	140	2	2	0	190	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor		1.00						1.00			1.00	0.99
Frt		0.998			0.958							0.850
Flt Protected	0.950							0.976			0.953	
Satd. Flow (prot)	1805	1859	0	0	1803	0	0	1854	0	0	1811	1599
Flt Permitted	0.357							0.874			0.729	
Satd. Flow (perm)	678	1859	0	0	1803	0	0	1659	0	0	1383	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			35							214
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	208	323	5	0	318	146	2	2	0	198	5	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	328	0	0	464	0	0	4	0	0	203	214
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	

Lanes, Volumes, Timings a) Existing SAT

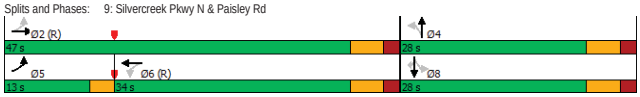
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	50.0	47.0			35.3			16.0			16.0	16.0
Actuated g/C Ratio	0.67	0.63			0.47			0.21			0.21	0.21
v/c Ratio	0.36	0.28			0.54			0.01			0.69	0.42
Control Delay	7.4	8.0			23.1			20.0			38.8	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	7.4	8.0			23.1			20.0			38.8	6.2
LOS	A	A			C			B			D	A
Approach Delay		7.8			23.1			20.0			22.1	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues a) Existing SAT

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	208	328	464	4	203	214
v/c Ratio	0.36	0.28	0.54	0.01	0.69	0.42
Control Delay	7.4	8.0	23.1	20.0	38.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	8.0	23.1	20.0	38.8	6.2
Queue Length 50th (m)	10.0	19.5	57.9	0.5	27.9	0.0
Queue Length 95th (m)	22.9	40.2	98.8	2.6	45.2	14.7
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	602	1165	867	486	405	613
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	0.35	0.28	0.54	0.01	0.50	0.35

Intersection Summary

HCM Signalized Intersection Capacity Analysis a) Existing SAT

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	310	5	0	305	140	2	2	0	190	5	205
Future Volume (vph)	200	310	5	0	305	140	2	2	0	190	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1805	1858			1802			1852			1809	1577
Flt Permitted	0.36	1.00			1.00			0.87			0.73	1.00
Satd. Flow (perm)	677	1858			1802			1659			1383	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	323	5	0	318	146	2	2	0	198	5	214
RTOR Reduction (vph)	0	1	0	0	19	0	0	0	0	0	0	168
Lane Group Flow (vph)	208	327	0	0	445	0	0	4	0	0	203	46
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	47.0	47.0			35.3			16.0			16.0	16.0
Effective Green, g (s)	47.0	47.0			35.3			16.0			16.0	16.0
Actuated g/C Ratio	0.63	0.63			0.47			0.21			0.21	0.21
Clearance Time (s)	3.0	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)	555	1164			848			353			295	336
v/s Ratio Prot	c0.04	0.18			c0.25							
v/s Ratio Perm	0.19							0.00			c0.15	0.03
v/c Ratio	0.37	0.28			0.53			0.01			0.69	0.14
Uniform Delay, d1	6.9	6.3			14.0			23.3			27.2	23.9
Progression Factor	1.00	1.00			1.39			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.6			2.2			0.0			6.5	0.2
Delay (s)	7.3	6.9			21.6			23.3			33.7	24.1
Level of Service	A	A			C			C			C	C
Approach Delay (s)		7.1			21.6			23.3			28.8	
Approach LOS		A			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.55				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	77.9%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings a) Existing SAT

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	75	0	960	160	0	0	0	0	0	0
Future Volume (vph)	0	620	75	0	960	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	674	82	0	1043	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	82	0	1043	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.9%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis a) Existing SAT

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	75	0	960	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	620	75	0	960	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	674	82	0	1043	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	1044			675			1024	1719	227	1270	1719	350
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	842			675			821	1557	227	1081	1557	107
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	758			926			255	108	782	165	108	880

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	225	225	225	82	348	348	348	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.13	0.05	0.20	0.20	0.20	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

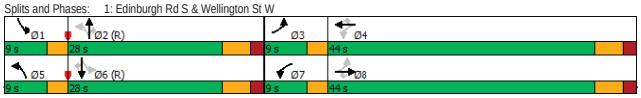
Intersection Summary					
Average Delay	0.0				
Intersection Capacity Utilization	21.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	775	175	110	510	45	180	555	200	55	515	75
Future Volume (vph)	110	775	175	110	510	45	180	555	200	55	515	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.348			0.165			0.274			0.361		
Satd. Flow (perm)	653	3471	1508	295	3438	1570	503	3539	1476	640	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			197			109			173			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	124	871	197	124	573	51	202	624	225	62	579	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	871	197	124	573	51	202	624	225	62	579	84
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	39.8	29.7	29.7	40.0	29.8	29.8	40.5	29.8	29.8	35.0	24.9	24.9
Actuated g/C Ratio	0.44	0.33	0.33	0.44	0.33	0.33	0.45	0.33	0.33	0.39	0.28	0.28
v/c Ratio	0.33	0.76	0.31	0.51	0.50	0.09	0.55	0.53	0.37	0.19	0.60	0.16
Control Delay	14.7	31.3	4.2	19.9	25.1	0.3	24.2	28.5	9.8	12.9	28.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	31.3	4.2	19.9	25.1	0.3	24.2	28.5	9.8	12.9	28.4	3.1
LOS	B	C	A	B	C	A	C	C	A	B	C	A
Approach Delay		25.1			22.6			23.7			24.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	871	197	124	573	51	202	624	225	62	579	84
v/c Ratio	0.33	0.76	0.31	0.51	0.50	0.09	0.55	0.53	0.37	0.19	0.60	0.16
Control Delay	14.7	31.3	4.2	19.9	25.1	0.3	24.2	28.5	9.8	12.9	28.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	31.3	4.2	19.9	25.1	0.3	24.2	28.5	9.8	12.9	28.4	3.1
Queue Length 50th (m)	11.7	73.6	0.0	11.7	43.5	0.0	22.6	51.2	6.9	4.4	53.5	1.7
Queue Length 95th (m)	19.2	83.5	12.3	19.4	51.7	0.2	#46.1	73.4	26.7	9.2	70.0	4.6
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	377	1465	750	243	1451	725	368	1170	603	333	979	518
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.59	0.26	0.51	0.39	0.07	0.55	0.53	0.37	0.19	0.59	0.16

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)	110	775	175	110	510	45	180	555	200	55	515	75
Future Volume (vph)	110	775	175	110	510	45	180	555	200	55	515	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1785	3471	1508	1703	3438	1570	1751	3539	1476	1695	3505	1573
Flt Permitted	0.35	1.00	1.00	0.16	1.00	1.00	0.27	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	654	3471	1508	296	3438	1570	505	3539	1476	644	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	871	197	124	573	51	202	624	225	62	579	84
RTOR Reduction (vph)	0	0	132	0	0	34	0	0	117	0	0	61
Lane Group Flow (vph)	124	871	65	124	573	17	202	624	108	62	579	23
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	36.8	29.7	29.7	37.0	29.8	29.8	38.1	29.2	29.2	30.8	24.9	24.9
Effective Green, g (s)	36.8	29.7	29.7	37.0	29.8	29.8	38.1	29.2	29.2	30.8	24.9	24.9
Actuated g/C Ratio	0.41	0.33	0.33	0.41	0.33	0.33	0.42	0.32	0.32	0.34	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	356	1145	497	234	1138	519	354	1148	478	289	969	435
v/s Ratio Prot	0.03	c0.25		c0.04	0.17		c0.06	0.18		0.01	0.17	
v/s Ratio Perm	0.11		0.04	0.18		0.01	c0.18		0.07	0.06		0.01
v/c Ratio	0.35	0.76	0.13	0.53	0.50	0.03	0.57	0.54	0.23	0.21	0.60	0.05
Uniform Delay, d1	17.1	27.0	21.1	18.4	24.2	20.4	17.7	24.9	22.2	20.3	28.2	23.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.87	0.71
Incremental Delay, d2	0.6	3.0	0.1	2.2	0.4	0.0	2.2	1.9	1.1	0.4	2.6	0.2
Delay (s)	17.7	30.0	21.2	20.5	24.5	20.4	19.9	26.8	23.3	15.2	27.2	17.2
Level of Service	B	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		27.3			23.6			24.7			25.0	
Approach LOS		C			C			C			C	

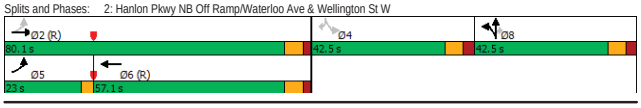
Intersection Summary					
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	860	0	0	735	5	190	185	225	1	0	345
Future Volume (vph)	155	860	0	0	735	5	190	185	225	1	0	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.995		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1772	1599	1805	0	1583
Flt Permitted	0.288						0.950	0.995		0.248		
Satd. Flow (perm)	526	4988	0	0	4983	0	1633	1772	1599	471	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				247			321
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	170	945	0	0	808	5	209	203	247	1	0	379
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	170	945	0	0	813	0	188	224	247	1	0	379
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	104.7	100.6			85.0		26.4	26.4	26.4	16.1		16.1
Actuated g/C Ratio	0.63	0.61			0.51		0.16	0.16	0.16	0.10		0.10
v/c Ratio	0.40	0.31			0.32		0.72	0.79	0.53	0.02		0.86
Control Delay	17.6	17.5			26.3		80.8	85.8	10.4	62.0		31.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	17.6	17.5			26.3		80.8	85.8	10.4	62.0		31.3
LOS	B	B			C		F	F	B	E		C
Approach Delay		17.5			26.3			56.1			31.4	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 30.3		Intersection LOS: C	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	170	945	813	188	224	247	1	379
v/c Ratio	0.40	0.31	0.32	0.72	0.79	0.53	0.02	0.86
Control Delay	17.6	17.5	26.3	80.8	85.8	10.4	62.0	31.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	17.5	26.3	80.8	85.8	10.4	62.0	31.3
Queue Length 50th (m)	21.4	52.4	55.0	66.1	79.7	0.0	0.3	19.5
Queue Length 95th (m)	47.1	87.1	93.9	91.4	106.9	25.1	2.4	58.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	480	3038	2566	346	375	533	99	588
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	0.35	0.31	0.32	0.54	0.60	0.46	0.01	0.64

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	860	0	0	735	5	190	185	225	1	0	345
Future Volume (vph)	155	860	0	0	735	5	190	185	225	1	0	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4983		1633	1772	1599	1805		1583
Flt Permitted	0.29	1.00			1.00		0.95	1.00	1.00	0.25		1.00
Satd. Flow (perm)	527	4988			4983		1633	1772	1599	472		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	170	945	0	0	808	5	209	203	247	1	0	379
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	208	0	0	290
Lane Group Flow (vph)	170	945	0	0	813	0	188	224	39	1	0	89
Confl. Peds. (#/hr)	1						1					
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	100.5	100.5			85.0		26.4	26.4	26.4	16.1		16.1
Effective Green, g (s)	100.5	100.5			85.0		26.4	26.4	26.4	16.1		16.1
Actuated g/C Ratio	0.61	0.61			0.51		0.16	0.16	0.16	0.10		0.10
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	412	3036			2565		261	283	255	46		154
v/s Ratio Prot	c0.03	0.19			0.16		0.12	c0.13				
v/s Ratio Perm	c0.22									0.02	0.00	c0.06
v/c Ratio	0.41	0.31			0.32		0.72	0.79	0.15	0.02		0.58
Uniform Delay, d1	14.6	15.6			23.2		65.8	66.7	59.7	67.4		71.3
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.3			0.3		9.4	14.0	0.3	0.2		5.2
Delay (s)	15.3	15.9			23.5		75.2	80.7	60.0	67.6		76.5
Level of Service	B	B			C		E	F	E	E		E
Approach Delay (s)		15.8			23.5			71.4			76.5	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

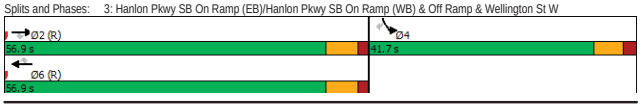
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	905	440	0	815	270	0	0	0	165	0	85
Future Volume (vph)	0	905	440	0	815	270	0	0	0	165	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			463			234						89
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	953	463	0	858	284	0	0	0	174	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	953	463	0	858	284	0	0	0	174	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.26	0.37		0.23	0.23				0.47		0.36
Control Delay		4.2	1.2		4.1	1.4				45.0		13.1
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.2	1.2		4.1	1.4				45.0		13.1
LOS		A	A		A	A				D		B
Approach Delay		3.2			3.4						34.2	
Approach LOS		A			A						C	

Intersection Summary

Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	953	463	858	284	174	89
v/c Ratio	0.26	0.37	0.23	0.23	0.47	0.36
Control Delay	4.2	1.2	4.1	1.4	45.0	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	1.2	4.1	1.4	45.0	13.1
Queue Length 50th (m)	17.5	0.0	15.4	2.1	17.2	0.0
Queue Length 95th (m)	25.6	7.7	22.6	9.3	27.1	14.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3694	1266	3730	1216	1150	573
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	0.26	0.37	0.23	0.23	0.15	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	905	440	0	815	270	0	0	0	165	0	85
Future Volume (vph)	0	905	440	0	815	270	0	0	0	165	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	953	463	0	858	284	0	0	0	174	0	89
RTOR Reduction (vph)	0	0	117	0	0	59	0	0	0	0	0	79
Lane Group Flow (vph)	0	953	346	0	858	225	0	0	0	174	0	10
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.7	73.7		73.7	73.7				11.3		11.3
Effective Green, g (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3692	1149		3728	1157				371		166
v/s Ratio Prot		0.19			0.17					c0.05		
v/s Ratio Perm			c0.23			0.15						0.01
v/c Ratio		0.26	0.30		0.23	0.19				0.47		0.06
Uniform Delay, d1		3.9	4.1		3.8	3.7				40.8		38.9
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.7		0.1	0.4				0.9		0.2
Delay (s)		4.1	4.7		3.9	4.1				41.8		39.1
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.3			4.0			0.0			40.9	
Approach LOS		A			A			A			D	

Intersection Summary

HCM 2000 Control Delay	7.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

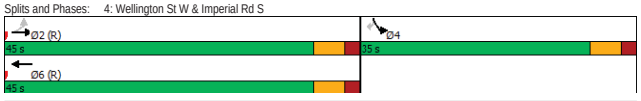
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	915	645	165	420	70
Future Volume (vph)	60	915	645	165	420	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.969			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3311	0	1770	1599
Flt Permitted		0.834			0.950	
Satd. Flow (perm)	0	2842	3311	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			56			73
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	63	953	672	172	438	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1016	844	0	438	73
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.8	43.8		24.2	24.2
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.65	0.46		0.82	0.14
Control Delay		16.3	11.9		38.7	5.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		16.3	11.9		38.7	5.4
LOS		B	B		D	A
Approach Delay		16.3	11.9		33.9	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1016	844	438	73
v/c Ratio	0.65	0.46	0.82	0.14
Control Delay	16.3	11.9	38.7	5.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.3	11.9	38.7	5.4
Queue Length 50th (m)	57.3	37.8	63.4	0.0
Queue Length 95th (m)	89.0	58.9	91.3	8.1
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1557	1839	641	626
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	0.46	0.68	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	915	645	165	420	70
Future Volume (vph)	60	915	645	165	420	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3312		1770	1599
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2843	3312		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	953	672	172	438	73
RTOR Reduction (vph)	0	0	25	0	0	51
Lane Group Flow (vph)	0	1016	819	0	438	22
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.8	43.8		24.2	24.2
Effective Green, g (s)		43.8	43.8		24.2	24.2
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1556	1813		535	483
v/s Ratio Prot			0.25		c0.25	
v/s Ratio Perm		c0.36				0.01
v/c Ratio		0.65	0.45		0.82	0.05
Uniform Delay, d1		12.7	10.9		25.9	19.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.1	0.8		9.5	0.0
Delay (s)		14.9	11.7		35.3	19.8
Level of Service		B	B		D	B
Approach Delay (s)		14.9	11.7		33.1	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

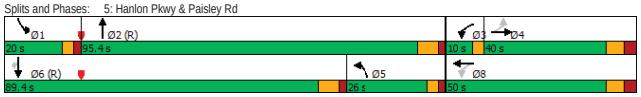
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	315	320	65	190	25	155	1245	95	25	935	45
Future Volume (vph)	95	315	320	65	190	25	155	1245	95	25	935	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3467	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.614			0.332			0.950			0.950		
Satd. Flow (perm)	1090	3438	1583	625	3467	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		8				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	97	321	327	66	194	26	158	1270	97	26	954	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	321	327	66	220	0	158	1270	97	26	954	46
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	21.5	21.5	165.4	39.5	34.5		18.1	106.8	165.4	8.9	92.4	92.4
Actuated g/C Ratio	0.13	0.13	1.00	0.24	0.21		0.11	0.65	1.00	0.05	0.56	0.56
v/c Ratio	0.69	0.72	0.21	0.30	0.30		0.44	0.59	0.06	0.30	0.52	0.05
Control Delay	92.3	78.1	0.3	51.2	53.0		71.8	20.4	0.1	84.0	25.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.3	78.1	0.3	51.2	53.0		71.8	20.4	0.1	84.0	25.8	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		45.8			52.6			24.5			26.1	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 31.6		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	321	327	66	220	158	1270	97	26	954	46
v/c Ratio	0.69	0.72	0.21	0.30	0.30	0.44	0.59	0.06	0.30	0.52	0.05
Control Delay	92.3	78.1	0.3	51.2	53.0	71.8	20.4	0.1	84.0	25.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.3	78.1	0.3	51.2	53.0	71.8	20.4	0.1	84.0	25.8	0.1
Queue Length 50th (m)	32.8	57.4	0.0	18.4	33.2	26.5	134.7	0.0	8.9	106.7	0.0
Queue Length 95th (m)	52.9	71.4	0.0	29.9	42.8	38.0	196.6	0.0	20.2	156.0	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	210	665	1583	219	899	433	2158	1568	144	1859	883
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.48	0.21	0.30	0.24	0.36	0.59	0.06	0.18	0.51	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	315	320	65	190	25	155	1245	95	25	935	45
Future Volume (vph)	95	315	320	65	190	25	155	1245	95	25	935	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3468		3303	3343	1568	1597	3282	1482
Flt Permitted	0.61	1.00	1.00	0.33	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1091	3438	1583	625	3468		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	321	327	66	194	26	158	1270	97	26	954	46
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	21
Lane Group Flow (vph)	97	321	327	66	214	0	158	1270	97	26	954	25
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	21.5	21.5	165.4	34.5	34.5		20.1	104.8	165.4	5.7	90.4	90.4
Effective Green, g (s)	21.5	21.5	165.4	34.5	34.5		20.1	104.8	165.4	5.7	90.4	90.4
Actuated g/C Ratio	0.13	0.13	1.00	0.21	0.21		0.12	0.63	1.00	0.03	0.55	0.55
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	141	446	1583	200	723		401	2118	1568	55	1793	809
v/s Ratio Prot		c0.09		c0.02	0.06		0.05	c0.38		0.02	c0.29	
v/s Ratio Perm	0.09		0.21	0.05					0.06			0.02
v/c Ratio	0.69	0.72	0.21	0.33	0.30		0.39	0.60	0.06	0.47	0.53	0.03
Uniform Delay, d1	68.7	69.1	0.0	54.1	55.2		67.0	17.9	0.0	78.4	24.0	17.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.1	5.5	0.3	1.0	0.2		0.6	1.3	0.1	6.3	1.1	0.1
Delay (s)	81.8	74.6	0.3	55.1	55.4		67.7	19.2	0.1	84.7	25.1	17.4
Level of Service	F	E	A	E	E		E	B	A	F	C	B
Approach Delay (s)		42.9			55.3			23.0			26.3	
Approach LOS		D			E			C			C	

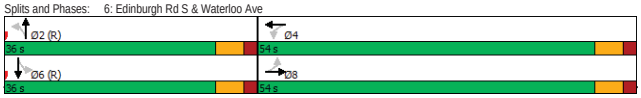
Intersection Summary					
HCM 2000 Control Delay		30.7	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.61			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)		23.4
Intersection Capacity Utilization		81.4%	ICU Level of Service		D
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	225	40	75	120	25	20	545	90	40	465	35
Future Volume (vph)	50	225	40	75	120	25	20	545	90	40	465	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		0.99	1.00		1.00	1.00	
Frt		0.978			0.974			0.979			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1786	0	1752	1780	0	1805	1820	0	1770	1842	0
Flt Permitted	0.634			0.366			0.400			0.307		
Satd. Flow (perm)	1165	1786	0	668	1780	0	756	1820	0	570	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			18			10			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	245	43	82	130	27	22	592	98	43	505	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	288	0	82	157	0	22	690	0	43	543	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	19.8	19.8		19.8	19.8		58.2	58.2		58.2	58.2	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
v/c Ratio	0.21	0.71		0.56	0.39		0.05	0.58		0.12	0.46	
Control Delay	28.4	40.1		44.7	27.8		19.2	27.3		8.8	10.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.4	40.1		44.7	27.8		19.2	27.3		8.8	10.5	
LOS	C	D		D	C		B	C		A	B	
Approach Delay		38.2			33.6			27.1			10.3	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	288	82	157	22	690	43	543
v/c Ratio	0.21	0.71	0.56	0.39	0.05	0.58	0.12	0.46
Control Delay	28.4	40.1	44.7	27.8	19.2	27.3	8.8	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	40.1	44.7	27.8	19.2	27.3	8.8	10.5
Queue Length 50th (m)	8.1	46.2	13.4	21.5	1.8	91.8	2.7	43.6
Queue Length 95th (m)	16.5	66.5	26.2	35.2	m7.4	160.1	8.9	83.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	621	959	356	957	488	1180	368	1193
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	0.30	0.23	0.16	0.05	0.58	0.12	0.46

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	225	40	75	120	25	20	545	90	40	465	35
Future Volume (vph)	50	225	40	75	120	25	20	545	90	40	465	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1746	1785		1737	1780		1793	1819		1762	1841	
Flt Permitted	0.63	1.00		0.37	1.00		0.40	1.00		0.31	1.00	
Satd. Flow (perm)	1165	1785		670	1780		755	1819		570	1841	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	245	43	82	130	27	22	592	98	43	505	38
RTOR Reduction (vph)	0	12	0	0	14	0	0	4	0	0	2	0
Lane Group Flow (vph)	54	276	0	82	143	0	22	686	0	43	541	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	19.8	19.8		19.8	19.8		58.2	58.2		58.2	58.2	
Effective Green, g (s)	19.8	19.8		19.8	19.8		58.2	58.2		58.2	58.2	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	256	392		147	391		488	1176		368	1190	
v/s Ratio Prot		c0.15			0.08			c0.38			0.29	
v/s Ratio Perm	0.05			0.12			0.03			0.08		
v/c Ratio	0.21	0.70		0.56	0.37		0.05	0.58		0.12	0.45	
Uniform Delay, d1	28.7	32.4		31.2	29.8		5.8	9.0		6.1	8.0	
Progression Factor	1.00	1.00		1.00	1.00		2.45	2.42		1.00	1.00	
Incremental Delay, d2	0.4	5.7		4.5	0.6		0.2	1.9		0.6	1.3	
Delay (s)	29.1	38.1		35.7	30.4		14.3	23.7		6.7	9.2	
Level of Service	C	D		D	C		B	C		A	A	
Approach Delay (s)		36.7			32.2			23.5			9.0	
Approach LOS		D			C			C			A	

Intersection Summary					
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	105	240	5	105	250
Future Volume (vph)	10	105	240	5	105	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	11	114	261	5	114	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	114	261	5	114	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	105	240	5	105	250
Future Volume (Veh/h)	10	105	240	5	105	250
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	114	261	5	114	272
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		546	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		546	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		72	74
cM capacity (veh/h)			1445		409	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	114	261	5	386
Volume Left	0	0	261	0	114
Volume Right	0	114	0	0	272
cSH	1700	1700	1445	1700	1384
Volume to Capacity	0.01	0.07	0.18	0.00	0.28
Queue Length 95th (m)	0.0	0.0	5.3	0.0	9.2
Control Delay (s)	0.0	0.0	8.0	0.0	11.9
Lane LOS			A		B
Approach Delay (s)	0.0		7.9		11.9
Approach LOS					B

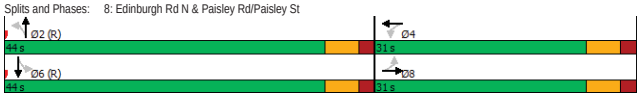
Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	315	65	45	225	75	70	435	55	90	385	70
Future Volume (vph)	70	315	65	45	225	75	70	435	55	90	385	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.98		0.99	1.00		1.00	1.00	
Frt		0.974			0.962			0.983			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1758	0	1805	1747	0	1656	1841	0	1656	1807	0
Flt Permitted	0.448			0.335			0.381			0.349		
Satd. Flow (perm)	783	1758	0	633	1747	0	660	1841	0	606	1807	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			24			12			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	76	342	71	49	245	82	76	473	60	98	418	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	413	0	49	327	0	76	533	0	98	494	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.29	0.69		0.23	0.55		0.23	0.57		0.32	0.53	
Control Delay	21.8	25.8		21.7	22.9		12.6	15.5		14.6	14.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.8	25.8		21.7	22.9		12.6	15.5		14.6	14.7	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		25.2			22.8			15.1			14.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 83.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues b) Future Background (2021) AM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	76	413	49	327	76	533	98	494
v/c Ratio	0.29	0.69	0.23	0.55	0.23	0.57	0.32	0.53
Control Delay	21.8	25.8	21.7	22.9	12.6	15.5	14.6	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	25.8	21.7	22.9	12.6	15.5	14.6	14.7
Queue Length 50th (m)	7.6	47.0	5.2	36.0	5.9	50.4	8.0	44.9
Queue Length 95th (m)	m17.2	67.1	13.9	61.0	14.3	79.1	19.1	71.5
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	261	596	211	598	334	938	307	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	0.29	0.69	0.23	0.55	0.23	0.57	0.32	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) AM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	315	65	45	225	75	70	435	55	90	385	70
Future Volume (vph)	70	315	65	45	225	75	70	435	55	90	385	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1661	1759		1794	1747		1644	1841		1650	1807	
Flt Permitted	0.45	1.00		0.34	1.00		0.38	1.00		0.35	1.00	
Satd. Flow (perm)	783	1759		633	1747		660	1841		605	1807	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	342	71	49	245	82	76	473	60	98	418	76
RTOR Reduction (vph)	0	10	0	0	16	0	0	6	0	0	9	0
Lane Group Flow (vph)	76	403	0	49	311	0	76	527	0	98	485	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	261	586		211	582		334	932		306	915	
v/s Ratio Prot		c0.23			0.18			c0.29			0.27	
v/s Ratio Perm	0.10			0.08			0.12			0.16		
v/c Ratio	0.29	0.69		0.23	0.53		0.23	0.57		0.32	0.53	
Uniform Delay, d1	18.5	21.6		18.1	20.3		10.3	12.8		10.9	12.5	
Progression Factor	0.98	0.91		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	6.1		2.6	3.5		1.6	2.5		2.7	2.2	
Delay (s)	20.7	25.8		20.6	23.8		11.9	15.3		13.6	14.7	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		25.0			23.4			14.9			14.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings b) Future Background (2021) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	290	1	50	250	145	0	50	50	170	50	80
Future Volume (vph)	150	290	1	50	250	145	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98			0.97		0.97		0.98
Frt			0.850		0.945			0.925				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1700	0	1900	1714	0	1770	1900	1553
Flt Permitted	0.334			0.549						0.679		
Satd. Flow (perm)	610	1792	1571	1038	1700	0	1900	1714	0	1232	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		44			61				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	183	354	1	61	305	177	0	61	61	207	61	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	183	354	1	61	482	0	0	122	0	207	61	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

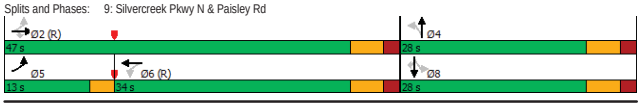
Lanes, Volumes, Timings b) Future Background (2021) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	49.0	46.0	46.0	34.4	34.4			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.65	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
v/c Ratio	0.35	0.32	0.00	0.13	0.60			0.28		0.74	0.14	0.23
Control Delay	7.9	9.0	0.0	21.4	25.5			13.6		42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	7.9	9.0	0.0	21.4	25.5			13.6		42.4	21.9	6.3
LOS	A	A	A	C	C			B		D	C	A
Approach Delay		8.6			25.0			13.6			29.3	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues b) Future Background (2021) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	183	354	1	61	482	122	207	61	98
v/c Ratio	0.35	0.32	0.00	0.13	0.60	0.28	0.74	0.14	0.23
Control Delay	7.9	9.0	0.0	21.4	25.5	13.6	42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	9.0	0.0	21.4	25.5	13.6	42.4	21.9	6.3
Queue Length 50th (m)	9.4	23.3	0.0	5.9	61.4	7.2	28.4	7.2	0.0
Queue Length 95th (m)	18.2	39.2	0.0	m15.3	89.4	16.2	42.2	13.7	8.3
Internal Link Dist (m)		177.0			1059.9	58.6		356.4	
Turn Bay Length (m)	30.0								60.0
Base Capacity (vph)	550	1098	979	475	802	545	361	557	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.32	0.00	0.13	0.60	0.22	0.57	0.11	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	290	1	50	250	145	0	50	50	170	50	80
Future Volume (vph)	150	290	1	50	250	145	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	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		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98			0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)	1747	1792	1571	1797	1700			1714		1724	1900	1525
Flt Permitted	0.33	1.00	1.00	0.55	1.00			1.00		0.68	1.00	1.00
Satd. Flow (perm)	613	1792	1571	1039	1700			1714		1231	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	183	354	1	61	305	177	0	61	61	207	61	98
RTOR Reduction (vph)	0	0	0	0	24	0	0	47	0	0	0	76
Lane Group Flow (vph)	183	354	1	61	458	0	0	75	0	207	61	22
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.0	46.0	46.0	34.4	34.4			17.0		17.0	17.0	17.0
Effective Green, g (s)	46.0	46.0	46.0	34.4	34.4			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.61	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
Clearance Time (s)	3.0	6.0	6.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	506	1099	963	476	779			388		279	430	345
v/s Ratio Prot	c0.04	0.20			c0.27			0.04			0.03	
v/s Ratio Perm	0.18		0.00	0.06						c0.17		0.01
v/c Ratio	0.36	0.32	0.00	0.13	0.59			0.19		0.74	0.14	0.06
Uniform Delay, d1	7.4	7.0	5.6	11.7	15.0			23.5		27.0	23.2	22.8
Progression Factor	1.00	1.00	1.00	1.42	1.40			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.8	0.0	0.5	3.1			0.2		10.2	0.2	0.1
Delay (s)	7.9	7.8	5.6	17.1	24.1			23.7		37.1	23.3	22.8
Level of Service	A	A	A	B	C			C		D	C	C
Approach Delay (s)		7.8			23.3			23.7			31.0	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings b) Future Background (2021) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis b) Future Background (2021) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1169			1088			1478	2257	364	1532	2257	391
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	874			1088			1210	2058	364	1269	2058	27
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	717			649			129	51	638	117	51	963

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	362	362	362	76	389	389	389	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.21	0.04	0.23	0.23	0.23	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

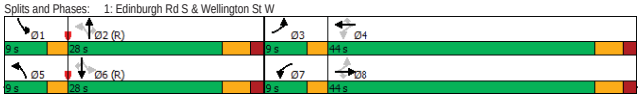
Average Delay	0.0		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	625	175	230	720	70	190	650	220	55	635	70
Future Volume (vph)	110	625	175	230	720	70	190	650	220	55	635	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.248			0.235			0.249			0.368		
Satd. Flow (perm)	470	3539	1577	438	3539	1555	472	3610	1535	682	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179			109			161			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	112	638	179	235	735	71	194	663	224	56	648	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	638	179	235	735	71	194	663	224	56	648	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	34.2	24.2	24.2	36.9	27.6	27.6	45.3	33.9	33.9	37.9	27.8	27.8
Actuated g/C Ratio	0.38	0.27	0.27	0.41	0.31	0.31	0.50	0.38	0.38	0.42	0.31	0.31
v/c Ratio	0.40	0.67	0.32	0.77	0.68	0.13	0.48	0.49	0.33	0.15	0.58	0.13
Control Delay	19.1	32.3	5.1	38.6	30.9	2.1	17.6	24.6	9.1	10.4	24.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	32.3	5.1	38.6	30.9	2.1	17.6	24.6	9.1	10.4	24.6	2.0
LOS	B	C	A	D	C	A	B	C	A	B	C	A
Approach Delay		25.5			30.7			20.1			21.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	112	638	179	235	735	71	194	663	224	56	648	71
v/c Ratio	0.40	0.67	0.32	0.77	0.68	0.13	0.48	0.49	0.33	0.15	0.58	0.13
Control Delay	19.1	32.3	5.1	38.6	30.9	2.1	17.6	24.6	9.1	10.4	24.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	32.3	5.1	38.6	30.9	2.1	17.6	24.6	9.1	10.4	24.6	2.0
Queue Length 50th (m)	11.7	53.4	0.0	26.5	63.7	0.0	19.3	50.3	7.7	3.4	56.7	1.4
Queue Length 95th (m)	20.3	64.7	13.4	#55.2	75.9	4.1	35.4	74.4	27.4	m6.0	73.5	m3.2
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	282	1494	769	305	1494	719	407	1361	679	373	1114	558
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.43	0.23	0.77	0.49	0.10	0.48	0.49	0.33	0.15	0.58	0.13

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	625	175	230	720	70	190	650	220	55	635	70
Future Volume (vph)	110	625	175	230	720	70	190	650	220	55	635	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1766	3610	1565
Flt Permitted	0.25	1.00	1.00	0.24	1.00	1.00	0.25	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	471	3539	1577	438	3539	1555	472	3610	1537	684	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	112	638	179	235	735	71	194	663	224	56	648	71
RTOR Reduction (vph)	0	0	130	0	0	49	0	0	102	0	0	50
Lane Group Flow (vph)	112	638	49	235	735	22	194	663	122	56	648	21
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	30.5	24.8	24.8	36.1	27.6	27.6	41.7	32.8	32.8	33.1	27.2	27.2
Effective Green, g (s)	30.5	24.8	24.8	36.1	27.6	27.6	41.7	32.8	32.8	33.1	27.2	27.2
Actuated g/C Ratio	0.34	0.28	0.28	0.40	0.31	0.31	0.46	0.36	0.36	0.37	0.30	0.30
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	244	975	434	301	1085	476	388	1315	560	322	1091	472
v/s Ratio Prot	0.03	0.18		c0.07	0.21		c0.06	0.18		0.01	c0.18	
v/s Ratio Perm	0.13		0.03	c0.24		0.01	0.17		0.08	0.05		0.01
v/c Ratio	0.46	0.65	0.11	0.78	0.68	0.05	0.50	0.50	0.22	0.17	0.59	0.05
Uniform Delay, d1	21.4	28.8	24.4	19.7	27.3	21.9	15.5	22.3	19.7	18.6	26.7	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.81	0.72
Incremental Delay, d2	1.4	1.6	0.1	12.3	1.7	0.0	1.0	1.4	0.9	0.2	2.2	0.2
Delay (s)	22.8	30.4	24.5	32.1	29.0	22.0	16.6	23.7	20.6	13.7	23.9	16.2
Level of Service	C	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		28.3			29.2			21.8			22.4	
Approach LOS		C			C			C			C	

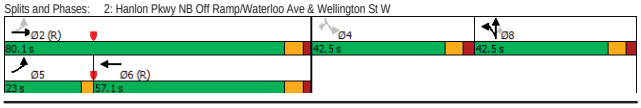
Intersection Summary					
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	74.8%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	760	0	0	985	10	395	215	140	5	0	365
Future Volume (vph)	150	760	0	0	985	10	395	215	140	5	0	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.985		0.950		
Satd. Flow (prot)	1787	5136	0	0	5130	0	1698	1772	1599	1805	0	1599
Flt Permitted	0.192						0.950	0.985		0.182		
Satd. Flow (perm)	361	5136	0	0	5130	0	1698	1772	1599	346	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				144			241
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	155	784	0	0	1015	10	407	222	144	5	0	376
Shared Lane Traffic (%)							24%					
Lane Group Flow (vph)	155	784	0	0	1025	0	309	320	144	5	0	376
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	90.7	86.6			70.5		34.4	34.4	34.4	22.0		22.0
Actuated g/C Ratio	0.55	0.52			0.43		0.21	0.21	0.21	0.13		0.13
v/c Ratio	0.50	0.29			0.47		0.88	0.87	0.32	0.11		0.89
Control Delay	26.9	24.1			37.4		87.0	85.4	9.2	61.8		47.6
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	26.9	24.1			37.4		87.0	85.4	9.2	61.8		47.6
LOS	C	C			D		F	F	A	E		D
Approach Delay		24.6			37.4			71.9			47.8	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 43.4		Intersection LOS: D	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	155	784	1025	309	320	144	5	376
v/c Ratio	0.50	0.29	0.47	0.88	0.87	0.32	0.11	0.89
Control Delay	26.9	24.1	37.4	87.0	85.4	9.2	61.8	47.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	24.1	37.4	87.0	85.4	9.2	61.8	47.6
Queue Length 50th (m)	26.8	56.4	94.5	107.6	111.3	0.0	1.5	49.8
Queue Length 95th (m)	47.2	76.3	128.7	#165.8	#168.2	19.6	5.9	86.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	371	2692	2192	376	392	466	73	528
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	0.42	0.29	0.47	0.82	0.82	0.31	0.07	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)	150	760	0	0	985	10	395	215	140	5	0	365
Future Volume (vph)	150	760	0	0	985	10	395	215	140	5	0	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5127		1698	1772	1599	1805		1599
Flt Permitted	0.19	1.00			1.00		0.95	0.98	1.00	0.18		1.00
Satd. Flow (perm)	361	5136			5127		1698	1772	1599	345		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	155	784	0	0	1015	10	407	222	144	5	0	376
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	114	0	0	209
Lane Group Flow (vph)	155	784	0	0	1024	0	309	320	30	5	0	167
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	86.6	86.6			70.6		34.4	34.4	34.4	22.0		22.0
Effective Green, g (s)	86.6	86.6			70.6		34.4	34.4	34.4	22.0		22.0
Actuated g/C Ratio	0.52	0.52			0.43		0.21	0.21	0.21	0.13		0.13
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	301	2693			2192		353	369	333	45		213
v/s Ratio Prot	c0.04	0.15			0.20		c0.18	0.18				
v/s Ratio Perm	c0.23								0.02	0.01		c0.10
v/c Ratio	0.51	0.29			0.47		0.88	0.87	0.09	0.11		0.78
Uniform Delay, d1	22.3	22.0			33.8		63.3	63.1	52.7	62.9		69.3
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.5	0.3			0.7		20.7	18.8	0.1	1.1		17.1
Delay (s)	23.8	22.3			34.5		84.0	81.9	52.8	64.0		86.3
Level of Service	C	C			C		F	F	D	E		F
Approach Delay (s)		22.6			34.5			77.3			86.0	
Approach LOS		C			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

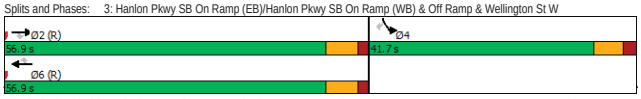
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	795	490	0	1240	280	0	0	0	180	0	75
Future Volume (vph)	0	795	490	0	1240	280	0	0	0	180	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			516			160						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	837	516	0	1305	295	0	0	0	189	0	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	837	516	0	1305	295	0	0	0	189	0	79
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.22	0.40		0.34	0.25				0.48		0.37
Control Delay		4.0	1.3		4.6	2.3				44.8		26.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.0	1.3		4.6	2.3				44.8		26.3
LOS		A	A		A	A				D		C
Approach Delay		3.0			4.2						39.3	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	837	516	1305	295	189	79
v/c Ratio	0.22	0.40	0.34	0.25	0.48	0.37
Control Delay	4.0	1.3	4.6	2.3	44.8	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	1.3	4.6	2.3	44.8	26.3
Queue Length 50th (m)	14.8	0.0	26.0	6.0	18.7	6.7
Queue Length 95th (m)	22.0	8.0	36.8	14.8	28.9	20.2
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3800	1299	3838	1195	1230	568
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	0.22	0.40	0.34	0.25	0.15	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	795	490	0	1240	280	0	0	0	180	0	75
Future Volume (vph)	0	795	490	0	1240	280	0	0	0	180	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	837	516	0	1305	295	0	0	0	189	0	79
RTOR Reduction (vph)	0	0	130	0	0	40	0	0	0	0	0	38
Lane Group Flow (vph)	0	837	386	0	1305	255	0	0	0	189	0	41
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.7	73.7		73.7	73.7				11.3		11.3
Effective Green, g (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3800	1169		3838	1154				397		174
v/s Ratio Prot		0.16			c0.25					c0.05		
v/s Ratio Perm			0.25			0.16						0.03
v/c Ratio		0.22	0.33		0.34	0.22				0.48		0.24
Uniform Delay, d1		3.8	4.2		4.2	3.8				40.9		39.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.8		0.2	0.4				0.9		0.7
Delay (s)		3.9	4.9		4.5	4.2				41.8		40.4
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.3			4.4			0.0			41.4	
Approach LOS		A			A			A			D	

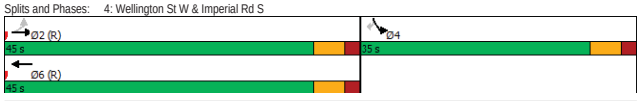
Intersection Summary					
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.36				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	43.6%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	880	805	390	355	55
Future Volume (vph)	65	880	805	390	355	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3342	0	1787	1615
Flt Permitted		0.733			0.950	
Satd. Flow (perm)	0	2598	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			143			57
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	67	907	830	402	366	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	974	1232	0	366	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		46.4	46.4		21.6	21.6
Actuated g/C Ratio		0.58	0.58		0.27	0.27
v/c Ratio		0.65	0.62		0.76	0.12
Control Delay		15.1	12.1		36.8	6.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		15.1	12.1		36.8	6.2
LOS		B	B		D	A
Approach Delay		15.1	12.1		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 95.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	974	1232	366	57
v/c Ratio	0.65	0.62	0.76	0.12
Control Delay	15.1	12.1	36.8	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.1	12.1	36.8	6.2
Queue Length 50th (m)	50.6	54.5	53.4	0.0
Queue Length 95th (m)	87.8	92.0	74.2	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1506	1998	647	621
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	0.62	0.57	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	880	805	390	355	55
Future Volume (vph)	65	880	805	390	355	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3342		1787	1615
Flt Permitted		0.73	1.00		0.95	1.00
Satd. Flow (perm)		2597	3342		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	67	907	830	402	366	57
RTOR Reduction (vph)	0	0	60	0	0	42
Lane Group Flow (vph)	0	974	1172	0	366	15
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		46.4	46.4		21.6	21.6
Effective Green, g (s)		46.4	46.4		21.6	21.6
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1506	1938		482	436
v/s Ratio Prot			0.35		c0.20	
v/s Ratio Perm		c0.38				0.01
v/c Ratio		0.65	0.60		0.76	0.04
Uniform Delay, d1		11.3	10.9		26.8	21.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.2	1.4		6.8	0.0
Delay (s)		13.5	12.3		33.6	21.6
Level of Service		B	B		C	C
Approach Delay (s)		13.5	12.3		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

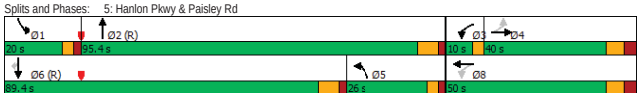
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	355	370	135	425	35	400	1045	190	40	1400	130
Future Volume (vph)	115	355	370	135	425	35	400	1045	190	40	1400	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3567	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.472			0.327			0.950			0.950		
Satd. Flow (perm)	887	3574	1595	621	3567	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			258		5				186			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	119	366	381	139	438	36	412	1077	196	41	1443	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	366	381	139	474	0	412	1077	196	41	1443	134
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	26.9	26.9	165.4	43.8	38.8		22.9	99.1	165.4	9.7	83.3	83.3
Actuated g/C Ratio	0.16	0.16	1.00	0.26	0.23		0.14	0.60	1.00	0.06	0.50	0.50
v/c Ratio	0.83	0.63	0.24	0.61	0.56		0.86	0.53	0.12	0.39	0.83	0.16
Control Delay	106.0	69.1	0.4	61.6	57.7		86.6	22.1	0.2	85.3	40.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.0	69.1	0.4	61.6	57.7		86.6	22.1	0.2	85.3	40.6	7.0
LOS	F	E	A	E	E		F	C	A	F	D	A
Approach Delay		43.9			58.6			35.3			38.9	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 41.1		Intersection LOS: D	
Intersection Capacity Utilization 95.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	366	381	139	474	412	1077	196	41	1443	134
v/c Ratio	0.83	0.63	0.24	0.61	0.56	0.86	0.53	0.12	0.39	0.83	0.16
Control Delay	106.0	69.1	0.4	61.6	57.7	86.6	22.1	0.2	85.3	40.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.0	69.1	0.4	61.6	57.7	86.6	22.1	0.2	85.3	40.6	7.0
Queue Length 50th (m)	39.8	62.1	0.0	38.6	76.0	71.2	116.1	0.0	14.0	231.1	5.8
Queue Length 95th (m)	#69.8	79.1	0.0	58.1	93.7	#107.6	149.4	0.0	27.7	257.3	18.2
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	171	691	1595	228	909	480	2022	1599	163	1768	873
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.53	0.24	0.61	0.52	0.86	0.53	0.12	0.25	0.82	0.15

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)	115	355	370	135	425	35	400	1045	190	40	1400	130
Future Volume (vph)	115	355	370	135	425	35	400	1045	190	40	1400	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1804	3565		3467	3374	1599	1805	3471	1615
Flt Permitted	0.47	1.00	1.00	0.33	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	888	3574	1595	620	3565		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	366	381	139	438	36	412	1077	196	41	1443	134
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	119	366	381	139	470	0	412	1077	196	41	1443	83
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	26.9	26.9	165.4	38.8	38.8		23.9	98.1	165.4	8.1	82.3	82.3
Effective Green, g (s)	26.9	26.9	165.4	38.8	38.8		23.9	98.1	165.4	8.1	82.3	82.3
Actuated g/C Ratio	0.16	0.16	1.00	0.23	0.23		0.14	0.59	1.00	0.05	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	144	581	1595	209	836		500	2001	1599	88	1727	803
v/s Ratio Prot		0.10		c0.04	0.13		c0.12	0.32		0.02	c0.42	
v/s Ratio Perm	c0.13		0.24	0.12					0.12			0.05
v/c Ratio	0.83	0.63	0.24	0.67	0.56		0.82	0.54	0.12	0.47	0.84	0.10
Uniform Delay, d1	67.0	64.6	0.0	54.7	55.8		68.7	20.1	0.0	76.5	35.7	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.5	2.1	0.4	7.7	0.9		10.6	1.0	0.2	3.9	5.0	0.3
Delay (s)	97.5	66.8	0.4	62.4	56.7		79.3	21.2	0.2	80.4	40.7	22.3
Level of Service	F	E	A	E	E		E	C	A	F	D	C
Approach Delay (s)		41.8			58.0			32.9			40.2	
Approach LOS		D			E			C			D	

Intersection Summary

HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

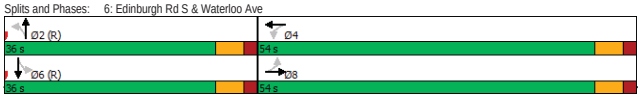
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	150	40	90	240	45	35	610	80	45	600	30
Future Volume (vph)	45	150	40	90	240	45	35	610	80	45	600	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.976			0.983			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1805	1827	0	1805	1858	0	1770	1884	0
Flt Permitted	0.355			0.551			0.332			0.295		
Satd. Flow (perm)	652	1811	0	1040	1827	0	630	1858	0	548	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			16			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	155	41	93	247	46	36	629	82	46	619	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	196	0	93	293	0	36	711	0	46	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	19.7	19.7		19.7	19.7		58.3	58.3		58.3	58.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
v/c Ratio	0.32	0.47		0.41	0.71		0.09	0.59		0.13	0.53	
Control Delay	33.8	29.6		34.1	39.9		14.2	23.1		8.9	11.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.8	29.6		34.1	39.9		14.2	23.1		8.9	11.6	
LOS	C	C		C	D		B	C		A	B	
Approach Delay		30.4			38.5			22.7			11.4	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	196	93	293	36	711	46	650
v/c Ratio	0.32	0.47	0.41	0.71	0.09	0.59	0.13	0.53
Control Delay	33.8	29.6	34.1	39.9	14.2	23.1	8.9	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	29.6	34.1	39.9	14.2	23.1	8.9	11.6
Queue Length 50th (m)	7.1	27.4	14.6	46.9	1.8	74.7	2.9	56.5
Queue Length 95th (m)	15.9	43.3	26.6	67.3	m10.6	149.5	9.5	106.4
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	347	976	554	981	408	1207	355	1222
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.20	0.17	0.30	0.09	0.59	0.13	0.53

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	150	40	90	240	45	35	610	80	45	600	30
Future Volume (vph)	45	150	40	90	240	45	35	610	80	45	600	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1749	1810		1793	1827		1801	1858		1763	1884	
Flt Permitted	0.35	1.00		0.55	1.00		0.33	1.00		0.30	1.00	
Satd. Flow (perm)	653	1810		1040	1827		630	1858		548	1884	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	155	41	93	247	46	36	629	82	46	619	31
RTOR Reduction (vph)	0	18	0	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	178	0	93	281	0	36	708	0	46	649	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	19.7	19.7		19.7	19.7		58.3	58.3		58.3	58.3	
Effective Green, g (s)	19.7	19.7		19.7	19.7		58.3	58.3		58.3	58.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.65	0.65		0.65	0.65	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	142	396		227	399		408	1203		354	1220	
v/s Ratio Prot		0.10			c0.15			c0.38			0.34	
v/s Ratio Perm	0.07			0.09			0.06			0.08		
v/c Ratio	0.32	0.45		0.41	0.70		0.09	0.59		0.13	0.53	
Uniform Delay, d1	29.6	30.5		30.2	32.4		5.9	9.0		6.1	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.75	2.02		1.00	1.00	
Incremental Delay, d2	1.3	0.8		1.2	5.5		0.4	1.9		0.8	1.7	
Delay (s)	30.9	31.3		31.4	38.0		10.8	20.2		6.9	10.2	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		31.2			36.4			19.7			10.0	
Approach LOS		C			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	74.3%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	110	260	10	120	260
Future Volume (vph)	10	110	260	10	120	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	11	120	283	11	130	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	120	283	11	130	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	110	260	10	120	260
Future Volume (Veh/h)	10	110	260	10	120	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	120	283	11	130	283
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		590	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		590	13
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			81		66	74
cM capacity (veh/h)			1452		381	1068

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	120	283	11	413
Volume Left	0	0	283	0	130
Volume Right	0	120	0	0	283
cSH	1700	1700	1452	1700	1209
Volume to Capacity	0.01	0.07	0.19	0.01	0.34
Queue Length 95th (m)	0.0	0.0	5.8	0.0	12.3
Control Delay (s)	0.0	0.0	8.1	0.0	12.6
Lane LOS			A		B
Approach Delay (s)	0.0		7.8		12.6
Approach LOS					B

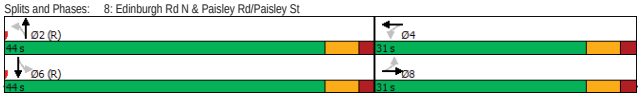
Intersection Summary			
Average Delay	9.0		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	290	110	55	350	45	100	500	50	95	510	85
Future Volume (vph)	70	290	110	55	350	45	100	500	50	95	510	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.959			0.983			0.986			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1792	0	1805	1843	0	1805	1865	0	1736	1853	0
Flt Permitted	0.321			0.314			0.263			0.300		
Satd. Flow (perm)	605	1792	0	593	1843	0	499	1865	0	547	1853	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			9			10			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	75	312	118	59	376	48	108	538	54	102	548	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	430	0	59	424	0	108	592	0	102	639	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.37	0.70		0.30	0.68		0.43	0.62		0.37	0.68	
Control Delay	25.7	26.1		23.7	27.8		18.4	16.7		16.1	18.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.7	26.1		23.7	27.8		18.4	16.7		16.1	18.0	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		26.0			27.3			17.0			17.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 91.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues b) Future Background (2021) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	430	59	424	108	592	102	639
v/c Ratio	0.37	0.70	0.30	0.68	0.43	0.62	0.37	0.68
Control Delay	25.7	26.1	23.7	27.8	18.4	16.7	16.1	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	26.1	23.7	27.8	18.4	16.7	16.1	18.0
Queue Length 50th (m)	7.1	40.6	6.4	52.6	9.5	58.6	8.7	65.2
Queue Length 95th (m)	m17.0	67.8	16.6	84.1	23.6	91.4	20.9	102.2
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	201	615	197	620	252	949	277	946
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	0.37	0.70	0.30	0.68	0.43	0.62	0.37	0.68

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	290	110	55	350	45	100	500	50	95	510	85
Future Volume (vph)	70	290	110	55	350	45	100	500	50	95	510	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1789	1792		1794	1843		1801	1866		1732	1852	
Flt Permitted	0.32	1.00		0.31	1.00		0.26	1.00		0.30	1.00	
Satd. Flow (perm)	605	1792		592	1843		498	1866		547	1852	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	312	118	59	376	48	108	538	54	102	548	91
RTOR Reduction (vph)	0	18	0	0	6	0	0	5	0	0	8	0
Lane Group Flow (vph)	75	412	0	59	418	0	108	587	0	102	631	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	201	597		197	614		252	945		277	938	
v/s Ratio Prot		c0.23			0.23			0.31			c0.34	
v/s Ratio Perm	0.12			0.10			0.22			0.19		
v/c Ratio	0.37	0.69		0.30	0.68		0.43	0.62		0.37	0.67	
Uniform Delay, d1	19.0	21.6		18.5	21.6		11.7	13.3		11.2	13.8	
Progression Factor	1.01	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9	6.0		3.9	6.0		5.2	3.1		3.7	3.8	
Delay (s)	24.2	26.6		22.4	27.6		16.9	16.4		15.0	17.7	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.3			26.9			16.5			17.3	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	91.0%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings b) Future Background (2021) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

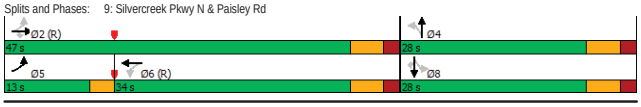
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	335	1	50	345	190	2	50	50	215	50	245
Future Volume (vph)	230	335	1	50	345	190	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1771	0	1805	1737	0	1787	1900	1615
Flt Permitted	0.242			0.546			0.722			0.687		
Satd. Flow (perm)	459	1881	1580	1036	1771	0	1370	1737	0	1289	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		42			54				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	247	360	1	54	371	204	2	54	54	231	54	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	247	360	1	54	575	0	2	108	0	231	54	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings b) Future Background (2021) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	48.2	45.2	45.2	33.2	33.2		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.64	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.54	0.32	0.00	0.12	0.71		0.01	0.24		0.76	0.12	0.46
Control Delay	11.1	9.2	0.0	24.6	32.7		19.0	13.1		42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	11.1	9.2	0.0	24.6	32.7		19.0	13.1		42.1	21.1	5.7
LOS	B	A	A	C	C		B	B		D	C	A
Approach Delay		9.9			32.0			13.2			22.6	
Approach LOS		A			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues b) Future Background (2021) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	247	360	1	54	575	2	108	231	54	263
v/c Ratio	0.54	0.32	0.00	0.12	0.71	0.01	0.24	0.76	0.12	0.46
Control Delay	11.1	9.2	0.0	24.6	32.7	19.0	13.1	42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	9.2	0.0	24.6	32.7	19.0	13.1	42.1	21.1	5.7
Queue Length 50th (m)	13.7	24.3	0.0	6.9	85.0	0.3	6.3	31.6	6.2	0.0
Queue Length 95th (m)	27.0	44.5	0.0	m12.0	#135.3	1.7	17.0	53.0	13.9	16.0
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	474	1134	970	458	807	401	547	378	557	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.32	0.00	0.12	0.71	0.00	0.20	0.61	0.10	0.40

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	335	1	50	345	190	2	50	50	215	50	245
Future Volume (vph)	230	335	1	50	345	190	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1771		1803	1737		1782	1900	1594
Flt Permitted	0.24	1.00	1.00	0.55	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	460	1881	1580	1037	1771		1370	1737		1289	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	247	360	1	54	371	204	2	54	54	231	54	263
RTOR Reduction (vph)	0	0	0	0	23	0	0	41	0	0	0	201
Lane Group Flow (vph)	247	360	1	54	552	0	2	67	0	231	54	62
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	45.2	45.2	45.2	33.2	33.2		17.8	17.8		17.8	17.8	17.8
Effective Green, g (s)	45.2	45.2	45.2	33.2	33.2		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.60	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	438	1133	952	459	783		325	412		305	450	378
v/s Ratio Prot	c0.07	0.19			c0.31			0.04			0.03	
v/s Ratio Perm	0.27		0.00	0.05			0.00			c0.18		0.04
v/c Ratio	0.56	0.32	0.00	0.12	0.70		0.01	0.16		0.76	0.12	0.17
Uniform Delay, d1	9.5	7.3	5.9	12.3	16.9		21.8	22.7		26.6	22.5	22.7
Progression Factor	1.00	1.00	1.00	1.60	1.57		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	0.7	0.0	0.4	4.4		0.0	0.2		10.3	0.1	0.2
Delay (s)	11.1	8.1	5.9	20.0	31.0		21.9	22.9		36.9	22.6	22.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		9.3			30.0			22.9			28.8	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	22.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Lanes, Volumes, Timings b) Future Background (2021) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis b) Future Background (2021) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	1626			979			1522	2605	328	1953	2605	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1183			979			1062	2313	328	1560	2313	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	518			713			156	33	673	67	33	944

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	326	326	326	82	542	542	542	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.05	0.32	0.32	0.32	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

Average Delay	0.0				
Intersection Capacity Utilization	32.2%	ICU Level of Service		A	
Analysis Period (min)	15				

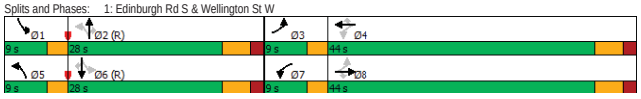
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	530	100	160	495	65	115	425	195	55	450	65
Future Volume (vph)	75	530	100	160	495	65	115	425	195	55	450	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.423			0.253			0.430			0.496		
Satd. Flow (perm)	791	3574	1575	471	3505	1487	817	3610	1583	942	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			199			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	77	541	102	163	505	66	117	434	199	56	459	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	541	102	163	505	66	117	434	199	56	459	66
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	30.4	19.6	19.6	35.1	23.7	23.7	47.4	37.0	37.0	44.3	35.5	35.5
Actuated g/C Ratio	0.34	0.22	0.22	0.39	0.26	0.26	0.53	0.41	0.41	0.49	0.39	0.39
v/c Ratio	0.22	0.70	0.24	0.49	0.55	0.14	0.22	0.29	0.26	0.11	0.32	0.09
Control Delay	17.3	37.1	6.3	22.3	31.0	2.3	12.8	20.4	4.4	9.5	19.0	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	37.1	6.3	22.3	31.0	2.3	12.8	20.4	4.4	9.5	19.0	2.1
LOS	B	D	A	C	C	A	B	C	A	A	B	A
Approach Delay		30.6			26.5			15.0			16.2	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	541	102	163	505	66	117	434	199	56	459	66
v/c Ratio	0.22	0.70	0.24	0.49	0.55	0.14	0.22	0.29	0.26	0.11	0.32	0.09
Control Delay	17.3	37.1	6.3	22.3	31.0	2.3	12.8	20.4	4.4	9.5	19.0	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	37.1	6.3	22.3	31.0	2.3	12.8	20.4	4.4	9.5	19.0	2.1
Queue Length 50th (m)	8.5	48.3	0.0	19.0	42.4	0.0	10.2	28.4	0.0	3.6	33.9	0.6
Queue Length 95th (m)	16.1	60.6	10.6	30.5	56.6	3.6	20.9	45.0	14.7	6.6	52.1	4.0
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	353	1509	727	331	1479	690	524	1484	767	531	1422	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.36	0.14	0.49	0.34	0.10	0.22	0.29	0.26	0.11	0.32	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	530	100	160	495	65	115	425	195	55	450	65
Future Volume (vph)	75	530	100	160	495	65	115	425	195	55	450	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.42	1.00	1.00	0.25	1.00	1.00	0.43	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	793	3574	1575	471	3505	1487	817	3610	1583	942	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	541	102	163	505	66	117	434	199	56	459	66
RTOR Reduction (vph)	0	0	79	0	0	49	0	0	120	0	0	41
Lane Group Flow (vph)	77	541	23	163	505	17	117	434	79	56	459	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	26.7	20.1	20.1	33.3	23.7	23.7	43.3	35.9	35.9	40.1	34.3	34.3
Effective Green, g (s)	26.7	20.1	20.1	33.3	23.7	23.7	43.3	35.9	35.9	40.1	34.3	34.3
Actuated g/C Ratio	0.30	0.22	0.22	0.37	0.26	0.26	0.48	0.40	0.40	0.45	0.38	0.38
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	798	351	321	922	391	474	1439	631	475	1375	615
v/s Ratio Prot	0.02	c0.15		c0.06	0.14		c0.02	0.12		0.01	c0.13	
v/s Ratio Perm	0.06		0.01	0.13		0.01	0.10		0.05	0.04		0.02
v/c Ratio	0.25	0.68	0.06	0.51	0.55	0.04	0.25	0.30	0.13	0.12	0.33	0.04
Uniform Delay, d1	23.3	32.0	27.5	20.4	28.5	24.7	13.1	18.5	17.1	14.3	19.7	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.86	1.17
Incremental Delay, d2	0.4	2.3	0.1	1.3	0.7	0.0	0.3	0.5	0.4	0.1	0.6	0.1
Delay (s)	23.7	34.3	27.6	21.6	29.2	24.8	13.3	19.0	17.5	11.0	17.6	20.6
Level of Service	C	C	C	C	C	C	B	B	B	B	B	C
Approach Delay (s)		32.2			27.1			17.7			17.3	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

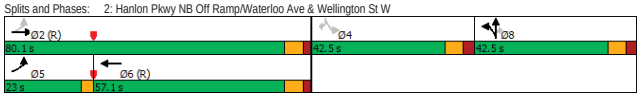
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	545	0	0	700	10	280	150	150	5	0	260
Future Volume (vph)	85	545	0	0	700	10	280	150	150	5	0	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.984		0.950		
Satd. Flow (prot)	1736	5085	0	0	5126	0	1681	1765	1599	1805	0	1599
Flt Permitted	0.332						0.950	0.984		0.323		
Satd. Flow (perm)	607	5085	0	0	5126	0	1681	1765	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				153			265
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	87	556	0	0	714	10	286	153	153	5	0	265
Shared Lane Traffic (%)							25%					
Lane Group Flow (vph)	87	556	0	0	724	0	214	225	153	5	0	265
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	108.1	104.0			92.1		26.6	26.6	26.6	12.4		12.4
Actuated g/C Ratio	0.65	0.63			0.56		0.16	0.16	0.16	0.08		0.08
v/c Ratio	0.19	0.17			0.25		0.79	0.79	0.40	0.11		0.73
Control Delay	13.2	13.9			20.5		86.2	85.5	10.4	73.8		19.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	13.2	13.9			20.5		86.2	85.5	10.4	73.8		19.3
LOS	B	B			C		F	F	B	E		B
Approach Delay		13.8			20.5			66.3			20.3	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	87	556	724	214	225	153	5	265
v/c Ratio	0.19	0.17	0.25	0.79	0.79	0.40	0.11	0.73
Control Delay	13.2	13.9	20.5	86.2	85.5	10.4	73.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.9	20.5	86.2	85.5	10.4	73.8	19.3
Queue Length 50th (m)	9.8	26.6	43.6	76.2	80.1	0.0	1.7	0.0
Queue Length 95th (m)	23.0	43.7	69.5	102.7	107.1	20.1	6.4	29.8
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	534	3201	2860	357	375	460	130	547
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	0.16	0.17	0.25	0.60	0.60	0.33	0.04	0.48

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	545	0	0	700	10	280	150	150	5	0	260
Future Volume (vph)	85	545	0	0	700	10	280	150	150	5	0	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5126		1681	1765	1599	1805		1599
Flt Permitted	0.33	1.00			1.00		0.95	0.98	1.00	0.32		1.00
Satd. Flow (perm)	607	5085			5126		1681	1765	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	87	556	0	0	714	10	286	153	153	5	0	265
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	128	0	0	245
Lane Group Flow (vph)	87	556	0	0	724	0	214	225	25	5	0	20
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	104.0	104.0			92.2		26.6	26.6	26.6	12.4		12.4
Effective Green, g (s)	104.0	104.0			92.2		26.6	26.6	26.6	12.4		12.4
Actuated g/C Ratio	0.63	0.63			0.56		0.16	0.16	0.16	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	442	3203			2862		270	284	257	46		120
v/s Ratio Prot	c0.01	0.11			c0.14		0.13	c0.13				
v/s Ratio Perm	0.11								0.02	0.01		c0.01
v/c Ratio	0.20	0.17			0.25		0.79	0.79	0.10	0.11		0.17
Uniform Delay, d1	12.2	12.7			18.7		66.6	66.6	59.0	71.2		71.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2	0.1			0.2		14.7	14.0	0.2	1.0		0.7
Delay (s)	12.4	12.8			19.0		81.3	80.6	59.2	72.2		72.2
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		12.8			19.0			75.3			72.2	
Approach LOS		B			B			E			E	

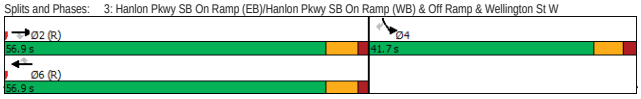
Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	575	375	0	825	250	0	0	0	150	0	125
Future Volume (vph)	0	575	375	0	825	250	0	0	0	150	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			387			214						117
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	593	387	0	851	258	0	0	0	155	0	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	593	387	0	851	258	0	0	0	155	0	129
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		74.3	74.3		74.3	74.3				10.7		10.7
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.16	0.30		0.22	0.21				0.41		0.47
Control Delay		3.6	1.0		3.8	1.2				44.4		15.8
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.6	1.0		3.8	1.2				44.4		15.8
LOS		A	A		A	A				D		B
Approach Delay		2.6			3.2						31.4	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	593	387	851	258	155	129
v/c Ratio	0.16	0.30	0.22	0.21	0.41	0.47
Control Delay	3.6	1.0	3.8	1.2	44.4	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	1.0	3.8	1.2	44.4	15.8
Queue Length 50th (m)	9.6	0.0	14.6	1.8	15.3	2.2
Queue Length 95th (m)	14.4	6.8	21.0	8.1	24.8	19.2
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3796	1275	3833	1217	1230	632
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	0.16	0.30	0.22	0.21	0.13	0.20

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	575	375	0	825	250	0	0	0	150	0	125
Future Volume (vph)	0	575	375	0	825	250	0	0	0	150	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	593	387	0	851	258	0	0	0	155	0	129
RTOR Reduction (vph)	0	0	95	0	0	53	0	0	0	0	0	104
Lane Group Flow (vph)	0	593	292	0	851	205	0	0	0	155	0	25
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		74.3	74.3		74.3	74.3				10.7		10.7
Effective Green, g (s)		74.3	74.3		74.3	74.3				10.7		10.7
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3794	1180		3831	1164				376		170
v/s Ratio Prot		0.12			0.17					c0.04		
v/s Ratio Perm			c0.19			0.13						0.02
v/c Ratio		0.16	0.25		0.22	0.18				0.41		0.15
Uniform Delay, d1		3.4	3.7		3.6	3.5				41.0		39.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.3				0.7		0.4
Delay (s)		3.5	4.2		3.7	3.8				41.8		40.2
Level of Service		A	A		A	A				D		D
Approach Delay (s)		3.8			3.7			0.0			41.0	
Approach LOS		A			A			A			D	

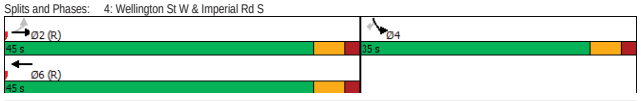
Intersection Summary					
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.27				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	565	540	295	375	55
Future Volume (vph)	65	565	540	295	375	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.947			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3325	0	1787	1615
Flt Permitted		0.770			0.950	
Satd. Flow (perm)	0	2707	3325	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			178			59
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	70	608	581	317	403	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	678	898	0	403	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.9	44.9		23.1	23.1
Actuated g/C Ratio		0.56	0.56		0.29	0.29
v/c Ratio		0.45	0.46		0.78	0.12
Control Delay		12.5	9.9		36.6	5.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		12.5	9.9		36.6	5.7
LOS		B	A		D	A
Approach Delay		12.5	9.9		32.6	
Approach LOS		B	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	678	898	403	59
v/c Ratio	0.45	0.46	0.78	0.12
Control Delay	12.5	9.9	36.6	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.5	9.9	36.6	5.7
Queue Length 50th (m)	31.1	32.2	58.5	0.0
Queue Length 95th (m)	53.9	56.7	80.4	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1525	1951	652	627
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	0.46	0.62	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	565	540	295	375	55
Future Volume (vph)	65	565	540	295	375	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3325		1787	1615
Flt Permitted		0.77	1.00		0.95	1.00
Satd. Flow (perm)		2707	3325		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	608	581	317	403	59
RTOR Reduction (vph)	0	0	78	0	0	42
Lane Group Flow (vph)	0	678	820	0	403	17
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.9	44.9		23.1	23.1
Effective Green, g (s)		44.9	44.9		23.1	23.1
Actuated g/C Ratio		0.56	0.56		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1519	1866		515	466
v/s Ratio Prot			0.25		c0.23	
v/s Ratio Perm		c0.25				0.01
v/c Ratio		0.45	0.44		0.78	0.04
Uniform Delay, d1		10.3	10.2		26.1	20.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.0	0.8		7.6	0.0
Delay (s)		11.2	11.0		33.8	20.5
Level of Service		B	B		C	C
Approach Delay (s)		11.2	11.0		32.1	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

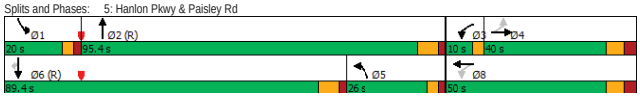
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	295	345	90	305	20	350	1035	95	35	945	125
Future Volume (vph)	125	295	345	90	305	20	350	1035	95	35	945	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.552			0.398			0.950			0.950		
Satd. Flow (perm)	1048	3574	1579	748	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			291		4				183			128
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	128	301	352	92	311	20	357	1056	97	36	964	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	301	352	92	331	0	357	1056	97	36	964	128
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	25.3	25.3	165.4	44.4	39.4		22.4	98.8	165.4	9.4	83.2	83.2
Actuated g/C Ratio	0.15	0.15	1.00	0.27	0.24		0.14	0.60	1.00	0.06	0.50	0.50
v/c Ratio	0.80	0.55	0.22	0.34	0.39		0.76	0.50	0.06	0.36	0.55	0.15
Control Delay	99.4	67.5	0.3	47.9	52.3		79.6	22.5	0.1	84.8	31.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.4	67.5	0.3	47.9	52.3		79.6	22.5	0.1	84.8	31.7	4.7
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		42.5			51.3			34.5			30.3	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 36.8		Intersection LOS: D	
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	301	352	92	331	357	1056	97	36	964	128
v/c Ratio	0.80	0.55	0.22	0.34	0.39	0.76	0.50	0.06	0.36	0.55	0.15
Control Delay	99.4	67.5	0.3	47.9	52.3	79.6	22.5	0.1	84.8	31.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.4	67.5	0.3	47.9	52.3	79.6	22.5	0.1	84.8	31.7	4.7
Queue Length 50th (m)	43.4	51.5	0.0	24.6	50.1	62.4	112.5	0.0	12.3	120.3	0.0
Queue Length 95th (m)	65.5	63.5	0.0	37.6	60.7	78.6	159.0	0.0	25.3	168.6	14.1
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	207	707	1579	269	961	488	2117	1579	158	1855	915
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.43	0.22	0.34	0.34	0.73	0.50	0.06	0.23	0.52	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	295	345	90	305	20	350	1035	95	35	945	125
Future Volume (vph)	125	295	345	90	305	20	350	1035	95	35	945	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3574	1579	1786	3574		3467	3505	1579	1752	3505	1615
Flt Permitted	0.55	1.00	1.00	0.40	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1048	3574	1579	748	3574		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	301	352	92	311	20	357	1056	97	36	964	128
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	64
Lane Group Flow (vph)	128	301	352	92	328	0	357	1056	97	36	964	64
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	25.4	25.4	165.4	39.4	39.4		23.4	97.8	165.4	7.8	82.2	82.2
Effective Green, g (s)	25.4	25.4	165.4	39.4	39.4		23.4	97.8	165.4	7.8	82.2	82.2
Actuated g/C Ratio	0.15	0.15	1.00	0.24	0.24		0.14	0.59	1.00	0.05	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	160	548	1579	247	851		490	2072	1579	82	1741	802
v/s Ratio Prot		0.08		0.02	c0.09		c0.10	0.30		0.02	c0.28	
v/s Ratio Perm	c0.12		0.22	0.06					0.06			0.04
v/c Ratio	0.80	0.55	0.22	0.37	0.39		0.73	0.51	0.06	0.44	0.55	0.08
Uniform Delay, d1	67.5	64.7	0.0	50.8	52.8		68.0	19.8	0.0	76.7	28.9	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.1	1.1	0.3	0.9	0.3		5.4	0.9	0.1	3.7	1.3	0.2
Delay (s)	91.7	65.8	0.3	51.8	53.1		73.3	20.7	0.1	80.4	30.1	22.0
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		40.5			52.8			31.8			30.8	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM 2000 Control Delay		35.6	HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		0.61			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)		23.4
Intersection Capacity Utilization		91.7%	ICU Level of Service		F
Analysis Period (min)		15			

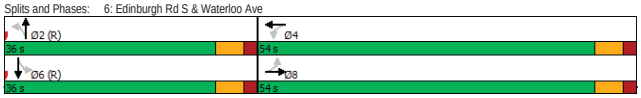
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	90	25	55	85	40	30	475	60	30	470	20
Future Volume (vph)	40	90	25	55	85	40	30	475	60	30	470	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00	1.00		1.00	1.00	
Frt		0.968			0.952			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1799	0	1805	1758	0	1805	1858	0	1805	1883	0
Flt Permitted	0.646			0.676			0.434			0.405		
Satd. Flow (perm)	1221	1799	0	1265	1758	0	823	1858	0	768	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			41			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	99	27	60	93	44	33	522	66	33	516	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	126	0	60	137	0	33	588	0	33	538	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.73	0.73	
v/c Ratio	0.27	0.49		0.36	0.51		0.05	0.43		0.06	0.39	
Control Delay	37.0	34.4		39.4	30.6		3.9	10.9		5.0	6.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.0	34.4		39.4	30.6		3.9	10.9		5.0	6.2	
LOS	D	C		D	C		A	B		A	A	
Approach Delay		35.0			33.2			10.5			6.2	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	126	60	137	33	588	33	538
v/c Ratio	0.27	0.49	0.36	0.51	0.05	0.43	0.06	0.39
Control Delay	37.0	34.4	39.4	30.6	3.9	10.9	5.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	34.4	39.4	30.6	3.9	10.9	5.0	6.2
Queue Length 50th (m)	7.4	17.8	10.3	16.6	0.9	29.5	1.3	27.7
Queue Length 95th (m)	15.6	30.9	19.8	30.4	4.3	86.5	5.7	66.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	651	970	674	956	603	1365	563	1382
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	0.07	0.13	0.09	0.14	0.05	0.43	0.06	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	90	25	55	85	40	30	475	60	30	470	20
Future Volume (vph)	40	90	25	55	85	40	30	475	60	30	470	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		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)	1796	1798		1778	1757		1799	1858		1800	1882	
Flt Permitted	0.65	1.00		0.68	1.00		0.43	1.00		0.40	1.00	
Satd. Flow (perm)	1220	1798		1265	1757		822	1858		767	1882	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	99	27	60	93	44	33	522	66	33	516	22
RTOR Reduction (vph)	0	20	0	0	36	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	106	0	60	101	0	33	586	0	33	537	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Effective Green, g (s)	12.0	12.0		12.0	12.0		66.0	66.0		66.0	66.0	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	162	239		168	234		602	1362		562	1380	
v/s Ratio Prot		c0.06			0.06			c0.32			0.29	
v/s Ratio Perm	0.04			0.05			0.04			0.04		
v/c Ratio	0.27	0.44		0.36	0.43		0.05	0.43		0.06	0.39	
Uniform Delay, d1	35.1	35.9		35.5	35.9		3.3	4.7		3.3	4.5	
Progression Factor	1.00	1.00		1.00	1.00		0.79	1.76		1.00	1.00	
Incremental Delay, d2	0.9	1.3		1.3	1.3		0.2	1.0		0.2	0.8	
Delay (s)	36.0	37.2		36.8	37.2		2.8	9.2		3.5	5.3	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		36.9			37.1			8.9			5.2	
Approach LOS		D			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	5	115	165	5	110	155
Future Volume (vph)	5	115	165	5	110	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	5	125	179	5	120	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	125	179	5	120	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	165	5	110	155
Future Volume (Veh/h)	5	115	165	5	110	155
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	125	179	5	120	168
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			131		370	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			131		370	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		78	84
cM capacity (veh/h)			1459		556	1077

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	5	125	179	5	288
Volume Left	0	0	179	0	120
Volume Right	0	125	0	0	168
cSH	1700	1700	1459	1700	1333
Volume to Capacity	0.00	0.07	0.12	0.00	0.22
Queue Length 95th (m)	0.0	0.0	3.3	0.0	6.6
Control Delay (s)	0.0	0.0	7.8	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		7.6		10.8
Approach LOS					B

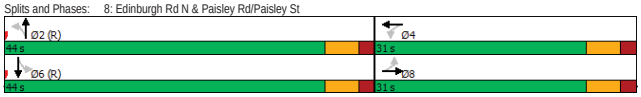
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	255	85	35	230	55	100	410	25	50	385	60
Future Volume (vph)	75	255	85	35	230	55	100	410	25	50	385	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.963			0.971			0.991			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1802	0	1805	1815	0	1805	1879	0	1671	1859	0
Flt Permitted	0.477			0.398			0.394			0.403		
Satd. Flow (perm)	894	1802	0	752	1815	0	748	1879	0	705	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24			17			6			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	81	274	91	38	247	59	108	441	27	54	414	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	365	0	38	306	0	108	468	0	54	479	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.27	0.59		0.15	0.50		0.29	0.49		0.15	0.50	
Control Delay	19.4	20.8		19.6	22.2		13.3	14.2		11.3	14.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.4	20.8		19.6	22.2		13.3	14.2		11.3	14.2	
LOS	B	C		B	C		B	B		B	B	
Approach Delay		20.5			21.9			14.0			13.9	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues b) Future Background (2021) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	365	38	306	108	468	54	479
v/c Ratio	0.27	0.59	0.15	0.50	0.29	0.49	0.15	0.50
Control Delay	19.4	20.8	19.6	22.2	13.3	14.2	11.3	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	20.8	19.6	22.2	13.3	14.2	11.3	14.2
Queue Length 50th (m)	5.5	27.0	3.9	33.7	8.7	42.3	4.0	42.8
Queue Length 95th (m)	m16.8	53.7	10.9	56.9	19.2	66.9	10.4	67.8
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	298	616	250	616	378	954	357	949
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	0.59	0.15	0.50	0.29	0.49	0.15	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	255	85	35	230	55	100	410	25	50	385	60
Future Volume (vph)	75	255	85	35	230	55	100	410	25	50	385	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1781	1801		1795	1815		1804	1880		1662	1858	
Flt Permitted	0.48	1.00		0.40	1.00		0.39	1.00		0.40	1.00	
Satd. Flow (perm)	893	1801		751	1815		748	1880		706	1858	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	274	91	38	247	59	108	441	27	54	414	65
RTOR Reduction (vph)	0	16	0	0	11	0	0	3	0	0	7	0
Lane Group Flow (vph)	81	349	0	38	295	0	108	465	0	54	472	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	297	600		250	605		378	952		357	941	
v/s Ratio Prot		c0.19			0.16			0.25			c0.25	
v/s Ratio Perm	0.09			0.05			0.14			0.08		
v/c Ratio	0.27	0.58		0.15	0.49		0.29	0.49		0.15	0.50	
Uniform Delay, d1	18.3	20.7		17.6	19.9		10.7	12.1		9.9	12.2	
Progression Factor	0.90	0.84		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	3.9		1.3	2.8		1.9	1.8		0.9	1.9	
Delay (s)	18.6	21.4		18.8	22.7		12.6	13.9		10.8	14.1	
Level of Service	B	C		B	C		B	B		B	B	
Approach Delay (s)		20.9			22.3			13.7			13.8	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	81.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings b) Future Background (2021) SAT - Build-out

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	265	5	50	260	140	2	50	50	190	55	155
Future Volume (vph)	155	265	5	50	260	140	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1781	0	1805	1737	0	1805	1900	1599
Flt Permitted	0.399			0.590			0.720			0.690		
Satd. Flow (perm)	758	1863	1578	1119	1781	0	1365	1737	0	1309	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		41			52				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	161	276	5	52	271	146	2	52	52	198	57	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	276	5	52	417	0	2	104	0	198	57	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings b) Future Background (2021) SAT - Build-out

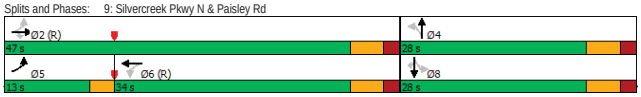
9: Silvercreek Pkwy N & Paisley Rd

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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	49.8	46.8	46.8	35.6	35.6		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.66	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
v/c Ratio	0.26	0.24	0.00	0.10	0.48		0.01	0.25		0.70	0.14	0.35
Control Delay	6.8	7.8	0.0	19.5	21.0		20.0	13.9		40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	6.8	7.8	0.0	19.5	21.0		20.0	13.9		40.0	22.4	6.1
LOS	A	A	A	B	C		B	B		D	C	A
Approach Delay		7.4			20.8			14.0			24.5	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 61.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues b) Future Background (2021) SAT - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	161	276	5	52	417	2	104	198	57	161
v/c Ratio	0.26	0.24	0.00	0.10	0.48	0.01	0.25	0.70	0.14	0.35
Control Delay	6.8	7.8	0.0	19.5	21.0	20.0	13.9	40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	7.8	0.0	19.5	21.0	20.0	13.9	40.0	22.4	6.1
Queue Length 50th (m)	7.6	16.2	0.0	5.0	38.9	0.3	6.3	27.2	6.9	0.0
Queue Length 95th (m)	18.0	33.7	0.0	m15.0	88.1	1.7	16.7	44.6	14.5	12.8
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	642	1162	1001	531	866	400	546	383	557	576
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	0.25	0.24	0.00	0.10	0.48	0.01	0.19	0.52	0.10	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis b) Future Background (2021) SAT - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	265	5	50	260	140	2	50	50	190	55	155
Future Volume (vph)	155	265	5	50	260	140	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1782		1802	1737		1802	1900	1577
Flt Permitted	0.40	1.00	1.00	0.59	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	758	1863	1578	1118	1782		1365	1737		1309	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	161	276	5	52	271	146	2	52	52	198	57	161
RTOR Reduction (vph)	0	0	2	0	22	0	0	41	0	0	0	126
Lane Group Flow (vph)	161	276	3	52	395	0	2	63	0	198	57	35
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.8	46.8	46.8	35.6	35.6		16.2	16.2		16.2	16.2	16.2
Effective Green, g (s)	46.8	46.8	46.8	35.6	35.6		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.62	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	587	1162	984	530	845		294	375		282	410	340
v/s Ratio Prot	c0.03	0.15			c0.22			0.04			0.03	
v/s Ratio Perm	0.14		0.00	0.05			0.00			c0.15		0.02
v/c Ratio	0.27	0.24	0.00	0.10	0.47		0.01	0.17		0.70	0.14	0.10
Uniform Delay, d1	6.4	6.2	5.3	10.9	13.3		23.1	23.9		27.2	23.8	23.6
Progression Factor	1.00	1.00	1.00	1.39	1.37		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5	0.0	0.3	1.7		0.0	0.2		7.7	0.2	0.1
Delay (s)	6.7	6.7	5.3	15.5	20.0		23.1	24.1		34.9	23.9	23.7
Level of Service	A	A	A	B	B		C	C		C	C	C
Approach Delay (s)		6.7			19.5			24.1			29.0	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	18.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	61.4%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings b) Future Background (2021) SAT - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis b) Future Background (2021) SAT - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	1159			675			1062	1834	227	1385	1834	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	937			675			833	1657	227	1177	1657	114
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	693			926			248	93	782	139	93	864

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	225	225	225	82	386	386	386	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.13	0.05	0.23	0.23	0.23	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

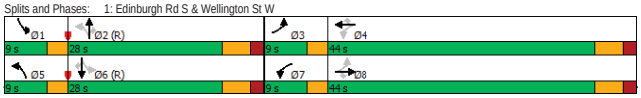
Average Delay	0.0				
Intersection Capacity Utilization	23.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	795	175	115	520	45	180	565	205	55	525	80
Future Volume (vph)	115	795	175	115	520	45	180	565	205	55	525	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.346			0.160			0.260			0.350		
Satd. Flow (perm)	649	3471	1508	286	3438	1570	478	3539	1476	620	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			197			109			173			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	893	197	129	584	51	202	635	230	62	590	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	893	197	129	584	51	202	635	230	62	590	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.4	30.4	30.4	40.8	30.6	30.6	39.7	29.2	29.2	34.2	24.2	24.2
Actuated g/C Ratio	0.45	0.34	0.34	0.45	0.34	0.34	0.44	0.32	0.32	0.38	0.27	0.27
v/c Ratio	0.34	0.76	0.31	0.53	0.50	0.08	0.57	0.55	0.39	0.19	0.63	0.18
Control Delay	14.5	30.8	4.1	20.4	24.6	0.3	26.0	29.2	10.3	13.1	29.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.8	4.1	20.4	24.6	0.3	26.0	29.2	10.3	13.1	29.0	3.3
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.8			22.3			24.5			24.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	893	197	129	584	51	202	635	230	62	590	90
v/c Ratio	0.34	0.76	0.31	0.53	0.50	0.08	0.57	0.55	0.39	0.19	0.63	0.18
Control Delay	14.5	30.8	4.1	20.4	24.6	0.3	26.0	29.2	10.3	13.1	29.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.8	4.1	20.4	24.6	0.3	26.0	29.2	10.3	13.1	29.0	3.3
Queue Length 50th (m)	12.1	75.4	0.0	12.2	44.1	0.0	22.7	52.6	7.7	4.5	55.0	2.1
Queue Length 95th (m)	19.5	85.3	12.2	19.7	52.2	0.2	#41.6	74.7	28.0	8.9	70.6	4.8
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	380	1465	750	242	1451	725	355	1147	595	320	958	509
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.61	0.26	0.53	0.40	0.07	0.57	0.55	0.39	0.19	0.62	0.18

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)	115	795	175	115	520	45	180	565	205	55	525	80
Future Volume (vph)	115	795	175	115	520	45	180	565	205	55	525	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1695	3505	1573
Flt Permitted	0.35	1.00	1.00	0.16	1.00	1.00	0.26	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	651	3471	1508	286	3438	1570	479	3539	1476	624	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	893	197	129	584	51	202	635	230	62	590	90
RTOR Reduction (vph)	0	0	130	0	0	34	0	0	118	0	0	66
Lane Group Flow (vph)	129	893	67	129	584	17	202	635	112	62	590	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.4	30.4	30.4	37.8	30.6	30.6	37.4	28.6	28.6	30.0	24.2	24.2
Effective Green, g (s)	37.4	30.4	30.4	37.8	30.6	30.6	37.4	28.6	28.6	30.0	24.2	24.2
Actuated g/C Ratio	0.42	0.34	0.34	0.42	0.34	0.34	0.42	0.32	0.32	0.33	0.27	0.27
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	358	1172	509	233	1168	533	343	1124	469	277	942	422
v/s Ratio Prot	0.03	c0.26		c0.04	0.17		c0.07	0.18		0.01	0.17	
v/s Ratio Perm	0.12		0.04	0.19		0.01	c0.18		0.08	0.06		0.02
v/c Ratio	0.36	0.76	0.13	0.55	0.50	0.03	0.59	0.56	0.24	0.22	0.63	0.06
Uniform Delay, d1	16.8	26.6	20.6	18.1	23.6	19.8	18.2	25.5	22.7	20.8	28.9	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.86	0.62
Incremental Delay, d2	0.6	3.0	0.1	2.8	0.3	0.0	2.6	2.1	1.2	0.4	3.0	0.2
Delay (s)	17.4	29.6	20.8	20.9	24.0	19.8	20.8	27.6	23.9	15.4	27.9	15.3
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.9			23.2			25.5			25.3	
Approach LOS		C			C			C			C	

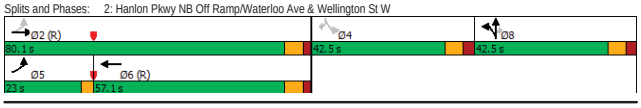
Intersection Summary					
HCM 2000 Control Delay		25.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.68			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		69.5%	ICU Level of Service	C	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	880	0	0	755	5	195	190	230	1	0	350
Future Volume (vph)	160	880	0	0	755	5	195	190	230	1	0	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.995		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1772	1599	1805	0	1583
Flt Permitted	0.277						0.950	0.995		0.238		
Satd. Flow (perm)	506	4988	0	0	4983	0	1633	1772	1599	452	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				253			317
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	176	967	0	0	830	5	214	209	253	1	0	385
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	176	967	0	0	835	0	193	230	253	1	0	385
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	103.0	98.9			82.9		27.3	27.3	27.3	16.8		16.8
Actuated g/C Ratio	0.62	0.60			0.50		0.17	0.17	0.17	0.10		0.10
v/c Ratio	0.43	0.32			0.33		0.71	0.79	0.53	0.02		0.87
Control Delay	18.9	18.6			28.0		79.3	84.1	10.0	61.0		33.4
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	18.9	18.6			28.0		79.3	84.1	10.0	61.0		33.4
LOS	B	B			C		E	F	B	E		C
Approach Delay		18.6			28.0			55.0			33.5	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 31.2		Intersection LOS: C	
Intersection Capacity Utilization 73.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	176	967	835	193	230	253	1	385
v/c Ratio	0.43	0.32	0.33	0.71	0.79	0.53	0.02	0.87
Control Delay	18.9	18.6	28.0	79.3	84.1	10.0	61.0	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	18.6	28.0	79.3	84.1	10.0	61.0	33.4
Queue Length 50th (m)	23.4	56.4	59.5	67.3	81.3	0.0	0.3	23.4
Queue Length 95th (m)	50.4	92.4	100.0	92.8	108.2	25.1	2.4	62.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	464	2988	2501	349	378	540	95	585
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	0.38	0.32	0.33	0.55	0.61	0.47	0.01	0.66

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	880	0	0	755	5	195	190	230	1	0	350
Future Volume (vph)	160	880	0	0	755	5	195	190	230	1	0	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4983		1633	1773	1599	1805		1583
Flt Permitted	0.28	1.00			1.00		0.95	1.00	1.00	0.24		1.00
Satd. Flow (perm)	506	4988			4983		1633	1773	1599	452		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	176	967	0	0	830	5	214	209	253	1	0	385
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	211	0	0	285
Lane Group Flow (vph)	176	967	0	0	835	0	193	230	42	1	0	100
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	98.9	98.9			82.8		27.3	27.3	27.3	16.8		16.8
Effective Green, g (s)	98.9	98.9			82.8		27.3	27.3	27.3	16.8		16.8
Actuated g/C Ratio	0.60	0.60			0.50		0.17	0.17	0.17	0.10		0.10
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	400	2987			2499		270	293	264	45		161
v/s Ratio Prot	c0.03	0.19			0.17		0.12	c0.13				
v/s Ratio Perm	c0.23								0.03	0.00		c0.06
v/c Ratio	0.44	0.32			0.33		0.71	0.78	0.16	0.02		0.62
Uniform Delay, d1	15.5	16.5			24.6		65.2	66.1	59.1	66.8		71.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.8	0.3			0.4		8.7	12.9	0.3	0.2		7.3
Delay (s)	16.2	16.8			25.0		73.9	79.0	59.3	67.0		78.4
Level of Service	B	B			C		E	E	E	E		E
Approach Delay (s)		16.7			25.0			70.2			78.4	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

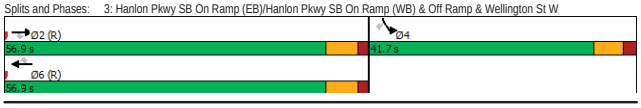
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	925	455	0	840	275	0	0	0	180	0	90
Future Volume (vph)	0	925	455	0	840	275	0	0	0	180	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			472			231						95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	974	479	0	884	289	0	0	0	189	0	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	974	479	0	884	289	0	0	0	189	0	95
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.26	0.38		0.24	0.24				0.50		0.37
Control Delay		4.3	1.3		4.2	1.5				45.1		12.8
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.3	1.3		4.2	1.5				45.1		12.8
LOS		A	A		A	A				D		B
Approach Delay		3.4			3.6						34.3	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	974	479	884	289	189	95
v/c Ratio	0.26	0.38	0.24	0.24	0.50	0.37
Control Delay	4.3	1.3	4.2	1.5	45.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	1.3	4.2	1.5	45.1	12.8
Queue Length 50th (m)	18.5	0.3	16.3	2.5	18.7	0.0
Queue Length 95th (m)	27.0	8.4	24.1	10.0	28.8	14.3
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3677	1265	3713	1211	1150	577
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	0.26	0.38	0.24	0.24	0.16	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	925	455	0	840	275	0	0	0	180	0	90
Future Volume (vph)	0	925	455	0	840	275	0	0	0	180	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	974	479	0	884	289	0	0	0	189	0	95
RTOR Reduction (vph)	0	0	121	0	0	59	0	0	0	0	0	84
Lane Group Flow (vph)	0	974	358	0	884	230	0	0	0	189	0	11
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.4	73.4		73.4	73.4				11.6		11.6
Effective Green, g (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3677	1144		3713	1152				381		171
v/s Ratio Prot		0.20			0.18					c0.06		
v/s Ratio Perm			c0.23			0.15						0.01
v/c Ratio		0.26	0.31		0.24	0.20				0.50		0.07
Uniform Delay, d1		4.0	4.2		3.9	3.8				40.8		38.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.7		0.2	0.4				1.0		0.2
Delay (s)		4.2	4.9		4.1	4.2				41.8		38.8
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.4			4.1			0.0			40.8	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.34				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

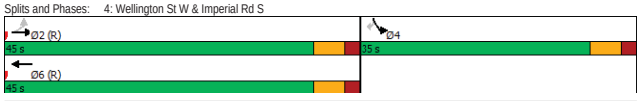
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	935	660	170	430	75
Future Volume (vph)	60	935	660	170	430	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.969			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3311	0	1770	1599
Flt Permitted		0.833			0.950	
Satd. Flow (perm)	0	2838	3311	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			56			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	63	974	688	177	448	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1037	865	0	448	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.5	43.5		24.5	24.5
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.67	0.47		0.83	0.14
Control Delay		16.8	12.2		39.1	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		16.8	12.2		39.1	5.2
LOS		B	B		D	A
Approach Delay		16.8	12.2		34.1	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1037	865	448	78
v/c Ratio	0.67	0.47	0.83	0.14
Control Delay	16.8	12.2	39.1	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.8	12.2	39.1	5.2
Queue Length 50th (m)	60.1	39.6	64.9	0.0
Queue Length 95th (m)	91.9	60.8	94.0	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1544	1827	641	629
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	0.47	0.70	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	935	660	170	430	75
Future Volume (vph)	60	935	660	170	430	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3312		1770	1599
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2838	3312		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	974	688	177	448	78
RTOR Reduction (vph)	0	0	26	0	0	54
Lane Group Flow (vph)	0	1037	839	0	448	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.5	43.5		24.5	24.5
Effective Green, g (s)		43.5	43.5		24.5	24.5
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1543	1800		542	489
v/s Ratio Prot			0.25		c0.25	
v/s Ratio Perm		c0.37				0.01
v/c Ratio		0.67	0.47		0.83	0.05
Uniform Delay, d1		13.1	11.2		25.8	19.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.4	0.9		10.0	0.0
Delay (s)		15.5	12.0		35.8	19.6
Level of Service		B	B		D	B
Approach Delay (s)		15.5	12.0		33.4	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.73		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		91.4%	ICU Level of Service	F
Analysis Period (min)		15		

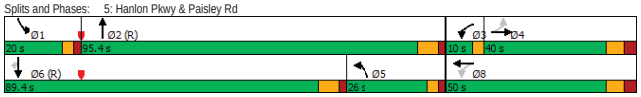
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	325	330	70	195	25	160	1340	100	25	1010	45
Future Volume (vph)	100	325	330	70	195	25	160	1340	100	25	1010	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3471	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.611			0.324			0.950			0.950		
Satd. Flow (perm)	1085	3438	1583	610	3471	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			251		8				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	332	337	71	199	26	163	1367	102	26	1031	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	332	337	71	225	0	163	1367	102	26	1031	46
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	22.2	22.2	165.4	40.4	35.4		18.3	105.9	165.4	8.9	91.3	91.3
Actuated g/C Ratio	0.13	0.13	1.00	0.24	0.21		0.11	0.64	1.00	0.05	0.55	0.55
v/c Ratio	0.70	0.72	0.21	0.32	0.30		0.45	0.64	0.07	0.30	0.57	0.05
Control Delay	92.6	77.4	0.3	50.9	52.3		71.6	22.4	0.1	84.0	27.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.6	77.4	0.3	50.9	52.3		71.6	22.4	0.1	84.0	27.9	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		45.7			52.0			25.9			28.1	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 32.6		Intersection LOS: C	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	332	337	71	225	163	1367	102	26	1031	46
v/c Ratio	0.70	0.72	0.21	0.32	0.30	0.45	0.64	0.07	0.30	0.57	0.05
Control Delay	92.6	77.4	0.3	50.9	52.3	71.6	22.4	0.1	84.0	27.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.6	77.4	0.3	50.9	52.3	71.6	22.4	0.1	84.0	27.9	0.1
Queue Length 50th (m)	34.6	59.4	0.0	19.7	33.8	27.4	154.5	0.0	8.9	121.2	0.0
Queue Length 95th (m)	54.9	73.5	0.0	31.5	43.1	38.8	225.1	0.0	20.2	177.8	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	209	665	1583	221	905	441	2142	1568	144	1845	878
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.50	0.21	0.32	0.25	0.37	0.64	0.07	0.18	0.56	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	325	330	70	195	25	160	1340	100	25	1010	45
Future Volume (vph)	100	325	330	70	195	25	160	1340	100	25	1010	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3470		3303	3343	1568	1597	3282	1482
Flt Permitted	0.61	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1086	3438	1583	609	3470		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	332	337	71	199	26	163	1367	102	26	1031	46
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	21
Lane Group Flow (vph)	102	332	337	71	219	0	163	1367	102	26	1031	25
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	22.2	22.2	165.4	35.4	35.4		20.3	103.9	165.4	5.7	89.3	89.3
Effective Green, g (s)	22.2	22.2	165.4	35.4	35.4		20.3	103.9	165.4	5.7	89.3	89.3
Actuated g/C Ratio	0.13	0.13	1.00	0.21	0.21		0.12	0.63	1.00	0.03	0.54	0.54
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	145	461	1583	202	742		405	2099	1568	55	1771	800
v/s Ratio Prot		c0.10		c0.02	0.06		0.05	c0.41		0.02	c0.31	
v/s Ratio Perm	0.09		0.21	0.05					0.07			0.02
v/c Ratio	0.70	0.72	0.21	0.35	0.29		0.40	0.65	0.07	0.47	0.58	0.03
Uniform Delay, d1	68.5	68.6	0.0	53.6	54.5		67.0	19.3	0.0	78.4	25.5	17.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.4	5.5	0.3	1.1	0.2		0.7	1.6	0.1	6.3	1.4	0.1
Delay (s)	82.8	74.1	0.3	54.6	54.8		67.6	20.9	0.1	84.7	26.9	17.9
Level of Service	F	E	A	D	D		E	C	A	F	C	B
Approach Delay (s)		43.0			54.7			24.3			27.9	
Approach LOS		D			D			C			C	

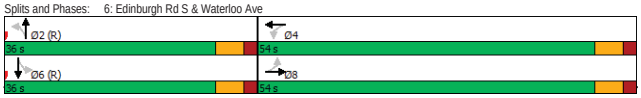
Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	230	40	75	125	25	20	555	95	40	480	35
Future Volume (vph)	50	230	40	75	125	25	20	555	95	40	480	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	0.99		1.00	1.00	
Frt		0.978			0.975			0.978			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1787	0	1752	1782	0	1805	1818	0	1770	1842	0
Flt Permitted	0.623			0.361			0.388			0.296		
Satd. Flow (perm)	1145	1787	0	659	1782	0	734	1818	0	550	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			17			10			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	250	43	82	136	27	22	603	103	43	522	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	293	0	82	163	0	22	706	0	43	560	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	20.1	20.1		20.1	20.1		57.9	57.9		57.9	57.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.64	0.64		0.64	0.64	
v/c Ratio	0.21	0.72		0.56	0.40		0.05	0.60		0.12	0.47	
Control Delay	28.2	39.9		44.5	28.1		19.9	28.6		9.1	10.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.2	39.9		44.5	28.1		19.9	28.6		9.1	10.9	
LOS	C	D		D	C		B	C		A	B	
Approach Delay		38.1			33.6			28.3			10.8	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	293	82	163	22	706	43	560
v/c Ratio	0.21	0.72	0.56	0.40	0.05	0.60	0.12	0.47
Control Delay	28.2	39.9	44.5	28.1	19.9	28.6	9.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	39.9	44.5	28.1	19.9	28.6	9.1	10.9
Queue Length 50th (m)	8.1	47.0	13.3	22.6	2.0	97.7	2.7	46.3
Queue Length 95th (m)	16.4	67.1	26.1	36.5	m7.2	163.7	9.1	88.5
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	610	960	351	958	472	1173	354	1187
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	0.31	0.23	0.17	0.05	0.60	0.12	0.47

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	230	40	75	125	25	20	555	95	40	480	35
Future Volume (vph)	50	230	40	75	125	25	20	555	95	40	480	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1746	1786		1738	1782		1793	1818		1762	1842	
Flt Permitted	0.62	1.00		0.36	1.00		0.39	1.00		0.30	1.00	
Satd. Flow (perm)	1144	1786		661	1782		732	1818		549	1842	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	250	43	82	136	27	22	603	103	43	522	38
RTOR Reduction (vph)	0	12	0	0	13	0	0	4	0	0	1	0
Lane Group Flow (vph)	54	281	0	82	150	0	22	702	0	43	559	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.1	20.1		20.1	20.1		57.9	57.9		57.9	57.9	
Effective Green, g (s)	20.1	20.1		20.1	20.1		57.9	57.9		57.9	57.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	255	398		147	397		470	1169		353	1185	
v/s Ratio Prot		c0.16			0.08			c0.39			0.30	
v/s Ratio Perm	0.05			0.12			0.03			0.08		
v/c Ratio	0.21	0.71		0.56	0.38		0.05	0.60		0.12	0.47	
Uniform Delay, d1	28.5	32.2		31.0	29.6		5.9	9.3		6.2	8.2	
Progression Factor	1.00	1.00		1.00	1.00		2.48	2.44		1.00	1.00	
Incremental Delay, d2	0.4	5.6		4.5	0.6		0.2	2.0		0.7	1.3	
Delay (s)	28.9	37.9		35.5	30.2		14.8	24.8		6.9	9.6	
Level of Service	C	D		D	C		B	C		A	A	
Approach Delay (s)		36.5			32.0			24.5			9.4	
Approach LOS		D			C			C			A	

Intersection Summary					
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	71.6%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	105	245	5	105	255
Future Volume (vph)	10	105	245	5	105	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	11	114	266	5	114	277
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	114	266	5	114	277
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	105	245	5	105	255
Future Volume (Veh/h)	10	105	245	5	105	255
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	114	266	5	114	277
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		556	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		556	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		72	74
cM capacity (veh/h)			1445		402	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	114	266	5	391
Volume Left	0	0	266	0	114
Volume Right	0	114	0	0	277
cSH	1700	1700	1445	1700	1377
Volume to Capacity	0.01	0.07	0.18	0.00	0.28
Queue Length 95th (m)	0.0	0.0	5.4	0.0	9.4
Control Delay (s)	0.0	0.0	8.1	0.0	11.9
Lane LOS			A		B
Approach Delay (s)	0.0		7.9		11.9
Approach LOS					B

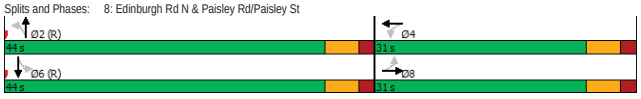
Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	325	70	45	230	80	75	450	55	95	395	75
Future Volume (vph)	75	325	70	45	230	80	75	450	55	95	395	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.98		0.99	1.00		1.00	1.00	
Frt		0.973			0.961			0.984			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1756	0	1805	1745	0	1656	1843	0	1656	1804	0
Flt Permitted	0.435			0.315			0.367			0.335		
Satd. Flow (perm)	761	1756	0	595	1745	0	635	1843	0	582	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			25			12			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	82	353	76	49	250	87	82	489	60	103	429	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	429	0	49	337	0	82	549	0	103	511	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.32	0.72		0.25	0.56		0.26	0.58		0.35	0.55	
Control Delay	22.7	27.2		22.3	23.3		13.2	15.8		15.4	15.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.7	27.2		22.3	23.3		13.2	15.8		15.4	15.0	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		26.5			23.2			15.5			15.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 85.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

c) Future Background (2026) AM - Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	429	49	337	82	549	103	511
v/c Ratio	0.32	0.72	0.25	0.56	0.26	0.58	0.35	0.55
Control Delay	22.7	27.2	22.3	23.3	13.2	15.8	15.4	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	27.2	22.3	23.3	13.2	15.8	15.4	15.0
Queue Length 50th (m)	8.3	44.5	5.2	37.4	6.5	52.5	8.6	47.0
Queue Length 95th (m)	m18.7	#78.0	14.1	63.0	15.7	82.5	20.6	74.8
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	253	596	198	598	321	939	294	923
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	0.32	0.72	0.25	0.56	0.26	0.58	0.35	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

c) Future Background (2026) AM - Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	325	70	45	230	80	75	450	55	95	395	75
Future Volume (vph)	75	325	70	45	230	80	75	450	55	95	395	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1662	1757		1794	1745		1645	1842		1650	1804	
Flt Permitted	0.43	1.00		0.31	1.00		0.37	1.00		0.34	1.00	
Satd. Flow (perm)	760	1757		595	1745		635	1842		582	1804	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	353	76	49	250	87	82	489	60	103	429	82
RTOR Reduction (vph)	0	11	0	0	17	0	0	6	0	0	9	0
Lane Group Flow (vph)	82	418	0	49	320	0	82	543	0	103	502	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	253	585		198	581		321	933		294	914	
v/s Ratio Prot		c0.24			0.18			c0.29			0.28	
v/s Ratio Perm	0.11			0.08			0.13			0.18		
v/c Ratio	0.32	0.72		0.25	0.55		0.26	0.58		0.35	0.55	
Uniform Delay, d1	18.7	21.9		18.2	20.4		10.5	12.9		11.1	12.6	
Progression Factor	0.99	0.92		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	6.8		3.0	3.7		1.9	2.6		3.3	2.4	
Delay (s)	21.6	27.1		21.1	24.2		12.4	15.6		14.4	15.0	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.2			23.8			15.2			14.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

c) Future Background (2026) AM - Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	300	1	50	255	150	0	50	50	170	50	80
Future Volume (vph)	155	300	1	50	255	150	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98			0.97		0.97		0.98
Frt			0.850		0.944			0.925				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1697	0	1900	1714	0	1770	1900	1553
Flt Permitted	0.322			0.543						0.679		
Satd. Flow (perm)	588	1792	1571	1027	1697	0	1900	1714	0	1232	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		45			61				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	189	366	1	61	311	183	0	61	61	207	61	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	366	1	61	494	0	0	122	0	207	61	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

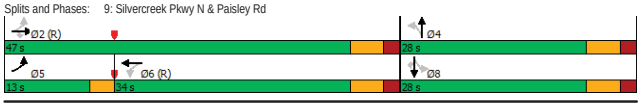
c) Future Background (2026) AM - Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	49.0	46.0	46.0	34.3	34.3			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.65	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
v/c Ratio	0.36	0.33	0.00	0.13	0.62			0.28		0.74	0.14	0.23
Control Delay	8.1	9.1	0.0	21.4	25.7			13.6		42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	8.1	9.1	0.0	21.4	25.7			13.6		42.4	21.9	6.3
LOS	A	A	A	C	C			B		D	C	A
Approach Delay		8.7			25.2			13.6			29.3	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues c) Future Background (2026) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	189	366	1	61	494	122	207	61	98
v/c Ratio	0.36	0.33	0.00	0.13	0.62	0.28	0.74	0.14	0.23
Control Delay	8.1	9.1	0.0	21.4	25.7	13.6	42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	9.1	0.0	21.4	25.7	13.6	42.4	21.9	6.3
Queue Length 50th (m)	9.8	24.3	0.0	5.8	63.9	7.2	28.4	7.2	0.0
Queue Length 95th (m)	18.8	40.7	0.0	m15.0	92.3	16.2	42.2	13.7	8.3
Internal Link Dist (m)		177.0			1059.9	58.6		356.4	
Turn Bay Length (m)	30.0								60.0
Base Capacity (vph)	539	1098	979	469	800	545	361	557	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.33	0.00	0.13	0.62	0.22	0.57	0.11	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis c) Future Background (2026) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	300	1	50	255	150	0	50	50	170	50	80
Future Volume (vph)	155	300	1	50	255	150	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	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		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98			0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)	1747	1792	1571	1797	1698			1714		1724	1900	1525
Flt Permitted	0.32	1.00	1.00	0.54	1.00			1.00		0.68	1.00	1.00
Satd. Flow (perm)	593	1792	1571	1027	1698			1714		1231	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	189	366	1	61	311	183	0	61	61	207	61	98
RTOR Reduction (vph)	0	0	0	0	24	0	0	47	0	0	0	76
Lane Group Flow (vph)	189	366	1	61	470	0	0	75	0	207	61	22
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.0	46.0	46.0	34.3	34.3			17.0		17.0	17.0	17.0
Effective Green, g (s)	46.0	46.0	46.0	34.3	34.3			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.61	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
Clearance Time (s)	3.0	6.0	6.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	497	1099	963	469	776			388		279	430	345
v/s Ratio Prot	c0.04	0.20			c0.28			0.04			0.03	
v/s Ratio Perm	0.19		0.00	0.06						c0.17		0.01
v/c Ratio	0.38	0.33	0.00	0.13	0.61			0.19		0.74	0.14	0.06
Uniform Delay, d1	7.6	7.0	5.6	11.7	15.3			23.5		27.0	23.2	22.8
Progression Factor	1.00	1.00	1.00	1.42	1.37			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.8	0.0	0.5	3.3			0.2		10.2	0.2	0.1
Delay (s)	8.1	7.9	5.6	17.2	24.3			23.7		37.1	23.3	22.8
Level of Service	A	A	A	B	C			C		D	C	C
Approach Delay (s)		7.9			23.5			23.7			31.0	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings c) Future Background (2026) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.1%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis c) Future Background (2026) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1169			1088			1478	2257	364	1532	2257	391
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	856			1088			1194	2046	364	1253	2046	5
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	725			649			132	52	638	119	52	989

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	362	362	362	76	389	389	389	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.21	0.04	0.23	0.23	0.23	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

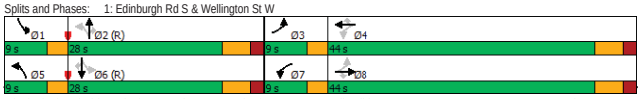
Average Delay	0.0		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	640	175	235	740	75	195	665	225	55	650	75
Future Volume (vph)	115	640	175	235	740	75	195	665	225	55	650	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.238			0.232			0.233			0.356		
Satd. Flow (perm)	451	3539	1577	432	3539	1555	442	3610	1535	660	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179			109			162			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	653	179	240	755	77	199	679	230	56	663	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	653	179	240	755	77	199	679	230	56	663	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	34.7	24.8	24.8	37.3	28.1	28.1	44.9	33.5	33.5	37.2	27.1	27.1
Actuated g/C Ratio	0.39	0.28	0.28	0.41	0.31	0.31	0.50	0.37	0.37	0.41	0.30	0.30
v/c Ratio	0.42	0.67	0.32	0.79	0.68	0.14	0.50	0.50	0.34	0.16	0.61	0.14
Control Delay	19.3	31.9	5.0	40.7	30.7	2.5	18.3	25.2	9.7	10.6	25.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	31.9	5.0	40.7	30.7	2.5	18.3	25.2	9.7	10.6	25.3	2.3
LOS	B	C	A	D	C	A	B	C	A	B	C	A
Approach Delay		25.3			30.9			20.8			22.1	
Approach LOS		C			C			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 24.9	Intersection LOS: C
Intersection Capacity Utilization 76.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	653	179	240	755	77	199	679	230	56	663	77
v/c Ratio	0.42	0.67	0.32	0.79	0.68	0.14	0.50	0.50	0.34	0.16	0.61	0.14
Control Delay	19.3	31.9	5.0	40.7	30.7	2.5	18.3	25.2	9.7	10.6	25.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	31.9	5.0	40.7	30.7	2.5	18.3	25.2	9.7	10.6	25.3	2.3
Queue Length 50th (m)	12.3	54.5	0.0	27.2	65.3	0.0	19.8	51.6	8.4	3.3	58.5	1.8
Queue Length 95th (m)	20.8	65.6	13.3	#56.8	77.5	5.0	36.8	77.3	28.9	m5.9	73.0	m3.3
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	277	1494	769	302	1494	719	399	1345	673	361	1086	546
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.44	0.23	0.79	0.51	0.11	0.50	0.50	0.34	0.16	0.61	0.14

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	640	175	235	740	75	195	665	225	55	650	75
Future Volume (vph)	115	640	175	235	740	75	195	665	225	55	650	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1766	3610	1565
Flt Permitted	0.24	1.00	1.00	0.23	1.00	1.00	0.23	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	452	3539	1577	432	3539	1555	443	3610	1537	663	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	653	179	240	755	77	199	679	230	56	663	77
RTOR Reduction (vph)	0	0	128	0	0	53	0	0	104	0	0	54
Lane Group Flow (vph)	117	653	51	240	755	24	199	679	126	56	663	23
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.0	25.4	25.4	36.4	28.1	28.1	41.3	32.3	32.3	32.5	26.5	26.5
Effective Green, g (s)	31.0	25.4	25.4	36.4	28.1	28.1	41.3	32.3	32.3	32.5	26.5	26.5
Actuated g/C Ratio	0.34	0.28	0.28	0.40	0.31	0.31	0.46	0.36	0.36	0.36	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	239	998	445	298	1104	485	381	1295	551	312	1062	460
v/s Ratio Prot	0.03	0.18		c0.07	0.21		c0.07	0.19		0.01	c0.18	
v/s Ratio Perm	0.14		0.03	c0.25		0.02	0.17		0.08	0.05		0.01
v/c Ratio	0.49	0.65	0.11	0.81	0.68	0.05	0.52	0.52	0.23	0.18	0.62	0.05
Uniform Delay, d1	21.2	28.4	24.0	19.8	27.1	21.6	15.9	22.8	20.2	19.0	27.4	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.81	0.67
Incremental Delay, d2	1.6	1.6	0.1	14.6	1.8	0.0	1.3	1.5	1.0	0.2	2.5	0.2
Delay (s)	22.8	30.0	24.1	34.3	28.8	21.7	17.2	24.3	21.1	13.8	24.7	15.5
Level of Service	C	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		28.0			29.6			22.4			23.0	
Approach LOS		C			C			C			C	

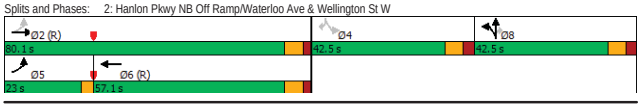
Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	780	0	0	1010	10	405	220	145	5	0	370
Future Volume (vph)	155	780	0	0	1010	10	405	220	145	5	0	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.985		0.950		
Satd. Flow (prot)	1787	5136	0	0	5130	0	1698	1773	1599	1805	0	1599
Flt Permitted	0.179						0.950	0.985		0.177		
Satd. Flow (perm)	337	5136	0	0	5130	0	1698	1773	1599	336	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				149			238
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	160	804	0	0	1041	10	418	227	149	5	0	381
Shared Lane Traffic (%)							24%					
Lane Group Flow (vph)	160	804	0	0	1051	0	318	327	149	5	0	381
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	88.9	84.8			68.4		35.6	35.6	35.6	22.6		22.6
Actuated g/C Ratio	0.54	0.51			0.41		0.22	0.22	0.22	0.14		0.14
v/c Ratio	0.54	0.30			0.49		0.87	0.86	0.32	0.11		0.90
Control Delay	28.7	25.2			39.3		85.2	82.8	9.0	61.4		49.5
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	28.7	25.2			39.3		85.2	82.8	9.0	61.4		49.5
LOS	C	C			D		F	F	A	E		D
Approach Delay		25.8			39.3			69.9			49.6	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 44.1		Intersection LOS: D	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	160	804	1051	318	327	149	5	381
v/c Ratio	0.54	0.30	0.49	0.87	0.86	0.32	0.11	0.90
Control Delay	28.7	25.2	39.3	85.2	82.8	9.0	61.4	49.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	25.2	39.3	85.2	82.8	9.0	61.4	49.5
Queue Length 50th (m)	28.7	60.1	100.8	110.2	112.8	0.0	1.5	52.8
Queue Length 95th (m)	48.3	78.5	133.0	#173.4	#174.2	20.2	5.9	90.0
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	357	2637	2124	380	397	474	71	526
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	0.45	0.30	0.49	0.84	0.82	0.31	0.07	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)	155	780	0	0	1010	10	405	220	145	5	0	370
Future Volume (vph)	155	780	0	0	1010	10	405	220	145	5	0	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5128		1698	1772	1599	1805		1599
Flt Permitted	0.18	1.00			1.00		0.95	0.98	1.00	0.18		1.00
Satd. Flow (perm)	337	5136			5128		1698	1772	1599	336		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	160	804	0	0	1041	10	418	227	149	5	0	381
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	117	0	0	205
Lane Group Flow (vph)	160	804	0	0	1050	0	318	327	32	5	0	176
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	84.8	84.8			68.4		35.6	35.6	35.6	22.6		22.6
Effective Green, g (s)	84.8	84.8			68.4		35.6	35.6	35.6	22.6		22.6
Actuated g/C Ratio	0.51	0.51			0.41		0.22	0.22	0.22	0.14		0.14
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	290	2637			2124		366	382	344	45		218
v/s Ratio Prot	c0.04	0.16			0.20		c0.19	0.18				
v/s Ratio Perm	c0.24								0.02	0.01		c0.11
v/c Ratio	0.55	0.30			0.49		0.87	0.86	0.09	0.11		0.81
Uniform Delay, d1	23.7	23.2			35.6		62.5	62.3	51.8	62.4		69.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.3	0.3			0.8		19.1	16.9	0.1	1.1		19.1
Delay (s)	25.9	23.5			36.4		81.6	79.2	52.0	63.5		88.2
Level of Service	C	C			D		F	E	D	E		F
Approach Delay (s)		23.9			36.4			75.0			87.9	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

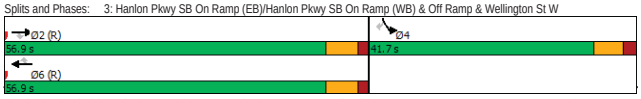
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	815	505	0	1270	280	0	0	0	190	0	80
Future Volume (vph)	0	815	505	0	1270	280	0	0	0	190	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			532			156						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	858	532	0	1337	295	0	0	0	200	0	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	532	0	1337	295	0	0	0	200	0	84
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.5	73.5		73.5	73.5				11.5		11.5
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
v/c Ratio		0.23	0.41		0.35	0.25				0.50		0.39
Control Delay		4.1	1.4		4.7	2.4				44.9		27.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.1	1.4		4.7	2.4				44.9		27.3
LOS		A	A		A	A				D		C
Approach Delay		3.1			4.3						39.7	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	858	532	1337	295	200	84
v/c Ratio	0.23	0.41	0.35	0.25	0.50	0.39
Control Delay	4.1	1.4	4.7	2.4	44.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	1.4	4.7	2.4	44.9	27.3
Queue Length 50th (m)	15.6	0.0	27.3	6.3	19.8	7.6
Queue Length 95th (m)	23.0	8.2	38.6	15.4	30.2	21.7
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3790	1301	3828	1191	1230	568
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	0.23	0.41	0.35	0.25	0.16	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	815	505	0	1270	280	0	0	0	190	0	80
Future Volume (vph)	0	815	505	0	1270	280	0	0	0	190	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	858	532	0	1337	295	0	0	0	200	0	84
RTOR Reduction (vph)	0	0	135	0	0	40	0	0	0	0	0	38
Lane Group Flow (vph)	0	858	397	0	1337	255	0	0	0	200	0	46
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.5	73.5		73.5	73.5				11.5		11.5
Effective Green, g (s)		73.5	73.5		73.5	73.5				11.5		11.5
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3790	1166		3828	1151				404		177
v/s Ratio Prot		0.17			c0.26					c0.06		
v/s Ratio Perm			0.25			0.17						0.03
v/c Ratio		0.23	0.34		0.35	0.22				0.50		0.26
Uniform Delay, d1		3.8	4.3		4.3	3.8				40.8		39.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.8		0.3	0.4				1.0		0.8
Delay (s)		4.0	5.1		4.6	4.3				41.8		40.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.4			4.5			0.0			41.4	
Approach LOS		A			A			A			D	

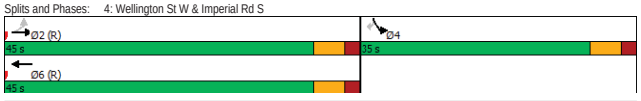
Intersection Summary						
HCM 2000 Control Delay		7.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio		0.37				
Actuated Cycle Length (s)		98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization		44.2%	ICU Level of Service		A	
Analysis Period (min)		15				
c Critical Lane Group						

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	900	825	400	365	55
Future Volume (vph)	70	900	825	400	365	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.996			0.950	
Satd. Flow (prot)	0	3530	3342	0	1787	1615
Flt Permitted		0.705			0.950	
Satd. Flow (perm)	0	2499	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			143			57
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	928	851	412	376	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1000	1263	0	376	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		46.0	46.0		22.0	22.0
Actuated g/C Ratio		0.58	0.58		0.28	0.28
v/c Ratio		0.70	0.64		0.77	0.12
Control Delay		16.9	12.8		36.7	6.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		16.9	12.8		36.7	6.0
LOS		B	B		D	A
Approach Delay		16.9	12.8		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 97.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1000	1263	376	57
v/c Ratio	0.70	0.64	0.77	0.12
Control Delay	16.9	12.8	36.7	6.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	12.8	36.7	6.0
Queue Length 50th (m)	55.0	57.8	54.9	0.0
Queue Length 95th (m)	96.4	97.4	75.8	7.2
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1436	1981	647	621
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	0.70	0.64	0.58	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	900	825	400	365	55
Future Volume (vph)	70	900	825	400	365	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3531	3342		1787	1615
Flt Permitted		0.70	1.00		0.95	1.00
Satd. Flow (perm)		2499	3342		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	928	851	412	376	57
RTOR Reduction (vph)	0	0	61	0	0	41
Lane Group Flow (vph)	0	1000	1202	0	376	16
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		46.0	46.0		22.0	22.0
Effective Green, g (s)		46.0	46.0		22.0	22.0
Actuated g/C Ratio		0.58	0.58		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1436	1921		491	444
v/s Ratio Prot			0.36		c0.21	
v/s Ratio Perm		c0.40				0.01
v/c Ratio		0.70	0.63		0.77	0.04
Uniform Delay, d1		12.1	11.3		26.6	21.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.8	1.6		7.0	0.0
Delay (s)		14.9	12.8		33.6	21.3
Level of Service		B	B		C	C
Approach Delay (s)		14.9	12.8		32.0	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.72		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		97.8%	ICU Level of Service	F
Analysis Period (min)		15		

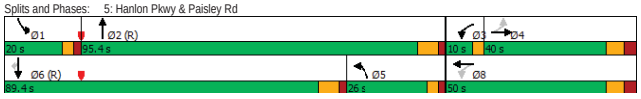
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	365	380	140	435	35	410	1125	195	40	1510	135
Future Volume (vph)	120	365	380	140	435	35	410	1125	195	40	1510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3567	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.448			0.324			0.950			0.950		
Satd. Flow (perm)	842	3574	1595	615	3567	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259		5				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	124	376	392	144	448	36	423	1160	201	41	1557	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	376	392	144	484	0	423	1160	201	41	1557	139
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	27.9	27.9	165.4	44.1	39.1		22.4	98.8	165.4	9.7	83.5	83.5
Actuated g/C Ratio	0.17	0.17	1.00	0.27	0.24		0.14	0.60	1.00	0.06	0.50	0.50
v/c Ratio	0.88	0.62	0.25	0.65	0.57		0.90	0.58	0.13	0.39	0.89	0.16
Control Delay	114.1	68.1	0.4	63.8	57.6		92.7	23.2	0.2	85.3	44.8	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.1	68.1	0.4	63.8	57.6		92.7	23.2	0.2	85.3	44.8	7.4
LOS	F	E	A	E	E		F	C	A	F	D	A
Approach Delay		44.7			59.1			37.1			42.7	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 43.1		Intersection LOS: D	
Intersection Capacity Utilization 99.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	376	392	144	484	423	1160	201	41	1557	139
v/c Ratio	0.88	0.62	0.25	0.65	0.57	0.90	0.58	0.13	0.39	0.89	0.16
Control Delay	114.1	68.1	0.4	63.8	57.6	92.7	23.2	0.2	85.3	44.8	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.1	68.1	0.4	63.8	57.6	92.7	23.2	0.2	85.3	44.8	7.4
Queue Length 50th (m)	41.4	62.9	0.0	39.4	76.5	75.9	134.0	0.0	14.0	255.7	6.5
Queue Length 95th (m)	#76.5	81.2	0.0	60.0	95.7	#112.0	166.2	0.0	27.7	292.7	19.1
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	162	691	1595	223	909	469	2015	1599	163	1757	868
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.54	0.25	0.65	0.53	0.90	0.58	0.13	0.25	0.89	0.16

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)	120	365	380	140	435	35	410	1125	195	40	1510	135
Future Volume (vph)	120	365	380	140	435	35	410	1125	195	40	1510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1805	3566		3467	3374	1599	1805	3471	1615
Flt Permitted	0.45	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	843	3574	1595	615	3566		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	376	392	144	448	36	423	1160	201	41	1557	139
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	124	376	392	144	480	0	423	1160	201	41	1557	88
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	27.9	27.9	165.4	39.1	39.1		23.4	97.8	165.4	8.1	82.5	82.5
Effective Green, g (s)	27.9	27.9	165.4	39.1	39.1		23.4	97.8	165.4	8.1	82.5	82.5
Actuated g/C Ratio	0.17	0.17	1.00	0.24	0.24		0.14	0.59	1.00	0.05	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	602	1595	204	842		490	1995	1599	88	1731	805
v/s Ratio Prot		0.11		c0.03	0.13		c0.12	0.34		0.02	c0.45	
v/s Ratio Perm	c0.15		0.25	0.13					0.13			0.05
v/c Ratio	0.87	0.62	0.25	0.71	0.57		0.86	0.58	0.13	0.47	0.90	0.11
Uniform Delay, d1	67.0	63.9	0.0	55.8	55.7		69.4	21.1	0.0	76.5	37.7	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.5	2.0	0.4	10.6	0.9		14.6	1.2	0.2	3.9	7.9	0.3
Delay (s)	107.5	65.9	0.4	66.4	56.7		84.0	22.3	0.2	80.4	45.6	22.2
Level of Service	F	E	A	E	E		F	C	A	F	D	C
Approach Delay (s)		42.9			58.9			34.4			44.6	
Approach LOS		D			E			C			D	

Intersection Summary					
HCM 2000 Control Delay		42.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio		0.88			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)	23.4	
Intersection Capacity Utilization		99.1%	ICU Level of Service	F	
Analysis Period (min)		15			

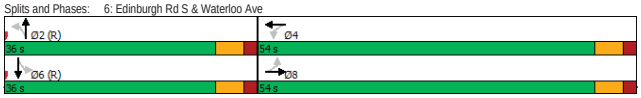
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	155	40	90	245	45	35	625	85	45	615	30
Future Volume (vph)	45	155	40	90	245	45	35	625	85	45	615	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.977			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1805	1829	0	1805	1856	0	1770	1884	0
Flt Permitted	0.348			0.543			0.322			0.281		
Satd. Flow (perm)	640	1811	0	1025	1829	0	611	1856	0	522	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			16			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	160	41	93	253	46	36	644	88	46	634	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	201	0	93	299	0	36	732	0	46	665	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.64	0.64		0.64	0.64	
v/c Ratio	0.32	0.48		0.41	0.72		0.09	0.61		0.14	0.55	
Control Delay	33.6	29.7		33.8	39.8		15.5	24.5		9.3	12.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.6	29.7		33.8	39.8		15.5	24.5		9.3	12.0	
LOS	C	C		C	D		B	C		A	B	
Approach Delay		30.5			38.4			24.1			11.8	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	201	93	299	36	732	46	665
v/c Ratio	0.32	0.48	0.41	0.72	0.09	0.61	0.14	0.55
Control Delay	33.6	29.7	33.8	39.8	15.5	24.5	9.3	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	29.7	33.8	39.8	15.5	24.5	9.3	12.0
Queue Length 50th (m)	7.1	28.3	14.6	47.9	1.9	80.3	2.9	59.1
Queue Length 95th (m)	15.9	44.3	26.5	68.3	m10.7	157.0	9.7	111.5
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	341	976	546	982	393	1199	336	1215
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.21	0.17	0.30	0.09	0.61	0.14	0.55

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	155	40	90	245	45	35	625	85	45	615	30
Future Volume (vph)	45	155	40	90	245	45	35	625	85	45	615	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1749	1811		1794	1828		1802	1856		1763	1884	
Flt Permitted	0.35	1.00		0.54	1.00		0.32	1.00		0.28	1.00	
Satd. Flow (perm)	641	1811		1026	1828		610	1856		521	1884	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	160	41	93	253	46	36	644	88	46	634	31
RTOR Reduction (vph)	0	17	0	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	184	0	93	287	0	36	729	0	46	664	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	142	402		228	406		393	1196		335	1214	
v/s Ratio Prot		0.10			c0.16			c0.39			0.35	
v/s Ratio Perm	0.07			0.09			0.06			0.09		
v/c Ratio	0.32	0.46		0.41	0.71		0.09	0.61		0.14	0.55	
Uniform Delay, d1	29.3	30.3		29.9	32.3		6.0	9.4		6.2	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.87	2.05		1.00	1.00	
Incremental Delay, d2	1.3	0.8		1.2	5.5		0.4	2.1		0.9	1.8	
Delay (s)	30.7	31.1		31.1	37.8		11.7	21.3		7.1	10.6	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		31.0			36.2			20.8			10.3	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	75.3%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	110	265	10	120	265
Future Volume (vph)	10	110	265	10	120	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	11	120	288	11	130	288
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	120	288	11	130	288
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	110	265	10	120	265
Future Volume (Veh/h)	10	110	265	10	120	265
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	120	288	11	130	288
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		600	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		600	13
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		65	73
cM capacity (veh/h)			1452		374	1068

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	120	288	11	418
Volume Left	0	0	288	0	130
Volume Right	0	120	0	0	288
cSH	1700	1700	1452	1700	1202
Volume to Capacity	0.01	0.07	0.20	0.01	0.35
Queue Length 95th (m)	0.0	0.0	5.9	0.0	12.6
Control Delay (s)	0.0	0.0	8.1	0.0	12.7
Lane LOS			A		B
Approach Delay (s)	0.0		7.8		12.7
Approach LOS					B

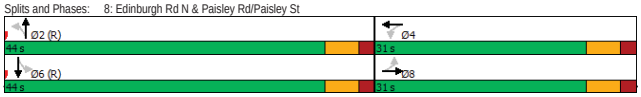
Intersection Summary			
Average Delay	9.0		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	295	115	55	360	45	105	515	50	100	520	90
Future Volume (vph)	75	295	115	55	360	45	105	515	50	100	520	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.958			0.983			0.987			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1790	0	1805	1843	0	1805	1867	0	1736	1850	0
Flt Permitted	0.307			0.300			0.249			0.287		
Satd. Flow (perm)	578	1790	0	567	1843	0	472	1867	0	523	1850	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			9			9			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	81	317	124	59	387	48	113	554	54	108	559	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	441	0	59	435	0	113	608	0	108	656	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.42	0.72		0.31	0.70		0.47	0.64		0.41	0.69	
Control Delay	27.4	26.7		24.3	28.5		20.3	17.2		17.5	18.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.4	26.7		24.3	28.5		20.3	17.2		17.5	18.5	
LOS	C	C		C	C		C	B		B	B	
Approach Delay		26.8			28.0			17.7			18.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 92.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues c) Future Background (2026) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	441	59	435	113	608	108	656
v/c Ratio	0.42	0.72	0.31	0.70	0.47	0.64	0.41	0.69
Control Delay	27.4	26.7	24.3	28.5	20.3	17.2	17.5	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	26.7	24.3	28.5	20.3	17.2	17.5	18.5
Queue Length 50th (m)	7.8	42.2	6.4	54.4	10.2	61.1	9.4	67.9
Queue Length 95th (m)	m18.3	73.6	16.8	86.9	26.3	95.3	22.9	106.6
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	192	615	189	620	239	950	264	945
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	0.42	0.72	0.31	0.70	0.47	0.64	0.41	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis c) Future Background (2026) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	295	115	55	360	45	105	515	50	100	520	90
Future Volume (vph)	75	295	115	55	360	45	105	515	50	100	520	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1790	1790		1794	1844		1802	1867		1732	1850	
Flt Permitted	0.31	1.00		0.30	1.00		0.25	1.00		0.29	1.00	
Satd. Flow (perm)	579	1790		566	1844		473	1867		524	1850	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	317	124	59	387	48	113	554	54	108	559	97
RTOR Reduction (vph)	0	19	0	0	6	0	0	4	0	0	8	0
Lane Group Flow (vph)	81	422	0	59	429	0	113	604	0	108	648	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	193	596		188	614		239	945		265	937	
v/s Ratio Prot		c0.24			0.23			0.32			c0.35	
v/s Ratio Perm	0.14			0.10			0.24			0.21		
v/c Ratio	0.42	0.71		0.31	0.70		0.47	0.64		0.41	0.69	
Uniform Delay, d1	19.4	21.8		18.6	21.7		12.0	13.5		11.5	14.0	
Progression Factor	1.00	0.94		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.1	6.5		4.3	6.5		6.6	3.3		4.6	4.2	
Delay (s)	25.6	27.1		22.9	28.2		18.6	16.8		16.1	18.2	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.8			27.6			17.1			17.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	92.4%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings c) Future Background (2026) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	345	1	50	355	195	2	50	50	215	50	245
Future Volume (vph)	235	345	1	50	355	195	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1771	0	1805	1737	0	1787	1900	1615
Flt Permitted	0.226			0.541			0.722			0.687		
Satd. Flow (perm)	429	1881	1580	1027	1771	0	1370	1737	0	1289	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		42			54				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	253	371	1	54	382	210	2	54	54	231	54	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	371	1	54	592	0	2	108	0	231	54	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

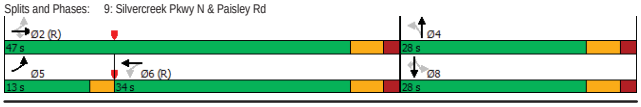
Lanes, Volumes, Timings c) Future Background (2026) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	48.2	45.2	45.2	33.0	33.0		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.64	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.57	0.33	0.00	0.12	0.74		0.01	0.24		0.76	0.12	0.46
Control Delay	11.8	9.3	0.0	24.6	33.7		19.0	13.1		42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	11.8	9.3	0.0	24.6	33.7		19.0	13.1		42.1	21.1	5.7
LOS	B	A	A	C	C		B	B		D	C	A
Approach Delay		10.3			32.9			13.2			22.6	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues c) Future Background (2026) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	253	371	1	54	592	2	108	231	54	263
v/c Ratio	0.57	0.33	0.00	0.12	0.74	0.01	0.24	0.76	0.12	0.46
Control Delay	11.8	9.3	0.0	24.6	33.7	19.0	13.1	42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	9.3	0.0	24.6	33.7	19.0	13.1	42.1	21.1	5.7
Queue Length 50th (m)	14.0	25.2	0.0	6.9	88.8	0.3	6.3	31.6	6.2	0.0
Queue Length 95th (m)	27.8	46.3	0.0	m11.3	#141.1	1.7	17.0	53.0	13.9	16.0
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	460	1134	970	452	803	401	547	378	557	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.33	0.00	0.12	0.74	0.00	0.20	0.61	0.10	0.40

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis c) Future Background (2026) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	345	1	50	355	195	2	50	50	215	50	245
Future Volume (vph)	235	345	1	50	355	195	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1771		1803	1737		1782	1900	1594
Flt Permitted	0.23	1.00	1.00	0.54	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	429	1881	1580	1026	1771		1370	1737		1289	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	253	371	1	54	382	210	2	54	54	231	54	263
RTOR Reduction (vph)	0	0	0	0	24	0	0	41	0	0	0	201
Lane Group Flow (vph)	253	371	1	54	568	0	2	67	0	231	54	62
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	45.2	45.2	45.2	33.0	33.0		17.8	17.8		17.8	17.8	17.8
Effective Green, g (s)	45.2	45.2	45.2	33.0	33.0		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.60	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	427	1133	952	451	779		325	412		305	450	378
v/s Ratio Prot	c0.07	0.20			c0.32			0.04			0.03	
v/s Ratio Perm	0.28		0.00	0.05			0.00			c0.18		0.04
v/c Ratio	0.59	0.33	0.00	0.12	0.73		0.01	0.16		0.76	0.12	0.17
Uniform Delay, d1	9.8	7.4	5.9	12.4	17.3		21.8	22.7		26.6	22.5	22.7
Progression Factor	1.00	1.00	1.00	1.58	1.58		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.2	0.8	0.0	0.4	4.8		0.0	0.2		10.3	0.1	0.2
Delay (s)	12.0	8.1	5.9	20.1	32.1		21.9	22.9		36.9	22.6	22.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		9.7			31.1			22.9			28.8	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings c) Future Background (2026) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis c) Future Background (2026) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	1626			979			1522	2605	328	1953	2605	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1151			979			1030	2292	328	1532	2292	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	527			713			163	34	673	70	34	936

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	326	326	326	82	542	542	542	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.05	0.32	0.32	0.32	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

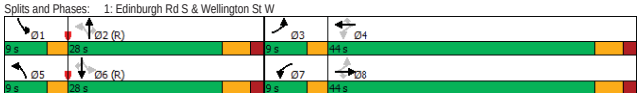
Average Delay	0.0			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	540	105	165	510	70	120	435	200	55	465	70
Future Volume (vph)	80	540	105	165	510	70	120	435	200	55	465	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.408			0.251			0.396			0.495		
Satd. Flow (perm)	763	3574	1575	467	3505	1487	752	3610	1583	940	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			204			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	551	107	168	520	71	122	444	204	56	474	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	551	107	168	520	71	122	444	204	56	474	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	30.8	20.0	20.0	35.4	24.1	24.1	47.2	36.7	36.7	43.2	33.2	33.2
Actuated g/C Ratio	0.34	0.22	0.22	0.39	0.27	0.27	0.52	0.41	0.41	0.48	0.37	0.37
v/c Ratio	0.23	0.70	0.25	0.51	0.56	0.15	0.25	0.30	0.27	0.11	0.36	0.11
Control Delay	17.4	36.7	6.6	22.6	30.9	2.6	13.2	20.7	4.4	9.5	19.9	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	36.7	6.6	22.6	30.9	2.6	13.2	20.7	4.4	9.5	19.9	2.4
LOS	B	D	A	C	C	A	B	C	A	A	B	A
Approach Delay		30.2			26.4			15.2			16.9	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	551	107	168	520	71	122	444	204	56	474	71
v/c Ratio	0.23	0.70	0.25	0.51	0.56	0.15	0.25	0.30	0.27	0.11	0.36	0.11
Control Delay	17.4	36.7	6.6	22.6	30.9	2.6	13.2	20.7	4.4	9.5	19.9	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	36.7	6.6	22.6	30.9	2.6	13.2	20.7	4.4	9.5	19.9	2.4
Queue Length 50th (m)	9.0	49.1	0.0	19.4	43.8	0.0	10.8	29.4	0.0	3.6	35.4	0.8
Queue Length 95th (m)	16.7	60.7	11.6	31.2	57.3	4.5	21.8	46.2	15.1	6.4	54.4	4.8
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	349	1509	727	329	1479	690	497	1472	766	519	1330	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.37	0.15	0.51	0.35	0.10	0.25	0.30	0.27	0.11	0.36	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	540	105	165	510	70	120	435	200	55	465	70
Future Volume (vph)	80	540	105	165	510	70	120	435	200	55	465	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.41	1.00	1.00	0.25	1.00	1.00	0.40	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	766	3574	1575	467	3505	1487	752	3610	1583	940	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	551	107	168	520	71	122	444	204	56	474	71
RTOR Reduction (vph)	0	0	83	0	0	52	0	0	124	0	0	45
Lane Group Flow (vph)	82	551	24	168	520	19	122	444	80	56	474	26
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.2	20.6	20.6	33.7	24.1	24.1	44.3	35.5	35.5	38.3	32.5	32.5
Effective Green, g (s)	27.2	20.6	20.6	33.7	24.1	24.1	44.3	35.5	35.5	38.3	32.5	32.5
Actuated g/C Ratio	0.30	0.23	0.23	0.37	0.27	0.27	0.49	0.39	0.39	0.43	0.36	0.36
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	306	818	360	320	938	398	473	1423	624	455	1303	583
v/s Ratio Prot	0.02	c0.15		c0.06	0.15		c0.03	0.12		0.01	c0.13	
v/s Ratio Perm	0.06		0.02	0.14		0.01	0.10		0.05	0.04		0.02
v/c Ratio	0.27	0.67	0.07	0.53	0.55	0.05	0.26	0.31	0.13	0.12	0.36	0.04
Uniform Delay, d1	23.0	31.6	27.2	20.2	28.3	24.4	12.7	18.8	17.4	15.3	21.1	18.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.86	1.06
Incremental Delay, d2	0.5	2.2	0.1	1.6	0.7	0.0	0.3	0.6	0.4	0.1	0.7	0.1
Delay (s)	23.5	33.8	27.3	21.8	29.0	24.5	13.0	19.4	17.8	11.6	18.9	19.9
Level of Service	C	C	C	C	C	C	B	B	B	B	B	B
Approach Delay (s)		31.7			27.0			18.0			18.3	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.46				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B		
Analysis Period (min)	15				

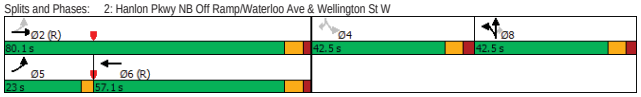
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	555	0	0	720	10	285	150	155	5	0	265
Future Volume (vph)	90	555	0	0	720	10	285	150	155	5	0	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.984		0.950		
Satd. Flow (prot)	1736	5085	0	0	5126	0	1681	1765	1599	1805	0	1599
Flt Permitted	0.323						0.950	0.984		0.323		
Satd. Flow (perm)	590	5085	0	0	5126	0	1681	1765	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				158			270
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	92	566	0	0	735	10	291	153	158	5	0	270
Shared Lane Traffic (%)							25%					
Lane Group Flow (vph)	92	566	0	0	745	0	218	226	158	5	0	270
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	107.8	103.7			91.6		26.9	26.9	26.9	12.4		12.4
Actuated g/C Ratio	0.65	0.63			0.55		0.16	0.16	0.16	0.08		0.08
v/c Ratio	0.21	0.18			0.26		0.80	0.79	0.40	0.11		0.73
Control Delay	13.5	14.1			20.9		86.5	84.6	10.3	73.8		19.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	13.5	14.1			20.9		86.5	84.6	10.3	73.8		19.3
LOS	B	B			C		F	F	B	E		B
Approach Delay		14.0			20.9			65.8			20.3	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 63.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	92	566	745	218	226	158	5	270
v/c Ratio	0.21	0.18	0.26	0.80	0.79	0.40	0.11	0.73
Control Delay	13.5	14.1	20.9	86.5	84.6	10.3	73.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	14.1	20.9	86.5	84.6	10.3	73.8	19.3
Queue Length 50th (m)	10.5	27.3	45.5	77.5	80.3	0.0	1.7	0.0
Queue Length 95th (m)	24.2	44.7	72.3	104.5	107.3	20.7	6.4	29.9
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	524	3193	2845	357	375	464	130	551
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	0.18	0.18	0.26	0.61	0.60	0.34	0.04	0.49

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	555	0	0	720	10	285	150	155	5	0	265
Future Volume (vph)	90	555	0	0	720	10	285	150	155	5	0	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5126		1681	1765	1599	1805		1599
Flt Permitted	0.32	1.00			1.00		0.95	0.98	1.00	0.32		1.00
Satd. Flow (perm)	590	5085			5126		1681	1765	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	92	566	0	0	735	10	291	153	158	5	0	270
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	132	0	0	250
Lane Group Flow (vph)	92	566	0	0	745	0	218	226	26	5	0	20
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	103.7	103.7			91.7		26.9	26.9	26.9	12.4		12.4
Effective Green, g (s)	103.7	103.7			91.7		26.9	26.9	26.9	12.4		12.4
Actuated g/C Ratio	0.63	0.63			0.56		0.16	0.16	0.16	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	433	3193			2847		273	287	260	46		120
v/s Ratio Prot	c0.01	0.11			c0.15		c0.13	0.13				
v/s Ratio Perm	0.12								0.02	0.01		c0.01
v/c Ratio	0.21	0.18			0.26		0.80	0.79	0.10	0.11		0.17
Uniform Delay, d1	12.3	12.8			19.1		66.5	66.4	58.8	71.2		71.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2	0.1			0.2		14.9	13.3	0.2	1.0		0.7
Delay (s)	12.6	13.0			19.3		81.4	79.7	59.0	72.2		72.2
Level of Service	B	B			B		F	E	E	E		E
Approach Delay (s)		12.9			19.3			74.9			72.2	
Approach LOS		B			B			E			E	

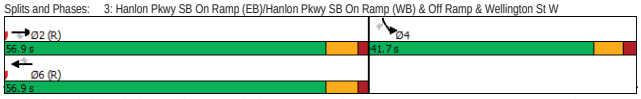
Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	590	385	0	850	255	0	0	0	165	0	135
Future Volume (vph)	0	590	385	0	850	255	0	0	0	165	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			397			212						110
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	608	397	0	876	263	0	0	0	170	0	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	608	397	0	876	263	0	0	0	170	0	139
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		74.0	74.0		74.0	74.0				11.0		11.0
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.16	0.31		0.23	0.22				0.44		0.51
Control Delay		3.7	1.1		4.0	1.4				44.4		19.1
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.7	1.1		4.0	1.4				44.4		19.1
LOS		A	A		A	A				D		B
Approach Delay		2.7			3.4						33.0	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 38.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	608	397	876	263	170	139
v/c Ratio	0.16	0.31	0.23	0.22	0.44	0.51
Control Delay	3.7	1.1	4.0	1.4	44.4	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	1.1	4.0	1.4	44.4	19.1
Queue Length 50th (m)	9.9	0.0	15.3	2.1	16.9	5.4
Queue Length 95th (m)	15.5	7.2	22.8	9.0	26.5	23.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3779	1274	3816	1212	1230	627
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	0.16	0.31	0.23	0.22	0.14	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	590	385	0	850	255	0	0	0	165	0	135
Future Volume (vph)	0	590	385	0	850	255	0	0	0	165	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	608	397	0	876	263	0	0	0	170	0	139
RTOR Reduction (vph)	0	0	99	0	0	53	0	0	0	0	0	98
Lane Group Flow (vph)	0	608	298	0	876	210	0	0	0	170	0	41
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		74.0	74.0		74.0	74.0				11.0		11.0
Effective Green, g (s)		74.0	74.0		74.0	74.0				11.0		11.0
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3779	1175		3816	1159				386		174
v/s Ratio Prot		0.12			0.17					c0.05		
v/s Ratio Perm			c0.19			0.14						0.03
v/c Ratio		0.16	0.25		0.23	0.18				0.44		0.24
Uniform Delay, d1		3.5	3.8		3.7	3.6				40.9		40.0
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.3				0.8		0.7
Delay (s)		3.6	4.3		3.8	3.9				41.7		40.7
Level of Service		A	A		A	A				D		D
Approach Delay (s)		3.9			3.9			0.0			41.3	
Approach LOS		A			A			A			D	

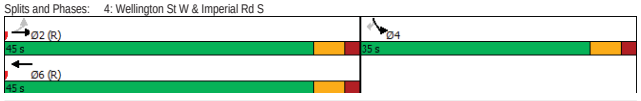
Intersection Summary					
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.28				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.9%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	580	550	300	385	55
Future Volume (vph)	70	580	550	300	385	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.947			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3325	0	1787	1615
Flt Permitted		0.753			0.950	
Satd. Flow (perm)	0	2647	3325	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			179			59
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	624	591	323	414	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	699	914	0	414	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.4	44.4		23.6	23.6
Actuated g/C Ratio		0.56	0.56		0.30	0.30
v/c Ratio		0.48	0.47		0.79	0.11
Control Delay		13.2	10.2		36.6	5.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.2	10.2		36.6	5.6
LOS		B	B		D	A
Approach Delay		13.2	10.2		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	699	914	414	59
v/c Ratio	0.48	0.47	0.79	0.11
Control Delay	13.2	10.2	36.6	5.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.2	10.2	36.6	5.6
Queue Length 50th (m)	33.1	33.7	60.1	0.0
Queue Length 95th (m)	57.3	58.8	82.2	7.2
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1479	1937	653	628
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.47	0.63	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	580	550	300	385	55
Future Volume (vph)	70	580	550	300	385	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3325		1787	1615
Flt Permitted		0.75	1.00		0.95	1.00
Satd. Flow (perm)		2648	3325		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	624	591	323	414	59
RTOR Reduction (vph)	0	0	80	0	0	42
Lane Group Flow (vph)	0	699	834	0	414	17
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.4	44.4		23.6	23.6
Effective Green, g (s)		44.4	44.4		23.6	23.6
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1469	1845		527	476
v/s Ratio Prot			0.25		c0.23	
v/s Ratio Perm		c0.26				0.01
v/c Ratio		0.48	0.45		0.79	0.04
Uniform Delay, d1		10.8	10.6		25.9	20.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.1	0.8		7.6	0.0
Delay (s)		11.9	11.4		33.4	20.1
Level of Service		B	B		C	C
Approach Delay (s)		11.9	11.4		31.8	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

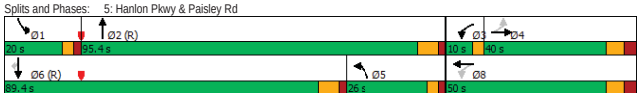
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	300	355	95	310	20	360	1115	100	35	1020	130
Future Volume (vph)	130	300	355	95	310	20	360	1115	100	35	1020	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.549			0.394			0.950			0.950		
Satd. Flow (perm)	1042	3574	1579	740	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			294		4				183			133
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	133	306	362	97	316	20	367	1138	102	36	1041	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	306	362	97	336	0	367	1138	102	36	1041	133
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	25.8	25.8	165.4	44.8	39.8		23.0	98.3	165.4	9.4	82.2	82.2
Actuated g/C Ratio	0.16	0.16	1.00	0.27	0.24		0.14	0.59	1.00	0.06	0.50	0.50
v/c Ratio	0.82	0.55	0.23	0.36	0.39		0.76	0.55	0.06	0.36	0.60	0.15
Control Delay	101.7	67.1	0.3	48.2	52.1		79.1	23.5	0.1	84.8	33.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.7	67.1	0.3	48.2	52.1		79.1	23.5	0.1	84.8	33.6	4.6
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		42.7			51.2			34.7			31.9	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 37.2		Intersection LOS: D	
Intersection Capacity Utilization 91.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	133	306	362	97	336	367	1138	102	36	1041	133
v/c Ratio	0.82	0.55	0.23	0.36	0.39	0.76	0.55	0.06	0.36	0.60	0.15
Control Delay	101.7	67.1	0.3	48.2	52.1	79.1	23.5	0.1	84.8	33.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.7	67.1	0.3	48.2	52.1	79.1	23.5	0.1	84.8	33.6	4.6
Queue Length 50th (m)	45.1	52.1	0.0	25.7	50.4	64.0	128.0	0.0	12.3	137.1	0.0
Queue Length 95th (m)	68.6	64.8	0.0	40.1	62.4	80.5	172.9	0.0	25.3	184.8	14.2
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	205	703	1579	270	958	495	2100	1579	158	1842	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.44	0.23	0.36	0.35	0.74	0.54	0.06	0.23	0.57	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	300	355	95	310	20	360	1115	100	35	1020	130
Future Volume (vph)	130	300	355	95	310	20	360	1115	100	35	1020	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3574	1579	1786	3575		3467	3505	1579	1752	3505	1615
Flt Permitted	0.55	1.00	1.00	0.39	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1043	3574	1579	741	3575		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	133	306	362	97	316	20	367	1138	102	36	1041	133
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	68
Lane Group Flow (vph)	133	306	362	97	333	0	367	1138	102	36	1041	65
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	25.8	25.8	165.4	39.8	39.8		23.9	97.4	165.4	7.8	81.3	81.3
Effective Green, g (s)	25.8	25.8	165.4	39.8	39.8		23.9	97.4	165.4	7.8	81.3	81.3
Actuated g/C Ratio	0.16	0.16	1.00	0.24	0.24		0.14	0.59	1.00	0.05	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	162	557	1579	247	860		500	2064	1579	82	1722	793
v/s Ratio Prot		0.09		0.03	c0.09		c0.11	0.32		0.02	c0.30	
v/s Ratio Perm	c0.13		0.23	0.07					0.06			0.04
v/c Ratio	0.82	0.55	0.23	0.39	0.39		0.73	0.55	0.06	0.44	0.60	0.08
Uniform Delay, d1	67.6	64.4	0.0	50.7	52.6		67.7	20.7	0.0	76.7	30.4	22.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.1	1.1	0.3	1.0	0.3		5.5	1.1	0.1	3.7	1.6	0.2
Delay (s)	94.7	65.5	0.3	51.7	52.9		73.2	21.8	0.1	80.4	32.0	22.5
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		40.9			52.6			32.1			32.4	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

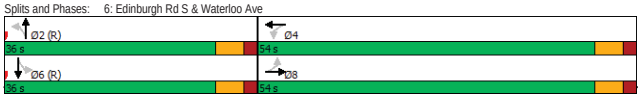
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	490	60	30	485	20
Future Volume (vph)	40	95	25	55	90	40	30	490	60	30	485	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.954			0.984			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1801	0	1805	1761	0	1805	1860	0	1805	1883	0
Flt Permitted	0.627			0.667			0.423			0.395		
Satd. Flow (perm)	1185	1801	0	1248	1761	0	802	1860	0	749	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			38			7			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	104	27	60	99	44	33	538	66	33	533	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	131	0	60	143	0	33	604	0	33	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
v/c Ratio	0.28	0.50		0.36	0.53		0.06	0.44		0.06	0.40	
Control Delay	36.9	35.1		39.1	32.2		4.3	11.6		5.1	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.9	35.1		39.1	32.2		4.3	11.6		5.1	6.5	
LOS	D	D		D	C		A	B		A	A	
Approach Delay		35.5			34.2			11.2			6.4	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	131	60	143	33	604	33	555
v/c Ratio	0.28	0.50	0.36	0.53	0.06	0.44	0.06	0.40
Control Delay	36.9	35.1	39.1	32.2	4.3	11.6	5.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	35.1	39.1	32.2	4.3	11.6	5.1	6.5
Queue Length 50th (m)	7.4	18.9	10.2	18.1	0.9	30.9	1.3	29.5
Queue Length 95th (m)	15.6	32.2	19.8	32.2	4.7	94.5	5.7	69.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	632	970	665	956	586	1361	547	1377
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	0.07	0.14	0.09	0.15	0.06	0.44	0.06	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	490	60	30	485	20
Future Volume (vph)	40	95	25	55	90	40	30	490	60	30	485	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		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)	1796	1800		1778	1761		1799	1859		1800	1883	
Flt Permitted	0.63	1.00		0.67	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1185	1800		1249	1761		801	1859		748	1883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	104	27	60	99	44	33	538	66	33	533	22
RTOR Reduction (vph)	0	19	0	0	33	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	112	0	60	110	0	33	602	0	33	554	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Effective Green, g (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	160	244		169	238		585	1359		546	1376	
v/s Ratio Prot		0.06			c0.06			c0.32			0.29	
v/s Ratio Perm	0.04			0.05			0.04			0.04		
v/c Ratio	0.28	0.46		0.36	0.46		0.06	0.44		0.06	0.40	
Uniform Delay, d1	34.9	35.9		35.3	35.9		3.4	4.8		3.4	4.6	
Progression Factor	1.00	1.00		1.00	1.00		0.86	1.82		1.00	1.00	
Incremental Delay, d2	0.9	1.4		1.3	1.4		0.2	1.0		0.2	0.9	
Delay (s)	35.9	37.2		36.6	37.3		3.1	9.8		3.6	5.5	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		36.9			37.1			9.4			5.4	
Approach LOS		D			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	5	115	170	5	110	160
Future Volume (vph)	5	115	170	5	110	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	5	125	185	5	120	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	125	185	5	120	174
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	170	5	110	160
Future Volume (Veh/h)	5	115	170	5	110	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	125	185	5	120	174
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			131		382	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			131		382	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		78	84
cM capacity (veh/h)			1459		544	1077

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	5	125	185	5	294
Volume Left	0	0	185	0	120
Volume Right	0	125	0	0	174
cSH	1700	1700	1459	1700	1334
Volume to Capacity	0.00	0.07	0.13	0.00	0.22
Queue Length 95th (m)	0.0	0.0	3.5	0.0	6.7
Control Delay (s)	0.0	0.0	7.8	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		7.6		10.8
Approach LOS					B

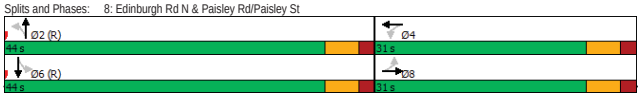
Intersection Summary			
Average Delay		7.5	
Intersection Capacity Utilization		28.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	260	90	35	235	55	105	420	25	50	395	60
Future Volume (vph)	80	260	90	35	235	55	105	420	25	50	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.961			0.972			0.992			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1798	0	1805	1817	0	1805	1881	0	1671	1859	0
Flt Permitted	0.468			0.382			0.385			0.394		
Satd. Flow (perm)	877	1798	0	722	1817	0	731	1881	0	689	1859	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			17			6			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	86	280	97	38	253	59	113	452	27	54	425	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	377	0	38	312	0	113	479	0	54	490	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.29	0.61		0.16	0.51		0.31	0.50		0.15	0.52	
Control Delay	20.1	21.5		19.8	22.4		13.7	14.4		11.4	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.1	21.5		19.8	22.4		13.7	14.4		11.4	14.4	
LOS	C	C		B	C		B	B		B	B	
Approach Delay		21.2			22.1			14.2			14.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues c) Future Background (2026) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	377	38	312	113	479	54	490
v/c Ratio	0.29	0.61	0.16	0.51	0.31	0.50	0.15	0.52
Control Delay	20.1	21.5	19.8	22.4	13.7	14.4	11.4	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	21.5	19.8	22.4	13.7	14.4	11.4	14.4
Queue Length 50th (m)	6.3	25.2	3.9	34.6	9.2	43.6	4.1	44.2
Queue Length 95th (m)	m18.2	55.6	11.0	58.1	20.5	68.4	10.4	70.0
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	292	616	240	617	370	956	349	949
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	0.29	0.61	0.16	0.51	0.31	0.50	0.15	0.52

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis c) Future Background (2026) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	260	90	35	235	55	105	420	25	50	395	60
Future Volume (vph)	80	260	90	35	235	55	105	420	25	50	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1781	1799		1795	1817		1804	1881		1662	1859	
Flt Permitted	0.47	1.00		0.38	1.00		0.38	1.00		0.39	1.00	
Satd. Flow (perm)	878	1799		722	1817		731	1881		689	1859	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	280	97	38	253	59	113	452	27	54	425	65
RTOR Reduction (vph)	0	17	0	0	11	0	0	3	0	0	7	0
Lane Group Flow (vph)	86	360	0	38	301	0	113	476	0	54	483	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	292	599		240	605		370	953		349	941	
v/s Ratio Prot		c0.20			0.17			0.25			c0.26	
v/s Ratio Perm	0.10			0.05			0.15			0.08		
v/c Ratio	0.29	0.60		0.16	0.50		0.31	0.50		0.15	0.51	
Uniform Delay, d1	18.5	20.8		17.6	20.0		10.8	12.2		9.9	12.3	
Progression Factor	0.91	0.86		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	4.2		1.4	2.9		2.1	1.9		0.9	2.0	
Delay (s)	19.2	22.1		19.0	22.9		12.9	14.1		10.8	14.3	
Level of Service	B	C		B	C		B	B		B	B	
Approach Delay (s)		21.6			22.5			13.9			14.0	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.55				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	81.9%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings c) Future Background (2026) SAT - Build-out

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	275	5	50	265	145	2	50	50	190	55	155
Future Volume (vph)	160	275	5	50	265	145	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1780	0	1805	1737	0	1805	1900	1599
Flt Permitted	0.390			0.584			0.720			0.690		
Satd. Flow (perm)	741	1863	1578	1107	1780	0	1365	1737	0	1309	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		42			52				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	167	286	5	52	276	151	2	52	52	198	57	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	286	5	52	427	0	2	104	0	198	57	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings c) Future Background (2026) SAT - Build-out

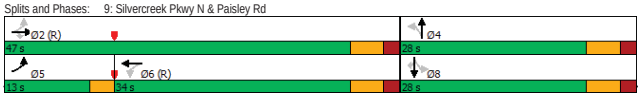
9: Silvercreek Pkwy N & Paisley Rd

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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	49.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.66	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
v/c Ratio	0.27	0.25	0.00	0.10	0.49		0.01	0.25		0.70	0.14	0.35
Control Delay	6.8	7.9	0.0	19.5	21.3		20.0	13.9		40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	6.8	7.9	0.0	19.5	21.3		20.0	13.9		40.0	22.4	6.1
LOS	A	A	A	B	C		B	B		D	C	A
Approach Delay		7.4			21.1			14.0			24.5	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues c) Future Background (2026) SAT - Build-out

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	286	5	52	427	2	104	198	57	161
v/c Ratio	0.27	0.25	0.00	0.10	0.49	0.01	0.25	0.70	0.14	0.35
Control Delay	6.8	7.9	0.0	19.5	21.3	20.0	13.9	40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	7.9	0.0	19.5	21.3	20.0	13.9	40.0	22.4	6.1
Queue Length 50th (m)	8.0	16.9	0.0	5.0	41.2	0.3	6.3	27.2	6.9	0.0
Queue Length 95th (m)	18.7	34.9	0.0	m15.0	90.6	1.7	16.7	44.6	14.5	12.8
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	633	1162	1001	524	865	400	546	383	557	576
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	0.26	0.25	0.00	0.10	0.49	0.01	0.19	0.52	0.10	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis c) Future Background (2026) SAT - Build-out

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	275	5	50	265	145	2	50	50	190	55	155
Future Volume (vph)	160	275	5	50	265	145	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1780		1802	1737		1802	1900	1577
Flt Permitted	0.39	1.00	1.00	0.58	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	740	1863	1578	1108	1780		1365	1737		1309	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	286	5	52	276	151	2	52	52	198	57	161
RTOR Reduction (vph)	0	0	2	0	22	0	0	41	0	0	0	126
Lane Group Flow (vph)	167	286	3	52	405	0	2	63	0	198	57	35
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Effective Green, g (s)	46.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.62	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	579	1162	984	524	842		294	375		282	410	340
v/s Ratio Prot	c0.03	0.15			c0.23			0.04			0.03	
v/s Ratio Perm	0.15		0.00	0.05			0.00			c0.15		0.02
v/c Ratio	0.29	0.25	0.00	0.10	0.48		0.01	0.17		0.70	0.14	0.10
Uniform Delay, d1	6.5	6.3	5.3	10.9	13.5		23.1	23.9		27.2	23.8	23.6
Progression Factor	1.00	1.00	1.00	1.38	1.37		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5	0.0	0.4	1.8		0.0	0.2		7.7	0.2	0.1
Delay (s)	6.8	6.8	5.3	15.5	20.3		23.1	24.1		34.9	23.9	23.7
Level of Service	A	A	A	B	C		C	C		C	C	C
Approach Delay (s)		6.8			19.8			24.1			29.0	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	18.7	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.51				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	62.3%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings c) Future Background (2026) SAT - Build-out

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.9%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis c) Future Background (2026) SAT - Build-out

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1159			675			1062	1834	227	1385	1834	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	925			675			821	1647	227	1167	1647	100
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	698			926			252	94	782	141	94	880

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	225	225	225	82	386	386	386	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.13	0.05	0.23	0.23	0.23	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

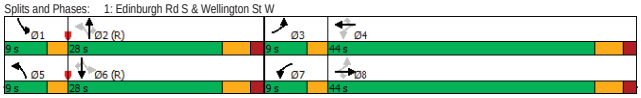
Average Delay	0.0				
Intersection Capacity Utilization	23.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Future Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.336			0.154			0.244			0.333		
Satd. Flow (perm)	630	3471	1508	276	3438	1570	448	3539	1476	590	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			109			173			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.8	30.9	30.9	41.1	31.1	31.1	39.2	28.8	28.8	33.9	23.8	23.8
Actuated g/C Ratio	0.45	0.34	0.34	0.46	0.35	0.35	0.44	0.32	0.32	0.38	0.26	0.26
v/c Ratio	0.35	0.77	0.31	0.54	0.51	0.09	0.61	0.57	0.40	0.22	0.65	0.18
Control Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.7			22.1			25.4			25.1	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
v/c Ratio	0.35	0.77	0.31	0.54	0.51	0.09	0.61	0.57	0.40	0.22	0.65	0.18
Control Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Length 50th (m)	12.2	77.3	0.0	12.3	45.3	0.0	23.4	54.2	8.5	4.8	56.4	2.1
Queue Length 95th (m)	19.3	87.3	12.3	19.4	53.3	1.0	#48.8	77.0	29.4	9.6	71.1	4.3
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	373	1465	753	237	1451	725	343	1134	590	309	940	501
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.63	0.27	0.54	0.41	0.08	0.61	0.57	0.40	0.22	0.65	0.18

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)	115	815	180	115	535	50	185	580	210	60	540	80
Future Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1696	3505	1573
Flt Permitted	0.34	1.00	1.00	0.15	1.00	1.00	0.24	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	632	3471	1508	277	3438	1570	451	3539	1476	595	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
RTOR Reduction (vph)	0	0	132	0	0	37	0	0	119	0	0	66
Lane Group Flow (vph)	129	916	70	129	601	19	208	652	117	67	607	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.9	31.0	31.0	38.1	31.1	31.1	37.0	28.2	28.2	29.6	23.8	23.8
Effective Green, g (s)	37.9	31.0	31.0	38.1	31.1	31.1	37.0	28.2	28.2	29.6	23.8	23.8
Actuated g/C Ratio	0.42	0.34	0.34	0.42	0.35	0.35	0.41	0.31	0.31	0.33	0.26	0.26
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354	1195	519	228	1188	542	332	1108	462	266	926	415
v/s Ratio Prot	0.03	c0.26		c0.04	0.17		c0.07	0.18		0.02	0.17	
v/s Ratio Perm	0.13		0.05	0.20		0.01	c0.19		0.08	0.07		0.02
v/c Ratio	0.36	0.77	0.13	0.57	0.51	0.04	0.63	0.59	0.25	0.25	0.66	0.06
Uniform Delay, d1	16.5	26.3	20.3	18.0	23.4	19.5	18.7	26.0	23.1	21.2	29.5	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.86	0.58
Incremental Delay, d2	0.6	3.0	0.1	3.2	0.3	0.0	3.7	2.3	1.3	0.5	3.4	0.2
Delay (s)	17.2	29.3	20.4	21.2	23.7	19.5	22.3	28.3	24.4	15.7	28.7	14.6
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.6			23.0			26.3			25.9	
Approach LOS		C			C			C			C	

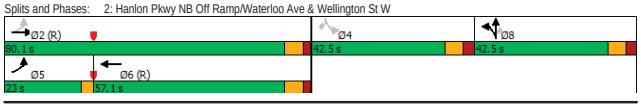
Intersection Summary					
HCM 2000 Control Delay		25.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.70			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		70.7%	ICU Level of Service	C	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	900	0	0	775	5	195	190	235	1	0	355
Future Volume (vph)	165	900	0	0	775	5	195	190	235	1	0	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.995		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1772	1599	1805	0	1583
Flt Permitted	0.268						0.950	0.995		0.231		
Satd. Flow (perm)	489	4988	0	0	4983	0	1633	1772	1599	439	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				258			316
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	181	989	0	0	852	5	214	209	258	1	0	390
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	181	989	0	0	857	0	193	230	258	1	0	390
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	102.5	98.4			82.1		27.3	27.3	27.3	17.3		17.3
Actuated g/C Ratio	0.62	0.60			0.50		0.17	0.17	0.17	0.10		0.10
v/c Ratio	0.45	0.33			0.35		0.71	0.79	0.54	0.02		0.87
Control Delay	19.6	19.0			28.7		79.3	84.1	10.0	60.0		34.6
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	19.6	19.0			28.7		79.3	84.1	10.0	60.0		34.6
LOS	B	B			C		E	F	B	E		C
Approach Delay		19.1			28.7			54.7			34.6	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	181	989	857	193	230	258	1	390
v/c Ratio	0.45	0.33	0.35	0.71	0.79	0.54	0.02	0.87
Control Delay	19.6	19.0	28.7	79.3	84.1	10.0	60.0	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	19.0	28.7	79.3	84.1	10.0	60.0	34.6
Queue Length 50th (m)	24.5	58.8	62.4	67.3	81.3	0.0	0.3	25.9
Queue Length 95th (m)	52.5	95.9	104.6	92.8	108.2	25.2	2.4	65.2
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	455	2974	2477	349	378	544	93	584
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	0.40	0.33	0.35	0.55	0.61	0.47	0.01	0.67

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	900	0	0	775	5	195	190	235	1	0	355
Future Volume (vph)	165	900	0	0	775	5	195	190	235	1	0	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4984		1633	1773	1599	1805		1583
Flt Permitted	0.27	1.00			1.00		0.95	1.00	1.00	0.23		1.00
Satd. Flow (perm)	489	4988			4984		1633	1773	1599	439		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	181	989	0	0	852	5	214	209	258	1	0	390
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	215	0	0	283
Lane Group Flow (vph)	181	989	0	0	856	0	193	230	43	1	0	107
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	98.4	98.4			82.0		27.3	27.3	27.3	17.3		17.3
Effective Green, g (s)	98.4	98.4			82.0		27.3	27.3	27.3	17.3		17.3
Actuated g/C Ratio	0.60	0.60			0.50		0.17	0.17	0.17	0.10		0.10
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	392	2972			2475		270	293	264	46		165
v/s Ratio Prot	c0.04	0.20			0.17		0.12	c0.13				
v/s Ratio Perm	c0.24								0.03	0.00		c0.07
v/c Ratio	0.46	0.33			0.35		0.71	0.78	0.16	0.02		0.65
Uniform Delay, d1	15.8	16.8			25.3		65.2	66.1	59.1	66.3		71.0
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.9	0.3			0.4		8.7	12.9	0.3	0.2		8.5
Delay (s)	16.7	17.1			25.6		73.9	79.0	59.4	66.5		79.5
Level of Service	B	B			C		E	E	E	E		E
Approach Delay (s)		17.0			25.6			70.1			79.5	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

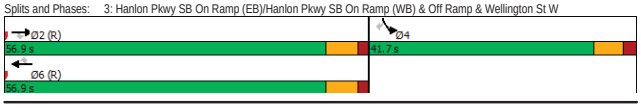
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	465	0	860	280	0	0	0	195	0	95
Future Volume (vph)	0	950	465	0	860	280	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			470			230						100
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	1000	489	0	905	295	0	0	0	205	0	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1000	489	0	905	295	0	0	0	205	0	100
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.27	0.39		0.24	0.24				0.52		0.38
Control Delay		4.5	1.5		4.4	1.6				45.3		12.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.5	1.5		4.4	1.6				45.3		12.3
LOS		A	A		A	A				D		B
Approach Delay		3.5			3.7						34.5	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1000	489	905	295	205	100
v/c Ratio	0.27	0.39	0.24	0.24	0.52	0.38
Control Delay	4.5	1.5	4.4	1.6	45.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	1.5	4.4	1.6	45.3	12.3
Queue Length 50th (m)	19.5	0.8	17.2	2.9	20.3	0.0
Queue Length 95th (m)	28.6	9.5	25.5	10.8	30.7	14.4
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3659	1261	3695	1206	1150	580
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	0.27	0.39	0.24	0.24	0.18	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	465	0	860	280	0	0	0	195	0	95
Future Volume (vph)	0	950	465	0	860	280	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1000	489	0	905	295	0	0	0	205	0	100
RTOR Reduction (vph)	0	0	122	0	0	60	0	0	0	0	0	88
Lane Group Flow (vph)	0	1000	367	0	905	235	0	0	0	205	0	12
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.0	73.0		73.0	73.0				12.0		12.0
Effective Green, g (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3657	1138		3692	1146				394		177
v/s Ratio Prot		0.20			0.18					c0.06		
v/s Ratio Perm			c0.24			0.15						0.01
v/c Ratio		0.27	0.32		0.25	0.21				0.52		0.07
Uniform Delay, d1		4.2	4.4		4.1	3.9				40.6		38.4
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.2	0.4				1.2		0.2
Delay (s)		4.4	5.1		4.2	4.3				41.8		38.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.2			0.0			40.8	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

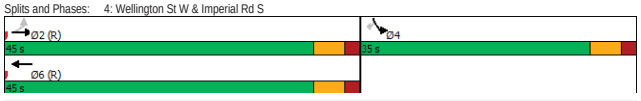
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	960	680	175	445	75
Future Volume (vph)	65	960	680	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.969			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3311	0	1770	1599
Flt Permitted		0.820			0.950	
Satd. Flow (perm)	0	2794	3311	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			56			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	68	1000	708	182	464	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1068	890	0	464	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.71	0.49		0.84	0.14
Control Delay		18.2	12.7		39.6	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.2	12.7		39.6	5.2
LOS		B	B		D	A
Approach Delay		18.2	12.7		34.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1068	890	464	78
v/c Ratio	0.71	0.49	0.84	0.14
Control Delay	18.2	12.7	39.6	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.2	12.7	39.6	5.2
Queue Length 50th (m)	65.0	42.3	67.0	0.0
Queue Length 95th (m)	97.5	63.1	98.4	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1501	1804	641	629
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	0.49	0.72	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	960	680	175	445	75
Future Volume (vph)	65	960	680	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3312		1770	1599
Flt Permitted		0.82	1.00		0.95	1.00
Satd. Flow (perm)		2794	3312		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1000	708	182	464	78
RTOR Reduction (vph)	0	0	26	0	0	54
Lane Group Flow (vph)	0	1068	864	0	464	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.0	43.0		25.0	25.0
Effective Green, g (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1501	1780		553	499
v/s Ratio Prot			0.26		c0.26	
v/s Ratio Perm		c0.38				0.02
v/c Ratio		0.71	0.49		0.84	0.05
Uniform Delay, d1		13.9	11.6		25.6	19.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.9	1.0		10.8	0.0
Delay (s)		16.7	12.5		36.4	19.2
Level of Service		B	B		D	B
Approach Delay (s)		16.7	12.5		33.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

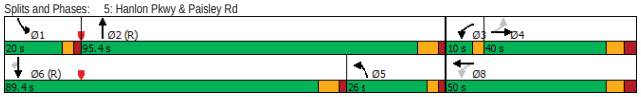
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	330	335	75	195	25	165	1445	105	25	1085	50
Future Volume (vph)	100	330	335	75	195	25	165	1445	105	25	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3471	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.611			0.318			0.950			0.950		
Satd. Flow (perm)	1085	3438	1583	598	3471	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252		8				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	337	342	77	199	26	168	1474	107	26	1107	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	337	342	77	225	0	168	1474	107	26	1107	51
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	22.3	22.3	165.4	39.7	34.7		18.6	106.5	165.4	8.9	91.7	91.7
Actuated g/C Ratio	0.13	0.13	1.00	0.24	0.21		0.11	0.64	1.00	0.05	0.55	0.55
v/c Ratio	0.70	0.73	0.22	0.36	0.31		0.45	0.68	0.07	0.30	0.61	0.06
Control Delay	91.9	77.6	0.3	53.3	53.2		71.3	23.1	0.1	84.0	28.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.6	0.3	53.3	53.2		71.3	23.1	0.1	84.0	28.6	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		45.6			53.3			26.3			28.6	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	337	342	77	225	168	1474	107	26	1107	51
v/c Ratio	0.70	0.73	0.22	0.36	0.31	0.45	0.68	0.07	0.30	0.61	0.06
Control Delay	91.9	77.6	0.3	53.3	53.2	71.3	23.1	0.1	84.0	28.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.6	0.3	53.3	53.2	71.3	23.1	0.1	84.0	28.6	0.1
Queue Length 50th (m)	34.5	60.3	0.0	21.3	33.6	28.1	177.6	0.0	8.9	137.0	0.0
Queue Length 95th (m)	54.9	74.5	0.0	35.3	45.1	39.2	237.5	0.0	20.2	189.3	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	209	665	1583	211	887	447	2153	1568	144	1840	875
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.51	0.22	0.36	0.25	0.38	0.68	0.07	0.18	0.60	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	330	335	75	195	25	165	1445	105	25	1085	50
Future Volume (vph)	100	330	335	75	195	25	165	1445	105	25	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3470		3303	3343	1568	1597	3282	1482
Flt Permitted	0.61	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1086	3438	1583	598	3470		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	337	342	77	199	26	168	1474	107	26	1107	51
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	23
Lane Group Flow (vph)	102	337	342	77	219	0	168	1474	107	26	1107	28
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	22.3	22.3	165.4	34.7	34.7		20.5	104.6	165.4	5.7	89.8	89.8
Effective Green, g (s)	22.3	22.3	165.4	34.7	34.7		20.5	104.6	165.4	5.7	89.8	89.8
Actuated g/C Ratio	0.13	0.13	1.00	0.21	0.21		0.12	0.63	1.00	0.03	0.54	0.54
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	146	463	1583	193	727		409	2114	1568	55	1781	804
v/s Ratio Prot		c0.10		c0.02	0.06		0.05	c0.44		0.02	c0.34	
v/s Ratio Perm	0.09		0.22	0.06					0.07			0.02
v/c Ratio	0.70	0.73	0.22	0.40	0.30		0.41	0.70	0.07	0.47	0.62	0.03
Uniform Delay, d1	68.3	68.6	0.0	54.3	55.1		66.9	20.0	0.0	78.4	26.1	17.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.6	5.6	0.3	1.4	0.2		0.7	1.9	0.1	6.3	1.6	0.1
Delay (s)	82.0	74.3	0.3	55.7	55.4		67.5	21.9	0.1	84.7	27.7	17.7
Level of Service	F	E	A	E	E		E	C	A	F	C	B
Approach Delay (s)		42.9			55.4			25.0			28.5	
Approach LOS		D			E			C			C	

Intersection Summary

HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

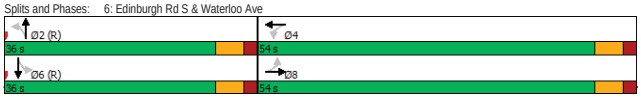
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Future Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.978			0.976			0.979			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1787	0	1752	1784	0	1805	1820	0	1770	1842	0
Flt Permitted	0.614			0.357			0.379			0.284		
Satd. Flow (perm)	1128	1787	0	652	1784	0	717	1820	0	528	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			16			10			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	255	43	82	141	27	22	620	103	49	533	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	298	0	82	168	0	22	723	0	49	571	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
v/c Ratio	0.21	0.72		0.56	0.40		0.05	0.62		0.15	0.48	
Control Delay	27.9	39.8		43.9	28.2		20.6	29.8		9.6	11.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.9	39.8		43.9	28.2		20.6	29.8		9.6	11.2	
LOS	C	D		D	C		C	C		A	B	
Approach Delay		38.0			33.4			29.6			11.1	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	298	82	168	22	723	49	571
v/c Ratio	0.21	0.72	0.56	0.40	0.05	0.62	0.15	0.48
Control Delay	27.9	39.8	43.9	28.2	20.6	29.8	9.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	39.8	43.9	28.2	20.6	29.8	9.6	11.2
Queue Length 50th (m)	8.0	47.9	13.3	23.5	2.2	103.5	3.2	48.1
Queue Length 95th (m)	16.3	68.1	26.0	37.6	m7.1	167.6	10.5	92.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	601	959	347	958	458	1168	337	1179
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	0.31	0.24	0.18	0.05	0.62	0.15	0.48

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Future Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1746	1787		1738	1783		1794	1819		1762	1842	
Flt Permitted	0.61	1.00		0.36	1.00		0.38	1.00		0.28	1.00	
Satd. Flow (perm)	1128	1787		653	1783		716	1819		526	1842	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	255	43	82	141	27	22	620	103	49	533	38
RTOR Reduction (vph)	0	11	0	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	54	287	0	82	156	0	22	719	0	49	570	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Effective Green, g (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	255	405		148	404		458	1164		336	1178	
v/s Ratio Prot		c0.16			0.09			c0.40			0.31	
v/s Ratio Perm	0.05			0.13			0.03			0.09		
v/c Ratio	0.21	0.71		0.55	0.39		0.05	0.62		0.15	0.48	
Uniform Delay, d1	28.3	32.1		30.8	29.5		6.0	9.6		6.4	8.4	
Progression Factor	1.00	1.00		1.00	1.00		2.52	2.45		1.00	1.00	
Incremental Delay, d2	0.4	5.6		4.4	0.6		0.2	2.2		0.9	1.4	
Delay (s)	28.7	37.7		35.2	30.1		15.4	25.8		7.3	9.9	
Level of Service	C	D		D	C		B	C		A	A	
Approach Delay (s)		36.3			31.8			25.5			9.7	
Approach LOS		D			C			C			A	

Intersection Summary					
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	74.0%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	105	250	5	105	260
Future Volume (vph)	10	105	250	5	105	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	11	114	272	5	114	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	114	272	5	114	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	105	250	5	105	260
Future Volume (Veh/h)	10	105	250	5	105	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	114	272	5	114	283
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		568	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		568	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			81		71	73
cM capacity (veh/h)			1445		393	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	114	272	5	397
Volume Left	0	0	272	0	114
Volume Right	0	114	0	0	283
cSH	1700	1700	1445	1700	1369
Volume to Capacity	0.01	0.07	0.19	0.00	0.29
Queue Length 95th (m)	0.0	0.0	5.5	0.0	9.7
Control Delay (s)	0.0	0.0	8.1	0.0	12.0
Lane LOS			A		B
Approach Delay (s)	0.0		7.9		12.0
Approach LOS					B

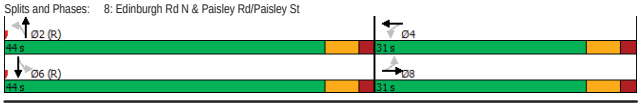
Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Future Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.98		0.99	1.00		1.00	1.00	
Frt		0.974			0.962			0.983			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1758	0	1805	1747	0	1656	1841	0	1656	1805	0
Flt Permitted	0.428			0.307			0.358			0.322		
Satd. Flow (perm)	749	1758	0	580	1747	0	620	1841	0	559	1805	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25			13			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	82	359	76	54	255	87	82	500	65	103	440	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	435	0	54	342	0	82	565	0	103	522	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.33	0.73		0.28	0.57		0.26	0.60		0.36	0.57	
Control Delay	23.0	28.0		23.3	23.5		13.4	16.2		15.9	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.0	28.0		23.3	23.5		13.4	16.2		15.9	15.3	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		27.2			23.5			15.8			15.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 86.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues d) Future Background (2031) AM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	435	54	342	82	565	103	522
v/c Ratio	0.33	0.73	0.28	0.57	0.26	0.60	0.36	0.57
Control Delay	23.0	28.0	23.3	23.5	13.4	16.2	15.9	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	28.0	23.3	23.5	13.4	16.2	15.9	15.3
Queue Length 50th (m)	8.3	43.1	5.8	38.2	6.5	54.7	8.7	48.6
Queue Length 95th (m)	m18.8	#84.0	15.4	64.2	15.8	85.9	21.0	77.1
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	249	596	193	599	314	939	283	923
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	0.33	0.73	0.28	0.57	0.26	0.60	0.36	0.57

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) AM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Future Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1662	1758		1794	1746		1645	1840		1650	1805	
Flt Permitted	0.43	1.00		0.31	1.00		0.36	1.00		0.32	1.00	
Satd. Flow (perm)	749	1758		580	1746		619	1840		560	1805	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	359	76	54	255	87	82	500	65	103	440	82
RTOR Reduction (vph)	0	10	0	0	17	0	0	6	0	0	9	0
Lane Group Flow (vph)	82	425	0	54	325	0	82	559	0	103	513	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	249	586		193	582		313	932		283	914	
v/s Ratio Prot		c0.24			0.19			c0.30			0.28	
v/s Ratio Perm	0.11			0.09			0.13			0.18		
v/c Ratio	0.33	0.73		0.28	0.56		0.26	0.60		0.36	0.56	
Uniform Delay, d1	18.7	22.0		18.4	20.5		10.5	13.1		11.2	12.8	
Progression Factor	0.99	0.93		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	7.1		3.6	3.8		2.0	2.8		3.6	2.5	
Delay (s)	21.9	27.6		22.0	24.3		12.6	16.0		14.8	15.2	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		26.7			24.0			15.5			15.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings d) Future Background (2031) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	305	1	50	265	155	0	50	50	170	50	80
Future Volume (vph)	160	305	1	50	265	155	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98			0.97		0.97		0.98
Frt			0.850		0.945			0.925				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1699	0	1900	1714	0	1770	1900	1553
Flt Permitted	0.307			0.540						0.679		
Satd. Flow (perm)	561	1792	1571	1021	1699	0	1900	1714	0	1232	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		45			61				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	195	372	1	61	323	189	0	61	61	207	61	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	372	1	61	512	0	0	122	0	207	61	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

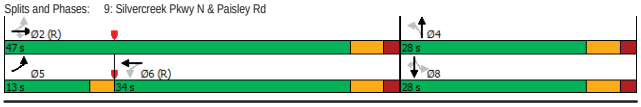
Lanes, Volumes, Timings d) Future Background (2031) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	49.0	46.0	46.0	34.2	34.2			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.65	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
v/c Ratio	0.39	0.34	0.00	0.13	0.64			0.28		0.74	0.14	0.23
Control Delay	8.4	9.1	0.0	21.5	26.6			13.6		42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	8.4	9.1	0.0	21.5	26.6			13.6		42.4	21.9	6.3
LOS	A	A	A	C	C			B		D	C	A
Approach Delay		8.8			26.1			13.6			29.3	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 62.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues d) Future Background (2031) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	372	1	61	512	122	207	61	98
v/c Ratio	0.39	0.34	0.00	0.13	0.64	0.28	0.74	0.14	0.23
Control Delay	8.4	9.1	0.0	21.5	26.6	13.6	42.4	21.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	9.1	0.0	21.5	26.6	13.6	42.4	21.9	6.3
Queue Length 50th (m)	10.1	24.8	0.0	6.0	66.8	7.2	28.4	7.2	0.0
Queue Length 95th (m)	19.3	41.4	0.0	m15.0	95.5	16.2	42.2	13.7	8.3
Internal Link Dist (m)		177.0			1059.9	58.6		356.4	
Turn Bay Length (m)	30.0								60.0
Base Capacity (vph)	525	1098	979	466	799	545	361	557	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.34	0.00	0.13	0.64	0.22	0.57	0.11	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) AM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	305	1	50	265	155	0	50	50	170	50	80
Future Volume (vph)	160	305	1	50	265	155	0	50	50	170	50	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	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		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98			0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1792	1571	1797	1699			1714		1724	1900	1525
Flt Permitted	0.31	1.00	1.00	0.54	1.00			1.00		0.68	1.00	1.00
Satd. Flow (perm)	565	1792	1571	1022	1699			1714		1231	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	195	372	1	61	323	189	0	61	61	207	61	98
RTOR Reduction (vph)	0	0	0	0	24	0	0	47	0	0	0	76
Lane Group Flow (vph)	195	372	1	61	488	0	0	75	0	207	61	22
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.0	46.0	46.0	34.3	34.3			17.0		17.0	17.0	17.0
Effective Green, g (s)	46.0	46.0	46.0	34.3	34.3			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.61	0.61	0.61	0.46	0.46			0.23		0.23	0.23	0.23
Clearance Time (s)	3.0	6.0	6.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	483	1099	963	467	777			388		279	430	345
v/s Ratio Prot	c0.05	0.21			c0.29			0.04			0.03	
v/s Ratio Perm	0.20		0.00	0.06						c0.17		0.01
v/c Ratio	0.40	0.34	0.00	0.13	0.63			0.19		0.74	0.14	0.06
Uniform Delay, d1	7.8	7.1	5.6	11.7	15.5			23.5		27.0	23.2	22.8
Progression Factor	1.00	1.00	1.00	1.41	1.38			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.8	0.0	0.5	3.6			0.2		10.2	0.2	0.1
Delay (s)	8.4	7.9	5.6	17.2	24.9			23.7		37.1	23.3	22.8
Level of Service	A	A	A	B	C			C		D	C	C
Approach Delay (s)		8.1			24.1			23.7			31.0	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings d) Future Background (2031) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (vph)	0	1000	70	0	1075	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1087	76	0	1168	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.1%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis d) Future Background (2031) AM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1000	70	0	1075	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1087	76	0	1168	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1169			1088			1478	2257	364	1532	2257	391
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	844			1088			1183	2038	364	1243	2038	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	730			649			134	52	638	121	52	993

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	362	362	362	76	389	389	389	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.21	0.04	0.23	0.23	0.23	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

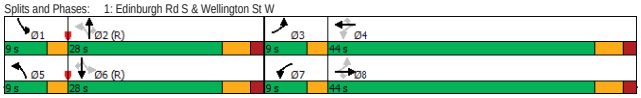
Average Delay	0.0		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Future Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.228			0.229			0.220			0.340		
Satd. Flow (perm)	432	3539	1577	426	3539	1555	417	3610	1535	631	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184			109			161			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	35.2	25.5	25.5	37.6	28.6	28.6	44.3	33.0	33.0	37.0	26.6	26.6
Actuated g/C Ratio	0.39	0.28	0.28	0.42	0.32	0.32	0.49	0.37	0.37	0.41	0.30	0.30
v/c Ratio	0.43	0.67	0.32	0.82	0.69	0.14	0.51	0.53	0.35	0.17	0.64	0.14
Control Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
LOS	B	C	A	D	C	A	B	C	B	B	C	A
Approach Delay		24.8			31.4			21.6			22.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
v/c Ratio	0.43	0.67	0.32	0.82	0.69	0.14	0.51	0.53	0.35	0.17	0.64	0.14
Control Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Length 50th (m)	12.4	55.5	0.0	28.2	67.0	0.0	19.6	53.2	9.1	3.5	59.9	1.7
Queue Length 95th (m)	20.2	65.8	13.3	#57.1	78.3	4.9	37.7	81.8	31.1	m6.2	72.8	m2.9
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	271	1494	772	297	1494	719	388	1324	665	352	1068	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.45	0.24	0.82	0.52	0.11	0.51	0.53	0.35	0.17	0.64	0.14

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Future Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1767	3610	1565
Flt Permitted	0.23	1.00	1.00	0.23	1.00	1.00	0.22	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	433	3539	1577	427	3539	1555	418	3610	1537	632	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
RTOR Reduction (vph)	0	0	131	0	0	53	0	0	104	0	0	55
Lane Group Flow (vph)	117	668	53	245	776	24	199	699	131	61	679	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.4	26.0	26.0	36.6	28.6	28.6	41.0	31.9	31.9	32.2	26.1	26.1
Effective Green, g (s)	31.4	26.0	26.0	36.6	28.6	28.6	41.0	31.9	31.9	32.2	26.1	26.1
Actuated g/C Ratio	0.35	0.29	0.29	0.41	0.32	0.32	0.46	0.35	0.35	0.36	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	1022	455	292	1124	494	373	1279	544	303	1046	453
v/s Ratio Prot	0.03	0.19		c0.07	0.22		c0.07	0.19		0.01	c0.19	
v/s Ratio Perm	0.14		0.03	c0.27		0.02	0.17		0.09	0.06		0.01
v/c Ratio	0.50	0.65	0.12	0.84	0.69	0.05	0.53	0.55	0.24	0.20	0.65	0.05
Uniform Delay, d1	21.0	28.1	23.6	20.4	26.8	21.3	16.2	23.3	20.5	19.3	27.9	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.80	0.63
Incremental Delay, d2	1.7	1.5	0.1	18.6	1.8	0.0	1.5	1.7	1.0	0.3	2.8	0.2
Delay (s)	22.7	29.6	23.7	39.0	28.7	21.3	17.7	24.9	21.6	13.8	25.2	14.8
Level of Service	C	C	C	D	C	C	B	C	C	B	C	B
Approach Delay (s)		27.6			30.5			23.0			23.4	
Approach LOS		C			C			C			C	

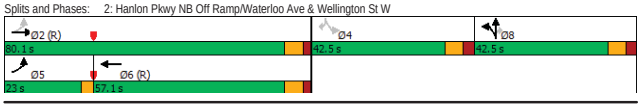
Intersection Summary					
HCM 2000 Control Delay		26.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.75			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		77.3%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	800	0	0	1035	10	415	220	150	5	0	375
Future Volume (vph)	160	800	0	0	1035	10	415	220	150	5	0	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.984		0.950		
Satd. Flow (prot)	1787	5136	0	0	5130	0	1698	1770	1599	1805	0	1599
Flt Permitted	0.169						0.950	0.984		0.173		
Satd. Flow (perm)	318	5136	0	0	5130	0	1698	1770	1599	329	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				155			236
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	165	825	0	0	1067	10	428	227	155	5	0	387
Shared Lane Traffic (%)							25%					
Lane Group Flow (vph)	165	825	0	0	1077	0	321	334	155	5	0	387
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0			2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	88.3	84.2			67.3		35.7	35.7	35.7	23.1		23.1
Actuated g/C Ratio	0.53	0.51			0.41		0.22	0.22	0.22	0.14		0.14
v/c Ratio	0.56	0.32			0.52		0.87	0.87	0.33	0.11		0.91
Control Delay	29.9	25.6			40.4		85.9	84.9	9.1	61.2		51.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	29.9	25.6			40.4		85.9	84.9	9.1	61.2		51.7
LOS	C	C			D		F	F	A	E		D
Approach Delay		26.3			40.4			70.8			51.8	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 45.0		Intersection LOS: D	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	165	825	1077	321	334	155	5	387
v/c Ratio	0.56	0.32	0.52	0.87	0.87	0.33	0.11	0.91
Control Delay	29.9	25.6	40.4	85.9	84.9	9.1	61.2	51.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	25.6	40.4	85.9	84.9	9.1	61.2	51.7
Queue Length 50th (m)	30.2	63.1	105.8	111.1	115.5	0.0	1.5	55.9
Queue Length 95th (m)	50.1	80.7	138.3	#175.6	#180.5	20.5	5.9	93.6
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	348	2618	2090	380	396	478	69	524
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	0.47	0.32	0.52	0.84	0.84	0.32	0.07	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)	160	800	0	0	1035	10	415	220	150	5	0	375
Future Volume (vph)	160	800	0	0	1035	10	415	220	150	5	0	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5128		1698	1771	1599	1805		1599
Flt Permitted	0.17	1.00			1.00		0.95	0.98	1.00	0.17		1.00
Satd. Flow (perm)	318	5136			5128		1698	1771	1599	329		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	165	825	0	0	1067	10	428	227	155	5	0	387
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	121	0	0	203
Lane Group Flow (vph)	165	825	0	0	1076	0	321	334	34	5	0	184
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	84.2	84.2			67.3		35.7	35.7	35.7	23.1		23.1
Effective Green, g (s)	84.2	84.2			67.3		35.7	35.7	35.7	23.1		23.1
Actuated g/C Ratio	0.51	0.51			0.41		0.22	0.22	0.22	0.14		0.14
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	285	2619			2090		367	382	345	46		223
v/s Ratio Prot	c0.05	0.16			0.21		c0.19	0.19				
v/s Ratio Perm	c0.25								0.02	0.02		c0.12
v/c Ratio	0.58	0.32			0.52		0.87	0.87	0.10	0.11		0.83
Uniform Delay, d1	24.4	23.6			36.7		62.5	62.5	51.8	62.0		69.0
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.8	0.3			0.9		20.0	19.3	0.1	1.0		21.3
Delay (s)	27.2	23.9			37.6		82.5	81.9	51.9	63.1		90.4
Level of Service	C	C			D		F	F	D	E		F
Approach Delay (s)		24.5			37.6			76.4			90.0	
Approach LOS		C			D			E			F	

Intersection Summary				
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1	
Intersection Capacity Utilization	81.4%	ICU Level of Service	D	
Analysis Period (min)	15			

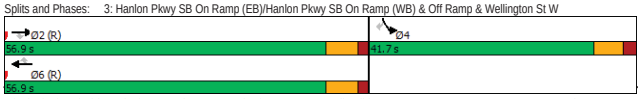
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	840	515	0	1300	285	0	0	0	205	0	85
Future Volume (vph)	0	840	515	0	1300	285	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			542			155						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	884	542	0	1368	300	0	0	0	216	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	884	542	0	1368	300	0	0	0	216	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.23	0.42		0.36	0.25				0.52		0.40
Control Delay		4.3	1.4		4.9	2.6				45.0		28.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.3	1.4		4.9	2.6				45.0		28.0
LOS		A	A		A	A				D		C
Approach Delay		3.2			4.5						40.0	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 44.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	884	542	1368	300	216	89
v/c Ratio	0.23	0.42	0.36	0.25	0.52	0.40
Control Delay	4.3	1.4	4.9	2.6	45.0	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	1.4	4.9	2.6	45.0	28.0
Queue Length 50th (m)	16.6	0.0	29.1	6.8	21.3	8.5
Queue Length 95th (m)	24.4	8.5	41.0	16.3	32.0	23.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3771	1301	3809	1186	1230	568
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	0.23	0.42	0.36	0.25	0.18	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	840	515	0	1300	285	0	0	0	205	0	85
Future Volume (vph)	0	840	515	0	1300	285	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	884	542	0	1368	300	0	0	0	216	0	89
RTOR Reduction (vph)	0	0	140	0	0	40	0	0	0	0	0	38
Lane Group Flow (vph)	0	884	402	0	1368	260	0	0	0	216	0	51
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.1	73.1		73.1	73.1				11.9		11.9
Effective Green, g (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3769	1160		3807	1145				418		183
v/s Ratio Prot		0.17			c0.27					c0.06		
v/s Ratio Perm			0.26			0.17						0.03
v/c Ratio		0.23	0.35		0.36	0.23				0.52		0.28
Uniform Delay, d1		4.0	4.4		4.5	4.0				40.7		39.4
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.8		0.3	0.5				1.1		0.8
Delay (s)		4.1	5.3		4.8	4.4				41.7		40.3
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.7			0.0			41.3	
Approach LOS		A			A			A			D	

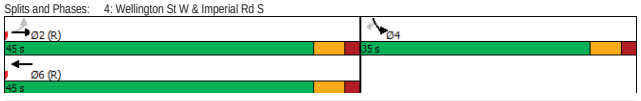
Intersection Summary						
HCM 2000 Control Delay		7.9	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio		0.38				
Actuated Cycle Length (s)		98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization		44.8%	ICU Level of Service		A	
Analysis Period (min)		15				
c Critical Lane Group						

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	925	850	410	375	60
Future Volume (vph)	70	925	850	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3342	0	1787	1615
Flt Permitted		0.694			0.950	
Satd. Flow (perm)	0	2460	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			142			62
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	954	876	423	387	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1026	1299	0	387	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
v/c Ratio		0.73	0.66		0.77	0.12
Control Delay		18.4	13.4		36.9	5.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.4	13.4		36.9	5.8
LOS		B	B		D	A
Approach Delay		18.4	13.4		32.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 100.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1026	1299	387	62
v/c Ratio	0.73	0.66	0.77	0.12
Control Delay	18.4	13.4	36.9	5.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.4	13.4	36.9	5.8
Queue Length 50th (m)	59.2	61.9	56.4	0.0
Queue Length 95th (m)	#114.1	102.5	78.3	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1402	1966	647	624
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	0.66	0.60	0.10

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	925	850	410	375	60
Future Volume (vph)	70	925	850	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3342		1787	1615
Flt Permitted		0.69	1.00		0.95	1.00
Satd. Flow (perm)		2461	3342		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	954	876	423	387	62
RTOR Reduction (vph)	0	0	61	0	0	45
Lane Group Flow (vph)	0	1026	1238	0	387	17
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		45.6	45.6		22.4	22.4
Effective Green, g (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1402	1904		500	452
v/s Ratio Prot			0.37		c0.22	
v/s Ratio Perm		c0.42				0.01
v/c Ratio		0.73	0.65		0.77	0.04
Uniform Delay, d1		12.7	11.8		26.5	21.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.4	1.7		7.3	0.0
Delay (s)		16.1	13.5		33.8	21.0
Level of Service		B	B		C	C
Approach Delay (s)		16.1	13.5		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	G
Analysis Period (min)	15		

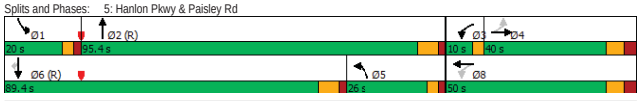
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	375	390	145	450	35	420	1215	205	45	1625	140
Future Volume (vph)	125	375	390	145	450	35	420	1215	205	45	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3567	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.427			0.324			0.950			0.950		
Satd. Flow (perm)	803	3574	1595	615	3567	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257		5				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	129	387	402	149	464	36	433	1253	211	46	1675	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	387	402	149	500	0	433	1253	211	46	1675	144
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	29.4	29.4	165.4	45.1	40.1		21.7	97.4	165.4	10.0	83.2	83.2
Actuated g/C Ratio	0.18	0.18	1.00	0.27	0.24		0.13	0.59	1.00	0.06	0.50	0.50
v/c Ratio	0.91	0.61	0.25	0.67	0.58		0.95	0.63	0.13	0.42	0.96	0.17
Control Delay	119.3	66.7	0.4	64.9	57.2		102.0	25.3	0.2	86.0	53.5	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.3	66.7	0.4	64.9	57.2		102.0	25.3	0.2	86.0	53.5	7.8
LOS	F	E	A	E	E		F	C	A	F	D	A
Approach Delay		45.1			59.0			40.0			50.8	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 47.0		Intersection LOS: D	
Intersection Capacity Utilization 103.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	387	402	149	500	433	1253	211	46	1675	144
v/c Ratio	0.91	0.61	0.25	0.67	0.58	0.95	0.63	0.13	0.42	0.96	0.17
Control Delay	119.3	66.7	0.4	64.9	57.2	102.0	25.3	0.2	86.0	53.5	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.3	66.7	0.4	64.9	57.2	102.0	25.3	0.2	86.0	53.5	7.8
Queue Length 50th (m)	43.5	64.6	0.0	40.6	79.0	78.4	153.9	0.0	15.7	293.1	7.4
Queue Length 95th (m)	#83.5	83.4	0.0	62.3	99.1	#116.1	188.7	0.0	30.0	#351.0	20.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	155	691	1595	223	909	455	1987	1599	163	1745	862
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.56	0.25	0.67	0.55	0.95	0.63	0.13	0.28	0.96	0.17

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)	125	375	390	145	450	35	420	1215	205	45	1625	140
Future Volume (vph)	125	375	390	145	450	35	420	1215	205	45	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1805	3568		3467	3374	1599	1805	3471	1615
Flt Permitted	0.43	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	802	3574	1595	615	3568		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	387	402	149	464	36	433	1253	211	46	1675	144
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	51
Lane Group Flow (vph)	129	387	402	149	496	0	433	1253	211	46	1675	93
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	29.4	29.4	165.4	40.2	40.2		22.6	96.4	165.4	8.4	82.2	82.2
Effective Green, g (s)	29.4	29.4	165.4	40.2	40.2		22.6	96.4	165.4	8.4	82.2	82.2
Actuated g/C Ratio	0.18	0.18	1.00	0.24	0.24		0.14	0.58	1.00	0.05	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	142	635	1595	205	867		473	1966	1599	91	1725	802
v/s Ratio Prot		0.11		c0.03	0.14		c0.12	0.37		0.03	c0.48	
v/s Ratio Perm	c0.16		0.25	0.14					0.13			0.06
v/c Ratio	0.91	0.61	0.25	0.73	0.57		0.92	0.64	0.13	0.51	0.97	0.12
Uniform Delay, d1	66.7	62.7	0.0	56.0	55.0		70.5	22.9	0.0	76.5	40.4	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.5	1.7	0.4	12.1	0.9		22.3	1.6	0.2	4.4	15.8	0.3
Delay (s)	115.2	64.4	0.4	68.0	56.0		92.7	24.5	0.2	80.8	56.2	22.5
Level of Service	F	E	A	E	E		F	C	A	F	E	C
Approach Delay (s)		43.5			58.7			37.4			54.2	
Approach LOS		D			E			D			D	

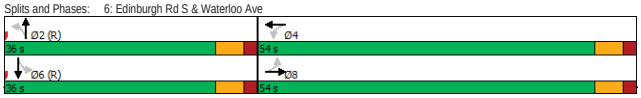
Intersection Summary					
HCM 2000 Control Delay		46.9	HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		0.94			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)		23.4
Intersection Capacity Utilization		103.0%	ICU Level of Service		G
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Future Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.970			0.977			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1813	0	1805	1829	0	1805	1856	0	1770	1884	0
Flt Permitted	0.344			0.536			0.311			0.269		
Satd. Flow (perm)	632	1813	0	1012	1829	0	590	1856	0	500	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			15			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	165	41	93	258	46	36	660	88	52	649	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	206	0	93	304	0	36	748	0	52	680	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
v/c Ratio	0.32	0.48		0.41	0.72		0.10	0.63		0.16	0.56	
Control Delay	33.3	29.8		33.5	39.7		17.2	26.1		9.9	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.3	29.8		33.5	39.7		17.2	26.1		9.9	12.5	
LOS	C	C		C	D		B	C		A	B	
Approach Delay		30.5			38.2			25.7			12.3	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	206	93	304	36	748	52	680
v/c Ratio	0.32	0.48	0.41	0.72	0.10	0.63	0.16	0.56
Control Delay	33.3	29.8	33.5	39.7	17.2	26.1	9.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	29.8	33.5	39.7	17.2	26.1	9.9	12.5
Queue Length 50th (m)	7.0	29.2	14.5	48.9	2.1	86.9	3.4	62.0
Queue Length 95th (m)	15.8	45.1	26.3	69.1	m11.2	166.6	11.1	117.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	337	976	539	982	378	1192	320	1208
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.21	0.17	0.31	0.10	0.63	0.16	0.56

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Future Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1750	1813		1794	1829		1802	1857		1764	1885	
Flt Permitted	0.34	1.00		0.54	1.00		0.31	1.00		0.27	1.00	
Satd. Flow (perm)	633	1813		1011	1829		589	1857		500	1885	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	165	41	93	258	46	36	660	88	52	649	31
RTOR Reduction (vph)	0	16	0	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	190	0	93	292	0	36	745	0	52	679	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Effective Green, g (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	142	408		228	412		377	1190		320	1208	
v/s Ratio Prot		0.10			c0.16			c0.40			0.36	
v/s Ratio Perm	0.07			0.09			0.06			0.10		
v/c Ratio	0.32	0.47		0.41	0.71		0.10	0.63		0.16	0.56	
Uniform Delay, d1	29.1	30.2		29.7	32.1		6.2	9.7		6.5	9.1	
Progression Factor	1.00	1.00		1.00	1.00		2.02	2.11		1.00	1.00	
Incremental Delay, d2	1.3	0.8		1.2	5.5		0.4	2.2		1.1	1.9	
Delay (s)	30.4	31.0		30.9	37.7		12.9	22.6		7.6	11.0	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		30.9			36.1			22.2			10.7	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	110	270	10	120	270
Future Volume (vph)	10	110	270	10	120	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	11	120	293	11	130	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	120	293	11	130	293
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	110	270	10	120	270
Future Volume (Veh/h)	10	110	270	10	120	270
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	120	293	11	130	293
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		610	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		610	13
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		65	73
cM capacity (veh/h)			1452		367	1068

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	120	293	11	423
Volume Left	0	0	293	0	130
Volume Right	0	120	0	0	293
cSH	1700	1700	1452	1700	1195
Volume to Capacity	0.01	0.07	0.20	0.01	0.35
Queue Length 95th (m)	0.0	0.0	6.0	0.0	12.9
Control Delay (s)	0.0	0.0	8.1	0.0	12.8
Lane LOS			A		B
Approach Delay (s)	0.0		7.8		12.8
Approach LOS					B

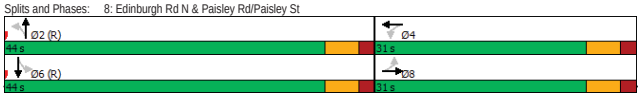
Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Future Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.959			0.982			0.986			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1792	0	1805	1841	0	1805	1865	0	1736	1851	0
Flt Permitted	0.286			0.286			0.237			0.271		
Satd. Flow (perm)	539	1792	0	540	1841	0	449	1865	0	494	1851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			10			10			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	81	328	124	65	398	54	113	570	59	108	575	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	452	0	65	452	0	113	629	0	108	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.45	0.73		0.36	0.73		0.50	0.66		0.43	0.71	
Control Delay	28.9	27.6		26.1	29.8		21.7	17.7		18.5	19.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.9	27.6		26.1	29.8		21.7	17.7		18.5	19.1	
LOS	C	C		C	C		C	B		B	B	
Approach Delay		27.8			29.3			18.3			19.0	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 93.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues d) Future Background (2031) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	452	65	452	113	629	108	672
v/c Ratio	0.45	0.73	0.36	0.73	0.50	0.66	0.43	0.71
Control Delay	28.9	27.6	26.1	29.8	21.7	17.7	18.5	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	27.6	26.1	29.8	21.7	17.7	18.5	19.1
Queue Length 50th (m)	8.0	44.3	7.2	57.2	10.4	64.3	9.5	70.6
Queue Length 95th (m)	m18.4	#85.6	18.7	#92.1	27.5	100.4	23.8	110.7
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	179	615	180	620	227	949	250	945
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	0.45	0.73	0.36	0.73	0.50	0.66	0.43	0.71

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) PM - Build-out
8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Future Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1790	1792		1795	1841		1802	1865		1732	1851	
Flt Permitted	0.29	1.00		0.29	1.00		0.24	1.00		0.27	1.00	
Satd. Flow (perm)	539	1792		540	1841		449	1865		493	1851	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	328	124	65	398	54	113	570	59	108	575	97
RTOR Reduction (vph)	0	18	0	0	7	0	0	5	0	0	8	0
Lane Group Flow (vph)	81	434	0	65	445	0	113	624	0	108	664	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	179	597		180	613		227	944		249	937	
v/s Ratio Prot		c0.24			0.24			0.33			c0.36	
v/s Ratio Perm	0.15			0.12			0.25			0.22		
v/c Ratio	0.45	0.73		0.36	0.73		0.50	0.66		0.43	0.71	
Uniform Delay, d1	19.6	22.0		18.9	22.0		12.2	13.7		11.7	14.2	
Progression Factor	1.00	0.94		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	7.0		5.5	7.4		7.6	3.6		5.4	4.5	
Delay (s)	27.1	27.7		24.5	29.4		19.8	17.4		17.1	18.8	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		27.6			28.7			17.7			18.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	93.7%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings d) Future Background (2031) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	355	1	50	365	195	2	50	50	215	50	245
Future Volume (vph)	245	355	1	50	365	195	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.948			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1773	0	1805	1737	0	1787	1900	1615
Flt Permitted	0.215			0.535			0.722			0.687		
Satd. Flow (perm)	408	1881	1580	1016	1773	0	1370	1737	0	1289	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		41			54				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	263	382	1	54	392	210	2	54	54	231	54	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	263	382	1	54	602	0	2	108	0	231	54	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

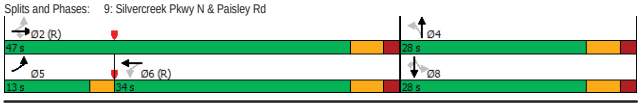
Lanes, Volumes, Timings d) Future Background (2031) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	48.2	45.2	45.2	32.8	32.8		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.64	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.60	0.34	0.00	0.12	0.75		0.01	0.24		0.76	0.12	0.46
Control Delay	12.6	9.3	0.0	24.8	34.6		19.0	13.1		42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	12.6	9.3	0.0	24.8	34.6		19.0	13.1		42.1	21.1	5.7
LOS	B	A	A	C	C		B	B		D	C	A
Approach Delay		10.7			33.8			13.2			22.6	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues d) Future Background (2031) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	263	382	1	54	602	2	108	231	54	263
v/c Ratio	0.60	0.34	0.00	0.12	0.75	0.01	0.24	0.76	0.12	0.46
Control Delay	12.6	9.3	0.0	24.8	34.6	19.0	13.1	42.1	21.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	9.3	0.0	24.8	34.6	19.0	13.1	42.1	21.1	5.7
Queue Length 50th (m)	14.7	26.1	0.0	7.0	91.2	0.3	6.3	31.6	6.2	0.0
Queue Length 95th (m)	28.9	47.8	0.0	m10.9	#145.5	1.7	17.0	53.0	13.9	16.0
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	450	1134	970	444	798	401	547	378	557	653
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	0.58	0.34	0.00	0.12	0.75	0.00	0.20	0.61	0.10	0.40

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) PM - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	355	1	50	365	195	2	50	50	215	50	245
Future Volume (vph)	245	355	1	50	365	195	2	50	50	215	50	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1773		1803	1737		1782	1900	1594
Flt Permitted	0.21	1.00	1.00	0.54	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	408	1881	1580	1016	1773		1370	1737		1289	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	263	382	1	54	392	210	2	54	54	231	54	263
RTOR Reduction (vph)	0	0	0	0	23	0	0	41	0	0	0	201
Lane Group Flow (vph)	263	382	1	54	579	0	2	67	0	231	54	62
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	45.2	45.2	45.2	32.8	32.8		17.8	17.8		17.8	17.8	17.8
Effective Green, g (s)	45.2	45.2	45.2	32.8	32.8		17.8	17.8		17.8	17.8	17.8
Actuated g/C Ratio	0.60	0.60	0.60	0.44	0.44		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	420	1133	952	444	775		325	412		305	450	378
v/s Ratio Prot	c0.08	0.20			c0.33			0.04			0.03	
v/s Ratio Perm	0.30		0.00	0.05			0.00			c0.18		0.04
v/c Ratio	0.63	0.34	0.00	0.12	0.75		0.01	0.16		0.76	0.12	0.17
Uniform Delay, d1	10.2	7.4	5.9	12.5	17.6		21.8	22.7		26.6	22.5	22.7
Progression Factor	1.00	1.00	1.00	1.59	1.58		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	0.8	0.0	0.4	5.1		0.0	0.2		10.3	0.1	0.2
Delay (s)	13.1	8.2	5.9	20.4	32.9		21.9	22.9		36.9	22.6	22.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		10.2			31.9			22.9			28.8	
Approach LOS		B			C			C			C	

Intersection Summary

HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings d) Future Background (2031) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (vph)	0	900	75	0	1495	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	978	82	0	1625	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis d) Future Background (2031) PM - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	900	75	0	1495	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	978	82	0	1625	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.85						0.85	0.85		0.85	0.85	0.85
vC, conflicting volume	1626			979			1522	2605	328	1953	2605	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1127			979			1004	2276	328	1511	2276	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	535			713			169	35	673	72	35	929

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	326	326	326	82	542	542	542	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.05	0.32	0.32	0.32	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

Average Delay	0.0			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

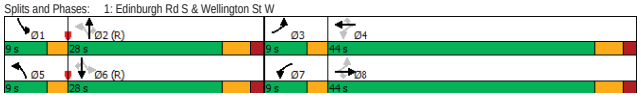
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Future Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.396			0.246			0.387			0.488		
Satd. Flow (perm)	741	3574	1575	458	3505	1487	735	3610	1583	927	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			209			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	31.2	20.5	20.5	35.9	24.7	24.7	46.8	36.1	36.1	42.7	32.5	32.5
Actuated g/C Ratio	0.35	0.23	0.23	0.40	0.27	0.27	0.52	0.40	0.40	0.47	0.36	0.36
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		29.9			26.3			15.6			17.3	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Length 50th (m)	8.7	49.7	0.0	19.5	44.2	0.0	11.7	31.5	0.0	3.8	37.3	0.9
Queue Length 95th (m)	16.8	62.2	11.5	32.0	58.8	4.5	22.7	47.9	15.1	6.5	55.7	5.0
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	345	1509	727	329	1479	690	487	1447	759	510	1305	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.38	0.15	0.53	0.36	0.10	0.26	0.32	0.28	0.12	0.37	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Future Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.40	1.00	1.00	0.25	1.00	1.00	0.39	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	744	3574	1575	458	3505	1487	735	3610	1583	927	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
RTOR Reduction (vph)	0	0	82	0	0	52	0	0	128	0	0	46
Lane Group Flow (vph)	82	566	25	173	536	19	128	459	81	61	485	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.7	21.2	21.2	34.2	24.7	24.7	43.7	34.8	34.8	37.9	31.9	31.9
Effective Green, g (s)	27.7	21.2	21.2	34.2	24.7	24.7	43.7	34.8	34.8	37.9	31.9	31.9
Actuated g/C Ratio	0.31	0.24	0.24	0.38	0.27	0.27	0.49	0.39	0.39	0.42	0.35	0.35
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	304	841	371	319	961	408	462	1395	612	448	1279	572
v/s Ratio Prot	0.02	c0.16		c0.06	0.15		c0.03	0.13		0.01	c0.13	
v/s Ratio Perm	0.06		0.02	0.15		0.01	0.11		0.05	0.05		0.02
v/c Ratio	0.27	0.67	0.07	0.54	0.56	0.05	0.28	0.33	0.13	0.14	0.38	0.04
Uniform Delay, d1	22.6	31.3	26.7	20.0	28.0	24.0	13.1	19.4	17.8	15.6	21.7	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.86	1.10
Incremental Delay, d2	0.5	2.1	0.1	1.9	0.7	0.0	0.3	0.6	0.4	0.1	0.8	0.1
Delay (s)	23.1	33.4	26.8	21.9	28.7	24.1	13.4	20.0	18.3	11.7	19.4	21.1
Level of Service	C	C	C	C	C	C	B	C	B	B	B	C
Approach Delay (s)		31.3			26.7			18.5			18.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

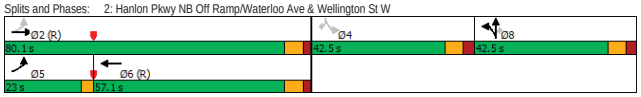
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	570	0	0	735	10	295	155	160	5	0	270
Future Volume (vph)	90	570	0	0	735	10	295	155	160	5	0	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.984		0.950		
Satd. Flow (prot)	1736	5085	0	0	5126	0	1681	1765	1599	1805	0	1599
Flt Permitted	0.316						0.950	0.984		0.323		
Satd. Flow (perm)	577	5085	0	0	5126	0	1681	1765	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				163			276
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	92	582	0	0	750	10	301	158	163	5	0	276
Shared Lane Traffic (%)							25%					
Lane Group Flow (vph)	92	582	0	0	760	0	226	233	163	5	0	276
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	107.0	102.9			90.8		27.7	27.7	27.7	12.4		12.4
Actuated g/C Ratio	0.65	0.62			0.55		0.17	0.17	0.17	0.08		0.08
v/c Ratio	0.21	0.18			0.27		0.80	0.79	0.40	0.11		0.74
Control Delay	13.9	14.5			21.4		86.2	83.9	10.0	73.8		19.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	13.9	14.5			21.4		86.2	83.9	10.0	73.8		19.3
LOS	B	B			C		F	F	A	E		B
Approach Delay		14.4			21.4			65.4			20.2	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 31.0		Intersection LOS: C	
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	92	582	760	226	233	163	5	276
v/c Ratio	0.21	0.18	0.27	0.80	0.79	0.40	0.11	0.74
Control Delay	13.9	14.5	21.4	86.2	83.9	10.0	73.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	14.5	21.4	86.2	83.9	10.0	73.8	19.3
Queue Length 50th (m)	10.7	28.6	47.2	80.4	82.7	0.0	1.7	0.0
Queue Length 95th (m)	24.5	46.7	74.8	107.5	109.7	20.5	6.4	30.8
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	514	3169	2819	359	378	470	130	556
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	0.18	0.18	0.27	0.63	0.62	0.35	0.04	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	570	0	0	735	10	295	155	160	5	0	270
Future Volume (vph)	90	570	0	0	735	10	295	155	160	5	0	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5126		1681	1765	1599	1805		1599
Flt Permitted	0.32	1.00			1.00		0.95	0.98	1.00	0.32		1.00
Satd. Flow (perm)	577	5085			5126		1681	1765	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	92	582	0	0	750	10	301	158	163	5	0	276
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	136	0	0	255
Lane Group Flow (vph)	92	582	0	0	760	0	226	233	27	5	0	21
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	102.9	102.9			90.8		27.7	27.7	27.7	12.4		12.4
Effective Green, g (s)	102.9	102.9			90.8		27.7	27.7	27.7	12.4		12.4
Actuated g/C Ratio	0.62	0.62			0.55		0.17	0.17	0.17	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	423	3169			2819		282	296	268	46		120
v/s Ratio Prot	c0.01	0.11			c0.15		c0.13	0.13				
v/s Ratio Perm	0.12								0.02	0.01		c0.01
v/c Ratio	0.22	0.18			0.27		0.80	0.79	0.10	0.11		0.17
Uniform Delay, d1	12.7	13.2			19.6		66.1	65.9	58.2	71.2		71.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	0.1			0.2		15.0	12.9	0.2	1.0		0.7
Delay (s)	13.0	13.4			19.9		81.1	78.8	58.3	72.2		72.2
Level of Service	B	B			B		F	E	E	E		E
Approach Delay (s)		13.3			19.9			74.3			72.2	
Approach LOS		B			B			E			E	

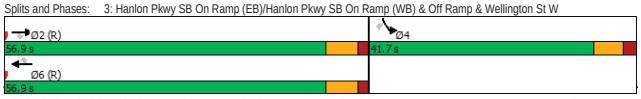
Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	395	0	870	260	0	0	0	175	0	145
Future Volume (vph)	0	605	395	0	870	260	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			407			211						104
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	624	407	0	897	268	0	0	0	180	0	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	624	407	0	897	268	0	0	0	180	0	149
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.6	73.6		73.6	73.6				11.4		11.4
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
v/c Ratio		0.17	0.32		0.24	0.22				0.45		0.55
Control Delay		3.9	1.1		4.1	1.5				44.1		22.4
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.9	1.1		4.1	1.5				44.1		22.4
LOS		A	A		A	A				D		C
Approach Delay		2.8			3.5						34.3	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	624	407	897	268	180	149
v/c Ratio	0.17	0.32	0.24	0.22	0.45	0.55
Control Delay	3.9	1.1	4.1	1.5	44.1	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	1.1	4.1	1.5	44.1	22.4
Queue Length 50th (m)	10.4	0.0	15.9	2.4	17.8	8.5
Queue Length 95th (m)	16.9	7.7	24.9	10.0	27.3	26.8
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3760	1272	3796	1206	1230	623
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	0.17	0.32	0.24	0.22	0.15	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	395	0	870	260	0	0	0	175	0	145
Future Volume (vph)	0	605	395	0	870	260	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	624	407	0	897	268	0	0	0	180	0	149
RTOR Reduction (vph)	0	0	103	0	0	53	0	0	0	0	0	92
Lane Group Flow (vph)	0	624	304	0	897	215	0	0	0	180	0	57
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.6	73.6		73.6	73.6				11.4		11.4
Effective Green, g (s)		73.6	73.6		73.6	73.6				11.4		11.4
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3759	1168		3795	1153				400		181
v/s Ratio Prot		0.12			0.18					c0.05		
v/s Ratio Perm			c0.19			0.14						0.04
v/c Ratio		0.17	0.26		0.24	0.19				0.45		0.32
Uniform Delay, d1		3.6	3.9		3.8	3.7				40.7		40.0
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.4				0.8		1.0
Delay (s)		3.7	4.5		4.0	4.0				41.5		41.0
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.0			4.0			0.0			41.3	
Approach LOS		A			A			A			D	

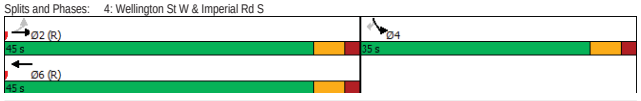
Intersection Summary					
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.29				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	39.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	590	565	310	395	60
Future Volume (vph)	70	590	565	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.947			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3325	0	1787	1615
Flt Permitted		0.744			0.950	
Satd. Flow (perm)	0	2615	3325	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			180			65
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	634	608	333	425	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	709	941	0	425	65
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.49	0.49		0.79	0.12
Control Delay		13.7	10.6		36.6	5.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.7	10.6		36.6	5.3
LOS		B	B		D	A
Approach Delay		13.7	10.6		32.5	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	709	941	425	65
v/c Ratio	0.49	0.49	0.79	0.12
Control Delay	13.7	10.6	36.6	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.7	10.6	36.6	5.3
Queue Length 50th (m)	34.5	35.8	61.6	0.0
Queue Length 95th (m)	59.4	62.2	84.0	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1450	1924	655	633
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	0.49	0.65	0.10

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	590	565	310	395	60
Future Volume (vph)	70	590	565	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3325		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2616	3325		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	634	608	333	425	65
RTOR Reduction (vph)	0	0	81	0	0	46
Lane Group Flow (vph)	0	709	860	0	425	20
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.0	44.0		24.0	24.0
Effective Green, g (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1438	1828		536	484
v/s Ratio Prot			0.26		c0.24	
v/s Ratio Perm		c0.27				0.01
v/c Ratio		0.49	0.47		0.79	0.04
Uniform Delay, d1		11.1	10.9		25.7	19.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.2	0.9		7.9	0.0
Delay (s)		12.3	11.8		33.6	19.9
Level of Service		B	B		C	B
Approach Delay (s)		12.3	11.8		31.8	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.60		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		80.9%	ICU Level of Service	D
Analysis Period (min)		15		

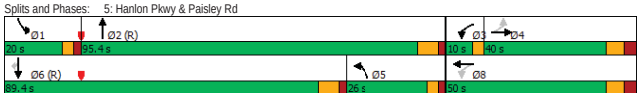
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	310	365	95	320	20	370	1200	105	35	1100	135
Future Volume (vph)	135	310	365	95	320	20	370	1200	105	35	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.544			0.385			0.950			0.950		
Satd. Flow (perm)	1033	3574	1579	723	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293		4				183			138
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	138	316	372	97	327	20	378	1224	107	36	1122	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	316	372	97	347	0	378	1224	107	36	1122	138
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	26.3	26.3	165.4	44.4	39.4		23.6	98.8	165.4	9.4	82.0	82.0
Actuated g/C Ratio	0.16	0.16	1.00	0.27	0.24		0.14	0.60	1.00	0.06	0.50	0.50
v/c Ratio	0.84	0.56	0.24	0.38	0.41		0.76	0.58	0.07	0.36	0.65	0.16
Control Delay	105.0	67.2	0.4	49.9	53.2		78.5	23.8	0.1	84.8	34.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	67.2	0.4	49.9	53.2		78.5	23.8	0.1	84.8	34.7	4.2
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		43.4			52.5			34.4			32.8	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 92.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	316	372	97	347	378	1224	107	36	1122	138
v/c Ratio	0.84	0.56	0.24	0.38	0.41	0.76	0.58	0.07	0.36	0.65	0.16
Control Delay	105.0	67.2	0.4	49.9	53.2	78.5	23.8	0.1	84.8	34.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	67.2	0.4	49.9	53.2	78.5	23.8	0.1	84.8	34.7	4.2
Queue Length 50th (m)	46.7	53.4	0.0	25.5	51.7	65.9	145.2	0.0	12.3	156.3	0.0
Queue Length 95th (m)	#75.4	68.4	0.0	42.4	68.0	82.4	176.3	0.0	25.3	192.1	13.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	199	691	1579	258	937	506	2094	1579	158	1828	908
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.46	0.24	0.38	0.37	0.75	0.58	0.07	0.23	0.61	0.15

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)	135	310	365	95	320	20	370	1200	105	35	1100	135
Future Volume (vph)	135	310	365	95	320	20	370	1200	105	35	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3574	1579	1786	3576		3467	3505	1579	1752	3505	1615
Flt Permitted	0.54	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1032	3574	1579	724	3576		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	138	316	372	97	327	20	378	1224	107	36	1122	138
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	70
Lane Group Flow (vph)	138	316	372	97	344	0	378	1224	107	36	1122	68
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	26.3	26.3	165.4	39.4	39.4		24.6	97.8	165.4	7.8	81.0	81.0
Effective Green, g (s)	26.3	26.3	165.4	39.4	39.4		24.6	97.8	165.4	7.8	81.0	81.0
Actuated g/C Ratio	0.16	0.16	1.00	0.24	0.24		0.15	0.59	1.00	0.05	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	164	568	1579	237	851		515	2072	1579	82	1716	790
v/s Ratio Prot		0.09		0.02	c0.10		c0.11	0.35		0.02	c0.32	
v/s Ratio Perm	c0.13		0.24	0.07					0.07			0.04
v/c Ratio	0.84	0.56	0.24	0.41	0.40		0.73	0.59	0.07	0.44	0.65	0.09
Uniform Delay, d1	67.5	64.2	0.0	51.0	53.1		67.3	21.2	0.0	76.7	31.7	22.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.4	1.2	0.4	1.2	0.3		5.4	1.2	0.1	3.7	2.0	0.2
Delay (s)	97.9	65.4	0.4	52.2	53.4		72.6	22.5	0.1	80.4	33.6	22.7
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		41.5			53.1			32.2			33.8	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4		
Intersection Capacity Utilization	92.1%	ICU Level of Service	F		
Analysis Period (min)	15				

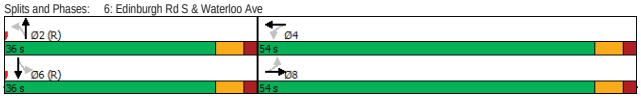
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Future Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.954			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1801	0	1805	1761	0	1805	1858	0	1805	1883	0
Flt Permitted	0.627			0.667			0.417			0.386		
Satd. Flow (perm)	1185	1801	0	1248	1761	0	791	1858	0	732	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			38			8			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	104	27	60	99	44	33	549	71	33	544	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	131	0	60	143	0	33	620	0	33	566	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
v/c Ratio	0.28	0.50		0.36	0.53		0.06	0.46		0.06	0.41	
Control Delay	36.9	35.1		39.1	32.2		4.9	12.3		5.1	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.9	35.1		39.1	32.2		4.9	12.3		5.1	6.5	
LOS	D	D		D	C		A	B		A	A	
Approach Delay		35.5			34.2			12.0			6.5	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	131	60	143	33	620	33	566
v/c Ratio	0.28	0.50	0.36	0.53	0.06	0.46	0.06	0.41
Control Delay	36.9	35.1	39.1	32.2	4.9	12.3	5.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	35.1	39.1	32.2	4.9	12.3	5.1	6.5
Queue Length 50th (m)	7.4	18.9	10.2	18.1	0.8	33.9	1.3	30.4
Queue Length 95th (m)	15.6	32.2	19.8	32.2	5.5	101.0	5.7	71.8
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	632	970	665	956	578	1360	535	1377
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	0.07	0.14	0.09	0.15	0.06	0.46	0.06	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Future Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		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)	1796	1800		1778	1761		1799	1857		1800	1883	
Flt Permitted	0.63	1.00		0.67	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1185	1800		1249	1761		789	1857		731	1883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	104	27	60	99	44	33	549	71	33	544	22
RTOR Reduction (vph)	0	19	0	0	33	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	112	0	60	110	0	33	618	0	33	565	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Effective Green, g (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	160	244		169	238		576	1357		534	1376	
v/s Ratio Prot		0.06			c0.06			c0.33			0.30	
v/s Ratio Perm	0.04			0.05			0.04			0.05		
v/c Ratio	0.28	0.46		0.36	0.46		0.06	0.46		0.06	0.41	
Uniform Delay, d1	34.9	35.9		35.3	35.9		3.4	4.9		3.4	4.7	
Progression Factor	1.00	1.00		1.00	1.00		0.98	1.91		1.00	1.00	
Incremental Delay, d2	0.9	1.4		1.3	1.4		0.2	1.1		0.2	0.9	
Delay (s)	35.9	37.2		36.6	37.3		3.5	10.4		3.6	5.6	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		36.9			37.1			10.1			5.5	
Approach LOS		D			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.46				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	5	115	175	5	110	165
Future Volume (vph)	5	115	175	5	110	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	5	125	190	5	120	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	125	190	5	120	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	175	5	110	165
Future Volume (Veh/h)	5	115	175	5	110	165
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	125	190	5	120	179
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			131		392	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			131		392	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		78	83
cM capacity (veh/h)			1459		535	1077

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	5	125	190	5	299
Volume Left	0	0	190	0	120
Volume Right	0	125	0	0	179
cSH	1700	1700	1459	1700	1333
Volume to Capacity	0.00	0.07	0.13	0.00	0.22
Queue Length 95th (m)	0.0	0.0	3.6	0.0	6.9
Control Delay (s)	0.0	0.0	7.8	0.0	10.9
Lane LOS			A		B
Approach Delay (s)	0.0		7.6		10.9
Approach LOS					B

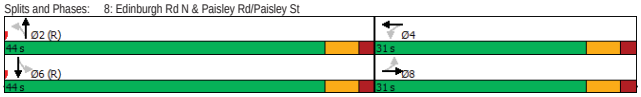
Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Future Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.962			0.970			0.992			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1800	0	1805	1813	0	1805	1881	0	1671	1857	0
Flt Permitted	0.453			0.375			0.372			0.385		
Satd. Flow (perm)	850	1800	0	709	1813	0	707	1881	0	674	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			18			6			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	86	285	97	38	258	65	113	462	27	59	435	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	382	0	38	323	0	113	489	0	59	505	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.30	0.62		0.16	0.52		0.32	0.51		0.17	0.53	
Control Delay	20.5	22.0		19.9	22.7		14.0	14.5		11.7	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.5	22.0		19.9	22.7		14.0	14.5		11.7	14.6	
LOS	C	C		B	C		B	B		B	B	
Approach Delay		21.7			22.4			14.4			14.3	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues d) Future Background (2031) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	382	38	323	113	489	59	505
v/c Ratio	0.30	0.62	0.16	0.52	0.32	0.51	0.17	0.53
Control Delay	20.5	22.0	19.9	22.7	14.0	14.5	11.7	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	22.0	19.9	22.7	14.0	14.5	11.7	14.6
Queue Length 50th (m)	6.8	27.7	3.9	36.0	9.3	44.9	4.5	46.0
Queue Length 95th (m)	m18.3	56.7	11.0	60.2	20.8	70.5	11.3	72.7
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	283	616	236	616	358	956	341	948
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	0.30	0.62	0.16	0.52	0.32	0.51	0.17	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) SAT - Build-out

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Future Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1782	1800		1796	1813		1804	1881		1663	1857	
Flt Permitted	0.45	1.00		0.38	1.00		0.37	1.00		0.39	1.00	
Satd. Flow (perm)	850	1800		709	1813		706	1881		675	1857	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	285	97	38	258	65	113	462	27	59	435	70
RTOR Reduction (vph)	0	17	0	0	12	0	0	3	0	0	8	0
Lane Group Flow (vph)	86	365	0	38	311	0	113	486	0	59	497	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	283	600		236	604		357	953		342	940	
v/s Ratio Prot		c0.20			0.17			0.26			c0.27	
v/s Ratio Perm	0.10			0.05			0.16			0.09		
v/c Ratio	0.30	0.61		0.16	0.51		0.32	0.51		0.17	0.53	
Uniform Delay, d1	18.5	20.9		17.6	20.1		10.9	12.3		10.0	12.5	
Progression Factor	0.92	0.87		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	4.4		1.5	3.1		2.3	1.9		1.1	2.1	
Delay (s)	19.6	22.5		19.1	23.2		13.2	14.3		11.1	14.6	
Level of Service	B	C		B	C		B	B		B	B	
Approach Delay (s)		22.0			22.8			14.1			14.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	82.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings d) Future Background (2031) SAT - Build-out

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	280	5	50	275	150	2	50	50	190	55	155
Future Volume (vph)	165	280	5	50	275	150	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1780	0	1805	1737	0	1805	1900	1599
Flt Permitted	0.377			0.581			0.720			0.690		
Satd. Flow (perm)	716	1863	1578	1102	1780	0	1365	1737	0	1309	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			44		42			52				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	172	292	5	52	286	156	2	52	52	198	57	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	292	5	52	442	0	2	104	0	198	57	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings d) Future Background (2031) SAT - Build-out

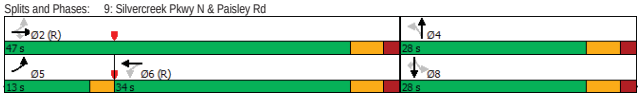
9: Silvercreek Pkwy N & Paisley Rd

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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	49.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.66	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
v/c Ratio	0.29	0.25	0.00	0.10	0.51		0.01	0.25		0.70	0.14	0.35
Control Delay	7.0	7.9	0.0	19.5	21.6		20.0	13.9		40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.0	7.9	0.0	19.5	21.6		20.0	13.9		40.0	22.4	6.1
LOS	A	A	A	B	C		B	B		D	C	A
Approach Delay		7.5			21.4			14.0			24.5	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues d) Future Background (2031) SAT - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	172	292	5	52	442	2	104	198	57	161
v/c Ratio	0.29	0.25	0.00	0.10	0.51	0.01	0.25	0.70	0.14	0.35
Control Delay	7.0	7.9	0.0	19.5	21.6	20.0	13.9	40.0	22.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	7.9	0.0	19.5	21.6	20.0	13.9	40.0	22.4	6.1
Queue Length 50th (m)	8.3	17.3	0.0	5.1	46.1	0.3	6.3	27.2	6.9	0.0
Queue Length 95th (m)	19.2	35.7	0.0	m14.5	93.6	1.7	16.7	44.6	14.5	12.8
Internal Link Dist (m)		177.0			1059.9		58.6		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	620	1162	1001	521	864	400	546	383	557	576
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	0.28	0.25	0.00	0.10	0.51	0.01	0.19	0.52	0.10	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis d) Future Background (2031) SAT - Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	280	5	50	275	150	2	50	50	190	55	155
Future Volume (vph)	165	280	5	50	275	150	2	50	50	190	55	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1781		1802	1737		1802	1900	1577
Flt Permitted	0.38	1.00	1.00	0.58	1.00		0.72	1.00		0.69	1.00	1.00
Satd. Flow (perm)	716	1863	1578	1102	1781		1365	1737		1309	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	172	292	5	52	286	156	2	52	52	198	57	161
RTOR Reduction (vph)	0	0	2	0	22	0	0	41	0	0	0	126
Lane Group Flow (vph)	172	292	3	52	420	0	2	63	0	198	57	35
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	46.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Effective Green, g (s)	46.8	46.8	46.8	35.5	35.5		16.2	16.2		16.2	16.2	16.2
Actuated g/C Ratio	0.62	0.62	0.62	0.47	0.47		0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	567	1162	984	521	843		294	375		282	410	340
v/s Ratio Prot	c0.03	0.16			c0.24			0.04			0.03	
v/s Ratio Perm	0.16		0.00	0.05			0.00			c0.15		0.02
v/c Ratio	0.30	0.25	0.00	0.10	0.50		0.01	0.17		0.70	0.14	0.10
Uniform Delay, d1	6.6	6.3	5.3	10.9	13.6		23.1	23.9		27.2	23.8	23.6
Progression Factor	1.00	1.00	1.00	1.38	1.37		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5	0.0	0.4	1.9		0.0	0.2		7.7	0.2	0.1
Delay (s)	7.0	6.8	5.3	15.4	20.5		23.1	24.1		34.9	23.9	23.7
Level of Service	A	A	A	B	C		C	C		C	C	C
Approach Delay (s)		6.8			20.0			24.1			29.0	
Approach LOS		A			B			C			C	

Intersection Summary

HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings d) Future Background (2031) SAT - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (vph)	0	620	75	0	1065	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	82	0	1158	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.9%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis d) Future Background (2031) SAT - Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	620	75	0	1065	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	674	82	0	1158	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1159			675			1062	1834	227	1385	1834	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	914			675			810	1639	227	1157	1639	87
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	702			926			256	95	782	143	95	894

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	225	225	225	82	386	386	386	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.13	0.05	0.23	0.23	0.23	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

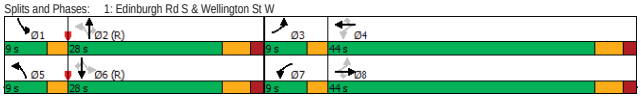
Average Delay	0.0				
Intersection Capacity Utilization	23.9%	ICU Level of Service	A		
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	785	180	110	520	45	180	560	200	60	525	75
Future Volume (vph)	110	785	180	110	520	45	180	560	200	60	525	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.343			0.164			0.262			0.354		
Satd. Flow (perm)	643	3471	1508	294	3438	1570	481	3539	1476	627	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			109			171			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	124	882	202	124	584	51	202	629	225	67	590	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	882	202	124	584	51	202	629	225	67	590	84
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.1	30.1	30.1	40.4	30.3	30.3	40.0	29.4	29.4	34.6	24.5	24.5
Actuated g/C Ratio	0.45	0.33	0.33	0.45	0.34	0.34	0.44	0.33	0.33	0.38	0.27	0.27
v/c Ratio	0.33	0.76	0.32	0.51	0.51	0.09	0.56	0.54	0.38	0.20	0.62	0.17
Control Delay	14.6	30.9	4.1	19.8	24.9	0.3	25.3	28.9	10.1	13.2	28.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	30.9	4.1	19.8	24.9	0.3	25.3	28.9	10.1	13.2	28.5	2.7
LOS	B	C	A	B	C	A	C	C	B	B	C	A
Approach Delay		24.8			22.4			24.2			24.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	882	202	124	584	51	202	629	225	67	590	84
v/c Ratio	0.33	0.76	0.32	0.51	0.51	0.09	0.56	0.54	0.38	0.20	0.62	0.17
Control Delay	14.6	30.9	4.1	19.8	24.9	0.3	25.3	28.9	10.1	13.2	28.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	30.9	4.1	19.8	24.9	0.3	25.3	28.9	10.1	13.2	28.5	2.7
Queue Length 50th (m)	11.7	74.6	0.0	11.7	44.3	0.0	22.6	51.8	7.3	4.8	55.0	1.8
Queue Length 95th (m)	19.1	84.4	12.5	19.2	52.4	0.2	#49.0	74.0	27.1	9.3	66.5	3.2
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	375	1465	753	243	1451	725	358	1155	597	327	966	512
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.60	0.27	0.51	0.40	0.07	0.56	0.54	0.38	0.20	0.61	0.16

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)	110	785	180	110	520	45	180	560	200	60	525	75
Future Volume (vph)	110	785	180	110	520	45	180	560	200	60	525	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1695	3505	1573
Flt Permitted	0.34	1.00	1.00	0.16	1.00	1.00	0.26	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	645	3471	1508	294	3438	1570	483	3539	1476	631	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	882	202	124	584	51	202	629	225	67	590	84
RTOR Reduction (vph)	0	0	134	0	0	34	0	0	116	0	0	61
Lane Group Flow (vph)	124	882	68	124	584	17	202	629	109	67	590	23
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.2	30.2	30.2	37.4	30.3	30.3	37.7	28.7	28.7	30.4	24.4	24.4
Effective Green, g (s)	37.2	30.2	30.2	37.4	30.3	30.3	37.7	28.7	28.7	30.4	24.4	24.4
Actuated g/C Ratio	0.41	0.34	0.34	0.42	0.34	0.34	0.42	0.32	0.32	0.34	0.27	0.27
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	355	1164	506	233	1157	528	347	1128	470	284	950	426
v/s Ratio Prot	0.03	c0.25		c0.04	0.17		c0.07	0.18		0.02	0.17	
v/s Ratio Perm	0.12		0.04	0.18		0.01	c0.18		0.07	0.06		0.01
v/c Ratio	0.35	0.76	0.13	0.53	0.50	0.03	0.58	0.56	0.23	0.24	0.62	0.05
Uniform Delay, d1	16.9	26.6	20.8	18.1	23.9	20.0	18.0	25.4	22.5	20.6	28.7	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.86	0.60
Incremental Delay, d2	0.6	2.9	0.1	2.3	0.3	0.0	2.5	2.0	1.1	0.4	2.9	0.2
Delay (s)	17.5	29.5	20.9	20.5	24.2	20.0	20.5	27.4	23.7	15.5	27.5	14.8
Level of Service	B	C	C	C	C	C	C	C	C	B	C	B
Approach Delay (s)		26.8			23.3			25.3			25.0	
Approach LOS		C			C			C			C	

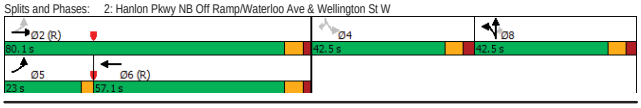
Intersection Summary					
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	860	0	0	735	15	190	215	225	15	0	430
Future Volume (vph)	180	860	0	0	735	15	190	215	225	15	0	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.997				0.850			0.850
Flt Protected	0.950						0.950	0.996		0.950		
Satd. Flow (prot)	1736	4988	0	0	4974	0	1633	1774	1599	1805	0	1583
Flt Permitted	0.265						0.950	0.996		0.164		
Satd. Flow (perm)	484	4988	0	0	4974	0	1633	1774	1599	312	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2				247			321
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	198	945	0	0	808	16	209	236	247	16	0	473
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	198	945	0	0	824	0	188	257	247	16	0	473
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	93.9	89.8			72.0		28.8	28.8	28.8	24.4		24.4
Actuated g/C Ratio	0.57	0.54			0.44		0.17	0.17	0.17	0.15		0.15
v/c Ratio	0.51	0.35			0.38		0.66	0.83	0.51	0.35		0.93
Control Delay	25.2	23.7			35.3		74.2	87.2	9.7	79.7		47.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	25.2	23.7			35.3		74.2	87.2	9.7	79.7		47.7
LOS	C	C			D		E	F	A	E		D
Approach Delay		24.0			35.3			56.0			48.7	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 37.8		Intersection LOS: D	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	198	945	824	188	257	247	16	473
v/c Ratio	0.51	0.35	0.38	0.66	0.83	0.51	0.35	0.93
Control Delay	25.2	23.7	35.3	74.2	87.2	9.7	79.7	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	23.7	35.3	74.2	87.2	9.7	79.7	47.7
Queue Length 50th (m)	33.5	67.9	71.7	64.2	90.8	0.0	5.0	58.3
Queue Length 95th (m)	59.6	94.7	102.7	91.4	123.0	25.1	13.4	103.9
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	427	2712	2169	346	376	533	66	588
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	0.46	0.35	0.38	0.54	0.68	0.46	0.24	0.80

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	860	0	0	735	15	190	215	225	15	0	430
Future Volume (vph)	180	860	0	0	735	15	190	215	225	15	0	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4974		1633	1774	1599	1805		1583
Flt Permitted	0.26	1.00			1.00		0.95	1.00	1.00	0.16		1.00
Satd. Flow (perm)	484	4988			4974		1633	1774	1599	311		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	198	945	0	0	808	16	209	236	247	16	0	473
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	204	0	0	274
Lane Group Flow (vph)	198	945	0	0	823	0	188	257	43	16	0	199
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	89.8	89.8			72.0		28.8	28.8	28.8	24.4		24.4
Effective Green, g (s)	89.8	89.8			72.0		28.8	28.8	28.8	24.4		24.4
Actuated g/C Ratio	0.54	0.54			0.44		0.17	0.17	0.17	0.15		0.15
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	375	2713			2169		284	309	278	45		233
v/s Ratio Prot	c0.05	0.19			0.17		0.12	c0.14				
v/s Ratio Perm	c0.24									0.03	0.05	c0.13
v/c Ratio	0.53	0.35			0.38		0.66	0.83	0.15	0.36		0.86
Uniform Delay, d1	20.4	21.2			31.5		63.6	65.8	57.8	63.3		68.6
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.3	0.4			0.5		5.7	17.1	0.3	4.8		25.1
Delay (s)	21.7	21.5			32.0		69.3	82.9	58.1	68.1		93.8
Level of Service	C	C			C		E	F	E	E		F
Approach Delay (s)		21.6			32.0			70.4			92.9	
Approach LOS		C			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

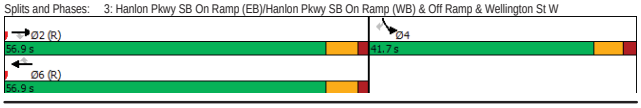
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	930	440	0	860	310	0	0	0	165	0	85
Future Volume (vph)	0	930	440	0	860	310	0	0	0	165	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			454			255						89
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	979	463	0	905	326	0	0	0	174	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	979	463	0	905	326	0	0	0	174	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.27	0.37		0.24	0.27				0.47		0.36
Control Delay		4.2	1.3		4.1	1.6				45.0		13.1
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.2	1.3		4.1	1.6				45.0		13.1
LOS		A	A		A	A				D		B
Approach Delay		3.3			3.4						34.2	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	979	463	905	326	174	89
v/c Ratio	0.27	0.37	0.24	0.27	0.47	0.36
Control Delay	4.2	1.3	4.1	1.6	45.0	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	1.3	4.1	1.6	45.0	13.1
Queue Length 50th (m)	18.1	0.4	16.3	3.0	17.2	0.0
Queue Length 95th (m)	26.5	8.2	24.2	11.0	27.1	14.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3694	1264	3730	1221	1150	573
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	0.27	0.37	0.24	0.27	0.15	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	930	440	0	860	310	0	0	0	165	0	85
Future Volume (vph)	0	930	440	0	860	310	0	0	0	165	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	979	463	0	905	326	0	0	0	174	0	89
RTOR Reduction (vph)	0	0	115	0	0	64	0	0	0	0	0	79
Lane Group Flow (vph)	0	979	348	0	905	262	0	0	0	174	0	10
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.7	73.7		73.7	73.7				11.3		11.3
Effective Green, g (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3692	1149		3728	1157				371		166
v/s Ratio Prot		0.20			0.18					c0.05		
v/s Ratio Perm			c0.23			0.17						0.01
v/c Ratio		0.27	0.30		0.24	0.23				0.47		0.06
Uniform Delay, d1		3.9	4.1		3.8	3.8				40.8		38.9
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.7		0.2	0.5				0.9		0.2
Delay (s)		4.1	4.7		4.0	4.2				41.8		39.1
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.3			4.1			0.0			40.9	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.32				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

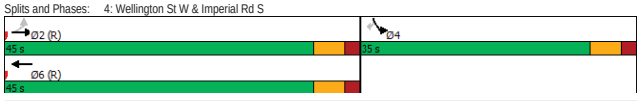
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	940	690	165	420	70
Future Volume (vph)	60	940	690	165	420	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.971			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3319	0	1770	1599
Flt Permitted		0.830			0.950	
Satd. Flow (perm)	0	2828	3319	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			51			73
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	63	979	719	172	438	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1042	891	0	438	73
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.8	43.8		24.2	24.2
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.67	0.48		0.82	0.14
Control Delay		16.7	12.3		38.7	5.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		16.7	12.3		38.7	5.4
LOS		B	B		D	A
Approach Delay		16.7	12.3		33.9	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 91.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1042	891	438	73
v/c Ratio	0.67	0.48	0.82	0.14
Control Delay	16.7	12.3	38.7	5.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.7	12.3	38.7	5.4
Queue Length 50th (m)	59.7	41.2	63.4	0.0
Queue Length 95th (m)	92.9	63.6	91.3	8.1
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1549	1842	641	626
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	0.48	0.68	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	940	690	165	420	70
Future Volume (vph)	60	940	690	165	420	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3319		1770	1599
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2827	3319		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	979	719	172	438	73
RTOR Reduction (vph)	0	0	23	0	0	51
Lane Group Flow (vph)	0	1042	868	0	438	22
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.8	43.8		24.2	24.2
Effective Green, g (s)		43.8	43.8		24.2	24.2
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1547	1817		535	483
v/s Ratio Prot			0.26		c0.25	
v/s Ratio Perm		c0.37				0.01
v/c Ratio		0.67	0.48		0.82	0.05
Uniform Delay, d1		13.0	11.1		25.9	19.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.4	0.9		9.5	0.0
Delay (s)		15.3	12.0		35.3	19.8
Level of Service		B	B		D	B
Approach Delay (s)		15.3	12.0		33.1	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

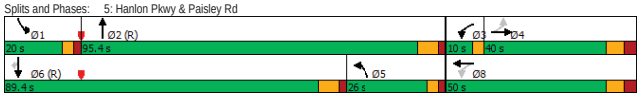
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	335	320	65	205	60	155	1245	95	45	935	45
Future Volume (vph)	95	335	320	65	205	60	155	1245	95	45	935	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.966				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3404	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.585			0.313			0.950			0.950		
Satd. Flow (perm)	1039	3438	1583	589	3404	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			237		22				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	97	342	327	66	209	61	158	1270	97	46	954	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	342	327	66	270	0	158	1270	97	46	954	46
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	22.4	22.4	165.4	40.4	35.4		20.9	101.7	165.4	10.5	88.7	88.7
Actuated g/C Ratio	0.14	0.14	1.00	0.24	0.21		0.13	0.61	1.00	0.06	0.54	0.54
v/c Ratio	0.69	0.73	0.21	0.31	0.36		0.38	0.62	0.06	0.46	0.54	0.05
Control Delay	91.9	77.9	0.3	50.7	51.0		67.9	23.7	0.1	88.1	28.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.9	0.3	50.7	51.0		67.9	23.7	0.1	88.1	28.4	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		46.5			50.9			26.7			29.8	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	342	327	66	270	158	1270	97	46	954	46
v/c Ratio	0.69	0.73	0.21	0.31	0.36	0.38	0.62	0.06	0.46	0.54	0.05
Control Delay	91.9	77.9	0.3	50.7	51.0	67.9	23.7	0.1	88.1	28.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.9	0.3	50.7	51.0	67.9	23.7	0.1	88.1	28.4	0.1
Queue Length 50th (m)	32.7	61.1	0.0	18.2	39.1	26.2	141.9	0.0	15.7	110.6	0.0
Queue Length 95th (m)	52.9	75.6	0.0	29.7	49.4	37.2	206.5	0.0	30.1	162.7	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	201	665	1583	215	895	454	2067	1568	144	1800	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.51	0.21	0.31	0.30	0.35	0.61	0.06	0.32	0.53	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	335	320	65	205	60	155	1245	95	45	935	45
Future Volume (vph)	95	335	320	65	205	60	155	1245	95	45	935	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3404		3303	3343	1568	1597	3282	1482
Flt Permitted	0.59	1.00	1.00	0.31	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1040	3438	1583	589	3404		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	342	327	66	209	61	158	1270	97	46	954	46
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	0	22
Lane Group Flow (vph)	97	342	327	66	253	0	158	1270	97	46	954	24
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	22.5	22.5	165.4	35.4	35.4		21.9	100.7	165.4	8.9	87.7	87.7
Effective Green, g (s)	22.5	22.5	165.4	35.4	35.4		21.9	100.7	165.4	8.9	87.7	87.7
Actuated g/C Ratio	0.14	0.14	1.00	0.21	0.21		0.13	0.61	1.00	0.05	0.53	0.53
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	141	467	1583	197	728		437	2035	1568	85	1740	785
v/s Ratio Prot		c0.10		0.02	c0.07		0.05	c0.38		0.03	c0.29	
v/s Ratio Perm	0.09		0.21	0.05					0.06			0.02
v/c Ratio	0.69	0.73	0.21	0.34	0.35		0.36	0.62	0.06	0.54	0.55	0.03
Uniform Delay, d1	68.1	68.6	0.0	53.4	55.2		65.4	20.4	0.0	76.3	25.7	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.1	5.9	0.3	1.0	0.3		0.5	1.5	0.1	6.9	1.2	0.1
Delay (s)	81.2	74.4	0.3	54.4	55.5		65.9	21.9	0.1	83.1	27.0	18.6
Level of Service	F	E	A	D	E		E	C	A	F	C	B
Approach Delay (s)		43.6			55.3			25.0			29.1	
Approach LOS		D			E			C			C	

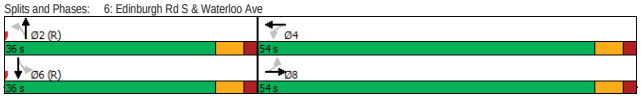
Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	240	55	75	130	25	25	545	90	40	465	35
Future Volume (vph)	50	240	55	75	130	25	25	545	90	40	465	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		0.99	1.00		1.00	1.00	
Frt		0.972			0.976			0.979			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1771	0	1752	1784	0	1805	1820	0	1770	1842	0
Flt Permitted	0.620			0.336			0.391			0.296		
Satd. Flow (perm)	1139	1771	0	614	1784	0	739	1820	0	550	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			16			10			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	261	60	82	141	27	27	592	98	43	505	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	321	0	82	168	0	27	690	0	43	543	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	21.7	21.7		21.7	21.7		56.3	56.3		56.3	56.3	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
v/c Ratio	0.20	0.73		0.56	0.38		0.06	0.60		0.12	0.47	
Control Delay	26.4	38.5		43.0	26.7		20.8	29.5		10.1	11.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.4	38.5		43.0	26.7		20.8	29.5		10.1	11.8	
LOS	C	D		D	C		C	C		B	B	
Approach Delay		36.8			32.1			29.2			11.6	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 71.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	321	82	168	27	690	43	543
v/c Ratio	0.20	0.73	0.56	0.38	0.06	0.60	0.12	0.47
Control Delay	26.4	38.5	43.0	26.7	20.8	29.5	10.1	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	38.5	43.0	26.7	20.8	29.5	10.1	11.8
Queue Length 50th (m)	7.9	50.7	13.1	23.1	2.4	94.2	2.9	46.8
Queue Length 95th (m)	15.7	70.2	25.6	36.2	m8.9	160.7	9.8	90.9
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	607	953	327	958	462	1143	344	1154
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	0.34	0.25	0.18	0.06	0.60	0.13	0.47

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	240	55	75	130	25	25	545	90	40	465	35
Future Volume (vph)	50	240	55	75	130	25	25	545	90	40	465	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1746	1771		1739	1783		1793	1819		1762	1841	
Flt Permitted	0.62	1.00		0.34	1.00		0.39	1.00		0.30	1.00	
Satd. Flow (perm)	1140	1771		615	1783		739	1819		549	1841	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	261	60	82	141	27	27	592	98	43	505	38
RTOR Reduction (vph)	0	15	0	0	12	0	0	4	0	0	2	0
Lane Group Flow (vph)	54	306	0	82	156	0	27	686	0	43	541	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	21.7	21.7		21.7	21.7		56.3	56.3		56.3	56.3	
Effective Green, g (s)	21.7	21.7		21.7	21.7		56.3	56.3		56.3	56.3	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	274	427		148	429		462	1137		343	1151	
v/s Ratio Prot		c0.17			0.09			c0.38			0.29	
v/s Ratio Perm	0.05			0.13			0.04			0.08		
v/c Ratio	0.20	0.72		0.55	0.36		0.06	0.60		0.13	0.47	
Uniform Delay, d1	27.2	31.3		29.9	28.4		6.5	10.1		6.8	8.9	
Progression Factor	1.00	1.00		1.00	1.00		2.34	2.31		1.00	1.00	
Incremental Delay, d2	0.4	5.6		4.4	0.5		0.2	2.1		0.8	1.4	
Delay (s)	27.6	37.0		34.3	28.9		15.5	25.5		7.6	10.3	
Level of Service	C	D		C	C		B	C		A	B	
Approach Delay (s)		35.6			30.7			25.2			10.1	
Approach LOS		D			C			C			B	

Intersection Summary					
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	71.8%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	205	240	20	170	250
Future Volume (vph)	40	205	240	20	170	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	43	223	261	22	185	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	223	261	22	185	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	205	240	20	170	250
Future Volume (Veh/h)	40	205	240	20	170	250
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	223	261	22	185	272
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			273		595	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			273		595	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		50	73
cM capacity (veh/h)			1283		372	1007

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	223	261	22	457
Volume Left	0	0	261	0	185
Volume Right	0	223	0	0	272
cSH	1700	1700	1283	1700	919
Volume to Capacity	0.03	0.13	0.20	0.01	0.50
Queue Length 95th (m)	0.0	0.0	6.1	0.0	22.6
Control Delay (s)	0.0	0.0	8.5	0.0	15.5
Lane LOS			A		C
Approach Delay (s)	0.0		7.9		15.5
Approach LOS					C

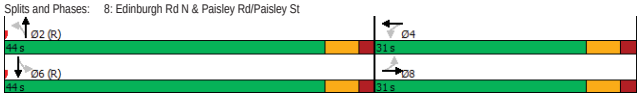
Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	350	65	45	250	75	70	435	55	90	385	95
Future Volume (vph)	110	350	65	45	250	75	70	435	55	90	385	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.976			0.965			0.983			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1762	0	1805	1753	0	1656	1841	0	1656	1790	0
Flt Permitted	0.412			0.287			0.359			0.349		
Satd. Flow (perm)	721	1762	0	542	1753	0	622	1841	0	606	1790	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			22			12			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	120	380	71	49	272	82	76	473	60	98	418	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	451	0	49	354	0	76	533	0	98	521	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.50	0.76		0.27	0.59		0.24	0.57		0.32	0.57	
Control Delay	27.3	29.6		23.3	24.2		13.0	15.5		14.6	15.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.3	29.6		23.3	24.2		13.0	15.5		14.6	15.2	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		29.1			24.1			15.2			15.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	120	451	49	354	76	533	98	521
v/c Ratio	0.50	0.76	0.27	0.59	0.24	0.57	0.32	0.57
Control Delay	27.3	29.6	23.3	24.2	13.0	15.5	14.6	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	29.6	23.3	24.2	13.0	15.5	14.6	15.2
Queue Length 50th (m)	11.5	42.1	5.3	40.3	6.0	50.4	8.0	47.9
Queue Length 95th (m)	m22.7	m#98.2	14.5	67.1	14.6	79.1	19.1	76.5
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	240	596	180	599	315	938	307	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	0.50	0.76	0.27	0.59	0.24	0.57	0.32	0.57

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	350	65	45	250	75	70	435	55	90	385	95
Future Volume (vph)	110	350	65	45	250	75	70	435	55	90	385	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1663	1763		1795	1753		1645	1841		1650	1791	
Flt Permitted	0.41	1.00		0.29	1.00		0.36	1.00		0.35	1.00	
Satd. Flow (perm)	721	1763		542	1753		621	1841		605	1791	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	380	71	49	272	82	76	473	60	98	418	103
RTOR Reduction (vph)	0	9	0	0	15	0	0	6	0	0	12	0
Lane Group Flow (vph)	120	442	0	49	339	0	76	527	0	98	509	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	240	587		180	584		314	932		306	907	
v/s Ratio Prot		c0.25			0.19			c0.29			0.28	
v/s Ratio Perm	0.17			0.09			0.12			0.16		
v/c Ratio	0.50	0.75		0.27	0.58		0.24	0.57		0.32	0.56	
Uniform Delay, d1	20.0	22.3		18.3	20.7		10.4	12.8		10.9	12.8	
Progression Factor	0.97	0.95		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	7.8		3.7	4.2		1.8	2.5		2.7	2.5	
Delay (s)	25.8	28.9		22.0	24.9		12.2	15.3		13.6	15.3	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		28.3			24.5			14.9			15.0	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

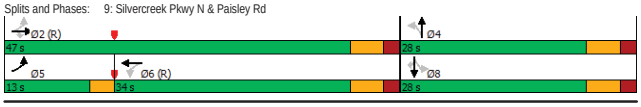
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	290	40	100	250	145	55	75	125	170	65	80
Future Volume (vph)	150	290	40	100	250	145	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98		0.99	0.97		0.98		0.98
Frt			0.850		0.945			0.906				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1700	0	1805	1667	0	1770	1900	1553
Flt Permitted	0.314			0.549			0.706			0.520		
Satd. Flow (perm)	573	1792	1571	1038	1700	0	1334	1667	0	949	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			49		44			113				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	183	354	49	122	305	177	67	91	152	207	79	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	183	354	49	122	482	0	67	243	0	207	79	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	47.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.63	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.37	0.34	0.05	0.27	0.64		0.20	0.48		0.86	0.16	0.21
Control Delay	8.9	9.9	2.8	24.1	27.6		22.1	15.1		59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	8.9	9.9	2.8	24.1	27.6		22.1	15.1		59.0	21.2	6.0
LOS	A	A	A	C	C		C	B		E	C	A
Approach Delay		9.0			26.9			16.6			37.7	
Approach LOS		A			C			B			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

e) Future Total (2021) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	183	354	49	122	482	67	243	207	79	98
v/c Ratio	0.37	0.34	0.05	0.27	0.64	0.20	0.48	0.86	0.16	0.21
Control Delay	8.9	9.9	2.8	24.1	27.6	22.1	15.1	59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	9.9	2.8	24.1	27.6	22.1	15.1	59.0	21.2	6.0
Queue Length 50th (m)	11.1	26.8	0.0	15.2	64.5	7.5	15.0	28.1	8.7	0.0
Queue Length 95th (m)	18.2	39.2	3.7	28.6	89.4	15.2	28.7	#52.0	16.8	8.3
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	516	1050	941	446	755	391	568	278	557	516
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	0.35	0.34	0.05	0.27	0.64	0.17	0.43	0.74	0.14	0.19

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

e) Future Total (2021) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	290	40	100	250	145	55	75	125	170	65	80
Future Volume (vph)	150	290	40	100	250	145	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1747	1792	1571	1797	1700		1795	1668		1733	1900	1525
Flt Permitted	0.31	1.00	1.00	0.55	1.00		0.71	1.00		0.52	1.00	1.00
Satd. Flow (perm)	577	1792	1571	1039	1700		1333	1668		949	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	183	354	49	122	305	177	67	91	152	207	79	98
RTOR Reduction (vph)	0	0	20	0	25	0	0	84	0	0	0	73
Lane Group Flow (vph)	183	354	29	122	457	0	67	159	0	207	79	25
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.0	44.0	44.0	32.3	32.3		19.0	19.0		19.0	19.0	19.0
Effective Green, g (s)	44.0	44.0	44.0	32.3	32.3		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.59	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	474	1051	921	447	732		337	422		240	481	386
v/s Ratio Prot	c0.04	0.20			c0.27			0.10			0.04	
v/s Ratio Perm	0.18		0.02	0.12			0.05			c0.22		0.02
v/c Ratio	0.39	0.34	0.03	0.27	0.62		0.20	0.38		0.86	0.16	0.06
Uniform Delay, d1	8.5	8.0	6.5	13.8	16.6		22.0	23.1		26.8	21.8	21.3
Progression Factor	1.00	1.00	1.00	1.39	1.38		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.9	0.1	1.4	3.7		0.3	0.6		25.8	0.2	0.1
Delay (s)	9.0	8.9	6.6	20.5	26.7		22.3	23.7		52.5	22.0	21.3
Level of Service	A	A	A	C	C		C	C		D	C	C
Approach Delay (s)		8.7			25.4			23.4			38.3	
Approach LOS		A			C			C			D	

Intersection Summary

HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	74.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings
11: Silvercreek Pkwy S & Street E/Street D

e) Future Total (2021) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (vph)	55	0	45	20	0	25	35	140	5	10	160	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.939			0.926			0.995			0.970	
Flt Protected		0.973			0.978		0.950			0.950		
Satd. Flow (prot)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Flt Permitted		0.973			0.978		0.950			0.950		
Satd. Flow (perm)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	49	0	38	157	0	11	217	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.3%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: Silvercreek Pkwy S & Street E/Street D

e) Future Total (2021) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (Veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	472	450	196	476	470	154	217			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	472	450	196	476	470	154	217			157		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	94	95	100	97	97			99		
cM capacity (veh/h)	473	486	846	458	474	891	1353			1423		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	109	49	38	157	11	217
Volume Left	60	22	38	0	11	0
Volume Right	49	27	0	5	0	43
cSH	590	625	1353	1700	1423	1700
Volume to Capacity	0.18	0.08	0.03	0.09	0.01	0.13
Queue Length 95th (m)	5.4	2.0	0.7	0.0	0.2	0.0
Control Delay (s)	12.5	11.2	7.7	0.0	7.5	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.5	11.2	1.5		0.4	
Approach LOS	B	B				

Intersection Summary

Average Delay	3.9		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	1262			1115			1536	2377	373	1634	2377	422
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	908			1115			1212	2145	373	1321	2145	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	684			634			126	44	629	105	44	982

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	371	371	371	76	420	420	420	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.22	0.22	0.04	0.25	0.25	0.25	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

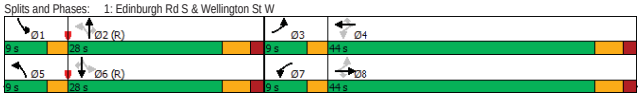
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	630	185	230	730	75	195	660	220	60	640	70
Future Volume (vph)	110	630	185	230	730	75	195	660	220	60	640	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.242			0.236			0.241			0.360		
Satd. Flow (perm)	459	3539	1577	439	3539	1555	457	3610	1535	668	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189			109			159			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	112	643	189	235	745	77	199	673	224	61	653	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	643	189	235	745	77	199	673	224	61	653	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	34.5	24.5	24.5	37.1	27.8	27.8	45.1	33.6	33.6	37.6	27.3	27.3
Actuated g/C Ratio	0.38	0.27	0.27	0.41	0.31	0.31	0.50	0.37	0.37	0.42	0.30	0.30
v/c Ratio	0.40	0.67	0.33	0.77	0.68	0.14	0.49	0.50	0.33	0.17	0.60	0.13
Control Delay	19.0	32.0	5.0	38.3	30.8	2.5	18.0	25.1	9.5	10.7	24.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	32.0	5.0	38.3	30.8	2.5	18.0	25.1	9.5	10.7	24.8	1.9
LOS	B	C	A	D	C	A	B	C	A	B	C	A
Approach Delay		25.1			30.4			20.6			21.7	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	112	643	189	235	745	77	199	673	224	61	653	71
v/c Ratio	0.40	0.67	0.33	0.77	0.68	0.14	0.49	0.50	0.33	0.17	0.60	0.13
Control Delay	19.0	32.0	5.0	38.3	30.8	2.5	18.0	25.1	9.5	10.7	24.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	32.0	5.0	38.3	30.8	2.5	18.0	25.1	9.5	10.7	24.8	1.9
Queue Length 50th (m)	11.7	53.7	0.0	26.6	64.5	0.0	19.8	51.2	8.0	3.8	57.8	1.3
Queue Length 95th (m)	20.2	64.8	13.8	#54.6	76.7	5.0	36.5	76.5	28.1	m6.7	69.7	m2.5
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	279	1494	775	304	1494	719	405	1347	672	368	1095	550
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.43	0.24	0.77	0.50	0.11	0.49	0.50	0.33	0.17	0.60	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	630	185	230	730	75	195	660	220	60	640	70
Future Volume (vph)	110	630	185	230	730	75	195	660	220	60	640	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1766	3610	1565
Flt Permitted	0.24	1.00	1.00	0.24	1.00	1.00	0.24	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	460	3539	1577	439	3539	1555	458	3610	1537	669	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	112	643	189	235	745	77	199	673	224	61	653	71
RTOR Reduction (vph)	0	0	136	0	0	53	0	0	102	0	0	50
Lane Group Flow (vph)	112	643	53	235	745	24	199	673	122	61	653	21
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	30.8	25.1	25.1	36.2	27.8	27.8	41.5	32.4	32.4	32.8	26.7	26.7
Effective Green, g (s)	30.8	25.1	25.1	36.2	27.8	27.8	41.5	32.4	32.4	32.8	26.7	26.7
Actuated g/C Ratio	0.34	0.28	0.28	0.40	0.31	0.31	0.46	0.36	0.36	0.36	0.30	0.30
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	242	986	439	300	1093	480	387	1299	553	318	1070	464
v/s Ratio Prot	0.03	0.18		c0.07	0.21		c0.07	0.19		0.01	c0.18	
v/s Ratio Perm	0.13		0.03	c0.24		0.02	0.17		0.08	0.06		0.01
v/c Ratio	0.46	0.65	0.12	0.78	0.68	0.05	0.51	0.52	0.22	0.19	0.61	0.05
Uniform Delay, d1	21.3	28.6	24.2	19.6	27.2	21.8	15.8	22.7	20.0	18.9	27.2	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.80	0.65
Incremental Delay, d2	1.4	1.6	0.1	12.5	1.8	0.0	1.2	1.5	0.9	0.3	2.3	0.2
Delay (s)	22.7	30.2	24.3	32.2	29.0	21.9	16.9	24.1	20.9	14.0	24.2	14.8
Level of Service	C	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		28.1			29.2			22.2			22.5	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay		25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.70			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		75.3%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

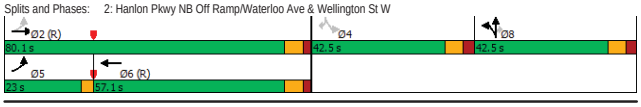
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	755	0	0	980	30	395	270	140	25	0	455
Future Volume (vph)	205	755	0	0	980	30	395	270	140	25	0	455
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.996				0.850			0.850
Flt Protected	0.950						0.950	0.990		0.950		
Satd. Flow (prot)	1787	5136	0	0	5113	0	1698	1783	1599	1805	0	1599
Flt Permitted	0.155						0.950	0.990		0.130		
Satd. Flow (perm)	291	5136	0	0	5113	0	1698	1783	1599	247	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				144			241
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	211	778	0	0	1010	31	407	278	144	26	0	469
Shared Lane Traffic (%)							17%					
Lane Group Flow (vph)	211	778	0	0	1041	0	338	347	144	26	0	469
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	81.2	77.1			57.7		35.1	35.1	35.1	30.8		30.8
Actuated g/C Ratio	0.49	0.47			0.35		0.21	0.21	0.21	0.19		0.19
v/c Ratio	0.72	0.32			0.58		0.94	0.92	0.32	0.57		0.95
Control Delay	40.3	28.9			46.9		97.2	92.4	9.3	104.4		61.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	40.3	28.9			46.9		97.2	92.4	9.3	104.4		61.0
LOS	D	C			D		F	F	A	F		E
Approach Delay		31.3			46.9			79.9			63.3	
Approach LOS		C			D			E			E	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 52.9		Intersection LOS: D	
Intersection Capacity Utilization 87.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	211	778	1041	338	347	144	26	469
v/c Ratio	0.72	0.32	0.58	0.94	0.92	0.32	0.57	0.95
Control Delay	40.3	28.9	46.9	97.2	92.4	9.3	104.4	61.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	28.9	46.9	97.2	92.4	9.3	104.4	61.0
Queue Length 50th (m)	43.6	64.2	112.8	122.5	125.1	0.0	8.0	84.4
Queue Length 95th (m)	63.3	75.7	132.8	#189.2	#190.0	19.6	#23.5	#151.0
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	324	2398	1787	366	385	458	52	528
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	0.65	0.32	0.58	0.92	0.90	0.31	0.50	0.89

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)	205	755	0	0	980	30	395	270	140	25	0	455
Future Volume (vph)	205	755	0	0	980	30	395	270	140	25	0	455
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5111		1698	1784	1599	1805		1599
Flt Permitted	0.16	1.00			1.00		0.95	0.99	1.00	0.13		1.00
Satd. Flow (perm)	292	5136			5111		1698	1784	1599	247		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	211	778	0	0	1010	31	407	278	144	26	0	469
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	113	0	0	196
Lane Group Flow (vph)	211	778	0	0	1039	0	338	347	31	26	0	273
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	77.1	77.1			57.6		35.1	35.1	35.1	30.8		30.8
Effective Green, g (s)	77.1	77.1			57.6		35.1	35.1	35.1	30.8		30.8
Actuated g/C Ratio	0.47	0.47			0.35		0.21	0.21	0.21	0.19		0.19
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	285	2398			1783		360	379	339	46		298
v/s Ratio Prot	c0.07	0.15			0.20		c0.20	0.19				
v/s Ratio Perm	c0.27								0.02	0.11		c0.17
v/c Ratio	0.74	0.32			0.58		0.94	0.92	0.09	0.57		0.92
Uniform Delay, d1	29.8	27.6			43.9		63.9	63.6	52.2	61.1		65.9
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	9.9	0.4			1.4		31.7	26.1	0.1	14.9		31.0
Delay (s)	39.7	28.0			45.3		95.6	89.7	52.3	76.0		96.9
Level of Service	D	C			D		F	F	D	E		F
Approach Delay (s)		30.5			45.3			85.6			95.8	
Approach LOS		C			D			F			F	

Intersection Summary

HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

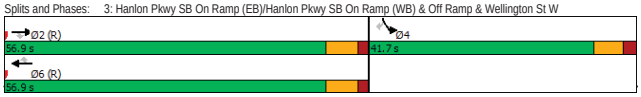
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	845	490	0	1285	320	0	0	0	180	0	75
Future Volume (vph)	0	845	490	0	1285	320	0	0	0	180	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			516			176						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	889	516	0	1353	337	0	0	0	189	0	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	889	516	0	1353	337	0	0	0	189	0	79
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.23	0.40		0.35	0.28				0.48		0.37
Control Delay		4.1	1.3		4.7	2.5				44.8		26.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.1	1.3		4.7	2.5				44.8		26.3
LOS		A	A		A	A				D		C
Approach Delay		3.1			4.2						39.3	
Approach LOS		A			A						D	

Intersection Summary

Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 44.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	889	516	1353	337	189	79
v/c Ratio	0.23	0.40	0.35	0.28	0.48	0.37
Control Delay	4.1	1.3	4.7	2.5	44.8	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	1.3	4.7	2.5	44.8	26.3
Queue Length 50th (m)	16.1	0.0	27.3	7.3	18.7	6.7
Queue Length 95th (m)	23.4	8.0	38.6	17.0	28.9	20.2
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3800	1299	3838	1199	1230	568
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	0.23	0.40	0.35	0.28	0.15	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	845	490	0	1285	320	0	0	0	180	0	75
Future Volume (vph)	0	845	490	0	1285	320	0	0	0	180	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	889	516	0	1353	337	0	0	0	189	0	79
RTOR Reduction (vph)	0	0	130	0	0	44	0	0	0	0	0	38
Lane Group Flow (vph)	0	889	386	0	1353	293	0	0	0	189	0	41
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.7	73.7		73.7	73.7				11.3		11.3
Effective Green, g (s)		73.7	73.7		73.7	73.7				11.3		11.3
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3800	1169		3838	1154				397		174
v/s Ratio Prot		0.17			c0.26					c0.05		
v/s Ratio Perm			0.25			0.19						0.03
v/c Ratio		0.23	0.33		0.35	0.25				0.48		0.24
Uniform Delay, d1		3.8	4.2		4.3	3.9				40.9		39.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.8		0.3	0.5				0.9		0.7
Delay (s)		4.0	4.9		4.5	4.4				41.8		40.4
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.3			4.5			0.0			41.4	
Approach LOS		A			A			A			D	

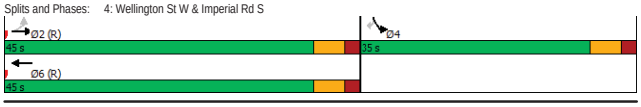
Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	930	850	390	355	55
Future Volume (vph)	65	930	850	390	355	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.953			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3348	0	1787	1615
Flt Permitted		0.724			0.950	
Satd. Flow (perm)	0	2566	3348	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			130			57
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	67	959	876	402	366	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1026	1278	0	366	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		46.4	46.4		21.6	21.6
Actuated g/C Ratio		0.58	0.58		0.27	0.27
v/c Ratio		0.69	0.64		0.76	0.12
Control Delay		16.3	12.7		36.8	6.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		16.3	12.7		36.8	6.2
LOS		B	B		D	A
Approach Delay		16.3	12.7		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Queues
4: Wellington St W & Imperial Rd S

e) Future Total (2021) PM - Full Build-out

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1026	1278	366	57
v/c Ratio	0.69	0.64	0.76	0.12
Control Delay	16.3	12.7	36.8	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.3	12.7	36.8	6.2
Queue Length 50th (m)	55.6	58.8	53.4	0.0
Queue Length 95th (m)	96.7	99.0	74.2	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1488	1996	647	621
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	0.64	0.57	0.09

Intersection Summary

HCM Signalized Intersection Capacity Analysis
4: Wellington St W & Imperial Rd S

e) Future Total (2021) PM - Full Build-out

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	930	850	390	355	55
Future Volume (vph)	65	930	850	390	355	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3348		1787	1615
Flt Permitted		0.72	1.00		0.95	1.00
Satd. Flow (perm)		2567	3348		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	67	959	876	402	366	57
RTOR Reduction (vph)	0	0	55	0	0	42
Lane Group Flow (vph)	0	1026	1223	0	366	15
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		46.4	46.4		21.6	21.6
Effective Green, g (s)		46.4	46.4		21.6	21.6
Actuated g/C Ratio		0.58	0.58		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1488	1941		482	436
v/s Ratio Prot			0.37		c0.20	
v/s Ratio Perm		c0.40				0.01
v/c Ratio		0.69	0.63		0.76	0.04
Uniform Delay, d1		11.8	11.1		26.8	21.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.6	1.6		6.8	0.0
Delay (s)		14.4	12.7		33.6	21.6
Level of Service		B	B		C	C
Approach Delay (s)		14.4	12.7		32.0	
Approach LOS		B	B		C	

Intersection Summary

HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
5: Hanlon Pkwy & Paisley Rd

e) Future Total (2021) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	380	370	135	445	70	400	1045	190	80	1400	130
Future Volume (vph)	115	380	370	135	445	70	400	1045	190	80	1400	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.980				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3531	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.404			0.318			0.950			0.950		
Satd. Flow (perm)	760	3574	1595	604	3531	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		10				186			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	119	392	381	139	459	72	412	1077	196	82	1443	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	392	381	139	531	0	412	1077	196	82	1443	134
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
5: Hanlon Pkwy & Paisley Rd

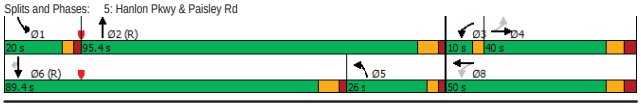
e) Future Total (2021) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	29.4	29.4	165.4	46.0	41.0		22.5	91.7	165.4	12.3	81.5	81.5
Actuated g/C Ratio	0.18	0.18	1.00	0.28	0.25		0.14	0.55	1.00	0.07	0.49	0.49
v/c Ratio	0.88	0.62	0.24	0.60	0.60		0.88	0.58	0.12	0.61	0.84	0.16
Control Delay	116.3	67.0	0.4	60.1	56.9		89.3	26.3	0.2	93.1	42.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.3	67.0	0.4	60.1	56.9		89.3	26.3	0.2	93.1	42.5	7.0
LOS	F	E	A	E	E		F	C	A	F	D	A
Approach Delay		45.1			57.6			38.6			42.1	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type:	Other
Cycle Length: 165.4	
Actuated Cycle Length: 165.4	
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 97.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Queues
5: Hanlon Pkwy & Paisley Rd

e) Future Total (2021) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	392	381	139	531	412	1077	196	82	1443	134
v/c Ratio	0.88	0.62	0.24	0.60	0.60	0.88	0.58	0.12	0.61	0.84	0.16
Control Delay	116.3	67.0	0.4	60.1	56.9	89.3	26.3	0.2	93.1	42.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.3	67.0	0.4	60.1	56.9	89.3	26.3	0.2	93.1	42.5	7.0
Queue Length 50th (m)	40.0	65.6	0.0	37.6	84.1	72.5	128.0	0.0	28.0	232.3	5.8
Queue Length 95th (m)	#78.6	84.6	0.0	58.1	105.0	#107.6	154.7	0.0	47.2	257.3	18.2
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	147	691	1595	230	915	470	1870	1599	163	1751	865
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.57	0.24	0.60	0.58	0.88	0.58	0.12	0.50	0.82	0.15

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: Hanlon Pkwy & Paisley Rd

e) Future Total (2021) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	380	370	135	445	70	400	1045	190	80	1400	130
Future Volume (vph)	115	380	370	135	445	70	400	1045	190	80	1400	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1805	3530		3467	3374	1599	1805	3471	1615
Flt Permitted	0.40	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	760	3574	1595	604	3530		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	392	381	139	459	72	412	1077	196	82	1443	134
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	52
Lane Group Flow (vph)	119	392	381	139	523	0	412	1077	196	82	1443	82
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	29.4	29.4	165.4	41.0	41.0		22.5	91.7	165.4	12.3	81.5	81.5
Effective Green, g (s)	29.4	29.4	165.4	41.0	41.0		22.5	91.7	165.4	12.3	81.5	81.5
Actuated g/C Ratio	0.18	0.18	1.00	0.25	0.25		0.14	0.55	1.00	0.07	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	135	635	1595	212	875		471	1870	1599	134	1710	795
v/s Ratio Prot		0.11		c0.03	0.15		c0.12	0.32		0.05	c0.42	
v/s Ratio Perm	c0.16		0.24	0.13					0.12			0.05
v/c Ratio	0.88	0.62	0.24	0.66	0.60		0.87	0.58	0.12	0.61	0.84	0.10
Uniform Delay, d1	66.3	62.8	0.0	53.2	54.9		70.1	24.1	0.0	74.2	36.4	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	43.9	1.8	0.4	7.1	1.1		16.4	1.3	0.2	8.0	5.3	0.3
Delay (s)	110.2	64.6	0.4	60.4	56.0		86.4	25.4	0.2	82.3	41.7	22.7
Level of Service	F	E	A	E	E		F	C	A	F	D	C
Approach Delay (s)		43.2			56.9			37.4			42.2	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

e) Future Total (2021) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	165	50	90	260	45	50	610	80	45	600	30
Future Volume (vph)	45	165	50	90	260	45	50	610	80	45	600	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.965			0.978			0.983			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1802	0	1805	1831	0	1805	1858	0	1770	1884	0
Flt Permitted	0.335			0.509			0.326			0.288		
Satd. Flow (perm)	616	1802	0	961	1831	0	619	1858	0	535	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			15			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	170	52	93	268	46	52	629	82	46	619	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	222	0	93	314	0	52	711	0	46	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

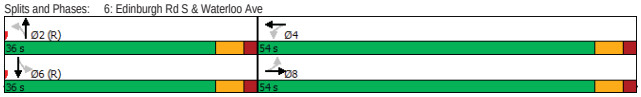
e) Future Total (2021) PM - Full Build-out

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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	20.9	20.9		20.9	20.9		57.1	57.1		57.1	57.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.32	0.51		0.42	0.72		0.13	0.60		0.14	0.54	
Control Delay	32.8	29.4		33.6	39.2		16.1	24.4		9.7	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.8	29.4		33.6	39.2		16.1	24.4		9.7	12.5	
LOS	C	C		C	D		B	C		A	B	
Approach Delay		30.0			37.9			23.8			12.3	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Queues
6: Edinburgh Rd S & Waterloo Ave

e) Future Total (2021) PM - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	222	93	314	52	711	46	650
v/c Ratio	0.32	0.51	0.42	0.72	0.13	0.60	0.14	0.54
Control Delay	32.8	29.4	33.6	39.2	16.1	24.4	9.7	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	29.4	33.6	39.2	16.1	24.4	9.7	12.5
Queue Length 50th (m)	7.0	31.0	14.5	50.4	2.7	75.9	3.0	59.1
Queue Length 95th (m)	15.6	47.1	26.2	70.5	m15.4	151.9	10.0	111.9
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	328	973	512	983	392	1182	339	1196
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.23	0.18	0.32	0.13	0.60	0.14	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
6: Edinburgh Rd S & Waterloo Ave

e) Future Total (2021) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	165	50	90	260	45	50	610	80	45	600	30
Future Volume (vph)	45	165	50	90	260	45	50	610	80	45	600	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		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)	1750	1801		1794	1831		1802	1858		1763	1884	
Flt Permitted	0.34	1.00		0.51	1.00		0.33	1.00		0.29	1.00	
Satd. Flow (perm)	618	1801		962	1831		618	1858		534	1884	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	170	52	93	268	46	52	629	82	46	619	31
RTOR Reduction (vph)	0	20	0	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	202	0	93	302	0	52	708	0	46	649	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.9	20.9		20.9	20.9		57.1	57.1		57.1	57.1	
Effective Green, g (s)	20.9	20.9		20.9	20.9		57.1	57.1		57.1	57.1	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	143	418		223	425		392	1178		338	1195	
v/s Ratio Prot		0.11			c0.17			c0.38			0.34	
v/s Ratio Perm	0.07			0.10			0.08			0.09		
v/c Ratio	0.32	0.48		0.42	0.71		0.13	0.60		0.14	0.54	
Uniform Delay, d1	28.7	29.9		29.4	31.8		6.6	9.7		6.6	9.2	
Progression Factor	1.00	1.00		1.00	1.00		1.77	1.97		1.00	1.00	
Incremental Delay, d2	1.3	0.9		1.3	5.6		0.6	2.1		0.8	1.8	
Delay (s)	30.0	30.8		30.6	37.3		12.2	21.2		7.4	10.9	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		30.6			35.8			20.6			10.7	
Approach LOS		C			D			C			B	

Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	79.2%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings
7: Waterloo Ave & Silvercreek Pkwy S

e) Future Total (2021) PM - Full Build-out

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	225	255	50	255	255
Future Volume (vph)	40	225	255	50	255	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	43	245	277	54	277	277
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	245	277	54	277	277
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: Waterloo Ave & Silvercreek Pkwy S

e) Future Total (2021) PM - Full Build-out

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	225	255	50	255	255
Future Volume (Veh/h)	40	225	255	50	255	255
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	245	277	54	277	277
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			289		653	45
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			289		653	45
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		18	73
cM capacity (veh/h)			1272		340	1026

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	245	277	54	554
Volume Left	0	0	277	0	277
Volume Right	0	245	0	0	277
cSH	1700	1700	1272	1700	680
Volume to Capacity	0.03	0.14	0.22	0.03	0.82
Queue Length 95th (m)	0.0	0.0	6.6	0.0	68.5
Control Delay (s)	0.0	0.0	8.6	0.0	29.4
Lane LOS			A		D
Approach Delay (s)	0.0		7.2		29.4
Approach LOS					D

Intersection Summary

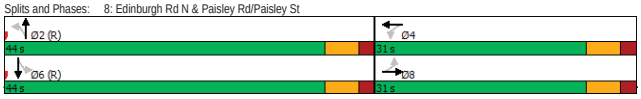
Average Delay	15.9			
Intersection Capacity Utilization	41.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	315	110	55	390	45	100	500	50	95	510	135
Future Volume (vph)	110	315	110	55	390	45	100	500	50	95	510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.961			0.985			0.986			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1797	0	1805	1847	0	1805	1865	0	1736	1830	0
Flt Permitted	0.267			0.279			0.220			0.300		
Satd. Flow (perm)	503	1797	0	527	1847	0	417	1865	0	547	1830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			8			10			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	118	339	118	59	419	48	108	538	54	102	548	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	457	0	59	467	0	108	592	0	102	693	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.71	0.74		0.34	0.75		0.51	0.62		0.37	0.74	
Control Delay	45.1	27.6		25.5	31.2		23.1	16.7		16.1	19.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	45.1	27.6		25.5	31.2		23.1	16.7		16.1	19.9	
LOS	D	C		C	C		C	B		B	B	
Approach Delay		31.2			30.5			17.7			19.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 95.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	457	59	467	108	592	102	693
v/c Ratio	0.71	0.74	0.34	0.75	0.51	0.62	0.37	0.74
Control Delay	45.1	27.6	25.5	31.2	23.1	16.7	16.1	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	27.6	25.5	31.2	23.1	16.7	16.1	19.9
Queue Length 50th (m)	12.0	43.8	6.5	60.0	10.1	58.6	8.7	73.6
Queue Length 95th (m)	m#36.3	m#75.4	17.3	#104.0	27.3	91.4	20.9	116.4
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	167	615	175	621	211	949	277	940
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	0.71	0.74	0.34	0.75	0.51	0.62	0.37	0.74

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	315	110	55	390	45	100	500	50	95	510	135
Future Volume (vph)	110	315	110	55	390	45	100	500	50	95	510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1791	1797		1795	1847		1802	1866		1732	1829	
Flt Permitted	0.27	1.00		0.28	1.00		0.22	1.00		0.30	1.00	
Satd. Flow (perm)	503	1797		528	1847		418	1866		547	1829	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	339	118	59	419	48	108	538	54	102	548	145
RTOR Reduction (vph)	0	17	0	0	5	0	0	5	0	0	13	0
Lane Group Flow (vph)	118	440	0	59	462	0	108	587	0	102	680	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	167	599		176	615		211	945		277	926	
v/s Ratio Prot		0.24			c0.25			0.31			c0.37	
v/s Ratio Perm	0.23			0.11			0.26			0.19		
v/c Ratio	0.71	0.74		0.34	0.75		0.51	0.62		0.37	0.73	
Uniform Delay, d1	21.8	22.1		18.8	22.2		12.3	13.3		11.2	14.5	
Progression Factor	0.95	0.93		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.3	7.1		5.1	8.2		8.6	3.1		3.7	5.2	
Delay (s)	41.0	27.5		23.8	30.4		20.9	16.4		15.0	19.7	
Level of Service	D	C		C	C		C	B		B	B	
Approach Delay (s)		30.3			29.7			17.1			19.1	
Approach LOS		C			C			B			B	

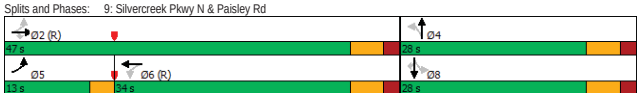
Intersection Summary					
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.74				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	95.4%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	330	70	145	340	190	60	80	120	215	85	245
Future Volume (vph)	230	330	70	145	340	190	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.946			0.910				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1769	0	1805	1705	0	1787	1900	1615
Flt Permitted	0.229			0.549			0.698			0.572		
Satd. Flow (perm)	435	1881	1580	1042	1769	0	1325	1705	0	1073	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			75		43			102				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	247	355	75	156	366	204	65	86	129	231	91	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	247	355	75	156	570	0	65	215	0	231	91	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	46.9	43.9	43.9	31.7	31.7		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.63	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.56	0.32	0.08	0.35	0.74		0.19	0.42		0.85	0.19	0.44
Control Delay	12.1	9.7	2.5	27.3	32.8		22.0	14.2		53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	12.1	9.7	2.5	27.3	32.8		22.0	14.2		53.9	21.6	5.5
LOS	B	A	A	C	C		C	B		D	C	A
Approach Delay		9.8			31.6			16.0			27.1	
Approach LOS		A			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	247	355	75	156	570	65	215	231	91	263
v/c Ratio	0.56	0.32	0.08	0.35	0.74	0.19	0.42	0.85	0.19	0.44
Control Delay	12.1	9.7	2.5	27.3	32.8	22.0	14.2	53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	9.7	2.5	27.3	32.8	22.0	14.2	53.9	21.6	5.5
Queue Length 50th (m)	15.4	26.5	0.0	22.5	85.9	7.3	12.9	31.3	10.2	0.0
Queue Length 95th (m)	27.0	43.9	5.4	m31.3	#132.9	16.5	30.0	#65.3	20.8	16.0
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	455	1101	955	441	773	388	572	314	557	653
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	0.32	0.08	0.35	0.74	0.17	0.38	0.74	0.16	0.40

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	330	70	145	340	190	60	80	120	215	85	245
Future Volume (vph)	230	330	70	145	340	190	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1770		1803	1705		1783	1900	1594
Flt Permitted	0.23	1.00	1.00	0.55	1.00		0.70	1.00		0.57	1.00	1.00
Satd. Flow (perm)	434	1881	1580	1042	1770		1325	1705		1073	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	247	355	75	156	366	204	65	86	129	231	91	263
RTOR Reduction (vph)	0	0	31	0	25	0	0	76	0	0	0	196
Lane Group Flow (vph)	247	355	44	156	545	0	65	139	0	231	91	67
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	43.9	43.9	43.9	31.7	31.7		19.1	19.1		19.1	19.1	19.1
Effective Green, g (s)	43.9	43.9	43.9	31.7	31.7		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.59	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	422	1101	924	440	748		337	434		273	483	405
v/s Ratio Prot	c0.07	0.19			c0.31			0.08			0.05	
v/s Ratio Perm	0.27		0.03	0.15			0.05			c0.22		0.04
v/c Ratio	0.59	0.32	0.05	0.35	0.73		0.19	0.32		0.85	0.19	0.17
Uniform Delay, d1	10.2	7.9	6.6	14.7	18.1		21.9	22.7		26.6	21.9	21.7
Progression Factor	1.00	1.00	1.00	1.50	1.49		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	0.8	0.1	1.7	4.7		0.3	0.4		20.8	0.2	0.2
Delay (s)	12.3	8.7	6.7	23.7	31.6		22.2	23.1		47.3	22.1	21.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		9.8			29.9			22.9			32.0	
Approach LOS		A			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.74				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	84.7%	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)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (vph)	70	0	70	10	0	15	85	170	20	20	165	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.932			0.920			0.984			0.955	
Flt Protected		0.976			0.980		0.950			0.950		
Satd. Flow (prot)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Flt Permitted		0.976			0.980		0.950			0.950		
Satd. Flow (perm)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	27	0	92	207	0	22	255	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 39.2%			ICU Level of Service A		
Analysis Period (min) 15					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (Veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	646	652	217	679	679	196	255			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	652	217	679	679	196	255			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	100	91	96	100	98	93			98		
cM capacity (veh/h)	353	354	823	310	342	845	1310			1364		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	152	27	92	207	22	255
Volume Left	76	11	92	0	22	0
Volume Right	76	16	0	22	0	76
cSH	494	496	1310	1700	1364	1700
Volume to Capacity	0.31	0.05	0.07	0.12	0.02	0.15
Queue Length 95th (m)	10.4	1.4	1.8	0.0	0.4	0.0
Control Delay (s)	15.5	12.7	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	15.5	12.7	2.4		0.6	
Approach LOS	C	B				

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 33.9%			ICU Level of Service A		
Analysis Period (min) 15					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1718			1034			1607	2752	346	2063	2752	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1202			1034			1071	2428	346	1612	2428	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	496			680			150	27	655	60	27	920

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	344	344	344	82	572	572	572	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.20	0.20	0.05	0.34	0.34	0.34	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	33.9%	ICU Level of Service	A	
Analysis Period (min)	15			

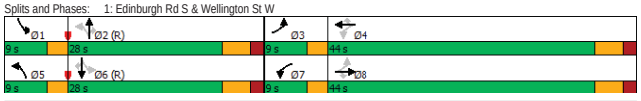
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	540	110	160	505	75	125	435	195	65	460	65
Future Volume (vph)	75	540	110	160	505	75	125	435	195	65	460	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.413			0.251			0.402			0.495		
Satd. Flow (perm)	772	3574	1575	467	3505	1487	764	3610	1583	940	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			112			109			199			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	77	551	112	163	515	77	128	444	199	66	469	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	551	112	163	515	77	128	444	199	66	469	66
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	30.7	20.0	20.0	35.3	24.1	24.1	47.2	36.5	36.5	43.4	33.1	33.1
Actuated g/C Ratio	0.34	0.22	0.22	0.39	0.27	0.27	0.52	0.41	0.41	0.48	0.37	0.37
v/c Ratio	0.22	0.70	0.26	0.50	0.55	0.16	0.25	0.30	0.26	0.13	0.35	0.10
Control Delay	17.2	36.7	6.8	22.3	30.8	3.1	13.2	20.9	4.5	9.8	20.3	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.7	6.8	22.3	30.8	3.1	13.2	20.9	4.5	9.8	20.3	2.2
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		30.1			26.1			15.4			17.1	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	551	112	163	515	77	128	444	199	66	469	66
v/c Ratio	0.22	0.70	0.26	0.50	0.55	0.16	0.25	0.30	0.26	0.13	0.35	0.10
Control Delay	17.2	36.7	6.8	22.3	30.8	3.1	13.2	20.9	4.5	9.8	20.3	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.7	6.8	22.3	30.8	3.1	13.2	20.9	4.5	9.8	20.3	2.2
Queue Length 50th (m)	8.4	49.1	0.0	18.8	43.2	0.0	11.3	29.5	0.0	4.5	35.5	0.7
Queue Length 95th (m)	15.9	60.7	12.0	30.3	56.8	5.6	22.8	46.6	14.9	7.8	54.4	4.4
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	349	1509	729	328	1479	690	503	1464	760	523	1328	663
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.37	0.15	0.50	0.35	0.11	0.25	0.30	0.26	0.13	0.35	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	540	110	160	505	75	125	435	195	65	460	65
Future Volume (vph)	75	540	110	160	505	75	125	435	195	65	460	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.41	1.00	1.00	0.25	1.00	1.00	0.40	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	775	3574	1575	467	3505	1487	763	3610	1583	940	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	551	112	163	515	77	128	444	199	66	469	66
RTOR Reduction (vph)	0	0	86	0	0	56	0	0	121	0	0	42
Lane Group Flow (vph)	77	551	26	163	515	21	128	444	78	66	469	24
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.1	20.6	20.6	33.6	24.1	24.1	44.2	35.3	35.3	38.6	32.5	32.5
Effective Green, g (s)	27.1	20.6	20.6	33.6	24.1	24.1	44.2	35.3	35.3	38.6	32.5	32.5
Actuated g/C Ratio	0.30	0.23	0.23	0.37	0.27	0.27	0.49	0.39	0.39	0.43	0.36	0.36
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	306	818	360	319	938	398	477	1415	620	461	1303	583
v/s Ratio Prot	0.02	c0.15		c0.06	0.15		c0.03	0.12		0.01	c0.13	
v/s Ratio Perm	0.06		0.02	0.13		0.01	0.11		0.05	0.05		0.01
v/c Ratio	0.25	0.67	0.07	0.51	0.55	0.05	0.27	0.31	0.13	0.14	0.36	0.04
Uniform Delay, d1	23.0	31.6	27.2	20.2	28.3	24.5	12.8	19.0	17.5	15.2	21.1	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.87	1.19
Incremental Delay, d2	0.4	2.2	0.1	1.4	0.7	0.1	0.3	0.6	0.4	0.1	0.7	0.1
Delay (s)	23.4	33.8	27.3	21.6	28.9	24.5	13.1	19.5	17.9	11.9	19.1	22.2
Level of Service	C	C	C	C	C	C	B	B	B	B	B	C
Approach Delay (s)		31.8			26.9			18.0			18.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

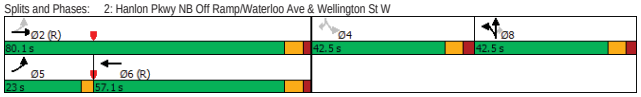
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	540	0	0	695	35	280	200	150	30	0	365
Future Volume (vph)	140	540	0	0	695	35	280	200	150	30	0	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.993				0.850			0.850
Flt Protected	0.950						0.950	0.991		0.950		
Satd. Flow (prot)	1736	5085	0	0	5102	0	1681	1782	1599	1805	0	1599
Flt Permitted	0.297						0.950	0.991		0.148		
Satd. Flow (perm)	543	5085	0	0	5102	0	1681	1782	1599	281	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5				153			291
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	143	551	0	0	709	36	286	204	153	31	0	372
Shared Lane Traffic (%)							16%					
Lane Group Flow (vph)	143	551	0	0	745	0	240	250	153	31	0	372
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	91.6	87.5			71.9		28.4	28.4	28.4	27.1		27.1
Actuated g/C Ratio	0.55	0.53			0.44		0.17	0.17	0.17	0.16		0.16
v/c Ratio	0.36	0.20			0.33		0.83	0.82	0.38	0.67		0.74
Control Delay	23.8	22.9			34.3		88.9	86.3	10.1	121.2		23.1
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	23.8	22.9			34.3		88.9	86.3	10.1	121.2		23.1
LOS	C	C			C		F	F	B	F		C
Approach Delay		23.1			34.3			69.1			30.6	
Approach LOS		C			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 39.6		Intersection LOS: D	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	143	551	745	240	250	153	31	372
v/c Ratio	0.36	0.20	0.33	0.83	0.82	0.38	0.67	0.74
Control Delay	23.8	22.9	34.3	88.9	86.3	10.1	121.2	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	22.9	34.3	88.9	86.3	10.1	121.2	23.1
Queue Length 50th (m)	25.6	39.1	65.8	85.3	88.6	0.0	9.8	24.6
Queue Length 95th (m)	44.0	52.9	89.5	116.1	119.3	20.2	#26.7	63.5
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	446	2694	2224	356	377	459	59	568
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	0.32	0.20	0.33	0.67	0.66	0.33	0.53	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)	140	540	0	0	695	35	280	200	150	30	0	365
Future Volume (vph)	140	540	0	0	695	35	280	200	150	30	0	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			0.99		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5101		1681	1782	1599	1805		1599
Flt Permitted	0.30	1.00			1.00		0.95	0.99	1.00	0.15		1.00
Satd. Flow (perm)	543	5085			5101		1681	1782	1599	280		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	143	551	0	0	709	36	286	204	153	31	0	372
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	127	0	0	243
Lane Group Flow (vph)	143	551	0	0	742	0	240	250	26	31	0	129
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	87.5	87.5			71.9		28.4	28.4	28.4	27.1		27.1
Effective Green, g (s)	87.5	87.5			71.9		28.4	28.4	28.4	27.1		27.1
Actuated g/C Ratio	0.53	0.53			0.44		0.17	0.17	0.17	0.16		0.16
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	378	2694			2221		289	306	275	45		262
v/s Ratio Prot	c0.03	0.11			0.15		c0.14	0.14				
v/s Ratio Perm	c0.17								0.02	c0.11		0.08
v/c Ratio	0.38	0.20			0.33		0.83	0.82	0.10	0.69		0.49
Uniform Delay, d1	20.5	20.5			30.8		66.0	65.8	57.5	65.0		62.7
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.6	0.2			0.4		18.0	15.4	0.2	35.8		1.5
Delay (s)	21.1	20.6			31.2		84.0	81.2	57.7	100.9		64.2
Level of Service	C	C			C		F	F	E	F		E
Approach Delay (s)		20.7			31.2			76.7			67.0	
Approach LOS		C			C			E			E	

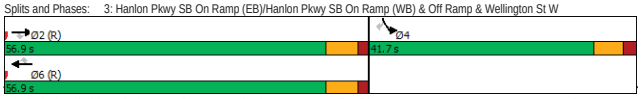
Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	625	375	0	875	300	0	0	0	150	0	125
Future Volume (vph)	0	625	375	0	875	300	0	0	0	150	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			387			243						102
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	644	387	0	902	309	0	0	0	155	0	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	387	0	902	309	0	0	0	155	0	129
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		74.2	74.2		74.2	74.2				10.8		10.8
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.17	0.30		0.24	0.25				0.41		0.49
Control Delay		3.7	1.0		3.9	1.5				44.1		19.4
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.7	1.0		3.9	1.5				44.1		19.4
LOS		A	A		A	A				D		B
Approach Delay		2.7			3.3						32.9	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	644	387	902	309	155	129
v/c Ratio	0.17	0.30	0.24	0.25	0.41	0.49
Control Delay	3.7	1.0	3.9	1.5	44.1	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	1.0	3.9	1.5	44.1	19.4
Queue Length 50th (m)	10.5	0.0	15.6	2.7	15.3	5.1
Queue Length 95th (m)	16.1	7.0	23.1	10.2	24.6	22.2
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3790	1274	3827	1223	1230	622
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	0.17	0.30	0.24	0.25	0.13	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	625	375	0	875	300	0	0	0	150	0	125
Future Volume (vph)	0	625	375	0	875	300	0	0	0	150	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	644	387	0	902	309	0	0	0	155	0	129
RTOR Reduction (vph)	0	0	96	0	0	60	0	0	0	0	0	91
Lane Group Flow (vph)	0	644	291	0	902	249	0	0	0	155	0	38
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		74.2	74.2		74.2	74.2				10.8		10.8
Effective Green, g (s)		74.2	74.2		74.2	74.2				10.8		10.8
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3789	1178		3826	1162				379		171
v/s Ratio Prot		0.13			0.18					c0.04		
v/s Ratio Perm			c0.19			0.16						0.02
v/c Ratio		0.17	0.25		0.24	0.21				0.41		0.22
Uniform Delay, d1		3.5	3.7		3.7	3.6				40.9		40.1
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.4				0.7		0.7
Delay (s)		3.6	4.2		3.8	4.0				41.6		40.7
Level of Service		A	A		A	A				D		D
Approach Delay (s)		3.8			3.9			0.0			41.2	
Approach LOS		A			A			A			D	

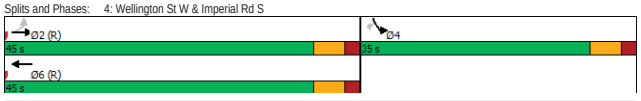
Intersection Summary						
HCM 2000 Control Delay		8.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio		0.27				
Actuated Cycle Length (s)		98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization		38.8%	ICU Level of Service		A	
Analysis Period (min)		15				
c Critical Lane Group						

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	615	590	295	375	55
Future Volume (vph)	65	615	590	295	375	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.950			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3497	3335	0	1787	1615
Flt Permitted		0.768			0.950	
Satd. Flow (perm)	0	2699	3335	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			151			59
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	70	661	634	317	403	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	731	951	0	403	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.9	44.9		23.1	23.1
Actuated g/C Ratio		0.56	0.56		0.29	0.29
v/c Ratio		0.48	0.49		0.78	0.12
Control Delay		13.0	10.7		36.6	5.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.0	10.7		36.6	5.7
LOS		B	B		D	A
Approach Delay		13.0	10.7		32.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 80.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	731	951	403	59
v/c Ratio	0.48	0.49	0.78	0.12
Control Delay	13.0	10.7	36.6	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.0	10.7	36.6	5.7
Queue Length 50th (m)	34.5	37.0	58.5	0.0
Queue Length 95th (m)	59.4	63.7	80.4	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1520	1945	652	627
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	0.49	0.62	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	615	590	295	375	55
Future Volume (vph)	65	615	590	295	375	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3498	3335		1787	1615
Flt Permitted		0.77	1.00		0.95	1.00
Satd. Flow (perm)		2698	3335		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	661	634	317	403	59
RTOR Reduction (vph)	0	0	66	0	0	42
Lane Group Flow (vph)	0	731	885	0	403	17
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.9	44.9		23.1	23.1
Effective Green, g (s)		44.9	44.9		23.1	23.1
Actuated g/C Ratio		0.56	0.56		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1514	1871		515	466
v/s Ratio Prot			0.27		c0.23	
v/s Ratio Perm		c0.27				0.01
v/c Ratio		0.48	0.47		0.78	0.04
Uniform Delay, d1		10.6	10.5		26.1	20.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.1	0.9		7.6	0.0
Delay (s)		11.7	11.3		33.8	20.5
Level of Service		B	B		C	C
Approach Delay (s)		11.7	11.3		32.1	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

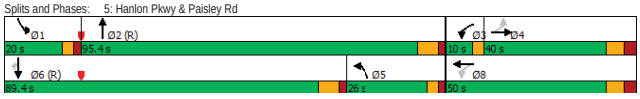
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	320	345	90	335	60	350	1035	95	80	945	125
Future Volume (vph)	125	320	345	90	335	60	350	1035	95	80	945	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.977				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3520	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.515			0.375			0.950			0.950		
Satd. Flow (perm)	978	3574	1579	705	3520	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			267		12				183			128
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	128	327	352	92	342	61	357	1056	97	82	964	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	327	352	92	403	0	357	1056	97	82	964	128
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	26.9	26.9	165.4	45.7	40.7		22.4	91.2	165.4	13.0	81.9	81.9
Actuated g/C Ratio	0.16	0.16	1.00	0.28	0.25		0.14	0.55	1.00	0.08	0.50	0.50
v/c Ratio	0.81	0.56	0.22	0.35	0.46		0.76	0.55	0.06	0.60	0.56	0.15
Control Delay	99.1	66.5	0.3	47.0	51.9		79.6	27.2	0.1	90.5	32.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	66.5	0.3	47.0	51.9		79.6	27.2	0.1	90.5	32.8	4.8
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		42.8			51.0			37.8			33.8	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 39.3		Intersection LOS: D	
Intersection Capacity Utilization 93.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	327	352	92	403	357	1056	97	82	964	128
v/c Ratio	0.81	0.56	0.22	0.35	0.46	0.76	0.55	0.06	0.60	0.56	0.15
Control Delay	99.1	66.5	0.3	47.0	51.9	79.6	27.2	0.1	90.5	32.8	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	66.5	0.3	47.0	51.9	79.6	27.2	0.1	90.5	32.8	4.8
Queue Length 50th (m)	43.3	55.6	0.0	24.2	60.4	62.4	122.9	0.0	28.0	122.8	0.0
Queue Length 95th (m)	65.5	67.6	0.0	37.0	71.5	78.6	174.3	0.0	46.4	171.3	14.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	196	715	1579	265	965	488	2009	1579	165	1846	911
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.46	0.22	0.35	0.42	0.73	0.53	0.06	0.50	0.52	0.14

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	320	345	90	335	60	350	1035	95	80	945	125
Future Volume (vph)	125	320	345	90	335	60	350	1035	95	80	945	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3574	1579	1786	3521		3467	3505	1579	1752	3505	1615
Flt Permitted	0.51	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	978	3574	1579	706	3521		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	327	352	92	342	61	357	1056	97	82	964	128
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	65
Lane Group Flow (vph)	128	327	352	92	394	0	357	1056	97	82	964	63
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	26.9	26.9	165.4	40.7	40.7		22.4	91.3	165.4	13.0	81.9	81.9
Effective Green, g (s)	26.9	26.9	165.4	40.7	40.7		22.4	91.3	165.4	13.0	81.9	81.9
Actuated g/C Ratio	0.16	0.16	1.00	0.25	0.25		0.14	0.55	1.00	0.08	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	581	1579	244	866		469	1934	1579	137	1735	799
v/s Ratio Prot		0.09		0.02	c0.11		c0.10	c0.30		0.05	c0.28	
v/s Ratio Perm	c0.13		0.22	0.07					0.06			0.04
v/c Ratio	0.81	0.56	0.22	0.38	0.45		0.76	0.55	0.06	0.60	0.56	0.08
Uniform Delay, d1	66.7	63.8	0.0	49.9	52.9		68.9	23.8	0.0	73.7	29.1	21.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.8	1.3	0.3	1.0	0.4		7.2	1.1	0.1	6.9	1.3	0.2
Delay (s)	91.5	65.1	0.3	50.8	53.3		76.1	24.9	0.1	80.5	30.4	22.1
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		41.0			52.9			35.4			33.0	
Approach LOS		D			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4		
Intersection Capacity Utilization	93.8%	ICU Level of Service	F		
Analysis Period (min)	15				

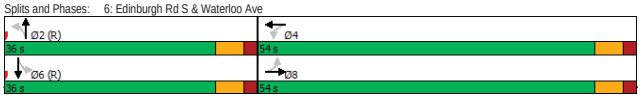
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	105	45	55	105	40	50	475	60	30	470	20
Future Volume (vph)	40	105	45	55	105	40	50	475	60	30	470	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.955			0.958			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1773	0	1805	1769	0	1805	1858	0	1805	1883	0
Flt Permitted	0.580			0.564			0.431			0.402		
Satd. Flow (perm)	1096	1773	0	1056	1769	0	817	1858	0	762	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			33			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	115	49	60	115	44	55	522	66	33	516	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	164	0	60	159	0	55	588	0	33	538	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.8	12.8		12.8	12.8		65.2	65.2		65.2	65.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.72	0.72		0.72	0.72	
v/c Ratio	0.28	0.58		0.40	0.57		0.09	0.44		0.06	0.39	
Control Delay	36.8	34.7		40.9	35.1		4.9	11.5		5.3	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.8	34.7		40.9	35.1		4.9	11.5		5.3	6.6	
LOS	D	C		D	D		A	B		A	A	
Approach Delay		35.1			36.7			10.9			6.5	
Approach LOS		D			D			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	164	60	159	55	588	33	538
v/c Ratio	0.28	0.58	0.40	0.57	0.09	0.44	0.06	0.39
Control Delay	36.8	34.7	40.9	35.1	4.9	11.5	5.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	34.7	40.9	35.1	4.9	11.5	5.3	6.6
Queue Length 50th (m)	7.3	21.9	10.2	21.7	2.2	28.2	1.4	29.9
Queue Length 95th (m)	15.8	37.4	20.2	37.0	7.1	91.9	5.7	66.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	584	962	563	958	591	1347	551	1364
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	0.08	0.17	0.11	0.17	0.09	0.44	0.06	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	105	45	55	105	40	50	475	60	30	470	20
Future Volume (vph)	40	105	45	55	105	40	50	475	60	30	470	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		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)	1796	1772		1780	1769		1799	1858		1800	1882	
Flt Permitted	0.58	1.00		0.56	1.00		0.43	1.00		0.40	1.00	
Satd. Flow (perm)	1097	1772		1058	1769		816	1858		761	1882	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	115	49	60	115	44	55	522	66	33	516	22
RTOR Reduction (vph)	0	32	0	0	28	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	132	0	60	131	0	55	586	0	33	537	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.8	12.8		12.8	12.8		65.2	65.2		65.2	65.2	
Effective Green, g (s)	12.8	12.8		12.8	12.8		65.2	65.2		65.2	65.2	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.72	0.72		0.72	0.72	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	156	252		150	251		591	1346		551	1363	
v/s Ratio Prot		c0.07			0.07			c0.32			0.29	
v/s Ratio Perm	0.04			0.06			0.07			0.04		
v/c Ratio	0.28	0.52		0.40	0.52		0.09	0.44		0.06	0.39	
Uniform Delay, d1	34.5	35.8		35.1	35.8		3.7	5.0		3.6	4.8	
Progression Factor	1.00	1.00		1.00	1.00		0.89	1.76		1.00	1.00	
Incremental Delay, d2	1.0	2.0		1.7	1.9		0.3	1.0		0.2	0.9	
Delay (s)	35.5	37.8		36.9	37.7		3.6	9.8		3.8	5.6	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		37.3			37.5			9.2			5.5	
Approach LOS		D			D			A			A	

Intersection Summary					
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	45	250	160	50	245	150
Future Volume (vph)	45	250	160	50	245	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	49	272	174	54	266	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	272	174	54	266	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	45	250	160	50	245	150
Future Volume (Veh/h)	45	250	160	50	245	150
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	272	174	54	266	163
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		453	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		453	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		45	84
cM capacity (veh/h)			1242		488	1018

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	49	272	174	54	429
Volume Left	0	0	174	0	266
Volume Right	0	272	0	0	163
cSH	1700	1700	1242	1700	787
Volume to Capacity	0.03	0.16	0.14	0.03	0.55
Queue Length 95th (m)	0.0	0.0	3.9	0.0	26.8
Control Delay (s)	0.0	0.0	8.4	0.0	16.4
Lane LOS			A		C
Approach Delay (s)	0.0		6.4		16.4
Approach LOS					C

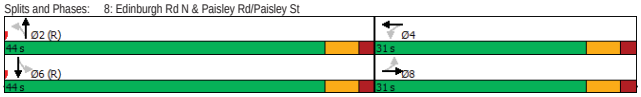
Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	290	85	35	270	55	100	410	25	50	385	110
Future Volume (vph)	125	290	85	35	270	55	100	410	25	50	385	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		1.00	0.99		1.00	1.00		0.99	1.00	
Frt		0.966			0.975			0.991			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1808	0	1805	1824	0	1805	1879	0	1671	1832	0
Flt Permitted	0.419			0.348			0.349			0.403		
Satd. Flow (perm)	786	1808	0	658	1824	0	663	1879	0	705	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			15			6			28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	134	312	91	38	290	59	108	441	27	54	414	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	403	0	38	349	0	108	468	0	54	532	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.51	0.65		0.17	0.56		0.32	0.49		0.15	0.56	
Control Delay	25.4	22.8		20.3	23.9		14.3	14.2		11.3	14.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.4	22.8		20.3	23.9		14.3	14.2		11.3	14.9	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		23.5			23.5			14.2			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 84.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

e) Future Total (2021) SAT - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	134	403	38	349	108	468	54	532
v/c Ratio	0.51	0.65	0.17	0.56	0.32	0.49	0.15	0.56
Control Delay	25.4	22.8	20.3	23.9	14.3	14.2	11.3	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	22.8	20.3	23.9	14.3	14.2	11.3	14.9
Queue Length 50th (m)	12.7	48.7	3.9	40.2	8.9	42.3	4.0	48.5
Queue Length 95th (m)	m23.8	57.7	11.1	66.2	20.2	66.9	10.4	77.3
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	262	616	219	618	335	954	357	942
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	0.51	0.65	0.17	0.56	0.32	0.49	0.15	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

e) Future Total (2021) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	290	85	35	270	55	100	410	25	50	385	110
Future Volume (vph)	125	290	85	35	270	55	100	410	25	50	385	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		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)	1783	1809		1796	1824		1804	1880		1662	1832	
Flt Permitted	0.42	1.00		0.35	1.00		0.35	1.00		0.40	1.00	
Satd. Flow (perm)	786	1809		658	1824		664	1880		706	1832	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	134	312	91	38	290	59	108	441	27	54	414	118
RTOR Reduction (vph)	0	14	0	0	10	0	0	3	0	0	14	0
Lane Group Flow (vph)	134	389	0	38	339	0	108	465	0	54	518	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	262	603		219	608		336	952		357	928	
v/s Ratio Prot		c0.22			0.19			0.25			c0.28	
v/s Ratio Perm	0.17			0.06			0.16			0.08		
v/c Ratio	0.51	0.65		0.17	0.56		0.32	0.49		0.15	0.56	
Uniform Delay, d1	20.1	21.2		17.7	20.5		10.9	12.1		9.9	12.7	
Progression Factor	0.88	0.86		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	4.9		1.7	3.7		2.5	1.8		0.9	2.4	
Delay (s)	24.1	23.1		19.4	24.1		13.4	13.9		10.8	15.2	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		23.4			23.7			13.8			14.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	84.5%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

e) Future Total (2021) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	260	80	145	255	140	75	85	140	190	90	155
Future Volume (vph)	155	260	80	145	255	140	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.907				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1780	0	1805	1699	0	1805	1900	1599
Flt Permitted	0.388			0.593			0.696			0.526		
Satd. Flow (perm)	737	1863	1578	1124	1780	0	1320	1699	0	998	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83		42			111				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	161	271	83	151	266	146	78	89	146	198	94	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	161	271	83	151	412	0	78	235	0	198	94	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

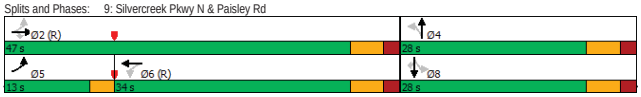
e) Future Total (2021) SAT - Full Build-out

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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	47.9	44.9	44.9	33.6	33.6		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.64	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.27	0.24	0.08	0.30	0.50		0.25	0.48		0.82	0.21	0.32
Control Delay	7.6	8.7	2.4	22.3	22.1		23.2	15.2		53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.6	8.7	2.4	22.3	22.1		23.2	15.2		53.7	22.2	5.6
LOS	A	A	A	C	C		C	B		D	C	A
Approach Delay		7.3			22.1			17.2			30.1	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 73.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues e) Future Total (2021) SAT - Full Build-out
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	161	271	83	151	412	78	235	198	94	161
v/c Ratio	0.27	0.24	0.08	0.30	0.50	0.25	0.48	0.82	0.21	0.32
Control Delay	7.6	8.7	2.4	22.3	22.1	23.2	15.2	53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	8.7	2.4	22.3	22.1	23.2	15.2	53.7	22.2	5.6
Queue Length 50th (m)	8.8	17.9	0.0	14.9	46.5	9.2	14.8	27.3	10.9	0.0
Queue Length 95th (m)	18.0	33.0	5.6	39.6	86.8	19.2	32.6	#55.5	21.3	12.8
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	613	1118	980	503	820	389	579	294	560	578
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	0.26	0.24	0.08	0.30	0.50	0.20	0.41	0.67	0.17	0.28

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis e) Future Total (2021) SAT - Full Build-out
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	260	80	145	255	140	75	85	140	190	90	155
Future Volume (vph)	155	260	80	145	255	140	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1780		1802	1698		1803	1900	1577
Flt Permitted	0.39	1.00	1.00	0.59	1.00		0.70	1.00		0.53	1.00	1.00
Satd. Flow (perm)	737	1863	1578	1124	1780		1320	1698		999	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	161	271	83	151	266	146	78	89	146	198	94	161
RTOR Reduction (vph)	0	0	33	0	23	0	0	84	0	0	0	122
Lane Group Flow (vph)	161	271	50	151	389	0	78	151	0	198	94	39
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.9	44.9	44.9	33.5	33.5		18.1	18.1		18.1	18.1	18.1
Effective Green, g (s)	44.9	44.9	44.9	33.5	33.5		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.60	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	560	1115	944	502	795		318	409		241	458	380
v/s Ratio Prot	c0.03	0.15			c0.22			0.09			0.05	
v/s Ratio Perm	0.14		0.03	0.13			0.06			c0.20		0.02
v/c Ratio	0.29	0.24	0.05	0.30	0.49		0.25	0.37		0.82	0.21	0.10
Uniform Delay, d1	7.3	7.1	6.2	13.3	14.7		22.9	23.7		26.9	22.7	22.1
Progression Factor	1.00	1.00	1.00	1.32	1.32		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5	0.1	1.4	1.9		0.4	0.6		19.7	0.2	0.1
Delay (s)	7.6	7.6	6.3	18.9	21.4		23.3	24.3		46.6	22.9	22.2
Level of Service	A	A	A	B	C		C	C		D	C	C
Approach Delay (s)		7.4			20.7			24.0			33.0	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	20.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	73.0%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings e) Future Total (2021) SAT - Full Build-out
11: Silvercreek Pkwy S & Street E/Street D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (vph)	80	0	85	15	0	20	90	175	15	20	175	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.931			0.922			0.988			0.953	
Flt Protected		0.976			0.979		0.950			0.950		
Satd. Flow (prot)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Flt Permitted		0.976			0.979		0.950			0.950		
Satd. Flow (perm)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	38	0	98	206	0	22	277	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis e) Future Total (2021) SAT - Full Build-out
11: Silvercreek Pkwy S & Street E/Street D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (Veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	686	680	234	720	715	198	277			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	680	234	720	715	198	277			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	100	89	94	100	97	92			98		
cM capacity (veh/h)	328	339	806	283	324	843	1286			1365		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	38	98	206	22	277
Volume Left	87	16	98	0	22	0
Volume Right	92	22	0	16	0	87
cSH	472	460	1286	1700	1365	1700
Volume to Capacity	0.38	0.08	0.08	0.12	0.02	0.16
Queue Length 95th (m)	14.0	2.2	2.0	0.0	0.4	0.0
Control Delay (s)	17.2	13.5	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	17.2	13.5	2.6		0.6	
Approach LOS	C	B				

Intersection Summary

Average Delay	5.6			
Intersection Capacity Utilization	42.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.8%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1267			729			1152	1996	245	1511	1996	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	967			729			841	1764	245	1233	1764	46
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	659			884			239	78	761	124	78	933

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	243	243	243	82	422	422	422	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.14	0.05	0.25	0.25	0.25	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

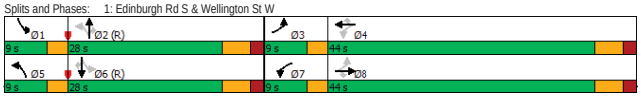
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	805	180	115	530	45	180	570	205	60	535	80
Future Volume (vph)	115	805	180	115	530	45	180	570	205	60	535	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.340			0.157			0.251			0.342		
Satd. Flow (perm)	638	3471	1508	281	3438	1570	461	3539	1476	606	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			109			172			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	904	202	129	596	51	202	640	230	67	601	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	904	202	129	596	51	202	640	230	67	601	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.6	30.7	30.7	40.9	30.8	30.8	39.4	29.0	29.0	34.1	24.1	24.1
Actuated g/C Ratio	0.45	0.34	0.34	0.45	0.34	0.34	0.44	0.32	0.32	0.38	0.27	0.27
v/c Ratio	0.34	0.76	0.31	0.54	0.51	0.08	0.58	0.56	0.39	0.21	0.64	0.18
Control Delay	14.5	30.7	4.0	20.6	24.5	0.3	26.8	29.5	10.5	13.2	28.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.6	24.5	0.3	26.8	29.5	10.5	13.2	28.9	2.9
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.7			22.3			24.9			24.4	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	904	202	129	596	51	202	640	230	67	601	90
v/c Ratio	0.34	0.76	0.31	0.54	0.51	0.08	0.58	0.56	0.39	0.21	0.64	0.18
Control Delay	14.5	30.7	4.0	20.6	24.5	0.3	26.8	29.5	10.5	13.2	28.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.6	24.5	0.3	26.8	29.5	10.5	13.2	28.9	2.9
Queue Length 50th (m)	12.1	76.2	0.0	12.2	45.0	0.0	22.7	53.1	7.8	4.6	56.4	2.2
Queue Length 95th (m)	19.4	86.2	12.4	19.6	53.1	0.2	#44.1	75.4	28.2	9.2	65.3	3.1
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	376	1465	753	239	1451	725	347	1138	591	316	952	506
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.62	0.27	0.54	0.41	0.07	0.58	0.56	0.39	0.21	0.63	0.18

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)	115	805	180	115	530	45	180	570	205	60	535	80
Future Volume (vph)	115	805	180	115	530	45	180	570	205	60	535	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1696	3505	1573
Flt Permitted	0.34	1.00	1.00	0.16	1.00	1.00	0.25	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	638	3471	1508	281	3438	1570	462	3539	1476	611	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	904	202	129	596	51	202	640	230	67	601	90
RTOR Reduction (vph)	0	0	133	0	0	33	0	0	118	0	0	66
Lane Group Flow (vph)	129	904	69	129	596	18	202	640	112	67	601	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.6	30.7	30.7	38.0	30.9	30.9	37.2	28.3	28.3	29.9	24.0	24.0
Effective Green, g (s)	37.6	30.7	30.7	38.0	30.9	30.9	37.2	28.3	28.3	29.9	24.0	24.0
Actuated g/C Ratio	0.42	0.34	0.34	0.42	0.34	0.34	0.41	0.31	0.31	0.33	0.27	0.27
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354	1183	514	230	1180	539	337	1112	464	274	934	419
v/s Ratio Prot	0.03	c0.26		c0.04	0.17		c0.07	0.18		0.02	0.17	
v/s Ratio Perm	0.12		0.05	0.19		0.01	c0.18		0.08	0.07		0.02
v/c Ratio	0.36	0.76	0.13	0.56	0.51	0.03	0.60	0.58	0.24	0.24	0.64	0.06
Uniform Delay, d1	16.7	26.4	20.5	18.0	23.5	19.6	18.4	25.8	22.9	21.0	29.2	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.85	0.52
Incremental Delay, d2	0.6	3.0	0.1	3.1	0.3	0.0	2.9	2.2	1.2	0.4	3.2	0.2
Delay (s)	17.3	29.4	20.6	21.1	23.8	19.6	21.3	28.0	24.1	15.5	27.9	13.0
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.7			23.1			25.9			25.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

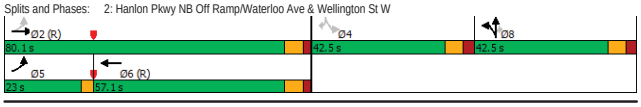
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	880	0	0	755	15	195	220	230	15	0	435
Future Volume (vph)	185	880	0	0	755	15	195	220	230	15	0	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.997				0.850			0.850
Flt Protected	0.950						0.950	0.996		0.950		
Satd. Flow (prot)	1736	4988	0	0	4974	0	1633	1774	1599	1805	0	1583
Flt Permitted	0.253						0.950	0.996		0.158		
Satd. Flow (perm)	462	4988	0	0	4974	0	1633	1774	1599	300	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2				253			317
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	203	967	0	0	830	16	214	242	253	16	0	478
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	203	967	0	0	846	0	193	263	253	16	0	478
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	92.5	88.4			70.2		29.3	29.3	29.3	25.3		25.3
Actuated g/C Ratio	0.56	0.54			0.43		0.18	0.18	0.18	0.15		0.15
v/c Ratio	0.54	0.36			0.40		0.67	0.84	0.52	0.36		0.94
Control Delay	26.7	24.6			36.8		74.3	87.7	9.6	79.4		48.8
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	26.7	24.6			36.8		74.3	87.7	9.6	79.4		48.8
LOS	C	C			D		E	F	A	E		D
Approach Delay		25.0			36.8			56.2			49.8	
Approach LOS		C			D			E			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 38.8		Intersection LOS: D	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Queues f) Future Total (2026) AM - Full Build-out
2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	203	967	846	193	263	253	16	478
v/c Ratio	0.54	0.36	0.40	0.67	0.84	0.52	0.36	0.94
Control Delay	26.7	24.6	36.8	74.3	87.7	9.6	79.4	48.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	24.6	36.8	74.3	87.7	9.6	79.4	48.8
Queue Length 50th (m)	35.6	72.0	76.3	65.8	92.9	0.0	5.0	61.5
Queue Length 95th (m)	61.1	97.2	105.7	93.8	126.2	25.4	13.5	108.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	413	2671	2117	346	376	538	63	585
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	0.49	0.36	0.40	0.56	0.70	0.47	0.25	0.82

Intersection Summary

HCM Signalized Intersection Capacity Analysis f) Future Total (2026) AM - Full Build-out
2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	880	0	0	755	15	195	220	230	15	0	435
Future Volume (vph)	185	880	0	0	755	15	195	220	230	15	0	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4975		1633	1774	1599	1805		1583
Flt Permitted	0.25	1.00			1.00		0.95	1.00	1.00	0.16		1.00
Satd. Flow (perm)	462	4988			4975		1633	1774	1599	300		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	203	967	0	0	830	16	214	242	253	16	0	478
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	208	0	0	268
Lane Group Flow (vph)	203	967	0	0	845	0	193	263	45	16	0	210
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	88.4	88.4			70.2		29.3	29.3	29.3	25.3		25.3
Effective Green, g (s)	88.4	88.4			70.2		29.3	29.3	29.3	25.3		25.3
Actuated g/C Ratio	0.54	0.54			0.43		0.18	0.18	0.18	0.15		0.15
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	364	2670			2115		289	314	283	45		242
v/s Ratio Prot	c0.05	0.19			0.17		0.12	c0.15				
v/s Ratio Perm	c0.25								0.03	0.05		c0.13
v/c Ratio	0.56	0.36			0.40		0.67	0.84	0.16	0.36		0.87
Uniform Delay, d1	21.3	22.1			32.9		63.4	65.6	57.5	62.6		68.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.9	0.4			0.6		5.7	17.4	0.3	4.8		26.1
Delay (s)	23.2	22.5			33.4		69.1	83.0	57.7	67.4		94.3
Level of Service	C	C			C		E	F	E	E		F
Approach Delay (s)		22.6			33.4			70.2			93.4	
Approach LOS		C			C			E			F	

Intersection Summary				
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1	
Intersection Capacity Utilization	79.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings f) Future Total (2026) AM - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

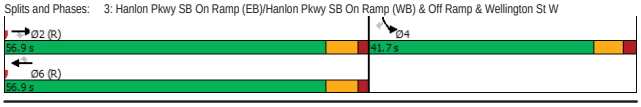
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	455	0	885	315	0	0	0	180	0	90
Future Volume (vph)	0	950	455	0	885	315	0	0	0	180	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			460			252						95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	1000	479	0	932	332	0	0	0	189	0	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1000	479	0	932	332	0	0	0	189	0	95
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lanes, Volumes, Timings f) Future Total (2026) AM - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.27	0.38		0.25	0.27				0.50		0.37
Control Delay		4.4	1.4		4.3	1.7				45.1		12.8
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.4	1.4		4.3	1.7				45.1		12.8
LOS		A	A		A	A				D		B
Approach Delay		3.4			3.6						34.3	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Queues f) Future Total (2026) AM - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1000	479	932	332	189	95
v/c Ratio	0.27	0.38	0.25	0.27	0.50	0.37
Control Delay	4.4	1.4	4.3	1.7	45.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	1.4	4.3	1.7	45.1	12.8
Queue Length 50th (m)	19.0	0.8	17.5	3.5	18.7	0.0
Queue Length 95th (m)	27.8	9.2	25.6	11.9	28.8	14.3
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3677	1262	3713	1216	1150	577
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	0.27	0.38	0.25	0.27	0.16	0.16

Intersection Summary

HCM Signalized Intersection Capacity Analysis f) Future Total (2026) AM - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	455	0	885	315	0	0	0	180	0	90
Future Volume (vph)	0	950	455	0	885	315	0	0	0	180	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1000	479	0	932	332	0	0	0	189	0	95
RTOR Reduction (vph)	0	0	118	0	0	64	0	0	0	0	0	84
Lane Group Flow (vph)	0	1000	361	0	932	268	0	0	0	189	0	11
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.4	73.4		73.4	73.4				11.6		11.6
Effective Green, g (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3677	1144		3713	1152				381		171
v/s Ratio Prot		0.20			0.19					c0.06		
v/s Ratio Perm			c0.23			0.17						0.01
v/c Ratio		0.27	0.32		0.25	0.23				0.50		0.07
Uniform Delay, d1		4.0	4.2		4.0	3.9				40.8		38.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.7		0.2	0.5				1.0		0.2
Delay (s)		4.2	4.9		4.1	4.4				41.8		38.8
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.5			4.2			0.0			40.8	
Approach LOS		A			A			A			D	

Intersection Summary

HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings f) Future Total (2026) AM - Full Build-out
4: Wellington St W & Imperial Rd S

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	960	705	170	430	75
Future Volume (vph)	60	960	705	170	430	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.971			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3318	0	1770	1599
Flt Permitted		0.828			0.950	
Satd. Flow (perm)	0	2821	3318	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			51			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	63	1000	734	177	448	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1063	911	0	448	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

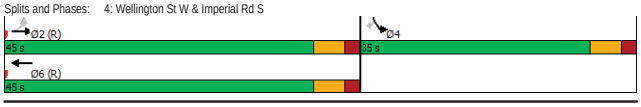
Lanes, Volumes, Timings f) Future Total (2026) AM - Full Build-out
4: Wellington St W & Imperial Rd S

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.5	43.5		24.5	24.5
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.69	0.50		0.83	0.14
Control Delay		17.4	12.6		39.1	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		17.4	12.6		39.1	5.2
LOS		B	B		D	A
Approach Delay		17.4	12.6		34.1	
Approach LOS		B	B		C	

Intersection Summary

Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 92.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1063	911	448	78
v/c Ratio	0.69	0.50	0.83	0.14
Control Delay	17.4	12.6	39.1	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.4	12.6	39.1	5.2
Queue Length 50th (m)	62.7	43.1	64.9	0.0
Queue Length 95th (m)	96.1	65.6	94.0	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1535	1829	641	629
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	0.50	0.70	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	960	705	170	430	75
Future Volume (vph)	60	960	705	170	430	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3318		1770	1599
Flt Permitted		0.83	1.00		0.95	1.00
Satd. Flow (perm)		2822	3318		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	1000	734	177	448	78
RTOR Reduction (vph)	0	0	23	0	0	54
Lane Group Flow (vph)	0	1063	888	0	448	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.5	43.5		24.5	24.5
Effective Green, g (s)		43.5	43.5		24.5	24.5
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1534	1804		542	489
v/s Ratio Prot			0.27		c0.25	
v/s Ratio Perm		c0.38				0.01
v/c Ratio		0.69	0.49		0.83	0.05
Uniform Delay, d1		13.4	11.4		25.8	19.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.6	1.0		10.0	0.0
Delay (s)		16.0	12.3		35.8	19.6
Level of Service		B	B		D	B
Approach Delay (s)		16.0	12.3		33.4	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

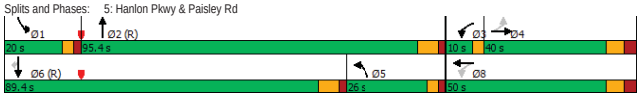
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	345	330	70	210	60	160	1340	100	45	1010	45
Future Volume (vph)	100	345	330	70	210	60	160	1340	100	45	1010	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3408	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.583			0.306			0.950			0.950		
Satd. Flow (perm)	1035	3438	1583	576	3408	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			238		21				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	352	337	71	214	61	163	1367	102	46	1031	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	352	337	71	275	0	163	1367	102	46	1031	46
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	23.1	23.1	165.4	40.6	35.6		21.4	101.5	165.4	10.5	88.1	88.1
Actuated g/C Ratio	0.14	0.14	1.00	0.25	0.22		0.13	0.61	1.00	0.06	0.53	0.53
v/c Ratio	0.71	0.73	0.21	0.34	0.37		0.38	0.67	0.07	0.46	0.59	0.06
Control Delay	92.7	77.1	0.3	51.7	51.4		67.4	25.1	0.1	88.1	30.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.7	77.1	0.3	51.7	51.4		67.4	25.1	0.1	88.1	30.0	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		46.4			51.4			27.7			31.2	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 34.6		Intersection LOS: C	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Queues
5: Hanlon Pkwy & Paisley Rd

f) Future Total (2026) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	352	337	71	275	163	1367	102	46	1031	46
v/c Ratio	0.71	0.73	0.21	0.34	0.37	0.38	0.67	0.07	0.46	0.59	0.06
Control Delay	92.7	77.1	0.3	51.7	51.4	67.4	25.1	0.1	88.1	30.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.7	77.1	0.3	51.7	51.4	67.4	25.1	0.1	88.1	30.0	0.1
Queue Length 50th (m)	34.5	62.9	0.0	19.6	39.8	27.1	162.3	0.0	15.7	125.4	0.0
Queue Length 95th (m)	54.8	77.0	0.0	32.4	51.6	37.8	225.1	0.0	30.1	178.2	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	200	665	1583	210	886	464	2053	1568	144	1788	854
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.53	0.21	0.34	0.31	0.35	0.67	0.07	0.32	0.58	0.05

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Hanlon Pkwy & Paisley Rd

f) Future Total (2026) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	345	330	70	210	60	160	1340	100	45	1010	45
Future Volume (vph)	100	345	330	70	210	60	160	1340	100	45	1010	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3407		3303	3343	1568	1597	3282	1482
Flt Permitted	0.58	1.00	1.00	0.31	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1035	3438	1583	576	3407		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	352	337	71	214	61	163	1367	102	46	1031	46
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	22
Lane Group Flow (vph)	102	352	337	71	259	0	163	1367	102	46	1031	24
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	23.1	23.1	165.4	35.6	35.6		22.3	100.5	165.4	8.9	87.1	87.1
Effective Green, g (s)	23.1	23.1	165.4	35.6	35.6		22.3	100.5	165.4	8.9	87.1	87.1
Actuated g/C Ratio	0.14	0.14	1.00	0.22	0.22		0.13	0.61	1.00	0.05	0.53	0.53
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	144	480	1583	193	733		445	2031	1568	85	1728	780
v/s Ratio Prot		c0.10		c0.02	0.08		0.05	c0.41		0.03	c0.31	
v/s Ratio Perm	0.10		0.21	0.06					0.07			0.02
v/c Ratio	0.71	0.73	0.21	0.37	0.35		0.37	0.67	0.07	0.54	0.60	0.03
Uniform Delay, d1	67.9	68.2	0.0	53.5	55.1		65.1	21.5	0.0	76.3	27.0	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.7	5.7	0.3	1.2	0.3		0.5	1.8	0.1	6.9	1.5	0.1
Delay (s)	82.7	73.9	0.3	54.6	55.4		65.6	23.3	0.1	83.1	28.6	18.9
Level of Service	F	E	A	D	E		E	C	A	F	C	B
Approach Delay (s)		43.7			55.3			26.1			30.4	
Approach LOS		D			E			C			C	

Intersection Summary				
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4	
Intersection Capacity Utilization	84.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	245	55	75	135	25	25	555	95	40	480	35
Future Volume (vph)	50	245	55	75	135	25	25	555	95	40	480	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	0.99		1.00	1.00	
Frt		0.972			0.977			0.978			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1771	0	1752	1785	0	1805	1818	0	1770	1842	0
Flt Permitted	0.610			0.332			0.378			0.284		
Satd. Flow (perm)	1121	1771	0	607	1785	0	715	1818	0	528	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			16			10			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	266	60	82	147	27	27	603	103	43	522	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	326	0	82	174	0	27	706	0	43	560	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

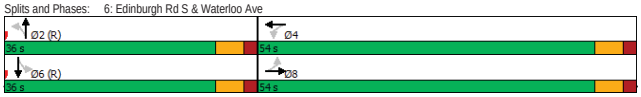
Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) AM - Full Build-out

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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	22.0	22.0		22.0	22.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.62	0.62		0.62	0.62	
v/c Ratio	0.20	0.73		0.55	0.39		0.06	0.62		0.13	0.49	
Control Delay	26.2	38.4		42.5	26.7		21.6	30.7		10.4	12.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.2	38.4		42.5	26.7		21.6	30.7		10.4	12.3	
LOS	C	D		D	C		C	C		B	B	
Approach Delay		36.7			31.8			30.3			12.1	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Queues
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) AM - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	326	82	174	27	706	43	560
v/c Ratio	0.20	0.73	0.55	0.39	0.06	0.62	0.13	0.49
Control Delay	26.2	38.4	42.5	26.7	21.6	30.7	10.4	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	38.4	42.5	26.7	21.6	30.7	10.4	12.3
Queue Length 50th (m)	7.8	51.6	13.1	23.9	2.7	100.0	2.9	49.6
Queue Length 95th (m)	15.6	71.3	25.4	37.1	m8.8	164.2	10.0	96.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	597	953	323	959	444	1134	328	1147
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	0.34	0.25	0.18	0.06	0.62	0.13	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	245	55	75	135	25	25	555	95	40	480	35
Future Volume (vph)	50	245	55	75	135	25	25	555	95	40	480	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1747	1772		1739	1785		1793	1818		1762	1842	
Flt Permitted	0.61	1.00		0.33	1.00		0.38	1.00		0.28	1.00	
Satd. Flow (perm)	1121	1772		608	1785		714	1818		526	1842	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	266	60	82	147	27	27	603	103	43	522	38
RTOR Reduction (vph)	0	14	0	0	12	0	0	4	0	0	2	0
Lane Group Flow (vph)	54	312	0	82	162	0	27	702	0	43	558	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	22.0	22.0		22.0	22.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)	22.0	22.0		22.0	22.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.62	0.62		0.62	0.62	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	274	433		148	436		444	1131		327	1146	
v/s Ratio Prot		c0.18			0.09			c0.39			0.30	
v/s Ratio Perm	0.05			0.13			0.04			0.08		
v/c Ratio	0.20	0.72		0.55	0.37		0.06	0.62		0.13	0.49	
Uniform Delay, d1	27.0	31.2		29.7	28.3		6.7	10.5		7.0	9.2	
Progression Factor	1.00	1.00		1.00	1.00		2.36	2.31		1.00	1.00	
Incremental Delay, d2	0.4	5.7		4.4	0.5		0.2	2.3		0.8	1.5	
Delay (s)	27.3	36.8		34.1	28.8		16.0	26.4		7.8	10.7	
Level of Service	C	D		C	C		B	C		A	B	
Approach Delay (s)		35.5			30.5			26.0			10.5	
Approach LOS		D			C			C			B	

Intersection Summary				
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	72.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
7: Waterloo Ave & Silvercreek Pkwy S

f) Future Total (2026) AM - Full Build-out

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	205	245	20	170	255
Future Volume (vph)	40	205	245	20	170	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	43	223	266	22	185	277
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	223	266	22	185	277
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
7: Waterloo Ave & Silvercreek Pkwy S

f) Future Total (2026) AM - Full Build-out

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	205	245	20	170	255
Future Volume (Veh/h)	40	205	245	20	170	255
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	223	266	22	185	277
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			273		605	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			273		605	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			79		49	73
cM capacity (veh/h)			1283		365	1007

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	223	266	22	462
Volume Left	0	0	266	0	185
Volume Right	0	223	0	0	277
cSH	1700	1700	1283	1700	913
Volume to Capacity	0.03	0.13	0.21	0.01	0.51
Queue Length 95th (m)	0.0	0.0	6.2	0.0	23.4
Control Delay (s)	0.0	0.0	8.5	0.0	15.8
Lane LOS			A		C
Approach Delay (s)	0.0		7.9		15.8
Approach LOS					C

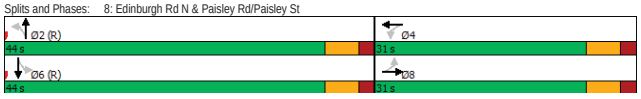
Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	360	70	45	255	80	75	450	55	95	395	100
Future Volume (vph)	115	360	70	45	255	80	75	450	55	95	395	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.976			0.964			0.984			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1762	0	1805	1751	0	1656	1843	0	1656	1790	0
Flt Permitted	0.399			0.267			0.344			0.335		
Satd. Flow (perm)	699	1762	0	505	1751	0	596	1843	0	582	1790	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			23			12			25	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	125	391	76	49	277	87	82	489	60	103	429	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	467	0	49	364	0	82	549	0	103	538	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.54	0.78		0.29	0.61		0.27	0.58		0.35	0.59	
Control Delay	29.1	31.3		24.2	24.7		13.7	15.8		15.4	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.1	31.3		24.2	24.7		13.7	15.8		15.4	15.5	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		30.9			24.6			15.5			15.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	467	49	364	82	549	103	538
v/c Ratio	0.54	0.78	0.29	0.61	0.27	0.58	0.35	0.59
Control Delay	29.1	31.3	24.2	24.7	13.7	15.8	15.4	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	31.3	24.2	24.7	13.7	15.8	15.4	15.5
Queue Length 50th (m)	12.2	44.6	5.3	41.7	6.6	52.5	8.6	50.1
Queue Length 95th (m)	m23.7	m#104.5	14.8	69.3	16.0	82.5	20.6	80.0
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	233	596	168	599	301	939	294	919
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	0.54	0.78	0.29	0.61	0.27	0.58	0.35	0.59

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	360	70	45	255	80	75	450	55	95	395	100
Future Volume (vph)	115	360	70	45	255	80	75	450	55	95	395	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1664	1761		1795	1751		1646	1842		1650	1789	
Flt Permitted	0.40	1.00		0.27	1.00		0.34	1.00		0.34	1.00	
Satd. Flow (perm)	699	1761		504	1751		597	1842		582	1789	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	391	76	49	277	87	82	489	60	103	429	109
RTOR Reduction (vph)	0	9	0	0	15	0	0	6	0	0	12	0
Lane Group Flow (vph)	125	458	0	49	349	0	82	543	0	103	526	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	233	587		168	583		302	933		294	906	
v/s Ratio Prot		c0.26			0.20			c0.29			0.29	
v/s Ratio Perm	0.18			0.10			0.14			0.18		
v/c Ratio	0.54	0.78		0.29	0.60		0.27	0.58		0.35	0.58	
Uniform Delay, d1	20.3	22.5		18.5	20.8		10.6	12.9		11.1	12.9	
Progression Factor	0.98	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	8.9		4.4	4.5		2.2	2.6		3.3	2.7	
Delay (s)	27.5	30.5		22.8	25.3		12.8	15.6		14.4	15.6	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		29.9			25.0			15.2			15.4	
Approach LOS		C			C			B			B	

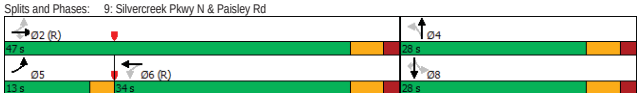
Intersection Summary					
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	300	40	100	255	150	55	75	125	170	65	80
Future Volume (vph)	155	300	40	100	255	150	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98		0.99	0.97		0.98		0.98
Frt			0.850		0.944			0.906				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1697	0	1805	1667	0	1770	1900	1553
Flt Permitted	0.302			0.543			0.706			0.520		
Satd. Flow (perm)	552	1792	1571	1027	1697	0	1334	1667	0	949	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			49		45			113				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	189	366	49	122	311	183	67	91	152	207	79	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	366	49	122	494	0	67	243	0	207	79	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	47.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.63	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.39	0.35	0.05	0.28	0.66		0.20	0.48		0.86	0.16	0.21
Control Delay	9.1	10.0	2.8	24.0	27.8		22.1	15.1		59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	9.1	10.0	2.8	24.0	27.8		22.1	15.1		59.0	21.2	6.0
LOS	A	B	A	C	C		C	B		E	C	A
Approach Delay		9.1			27.1			16.6			37.7	
Approach LOS		A			C			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	189	366	49	122	494	67	243	207	79	98
v/c Ratio	0.39	0.35	0.05	0.28	0.66	0.20	0.48	0.86	0.16	0.21
Control Delay	9.1	10.0	2.8	24.0	27.8	22.1	15.1	59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	10.0	2.8	24.0	27.8	22.1	15.1	59.0	21.2	6.0
Queue Length 50th (m)	11.5	28.0	0.0	15.2	66.9	7.5	15.0	28.1	8.7	0.0
Queue Length 95th (m)	18.8	40.7	3.7	m28.5	92.2	15.2	28.7	#52.0	16.8	8.3
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	505	1050	941	441	753	391	568	278	557	516
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	0.37	0.35	0.05	0.28	0.66	0.17	0.43	0.74	0.14	0.19

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	300	40	100	255	150	55	75	125	170	65	80
Future Volume (vph)	155	300	40	100	255	150	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1792	1571	1797	1698		1795	1668		1733	1900	1525
Flt Permitted	0.30	1.00	1.00	0.54	1.00		0.71	1.00		0.52	1.00	1.00
Satd. Flow (perm)	555	1792	1571	1027	1698		1333	1668		949	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	189	366	49	122	311	183	67	91	152	207	79	98
RTOR Reduction (vph)	0	0	20	0	26	0	0	84	0	0	0	73
Lane Group Flow (vph)	189	366	29	122	468	0	67	159	0	207	79	25
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Effective Green, g (s)	44.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.59	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	465	1051	921	440	729		337	422		240	481	386
v/s Ratio Prot	c0.05	0.20			c0.28			0.10			0.04	
v/s Ratio Perm	0.19		0.02	0.12			0.05			c0.22		0.02
v/c Ratio	0.41	0.35	0.03	0.28	0.64		0.20	0.38		0.86	0.16	0.06
Uniform Delay, d1	8.7	8.1	6.5	13.9	16.9		22.0	23.1		26.8	21.8	21.3
Progression Factor	1.00	1.00	1.00	1.37	1.36		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.9	0.1	1.4	4.0		0.3	0.6		25.8	0.2	0.1
Delay (s)	9.2	9.0	6.6	20.5	26.9		22.3	23.7		52.5	22.0	21.3
Level of Service	A	A	A	C	C		C	C		D	C	C
Approach Delay (s)		8.9			25.6			23.4			38.3	
Approach LOS		A			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	74.8%	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)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (vph)	55	0	45	20	0	25	35	140	5	10	160	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.939			0.926			0.995			0.970	
Flt Protected		0.973			0.978		0.950			0.950		
Satd. Flow (prot)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Flt Permitted		0.973			0.978		0.950			0.950		
Satd. Flow (perm)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	49	0	38	157	0	11	217	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (Veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	472	450	196	476	470	154	217			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	472	450	196	476	470	154	217			157		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	94	95	100	97	97			99		
cM capacity (veh/h)	473	486	846	458	474	891	1353			1423		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	109	49	38	157	11	217
Volume Left	60	22	38	0	11	0
Volume Right	49	27	0	5	0	43
cSH	590	625	1353	1700	1423	1700
Volume to Capacity	0.18	0.08	0.03	0.09	0.01	0.13
Queue Length 95th (m)	5.4	2.0	0.7	0.0	0.2	0.0
Control Delay (s)	12.5	11.2	7.7	0.0	7.5	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.5	11.2	1.5		0.4	
Approach LOS	B	B				

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	1262			1115			1536	2377	373	1634	2377	422
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	889			1115			1195	2132	373	1304	2132	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	691			634			129	45	629	107	45	977

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	371	371	371	76	420	420	420	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.22	0.22	0.04	0.25	0.25	0.25	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

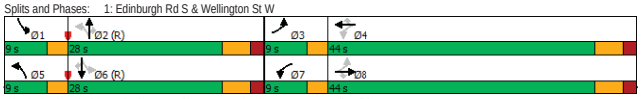
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	25.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	645	185	235	750	80	200	675	225	60	655	75
Future Volume (vph)	115	645	185	235	750	80	200	675	225	60	655	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.233			0.233			0.224			0.351		
Satd. Flow (perm)	442	3539	1577	434	3539	1555	424	3610	1535	651	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189			109			159			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	658	189	240	765	82	204	689	230	61	668	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	658	189	240	765	82	204	689	230	61	668	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	35.0	25.2	25.2	37.5	28.4	28.4	44.5	33.2	33.2	36.8	26.5	26.5
Actuated g/C Ratio	0.39	0.28	0.28	0.42	0.32	0.32	0.49	0.37	0.37	0.41	0.29	0.29
v/c Ratio	0.43	0.67	0.33	0.80	0.69	0.15	0.52	0.52	0.35	0.17	0.63	0.14
Control Delay	19.2	31.5	4.9	40.4	30.5	2.8	18.9	25.8	10.1	10.9	25.6	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.5	4.9	40.4	30.5	2.8	18.9	25.8	10.1	10.9	25.6	2.1
LOS	B	C	A	D	C	A	B	C	B	B	C	A
Approach Delay		24.8			30.6			21.4			22.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	658	189	240	765	82	204	689	230	61	668	77
v/c Ratio	0.43	0.67	0.33	0.80	0.69	0.15	0.52	0.52	0.35	0.17	0.63	0.14
Control Delay	19.2	31.5	4.9	40.4	30.5	2.8	18.9	25.8	10.1	10.9	25.6	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.5	4.9	40.4	30.5	2.8	18.9	25.8	10.1	10.9	25.6	2.1
Queue Length 50th (m)	12.3	54.8	0.0	27.3	66.2	0.0	20.4	52.6	8.8	3.6	59.5	1.7
Queue Length 95th (m)	20.4	65.3	13.5	#54.9	77.5	5.8	38.4	80.0	30.1	m6.5	69.2	m2.5
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	275	1494	775	301	1494	719	396	1330	665	357	1063	538
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.44	0.24	0.80	0.51	0.11	0.52	0.52	0.35	0.17	0.63	0.14

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	645	185	235	750	80	200	675	225	60	655	75
Future Volume (vph)	115	645	185	235	750	80	200	675	225	60	655	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1766	3610	1565
Flt Permitted	0.23	1.00	1.00	0.23	1.00	1.00	0.22	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	443	3539	1577	435	3539	1555	425	3610	1537	653	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	658	189	240	765	82	204	689	230	61	668	77
RTOR Reduction (vph)	0	0	135	0	0	56	0	0	103	0	0	55
Lane Group Flow (vph)	117	658	54	240	765	26	204	689	127	61	668	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.4	25.8	25.8	36.6	28.4	28.4	41.0	31.9	31.9	31.9	25.8	25.8
Effective Green, g (s)	31.4	25.8	25.8	36.6	28.4	28.4	41.0	31.9	31.9	31.9	25.8	25.8
Actuated g/C Ratio	0.35	0.29	0.29	0.41	0.32	0.32	0.46	0.35	0.35	0.35	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	239	1014	452	298	1116	490	380	1279	544	306	1034	448
v/s Ratio Prot	0.03	0.19		c0.07	0.22		c0.07	0.19		0.01	c0.19	
v/s Ratio Perm	0.14		0.03	c0.25		0.02	0.17		0.08	0.06		0.01
v/c Ratio	0.49	0.65	0.12	0.81	0.69	0.05	0.54	0.54	0.23	0.20	0.65	0.05
Uniform Delay, d1	21.0	28.1	23.7	19.7	26.9	21.4	16.2	23.2	20.5	19.5	28.1	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.80	0.59
Incremental Delay, d2	1.6	1.4	0.1	14.6	1.8	0.0	1.5	1.6	1.0	0.3	2.8	0.2
Delay (s)	22.5	29.6	23.8	34.3	28.7	21.5	17.7	24.8	21.5	14.3	25.2	13.9
Level of Service	C	C	C	C	C	C	B	C	C	B	C	B
Approach Delay (s)		27.6			29.4			22.8			23.3	
Approach LOS		C			C			C			C	

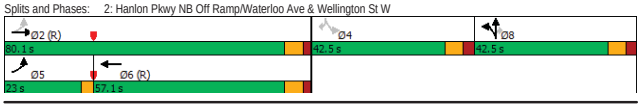
Intersection Summary					
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	76.7%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	775	0	0	1005	30	405	275	145	25	0	460
Future Volume (vph)	210	775	0	0	1005	30	405	275	145	25	0	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.996				0.850			0.850
Flt Protected	0.950						0.950	0.990		0.950		
Satd. Flow (prot)	1787	5136	0	0	5113	0	1698	1783	1599	1805	0	1599
Flt Permitted	0.143						0.950	0.990		0.127		
Satd. Flow (perm)	269	5136	0	0	5113	0	1698	1783	1599	241	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				149			238
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	216	799	0	0	1036	31	418	284	149	26	0	474
Shared Lane Traffic (%)							18%					
Lane Group Flow (vph)	216	799	0	0	1067	0	343	359	149	26	0	474
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	80.2	76.1			56.2		35.5	35.5	35.5	31.4		31.4
Actuated g/C Ratio	0.49	0.46			0.34		0.22	0.22	0.22	0.19		0.19
v/c Ratio	0.76	0.34			0.61		0.94	0.94	0.32	0.57		0.96
Control Delay	44.4	29.5			48.3		97.4	95.8	9.3	104.4		62.5
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	44.4	29.5			48.3		97.4	95.8	9.3	104.4		62.5
LOS	D	C			D		F	F	A	F		E
Approach Delay		32.7			48.3			81.3			64.7	
Approach LOS		C			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 54.2		Intersection LOS: D	
Intersection Capacity Utilization 87.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	216	799	1067	343	359	149	26	474
v/c Ratio	0.76	0.34	0.61	0.94	0.94	0.32	0.57	0.96
Control Delay	44.4	29.5	48.3	97.4	95.8	9.3	104.4	62.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	29.5	48.3	97.4	95.8	9.3	104.4	62.5
Queue Length 50th (m)	44.8	66.3	116.9	124.8	130.4	0.0	8.0	88.0
Queue Length 95th (m)	68.8	77.9	136.7	#193.7	#200.5	20.2	#24.0	#156.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	314	2368	1743	368	387	464	51	526
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	0.69	0.34	0.61	0.93	0.93	0.32	0.51	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)	210	775	0	0	1005	30	405	275	145	25	0	460
Future Volume (vph)	210	775	0	0	1005	30	405	275	145	25	0	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5111		1698	1783	1599	1805		1599
Flt Permitted	0.14	1.00			1.00		0.95	0.99	1.00	0.13		1.00
Satd. Flow (perm)	269	5136			5111		1698	1783	1599	242		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	216	799	0	0	1036	31	418	284	149	26	0	474
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	117	0	0	193
Lane Group Flow (vph)	216	799	0	0	1065	0	343	359	32	26	0	281
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	76.1	76.1			56.2		35.5	35.5	35.5	31.4		31.4
Effective Green, g (s)	76.1	76.1			56.2		35.5	35.5	35.5	31.4		31.4
Actuated g/C Ratio	0.46	0.46			0.34		0.22	0.22	0.22	0.19		0.19
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	279	2367			1739		365	383	343	46		304
v/s Ratio Prot	c0.08	0.16			0.21		c0.20	0.20				
v/s Ratio Perm	c0.28								0.02	0.11		c0.18
v/c Ratio	0.77	0.34			0.61		0.94	0.94	0.09	0.57		0.93
Uniform Delay, d1	31.0	28.4			45.4		63.7	63.7	51.9	60.7		65.7
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	12.6	0.4			1.6		31.6	30.2	0.1	14.9		32.5
Delay (s)	43.6	28.8			47.0		95.3	93.9	52.0	75.6		98.2
Level of Service	D	C			D		F	F	D	E		F
Approach Delay (s)		31.9			47.0			87.1			97.0	
Approach LOS		C			D			F			F	

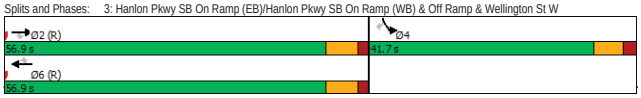
Intersection Summary					
HCM 2000 Control Delay	59.8	HCM 2000 Level of Service	E		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1		
Intersection Capacity Utilization	87.8%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	865	505	0	1315	320	0	0	0	190	0	80
Future Volume (vph)	0	865	505	0	1315	320	0	0	0	190	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			532			172						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	911	532	0	1384	337	0	0	0	200	0	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	911	532	0	1384	337	0	0	0	200	0	84
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.5	73.5		73.5	73.5				11.5		11.5
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
v/c Ratio		0.24	0.41		0.36	0.28				0.50		0.39
Control Delay		4.2	1.4		4.8	2.6				44.9		27.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.2	1.4		4.8	2.6				44.9		27.3
LOS		A	A		A	A				D		C
Approach Delay		3.1			4.4						39.7	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 45.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	911	532	1384	337	200	84
v/c Ratio	0.24	0.41	0.36	0.28	0.50	0.39
Control Delay	4.2	1.4	4.8	2.6	44.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	1.4	4.8	2.6	44.9	27.3
Queue Length 50th (m)	16.8	0.0	28.6	7.6	19.8	7.6
Queue Length 95th (m)	24.6	8.2	40.5	17.7	30.2	21.7
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3790	1301	3828	1195	1230	568
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	0.24	0.41	0.36	0.28	0.16	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	865	505	0	1315	320	0	0	0	190	0	80
Future Volume (vph)	0	865	505	0	1315	320	0	0	0	190	0	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	911	532	0	1384	337	0	0	0	200	0	84
RTOR Reduction (vph)	0	0	135	0	0	44	0	0	0	0	0	38
Lane Group Flow (vph)	0	911	397	0	1384	293	0	0	0	200	0	46
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.5	73.5		73.5	73.5				11.5		11.5
Effective Green, g (s)		73.5	73.5		73.5	73.5				11.5		11.5
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3790	1166		3828	1151				404		177
v/s Ratio Prot		0.18			c0.27					c0.06		
v/s Ratio Perm			0.25			0.19						0.03
v/c Ratio		0.24	0.34		0.36	0.25				0.50		0.26
Uniform Delay, d1		3.9	4.3		4.4	3.9				40.8		39.7
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.3	0.5				1.0		0.8
Delay (s)		4.0	5.1		4.6	4.5				41.8		40.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.4			4.6			0.0			41.4	
Approach LOS		A			A			A			D	

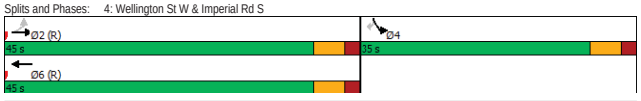
Intersection Summary					
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.38				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	45.1%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	950	870	400	365	55
Future Volume (vph)	70	950	870	400	365	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.953			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3348	0	1787	1615
Flt Permitted		0.696			0.950	
Satd. Flow (perm)	0	2467	3348	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			131			57
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	979	897	412	376	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1051	1309	0	376	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		46.0	46.0		22.0	22.0
Actuated g/C Ratio		0.58	0.58		0.28	0.28
v/c Ratio		0.74	0.66		0.77	0.12
Control Delay		18.5	13.4		36.7	6.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.5	13.4		36.7	6.0
LOS		B	B		D	A
Approach Delay		18.5	13.4		32.7	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 100.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1051	1309	376	57
v/c Ratio	0.74	0.66	0.77	0.12
Control Delay	18.5	13.4	36.7	6.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.5	13.4	36.7	6.0
Queue Length 50th (m)	60.4	62.3	54.9	0.0
Queue Length 95th (m)	#118.3	104.5	75.8	7.2
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1417	1980	647	621
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.66	0.58	0.09

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	950	870	400	365	55
Future Volume (vph)	70	950	870	400	365	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3348		1787	1615
Flt Permitted		0.70	1.00		0.95	1.00
Satd. Flow (perm)		2468	3348		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	979	897	412	376	57
RTOR Reduction (vph)	0	0	56	0	0	41
Lane Group Flow (vph)	0	1051	1253	0	376	16
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		46.0	46.0		22.0	22.0
Effective Green, g (s)		46.0	46.0		22.0	22.0
Actuated g/C Ratio		0.58	0.58		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1419	1925		491	444
v/s Ratio Prot			0.37		c0.21	
v/s Ratio Perm		c0.43				0.01
v/c Ratio		0.74	0.65		0.77	0.04
Uniform Delay, d1		12.6	11.5		26.6	21.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.5	1.7		7.0	0.0
Delay (s)		16.1	13.3		33.6	21.3
Level of Service		B	B		C	C
Approach Delay (s)		16.1	13.3		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

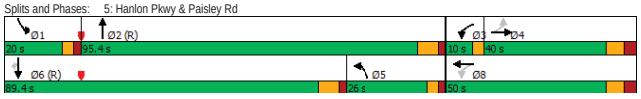
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	390	380	140	455	70	410	1125	195	80	1510	135
Future Volume (vph)	120	390	380	140	455	70	410	1125	195	80	1510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.980				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3531	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.382			0.317			0.950			0.950		
Satd. Flow (perm)	718	3574	1595	602	3531	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			241		10				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	124	402	392	144	469	72	423	1160	201	82	1557	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	402	392	144	541	0	423	1160	201	82	1557	139
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	30.6	30.6	165.4	46.3	41.3		21.8	91.4	165.4	12.3	81.9	81.9
Actuated g/C Ratio	0.19	0.19	1.00	0.28	0.25		0.13	0.55	1.00	0.07	0.50	0.50
v/c Ratio	0.94	0.61	0.25	0.64	0.61		0.93	0.62	0.13	0.61	0.91	0.16
Control Delay	128.2	66.0	0.4	62.8	57.1		97.5	27.6	0.2	93.1	47.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.2	66.0	0.4	62.8	57.1		97.5	27.6	0.2	93.1	47.0	7.4
LOS	F	E	A	E	E		F	C	A	F	D	A
Approach Delay		46.4			58.3			41.1			46.0	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 46.0		Intersection LOS: D	
Intersection Capacity Utilization 100.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	124	402	392	144	541	423	1160	201	82	1557	139
v/c Ratio	0.94	0.61	0.25	0.64	0.61	0.93	0.62	0.13	0.61	0.91	0.16
Control Delay	128.2	66.0	0.4	62.8	57.1	97.5	27.6	0.2	93.1	47.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.2	66.0	0.4	62.8	57.1	97.5	27.6	0.2	93.1	47.0	7.4
Queue Length 50th (m)	42.5	67.4	0.0	39.1	86.0	76.3	143.2	0.0	28.0	255.7	6.5
Queue Length 95th (m)	#85.1	86.5	0.0	60.0	107.2	#112.0	172.1	0.0	47.2	292.7	19.1
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	138	691	1595	224	904	456	1864	1599	163	1729	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.58	0.25	0.64	0.60	0.93	0.62	0.13	0.50	0.90	0.16

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)	120	390	380	140	455	70	410	1125	195	80	1510	135
Future Volume (vph)	120	390	380	140	455	70	410	1125	195	80	1510	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1805	3532		3467	3374	1599	1805	3471	1615
Flt Permitted	0.38	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	719	3574	1595	602	3532		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	402	392	144	469	72	423	1160	201	82	1557	139
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	51
Lane Group Flow (vph)	124	402	392	144	533	0	423	1160	201	82	1557	88
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	30.6	30.6	165.4	41.3	41.3		21.8	91.4	165.4	12.3	81.9	81.9
Effective Green, g (s)	30.6	30.6	165.4	41.3	41.3		21.8	91.4	165.4	12.3	81.9	81.9
Actuated g/C Ratio	0.19	0.19	1.00	0.25	0.25		0.13	0.55	1.00	0.07	0.50	0.50
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	133	661	1595	206	881		456	1864	1599	134	1718	799
v/s Ratio Prot		0.11		c0.03	0.15		c0.12	0.34		0.05	c0.45	
v/s Ratio Perm	c0.17		0.25	0.14					0.13			0.05
v/c Ratio	0.93	0.61	0.25	0.70	0.61		0.93	0.62	0.13	0.61	0.91	0.11
Uniform Delay, d1	66.4	61.9	0.0	54.8	54.8		71.0	25.2	0.0	74.2	38.2	22.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	57.4	1.6	0.4	9.9	1.2		25.0	1.6	0.2	8.0	8.4	0.3
Delay (s)	123.8	63.5	0.4	64.7	56.0		96.0	26.8	0.2	82.3	46.7	22.6
Level of Service	F	E	A	E	E		F	C	A	F	D	C
Approach Delay (s)		44.7			57.8			40.2			46.4	
Approach LOS		D			E			D			D	

Intersection Summary					
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4		
Intersection Capacity Utilization	100.7%	ICU Level of Service	G		
Analysis Period (min)	15				

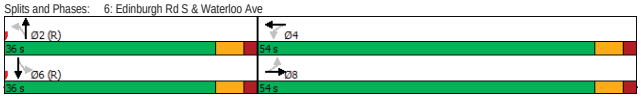
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	170	50	90	265	45	50	625	85	45	615	30
Future Volume (vph)	45	170	50	90	265	45	50	625	85	45	615	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.966			0.978			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1804	0	1805	1831	0	1805	1856	0	1770	1884	0
Flt Permitted	0.331			0.503			0.315			0.273		
Satd. Flow (perm)	609	1804	0	949	1831	0	598	1856	0	507	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			14			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	175	52	93	273	46	52	644	88	46	634	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	227	0	93	319	0	52	732	0	46	665	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	21.2	21.2		21.2	21.2		56.8	56.8		56.8	56.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
v/c Ratio	0.32	0.51		0.42	0.72		0.14	0.62		0.14	0.56	
Control Delay	32.4	29.4		33.2	39.1		17.4	25.9		10.1	13.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.4	29.4		33.2	39.1		17.4	25.9		10.1	13.0	
LOS	C	C		C	D		B	C		B	B	
Approach Delay		29.9			37.8			25.4			12.8	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	227	93	319	52	732	46	665
v/c Ratio	0.32	0.51	0.42	0.72	0.14	0.62	0.14	0.56
Control Delay	32.4	29.4	33.2	39.1	17.4	25.9	10.1	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	29.4	33.2	39.1	17.4	25.9	10.1	13.0
Queue Length 50th (m)	7.0	31.9	14.4	51.3	2.9	82.4	3.1	61.9
Queue Length 95th (m)	15.5	48.2	26.0	71.5	m16.1	161.7	10.3	117.4
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	324	973	506	983	377	1174	319	1190
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.23	0.18	0.32	0.14	0.62	0.14	0.56

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	170	50	90	265	45	50	625	85	45	615	30
Future Volume (vph)	45	170	50	90	265	45	50	625	85	45	615	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1750	1803		1794	1831		1802	1856		1763	1884	
Flt Permitted	0.33	1.00		0.50	1.00		0.31	1.00		0.27	1.00	
Satd. Flow (perm)	610	1803		949	1831		596	1856		507	1884	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	175	52	93	273	46	52	644	88	46	634	31
RTOR Reduction (vph)	0	19	0	0	11	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	208	0	93	308	0	52	729	0	46	664	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	21.2	21.2		21.2	21.2		56.8	56.8		56.8	56.8	
Effective Green, g (s)	21.2	21.2		21.2	21.2		56.8	56.8		56.8	56.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	143	424		223	431		376	1171		319	1189	
v/s Ratio Prot		0.12			c0.17			c0.39			0.35	
v/s Ratio Perm	0.08			0.10			0.09			0.09		
v/c Ratio	0.32	0.49		0.42	0.72		0.14	0.62		0.14	0.56	
Uniform Delay, d1	28.5	29.7		29.2	31.6		6.7	10.1		6.7	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.86	2.00		1.00	1.00	
Incremental Delay, d2	1.3	0.9		1.3	5.6		0.7	2.2		0.9	1.9	
Delay (s)	29.8	30.6		30.4	37.2		13.2	22.4		7.7	11.4	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		30.5			35.7			21.8			11.1	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	79.4%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	225	260	50	255	260
Future Volume (vph)	40	225	260	50	255	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	43	245	283	54	277	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	245	283	54	277	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	225	260	50	255	260
Future Volume (Veh/h)	40	225	260	50	255	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	245	283	54	277	283
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			289		665	45
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			289		665	45
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		17	72
cM capacity (veh/h)			1272		332	1026

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	245	283	54	560
Volume Left	0	0	283	0	277
Volume Right	0	245	0	0	283
cSH	1700	1700	1272	1700	672
Volume to Capacity	0.03	0.14	0.22	0.03	0.83
Queue Length 95th (m)	0.0	0.0	6.8	0.0	72.8
Control Delay (s)	0.0	0.0	8.6	0.0	30.8
Lane LOS			A		D
Approach Delay (s)	0.0		7.3		30.8
Approach LOS					D

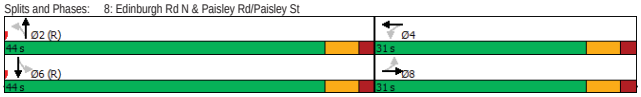
Intersection Summary			
Average Delay	16.6		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	320	115	55	400	45	105	515	50	100	520	140
Future Volume (vph)	115	320	115	55	400	45	105	515	50	100	520	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.960			0.985			0.987			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1795	0	1805	1848	0	1805	1867	0	1736	1828	0
Flt Permitted	0.253			0.266			0.207			0.287		
Satd. Flow (perm)	477	1795	0	503	1848	0	393	1867	0	523	1828	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			8			9			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	124	344	124	59	430	48	113	554	54	108	559	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	468	0	59	478	0	113	608	0	108	710	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.78	0.76		0.35	0.77		0.57	0.64		0.41	0.76	
Control Delay	54.5	28.4		26.3	32.2		27.0	17.2		17.5	20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.5	28.4		26.3	32.2		27.0	17.2		17.5	20.7	
LOS	D	C		C	C		C	B		B	C	
Approach Delay		33.9			31.5			18.7			20.3	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 25.1		Intersection LOS: C	
Intersection Capacity Utilization 96.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

f) Future Total (2026) PM - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	468	59	478	113	608	108	710
v/c Ratio	0.78	0.76	0.35	0.77	0.57	0.64	0.41	0.76
Control Delay	54.5	28.4	26.3	32.2	27.0	17.2	17.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	28.4	26.3	32.2	27.0	17.2	17.5	20.7
Queue Length 50th (m)	12.9	45.4	6.6	61.9	10.9	61.1	9.4	76.5
Queue Length 95th (m)	m#40.6	m#101.6	17.5	#107.8	#35.2	95.3	22.9	121.5
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	159	615	167	621	199	950	264	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	0.78	0.76	0.35	0.77	0.57	0.64	0.41	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

f) Future Total (2026) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	320	115	55	400	45	105	515	50	100	520	140
Future Volume (vph)	115	320	115	55	400	45	105	515	50	100	520	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1791	1795		1795	1847		1802	1867		1732	1828	
Flt Permitted	0.25	1.00		0.27	1.00		0.21	1.00		0.29	1.00	
Satd. Flow (perm)	478	1795		502	1847		393	1867		524	1828	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	344	124	59	430	48	113	554	54	108	559	151
RTOR Reduction (vph)	0	17	0	0	5	0	0	4	0	0	13	0
Lane Group Flow (vph)	124	451	0	59	473	0	113	604	0	108	697	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	159	598		167	615		199	945		265	926	
v/s Ratio Prot		0.25			0.26			0.32			c0.38	
v/s Ratio Perm	c0.26			0.12			0.29			0.21		
v/c Ratio	0.78	0.75		0.35	0.77		0.57	0.64		0.41	0.75	
Uniform Delay, d1	22.5	22.3		18.9	22.4		12.8	13.5		11.5	14.8	
Progression Factor	0.95	0.92		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.1	7.7		5.8	9.0		11.2	3.3		4.6	5.6	
Delay (s)	49.4	28.3		24.7	31.4		24.0	16.8		16.1	20.4	
Level of Service	D	C		C	C		C	B		B	C	
Approach Delay (s)		32.7			30.6			17.9			19.8	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	96.8%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

f) Future Total (2026) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	340	70	145	350	195	60	80	120	215	85	245
Future Volume (vph)	235	340	70	145	350	195	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.946			0.910				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1769	0	1805	1705	0	1787	1900	1615
Flt Permitted	0.213			0.543			0.698			0.572		
Satd. Flow (perm)	404	1881	1580	1031	1769	0	1325	1705	0	1073	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			75		43			102				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	253	366	75	156	376	210	65	86	129	231	91	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	366	75	156	586	0	65	215	0	231	91	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

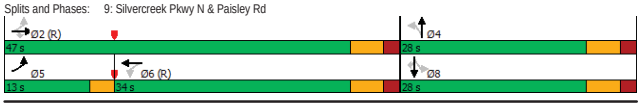
f) Future Total (2026) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	46.9	43.9	43.9	31.6	31.6		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.63	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.59	0.33	0.08	0.36	0.76		0.19	0.42		0.85	0.19	0.44
Control Delay	13.0	9.8	2.5	27.4	33.7		22.0	14.2		53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	13.0	9.8	2.5	27.4	33.7		22.0	14.2		53.9	21.6	5.5
LOS	B	A	A	C	C		C	B		D	C	A
Approach Delay		10.2			32.4			16.0			27.1	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

f) Future Total (2026) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	253	366	75	156	586	65	215	231	91	263
v/c Ratio	0.59	0.33	0.08	0.36	0.76	0.19	0.42	0.85	0.19	0.44
Control Delay	13.0	9.8	2.5	27.4	33.7	22.0	14.2	53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	9.8	2.5	27.4	33.7	22.0	14.2	53.9	21.6	5.5
Queue Length 50th (m)	15.8	27.5	0.0	22.6	89.1	7.3	12.9	31.3	10.2	0.0
Queue Length 95th (m)	27.8	45.4	5.4	m30.1	m#136.7	16.5	30.0	#65.3	20.8	16.0
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	441	1101	955	434	770	388	572	314	557	653
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	0.57	0.33	0.08	0.36	0.76	0.17	0.38	0.74	0.16	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

f) Future Total (2026) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	340	70	145	350	195	60	80	120	215	85	245
Future Volume (vph)	235	340	70	145	350	195	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1769		1803	1705		1783	1900	1594
Flt Permitted	0.21	1.00	1.00	0.54	1.00		0.70	1.00		0.57	1.00	1.00
Satd. Flow (perm)	405	1881	1580	1031	1769		1325	1705		1073	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	253	366	75	156	376	210	65	86	129	231	91	263
RTOR Reduction (vph)	0	0	31	0	25	0	0	76	0	0	0	196
Lane Group Flow (vph)	253	366	44	156	561	0	65	139	0	231	91	67
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	43.9	43.9	43.9	31.6	31.6		19.1	19.1		19.1	19.1	19.1
Effective Green, g (s)	43.9	43.9	43.9	31.6	31.6		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.59	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	410	1101	924	434	745		337	434		273	483	405
v/s Ratio Prot	c0.08	0.19			c0.32			0.08			0.05	
v/s Ratio Perm	0.28		0.03	0.15			0.05			c0.22		0.04
v/c Ratio	0.62	0.33	0.05	0.36	0.75		0.19	0.32		0.85	0.19	0.17
Uniform Delay, d1	10.6	8.0	6.6	14.8	18.4		21.9	22.7		26.6	21.9	21.7
Progression Factor	1.00	1.00	1.00	1.49	1.49		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.8	0.8	0.1	1.7	5.1		0.3	0.4		20.8	0.2	0.2
Delay (s)	13.3	8.8	6.7	23.7	32.4		22.2	23.1		47.3	22.1	21.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		10.2			30.6			22.9			32.0	
Approach LOS		B			C			C			C	

Intersection Summary

HCM 2000 Control Delay	23.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	85.8%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lanes, Volumes, Timings
11: Silvercreek Pkwy S & Street E/Street D

f) Future Total (2026) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (vph)	70	0	70	10	0	15	85	170	20	20	165	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.932			0.920			0.984			0.955	
Flt Protected		0.976			0.980		0.950			0.950		
Satd. Flow (prot)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Flt Permitted		0.976			0.980		0.950			0.950		
Satd. Flow (perm)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	27	0	92	207	0	22	255	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
11: Silvercreek Pkwy S & Street E/Street D

f) Future Total (2026) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (Veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	646	652	217	679	679	196	255			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	652	217	679	679	196	255			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	100	91	96	100	98	93			98		
cM capacity (veh/h)	353	354	823	310	342	845	1310			1364		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	152	27	92	207	22	255
Volume Left	76	11	92	0	22	0
Volume Right	76	16	0	22	0	76
cSH	494	496	1310	1700	1364	1700
Volume to Capacity	0.31	0.05	0.07	0.12	0.02	0.15
Queue Length 95th (m)	10.4	1.4	1.8	0.0	0.4	0.0
Control Delay (s)	15.5	12.7	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	15.5	12.7	2.4		0.6	
Approach LOS	C	B				

Intersection Summary

Average Delay	4.8			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.9%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1718			1034			1607	2752	346	2063	2752	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1172			1034			1040	2409	346	1585	2409	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	504			680			156	28	655	62	28	911

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	344	344	344	82	572	572	572	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.20	0.20	0.05	0.34	0.34	0.34	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

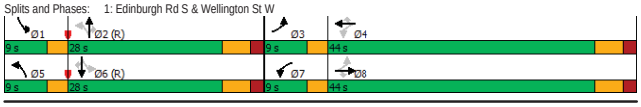
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	550	115	165	520	80	130	445	200	65	475	70
Future Volume (vph)	80	550	115	165	520	80	130	445	200	65	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.400			0.248			0.386			0.490		
Satd. Flow (perm)	748	3574	1575	461	3505	1487	733	3610	1583	931	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117			109			204			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	561	117	168	531	82	133	454	204	66	485	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	561	117	168	531	82	133	454	204	66	485	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	31.1	20.4	20.4	35.7	24.5	24.5	47.0	36.1	36.1	42.9	32.6	32.6
Actuated g/C Ratio	0.35	0.23	0.23	0.40	0.27	0.27	0.52	0.40	0.40	0.48	0.36	0.36
v/c Ratio	0.24	0.69	0.26	0.51	0.56	0.17	0.27	0.31	0.27	0.13	0.37	0.11
Control Delay	17.3	36.2	6.6	22.7	30.6	3.5	13.5	21.2	4.5	9.8	20.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	36.2	6.6	22.7	30.6	3.5	13.5	21.2	4.5	9.8	20.6	2.4
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		29.6			26.1			15.6			17.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Queues f) Future Total (2026) SAT - Full Build-out
1: Edinburgh Rd S & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	561	117	168	531	82	133	454	204	66	485	71
v/c Ratio	0.24	0.69	0.26	0.51	0.56	0.17	0.27	0.31	0.27	0.13	0.37	0.11
Control Delay	17.3	36.2	6.6	22.7	30.6	3.5	13.5	21.2	4.5	9.8	20.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	36.2	6.6	22.7	30.6	3.5	13.5	21.2	4.5	9.8	20.6	2.4
Queue Length 50th (m)	8.8	49.3	0.0	18.9	43.9	0.0	12.2	31.1	0.0	4.4	37.6	0.9
Queue Length 95th (m)	16.8	61.5	12.2	31.3	58.4	6.5	23.4	47.4	15.2	7.6	56.2	4.9
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	347	1509	732	327	1479	690	490	1449	757	514	1306	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.37	0.16	0.51	0.36	0.12	0.27	0.31	0.27	0.13	0.37	0.11

Intersection Summary

HCM Signalized Intersection Capacity Analysis f) Future Total (2026) SAT - Full Build-out
1: Edinburgh Rd S & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	550	115	165	520	80	130	445	200	65	475	70
Future Volume (vph)	80	550	115	165	520	80	130	445	200	65	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.40	1.00	1.00	0.25	1.00	1.00	0.39	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	750	3574	1575	461	3505	1487	733	3610	1583	931	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	561	117	168	531	82	133	454	204	66	485	71
RTOR Reduction (vph)	0	0	90	0	0	60	0	0	125	0	0	46
Lane Group Flow (vph)	82	561	27	168	531	22	133	454	79	66	485	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.5	21.0	21.0	34.0	24.5	24.5	44.0	34.9	34.9	38.0	31.9	31.9
Effective Green, g (s)	27.5	21.0	21.0	34.0	24.5	24.5	44.0	34.9	34.9	38.0	31.9	31.9
Actuated g/C Ratio	0.31	0.23	0.23	0.38	0.27	0.27	0.49	0.39	0.39	0.42	0.35	0.35
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	833	367	319	954	404	466	1399	613	452	1279	572
v/s Ratio Prot	0.02	c0.16		c0.06	0.15		c0.03	0.13		0.01	c0.13	
v/s Ratio Perm	0.06		0.02	0.14		0.02	0.11		0.05	0.05		0.02
v/c Ratio	0.27	0.67	0.07	0.53	0.56	0.06	0.29	0.32	0.13	0.15	0.38	0.04
Uniform Delay, d1	22.8	31.4	26.9	20.0	28.1	24.2	13.0	19.3	17.8	15.6	21.7	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.87	1.06
Incremental Delay, d2	0.5	2.2	0.1	1.6	0.7	0.1	0.3	0.6	0.4	0.1	0.8	0.1
Delay (s)	23.3	33.5	27.0	21.6	28.8	24.3	13.3	19.9	18.2	12.1	19.6	20.3
Level of Service	C	C	C	C	C	C	B	B	B	B	B	C
Approach Delay (s)		31.4			26.8			18.4			18.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings f) Future Total (2026) SAT - Full Build-out
2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

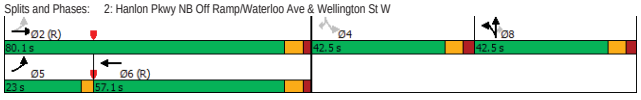
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	550	0	0	715	35	285	200	155	30	0	370
Future Volume (vph)	145	550	0	0	715	35	285	200	155	30	0	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.993				0.850			0.850
Flt Protected	0.950						0.950	0.990		0.950		
Satd. Flow (prot)	1736	5085	0	0	5102	0	1681	1780	1599	1805	0	1599
Flt Permitted	0.288						0.950	0.990		0.148		
Satd. Flow (perm)	526	5085	0	0	5102	0	1681	1780	1599	281	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5				158			287
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	148	561	0	0	730	36	291	204	158	31	0	378
Shared Lane Traffic (%)							17%					
Lane Group Flow (vph)	148	561	0	0	766	0	242	253	158	31	0	378
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lanes, Volumes, Timings f) Future Total (2026) SAT - Full Build-out
2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	91.4	87.3			71.5		28.5	28.5	28.5	27.1		27.1
Actuated g/C Ratio	0.55	0.53			0.43		0.17	0.17	0.17	0.16		0.16
v/c Ratio	0.38	0.21			0.35		0.83	0.82	0.39	0.67		0.75
Control Delay	24.2	23.0			34.8		89.0	86.7	10.0	121.2		25.1
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	24.2	23.0			34.8		89.0	86.7	10.0	121.2		25.1
LOS	C	C			C		F	F	B	F		C
Approach Delay		23.2			34.8			69.0			32.4	
Approach LOS		C			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 40.0		Intersection LOS: D	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	148	561	766	242	253	158	31	378
v/c Ratio	0.38	0.21	0.35	0.83	0.82	0.39	0.67	0.75
Control Delay	24.2	23.0	34.8	89.0	86.7	10.0	121.2	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	23.0	34.8	89.0	86.7	10.0	121.2	25.1
Queue Length 50th (m)	26.6	40.1	68.4	86.0	89.7	0.0	9.8	28.5
Queue Length 95th (m)	45.2	53.9	92.6	116.9	121.0	20.8	#26.7	67.9
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	437	2690	2211	356	377	463	59	565
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	0.34	0.21	0.35	0.68	0.67	0.34	0.53	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)	145	550	0	0	715	35	285	200	155	30	0	370
Future Volume (vph)	145	550	0	0	715	35	285	200	155	30	0	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			0.99		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5102		1681	1781	1599	1805		1599
Flt Permitted	0.29	1.00			1.00		0.95	0.99	1.00	0.15		1.00
Satd. Flow (perm)	525	5085			5102		1681	1781	1599	280		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	148	561	0	0	730	36	291	204	158	31	0	378
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	131	0	0	240
Lane Group Flow (vph)	148	561	0	0	763	0	242	253	27	31	0	138
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	87.4	87.4			71.5		28.5	28.5	28.5	27.1		27.1
Effective Green, g (s)	87.4	87.4			71.5		28.5	28.5	28.5	27.1		27.1
Actuated g/C Ratio	0.53	0.53			0.43		0.17	0.17	0.17	0.16		0.16
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	372	2691			2209		290	307	276	45		262
v/s Ratio Prot	c0.03	0.11			0.15		c0.14	0.14				
v/s Ratio Perm	c0.18								0.02	c0.11		0.09
v/c Ratio	0.40	0.21			0.35		0.83	0.82	0.10	0.69		0.53
Uniform Delay, d1	20.7	20.6			31.2		66.0	65.9	57.5	65.0		63.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.2			0.4		18.3	16.2	0.2	35.8		1.9
Delay (s)	21.4	20.7			31.6		84.3	82.1	57.6	100.9		65.0
Level of Service	C	C			C		F	F	E	F		E
Approach Delay (s)		20.9			31.6			77.0			67.8	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

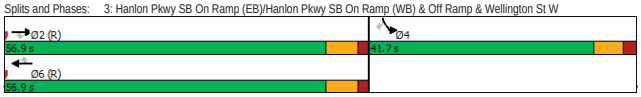
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	640	385	0	900	305	0	0	0	165	0	135
Future Volume (vph)	0	640	385	0	900	305	0	0	0	165	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			397			239						95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	660	397	0	928	314	0	0	0	170	0	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	660	397	0	928	314	0	0	0	170	0	139
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.8	73.8		73.8	73.8				11.2		11.2
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
v/c Ratio		0.18	0.31		0.24	0.26				0.43		0.53
Control Delay		3.8	1.1		4.1	1.6				44.0		23.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.8	1.1		4.1	1.6				44.0		23.0
LOS		A	A		A	A				D		C
Approach Delay		2.8			3.5						34.5	
Approach LOS		A			A						C	

Intersection Summary

Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 6.9		Intersection LOS: A	
Intersection Capacity Utilization 38.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Queues f) Future Total (2026) SAT - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	660	397	928	314	170	139
v/c Ratio	0.18	0.31	0.24	0.26	0.43	0.53
Control Delay	3.8	1.1	4.1	1.6	44.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	1.1	4.1	1.6	44.0	23.0
Queue Length 50th (m)	10.9	0.0	16.3	3.1	16.9	8.3
Queue Length 95th (m)	17.6	7.5	25.3	11.4	26.2	26.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3770	1272	3806	1216	1230	617
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	0.18	0.31	0.24	0.26	0.14	0.23

Intersection Summary

HCM Signalized Intersection Capacity Analysis f) Future Total (2026) SAT - Full Build-out
3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	640	385	0	900	305	0	0	0	165	0	135
Future Volume (vph)	0	640	385	0	900	305	0	0	0	165	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	660	397	0	928	314	0	0	0	170	0	139
RTOR Reduction (vph)	0	0	100	0	0	60	0	0	0	0	0	84
Lane Group Flow (vph)	0	660	297	0	928	254	0	0	0	170	0	55
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.8	73.8		73.8	73.8				11.2		11.2
Effective Green, g (s)		73.8	73.8		73.8	73.8				11.2		11.2
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.11		0.11
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3769	1172		3806	1156				393		178
v/s Ratio Prot		0.13			0.18					c0.05		
v/s Ratio Perm			c0.19			0.16						0.03
v/c Ratio		0.18	0.25		0.24	0.22				0.43		0.31
Uniform Delay, d1		3.6	3.8		3.8	3.7				40.7		40.1
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.2	0.4				0.8		1.0
Delay (s)		3.7	4.4		4.0	4.2				41.5		41.1
Level of Service		A	A		A	A				D		D
Approach Delay (s)		3.9			4.0			0.0			41.3	
Approach LOS		A			A			A			D	

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings f) Future Total (2026) SAT - Full Build-out
4: Wellington St W & Imperial Rd S

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	630	600	300	385	55
Future Volume (vph)	70	630	600	300	385	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.950			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3497	3335	0	1787	1615
Flt Permitted		0.744			0.950	
Satd. Flow (perm)	0	2615	3335	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			152			59
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	677	645	323	414	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	752	968	0	414	59
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

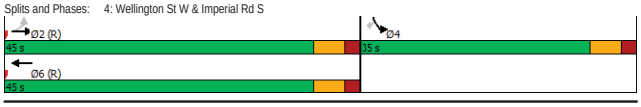
Lanes, Volumes, Timings f) Future Total (2026) SAT - Full Build-out
4: Wellington St W & Imperial Rd S

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.5	44.5		23.5	23.5
Actuated g/C Ratio		0.56	0.56		0.29	0.29
v/c Ratio		0.52	0.50		0.79	0.11
Control Delay		13.8	11.0		36.7	5.6
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.8	11.0		36.7	5.6
LOS		B	B		D	A
Approach Delay		13.8	11.0		32.8	
Approach LOS		B	B		C	

Intersection Summary

Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	752	968	414	59
v/c Ratio	0.52	0.50	0.79	0.11
Control Delay	13.8	11.0	36.7	5.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.8	11.0	36.7	5.6
Queue Length 50th (m)	36.8	38.6	60.1	0.0
Queue Length 95th (m)	63.1	65.8	82.6	7.3
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1461	1931	652	628
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	0.50	0.63	0.09

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	630	600	300	385	55
Future Volume (vph)	70	630	600	300	385	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3497	3335		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2617	3335		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	677	645	323	414	59
RTOR Reduction (vph)	0	0	67	0	0	42
Lane Group Flow (vph)	0	752	901	0	414	17
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.5	44.5		23.5	23.5
Effective Green, g (s)		44.5	44.5		23.5	23.5
Actuated g/C Ratio		0.56	0.56		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1455	1855		524	474
v/s Ratio Prot			0.27		c0.23	
v/s Ratio Perm		c0.29				0.01
v/c Ratio		0.52	0.49		0.79	0.04
Uniform Delay, d1		11.1	10.8		26.0	20.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.3	0.9		7.9	0.0
Delay (s)		12.4	11.7		33.9	20.2
Level of Service		B	B		C	C
Approach Delay (s)		12.4	11.7		32.2	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

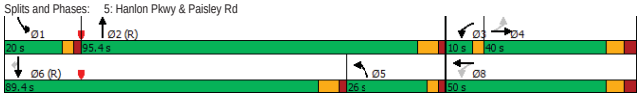
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	325	355	95	340	60	360	1115	100	80	1020	130
Future Volume (vph)	130	325	355	95	340	60	360	1115	100	80	1020	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3524	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.512			0.371			0.950			0.950		
Satd. Flow (perm)	972	3574	1579	697	3524	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			270		12				183			128
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	133	332	362	97	347	61	367	1138	102	82	1041	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	332	362	97	408	0	367	1138	102	82	1041	133
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	27.1	27.1	165.4	45.8	40.8		23.0	91.8	165.4	12.4	81.2	81.2
Actuated g/C Ratio	0.16	0.16	1.00	0.28	0.25		0.14	0.56	1.00	0.07	0.49	0.49
v/c Ratio	0.84	0.57	0.23	0.37	0.46		0.76	0.59	0.06	0.63	0.60	0.16
Control Delay	104.4	66.8	0.3	48.0	52.2		79.1	27.3	0.1	94.3	34.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.4	66.8	0.3	48.0	52.2		79.1	27.3	0.1	94.3	34.1	5.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		43.7			51.4			37.4			35.0	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 39.6		Intersection LOS: D	
Intersection Capacity Utilization 93.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Queues
5: Hanlon Pkwy & Paisley Rd

f) Future Total (2026) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	133	332	362	97	408	367	1138	102	82	1041	133
v/c Ratio	0.84	0.57	0.23	0.37	0.46	0.76	0.59	0.06	0.63	0.60	0.16
Control Delay	104.4	66.8	0.3	48.0	52.2	79.1	27.3	0.1	94.3	34.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.4	66.8	0.3	48.0	52.2	79.1	27.3	0.1	94.3	34.1	5.1
Queue Length 50th (m)	44.9	56.1	0.0	25.3	60.5	64.0	140.2	0.0	28.0	140.4	0.9
Queue Length 95th (m)	#70.9	70.8	0.0	40.7	75.6	80.5	175.8	0.0	47.3	181.5	15.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	191	703	1579	263	957	495	1991	1579	158	1830	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.47	0.23	0.37	0.43	0.74	0.57	0.06	0.52	0.57	0.15

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: Hanlon Pkwy & Paisley Rd

f) Future Total (2026) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	325	355	95	340	60	360	1115	100	80	1020	130
Future Volume (vph)	130	325	355	95	340	60	360	1115	100	80	1020	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3574	1579	1786	3522		3467	3505	1579	1752	3505	1615
Flt Permitted	0.51	1.00	1.00	0.37	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	973	3574	1579	697	3522		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	133	332	362	97	347	61	367	1138	102	82	1041	133
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	65
Lane Group Flow (vph)	133	332	362	97	399	0	367	1138	102	82	1041	68
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	27.1	27.1	165.4	40.8	40.8		23.0	91.8	165.4	12.4	81.2	81.2
Effective Green, g (s)	27.1	27.1	165.4	40.8	40.8		23.0	91.8	165.4	12.4	81.2	81.2
Actuated g/C Ratio	0.16	0.16	1.00	0.25	0.25		0.14	0.56	1.00	0.07	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	585	1579	242	868		482	1945	1579	131	1720	792
v/s Ratio Prot		0.09		0.03	c0.11		c0.11	c0.32		0.05	c0.30	
v/s Ratio Perm	c0.14		0.23	0.07					0.06			0.04
v/c Ratio	0.84	0.57	0.23	0.40	0.46		0.76	0.59	0.06	0.63	0.61	0.09
Uniform Delay, d1	67.0	63.7	0.0	50.0	52.9		68.6	24.3	0.0	74.2	30.5	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.0	1.3	0.3	1.1	0.4		7.0	1.3	0.1	9.0	1.6	0.2
Delay (s)	97.0	65.0	0.3	51.0	53.3		75.5	25.5	0.1	83.2	32.1	22.6
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		41.8			52.9			35.3			34.4	
Approach LOS		D			D			D			C	

Intersection Summary

HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	110	45	55	110	40	50	490	60	30	485	20
Future Volume (vph)	40	110	45	55	110	40	50	490	60	30	485	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.957			0.960			0.984			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1777	0	1805	1772	0	1805	1860	0	1805	1883	0
Flt Permitted	0.565			0.549			0.420			0.391		
Satd. Flow (perm)	1068	1777	0	1028	1772	0	796	1860	0	741	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			31			7			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	121	49	60	121	44	55	538	66	33	533	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	170	0	60	165	0	55	604	0	33	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

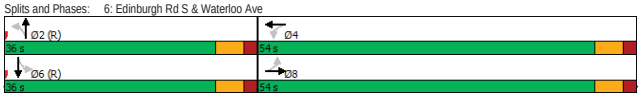
f) Future Total (2026) SAT - Full Build-out

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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.72		0.72	0.72	
v/c Ratio	0.28	0.59		0.40	0.58		0.10	0.45		0.06	0.41	
Control Delay	36.7	35.8		41.0	36.2		5.2	12.0		5.3	6.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.7	35.8		41.0	36.2		5.2	12.0		5.3	6.8	
LOS	D	D		D	D		A	B		A	A	
Approach Delay		36.0			37.5			11.4			6.8	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Queues
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) SAT - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	170	60	165	55	604	33	555
v/c Ratio	0.28	0.59	0.40	0.58	0.10	0.45	0.06	0.41
Control Delay	36.7	35.8	41.0	36.2	5.2	12.0	5.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	35.8	41.0	36.2	5.2	12.0	5.3	6.8
Queue Length 50th (m)	7.3	23.3	10.1	23.1	2.2	30.1	1.4	32.0
Queue Length 95th (m)	15.8	39.2	20.3	38.8	7.8	97.1	5.7	69.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	569	964	548	959	574	1343	534	1358
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	0.08	0.18	0.11	0.17	0.10	0.45	0.06	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis
6: Edinburgh Rd S & Waterloo Ave

f) Future Total (2026) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	110	45	55	110	40	50	490	60	30	485	20
Future Volume (vph)	40	110	45	55	110	40	50	490	60	30	485	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		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)	1796	1775		1781	1772		1799	1859		1800	1883	
Flt Permitted	0.56	1.00		0.55	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1068	1775		1030	1772		795	1859		741	1883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	121	49	60	121	44	55	538	66	33	533	22
RTOR Reduction (vph)	0	30	0	0	26	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	140	0	60	139	0	55	602	0	33	554	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Effective Green, g (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.72		0.72	0.72	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	155	258		149	257		573	1340		534	1357	
v/s Ratio Prot		c0.08			0.08			c0.32			0.29	
v/s Ratio Perm	0.04			0.06			0.07			0.04		
v/c Ratio	0.28	0.54		0.40	0.54		0.10	0.45		0.06	0.41	
Uniform Delay, d1	34.3	35.7		34.9	35.7		3.8	5.2		3.7	5.0	
Progression Factor	1.00	1.00		1.00	1.00		0.95	1.78		1.00	1.00	
Incremental Delay, d2	1.0	2.3		1.8	2.2		0.3	1.1		0.2	0.9	
Delay (s)	35.3	38.0		36.7	37.8		3.9	10.3		3.9	5.9	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		37.4			37.5			9.7			5.8	
Approach LOS		D			D			A			A	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
7: Waterloo Ave & Silvercreek Pkwy S

f) Future Total (2026) SAT - Full Build-out

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	45	250	165	50	245	155
Future Volume (vph)	45	250	165	50	245	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	49	272	179	54	266	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	272	179	54	266	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: Waterloo Ave & Silvercreek Pkwy S

f) Future Total (2026) SAT - Full Build-out

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	45	250	165	50	245	155
Future Volume (Veh/h)	45	250	165	50	245	155
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	272	179	54	266	168
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		463	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		463	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		44	83
cM capacity (veh/h)			1242		479	1018

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	49	272	179	54	434
Volume Left	0	0	179	0	266
Volume Right	0	272	0	0	168
cSH	1700	1700	1242	1700	782
Volume to Capacity	0.03	0.16	0.14	0.03	0.56
Queue Length 95th (m)	0.0	0.0	4.0	0.0	27.7
Control Delay (s)	0.0	0.0	8.4	0.0	16.7
Lane LOS			A		C
Approach Delay (s)	0.0		6.4		16.7
Approach LOS					C

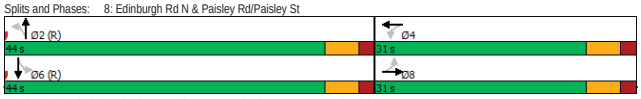
Intersection Summary				
Average Delay	8.9			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	295	90	35	275	55	105	420	25	50	395	110
Future Volume (vph)	130	295	90	35	275	55	105	420	25	50	395	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		1.00	0.99		1.00	1.00		0.99	1.00	
Frt		0.965			0.975			0.992			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1806	0	1805	1824	0	1805	1881	0	1671	1832	0
Flt Permitted	0.411			0.334			0.340			0.394		
Satd. Flow (perm)	772	1806	0	632	1824	0	646	1881	0	689	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			14			6			27	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	140	317	97	38	296	59	113	452	27	54	425	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	414	0	38	355	0	113	479	0	54	543	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.54	0.67		0.18	0.58		0.35	0.50		0.15	0.58	
Control Delay	26.7	23.4		20.6	24.2		14.9	14.4		11.4	15.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.7	23.4		20.6	24.2		14.9	14.4		11.4	15.2	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		24.2			23.9			14.5			14.9	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 85.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	414	38	355	113	479	54	543
v/c Ratio	0.54	0.67	0.18	0.58	0.35	0.50	0.15	0.58
Control Delay	26.7	23.4	20.6	24.2	14.9	14.4	11.4	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	23.4	20.6	24.2	14.9	14.4	11.4	15.2
Queue Length 50th (m)	13.8	50.0	3.9	41.3	9.5	43.6	4.1	50.1
Queue Length 95th (m)	m25.2	59.4	11.2	67.7	21.6	68.4	10.4	79.6
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	257	616	210	617	327	956	349	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	0.54	0.67	0.18	0.58	0.35	0.50	0.15	0.58

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	295	90	35	275	55	105	420	25	50	395	110
Future Volume (vph)	130	295	90	35	275	55	105	420	25	50	395	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1783	1806		1796	1824		1804	1881		1662	1833	
Flt Permitted	0.41	1.00		0.33	1.00		0.34	1.00		0.39	1.00	
Satd. Flow (perm)	771	1806		632	1824		646	1881		689	1833	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	317	97	38	296	59	113	452	27	54	425	118
RTOR Reduction (vph)	0	15	0	0	9	0	0	3	0	0	13	0
Lane Group Flow (vph)	140	399	0	38	346	0	113	476	0	54	530	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	257	602		210	608		327	953		349	928	
v/s Ratio Prot		c0.22			0.19			0.25			c0.29	
v/s Ratio Perm	0.18			0.06			0.17			0.08		
v/c Ratio	0.54	0.66		0.18	0.57		0.35	0.50		0.15	0.57	
Uniform Delay, d1	20.4	21.4		17.7	20.6		11.1	12.2		9.9	12.8	
Progression Factor	0.88	0.86		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	5.3		1.9	3.8		2.9	1.9		0.9	2.5	
Delay (s)	25.4	23.7		19.6	24.4		13.9	14.1		10.8	15.4	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		24.1			23.9			14.1			15.0	
Approach LOS		C			C			B			B	

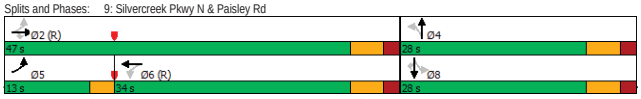
Intersection Summary					
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	85.3%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	270	80	145	260	145	75	85	140	190	90	155
Future Volume (vph)	160	270	80	145	260	145	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.946			0.907				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1778	0	1805	1699	0	1805	1900	1599
Flt Permitted	0.379			0.587			0.696			0.526		
Satd. Flow (perm)	720	1863	1578	1113	1778	0	1320	1699	0	998	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83		43			111				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	167	281	83	151	271	151	78	89	146	198	94	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	281	83	151	422	0	78	235	0	198	94	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	47.9	44.9	44.9	33.5	33.5		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.64	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.29	0.25	0.08	0.30	0.52		0.25	0.48		0.82	0.21	0.32
Control Delay	7.7	8.8	2.4	22.6	22.4		23.2	15.2		53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.7	8.8	2.4	22.6	22.4		23.2	15.2		53.7	22.2	5.6
LOS	A	A	A	C	C		C	B		D	C	A
Approach Delay		7.4			22.5			17.2			30.1	
Approach LOS		A			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	281	83	151	422	78	235	198	94	161
v/c Ratio	0.29	0.25	0.08	0.30	0.52	0.25	0.48	0.82	0.21	0.32
Control Delay	7.7	8.8	2.4	22.6	22.4	23.2	15.2	53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.8	2.4	22.6	22.4	23.2	15.2	53.7	22.2	5.6
Queue Length 50th (m)	9.1	18.6	0.0	15.1	49.8	9.2	14.8	27.3	10.9	0.0
Queue Length 95th (m)	18.7	34.3	5.6	39.7	88.8	19.2	32.6	#55.5	21.3	12.8
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	604	1118	980	497	818	389	579	294	560	578
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	0.28	0.25	0.08	0.30	0.52	0.20	0.41	0.67	0.17	0.28

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)	160	270	80	145	260	145	75	85	140	190	90	155
Future Volume (vph)	160	270	80	145	260	145	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1779		1802	1698		1803	1900	1577
Flt Permitted	0.38	1.00	1.00	0.59	1.00		0.70	1.00		0.53	1.00	1.00
Satd. Flow (perm)	720	1863	1578	1113	1779		1320	1698		999	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	281	83	151	271	151	78	89	146	198	94	161
RTOR Reduction (vph)	0	0	33	0	24	0	0	84	0	0	0	122
Lane Group Flow (vph)	167	281	50	151	398	0	78	151	0	198	94	39
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.9	44.9	44.9	33.5	33.5		18.1	18.1		18.1	18.1	18.1
Effective Green, g (s)	44.9	44.9	44.9	33.5	33.5		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.60	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	552	1115	944	497	794		318	409		241	458	380
v/s Ratio Prot	c0.03	0.15			c0.22			0.09			0.05	
v/s Ratio Perm	0.15		0.03	0.14			0.06			c0.20		0.02
v/c Ratio	0.30	0.25	0.05	0.30	0.50		0.25	0.37		0.82	0.21	0.10
Uniform Delay, d1	7.4	7.1	6.2	13.3	14.8		22.9	23.7		26.9	22.7	22.1
Progression Factor	1.00	1.00	1.00	1.32	1.33		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.5	0.1	1.4	2.0		0.4	0.6		19.7	0.2	0.1
Delay (s)	7.7	7.7	6.3	19.0	21.7		23.3	24.3		46.6	22.9	22.2
Level of Service	A	A	A	B	C		C	C		D	C	C
Approach Delay (s)		7.5			21.0			24.0			33.0	
Approach LOS		A			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	73.5%	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)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (vph)	80	0	85	15	0	20	90	175	15	20	175	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.931			0.922			0.988			0.953	
Flt Protected		0.976			0.979		0.950			0.950		
Satd. Flow (prot)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Flt Permitted		0.976			0.979		0.950			0.950		
Satd. Flow (perm)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	38	0	98	206	0	22	277	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (Veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	686	680	234	720	715	198	277			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	680	234	720	715	198	277			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	100	89	94	100	97	92			98		
cM capacity (veh/h)	328	339	806	283	324	843	1286			1365		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	38	98	206	22	277
Volume Left	87	16	98	0	22	0
Volume Right	92	22	0	16	0	87
cSH	472	460	1286	1700	1365	1700
Volume to Capacity	0.38	0.08	0.08	0.12	0.02	0.16
Queue Length 95th (m)	14.0	2.2	2.0	0.0	0.4	0.0
Control Delay (s)	17.2	13.5	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	17.2	13.5	2.6		0.6	
Approach LOS	C	B				

Intersection Summary				
Average Delay		5.6		
Intersection Capacity Utilization		42.0%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1267			729			1152	1996	245	1511	1996	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	953			729			826	1752	245	1220	1752	28
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	665			884			244	79	761	126	79	954

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	243	243	243	82	422	422	422	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.14	0.05	0.25	0.25	0.25	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

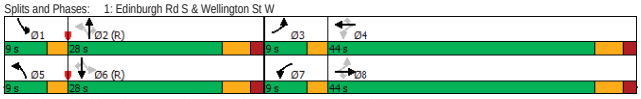
Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		25.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	825	185	115	545	50	185	585	210	65	550	80
Future Volume (vph)	115	825	185	115	545	50	185	585	210	65	550	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.331			0.152			0.236			0.327		
Satd. Flow (perm)	621	3471	1508	272	3438	1570	434	3539	1476	580	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			109			172			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	927	208	129	612	56	208	657	236	73	618	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	927	208	129	612	56	208	657	236	73	618	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	41.0	31.3	31.3	41.4	31.4	31.4	38.8	28.6	28.6	33.8	23.7	23.7
Actuated g/C Ratio	0.46	0.35	0.35	0.46	0.35	0.35	0.43	0.32	0.32	0.38	0.26	0.26
v/c Ratio	0.35	0.77	0.32	0.55	0.51	0.09	0.62	0.59	0.40	0.24	0.67	0.18
Control Delay	14.4	30.5	3.9	20.9	24.2	0.7	29.6	30.2	11.1	13.7	29.4	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	30.5	3.9	20.9	24.2	0.7	29.6	30.2	11.1	13.7	29.4	2.7
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.5			22.0			26.0			24.9	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 71.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	927	208	129	612	56	208	657	236	73	618	90
v/c Ratio	0.35	0.77	0.32	0.55	0.51	0.09	0.62	0.59	0.40	0.24	0.67	0.18
Control Delay	14.4	30.5	3.9	20.9	24.2	0.7	29.6	30.2	11.1	13.7	29.4	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	30.5	3.9	20.9	24.2	0.7	29.6	30.2	11.1	13.7	29.4	2.7
Queue Length 50th (m)	12.2	78.1	0.0	12.3	46.0	0.0	23.3	54.8	8.6	4.9	57.6	2.2
Queue Length 95th (m)	19.0	87.4	12.3	19.1	53.6	1.0	#61.2	77.6	29.5	9.9	66.1	2.9
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	370	1465	756	235	1451	725	334	1123	585	305	932	498
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.63	0.28	0.55	0.42	0.08	0.62	0.59	0.40	0.24	0.66	0.18

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)	115	825	185	115	545	50	185	585	210	65	550	80
Future Volume (vph)	115	825	185	115	545	50	185	585	210	65	550	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1696	3505	1573
Flt Permitted	0.33	1.00	1.00	0.15	1.00	1.00	0.24	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	621	3471	1508	272	3438	1570	435	3539	1476	583	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	927	208	129	612	56	208	657	236	73	618	90
RTOR Reduction (vph)	0	0	136	0	0	36	0	0	118	0	0	66
Lane Group Flow (vph)	129	927	72	129	612	20	208	657	118	73	618	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	38.1	31.3	31.3	38.3	31.4	31.4	36.8	28.0	28.0	29.5	23.7	23.7
Effective Green, g (s)	38.1	31.3	31.3	38.3	31.4	31.4	36.8	28.0	28.0	29.5	23.7	23.7
Actuated g/C Ratio	0.42	0.35	0.35	0.43	0.35	0.35	0.41	0.31	0.31	0.33	0.26	0.26
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	350	1207	524	225	1199	547	325	1101	459	262	922	414
v/s Ratio Prot	0.03	c0.27		c0.04	0.18		c0.07	0.19		0.02	0.18	
v/s Ratio Perm	0.13		0.05	0.20		0.01	c0.19		0.08	0.07		0.02
v/c Ratio	0.37	0.77	0.14	0.57	0.51	0.04	0.64	0.60	0.26	0.28	0.67	0.06
Uniform Delay, d1	16.4	26.1	20.1	17.9	23.2	19.3	18.9	26.2	23.2	21.4	29.7	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.84	0.48
Incremental Delay, d2	0.7	3.0	0.1	3.5	0.4	0.0	4.3	2.4	1.3	0.5	3.6	0.2
Delay (s)	17.1	29.1	20.2	21.4	23.6	19.3	23.1	28.6	24.5	15.8	28.6	12.1
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.4			22.9			26.7			25.5	
Approach LOS		C			C			C			C	

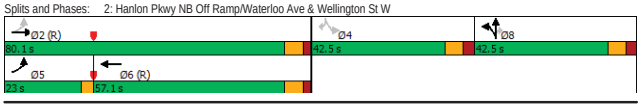
Intersection Summary					
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.71				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	900	0	0	775	15	195	220	235	15	0	440
Future Volume (vph)	190	900	0	0	775	15	195	220	235	15	0	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.997				0.850			0.850
Flt Protected	0.950						0.950	0.996		0.950		
Satd. Flow (prot)	1736	4988	0	0	4974	0	1633	1774	1599	1805	0	1583
Flt Permitted	0.242						0.950	0.996		0.153		
Satd. Flow (perm)	442	4988	0	0	4974	0	1633	1774	1599	291	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2				258			316
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	209	989	0	0	852	16	214	242	258	16	0	484
Shared Lane Traffic (%)							10%					
Lane Group Flow (vph)	209	989	0	0	868	0	193	263	258	16	0	484
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	91.6	87.5			69.0		29.3	29.3	29.3	26.2		26.2
Actuated g/C Ratio	0.55	0.53			0.42		0.18	0.18	0.18	0.16		0.16
v/c Ratio	0.57	0.37			0.42		0.67	0.84	0.52	0.36		0.94
Control Delay	28.0	25.3			37.8		74.3	87.7	9.6	79.1		49.2
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	28.0	25.3			37.8		74.3	87.7	9.6	79.1		49.2
LOS	C	C			D		E	F	A	E		D
Approach Delay		25.7			37.8			55.9			50.2	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	209	989	868	193	263	258	16	484
v/c Ratio	0.57	0.37	0.42	0.67	0.84	0.52	0.36	0.94
Control Delay	28.0	25.3	37.8	74.3	87.7	9.6	79.1	49.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	25.3	37.8	74.3	87.7	9.6	79.1	49.2
Queue Length 50th (m)	37.4	75.2	80.1	65.8	92.9	0.0	4.9	64.4
Queue Length 95th (m)	63.0	99.8	108.8	93.8	126.2	25.5	13.5	#114.7
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	402	2644	2080	346	376	542	61	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.37	0.42	0.56	0.70	0.48	0.26	0.83

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)	190	900	0	0	775	15	195	220	235	15	0	440
Future Volume (vph)	190	900	0	0	775	15	195	220	235	15	0	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4975		1633	1774	1599	1805		1583
Flt Permitted	0.24	1.00			1.00		0.95	1.00	1.00	0.15		1.00
Satd. Flow (perm)	443	4988			4975		1633	1774	1599	290		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	209	989	0	0	852	16	214	242	258	16	0	484
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	212	0	0	266
Lane Group Flow (vph)	209	989	0	0	867	0	193	263	46	16	0	218
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	87.5	87.5			69.0		29.3	29.3	29.3	26.2		26.2
Effective Green, g (s)	87.5	87.5			69.0		29.3	29.3	29.3	26.2		26.2
Actuated g/C Ratio	0.53	0.53			0.42		0.18	0.18	0.18	0.16		0.16
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	356	2643			2079		289	314	283	46		251
v/s Ratio Prot	c0.06	0.20			0.17		0.12	c0.15				
v/s Ratio Perm	c0.26								0.03	0.06		c0.14
v/c Ratio	0.59	0.37			0.42		0.67	0.84	0.16	0.35		0.87
Uniform Delay, d1	22.0	22.7			33.9		63.4	65.6	57.5	61.8		67.8
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.5	0.4			0.6		5.7	17.4	0.3	4.5		25.7
Delay (s)	24.5	23.2			34.5		69.1	83.0	57.8	66.4		93.5
Level of Service	C	C			C		E	F	E	E		F
Approach Delay (s)		23.4			34.5			70.1			92.6	
Approach LOS		C			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

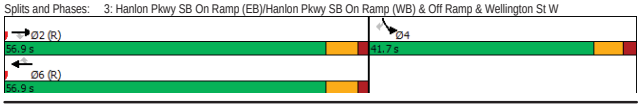
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	975	465	0	905	320	0	0	0	195	0	95
Future Volume (vph)	0	975	465	0	905	320	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			458			250						89
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	1026	489	0	953	337	0	0	0	205	0	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1026	489	0	953	337	0	0	0	205	0	100
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.28	0.39		0.26	0.28				0.52		0.39
Control Delay		4.6	1.5		4.4	1.8				45.3		15.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.6	1.5		4.4	1.8				45.3		15.3
LOS		A	A		A	A				D		B
Approach Delay		3.6			3.8						35.4	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1026	489	953	337	205	100
v/c Ratio	0.28	0.39	0.26	0.28	0.52	0.39
Control Delay	4.6	1.5	4.4	1.8	45.3	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	1.5	4.4	1.8	45.3	15.3
Queue Length 50th (m)	20.3	1.4	18.4	4.0	20.3	2.0
Queue Length 95th (m)	29.5	10.3	27.1	12.7	30.7	16.5
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3659	1257	3695	1211	1150	573
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	0.28	0.39	0.26	0.28	0.18	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	975	465	0	905	320	0	0	0	195	0	95
Future Volume (vph)	0	975	465	0	905	320	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1026	489	0	953	337	0	0	0	205	0	100
RTOR Reduction (vph)	0	0	119	0	0	65	0	0	0	0	0	78
Lane Group Flow (vph)	0	1026	370	0	953	272	0	0	0	205	0	22
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.0	73.0		73.0	73.0				12.0		12.0
Effective Green, g (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3657	1138		3692	1146				394		177
v/s Ratio Prot		0.21			0.19					c0.06		
v/s Ratio Perm			c0.24			0.18						0.02
v/c Ratio		0.28	0.33		0.26	0.24				0.52		0.12
Uniform Delay, d1		4.2	4.4		4.1	4.0				40.6		38.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.2	0.5				1.2		0.3
Delay (s)		4.4	5.1		4.3	4.5				41.8		38.9
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.3			0.0			40.9	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

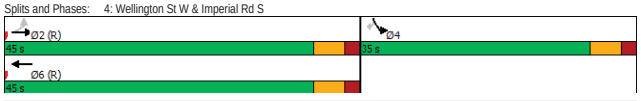
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	985	725	175	445	75
Future Volume (vph)	65	985	725	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.971			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3318	0	1770	1599
Flt Permitted		0.808			0.950	
Satd. Flow (perm)	0	2753	3318	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			51			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	68	1026	755	182	464	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1094	937	0	464	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.74	0.52		0.84	0.14
Control Delay		19.2	13.2		39.6	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		19.2	13.2		39.6	5.2
LOS		B	B		D	A
Approach Delay		19.2	13.2		34.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1094	937	464	78
v/c Ratio	0.74	0.52	0.84	0.14
Control Delay	19.2	13.2	39.6	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.2	13.2	39.6	5.2
Queue Length 50th (m)	68.2	45.8	67.0	0.0
Queue Length 95th (m)	102.7	68.2	98.4	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1479	1806	641	629
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.52	0.72	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	985	725	175	445	75
Future Volume (vph)	65	985	725	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3318		1770	1599
Flt Permitted		0.81	1.00		0.95	1.00
Satd. Flow (perm)		2753	3318		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1026	755	182	464	78
RTOR Reduction (vph)	0	0	24	0	0	54
Lane Group Flow (vph)	0	1094	913	0	464	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.0	43.0		25.0	25.0
Effective Green, g (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1479	1783		553	499
v/s Ratio Prot			0.28		c0.26	
v/s Ratio Perm		c0.40				0.02
v/c Ratio		0.74	0.51		0.84	0.05
Uniform Delay, d1		14.2	11.8		25.6	19.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.4	1.1		10.8	0.0
Delay (s)		17.6	12.9		36.4	19.2
Level of Service		B	B		D	B
Approach Delay (s)		17.6	12.9		33.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

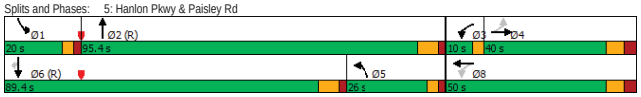
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	350	335	75	210	60	165	1445	105	45	1085	50
Future Volume (vph)	100	350	335	75	210	60	165	1445	105	45	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3408	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.583			0.302			0.950			0.950		
Satd. Flow (perm)	1035	3438	1583	568	3408	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			238		21				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	357	342	77	214	61	168	1474	107	46	1107	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	357	342	77	275	0	168	1474	107	46	1107	51
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	23.2	23.2	165.4	40.5	35.5		21.3	101.6	165.4	10.5	88.2	88.2
Actuated g/C Ratio	0.14	0.14	1.00	0.24	0.21		0.13	0.61	1.00	0.06	0.53	0.53
v/c Ratio	0.70	0.74	0.22	0.37	0.37		0.39	0.72	0.07	0.46	0.63	0.06
Control Delay	91.9	77.3	0.3	53.2	51.6		67.7	26.7	0.1	88.1	31.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.3	0.3	53.2	51.6		67.7	26.7	0.1	88.1	31.0	0.1
LOS	F	E	A	D	D		E	C	A	F	C	A
Approach Delay		46.3			51.9			29.0			31.9	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	357	342	77	275	168	1474	107	46	1107	51
v/c Ratio	0.70	0.74	0.22	0.37	0.37	0.39	0.72	0.07	0.46	0.63	0.06
Control Delay	91.9	77.3	0.3	53.2	51.6	67.7	26.7	0.1	88.1	31.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.9	77.3	0.3	53.2	51.6	67.7	26.7	0.1	88.1	31.0	0.1
Queue Length 50th (m)	34.5	63.8	0.0	21.1	39.6	27.7	187.0	0.0	15.7	142.4	0.0
Queue Length 95th (m)	54.8	78.2	0.0	35.4	52.7	39.1	247.5	0.0	30.1	189.6	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	200	665	1583	207	881	465	2053	1568	144	1780	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.54	0.22	0.37	0.31	0.36	0.72	0.07	0.32	0.62	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	350	335	75	210	60	165	1445	105	45	1085	50
Future Volume (vph)	100	350	335	75	210	60	165	1445	105	45	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3407		3303	3343	1568	1597	3282	1482
Flt Permitted	0.58	1.00	1.00	0.30	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1035	3438	1583	567	3407		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	357	342	77	214	61	168	1474	107	46	1107	51
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	0	24
Lane Group Flow (vph)	102	357	342	77	259	0	168	1474	107	46	1107	27
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	23.3	23.3	165.4	35.5	35.5		22.3	100.6	165.4	8.9	87.2	87.2
Effective Green, g (s)	23.3	23.3	165.4	35.5	35.5		22.3	100.6	165.4	8.9	87.2	87.2
Actuated g/C Ratio	0.14	0.14	1.00	0.21	0.21		0.13	0.61	1.00	0.05	0.53	0.53
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	145	484	1583	189	731		445	2033	1568	85	1730	781
v/s Ratio Prot		c0.10		c0.02	0.08		0.05	c0.44		0.03	c0.34	
v/s Ratio Perm	0.10		0.22	0.06					0.07			0.02
v/c Ratio	0.70	0.74	0.22	0.41	0.35		0.38	0.73	0.07	0.54	0.64	0.03
Uniform Delay, d1	67.8	68.1	0.0	53.7	55.2		65.2	22.7	0.0	76.3	27.9	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.4	5.8	0.3	1.4	0.3		0.5	2.3	0.1	6.9	1.8	0.1
Delay (s)	82.1	73.9	0.3	55.2	55.5		65.8	25.0	0.1	83.1	29.7	18.9
Level of Service	F	E	A	E	E		E	C	A	F	C	B
Approach Delay (s)		43.5			55.4			27.4			31.3	
Approach LOS		D			E			C			C	

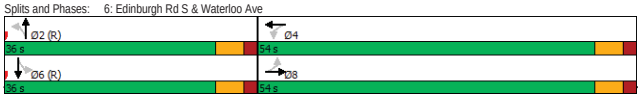
Intersection Summary					
HCM 2000 Control Delay		34.1	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.71			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)		23.4
Intersection Capacity Utilization		86.9%	ICU Level of Service		E
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	250	55	75	140	25	25	570	95	45	490	35
Future Volume (vph)	50	250	55	75	140	25	25	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.973			0.977			0.979			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1773	0	1752	1785	0	1805	1820	0	1770	1842	0
Flt Permitted	0.602			0.326			0.369			0.271		
Satd. Flow (perm)	1106	1773	0	596	1785	0	698	1820	0	503	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			15			10			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	272	60	82	152	27	27	620	103	49	533	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	332	0	82	179	0	27	723	0	49	571	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	22.3	22.3		22.3	22.3		55.7	55.7		55.7	55.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.62	0.62		0.62	0.62	
v/c Ratio	0.20	0.73		0.56	0.39		0.06	0.64		0.16	0.50	
Control Delay	25.9	38.2		42.5	26.8		22.2	32.0		11.1	12.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.9	38.2		42.5	26.8		22.2	32.0		11.1	12.7	
LOS	C	D		D	C		C	C		B	B	
Approach Delay		36.5			31.8			31.7			12.6	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 26.7		Intersection LOS: C	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	332	82	179	27	723	49	571
v/c Ratio	0.20	0.73	0.56	0.39	0.06	0.64	0.16	0.50
Control Delay	25.9	38.2	42.5	26.8	22.2	32.0	11.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	38.2	42.5	26.8	22.2	32.0	11.1	12.7
Queue Length 50th (m)	7.8	52.5	13.0	24.8	2.9	106.5	3.4	51.7
Queue Length 95th (m)	15.5	72.2	25.4	38.0	m8.5	168.2	11.5	100.1
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	589	954	317	959	431	1129	310	1140
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	0.35	0.26	0.19	0.06	0.64	0.16	0.50

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	250	55	75	140	25	25	570	95	45	490	35
Future Volume (vph)	50	250	55	75	140	25	25	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1747	1773		1739	1786		1794	1819		1763	1842	
Flt Permitted	0.60	1.00		0.33	1.00		0.37	1.00		0.27	1.00	
Satd. Flow (perm)	1106	1773		598	1786		698	1819		503	1842	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	272	60	82	152	27	27	620	103	49	533	38
RTOR Reduction (vph)	0	14	0	0	11	0	0	4	0	0	2	0
Lane Group Flow (vph)	54	318	0	82	168	0	27	719	0	49	569	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	22.3	22.3		22.3	22.3		55.7	55.7		55.7	55.7	
Effective Green, g (s)	22.3	22.3		22.3	22.3		55.7	55.7		55.7	55.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.62	0.62		0.62	0.62	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	274	439		148	442		431	1125		311	1139	
v/s Ratio Prot		c0.18			0.09			c0.40			0.31	
v/s Ratio Perm	0.05			0.14			0.04			0.10		
v/c Ratio	0.20	0.72		0.55	0.38		0.06	0.64		0.16	0.50	
Uniform Delay, d1	26.8	31.0		29.5	28.1		6.8	10.8		7.2	9.5	
Progression Factor	1.00	1.00		1.00	1.00		2.37	2.32		1.00	1.00	
Incremental Delay, d2	0.4	5.8		4.4	0.5		0.2	2.4		1.1	1.6	
Delay (s)	27.1	36.9		33.9	28.7		16.4	27.5		8.3	11.0	
Level of Service	C	D		C	C		B	C		A	B	
Approach Delay (s)		35.5			30.3			27.1			10.8	
Approach LOS		D			C			C			B	

Intersection Summary					
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	75.2%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	205	250	20	170	260
Future Volume (vph)	40	205	250	20	170	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	43	223	272	22	185	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	223	272	22	185	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 36.7%		ICU Level of Service A		
Analysis Period (min) 15				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	205	250	20	170	260
Future Volume (Veh/h)	40	205	250	20	170	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	223	272	22	185	283
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			273		617	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			273		617	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			79		48	72
cM capacity (veh/h)			1283		357	1007

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	223	272	22	468
Volume Left	0	0	272	0	185
Volume Right	0	223	0	0	283
cSH	1700	1700	1283	1700	904
Volume to Capacity	0.03	0.13	0.21	0.01	0.52
Queue Length 95th (m)	0.0	0.0	6.4	0.0	24.4
Control Delay (s)	0.0	0.0	8.6	0.0	16.1
Lane LOS			A		C
Approach Delay (s)	0.0		7.9		16.1
Approach LOS					C

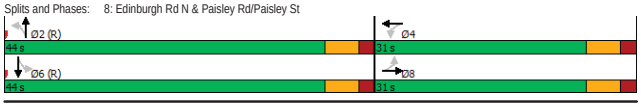
Intersection Summary				
Average Delay		9.6		
Intersection Capacity Utilization		36.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	365	70	50	260	80	75	460	60	95	405	100
Future Volume (vph)	115	365	70	50	260	80	75	460	60	95	405	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.99		0.99	1.00		1.00	0.99	
Frt		0.976			0.965			0.983			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1762	0	1805	1753	0	1656	1841	0	1656	1790	0
Flt Permitted	0.391			0.259			0.335			0.322		
Satd. Flow (perm)	685	1762	0	489	1753	0	580	1841	0	559	1790	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			22			13			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	125	397	76	54	283	87	82	500	65	103	440	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	473	0	54	370	0	82	565	0	103	549	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.55	0.79		0.33	0.62		0.28	0.60		0.36	0.60	
Control Delay	29.8	32.0		25.7	25.0		13.9	16.2		15.9	15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.8	32.0		25.7	25.0		13.9	16.2		15.9	15.8	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		31.6			25.1			15.9			15.9	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 21.6		Intersection LOS: C	
Intersection Capacity Utilization 88.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

g) Future Total (2031) AM - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	473	54	370	82	565	103	549
v/c Ratio	0.55	0.79	0.33	0.62	0.28	0.60	0.36	0.60
Control Delay	29.8	32.0	25.7	25.0	13.9	16.2	15.9	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	32.0	25.7	25.0	13.9	16.2	15.9	15.8
Queue Length 50th (m)	12.5	46.1	6.0	42.7	6.6	54.7	8.7	51.8
Queue Length 95th (m)	m23.8	m#106.6	16.3	70.8	16.2	85.9	21.0	82.5
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	228	596	163	599	293	939	283	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	0.55	0.79	0.33	0.62	0.28	0.60	0.36	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

g) Future Total (2031) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	365	70	50	260	80	75	460	60	95	405	100
Future Volume (vph)	115	365	70	50	260	80	75	460	60	95	405	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1665	1762		1795	1752		1646	1840		1650	1790	
Flt Permitted	0.39	1.00		0.26	1.00		0.34	1.00		0.32	1.00	
Satd. Flow (perm)	685	1762		490	1752		581	1840		560	1790	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	397	76	54	283	87	82	500	65	103	440	109
RTOR Reduction (vph)	0	9	0	0	15	0	0	6	0	0	12	0
Lane Group Flow (vph)	125	464	0	54	355	0	82	559	0	103	537	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	228	587		163	584		294	932		283	906	
v/s Ratio Prot		c0.26			0.20			c0.30			0.30	
v/s Ratio Perm	0.18			0.11			0.14			0.18		
v/c Ratio	0.55	0.79		0.33	0.61		0.28	0.60		0.36	0.59	
Uniform Delay, d1	20.4	22.6		18.7	20.9		10.6	13.1		11.2	13.0	
Progression Factor	0.98	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.2	9.4		5.4	4.7		2.4	2.8		3.6	2.8	
Delay (s)	28.1	31.2		24.1	25.6		13.0	16.0		14.8	15.9	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		30.5			25.4			15.6			15.7	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	305	40	100	265	155	55	75	125	170	65	80
Future Volume (vph)	160	305	40	100	265	155	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	1.00	0.98		0.99	0.97		0.98		0.98
Frt			0.850		0.945			0.906				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1699	0	1805	1667	0	1770	1900	1553
Flt Permitted	0.286			0.540			0.706			0.520		
Satd. Flow (perm)	523	1792	1571	1021	1699	0	1334	1667	0	949	1900	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			49		45			113				98
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	195	372	49	122	323	189	67	91	152	207	79	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	372	49	122	512	0	67	243	0	207	79	98
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

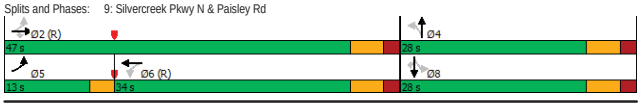
g) Future Total (2031) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8		8	8	8
Act Effct Green (s)	47.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.63	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.41	0.35	0.05	0.28	0.68		0.20	0.48		0.86	0.16	0.21
Control Delay	9.5	10.1	2.8	24.2	29.0		22.1	15.1		59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	9.5	10.1	2.8	24.2	29.0		22.1	15.1		59.0	21.2	6.0
LOS	A	B	A	C	C		C	B		E	C	A
Approach Delay		9.3			28.1			16.6			37.7	
Approach LOS		A			C			B			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	372	49	122	512	67	243	207	79	98
v/c Ratio	0.41	0.35	0.05	0.28	0.68	0.20	0.48	0.86	0.16	0.21
Control Delay	9.5	10.1	2.8	24.2	29.0	22.1	15.1	59.0	21.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	10.1	2.8	24.2	29.0	22.1	15.1	59.0	21.2	6.0
Queue Length 50th (m)	11.9	28.5	0.0	15.5	70.4	7.5	15.0	28.1	8.7	0.0
Queue Length 95th (m)	19.3	41.4	3.7	m28.0	95.6	15.2	28.7	#52.0	16.8	8.3
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	491	1050	941	438	754	391	568	278	557	516
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	0.40	0.35	0.05	0.28	0.68	0.17	0.43	0.74	0.14	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	305	40	100	265	155	55	75	125	170	65	80
Future Volume (vph)	160	305	40	100	265	155	55	75	125	170	65	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.97		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		0.98	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1792	1571	1797	1699		1795	1668		1733	1900	1525
Flt Permitted	0.29	1.00	1.00	0.54	1.00		0.71	1.00		0.52	1.00	1.00
Satd. Flow (perm)	526	1792	1571	1022	1699		1333	1668		949	1900	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	195	372	49	122	323	189	67	91	152	207	79	98
RTOR Reduction (vph)	0	0	20	0	26	0	0	84	0	0	0	73
Lane Group Flow (vph)	195	372	29	122	486	0	67	159	0	207	79	25
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Effective Green, g (s)	44.0	44.0	44.0	32.2	32.2		19.0	19.0		19.0	19.0	19.0
Actuated g/C Ratio	0.59	0.59	0.59	0.43	0.43		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	451	1051	921	438	729		337	422		240	481	386
v/s Ratio Prot	c0.05	0.21			c0.29			0.10			0.04	
v/s Ratio Perm	0.20		0.02	0.12			0.05			c0.22		0.02
v/c Ratio	0.43	0.35	0.03	0.28	0.67		0.20	0.38		0.86	0.16	0.06
Uniform Delay, d1	8.9	8.1	6.5	13.9	17.1		22.0	23.1		26.8	21.8	21.3
Progression Factor	1.00	1.00	1.00	1.38	1.37		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.9	0.1	1.5	4.5		0.3	0.6		25.8	0.2	0.1
Delay (s)	9.6	9.0	6.6	20.7	27.9		22.3	23.7		52.5	22.0	21.3
Level of Service	A	A	A	C	C		C	C		D	C	C
Approach Delay (s)		9.0			26.5			23.4			38.3	
Approach LOS		A			C			C			D	

Intersection Summary

HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	75.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings
11: Silvercreek Pkwy S & Street E/Street D

g) Future Total (2031) AM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (vph)	55	0	45	20	0	25	35	140	5	10	160	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.939			0.926			0.995			0.970	
Flt Protected		0.973			0.978		0.950			0.950		
Satd. Flow (prot)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Flt Permitted		0.973			0.978		0.950			0.950		
Satd. Flow (perm)	0	1702	0	0	1687	0	1770	1853	0	1770	1807	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	49	0	38	157	0	11	217	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.3%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: Silvercreek Pkwy S & Street E/Street D

g) Future Total (2031) AM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Future Volume (Veh/h)	55	0	45	20	0	25	35	140	5	10	160	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	0	49	22	0	27	38	152	5	11	174	43
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	472	450	196	476	470	154	217			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	472	450	196	476	470	154	217			157		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	94	95	100	97	97			99		
cM capacity (veh/h)	473	486	846	458	474	891	1353			1423		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	109	49	38	157	11	217
Volume Left	60	22	38	0	11	0
Volume Right	49	27	0	5	0	43
cSH	590	625	1353	1700	1423	1700
Volume to Capacity	0.18	0.08	0.03	0.09	0.01	0.13
Queue Length 95th (m)	5.4	2.0	0.7	0.0	0.2	0.0
Control Delay (s)	12.5	11.2	7.7	0.0	7.5	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	12.5	11.2	1.5		0.4	
Approach LOS	B	B				

Intersection Summary

Average Delay	3.9			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (vph)	0	1025	70	0	1160	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1114	76	0	1261	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1025	70	0	1160	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1114	76	0	1261	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	1262			1115			1536	2377	373	1634	2377	422
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	872			1115			1180	2121	373	1289	2121	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	698			634			132	45	629	110	45	973

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	371	371	371	76	420	420	420	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.22	0.22	0.04	0.25	0.25	0.25	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

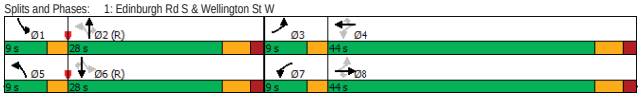
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	660	190	240	770	80	200	695	230	65	670	75
Future Volume (vph)	115	660	190	240	770	80	200	695	230	65	670	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.224			0.229			0.211			0.333		
Satd. Flow (perm)	425	3539	1577	426	3539	1555	400	3610	1535	618	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			194			109			158			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	673	194	245	786	82	204	709	235	66	684	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	673	194	245	786	82	204	709	235	66	684	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	35.4	25.8	25.8	37.7	28.9	28.9	44.0	32.7	32.7	36.5	26.1	26.1
Actuated g/C Ratio	0.39	0.29	0.29	0.42	0.32	0.32	0.49	0.36	0.36	0.41	0.29	0.29
v/c Ratio	0.44	0.66	0.33	0.83	0.69	0.14	0.53	0.54	0.36	0.19	0.65	0.15
Control Delay	19.4	31.0	4.7	44.4	30.2	2.7	19.6	26.6	10.8	11.1	26.7	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.0	4.7	44.4	30.2	2.7	19.6	26.6	10.8	11.1	26.7	2.1
LOS	B	C	A	D	C	A	B	C	B	B	C	A
Approach Delay		24.4			31.3			22.1			23.1	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	673	194	245	786	82	204	709	235	66	684	77
v/c Ratio	0.44	0.66	0.33	0.83	0.69	0.14	0.53	0.54	0.36	0.19	0.65	0.15
Control Delay	19.4	31.0	4.7	44.4	30.2	2.7	19.6	26.6	10.8	11.1	26.7	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.0	4.7	44.4	30.2	2.7	19.6	26.6	10.8	11.1	26.7	2.1
Queue Length 50th (m)	12.4	55.7	0.0	28.3	67.8	0.0	20.1	54.2	9.5	3.8	61.0	1.7
Queue Length 95th (m)	20.0	66.1	13.4	#56.5	79.0	5.7	39.0	84.0	32.0	m6.8	71.8	m2.2
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	268	1494	777	295	1494	719	387	1311	658	346	1045	530
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.45	0.25	0.83	0.53	0.11	0.53	0.54	0.36	0.19	0.65	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	660	190	240	770	80	200	695	230	65	670	75
Future Volume (vph)	115	660	190	240	770	80	200	695	230	65	670	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1767	3610	1565
Flt Permitted	0.22	1.00	1.00	0.23	1.00	1.00	0.21	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	426	3539	1577	426	3539	1555	401	3610	1537	619	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	673	194	245	786	82	204	709	235	66	684	77
RTOR Reduction (vph)	0	0	137	0	0	56	0	0	103	0	0	55
Lane Group Flow (vph)	117	673	57	245	786	26	204	709	132	66	684	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.6	26.3	26.3	36.8	28.9	28.9	40.8	31.5	31.5	31.8	25.5	25.5
Effective Green, g (s)	31.6	26.3	26.3	36.8	28.9	28.9	40.8	31.5	31.5	31.8	25.5	25.5
Actuated g/C Ratio	0.35	0.29	0.29	0.41	0.32	0.32	0.45	0.35	0.35	0.35	0.28	0.28
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	230	1034	460	292	1136	499	373	1263	537	299	1022	443
v/s Ratio Prot	0.03	0.19		c0.07	0.22		c0.07	0.20		0.02	c0.19	
v/s Ratio Perm	0.15		0.04	c0.27		0.02	0.17		0.09	0.06		0.01
v/c Ratio	0.51	0.65	0.12	0.84	0.69	0.05	0.55	0.56	0.25	0.22	0.67	0.05
Uniform Delay, d1	20.9	27.8	23.4	20.3	26.7	21.1	16.5	23.7	20.8	19.6	28.5	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.81	0.60
Incremental Delay, d2	1.8	1.5	0.1	18.6	1.8	0.0	1.6	1.8	1.1	0.3	3.1	0.2
Delay (s)	22.7	29.3	23.5	39.0	28.5	21.1	18.1	25.5	21.9	14.2	26.1	14.2
Level of Service	C	C	C	D	C	C	B	C	C	B	C	B
Approach Delay (s)		27.4			30.3			23.4			24.0	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay		26.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.76			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		77.8%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

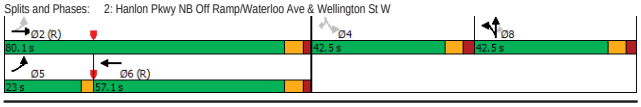
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	795	0	0	1030	30	415	275	150	25	0	465
Future Volume (vph)	215	795	0	0	1030	30	415	275	150	25	0	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.996				0.850			0.850
Flt Protected	0.950						0.950	0.989		0.950		
Satd. Flow (prot)	1787	5136	0	0	5113	0	1698	1781	1599	1805	0	1599
Flt Permitted	0.131						0.950	0.989		0.125		
Satd. Flow (perm)	246	5136	0	0	5113	0	1698	1781	1599	238	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				155			236
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	222	820	0	0	1062	31	428	284	155	26	0	479
Shared Lane Traffic (%)							18%					
Lane Group Flow (vph)	222	820	0	0	1093	0	351	361	155	26	0	479
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	79.4	75.3			54.8		35.8	35.8	35.8	31.9		31.9
Actuated g/C Ratio	0.48	0.46			0.33		0.22	0.22	0.22	0.19		0.19
v/c Ratio	0.79	0.35			0.64		0.95	0.94	0.33	0.58		0.96
Control Delay	49.5	30.0			49.8		99.4	94.6	9.2	104.8		64.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	49.5	30.0			49.8		99.4	94.6	9.2	104.8		64.0
LOS	D	C			D		F	F	A	F		E
Approach Delay		34.2			49.8			81.3			66.1	
Approach LOS		C			D			F			E	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 55.3		Intersection LOS: E	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	222	820	1093	351	361	155	26	479
v/c Ratio	0.79	0.35	0.64	0.95	0.94	0.33	0.58	0.96
Control Delay	49.5	30.0	49.8	99.4	94.6	9.2	104.8	64.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	30.0	49.8	99.4	94.6	9.2	104.8	64.0
Queue Length 50th (m)	46.2	68.3	121.7	128.4	131.4	0.0	8.1	91.3
Queue Length 95th (m)	#75.0	80.2	140.7	#200.5	#201.4	20.5	#24.2	#161.1
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	304	2340	1700	368	386	468	50	524
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	0.73	0.35	0.64	0.95	0.94	0.33	0.52	0.91

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)	215	795	0	0	1030	30	415	275	150	25	0	465
Future Volume (vph)	215	795	0	0	1030	30	415	275	150	25	0	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5112		1698	1782	1599	1805		1599
Flt Permitted	0.13	1.00			1.00		0.95	0.99	1.00	0.13		1.00
Satd. Flow (perm)	247	5136			5112		1698	1782	1599	238		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	222	820	0	0	1062	31	428	284	155	26	0	479
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	121	0	0	190
Lane Group Flow (vph)	222	820	0	0	1091	0	351	361	34	26	0	289
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	75.3	75.3			54.9		35.8	35.8	35.8	31.9		31.9
Effective Green, g (s)	75.3	75.3			54.9		35.8	35.8	35.8	31.9		31.9
Actuated g/C Ratio	0.46	0.46			0.33		0.22	0.22	0.22	0.19		0.19
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	274	2342			1699		368	386	346	45		308
v/s Ratio Prot	c0.09	0.16			0.21		c0.21	0.20				
v/s Ratio Perm	c0.28								0.02	0.11		c0.18
v/c Ratio	0.81	0.35			0.64		0.95	0.94	0.10	0.58		0.94
Uniform Delay, d1	32.2	29.1			46.8		63.8	63.5	51.7	60.5		65.6
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	16.4	0.4			1.9		34.8	29.6	0.1	16.7		34.7
Delay (s)	48.6	29.5			48.6		98.6	93.2	51.8	77.2		100.3
Level of Service	D	C			D		F	F	D	E		F
Approach Delay (s)		33.5			48.6			88.0			99.1	
Approach LOS		C			D			F			F	

Intersection Summary

HCM 2000 Control Delay	61.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

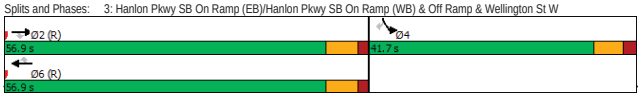
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	890	515	0	1345	325	0	0	0	205	0	85
Future Volume (vph)	0	890	515	0	1345	325	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			542			171						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	937	542	0	1416	342	0	0	0	216	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	937	542	0	1416	342	0	0	0	216	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.25	0.42		0.37	0.29				0.52		0.40
Control Delay		4.4	1.4		5.0	2.8				45.0		28.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.4	1.4		5.0	2.8				45.0		28.0
LOS		A	A		A	A				D		C
Approach Delay		3.3			4.6						40.0	
Approach LOS		A			A						D	

Intersection Summary

Area Type: Other
Cycle Length: 98.6
Actuated Cycle Length: 98.6
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 7.1 Intersection LOS: A
Intersection Capacity Utilization 45.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	937	542	1416	342	216	89
v/c Ratio	0.25	0.42	0.37	0.29	0.52	0.40
Control Delay	4.4	1.4	5.0	2.8	45.0	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	1.4	5.0	2.8	45.0	28.0
Queue Length 50th (m)	17.8	0.0	30.4	8.2	21.3	8.5
Queue Length 95th (m)	26.1	8.5	42.8	18.7	32.0	23.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3771	1301	3809	1190	1230	568
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	0.25	0.42	0.37	0.29	0.18	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	890	515	0	1345	325	0	0	0	205	0	85
Future Volume (vph)	0	890	515	0	1345	325	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	937	542	0	1416	342	0	0	0	216	0	89
RTOR Reduction (vph)	0	0	140	0	0	44	0	0	0	0	0	38
Lane Group Flow (vph)	0	937	402	0	1416	298	0	0	0	216	0	51
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.1	73.1		73.1	73.1				11.9		11.9
Effective Green, g (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3769	1160		3807	1145				418		183
v/s Ratio Prot		0.18			c0.28					c0.06		
v/s Ratio Perm			0.26			0.19						0.03
v/c Ratio		0.25	0.35		0.37	0.26				0.52		0.28
Uniform Delay, d1		4.0	4.4		4.6	4.1				40.7		39.4
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.3	0.6				1.1		0.8
Delay (s)		4.2	5.3		4.8	4.6				41.7		40.3
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.8			0.0			41.3	
Approach LOS		A			A			A			D	

Intersection Summary

HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	98.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

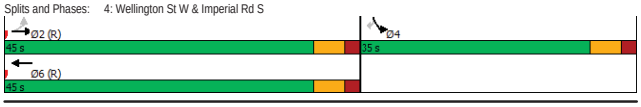
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	975	895	410	375	60
Future Volume (vph)	70	975	895	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.953			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3348	0	1787	1615
Flt Permitted		0.685			0.950	
Satd. Flow (perm)	0	2428	3348	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			130			62
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	1005	923	423	387	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1077	1346	0	387	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
v/c Ratio		0.78	0.69		0.77	0.12
Control Delay		20.2	14.1		36.9	5.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		20.2	14.1		36.9	5.8
LOS		C	B		D	A
Approach Delay		20.2	14.1		32.6	
Approach LOS		C	B		C	

Intersection Summary

Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 102.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1077	1346	387	62
v/c Ratio	0.78	0.69	0.77	0.12
Control Delay	20.2	14.1	36.9	5.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.2	14.1	36.9	5.8
Queue Length 50th (m)	65.0	66.7	56.4	0.0
Queue Length 95th (m)	#125.1	110.1	78.3	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1383	1964	647	624
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	0.78	0.69	0.60	0.10

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	975	895	410	375	60
Future Volume (vph)	70	975	895	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3348		1787	1615
Flt Permitted		0.69	1.00		0.95	1.00
Satd. Flow (perm)		2429	3348		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	1005	923	423	387	62
RTOR Reduction (vph)	0	0	56	0	0	45
Lane Group Flow (vph)	0	1077	1290	0	387	17
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		45.6	45.6		22.4	22.4
Effective Green, g (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1384	1908		500	452
v/s Ratio Prot			0.39		c0.22	
v/s Ratio Perm		c0.44				0.01
v/c Ratio		0.78	0.68		0.77	0.04
Uniform Delay, d1		13.3	12.0		26.5	21.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		4.4	1.9		7.3	0.0
Delay (s)		17.7	14.0		33.8	21.0
Level of Service		B	B		C	C
Approach Delay (s)		17.7	14.0		32.0	
Approach LOS		B	B		C	

Intersection Summary

HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

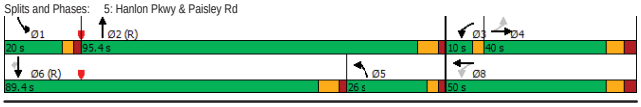
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	400	390	145	470	70	420	1215	205	85	1625	140
Future Volume (vph)	125	400	390	145	470	70	420	1215	205	85	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3535	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.360			0.317			0.950			0.950		
Satd. Flow (perm)	677	3574	1595	602	3535	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		10				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	129	412	402	149	485	72	433	1253	211	88	1675	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	412	402	149	557	0	433	1253	211	88	1675	144
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	32.0	32.0	165.4	47.0	42.0		21.2	90.4	165.4	12.6	81.8	81.8
Actuated g/C Ratio	0.19	0.19	1.00	0.28	0.25		0.13	0.55	1.00	0.08	0.49	0.49
v/c Ratio	0.99	0.60	0.25	0.67	0.62		0.97	0.68	0.13	0.64	0.98	0.17
Control Delay	141.3	64.9	0.4	64.8	57.0		107.1	29.8	0.2	94.8	57.4	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.3	64.9	0.4	64.8	57.0		107.1	29.8	0.2	94.8	57.4	7.8
LOS	F	E	A	E	E		F	C	A	F	E	A
Approach Delay		47.9			58.6			44.1			55.4	
Approach LOS		D			E			D			E	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 50.6		Intersection LOS: D	
Intersection Capacity Utilization 104.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Queues
5: Hanlon Pkwy & Paisley Rd

g) Future Total (2031) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	412	402	149	557	433	1253	211	88	1675	144
v/c Ratio	0.99	0.60	0.25	0.67	0.62	0.97	0.68	0.13	0.64	0.98	0.17
Control Delay	141.3	64.9	0.4	64.8	57.0	107.1	29.8	0.2	94.8	57.4	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.3	64.9	0.4	64.8	57.0	107.1	29.8	0.2	94.8	57.4	7.8
Queue Length 50th (m)	45.2	69.3	0.0	40.6	89.1	78.4	162.7	0.0	30.0	293.1	7.4
Queue Length 95th (m)	#92.2	88.8	0.0	62.3	110.5	#116.1	193.4	0.0	50.2	#351.0	20.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	130	691	1595	221	905	445	1844	1599	163	1720	852
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.60	0.25	0.67	0.62	0.97	0.68	0.13	0.54	0.97	0.17

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
5: Hanlon Pkwy & Paisley Rd

g) Future Total (2031) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	400	390	145	470	70	420	1215	205	85	1625	140
Future Volume (vph)	125	400	390	145	470	70	420	1215	205	85	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3574	1595	1805	3534		3467	3374	1599	1805	3471	1615
Flt Permitted	0.36	1.00	1.00	0.32	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	677	3574	1595	602	3534		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	412	402	149	485	72	433	1253	211	88	1675	144
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	52
Lane Group Flow (vph)	129	412	402	149	550	0	433	1253	211	88	1675	92
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	32.0	32.0	165.4	42.0	42.0		21.2	90.4	165.4	12.6	81.8	81.8
Effective Green, g (s)	32.0	32.0	165.4	42.0	42.0		21.2	90.4	165.4	12.6	81.8	81.8
Actuated g/C Ratio	0.19	0.19	1.00	0.25	0.25		0.13	0.55	1.00	0.08	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	691	1595	203	897		444	1844	1599	137	1716	798
v/s Ratio Prot		0.12		c0.03	0.16		c0.12	0.37		0.05	c0.48	
v/s Ratio Perm	c0.19		0.25	0.15					0.13			0.06
v/c Ratio	0.99	0.60	0.25	0.73	0.61		0.98	0.68	0.13	0.64	0.98	0.12
Uniform Delay, d1	66.6	60.8	0.0	55.7	54.5		71.8	27.1	0.0	74.2	40.8	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	76.3	1.4	0.4	12.9	1.2		36.0	2.0	0.2	9.9	16.8	0.3
Delay (s)	142.9	62.2	0.4	68.6	55.8		107.8	29.1	0.2	84.1	57.6	22.7
Level of Service	F	E	A	E	E		F	C	A	F	E	C
Approach Delay (s)		46.9			58.5			43.8			56.2	
Approach LOS		D			E			D			E	

Intersection Summary

HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

g) Future Total (2031) PM - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	175	50	90	270	45	50	640	85	50	630	30
Future Volume (vph)	45	175	50	90	270	45	50	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.966			0.979			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1804	0	1805	1833	0	1805	1856	0	1770	1884	0
Flt Permitted	0.327			0.496			0.303			0.261		
Satd. Flow (perm)	601	1804	0	936	1833	0	575	1856	0	485	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			14			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	180	52	93	278	46	52	660	88	52	649	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	232	0	93	324	0	52	748	0	52	680	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

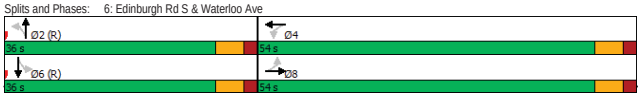
g) Future Total (2031) PM - Full Build-out

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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	21.5	21.5		21.5	21.5		56.5	56.5		56.5	56.5	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
v/c Ratio	0.32	0.52		0.42	0.72		0.14	0.64		0.17	0.57	
Control Delay	32.2	29.4		33.0	38.9		19.0	27.5		10.8	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.2	29.4		33.0	38.9		19.0	27.5		10.8	13.5	
LOS	C	C		C	D		B	C		B	B	
Approach Delay		29.9			37.6			27.0			13.3	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.8		Intersection LOS: C	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Queues
6: Edinburgh Rd S & Waterloo Ave

g) Future Total (2031) PM - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	232	93	324	52	748	52	680
v/c Ratio	0.32	0.52	0.42	0.72	0.14	0.64	0.17	0.57
Control Delay	32.2	29.4	33.0	38.9	19.0	27.5	10.8	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	29.4	33.0	38.9	19.0	27.5	10.8	13.5
Queue Length 50th (m)	6.9	32.6	14.4	52.1	3.4	89.0	3.6	64.8
Queue Length 95th (m)	15.4	48.7	25.9	72.0	m16.2	169.2	11.7	123.1
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	320	973	499	984	360	1168	304	1183
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.19	0.33	0.14	0.64	0.17	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
6: Edinburgh Rd S & Waterloo Ave

g) Future Total (2031) PM - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	175	50	90	270	45	50	640	85	50	630	30
Future Volume (vph)	45	175	50	90	270	45	50	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1751	1805		1794	1832		1802	1857		1764	1885	
Flt Permitted	0.33	1.00		0.50	1.00		0.30	1.00		0.26	1.00	
Satd. Flow (perm)	603	1805		937	1832		575	1857		485	1885	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	180	52	93	278	46	52	660	88	52	649	31
RTOR Reduction (vph)	0	19	0	0	11	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	213	0	93	313	0	52	745	0	52	679	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	21.5	21.5		21.5	21.5		56.5	56.5		56.5	56.5	
Effective Green, g (s)	21.5	21.5		21.5	21.5		56.5	56.5		56.5	56.5	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	144	431		223	437		360	1165		304	1183	
v/s Ratio Prot		0.12			c0.17			c0.40			0.36	
v/s Ratio Perm	0.08			0.10			0.09			0.11		
v/c Ratio	0.32	0.49		0.42	0.72		0.14	0.64		0.17	0.57	
Uniform Delay, d1	28.2	29.6		29.0	31.5		6.9	10.4		7.0	9.7	
Progression Factor	1.00	1.00		1.00	1.00		1.98	2.05		1.00	1.00	
Incremental Delay, d2	1.3	0.9		1.3	5.5		0.7	2.4		1.2	2.0	
Delay (s)	29.5	30.5		30.2	37.0		14.3	23.8		8.2	11.8	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		30.3			35.5			23.2			11.5	
Approach LOS		C			D			C			B	

Intersection Summary

HCM 2000 Control Delay	22.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	79.6%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings
7: Waterloo Ave & Silvercreek Pkwy S

g) Future Total (2031) PM - Full Build-out

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	225	265	50	255	265
Future Volume (vph)	40	225	265	50	255	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	43	245	288	54	277	288
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	245	288	54	277	288
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
7: Waterloo Ave & Silvercreek Pkwy S

g) Future Total (2031) PM - Full Build-out

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	225	265	50	255	265
Future Volume (Veh/h)	40	225	265	50	255	265
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	245	288	54	277	288
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			289		675	45
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			289		675	45
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			77		15	72
cM capacity (veh/h)			1272		326	1026

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	245	288	54	565
Volume Left	0	0	288	0	277
Volume Right	0	245	0	0	288
cSH	1700	1700	1272	1700	666
Volume to Capacity	0.03	0.14	0.23	0.03	0.85
Queue Length 95th (m)	0.0	0.0	7.0	0.0	76.6
Control Delay (s)	0.0	0.0	8.7	0.0	32.2
Lane LOS			A		D
Approach Delay (s)	0.0		7.3		32.2
Approach LOS					D

Intersection Summary

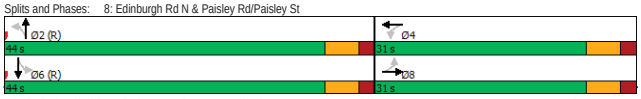
Average Delay	17.3			
Intersection Capacity Utilization	42.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	330	115	60	410	50	105	530	55	100	535	140
Future Volume (vph)	115	330	115	60	410	50	105	530	55	100	535	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.961			0.984			0.986			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1797	0	1805	1845	0	1805	1865	0	1736	1830	0
Flt Permitted	0.232			0.252			0.195			0.271		
Satd. Flow (perm)	438	1797	0	476	1845	0	370	1865	0	494	1830	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			9			10			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	124	355	124	65	441	54	113	570	59	108	575	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	479	0	65	495	0	113	629	0	108	726	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.85	0.78		0.41	0.80		0.60	0.66		0.43	0.77	
Control Delay	67.4	29.4		29.0	33.9		30.5	17.7		18.5	21.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.4	29.4		29.0	33.9		30.5	17.7		18.5	21.5	
LOS	E	C		C	C		C	B		B	C	
Approach Delay		37.2			33.4			19.7			21.1	
Approach LOS		D			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 98.3%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	479	65	495	113	629	108	726
v/c Ratio	0.85	0.78	0.41	0.80	0.60	0.66	0.43	0.77
Control Delay	67.4	29.4	29.0	33.9	30.5	17.7	18.5	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	29.4	29.0	33.9	30.5	17.7	18.5	21.5
Queue Length 50th (m)	12.9	47.0	7.4	64.8	11.2	64.3	9.5	79.4
Queue Length 95th (m)	m#42.9	m#106.2	19.6	#114.3	#37.0	100.4	23.8	126.1
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	146	615	158	621	187	949	250	940
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	0.85	0.78	0.41	0.80	0.60	0.66	0.43	0.77

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	330	115	60	410	50	105	530	55	100	535	140
Future Volume (vph)	115	330	115	60	410	50	105	530	55	100	535	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1792	1797		1796	1845		1802	1865		1732	1830	
Flt Permitted	0.23	1.00		0.25	1.00		0.19	1.00		0.27	1.00	
Satd. Flow (perm)	438	1797		476	1845		369	1865		493	1830	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	355	124	65	441	54	113	570	59	108	575	151
RTOR Reduction (vph)	0	17	0	0	6	0	0	5	0	0	13	0
Lane Group Flow (vph)	124	462	0	65	489	0	113	624	0	108	713	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	146	599		158	615		186	944		249	927	
v/s Ratio Prot		0.26			0.27			0.33			c0.39	
v/s Ratio Perm	c0.28			0.14			0.31			0.22		
v/c Ratio	0.85	0.77		0.41	0.80		0.61	0.66		0.43	0.77	
Uniform Delay, d1	23.2	22.4		19.3	22.7		13.2	13.7		11.7	15.0	
Progression Factor	0.94	0.92		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.4	8.4		7.7	10.2		13.9	3.6		5.4	6.1	
Delay (s)	61.3	29.1		27.1	32.9		27.1	17.4		17.1	21.1	
Level of Service	E	C		C	C		C	B		B	C	
Approach Delay (s)		35.7			32.2			18.8			20.6	
Approach LOS		D			C			B			C	

Intersection Summary					
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	98.3%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

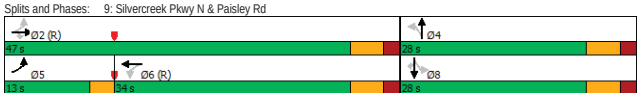
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	350	70	145	360	195	60	80	120	215	85	245
Future Volume (vph)	245	350	70	145	360	195	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00		0.99
Frt			0.850		0.947			0.910				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1771	0	1805	1705	0	1787	1900	1615
Flt Permitted	0.201			0.538			0.698			0.572		
Satd. Flow (perm)	381	1881	1580	1021	1771	0	1325	1705	0	1073	1900	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			75		42			102				263
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	263	376	75	156	387	210	65	86	129	231	91	263
Shared Lane Traffic (%)												
Lane Group Flow (vph)	263	376	75	156	597	0	65	215	0	231	91	263
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	46.9	43.9	43.9	31.4	31.4		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.63	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
v/c Ratio	0.63	0.34	0.08	0.37	0.78		0.19	0.42		0.85	0.19	0.44
Control Delay	14.5	9.9	2.5	27.7	34.6		22.0	14.2		53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.5	9.9	2.5	27.7	34.6		22.0	14.2		53.9	21.6	5.5
LOS	B	A	A	C	C		C	B		D	C	A
Approach Delay		10.8			33.2			16.0			27.1	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	263	376	75	156	597	65	215	231	91	263
v/c Ratio	0.63	0.34	0.08	0.37	0.78	0.19	0.42	0.85	0.19	0.44
Control Delay	14.5	9.9	2.5	27.7	34.6	22.0	14.2	53.9	21.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	9.9	2.5	27.7	34.6	22.0	14.2	53.9	21.6	5.5
Queue Length 50th (m)	16.6	28.4	0.0	22.7	91.3	7.3	12.9	31.3	10.2	0.0
Queue Length 95th (m)	31.0	46.7	5.4	m29.5	m#134.8	16.5	30.0	#65.3	20.8	16.0
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	431	1101	955	427	765	388	572	314	557	653
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	0.61	0.34	0.08	0.37	0.78	0.17	0.38	0.74	0.16	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	350	70	145	360	195	60	80	120	215	85	245
Future Volume (vph)	245	350	70	145	360	195	60	80	120	215	85	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1772		1803	1705		1783	1900	1594
Flt Permitted	0.20	1.00	1.00	0.54	1.00		0.70	1.00		0.57	1.00	1.00
Satd. Flow (perm)	382	1881	1580	1022	1772		1325	1705		1073	1900	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	263	376	75	156	387	210	65	86	129	231	91	263
RTOR Reduction (vph)	0	0	31	0	24	0	0	76	0	0	0	196
Lane Group Flow (vph)	263	376	44	156	573	0	65	139	0	231	91	67
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	43.9	43.9	43.9	31.4	31.4		19.1	19.1		19.1	19.1	19.1
Effective Green, g (s)	43.9	43.9	43.9	31.4	31.4		19.1	19.1		19.1	19.1	19.1
Actuated g/C Ratio	0.59	0.59	0.59	0.42	0.42		0.25	0.25		0.25	0.25	0.25
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	403	1101	924	427	741		337	434		273	483	405
v/s Ratio Prot	c0.08	0.20			c0.32			0.08			0.05	
v/s Ratio Perm	0.30		0.03	0.15			0.05			c0.22		0.04
v/c Ratio	0.65	0.34	0.05	0.37	0.77		0.19	0.32		0.85	0.19	0.17
Uniform Delay, d1	10.9	8.1	6.6	15.0	18.7		21.9	22.7		26.6	21.9	21.7
Progression Factor	1.00	1.00	1.00	1.50	1.49		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.8	0.1	1.7	5.4		0.3	0.4		20.8	0.2	0.2
Delay (s)	14.7	8.9	6.7	24.0	33.4		22.2	23.1		47.3	22.1	21.9
Level of Service	B	A	A	C	C		C	C		D	C	C
Approach Delay (s)		10.8			31.4			22.9			32.0	
Approach LOS		B			C			C			C	

Intersection Summary

HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.9%	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)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (vph)	70	0	70	10	0	15	85	170	20	20	165	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.932			0.920			0.984			0.955	
Flt Protected		0.976			0.980		0.950			0.950		
Satd. Flow (prot)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Flt Permitted		0.976			0.980		0.950			0.950		
Satd. Flow (perm)	0	1694	0	0	1679	0	1770	1833	0	1770	1779	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	27	0	92	207	0	22	255	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Future Volume (Veh/h)	70	0	70	10	0	15	85	170	20	20	165	70
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	0	76	11	0	16	92	185	22	22	179	76
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	646	652	217	679	679	196	255			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	652	217	679	679	196	255			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	100	91	96	100	98	93			98		
cM capacity (veh/h)	353	354	823	310	342	845	1310			1364		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	152	27	92	207	22	255
Volume Left	76	11	92	0	22	0
Volume Right	76	16	0	22	0	76
cSH	494	496	1310	1700	1364	1700
Volume to Capacity	0.31	0.05	0.07	0.12	0.02	0.15
Queue Length 95th (m)	10.4	1.4	1.8	0.0	0.4	0.0
Control Delay (s)	15.5	12.7	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	15.5	12.7	2.4		0.6	
Approach LOS	C	B				

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (vph)	0	950	75	0	1580	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1033	82	0	1717	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	950	75	0	1580	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1033	82	0	1717	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	1718			1034			1607	2752	346	2063	2752	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1143			1034			1009	2390	346	1559	2390	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	513			680			163	28	655	64	28	903

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	344	344	344	82	572	572	572	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.20	0.20	0.05	0.34	0.34	0.34	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	33.9%	ICU Level of Service	A	
Analysis Period (min)	15			

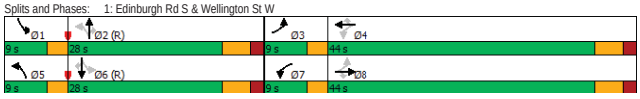
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	565	115	170	535	80	135	460	205	70	485	70
Future Volume (vph)	80	565	115	170	535	80	135	460	205	70	485	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.388			0.240			0.377			0.483		
Satd. Flow (perm)	726	3574	1575	447	3505	1487	716	3610	1583	918	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117			109			209			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	577	117	173	546	82	138	469	209	71	495	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	577	117	173	546	82	138	469	209	71	495	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	31.4	20.8	20.8	36.0	24.9	24.9	46.6	35.7	35.7	42.6	32.1	32.1
Actuated g/C Ratio	0.35	0.23	0.23	0.40	0.28	0.28	0.52	0.40	0.40	0.47	0.36	0.36
v/c Ratio	0.24	0.70	0.26	0.54	0.56	0.17	0.29	0.33	0.28	0.14	0.38	0.11
Control Delay	17.2	36.1	6.5	23.5	30.5	3.5	13.8	21.6	4.5	9.9	21.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.1	6.5	23.5	30.5	3.5	13.8	21.6	4.5	9.9	21.0	2.5
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		29.6			26.2			15.9			17.7	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	577	117	173	546	82	138	469	209	71	495	71
v/c Ratio	0.24	0.70	0.26	0.54	0.56	0.17	0.29	0.33	0.28	0.14	0.38	0.11
Control Delay	17.2	36.1	6.5	23.5	30.5	3.5	13.8	21.6	4.5	9.9	21.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.1	6.5	23.5	30.5	3.5	13.8	21.6	4.5	9.9	21.0	2.5
Queue Length 50th (m)	8.7	50.7	0.0	19.4	45.0	0.0	12.8	32.7	0.0	4.6	38.8	0.9
Queue Length 95th (m)	16.8	62.9	12.2	32.2	59.6	6.5	24.1	49.1	15.2	7.8	57.2	5.1
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	342	1509	732	323	1479	690	482	1432	753	507	1289	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.38	0.16	0.54	0.37	0.12	0.29	0.33	0.28	0.14	0.38	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	565	115	170	535	80	135	460	205	70	485	70
Future Volume (vph)	80	565	115	170	535	80	135	460	205	70	485	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1784	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.39	1.00	1.00	0.24	1.00	1.00	0.38	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)	729	3574	1575	447	3505	1487	716	3610	1583	918	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	577	117	173	546	82	138	469	209	71	495	71
RTOR Reduction (vph)	0	0	89	0	0	59	0	0	129	0	0	46
Lane Group Flow (vph)	82	577	28	173	546	23	138	469	80	71	495	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.8	21.4	21.4	34.3	24.9	24.9	43.7	34.5	34.5	37.7	31.5	31.5
Effective Green, g (s)	27.8	21.4	21.4	34.3	24.9	24.9	43.7	34.5	34.5	37.7	31.5	31.5
Actuated g/C Ratio	0.31	0.24	0.24	0.38	0.28	0.28	0.49	0.38	0.38	0.42	0.35	0.35
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	300	849	374	315	969	411	458	1383	606	445	1263	565
v/s Ratio Prot	0.02	c0.16		c0.06	0.16		c0.03	0.13		0.01	c0.14	
v/s Ratio Perm	0.06		0.02	0.15		0.02	0.12		0.05	0.06		0.02
v/c Ratio	0.27	0.68	0.07	0.55	0.56	0.06	0.30	0.34	0.13	0.16	0.39	0.04
Uniform Delay, d1	22.6	31.2	26.6	19.9	27.9	23.9	13.2	19.7	18.0	15.8	22.0	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.87	1.09
Incremental Delay, d2	0.5	2.2	0.1	2.0	0.8	0.1	0.4	0.7	0.5	0.2	0.9	0.1
Delay (s)	23.1	33.4	26.7	21.9	28.6	24.0	13.6	20.3	18.5	12.2	20.0	21.1
Level of Service	C	C	C	C	C	C	B	C	B	B	B	C
Approach Delay (s)		31.3			26.7			18.7			19.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

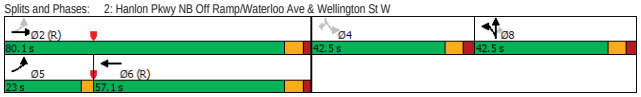
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	565	0	0	730	35	295	205	160	30	0	375
Future Volume (vph)	145	565	0	0	730	35	295	205	160	30	0	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.993				0.850			0.850
Flt Protected	0.950						0.950	0.990		0.950		
Satd. Flow (prot)	1736	5085	0	0	5102	0	1681	1780	1599	1805	0	1599
Flt Permitted	0.280						0.950	0.990		0.148		
Satd. Flow (perm)	512	5085	0	0	5102	0	1681	1780	1599	281	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5				163			282
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	148	577	0	0	745	36	301	209	163	31	0	383
Shared Lane Traffic (%)							17%					
Lane Group Flow (vph)	148	577	0	0	781	0	250	260	163	31	0	383
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	90.7	86.6			70.7		29.3	29.3	29.3	27.1		27.1
Actuated g/C Ratio	0.55	0.52			0.43		0.18	0.18	0.18	0.16		0.16
v/c Ratio	0.39	0.22			0.36		0.84	0.83	0.39	0.67		0.77
Control Delay	24.7	23.4			35.4		88.9	86.1	9.8	121.2		27.2
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	24.7	23.4			35.4		88.9	86.1	9.8	121.2		27.2
LOS	C	C			D		F	F	A	F		C
Approach Delay		23.7			35.4			68.7			34.2	
Approach LOS		C			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 40.6		Intersection LOS: D	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	148	577	781	250	260	163	31	383
v/c Ratio	0.39	0.22	0.36	0.84	0.83	0.39	0.67	0.77
Control Delay	24.7	23.4	35.4	88.9	86.1	9.8	121.2	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	23.4	35.4	88.9	86.1	9.8	121.2	27.2
Queue Length 50th (m)	27.2	42.1	71.3	88.3	91.5	0.0	9.8	32.3
Queue Length 95th (m)	45.2	55.6	94.4	120.9	124.7	20.8	#26.7	72.7
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	429	2667	2186	356	377	467	59	561
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	0.34	0.22	0.36	0.70	0.69	0.35	0.53	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)	145	565	0	0	730	35	295	205	160	30	0	375
Future Volume (vph)	145	565	0	0	730	35	295	205	160	30	0	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			0.99		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5102		1681	1780	1599	1805		1599
Flt Permitted	0.28	1.00			1.00		0.95	0.99	1.00	0.15		1.00
Satd. Flow (perm)	511	5085			5102		1681	1780	1599	280		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	148	577	0	0	745	36	301	209	163	31	0	383
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	134	0	0	236
Lane Group Flow (vph)	148	577	0	0	778	0	250	260	29	31	0	147
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	86.6	86.6			70.7		29.3	29.3	29.3	27.1		27.1
Effective Green, g (s)	86.6	86.6			70.7		29.3	29.3	29.3	27.1		27.1
Actuated g/C Ratio	0.52	0.52			0.43		0.18	0.18	0.18	0.16		0.16
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	363	2667			2184		298	315	283	45		262
v/s Ratio Prot	c0.03	0.11			0.15		c0.15	0.15				
v/s Ratio Perm	c0.18								0.02	c0.11		0.09
v/c Ratio	0.41	0.22			0.36		0.84	0.83	0.10	0.69		0.56
Uniform Delay, d1	21.1	21.1			31.8		65.6	65.4	56.9	65.0		63.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.2			0.5		18.3	16.0	0.2	35.8		2.7
Delay (s)	21.9	21.2			32.3		83.9	81.4	57.0	100.9		66.3
Level of Service	C	C			C		F	F	E	F		E
Approach Delay (s)		21.4			32.3			76.4			68.9	
Approach LOS		C			C			E			E	

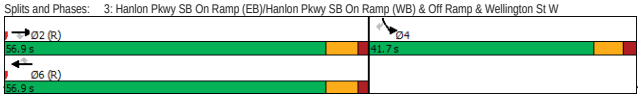
Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	655	395	0	920	310	0	0	0	175	0	145
Future Volume (vph)	0	655	395	0	920	310	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			407			239						90
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	675	407	0	948	320	0	0	0	180	0	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	675	407	0	948	320	0	0	0	180	0	149
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.18	0.32		0.25	0.26				0.44		0.57
Control Delay		4.0	1.2		4.3	1.8				43.6		26.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.0	1.2		4.3	1.8				43.6		26.3
LOS		A	A		A	A				D		C
Approach Delay		2.9			3.7						35.7	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	675	407	948	320	180	149
v/c Ratio	0.18	0.32	0.25	0.26	0.44	0.57
Control Delay	4.0	1.2	4.3	1.8	43.6	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	1.2	4.3	1.8	43.6	26.3
Queue Length 50th (m)	11.4	0.0	17.1	3.4	17.8	11.2
Queue Length 95th (m)	19.1	8.0	27.5	12.5	27.0	29.5
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3748	1269	3785	1211	1230	614
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	0.18	0.32	0.25	0.26	0.15	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	655	395	0	920	310	0	0	0	175	0	145
Future Volume (vph)	0	655	395	0	920	310	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	675	407	0	948	320	0	0	0	180	0	149
RTOR Reduction (vph)	0	0	104	0	0	61	0	0	0	0	0	79
Lane Group Flow (vph)	0	675	303	0	948	259	0	0	0	180	0	70
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.4	73.4		73.4	73.4				11.6		11.6
Effective Green, g (s)		73.4	73.4		73.4	73.4				11.6		11.6
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3748	1165		3785	1150				407		184
v/s Ratio Prot		0.13			0.19					c0.05		
v/s Ratio Perm			c0.19			0.17						0.04
v/c Ratio		0.18	0.26		0.25	0.23				0.44		0.38
Uniform Delay, d1		3.7	4.0		4.0	3.9				40.5		40.2
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.2	0.5				0.8		1.3
Delay (s)		3.8	4.5		4.1	4.3				41.3		41.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.1			4.2			0.0			41.4	
Approach LOS		A			A			A			D	

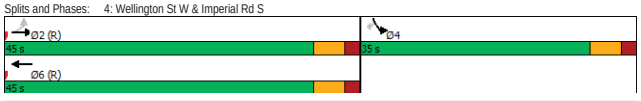
Intersection Summary					
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.28				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	39.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	640	615	310	395	60
Future Volume (vph)	70	640	615	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.950			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3497	3335	0	1787	1615
Flt Permitted		0.737			0.950	
Satd. Flow (perm)	0	2590	3335	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			154			65
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	688	661	333	425	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	763	994	0	425	65
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.3	44.3		23.7	23.7
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.53	0.52		0.80	0.12
Control Delay		14.1	11.2		37.5	5.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.1	11.2		37.5	5.5
LOS		B	B		D	A
Approach Delay		14.1	11.2		33.3	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	763	994	425	65
v/c Ratio	0.53	0.52	0.80	0.12
Control Delay	14.1	11.2	37.5	5.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.1	11.2	37.5	5.5
Queue Length 50th (m)	38.3	40.9	61.6	0.0
Queue Length 95th (m)	63.6	67.1	86.3	7.7
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1436	1918	650	628
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	0.52	0.65	0.10

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	640	615	310	395	60
Future Volume (vph)	70	640	615	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3497	3335		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2590	3335		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	688	661	333	425	65
RTOR Reduction (vph)	0	0	69	0	0	46
Lane Group Flow (vph)	0	763	925	0	425	19
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.3	44.3		23.7	23.7
Effective Green, g (s)		44.3	44.3		23.7	23.7
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1434	1846		529	478
v/s Ratio Prot			0.28		c0.24	
v/s Ratio Perm		c0.29				0.01
v/c Ratio		0.53	0.50		0.80	0.04
Uniform Delay, d1		11.3	11.0		26.0	20.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.4	1.0		8.6	0.0
Delay (s)		12.7	12.0		34.6	20.1
Level of Service		B	B		C	C
Approach Delay (s)		12.7	12.0		32.7	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

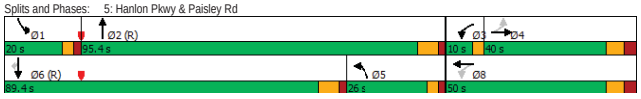
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	335	365	95	350	60	370	1200	105	80	1100	135
Future Volume (vph)	135	335	365	95	350	60	370	1200	105	80	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.978				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3524	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.507			0.364			0.950			0.950		
Satd. Flow (perm)	963	3574	1579	684	3524	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			270		11				183			121
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	138	342	372	97	357	61	378	1224	107	82	1122	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	342	372	97	418	0	378	1224	107	82	1122	138
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	31.0	31.0		10.0	43.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	40.0	40.0		10.0	50.0		26.0	95.4		20.0	89.4	89.4
Total Split (%)	24.2%	24.2%		6.0%	30.2%		15.7%	57.7%		12.1%	54.1%	54.1%
Maximum Green (s)	32.0	32.0		7.0	42.0		21.0	88.0		15.0	82.0	82.0
Yellow Time (s)	4.5	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	3.5	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead	Lead	Lead
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	3.0
Recall Mode	Min	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)	8.0	8.0			20.0			42.0			42.0	42.0
Flash Dont Walk (s)	15.0	15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	27.8	27.8	165.4	45.6	40.6		23.6	91.9	165.4	12.4	80.7	80.7
Actuated g/C Ratio	0.17	0.17	1.00	0.28	0.25		0.14	0.56	1.00	0.07	0.49	0.49
v/c Ratio	0.86	0.57	0.24	0.38	0.48		0.76	0.63	0.07	0.63	0.66	0.16
Control Delay	106.4	66.4	0.4	49.3	53.2		78.5	28.1	0.1	94.3	35.7	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.4	66.4	0.4	49.3	53.2		78.5	28.1	0.1	94.3	35.7	6.3
LOS	F	E	A	D	D		E	C	A	F	D	A
Approach Delay		44.1			52.4			37.5			36.2	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	342	372	97	418	378	1224	107	82	1122	138
v/c Ratio	0.86	0.57	0.24	0.38	0.48	0.76	0.63	0.07	0.63	0.66	0.16
Control Delay	106.4	66.4	0.4	49.3	53.2	78.5	28.1	0.1	94.3	35.7	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.4	66.4	0.4	49.3	53.2	78.5	28.1	0.1	94.3	35.7	6.3
Queue Length 50th (m)	46.4	57.3	0.0	25.1	62.0	65.9	158.0	0.0	28.0	159.2	3.2
Queue Length 95th (m)	#80.3	74.0	0.0	42.4	81.0	82.4	183.7	0.0	47.3	192.1	16.9
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	189	702	1579	254	942	506	1980	1579	158	1815	894
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.49	0.24	0.38	0.44	0.75	0.62	0.07	0.52	0.62	0.15

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)	135	335	365	95	350	60	370	1200	105	80	1100	135
Future Volume (vph)	135	335	365	95	350	60	370	1200	105	80	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	8.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3574	1579	1787	3524		3467	3505	1579	1752	3505	1615
Flt Permitted	0.51	1.00	1.00	0.36	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	963	3574	1579	684	3524		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	138	342	372	97	357	61	378	1224	107	82	1122	138
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	62
Lane Group Flow (vph)	138	342	372	97	410	0	378	1224	107	82	1122	76
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	Perm	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	27.8	27.8	165.4	40.6	40.6		23.6	92.0	165.4	12.4	80.8	80.8
Effective Green, g (s)	27.8	27.8	165.4	40.6	40.6		23.6	92.0	165.4	12.4	80.8	80.8
Actuated g/C Ratio	0.17	0.17	1.00	0.25	0.25		0.14	0.56	1.00	0.07	0.49	0.49
Clearance Time (s)	8.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	161	600	1579	233	865		494	1949	1579	131	1712	788
v/s Ratio Prot		0.10		0.02	c0.12		c0.11	0.35		0.05	c0.32	
v/s Ratio Perm	c0.14		0.24	0.08					0.07			0.05
v/c Ratio	0.86	0.57	0.24	0.42	0.47		0.77	0.63	0.07	0.63	0.66	0.10
Uniform Delay, d1	66.9	63.3	0.0	50.1	53.3		68.2	25.0	0.0	74.2	31.8	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	1.2	0.4	1.2	0.4		7.0	1.5	0.1	9.0	2.0	0.2
Delay (s)	100.4	64.5	0.4	51.3	53.7		75.2	26.6	0.1	83.2	33.8	23.0
Level of Service	F	E	A	D	D		E	C	A	F	C	C
Approach Delay (s)		42.3			53.2			35.7			35.7	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

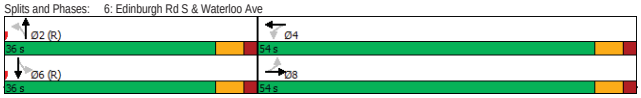
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	110	45	55	110	40	50	500	65	30	495	20
Future Volume (vph)	40	110	45	55	110	40	50	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.957			0.960			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1777	0	1805	1772	0	1805	1858	0	1805	1883	0
Flt Permitted	0.565			0.549			0.413			0.382		
Satd. Flow (perm)	1068	1777	0	1028	1772	0	783	1858	0	724	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			31			8			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	121	49	60	121	44	55	549	71	33	544	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	170	0	60	165	0	55	620	0	33	566	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.72		0.72	0.72	
v/c Ratio	0.28	0.59		0.40	0.58		0.10	0.46		0.06	0.42	
Control Delay	36.7	35.8		41.0	36.2		5.8	12.8		5.4	6.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.7	35.8		41.0	36.2		5.8	12.8		5.4	6.9	
LOS	D	D		D	D		A	B		A	A	
Approach Delay		36.0			37.5			12.2			6.8	
Approach LOS		D			D			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	170	60	165	55	620	33	566
v/c Ratio	0.28	0.59	0.40	0.58	0.10	0.46	0.06	0.42
Control Delay	36.7	35.8	41.0	36.2	5.8	12.8	5.4	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	35.8	41.0	36.2	5.8	12.8	5.4	6.9
Queue Length 50th (m)	7.3	23.3	10.1	23.1	2.0	32.7	1.4	33.0
Queue Length 95th (m)	15.8	39.2	20.3	38.8	8.6	103.8	5.7	71.8
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	569	964	548	959	564	1342	522	1358
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	0.08	0.18	0.11	0.17	0.10	0.46	0.06	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	110	45	55	110	40	50	500	65	30	495	20
Future Volume (vph)	40	110	45	55	110	40	50	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		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)	1796	1775		1781	1772		1799	1857		1800	1883	
Flt Permitted	0.56	1.00		0.55	1.00		0.41	1.00		0.38	1.00	
Satd. Flow (perm)	1068	1775		1030	1772		783	1857		724	1883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	121	49	60	121	44	55	549	71	33	544	22
RTOR Reduction (vph)	0	30	0	0	26	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	140	0	60	139	0	55	618	0	33	565	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Effective Green, g (s)	13.1	13.1		13.1	13.1		64.9	64.9		64.9	64.9	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.72	0.72		0.72	0.72	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	155	258		149	257		564	1339		522	1357	
v/s Ratio Prot		c0.08			0.08			c0.33			0.30	
v/s Ratio Perm	0.04			0.06			0.07			0.05		
v/c Ratio	0.28	0.54		0.40	0.54		0.10	0.46		0.06	0.42	
Uniform Delay, d1	34.3	35.7		34.9	35.7		3.8	5.2		3.7	5.0	
Progression Factor	1.00	1.00		1.00	1.00		1.06	1.87		1.00	1.00	
Incremental Delay, d2	1.0	2.3		1.8	2.2		0.3	1.1		0.2	0.9	
Delay (s)	35.3	38.0		36.7	37.8		4.3	10.9		3.9	5.9	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		37.4			37.5			10.4			5.8	
Approach LOS		D			D			B			A	

Intersection Summary					
HCM 2000 Control Delay		15.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio		0.47			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization		74.5%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	45	250	170	50	245	160
Future Volume (vph)	45	250	170	50	245	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	49	272	185	54	266	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	272	185	54	266	174
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	45	250	170	50	245	160
Future Volume (Veh/h)	45	250	170	50	245	160
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	272	185	54	266	174
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		475	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		475	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		43	83
cM capacity (veh/h)			1242		469	1018

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	49	272	185	54	440
Volume Left	0	0	185	0	266
Volume Right	0	272	0	0	174
cSH	1700	1700	1242	1700	776
Volume to Capacity	0.03	0.16	0.15	0.03	0.57
Queue Length 95th (m)	0.0	0.0	4.2	0.0	29.0
Control Delay (s)	0.0	0.0	8.4	0.0	17.1
Lane LOS			A		C
Approach Delay (s)	0.0		6.5		17.1
Approach LOS					C

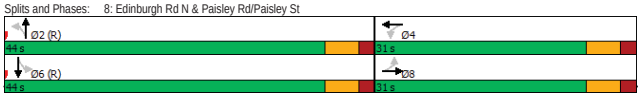
Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	300	90	35	280	60	105	430	25	55	405	115
Future Volume (vph)	130	300	90	35	280	60	105	430	25	55	405	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		1.00	0.99		1.00	1.00		0.99	1.00	
Frt		0.965			0.973			0.992			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1806	0	1805	1820	0	1805	1881	0	1671	1832	0
Flt Permitted	0.396			0.326			0.327			0.385		
Satd. Flow (perm)	744	1806	0	616	1820	0	621	1881	0	674	1832	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			16			6			28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	140	323	97	38	301	65	113	462	27	59	435	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	420	0	38	366	0	113	489	0	59	559	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.56	0.68		0.19	0.59		0.36	0.51		0.17	0.59	
Control Delay	27.8	23.7		20.7	24.6		15.4	14.5		11.7	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.8	23.7		20.7	24.6		15.4	14.5		11.7	15.6	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		24.7			24.2			14.7			15.2	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 86.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

g) Future Total (2031) SAT - Full Build-out

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	420	38	366	113	489	59	559
v/c Ratio	0.56	0.68	0.19	0.59	0.36	0.51	0.17	0.59
Control Delay	27.8	23.7	20.7	24.6	15.4	14.5	11.7	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	23.7	20.7	24.6	15.4	14.5	11.7	15.6
Queue Length 50th (m)	13.0	49.9	4.0	42.6	9.5	44.9	4.5	52.2
Queue Length 95th (m)	m25.1	60.4	11.3	69.9	22.0	70.5	11.3	82.7
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	248	616	205	617	314	956	341	942
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.68	0.19	0.59	0.36	0.51	0.17	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

g) Future Total (2031) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	300	90	35	280	60	105	430	25	55	405	115
Future Volume (vph)	130	300	90	35	280	60	105	430	25	55	405	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.97		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)	1784	1807		1796	1821		1804	1881		1663	1832	
Flt Permitted	0.40	1.00		0.33	1.00		0.33	1.00		0.39	1.00	
Satd. Flow (perm)	744	1807		617	1821		621	1881		675	1832	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	323	97	38	301	65	113	462	27	59	435	124
RTOR Reduction (vph)	0	15	0	0	11	0	0	3	0	0	14	0
Lane Group Flow (vph)	140	405	0	38	355	0	113	486	0	59	545	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	248	602		205	607		314	953		342	928	
v/s Ratio Prot		c0.22			0.20			0.26			c0.30	
v/s Ratio Perm	0.19			0.06			0.18			0.09		
v/c Ratio	0.56	0.67		0.19	0.59		0.36	0.51		0.17	0.59	
Uniform Delay, d1	20.5	21.5		17.8	20.7		11.2	12.3		10.0	13.0	
Progression Factor	0.88	0.86		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.3	5.5		2.0	4.1		3.2	1.9		1.1	2.7	
Delay (s)	26.4	24.0		19.8	24.8		14.3	14.3		11.1	15.7	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		24.6			24.3			14.3			15.3	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	86.4%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	275	80	145	270	150	75	85	140	190	90	155
Future Volume (vph)	165	275	80	145	270	150	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.99
Frt			0.850		0.946			0.907				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1778	0	1805	1699	0	1805	1900	1599
Flt Permitted	0.364			0.584			0.696			0.526		
Satd. Flow (perm)	692	1863	1578	1107	1778	0	1320	1699	0	998	1900	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83		43			111				161
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	172	286	83	151	281	156	78	89	146	198	94	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	286	83	151	437	0	78	235	0	198	94	161
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

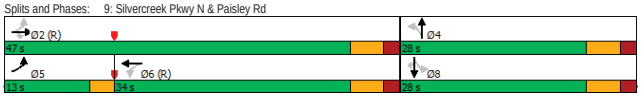
g) Future Total (2031) SAT - Full Build-out

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	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0	47.0	34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%	62.7%	45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0	41.0	28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	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	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
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	3.0	3.0
Recall Mode	None	C-Min	C-Min	C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1		1	1	1
Act Effct Green (s)	47.9	44.9	44.9	33.4	33.4		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.64	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
v/c Ratio	0.30	0.26	0.08	0.31	0.54		0.25	0.48		0.82	0.21	0.32
Control Delay	7.8	8.8	2.4	22.6	22.9		23.2	15.2		53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.8	8.8	2.4	22.6	22.9		23.2	15.2		53.7	22.2	5.6
LOS	A	A	A	C	C		C	B		D	C	A
Approach Delay		7.5			22.8			17.2			30.1	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 19.3 Intersection LOS: B
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	172	286	83	151	437	78	235	198	94	161
v/c Ratio	0.30	0.26	0.08	0.31	0.54	0.25	0.48	0.82	0.21	0.32
Control Delay	7.8	8.8	2.4	22.6	22.9	23.2	15.2	53.7	22.2	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	8.8	2.4	22.6	22.9	23.2	15.2	53.7	22.2	5.6
Queue Length 50th (m)	9.4	19.0	0.0	15.4	53.3	9.2	14.8	27.3	10.9	0.0
Queue Length 95th (m)	19.2	34.9	5.6	m38.4	92.4	19.2	32.6	#55.5	21.3	12.8
Internal Link Dist (m)		177.0			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	590	1118	980	494	817	389	579	294	560	578
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	0.29	0.26	0.08	0.31	0.53	0.20	0.41	0.67	0.17	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

g) Future Total (2031) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	275	80	145	270	150	75	85	140	190	90	155
Future Volume (vph)	165	275	80	145	270	150	75	85	140	190	90	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	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	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1578	1801	1779		1802	1698		1803	1900	1577
Flt Permitted	0.36	1.00	1.00	0.58	1.00		0.70	1.00		0.53	1.00	1.00
Satd. Flow (perm)	692	1863	1578	1108	1779		1320	1698		999	1900	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	172	286	83	151	281	156	78	89	146	198	94	161
RTOR Reduction (vph)	0	0	33	0	24	0	0	84	0	0	0	122
Lane Group Flow (vph)	172	286	50	151	413	0	78	151	0	198	94	39
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.9	44.9	44.9	33.4	33.4		18.1	18.1		18.1	18.1	18.1
Effective Green, g (s)	44.9	44.9	44.9	33.4	33.4		18.1	18.1		18.1	18.1	18.1
Actuated g/C Ratio	0.60	0.60	0.60	0.45	0.45		0.24	0.24		0.24	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	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	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	540	1115	944	493	792		318	409		241	458	380
v/s Ratio Prot	c0.04	0.15			c0.23			0.09			0.05	
v/s Ratio Perm	0.15		0.03	0.14			0.06			c0.20		0.02
v/c Ratio	0.32	0.26	0.05	0.31	0.52		0.25	0.37		0.82	0.21	0.10
Uniform Delay, d1	7.5	7.1	6.2	13.4	15.0		22.9	23.7		26.9	22.7	22.1
Progression Factor	1.00	1.00	1.00	1.32	1.33		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.6	0.1	1.4	2.2		0.4	0.6		19.7	0.2	0.1
Delay (s)	7.9	7.7	6.3	19.1	22.1		23.3	24.3		46.6	22.9	22.2
Level of Service	A	A	A	B	C		C	C		D	C	C
Approach Delay (s)		7.5			21.3			24.0			33.0	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	20.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		15.0	
Intersection Capacity Utilization	74.7%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings
11: Silvercreek Pkwy S & Street E/Street D

g) Future Total (2031) SAT - Full Build-out

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (vph)	80	0	85	15	0	20	90	175	15	20	175	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			45.0			45.0		
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		0.931			0.922			0.988			0.953	
Flt Protected		0.976			0.979		0.950			0.950		
Satd. Flow (prot)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Flt Permitted		0.976			0.979		0.950			0.950		
Satd. Flow (perm)	0	1693	0	0	1681	0	1770	1840	0	1770	1775	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		103.9			95.3			499.5			423.1	
Travel Time (s)		7.5			6.9			36.0			30.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	179	0	0	38	0	98	206	0	22	277	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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: Silvercreek Pkwy S & Street E/Street D

g) Future Total (2031) SAT - Full Build-out

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Future Volume (Veh/h)	80	0	85	15	0	20	90	175	15	20	175	80
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	0	92	16	0	22	98	190	16	22	190	87
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	686	680	234	720	715	198	277			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	686	680	234	720	715	198	277			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	100	89	94	100	97	92			98		
cM capacity (veh/h)	328	339	806	283	324	843	1286			1365		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	38	98	206	22	277
Volume Left	87	16	98	0	22	0
Volume Right	92	22	0	16	0	87
cSH	472	460	1286	1700	1365	1700
Volume to Capacity	0.38	0.08	0.08	0.12	0.02	0.16
Queue Length 95th (m)	14.0	2.2	2.0	0.0	0.4	0.0
Control Delay (s)	17.2	13.5	8.0	0.0	7.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	17.2	13.5	2.6		0.6	
Approach LOS	C	B				

Intersection Summary

Average Delay	5.6			
Intersection Capacity Utilization	42.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lanes, Volumes, Timings g) Future Total (2031) SAT - Full Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (vph)	0	670	75	0	1165	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	728	82	0	1266	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.8%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis g) Future Total (2031) SAT - Full Build-out
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	670	75	0	1165	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	728	82	0	1266	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1267			729			1152	1996	245	1511	1996	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	940			729			813	1742	245	1208	1742	11
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	670			884			248	80	761	128	80	974

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	243	243	243	82	422	422	422	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.14	0.05	0.25	0.25	0.25	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings h) Future Background (2031) AM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

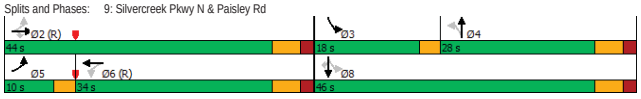
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	205	1	50	185	235	0	50	50	270	50	60
Future Volume (vph)	130	205	1	50	185	235	0	50	50	270	50	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	0.99	0.97			0.97		0.97		0.97
Frt			0.850		0.916			0.925				0.850
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1613	0	1900	1708	0	1770	1900	1553
Flt Permitted	0.263			0.604						0.536		
Satd. Flow (perm)	481	1792	1568	1140	1613	0	1900	1708	0	970	1900	1503
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		74			53				73
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			115.1			380.4	
Travel Time (s)		17.1			78.0			8.3			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	159	250	1	61	226	287	0	61	61	329	61	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	250	1	61	513	0	0	122	0	329	61	73
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings h) Future Background (2031) AM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8			8	8
Act Effct Green (s)	51.9	48.9	48.9	37.4	37.4			11.3		32.1	29.1	29.1
Actuated g/C Ratio	0.58	0.54	0.54	0.42	0.42			0.13		0.36	0.32	0.32
v/c Ratio	0.40	0.26	0.00	0.13	0.72			0.47		0.69	0.10	0.14
Control Delay	13.7	13.3	0.0	20.1	27.8			26.1		30.1	19.5	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	13.7	13.3	0.0	20.1	27.8			26.1		30.1	19.5	4.9
LOS	B	B	A	C	C			C		C	B	A
Approach Delay		13.4			27.0			26.1			24.8	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
h) Future Background (2031) AM - Westwood

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	159	250	1	61	513	122	329	61	73
v/c Ratio	0.40	0.26	0.00	0.13	0.72	0.47	0.69	0.10	0.14
Control Delay	13.7	13.3	0.0	20.1	27.8	26.1	30.1	19.5	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	13.3	0.0	20.1	27.8	26.1	30.1	19.5	4.9
Queue Length 50th (m)	11.7	21.4	0.0	6.5	63.7	12.0	48.4	8.0	0.0
Queue Length 95th (m)	26.4	42.8	0.0	16.1	#119.5	21.2	51.0	12.1	6.1
Internal Link Dist (m)		214.1			1059.9	91.1		356.4	
Turn Bay Length (m)	30.0								60.0
Base Capacity (vph)	397	974	885	473	713	457	481	844	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.26	0.00	0.13	0.72	0.27	0.68	0.07	0.10

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

HCM Signalized Intersection Capacity Analysis
h) Future Background (2031) AM - Westwood

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	205	1	50	185	235	0	50	50	270	50	60
Future Volume (vph)	130	205	1	50	185	235	0	50	50	270	50	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0			6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.97			0.97		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00			1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.92			0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)	1748	1792	1568	1794	1613			1708		1743	1900	1503
Flt Permitted	0.26	1.00	1.00	0.60	1.00			1.00		0.54	1.00	1.00
Satd. Flow (perm)	485	1792	1568	1140	1613			1708		984	1900	1503
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	159	250	1	61	226	287	0	61	61	329	61	73
RTOR Reduction (vph)	0	0	0	0	43	0	0	46	0	0	0	49
Lane Group Flow (vph)	159	250	1	61	470	0	0	76	0	329	61	24
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	48.9	48.9	48.9	37.4	37.4			11.3		29.1	29.1	29.1
Effective Green, g (s)	48.9	48.9	48.9	37.4	37.4			11.3		29.1	29.1	29.1
Actuated g/C Ratio	0.54	0.54	0.54	0.42	0.42			0.13		0.32	0.32	0.32
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0			6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	382	973	851	473	670			214		442	614	485
v/s Ratio Prot	c0.04	0.14			c0.29			0.04		c0.12	0.03	
v/s Ratio Perm	0.19		0.00	0.05						c0.12		0.02
v/c Ratio	0.42	0.26	0.00	0.13	0.70			0.35		0.74	0.10	0.05
Uniform Delay, d1	12.5	10.9	9.4	16.2	21.7			36.0		25.5	21.3	20.9
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.0	0.6	6.0			1.0		6.7	0.1	0.0
Delay (s)	13.3	11.5	9.4	16.8	27.7			37.0		32.1	21.4	21.0
Level of Service	B	B	A	B	C			D		C	C	C
Approach Delay (s)		12.2			26.6			37.0			29.0	
Approach LOS		B			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	67.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings
h) Future Background (2031) PM - Westwood

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	195	1	50	245	315	2	50	50	375	50	185
Future Volume (vph)	155	195	1	50	245	315	2	50	50	375	50	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00	0.99		1.00	0.99		1.00		0.98
Frt			0.850		0.916			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1697	0	1805	1736	0	1787	1900	1615
Flt Permitted	0.185			0.626			0.722			0.539		
Satd. Flow (perm)	352	1881	1580	1188	1697	0	1369	1736	0	1011	1900	1579
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		75			53				199
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			115.1			380.4	
Travel Time (s)		17.1			78.0			8.3			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	167	210	1	54	263	339	2	54	54	403	54	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	210	1	54	602	0	2	108	0	403	54	199
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

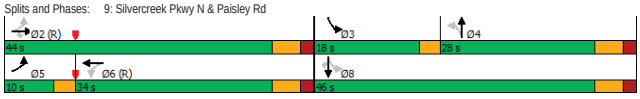
Lanes, Volumes, Timings
h) Future Background (2031) PM - Westwood

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1			1	1
Act Effct Green (s)	52.1	49.1	49.1	37.5	37.5		10.9	10.9		31.9	28.9	28.9
Actuated g/C Ratio	0.58	0.55	0.55	0.42	0.42		0.12	0.12		0.35	0.32	0.32
v/c Ratio	0.49	0.20	0.00	0.11	0.80		0.01	0.42		0.83	0.09	0.31
Control Delay	15.7	12.5	0.0	19.5	31.8		30.0	23.8		39.2	19.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.7	12.5	0.0	19.5	31.8		30.0	23.8		39.2	19.8	4.0
LOS	B	B	A	B	C		C	C		D	B	A
Approach Delay		13.9			30.8			23.9			26.9	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 81.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues h) Future Background (2031) PM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	210	1	54	602	2	108	403	54	199
v/c Ratio	0.49	0.20	0.00	0.11	0.80	0.01	0.42	0.83	0.09	0.31
Control Delay	15.7	12.5	0.0	19.5	31.8	30.0	23.8	39.2	19.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	12.5	0.0	19.5	31.8	30.0	23.8	39.2	19.8	4.0
Queue Length 50th (m)	12.0	17.0	0.0	5.7	79.9	0.3	9.6	63.3	7.1	0.0
Queue Length 95th (m)	30.5	40.2	0.0	16.2	#175.4	2.1	21.2	72.7	12.2	11.8
Internal Link Dist (m)		214.1			1059.9		91.1		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	343	1026	895	494	750	334	464	487	844	812
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	0.49	0.20	0.00	0.11	0.80	0.01	0.23	0.83	0.06	0.25

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis h) Future Background (2031) PM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	195	1	50	245	315	2	50	50	375	50	185
Future Volume (vph)	155	195	1	50	245	315	2	50	50	375	50	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1696		1802	1736		1784	1900	1579
Flt Permitted	0.18	1.00	1.00	0.63	1.00		0.72	1.00		0.54	1.00	1.00
Satd. Flow (perm)	351	1881	1580	1189	1696		1369	1736		1012	1900	1579
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	167	210	1	54	263	339	2	54	54	403	54	199
RTOR Reduction (vph)	0	0	0	0	44	0	0	47	0	0	0	135
Lane Group Flow (vph)	167	210	1	54	558	0	2	61	0	403	54	64
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	49.1	49.1	49.1	37.5	37.5		10.9	10.9		28.9	28.9	28.9
Effective Green, g (s)	49.1	49.1	49.1	37.5	37.5		10.9	10.9		28.9	28.9	28.9
Actuated g/C Ratio	0.55	0.55	0.55	0.42	0.42		0.12	0.12		0.32	0.32	0.32
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	330	1026	861	495	706		165	210		453	610	507
v/s Ratio Prot	c0.05	0.11			c0.33			0.04		c0.15	0.03	
v/s Ratio Perm	0.23		0.00	0.05			0.00			c0.14		0.04
v/c Ratio	0.51	0.20	0.00	0.11	0.79		0.01	0.29		0.89	0.09	0.13
Uniform Delay, d1	14.0	10.5	9.3	16.0	22.8		34.8	36.0		27.4	21.3	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.0	0.4	8.8		0.0	0.8		18.8	0.1	0.1
Delay (s)	15.3	10.9	9.3	16.5	31.6		34.8	36.8		46.2	21.4	21.7
Level of Service	B	B	A	B	C		C	D		D	C	C
Approach Delay (s)		12.8			30.4			36.8			36.7	
Approach LOS		B			C			D			D	

Intersection Summary

HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings h) Future Background (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	185	5	50	195	230	2	50	50	285	55	120
Future Volume (vph)	120	185	5	50	195	230	2	50	50	285	55	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.98
Frt			0.850		0.919			0.925				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1718	0	1805	1737	0	1805	1900	1599
Flt Permitted	0.336			0.636			0.720			0.541		
Satd. Flow (perm)	638	1863	1577	1205	1718	0	1363	1737	0	1026	1900	1561
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		69			52				125
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			115.1			380.4	
Travel Time (s)		17.1			78.0			8.3			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	125	193	5	52	203	240	2	52	52	297	57	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	193	5	52	443	0	2	104	0	297	57	125
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

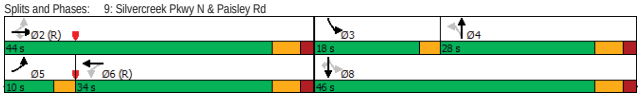
Lanes, Volumes, Timings h) Future Background (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

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	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1			1	1
Act Effct Green (s)	52.0	49.0	49.0	38.3	38.3		10.8	10.8		32.0	29.0	29.0
Actuated g/C Ratio	0.58	0.54	0.54	0.43	0.43		0.12	0.12		0.36	0.32	0.32
v/c Ratio	0.27	0.19	0.01	0.10	0.57		0.01	0.41		0.60	0.09	0.21
Control Delay	11.9	12.7	0.0	19.4	22.0		30.0	23.4		26.7	19.2	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	11.9	12.7	0.0	19.4	22.0		30.0	23.4		26.7	19.2	4.2
LOS	B	B	A	B	C		C	C		C	B	A
Approach Delay		12.2			21.8			23.6			20.0	
Approach LOS		B			C			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 22 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 66.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues h) Future Background (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	125	193	5	52	443	2	104	297	57	125
v/c Ratio	0.27	0.19	0.01	0.10	0.57	0.01	0.41	0.60	0.09	0.21
Control Delay	11.9	12.7	0.0	19.4	22.0	30.0	23.4	26.7	19.2	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	12.7	0.0	19.4	22.0	30.0	23.4	26.7	19.2	4.2
Queue Length 50th (m)	9.3	16.3	0.0	5.5	49.5	0.3	9.1	41.8	7.3	0.0
Queue Length 95th (m)	23.6	37.1	0.0	15.7	#107.3	2.1	20.5	51.1	12.8	9.6
Internal Link Dist (m)		214.1			1059.9		91.1		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	469	1015	892	512	771	333	463	501	844	763
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	0.27	0.19	0.01	0.10	0.57	0.01	0.22	0.59	0.07	0.16

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis h) Future Background (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	185	5	50	195	230	2	50	50	285	55	120
Future Volume (vph)	120	185	5	50	195	230	2	50	50	285	55	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1577	1800	1718		1798	1735		1803	1900	1561
Flt Permitted	0.34	1.00	1.00	0.64	1.00		0.72	1.00		0.54	1.00	1.00
Satd. Flow (perm)	638	1863	1577	1206	1718		1363	1735		1027	1900	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	193	5	52	203	240	2	52	52	297	57	125
RTOR Reduction (vph)	0	0	2	0	40	0	0	46	0	0	0	85
Lane Group Flow (vph)	125	193	3	52	403	0	2	58	0	297	57	40
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	49.0	49.0	49.0	38.3	38.3		10.9	10.9		29.0	29.0	29.0
Effective Green, g (s)	49.0	49.0	49.0	38.3	38.3		10.9	10.9		29.0	29.0	29.0
Actuated g/C Ratio	0.54	0.54	0.54	0.43	0.43		0.12	0.12		0.32	0.32	0.32
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	447	1014	858	513	731		165	210		461	612	502
v/s Ratio Prot	c0.02	0.10			c0.23			0.03		c0.11	0.03	
v/s Ratio Perm	0.13		0.00	0.04			0.00			c0.10		0.03
v/c Ratio	0.28	0.19	0.00	0.10	0.55		0.01	0.28		0.64	0.09	0.08
Uniform Delay, d1	11.3	10.4	9.4	15.5	19.4		34.8	36.0		24.8	21.3	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.4	0.0	0.4	3.0		0.0	0.7		3.1	0.1	0.1
Delay (s)	11.6	10.8	9.4	15.9	22.4		34.8	36.7		27.9	21.4	21.3
Level of Service	B	B	A	B	C		C	D		C	C	C
Approach Delay (s)		11.1			21.7			36.7			25.4	
Approach LOS		B			C			D			C	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lanes, Volumes, Timings i) Future Total (2031) AM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	205	20	100	185	235	20	110	125	270	85	60
Future Volume (vph)	130	205	20	100	185	235	20	110	125	270	85	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor	0.99		0.97	0.99	0.97		0.99	0.97		0.98		0.97
Frt			0.850		0.916			0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1792	1615	1805	1613	0	1805	1696	0	1770	1900	1553
Flt Permitted	0.204			0.604			0.690			0.269		
Satd. Flow (perm)	373	1792	1568	1140	1613	0	1297	1696	0	491	1900	1503
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		74			60				73
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			117.7			380.4	
Travel Time (s)		17.1			78.0			8.5			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	159	250	24	122	226	287	24	134	152	329	104	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	250	24	122	513	0	24	286	0	329	104	73
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

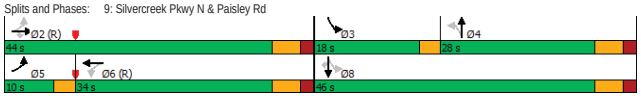
Lanes, Volumes, Timings i) Future Total (2031) AM - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		8	8	8	8		8	8			8	8
Act Effct Green (s)	46.5	43.5	43.5	32.2	32.2		17.0	17.0		37.5	34.5	34.5
Actuated g/C Ratio	0.52	0.48	0.48	0.36	0.36		0.19	0.19		0.42	0.38	0.38
v/c Ratio	0.50	0.29	0.03	0.30	0.82		0.10	0.78		0.80	0.14	0.12
Control Delay	18.9	16.4	0.1	25.4	37.1		29.1	41.5		34.2	17.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	18.9	16.4	0.1	25.4	37.1		29.1	41.5		34.2	17.1	4.3
LOS	B	B	A	C	D		C	D		C	B	A
Approach Delay		16.4			34.8			40.6			26.4	
Approach LOS		B			C			D			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 29.3		Intersection LOS: C	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) AM - Westwood

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	159	250	24	122	513	24	286	329	104	73
v/c Ratio	0.50	0.29	0.03	0.30	0.82	0.10	0.78	0.80	0.14	0.12
Control Delay	18.9	16.4	0.1	25.4	37.1	29.1	41.5	34.2	17.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	16.4	0.1	25.4	37.1	29.1	41.5	34.2	17.1	4.3
Queue Length 50th (m)	15.0	26.9	0.0	16.7	77.2	3.5	38.6	40.8	11.9	0.0
Queue Length 95th (m)	26.4	42.8	0.0	29.1	#119.5	8.8	54.5	51.0	18.5	6.1
Internal Link Dist (m)		214.1			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	320	866	796	408	624	317	459	417	844	708
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.29	0.03	0.30	0.82	0.08	0.62	0.79	0.12	0.10

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) AM - Westwood

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	205	20	100	185	235	20	110	125	270	85	60
Future Volume (vph)	130	205	20	100	185	235	20	110	125	270	85	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.97		1.00	0.97		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	1792	1568	1794	1613		1786	1696		1762	1900	1503
Flt Permitted	0.20	1.00	1.00	0.60	1.00		0.69	1.00		0.27	1.00	1.00
Satd. Flow (perm)	376	1792	1568	1140	1613		1297	1696		499	1900	1503
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	159	250	24	122	226	287	24	134	152	329	104	73
RTOR Reduction (vph)	0	0	12	0	48	0	0	49	0	0	0	45
Lane Group Flow (vph)	159	250	12	122	465	0	24	237	0	329	104	28
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	43.5	43.5	43.5	32.2	32.2		17.0	17.0		34.5	34.5	34.5
Effective Green, g (s)	43.5	43.5	43.5	32.2	32.2		17.0	17.0		34.5	34.5	34.5
Actuated g/C Ratio	0.48	0.48	0.48	0.36	0.36		0.19	0.19		0.38	0.38	0.38
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	308	866	757	407	577		244	320		394	728	576
v/s Ratio Prot	c0.05	0.14			c0.29			0.14		c0.13	0.05	
v/s Ratio Perm	0.20		0.01	0.11			0.02			c0.19		0.02
v/c Ratio	0.52	0.29	0.02	0.30	0.81		0.10	0.74		0.84	0.14	0.05
Uniform Delay, d1	15.9	14.0	12.1	20.8	26.1		30.2	34.4		22.0	18.1	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.01	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.8	0.0	1.9	11.5		0.2	8.9		14.1	0.1	0.0
Delay (s)	17.4	14.8	12.1	22.7	37.6		30.7	43.4		36.1	18.2	17.5
Level of Service	B	B	B	C	D		C	D		D	B	B
Approach Delay (s)		15.6			34.7			42.4			29.7	
Approach LOS		B			C			D			C	

Intersection Summary

HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) PM - Westwood

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	190	30	145	240	315	25	115	120	375	125	185
Future Volume (vph)	155	190	30	145	240	315	25	115	120	375	125	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00	0.99		1.00	0.99		1.00		0.98
Frt			0.850		0.915			0.924				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1615	1805	1694	0	1805	1734	0	1787	1900	1615
Flt Permitted	0.123			0.630			0.671			0.308		
Satd. Flow (perm)	234	1881	1580	1195	1694	0	1273	1734	0	578	1900	1579
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		76			55				199
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			117.7			380.4	
Travel Time (s)		17.1			78.0			8.5			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	167	204	32	156	258	339	27	124	129	403	134	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	204	32	156	597	0	27	253	0	403	134	199
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

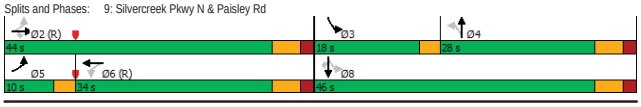
i) Future Total (2031) PM - Westwood

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1			1	1
Act Effct Green (s)	47.3	44.3	44.3	32.5	32.5		15.7	15.7		36.7	33.7	33.7
Actuated g/C Ratio	0.53	0.49	0.49	0.36	0.36		0.17	0.17		0.41	0.37	0.37
v/c Ratio	0.61	0.22	0.04	0.36	0.90		0.12	0.73		0.92	0.19	0.28
Control Delay	24.3	15.0	0.5	26.0	45.2		31.7	40.7		49.7	18.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	24.3	15.0	0.5	26.0	45.2		31.7	40.7		49.7	18.5	3.5
LOS	C	B	A	C	D		C	D		D	B	A
Approach Delay		17.7			41.2			39.9			31.5	
Approach LOS		B			D			D			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 33.4		Intersection LOS: C	
Intersection Capacity Utilization 92.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) PM - Westwood

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	204	32	156	597	27	253	403	134	199
v/c Ratio	0.61	0.22	0.04	0.36	0.90	0.12	0.73	0.92	0.19	0.28
Control Delay	24.3	15.0	0.5	26.0	45.2	31.7	40.7	49.7	18.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	15.0	0.5	26.0	45.2	31.7	40.7	49.7	18.5	3.5
Queue Length 50th (m)	15.1	20.3	0.0	21.2	93.7	4.1	34.2	54.7	16.1	0.0
Queue Length 95th (m)	#42.6	39.1	0.9	40.7	#173.3	10.6	54.0	#83.3	25.5	11.8
Internal Link Dist (m)		214.1			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	276	925	814	431	660	311	465	436	844	812
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	0.61	0.22	0.04	0.36	0.90	0.09	0.54	0.92	0.16	0.25

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) PM - Westwood

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	190	30	145	240	315	25	115	120	375	125	185
Future Volume (vph)	155	190	30	145	240	315	25	115	120	375	125	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1580	1803	1694		1802	1733		1786	1900	1579
Flt Permitted	0.12	1.00	1.00	0.63	1.00		0.67	1.00		0.31	1.00	1.00
Satd. Flow (perm)	234	1881	1580	1195	1694		1273	1733		578	1900	1579
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	167	204	32	156	258	339	27	124	129	403	134	199
RTOR Reduction (vph)	0	0	16	0	49	0	0	45	0	0	0	124
Lane Group Flow (vph)	167	204	16	156	548	0	27	208	0	403	134	75
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.3	44.3	44.3	32.5	32.5		15.7	15.7		33.7	33.7	33.7
Effective Green, g (s)	44.3	44.3	44.3	32.5	32.5		15.7	15.7		33.7	33.7	33.7
Actuated g/C Ratio	0.49	0.49	0.49	0.36	0.36		0.17	0.17		0.37	0.37	0.37
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	268	925	777	431	611		222	302		417	711	591
v/s Ratio Prot	c0.06	0.11			c0.32			0.12		c0.16	0.07	
v/s Ratio Perm	0.24		0.01	0.13			0.02			c0.20		0.05
v/c Ratio	0.62	0.22	0.02	0.36	0.90		0.12	0.69		0.97	0.19	0.13
Uniform Delay, d1	17.3	13.0	11.7	21.1	27.2		31.3	34.8		24.3	18.9	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.06	1.06		1.00	1.00	1.00
Incremental Delay, d2	4.5	0.5	0.0	2.3	18.4		0.2	6.4		35.0	0.1	0.1
Delay (s)	21.8	13.6	11.8	23.5	45.6		33.4	43.4		59.3	19.1	18.6
Level of Service	C	B	B	C	D		C	D		E	B	B
Approach Delay (s)		16.8			41.0			42.4			41.0	
Approach LOS		B			D			D			D	

Intersection Summary

HCM 2000 Control Delay	36.7	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)	18.0	
Intersection Capacity Utilization	92.0%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

i) Future Total (2031) SAT - Westwood

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	180	35	145	190	230	35	125	140	285	135	120
Future Volume (vph)	120	180	35	145	190	230	35	125	140	285	135	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		60.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	30.0			7.5			7.5			7.5		
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
Ped Bike Factor			0.98	1.00			1.00	0.99		1.00		0.98
Frt			0.850		0.918			0.921				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1863	1615	1805	1716	0	1805	1728	0	1805	1900	1599
Flt Permitted	0.295			0.639			0.667			0.278		
Satd. Flow (perm)	560	1863	1577	1211	1716	0	1263	1728	0	528	1900	1561
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73		70			59				125
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.1			1083.9			117.7			380.4	
Travel Time (s)		17.1			78.0			8.5			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	125	188	36	151	198	240	36	130	146	297	141	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	188	36	151	438	0	36	276	0	297	141	125
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)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	2.0
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)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

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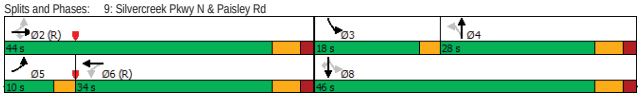
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	5	2	2	6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0	31.0	31.0	31.0		28.0	28.0		10.0	28.0	28.0
Total Split (s)	10.0	44.0	44.0	34.0	34.0		28.0	28.0		18.0	46.0	46.0
Total Split (%)	11.1%	48.9%	48.9%	37.8%	37.8%		31.1%	31.1%		20.0%	51.1%	51.1%
Maximum Green (s)	7.0	38.0	38.0	28.0	28.0		22.0	22.0		15.0	40.0	40.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0		2.0	2.0		0.0	2.0	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)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	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	C-Min	C-Min	C-Min	C-Min		Min	Min		None	Min	Min
Walk Time (s)		11.0	11.0	11.0	11.0		11.0	11.0			11.0	11.0
Flash Dont Walk (s)		14.0	14.0	14.0	14.0		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		1	1	1	1		1	1			1	1
Act Effct Green (s)	47.2	44.2	44.2	33.3	33.3		16.5	16.5		36.8	33.8	33.8
Actuated g/C Ratio	0.52	0.49	0.49	0.37	0.37		0.18	0.18		0.41	0.38	0.38
v/c Ratio	0.31	0.21	0.04	0.34	0.65		0.16	0.76		0.71	0.20	0.19
Control Delay	14.7	15.2	1.1	25.3	26.6		29.5	39.4		27.9	18.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.7	15.2	1.1	25.3	26.6		29.5	39.4		27.9	18.3	3.7
LOS	B	B	A	C	C		C	D		C	B	A
Approach Delay		13.6			26.2			38.2			20.1	
Approach LOS		B			C			D			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 22 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues — i) Future Total (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	125	188	36	151	438	36	276	297	141	125
v/c Ratio	0.31	0.21	0.04	0.34	0.65	0.16	0.76	0.71	0.20	0.19
Control Delay	14.7	15.2	1.1	25.3	26.6	29.5	39.4	27.9	18.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	15.2	1.1	25.3	26.6	29.5	39.4	27.9	18.3	3.7
Queue Length 50th (m)	11.6	19.4	0.0	20.5	57.6	5.2	37.8	35.8	16.4	0.0
Queue Length 95th (m)	23.6	36.3	1.6	39.5	#99.6	12.9	61.0	51.1	26.7	9.6
Internal Link Dist (m)		214.1			1059.9		93.7		356.4	
Turn Bay Length (m)	30.0									60.0
Base Capacity (vph)	403	915	812	448	679	308	466	430	844	763
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	0.31	0.21	0.04	0.34	0.65	0.12	0.59	0.69	0.17	0.16

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

HCM Signalized Intersection Capacity Analysis — i) Future Total (2031) SAT - Westwood
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	180	35	145	190	230	35	125	140	285	135	120
Future Volume (vph)	120	180	35	145	190	230	35	125	140	285	135	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1863	1577	1800	1716		1799	1727		1805	1900	1561
Flt Permitted	0.30	1.00	1.00	0.64	1.00		0.67	1.00		0.28	1.00	1.00
Satd. Flow (perm)	561	1863	1577	1211	1716		1263	1727		528	1900	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	188	36	151	198	240	36	130	146	297	141	125
RTOR Reduction (vph)	0	0	18	0	44	0	0	48	0	0	0	78
Lane Group Flow (vph)	125	188	18	151	394	0	36	228	0	297	141	47
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	44.2	44.2	44.2	33.3	33.3		16.5	16.5		33.8	33.8	33.8
Effective Green, g (s)	44.2	44.2	44.2	33.3	33.3		16.5	16.5		33.8	33.8	33.8
Actuated g/C Ratio	0.49	0.49	0.49	0.37	0.37		0.18	0.18		0.38	0.38	0.38
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0		6.0	6.0		3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	914	774	448	634		231	316		401	713	586
v/s Ratio Prot	c0.03	0.10			c0.23			0.13		c0.12	0.07	
v/s Ratio Perm	0.13		0.01	0.12			0.03			c0.16		0.03
v/c Ratio	0.33	0.21	0.02	0.34	0.62		0.16	0.72		0.74	0.20	0.08
Uniform Delay, d1	14.0	13.0	11.8	20.4	23.2		30.9	34.6		21.8	19.0	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.97		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.5	0.1	2.0	4.5		0.3	7.9		7.2	0.1	0.1
Delay (s)	14.5	13.5	11.8	22.4	27.7		30.4	41.3		29.0	19.1	18.2
Level of Service	B	B	B	C	C		C	D		C	B	B
Approach Delay (s)		13.7			26.4			40.0			24.1	
Approach LOS		B			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings — j) Future Total (2021) AM - Silvercreek
7: Waterloo Ave & Silvercreek Pkwy S

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	240	20	170	250	40	205
Future Volume (vph)	240	20	170	250	40	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1770	1615	1900	1568	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1770	1615	1900	1568	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	7	1		1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	261	22	185	272	43	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	261	22	185	272	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — j) Future Total (2021) AM - Silvercreek
7: Waterloo Ave & Silvercreek Pkwy S

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	240	20	170	250	40	205
Future Volume (Veh/h)	240	20	170	250	40	205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	261	22	185	272	43	223
Pedestrians	1		7			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	502	187			458	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502	187			458	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	48	97			96	
cM capacity (veh/h)	505	859			1113	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	261	22	185	272	266
Volume Left	261	0	0	0	43
Volume Right	0	22	0	272	0
cSH	505	859	1700	1700	1113
Volume to Capacity	0.52	0.03	0.11	0.16	0.04
Queue Length 95th (m)	23.4	0.6	0.0	0.0	1.0
Control Delay (s)	19.5	9.3	0.0	0.0	1.7
Lane LOS	C	A			A
Approach Delay (s)	18.7		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	255	50	255	255	40	225
Future Volume (vph)	255	50	255	255	40	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.993
Satd. Flow (prot)	1770	1615	1900	1599	0	1887
Flt Permitted	0.950					0.993
Satd. Flow (perm)	1770	1615	1900	1599	0	1887
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	277	54	277	277	43	245
Shared Lane Traffic (%)						
Lane Group Flow (vph)	277	54	277	277	0	288
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	255	50	255	255	40	225
Future Volume (Veh/h)	255	50	255	255	40	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	277	54	277	277	43	245
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	610	279			555	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	279			555	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	37	93			96	
cM capacity (veh/h)	438	763			1025	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	277	54	277	277	288
Volume Left	277	0	0	0	43
Volume Right	0	54	0	277	0
cSH	438	763	1700	1700	1025
Volume to Capacity	0.63	0.07	0.16	0.16	0.04
Queue Length 95th (m)	34.1	1.8	0.0	0.0	1.1
Control Delay (s)	26.3	10.1	0.0	0.0	1.7
Lane LOS	D	B			A
Approach Delay (s)	23.7		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	160	50	245	150	45	250
Future Volume (vph)	160	50	245	150	45	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1787	1615	1900	1599	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1787	1615	1900	1599	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	174	54	266	163	49	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	54	266	163	0	321
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	160	50	245	150	45	250
Future Volume (Veh/h)	160	50	245	150	45	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	54	266	163	49	272
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	638	268			430	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	638	268			430	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	93			96	
cM capacity (veh/h)	423	774			1139	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	174	54	266	163	321
Volume Left	174	0	0	0	49
Volume Right	0	54	0	163	0
cSH	423	774	1700	1700	1139
Volume to Capacity	0.41	0.07	0.16	0.10	0.04
Queue Length 95th (m)	15.8	1.8	0.0	0.0	1.1
Control Delay (s)	19.3	10.0	0.0	0.0	1.6
Lane LOS	C	A			A
Approach Delay (s)	17.1		0.0		1.6
Approach LOS	C				

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	245	20	170	255	40	205
Future Volume (vph)	245	20	170	255	40	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1770	1615	1900	1568	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1770	1615	1900	1568	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	7	1		1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	266	22	185	277	43	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	22	185	277	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	245	20	170	255	40	205
Future Volume (Veh/h)	245	20	170	255	40	205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	266	22	185	277	43	223
Pedestrians	1		7			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	502	187			463	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502	187			463	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	47	97			96	
cM capacity (veh/h)	505	859			1108	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	266	22	185	277	266
Volume Left	266	0	0	0	43
Volume Right	0	22	0	277	0
cSH	505	859	1700	1700	1108
Volume to Capacity	0.53	0.03	0.11	0.16	0.04
Queue Length 95th (m)	24.3	0.6	0.0	0.0	1.0
Control Delay (s)	19.8	9.3	0.0	0.0	1.7
Lane LOS	C	A			A
Approach Delay (s)	19.0		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	260	50	255	260	40	225
Future Volume (vph)	260	50	255	260	40	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.993
Satd. Flow (prot)	1770	1615	1900	1599	0	1887
Flt Permitted	0.950					0.993
Satd. Flow (perm)	1770	1615	1900	1599	0	1887
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	283	54	277	283	43	245
Shared Lane Traffic (%)						
Lane Group Flow (vph)	283	54	277	283	0	288
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	260	50	255	260	40	225
Future Volume (Veh/h)	260	50	255	260	40	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	283	54	277	283	43	245
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	610	279			561	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	279			561	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	35	93			96	
cM capacity (veh/h)	438	763			1019	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	283	54	277	283	288
Volume Left	283	0	0	0	43
Volume Right	0	54	0	283	0
cSH	438	763	1700	1700	1019
Volume to Capacity	0.65	0.07	0.16	0.17	0.04
Queue Length 95th (m)	35.7	1.8	0.0	0.0	1.1
Control Delay (s)	27.1	10.1	0.0	0.0	1.7
Lane LOS	D	B			A
Approach Delay (s)	24.3		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	165	50	245	155	45	250
Future Volume (vph)	165	50	245	155	45	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1787	1615	1900	1599	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1787	1615	1900	1599	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	179	54	266	168	49	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	54	266	168	0	321
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	165	50	245	155	45	250
Future Volume (Veh/h)	165	50	245	155	45	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	179	54	266	168	49	272
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	638	268			435	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	638	268			435	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	58	93			96	
cM capacity (veh/h)	423	774			1135	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	179	54	266	168	321
Volume Left	179	0	0	0	49
Volume Right	0	54	0	168	0
cSH	423	774	1700	1700	1135
Volume to Capacity	0.42	0.07	0.16	0.10	0.04
Queue Length 95th (m)	16.5	1.8	0.0	0.0	1.1
Control Delay (s)	19.6	10.0	0.0	0.0	1.6
Lane LOS	C	A			A
Approach Delay (s)	17.4		0.0		1.6
Approach LOS	C				

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	20	170	260	40	205
Future Volume (vph)	250	20	170	260	40	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1770	1615	1900	1568	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1770	1615	1900	1568	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	7	1		1	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	272	22	185	283	43	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	272	22	185	283	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	250	20	170	260	40	205
Future Volume (Veh/h)	250	20	170	260	40	205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	272	22	185	283	43	223
Pedestrians	1		7			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	502	187			469	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	502	187			469	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	46	97			96	
cM capacity (veh/h)	505	859			1102	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	272	22	185	283	266
Volume Left	272	0	0	0	43
Volume Right	0	22	0	283	0
cSH	505	859	1700	1700	1102
Volume to Capacity	0.54	0.03	0.11	0.17	0.04
Queue Length 95th (m)	25.3	0.6	0.0	0.0	1.0
Control Delay (s)	20.1	9.3	0.0	0.0	1.7
Lane LOS	C	A			A
Approach Delay (s)	19.3		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	265	50	255	265	40	225
Future Volume (vph)	265	50	255	265	40	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.993
Satd. Flow (prot)	1770	1615	1900	1599	0	1887
Flt Permitted	0.950					0.993
Satd. Flow (perm)	1770	1615	1900	1599	0	1887
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Adj. Flow (vph)	288	54	277	288	43	245
Shared Lane Traffic (%)						
Lane Group Flow (vph)	288	54	277	288	0	288
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	265	50	255	265	40	225
Future Volume (Veh/h)	265	50	255	265	40	225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	288	54	277	288	43	245
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	610	279			566	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	279			566	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	34	93			96	
cM capacity (veh/h)	438	763			1015	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	288	54	277	288	288
Volume Left	288	0	0	0	43
Volume Right	0	54	0	288	0
cSH	438	763	1700	1700	1015
Volume to Capacity	0.66	0.07	0.16	0.17	0.04
Queue Length 95th (m)	37.0	1.8	0.0	0.0	1.1
Control Delay (s)	27.7	10.1	0.0	0.0	1.7
Lane LOS	D	B			A
Approach Delay (s)	24.9		0.0		1.7
Approach LOS	C				

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	170	50	245	160	45	250
Future Volume (vph)	170	50	245	160	45	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0	0.0		60.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	15.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1787	1615	1900	1599	0	1885
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1787	1615	1900	1599	0	1885
Link Speed (k/h)	50		50			50
Link Distance (m)	908.3		140.7			499.5
Travel Time (s)	65.4		10.1			36.0
Confl. Peds. (#/hr)	1	1			1	
Confl. Bikes (#/hr)				2		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	185	54	266	174	49	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	54	266	174	0	321
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	100		15	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	170	50	245	160	45	250
Future Volume (Veh/h)	170	50	245	160	45	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	185	54	266	174	49	272
Pedestrians	1		1			1
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			141			
pX, platoon unblocked						
vC, conflicting volume	638	268			441	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	638	268			441	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	93			96	
cM capacity (veh/h)	423	774			1129	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	185	54	266	174	321
Volume Left	185	0	0	0	49
Volume Right	0	54	0	174	0
cSH	423	774	1700	1700	1129
Volume to Capacity	0.44	0.07	0.16	0.10	0.04
Queue Length 95th (m)	17.4	1.8	0.0	0.0	1.1
Control Delay (s)	20.0	10.0	0.0	0.0	1.6
Lane LOS	C	A			A
Approach Delay (s)	17.7		0.0		1.6
Approach LOS	C				

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings m) Future Background (2031) AM - Phase 1
1: Edinburgh Rd S & Wellington St W

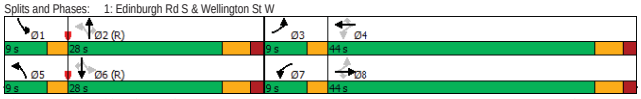
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Future Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.336			0.154			0.244			0.333		
Satd. Flow (perm)	630	3471	1508	276	3438	1570	448	3539	1476	590	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			109			173			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings m) Future Background (2031) AM - Phase 1
1: Edinburgh Rd S & Wellington St W

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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.8	30.9	30.9	41.1	31.1	31.1	39.2	28.8	28.8	33.9	23.8	23.8
Actuated g/C Ratio	0.45	0.34	0.34	0.46	0.35	0.35	0.44	0.32	0.32	0.38	0.26	0.26
v/c Ratio	0.35	0.77	0.31	0.54	0.51	0.09	0.61	0.57	0.40	0.22	0.65	0.18
Control Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.7			22.1			25.4			25.1	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Queues m) Future Background (2031) AM - Phase 1
1: Edinburgh Rd S & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
v/c Ratio	0.35	0.77	0.31	0.54	0.51	0.09	0.61	0.57	0.40	0.22	0.65	0.18
Control Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	30.7	4.0	20.8	24.4	0.7	28.2	29.8	10.9	13.4	29.6	3.2
Queue Length 50th (m)	12.2	77.3	0.0	12.3	45.3	0.0	23.4	54.2	8.5	4.8	56.4	2.1
Queue Length 95th (m)	19.3	87.3	12.3	19.4	53.3	1.0	#48.8	77.0	29.4	9.6	71.1	4.3
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	373	1465	753	237	1451	725	343	1134	590	309	940	501
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.63	0.27	0.54	0.41	0.08	0.61	0.57	0.40	0.22	0.65	0.18

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

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) AM - Phase 1
1: Edinburgh Rd S & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Future Volume (vph)	115	815	180	115	535	50	185	580	210	60	540	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1696	3505	1573
Flt Permitted	0.34	1.00	1.00	0.15	1.00	1.00	0.24	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	632	3471	1508	277	3438	1570	451	3539	1476	595	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	916	202	129	601	56	208	652	236	67	607	90
RTOR Reduction (vph)	0	0	132	0	0	37	0	0	119	0	0	66
Lane Group Flow (vph)	129	916	70	129	601	19	208	652	117	67	607	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.9	31.0	31.0	38.1	31.1	31.1	37.0	28.2	28.2	29.6	23.8	23.8
Effective Green, g (s)	37.9	31.0	31.0	38.1	31.1	31.1	37.0	28.2	28.2	29.6	23.8	23.8
Actuated g/C Ratio	0.42	0.34	0.34	0.42	0.35	0.35	0.41	0.31	0.31	0.33	0.26	0.26
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354	1195	519	228	1188	542	332	1108	462	266	926	415
v/s Ratio Prot	0.03	c0.26		c0.04	0.17		c0.07	0.18		0.02	0.17	
v/s Ratio Perm	0.13		0.05	0.20		0.01	c0.19		0.08	0.07		0.02
v/c Ratio	0.36	0.77	0.13	0.57	0.51	0.04	0.63	0.59	0.25	0.25	0.66	0.06
Uniform Delay, d1	16.5	26.3	20.3	18.0	23.4	19.5	18.7	26.0	23.1	21.2	29.5	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.86	0.58
Incremental Delay, d2	0.6	3.0	0.1	3.2	0.3	0.0	3.7	2.3	1.3	0.5	3.4	0.2
Delay (s)	17.2	29.3	20.4	21.2	23.7	19.5	22.3	28.3	24.4	15.7	28.7	14.6
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.6			23.0			26.3			25.9	
Approach LOS		C			C			C			C	

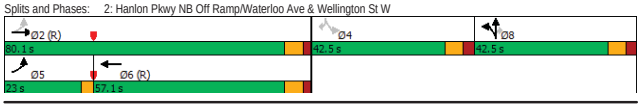
Intersection Summary					
HCM 2000 Control Delay		25.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.70			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		70.7%	ICU Level of Service	C	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	900	0	0	775	5	195	90	235	1	0	255
Future Volume (vph)	165	900	0	0	775	5	195	90	235	1	0	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.981		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1727	1599	1805	0	1583
Flt Permitted	0.284						0.950	0.981		0.342		
Satd. Flow (perm)	519	4988	0	0	4983	0	1633	1727	1599	650	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				258			280
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	181	989	0	0	852	5	214	99	258	1	0	280
Shared Lane Traffic (%)							28%					
Lane Group Flow (vph)	181	989	0	0	857	0	154	159	258	1	0	280
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	114.3	110.2			95.5		21.1	21.1	21.1	11.7		11.7
Actuated g/C Ratio	0.69	0.67			0.58		0.13	0.13	0.13	0.07		0.07
v/c Ratio	0.41	0.30			0.30		0.74	0.72	0.60	0.02		0.75
Control Delay	12.7	12.4			19.4		89.5	86.8	12.5	70.0		20.5
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	12.7	12.4			19.4		89.5	86.8	12.5	70.0		20.5
LOS	B	B			B		F	F	B	E		C
Approach Delay		12.5			19.4			54.0			20.6	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	181	989	857	154	159	258	1	280
v/c Ratio	0.41	0.30	0.30	0.74	0.72	0.60	0.02	0.75
Control Delay	12.7	12.4	19.4	89.5	86.8	12.5	70.0	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	12.4	19.4	89.5	86.8	12.5	70.0	20.5
Queue Length 50th (m)	19.3	47.2	51.4	55.0	56.6	0.0	0.3	0.0
Queue Length 95th (m)	39.5	73.2	81.9	78.9	80.7	27.0	2.6	31.1
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	506	3330	2882	346	366	542	137	556
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	0.36	0.30	0.30	0.45	0.43	0.48	0.01	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	900	0	0	775	5	195	90	235	1	0	255
Future Volume (vph)	165	900	0	0	775	5	195	90	235	1	0	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4984		1633	1728	1599	1805		1583
Flt Permitted	0.28	1.00			1.00		0.95	0.98	1.00	0.34		1.00
Satd. Flow (perm)	519	4988			4984		1633	1728	1599	650		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	181	989	0	0	852	5	214	99	258	1	0	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	225	0	0	260
Lane Group Flow (vph)	181	989	0	0	857	0	154	159	33	1	0	20
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	110.2	110.2			95.5		21.1	21.1	21.1	11.7		11.7
Effective Green, g (s)	110.2	110.2			95.5		21.1	21.1	21.1	11.7		11.7
Actuated g/C Ratio	0.67	0.67			0.58		0.13	0.13	0.13	0.07		0.07
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	432	3329			2882		208	220	204	46		112
v/s Ratio Prot	c0.03	0.20			0.17		c0.09	0.09				
v/s Ratio Perm	c0.25								0.02	0.00		c0.01
v/c Ratio	0.42	0.30			0.30		0.74	0.72	0.16	0.02		0.18
Uniform Delay, d1	10.7	11.4			17.7		69.4	69.2	64.1	71.4		72.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.7	0.2			0.3		13.2	11.1	0.4	0.2		0.8
Delay (s)	11.3	11.6			18.0		82.6	80.3	64.5	71.6		72.9
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		11.6			18.0			73.8			72.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

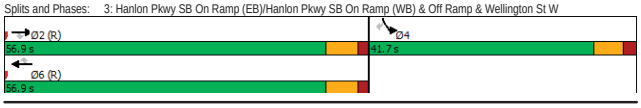
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	465	0	860	180	0	0	0	195	0	95
Future Volume (vph)	0	950	465	0	860	180	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			470			148						100
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	1000	489	0	905	189	0	0	0	205	0	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1000	489	0	905	189	0	0	0	205	0	100
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.27	0.39		0.24	0.16				0.52		0.38
Control Delay		4.5	1.5		4.4	1.5				45.3		12.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.5	1.5		4.4	1.5				45.3		12.3
LOS		A	A		A	A				D		B
Approach Delay		3.5			3.9						34.5	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 6.9		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1000	489	905	189	205	100
v/c Ratio	0.27	0.39	0.24	0.16	0.52	0.38
Control Delay	4.5	1.5	4.4	1.5	45.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	1.5	4.4	1.5	45.3	12.3
Queue Length 50th (m)	19.5	0.8	17.2	1.8	20.3	0.0
Queue Length 95th (m)	28.6	9.5	25.5	8.1	30.7	14.4
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3659	1261	3695	1185	1150	580
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	0.27	0.39	0.24	0.16	0.18	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	950	465	0	860	180	0	0	0	195	0	95
Future Volume (vph)	0	950	465	0	860	180	0	0	0	195	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1000	489	0	905	189	0	0	0	205	0	100
RTOR Reduction (vph)	0	0	122	0	0	38	0	0	0	0	0	88
Lane Group Flow (vph)	0	1000	367	0	905	151	0	0	0	205	0	12
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.0	73.0		73.0	73.0				12.0		12.0
Effective Green, g (s)		73.0	73.0		73.0	73.0				12.0		12.0
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3657	1138		3692	1146				394		177
v/s Ratio Prot		0.20			0.18					c0.06		
v/s Ratio Perm			c0.24			0.10						0.01
v/c Ratio		0.27	0.32		0.25	0.13				0.52		0.07
Uniform Delay, d1		4.2	4.4		4.1	3.7				40.6		38.4
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.2	0.2				1.2		0.2
Delay (s)		4.4	5.1		4.2	3.9				41.8		38.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.2			0.0			40.8	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

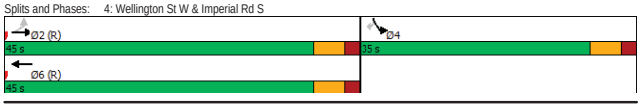
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	960	680	175	445	75
Future Volume (vph)	65	960	680	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.969			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3311	0	1770	1599
Flt Permitted		0.820			0.950	
Satd. Flow (perm)	0	2794	3311	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			56			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	68	1000	708	182	464	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1068	890	0	464	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.71	0.49		0.84	0.14
Control Delay		18.2	12.7		39.6	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.2	12.7		39.6	5.2
LOS		B	B		D	A
Approach Delay		18.2	12.7		34.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1068	890	464	78
v/c Ratio	0.71	0.49	0.84	0.14
Control Delay	18.2	12.7	39.6	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.2	12.7	39.6	5.2
Queue Length 50th (m)	65.0	42.3	67.0	0.0
Queue Length 95th (m)	97.5	63.1	98.4	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1501	1804	641	629
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	0.49	0.72	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	960	680	175	445	75
Future Volume (vph)	65	960	680	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3312		1770	1599
Flt Permitted		0.82	1.00		0.95	1.00
Satd. Flow (perm)		2794	3312		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1000	708	182	464	78
RTOR Reduction (vph)	0	0	26	0	0	54
Lane Group Flow (vph)	0	1068	864	0	464	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.0	43.0		25.0	25.0
Effective Green, g (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1501	1780		553	499
v/s Ratio Prot			0.26		c0.26	
v/s Ratio Perm		c0.38				0.02
v/c Ratio		0.71	0.49		0.84	0.05
Uniform Delay, d1		13.9	11.6		25.6	19.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.9	1.0		10.8	0.0
Delay (s)		16.7	12.5		36.4	19.2
Level of Service		B	B		D	B
Approach Delay (s)		16.7	12.5		33.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	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)	100	330	335	175	195	25	165	1445	205	25	1085	50
Future Volume (vph)	100	330	335	175	195	25	165	1445	205	25	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3471	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.611			0.298			0.950			0.950		
Satd. Flow (perm)	1085	3438	1583	561	3471	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252		7				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	337	342	179	199	26	168	1474	209	26	1107	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	337	342	179	225	0	168	1474	209	26	1107	51
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	38.8	20.7	165.4	45.1	24.6		18.5	101.0	165.4	8.5	85.8	85.8
Actuated g/C Ratio	0.23	0.13	1.00	0.27	0.15		0.11	0.61	1.00	0.05	0.52	0.52
v/c Ratio	0.34	0.79	0.22	0.64	0.43		0.46	0.72	0.13	0.32	0.65	0.06
Control Delay	48.3	83.4	0.3	58.5	64.5		71.4	27.1	0.2	86.1	33.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	83.4	0.3	58.5	64.5		71.4	27.1	0.2	86.1	33.2	0.1
LOS	D	F	A	E	E		E	C	A	F	C	A
Approach Delay		42.4			61.8			28.1			32.9	
Approach LOS		D			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	337	342	179	225	168	1474	209	26	1107	51
v/c Ratio	0.34	0.79	0.22	0.64	0.43	0.46	0.72	0.13	0.32	0.65	0.06
Control Delay	48.3	83.4	0.3	58.5	64.5	71.4	27.1	0.2	86.1	33.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	83.4	0.3	58.5	64.5	71.4	27.1	0.2	86.1	33.2	0.1
Queue Length 50th (m)	26.9	60.3	0.0	49.3	36.1	27.9	201.4	0.0	8.9	153.6	0.0
Queue Length 95th (m)	44.0	78.4	0.0	72.7	52.1	39.7	239.7	0.0	20.5	191.2	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	348	480	1583	291	535	442	2057	1568	87	1754	839
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.70	0.22	0.62	0.42	0.38	0.72	0.13	0.30	0.63	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	330	335	175	195	25	165	1445	205	25	1085	50
Future Volume (vph)	100	330	335	175	195	25	165	1445	205	25	1085	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3470		3303	3343	1568	1597	3282	1482
Flt Permitted	0.61	1.00	1.00	0.30	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1086	3438	1583	561	3470		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	337	342	179	199	26	168	1474	209	26	1107	51
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	25
Lane Group Flow (vph)	102	337	342	179	219	0	168	1474	209	26	1107	26
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	33.8	20.7	165.4	40.7	24.6		20.5	99.0	165.4	5.3	83.8	83.8
Effective Green, g (s)	33.8	20.7	165.4	40.7	24.6		20.5	99.0	165.4	5.3	83.8	83.8
Actuated g/C Ratio	0.20	0.13	1.00	0.25	0.15		0.12	0.60	1.00	0.03	0.51	0.51
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	269	430	1583	264	516		409	2000	1568	51	1662	750
v/s Ratio Prot	0.03	c0.10		c0.07	0.06		0.05	c0.44		0.02	c0.34	
v/s Ratio Perm	0.05		0.22	0.10					0.13			0.02
v/c Ratio	0.38	0.78	0.22	0.68	0.42		0.41	0.74	0.13	0.51	0.67	0.03
Uniform Delay, d1	55.7	70.2	0.0	52.7	64.0		66.9	23.8	0.0	78.8	30.4	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	9.0	0.3	6.7	0.6		0.7	2.5	0.2	7.8	2.1	0.1
Delay (s)	56.6	79.2	0.3	59.4	64.5		67.5	26.3	0.2	86.6	32.5	20.6
Level of Service	E	E	A	E	E		E	C	A	F	C	C
Approach Delay (s)		41.7			62.3			27.1			33.2	
Approach LOS		D			E			C			C	

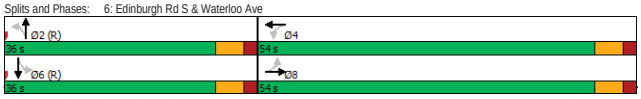
Intersection Summary					
HCM 2000 Control Delay		34.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.75			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)	23.4	
Intersection Capacity Utilization		85.8%	ICU Level of Service	E	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Future Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.978			0.976			0.979			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1787	0	1752	1784	0	1805	1820	0	1770	1842	0
Flt Permitted	0.614			0.357			0.379			0.284		
Satd. Flow (perm)	1128	1787	0	652	1784	0	717	1820	0	528	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			16			10			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	54	255	43	82	141	27	22	620	103	49	533	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	298	0	82	168	0	22	723	0	49	571	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
v/c Ratio	0.21	0.72		0.56	0.40		0.05	0.62		0.15	0.48	
Control Delay	27.9	39.8		43.9	28.2		20.6	29.8		9.6	11.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.9	39.8		43.9	28.2		20.6	29.8		9.6	11.2	
LOS	C	D		D	C		C	C		A	B	
Approach Delay		38.0			33.4			29.6			11.1	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	298	82	168	22	723	49	571
v/c Ratio	0.21	0.72	0.56	0.40	0.05	0.62	0.15	0.48
Control Delay	27.9	39.8	43.9	28.2	20.6	29.8	9.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	39.8	43.9	28.2	20.6	29.8	9.6	11.2
Queue Length 50th (m)	8.0	47.9	13.3	23.5	2.2	103.5	3.2	48.1
Queue Length 95th (m)	16.3	68.1	26.0	37.6	m7.1	167.6	10.5	92.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	601	959	347	958	458	1168	337	1179
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	0.31	0.24	0.18	0.05	0.62	0.15	0.48

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Future Volume (vph)	50	235	40	75	130	25	20	570	95	45	490	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1746	1787		1738	1783		1794	1819		1762	1842	
Flt Permitted	0.61	1.00		0.36	1.00		0.38	1.00		0.28	1.00	
Satd. Flow (perm)	1128	1787		653	1783		716	1819		526	1842	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	255	43	82	141	27	22	620	103	49	533	38
RTOR Reduction (vph)	0	11	0	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	54	287	0	82	156	0	22	719	0	49	570	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Effective Green, g (s)	20.4	20.4		20.4	20.4		57.6	57.6		57.6	57.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	255	405		148	404		458	1164		336	1178	
v/s Ratio Prot		c0.16			0.09			c0.40			0.31	
v/s Ratio Perm	0.05			0.13			0.03			0.09		
v/c Ratio	0.21	0.71		0.55	0.39		0.05	0.62		0.15	0.48	
Uniform Delay, d1	28.3	32.1		30.8	29.5		6.0	9.6		6.4	8.4	
Progression Factor	1.00	1.00		1.00	1.00		2.52	2.45		1.00	1.00	
Incremental Delay, d2	0.4	5.6		4.4	0.6		0.2	2.2		0.9	1.4	
Delay (s)	28.7	37.7		35.2	30.1		15.4	25.8		7.3	9.9	
Level of Service	C	D		D	C		B	C		A	A	
Approach Delay (s)		36.3			31.8			25.5			9.7	
Approach LOS		D			C			C			A	

Intersection Summary					
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	74.0%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	5	250	5	5	260
Future Volume (vph)	10	5	250	5	5	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	11	5	272	5	5	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	5	272	5	5	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	5	250	5	5	260
Future Volume (Veh/h)	10	5	250	5	5	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	5	272	5	5	283
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			23		568	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			23		568	19
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			83		99	73
cM capacity (veh/h)			1583		401	1049

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	5	272	5	288
Volume Left	0	0	272	0	5
Volume Right	0	5	0	0	283
cSH	1700	1700	1583	1700	1068
Volume to Capacity	0.01	0.00	0.17	0.00	0.27
Queue Length 95th (m)	0.0	0.0	5.0	0.0	8.8
Control Delay (s)	0.0	0.0	7.7	0.0	9.8
Lane LOS			A		A
Approach Delay (s)	0.0		7.6		9.8
Approach LOS					A

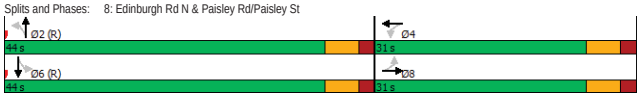
Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Future Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.98		0.99	1.00		1.00	0.99	
Frt		0.974			0.962			0.983			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1758	0	1805	1747	0	1656	1841	0	1656	1799	0
Flt Permitted	0.428			0.307			0.358			0.322		
Satd. Flow (perm)	749	1758	0	580	1747	0	617	1841	0	559	1799	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25			13			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	82	359	76	54	255	87	82	500	65	103	440	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	435	0	54	342	0	82	565	0	103	522	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.33	0.73		0.28	0.57		0.26	0.60		0.36	0.57	
Control Delay	24.6	29.8		23.3	23.5		13.4	16.2		15.9	15.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.6	29.8		23.3	23.5		13.4	16.2		15.9	15.3	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		29.0			23.5			15.8			15.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 86.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues m) Future Background (2031) AM - Phase 1

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	435	54	342	82	565	103	522
v/c Ratio	0.33	0.73	0.28	0.57	0.26	0.60	0.36	0.57
Control Delay	24.6	29.8	23.3	23.5	13.4	16.2	15.9	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	29.8	23.3	23.5	13.4	16.2	15.9	15.3
Queue Length 50th (m)	8.7	48.5	5.8	38.2	6.5	54.7	8.7	48.7
Queue Length 95th (m)	m20.7	#86.2	15.4	64.2	15.8	85.9	21.0	77.3
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	249	596	193	599	312	939	283	920
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	0.33	0.73	0.28	0.57	0.26	0.60	0.36	0.57

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) AM - Phase 1

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Future Volume (vph)	75	330	70	50	235	80	75	460	60	95	405	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1662	1758		1794	1746		1638	1840		1650	1800	
Flt Permitted	0.43	1.00		0.31	1.00		0.36	1.00		0.32	1.00	
Satd. Flow (perm)	749	1758		580	1746		617	1840		560	1800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	359	76	54	255	87	82	500	65	103	440	82
RTOR Reduction (vph)	0	10	0	0	17	0	0	6	0	0	9	0
Lane Group Flow (vph)	82	425	0	54	325	0	82	559	0	103	513	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	249	586		193	582		312	932		283	912	
v/s Ratio Prot		c0.24			0.19			c0.30			0.29	
v/s Ratio Perm	0.11			0.09			0.13			0.18		
v/c Ratio	0.33	0.73		0.28	0.56		0.26	0.60		0.36	0.56	
Uniform Delay, d1	18.7	22.0		18.4	20.5		10.5	13.1		11.2	12.8	
Progression Factor	1.08	1.02		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	7.0		3.6	3.8		2.0	2.8		3.6	2.5	
Delay (s)	23.4	29.5		22.0	24.3		12.6	16.0		14.8	15.3	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		28.5			24.0			15.5			15.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings m) Future Background (2031) AM - Phase 1

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	355	1	0	315	155	0	1	0	170	1	130
Future Volume (vph)	210	355	1	0	315	155	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor	0.99	1.00			0.98						0.97	0.98
Frt					0.955							0.850
Flt Protected	0.950										0.953	
Satd. Flow (prot)	1752	1793	0	0	1724	0	0	1900	0	0	1775	1553
Flt Permitted	0.252										0.727	
Satd. Flow (perm)	461	1793	0	0	1724	0	0	1900	0	0	1313	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					38							159
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	256	433	1	0	384	189	0	1	0	207	1	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	434	0	0	573	0	0	1	0	0	208	159
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lanes, Volumes, Timings m) Future Background (2031) AM - Phase 1

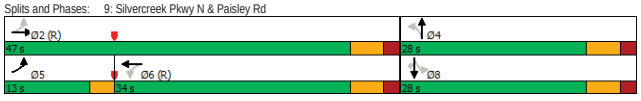
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8		8	8		8	8		8	8	8
Act Effct Green (s)	49.4	46.4			33.9			16.6			16.6	16.6
Actuated g/C Ratio	0.66	0.62			0.45			0.22			0.22	0.22
v/c Ratio	0.55	0.39			0.72			0.00			0.72	0.35
Control Delay	10.7	9.5			30.9			20.0			40.5	6.1
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	10.7	9.5			30.9			20.0			40.5	6.1
LOS	B	A			C			B			D	A
Approach Delay		9.9			30.9			20.0			25.6	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
m) Future Background (2031) AM - Phase 1

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	256	434	573	1	208	159
v/c Ratio	0.55	0.39	0.72	0.00	0.72	0.35
Control Delay	10.7	9.5	30.9	20.0	40.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	9.5	30.9	20.0	40.5	6.1
Queue Length 50th (m)	13.4	29.3	80.5	0.1	28.6	0.0
Queue Length 95th (m)	25.1	49.4	#114.6	1.1	41.5	9.9
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	483	1109	799	557	385	559
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	0.53	0.39	0.72	0.00	0.54	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
m) Future Background (2031) AM - Phase 1

9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	355	1	0	315	155	0	1	0	170	1	130
Future Volume (vph)	210	355	1	0	315	155	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.98			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			0.97	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1749	1792			1725			1900			1721	1525
Flt Permitted	0.25	1.00			1.00			1.00			0.73	1.00
Satd. Flow (perm)	464	1792			1725			1900			1314	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	256	433	1	0	384	189	0	1	0	207	1	159
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	124
Lane Group Flow (vph)	256	434	0	0	552	0	0	1	0	0	208	35
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.4	46.4			33.9			16.6			16.6	16.6
Effective Green, g (s)	46.4	46.4			33.9			16.6			16.6	16.6
Actuated g/C Ratio	0.62	0.62			0.45			0.22			0.22	0.22
Clearance Time (s)	3.0	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)	449	1108			779			420			290	337
v/s Ratio Prot	c0.07	0.24			c0.32			0.00				
v/s Ratio Perm	0.28										c0.16	0.02
v/c Ratio	0.57	0.39			0.71			0.00			0.72	0.10
Uniform Delay, d1	8.9	7.2			16.6			22.7			27.0	23.3
Progression Factor	1.00	1.00			1.42			1.00			1.00	1.00
Incremental Delay, d2	1.7	1.0			5.1			0.0			8.2	0.1
Delay (s)	10.7	8.2			28.6			22.8			35.2	23.4
Level of Service	B	A			C			C			D	C
Approach Delay (s)		9.1			28.6			22.8			30.1	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
m) Future Background (2031) AM - Phase 1

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	70	0	975	175	0	0	0	0	0	0
Future Volume (vph)	0	1000	70	0	975	175	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1087	76	0	1060	190	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1087	76	0	1060	190	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.7%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
m) Future Background (2031) AM - Phase 1

16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1000	70	0	975	175	0	0	0	0	0	0
Future Volume (Veh/h)	0	1000	70	0	975	175	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1087	76	0	1060	190	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1061			1088			1442	2149	364	1424	2149	355
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	799			1088			1210	1970	364	1190	1970	40
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	773			649			131	59	638	135	59	956

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	362	362	362	76	353	353	353	190
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	190
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.21	0.21	0.04	0.21	0.21	0.21	0.11
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

Average Delay	0.0		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings m) Future Background (2031) PM - Phase 1
1: Edinburgh Rd S & Wellington St W

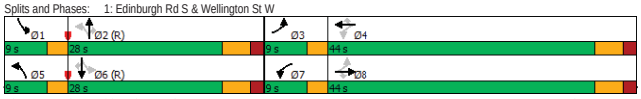
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Future Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.228			0.229			0.220			0.340		
Satd. Flow (perm)	432	3539	1577	426	3539	1555	417	3610	1535	631	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184			109			161			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings m) Future Background (2031) PM - Phase 1
1: Edinburgh Rd S & Wellington St W

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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	35.2	25.5	25.5	37.6	28.6	28.6	44.3	33.0	33.0	37.0	26.6	26.6
Actuated g/C Ratio	0.39	0.28	0.28	0.42	0.32	0.32	0.49	0.37	0.37	0.41	0.30	0.30
v/c Ratio	0.43	0.67	0.32	0.82	0.69	0.14	0.51	0.53	0.35	0.17	0.64	0.14
Control Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
LOS	B	C	A	D	C	A	B	C	B	B	C	A
Approach Delay		24.8			31.4			21.6			22.5	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Queues m) Future Background (2031) PM - Phase 1
1: Edinburgh Rd S & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
v/c Ratio	0.43	0.67	0.32	0.82	0.69	0.14	0.51	0.53	0.35	0.17	0.64	0.14
Control Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	31.3	4.8	44.0	30.4	2.4	19.0	26.1	10.3	10.8	25.9	2.2
Queue Length 50th (m)	12.4	55.5	0.0	28.2	67.0	0.0	19.6	53.2	9.1	3.5	59.9	1.7
Queue Length 95th (m)	20.2	65.8	13.3	#57.1	78.3	4.9	37.7	81.8	31.1	m6.2	72.8	m2.9
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	271	1494	772	297	1494	719	388	1324	665	352	1068	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.45	0.24	0.82	0.52	0.11	0.51	0.53	0.35	0.17	0.64	0.14

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) PM - Phase 1
1: Edinburgh Rd S & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Future Volume (vph)	115	655	180	240	760	75	195	685	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1767	3610	1565
Flt Permitted	0.23	1.00	1.00	0.23	1.00	1.00	0.22	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	433	3539	1577	427	3539	1555	418	3610	1537	632	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	668	184	245	776	77	199	699	235	61	679	77
RTOR Reduction (vph)	0	0	131	0	0	53	0	0	104	0	0	55
Lane Group Flow (vph)	117	668	53	245	776	24	199	699	131	61	679	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.4	26.0	26.0	36.6	28.6	28.6	41.0	31.9	31.9	32.2	26.1	26.1
Effective Green, g (s)	31.4	26.0	26.0	36.6	28.6	28.6	41.0	31.9	31.9	32.2	26.1	26.1
Actuated g/C Ratio	0.35	0.29	0.29	0.41	0.32	0.32	0.46	0.35	0.35	0.36	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	1022	455	292	1124	494	373	1279	544	303	1046	453
v/s Ratio Prot	0.03	0.19		c0.07	0.22		c0.07	0.19		0.01	c0.19	
v/s Ratio Perm	0.14		0.03	c0.27		0.02	0.17		0.09	0.06		0.01
v/c Ratio	0.50	0.65	0.12	0.84	0.69	0.05	0.53	0.55	0.24	0.20	0.65	0.05
Uniform Delay, d1	21.0	28.1	23.6	20.4	26.8	21.3	16.2	23.3	20.5	19.3	27.9	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.80	0.63
Incremental Delay, d2	1.7	1.5	0.1	18.6	1.8	0.0	1.5	1.7	1.0	0.3	2.8	0.2
Delay (s)	22.7	29.6	23.7	39.0	28.7	21.3	17.7	24.9	21.6	13.8	25.2	14.8
Level of Service	C	C	C	D	C	C	B	C	C	B	C	B
Approach Delay (s)		27.6			30.5			23.0			23.4	
Approach LOS		C			C			C			C	

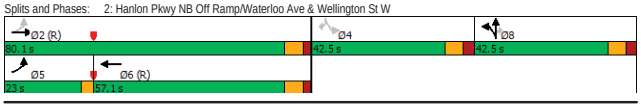
Intersection Summary					
HCM 2000 Control Delay		26.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.75			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		77.3%	ICU Level of Service	D	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	800	0	0	1035	10	415	120	150	5	0	275
Future Volume (vph)	160	800	0	0	1035	10	415	120	150	5	0	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.973		0.950		
Satd. Flow (prot)	1787	5136	0	0	5130	0	1698	1747	1599	1805	0	1599
Flt Permitted	0.194						0.950	0.973		0.284		
Satd. Flow (perm)	365	5136	0	0	5130	0	1698	1747	1599	540	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				155			236
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	165	825	0	0	1067	10	428	124	155	5	0	284
Shared Lane Traffic (%)							36%					
Lane Group Flow (vph)	165	825	0	0	1077	0	274	278	155	5	0	284
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	100.5	96.4			80.7		32.5	32.5	32.5	14.1		14.1
Actuated g/C Ratio	0.61	0.58			0.49		0.20	0.20	0.20	0.09		0.09
v/c Ratio	0.50	0.28			0.43		0.82	0.81	0.35	0.11		0.81
Control Delay	21.6	18.8			30.5		82.5	80.8	9.0	70.8		32.2
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	21.6	18.8			30.5		82.5	80.8	9.0	70.8		32.2
LOS	C	B			C		F	F	A	E		C
Approach Delay		19.3			30.5			65.7			32.9	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	165	825	1077	274	278	155	5	284
v/c Ratio	0.50	0.28	0.43	0.82	0.81	0.35	0.11	0.81
Control Delay	21.6	18.8	30.5	82.5	80.8	9.0	70.8	32.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	18.8	30.5	82.5	80.8	9.0	70.8	32.2
Queue Length 50th (m)	22.7	48.2	83.1	96.5	97.6	0.0	1.7	16.3
Queue Length 95th (m)	47.3	76.4	131.7	125.5	126.4	19.3	6.3	49.4
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	394	2998	2507	377	388	476	114	524
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	0.42	0.28	0.43	0.73	0.72	0.33	0.04	0.54

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	800	0	0	1035	10	415	120	150	5	0	275
Future Volume (vph)	160	800	0	0	1035	10	415	120	150	5	0	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5128		1698	1747	1599	1805		1599
Flt Permitted	0.19	1.00			1.00		0.95	0.97	1.00	0.28		1.00
Satd. Flow (perm)	365	5136			5128		1698	1747	1599	539		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	165	825	0	0	1067	10	428	124	155	5	0	284
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	124	0	0	216
Lane Group Flow (vph)	165	825	0	0	1076	0	274	278	31	5	0	68
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	96.4	96.4			80.7		32.5	32.5	32.5	14.1		14.1
Effective Green, g (s)	96.4	96.4			80.7		32.5	32.5	32.5	14.1		14.1
Actuated g/C Ratio	0.58	0.58			0.49		0.20	0.20	0.20	0.09		0.09
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	322	2998			2506		334	343	314	46		136
v/s Ratio Prot	c0.04	0.16			0.21		c0.16	0.16				
v/s Ratio Perm	c0.26								0.02	0.01		c0.04
v/c Ratio	0.51	0.28			0.43		0.82	0.81	0.10	0.11		0.50
Uniform Delay, d1	17.5	17.0			27.3		63.5	63.4	54.3	69.7		72.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.4	0.2			0.5		14.8	13.5	0.1	1.0		2.9
Delay (s)	18.9	17.3			27.8		78.3	76.8	54.4	70.7		75.0
Level of Service	B	B			C		E	E	D	E		E
Approach Delay (s)		17.5			27.8			72.5			75.0	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

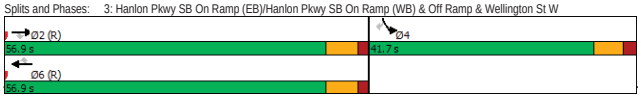
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	840	515	0	1300	185	0	0	0	205	0	85
Future Volume (vph)	0	840	515	0	1300	185	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			542			101						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	884	542	0	1368	195	0	0	0	216	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	884	542	0	1368	195	0	0	0	216	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.23	0.42		0.36	0.17				0.52		0.40
Control Delay		4.3	1.4		4.9	2.3				45.0		28.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.3	1.4		4.9	2.3				45.0		28.0
LOS		A	A		A	A				D		C
Approach Delay		3.2			4.6						40.0	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 44.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	884	542	1368	195	216	89
v/c Ratio	0.23	0.42	0.36	0.17	0.52	0.40
Control Delay	4.3	1.4	4.9	2.3	45.0	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	1.4	4.9	2.3	45.0	28.0
Queue Length 50th (m)	16.6	0.0	29.1	4.3	21.3	8.5
Queue Length 95th (m)	24.4	8.5	41.0	11.5	32.0	23.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3771	1301	3809	1172	1230	568
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	0.23	0.42	0.36	0.17	0.18	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	840	515	0	1300	185	0	0	0	205	0	85
Future Volume (vph)	0	840	515	0	1300	185	0	0	0	205	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	884	542	0	1368	195	0	0	0	216	0	89
RTOR Reduction (vph)	0	0	140	0	0	26	0	0	0	0	0	38
Lane Group Flow (vph)	0	884	402	0	1368	169	0	0	0	216	0	51
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.1	73.1		73.1	73.1				11.9		11.9
Effective Green, g (s)		73.1	73.1		73.1	73.1				11.9		11.9
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3769	1160		3807	1145				418		183
v/s Ratio Prot		0.17			c0.27					c0.06		
v/s Ratio Perm			0.26			0.11						0.03
v/c Ratio		0.23	0.35		0.36	0.15				0.52		0.28
Uniform Delay, d1		4.0	4.4		4.5	3.7				40.7		39.4
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.8		0.3	0.3				1.1		0.8
Delay (s)		4.1	5.3		4.8	4.0				41.7		40.3
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.7			0.0			41.3	
Approach LOS		A			A			A			D	

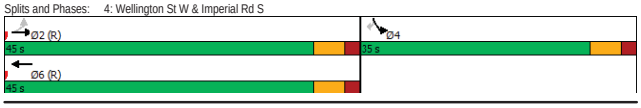
Intersection Summary					
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.38				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	44.8%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	925	850	410	375	60
Future Volume (vph)	70	925	850	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3342	0	1787	1615
Flt Permitted		0.694			0.950	
Satd. Flow (perm)	0	2460	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			142			62
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	954	876	423	387	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1026	1299	0	387	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
v/c Ratio		0.73	0.66		0.77	0.12
Control Delay		18.4	13.4		36.9	5.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.4	13.4		36.9	5.8
LOS		B	B		D	A
Approach Delay		18.4	13.4		32.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 100.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1026	1299	387	62
v/c Ratio	0.73	0.66	0.77	0.12
Control Delay	18.4	13.4	36.9	5.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.4	13.4	36.9	5.8
Queue Length 50th (m)	59.2	61.9	56.4	0.0
Queue Length 95th (m)	#114.1	102.5	78.3	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1402	1966	647	624
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	0.66	0.60	0.10

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	925	850	410	375	60
Future Volume (vph)	70	925	850	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3342		1787	1615
Flt Permitted		0.69	1.00		0.95	1.00
Satd. Flow (perm)		2461	3342		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	954	876	423	387	62
RTOR Reduction (vph)	0	0	61	0	0	45
Lane Group Flow (vph)	0	1026	1238	0	387	17
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		45.6	45.6		22.4	22.4
Effective Green, g (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1402	1904		500	452
v/s Ratio Prot			0.37		c0.22	
v/s Ratio Perm		c0.42				0.01
v/c Ratio		0.73	0.65		0.77	0.04
Uniform Delay, d1		12.7	11.8		26.5	21.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.4	1.7		7.3	0.0
Delay (s)		16.1	13.5		33.8	21.0
Level of Service		B	B		C	C
Approach Delay (s)		16.1	13.5		32.0	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

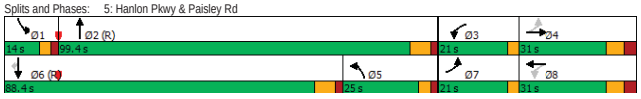
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	375	390	245	450	35	420	1215	305	45	1625	140
Future Volume (vph)	125	375	390	245	450	35	420	1215	305	45	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3567	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.214			0.250			0.950			0.950		
Satd. Flow (perm)	402	3574	1595	475	3567	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			257		4				257			129
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	129	387	402	253	464	36	433	1253	314	46	1675	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	387	402	253	500	0	433	1253	314	46	1675	144
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	41.7	22.4	165.4	47.5	26.1		20.1	95.6	165.4	8.6	81.5	81.5
Actuated g/C Ratio	0.25	0.14	1.00	0.29	0.16		0.12	0.58	1.00	0.05	0.49	0.49
v/c Ratio	0.58	0.80	0.25	0.90	0.88		1.03	0.64	0.20	0.49	0.98	0.17
Control Delay	55.8	82.4	0.4	82.8	84.8		120.7	26.2	0.3	93.9	58.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	82.4	0.4	82.8	84.8		120.7	26.2	0.3	93.9	58.3	5.0
LOS	E	F	A	F	F		F	C	A	F	E	A
Approach Delay		42.8			84.1			42.6			55.0	
Approach LOS		D			F			D			E	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 52.5		Intersection LOS: D	
Intersection Capacity Utilization 101.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	387	402	253	500	433	1253	314	46	1675	144
v/c Ratio	0.58	0.80	0.25	0.90	0.88	1.03	0.64	0.20	0.49	0.98	0.17
Control Delay	55.8	82.4	0.4	82.8	84.8	120.7	26.2	0.3	93.9	58.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	82.4	0.4	82.8	84.8	120.7	26.2	0.3	93.9	58.3	5.0
Queue Length 50th (m)	34.1	69.2	0.0	72.2	89.6	~82.6	157.1	0.0	15.8	297.1	2.6
Queue Length 95th (m)	53.4	89.3	0.0	#113.7	#134.0	#120.0	182.5	0.0	30.9	#355.0	15.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	261	496	1595	281	566	420	1949	1599	98	1710	861
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.78	0.25	0.90	0.88	1.03	0.64	0.20	0.47	0.98	0.17

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	375	390	245	450	35	420	1215	305	45	1625	140
Future Volume (vph)	125	375	390	245	450	35	420	1215	305	45	1625	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1595	1805	3567		3467	3374	1599	1805	3471	1615
Flt Permitted	0.21	1.00	1.00	0.25	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	403	3574	1595	475	3567		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	387	402	253	464	36	433	1253	314	46	1675	144
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	66
Lane Group Flow (vph)	129	387	402	253	497	0	433	1253	314	46	1675	78
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	36.7	22.4	165.4	43.4	26.1		21.1	94.6	165.4	7.0	80.5	80.5
Effective Green, g (s)	36.7	22.4	165.4	43.4	26.1		21.1	94.6	165.4	7.0	80.5	80.5
Actuated g/C Ratio	0.22	0.14	1.00	0.26	0.16		0.13	0.57	1.00	0.04	0.49	0.49
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	209	484	1595	269	562		442	1929	1599	76	1689	786
v/s Ratio Prot	0.05	0.11		c0.10	0.14		c0.12	0.37		0.03	c0.48	
v/s Ratio Perm	0.08		0.25	c0.14					0.20			0.05
v/c Ratio	0.62	0.80	0.25	0.94	0.88		0.98	0.65	0.20	0.61	0.99	0.10
Uniform Delay, d1	54.5	69.3	0.0	54.4	68.2		71.9	24.1	0.0	77.8	42.1	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	9.0	0.4	39.0	15.2		37.0	1.7	0.3	12.9	20.0	0.3
Delay (s)	59.8	78.3	0.4	93.3	83.4		108.9	25.8	0.3	90.7	62.1	23.1
Level of Service	E	E	A	F	F		F	C	A	F	E	C
Approach Delay (s)		41.6			86.7			39.8			59.8	
Approach LOS		D			F			D			E	

Intersection Summary

HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

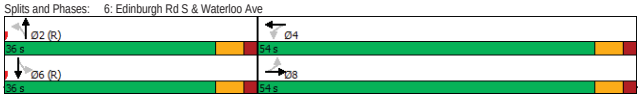
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Future Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.970			0.977			0.982			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1813	0	1805	1829	0	1805	1856	0	1770	1884	0
Flt Permitted	0.344			0.536			0.311			0.269		
Satd. Flow (perm)	632	1813	0	1012	1829	0	590	1856	0	500	1884	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			15			8			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	46	165	41	93	258	46	36	660	88	52	649	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	206	0	93	304	0	36	748	0	52	680	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
v/c Ratio	0.32	0.48		0.41	0.72		0.10	0.63		0.16	0.56	
Control Delay	33.3	29.8		33.5	39.7		17.2	26.1		9.9	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.3	29.8		33.5	39.7		17.2	26.1		9.9	12.5	
LOS	C	C		C	D		B	C		A	B	
Approach Delay		30.5			38.2			25.7			12.3	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	206	93	304	36	748	52	680
v/c Ratio	0.32	0.48	0.41	0.72	0.10	0.63	0.16	0.56
Control Delay	33.3	29.8	33.5	39.7	17.2	26.1	9.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	29.8	33.5	39.7	17.2	26.1	9.9	12.5
Queue Length 50th (m)	7.0	29.2	14.5	48.9	2.1	86.9	3.4	62.0
Queue Length 95th (m)	15.8	45.1	26.3	69.1	m11.2	166.6	11.1	117.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	337	976	539	982	378	1192	320	1208
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.21	0.17	0.31	0.10	0.63	0.16	0.56

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Future Volume (vph)	45	160	40	90	250	45	35	640	85	50	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1750	1813		1794	1829		1802	1857		1764	1885	
Flt Permitted	0.34	1.00		0.54	1.00		0.31	1.00		0.27	1.00	
Satd. Flow (perm)	633	1813		1011	1829		589	1857		500	1885	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	165	41	93	258	46	36	660	88	52	649	31
RTOR Reduction (vph)	0	16	0	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	46	190	0	93	292	0	36	745	0	52	679	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Effective Green, g (s)	20.3	20.3		20.3	20.3		57.7	57.7		57.7	57.7	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	142	408		228	412		377	1190		320	1208	
v/s Ratio Prot		0.10			c0.16			c0.40			0.36	
v/s Ratio Perm	0.07			0.09			0.06			0.10		
v/c Ratio	0.32	0.47		0.41	0.71		0.10	0.63		0.16	0.56	
Uniform Delay, d1	29.1	30.2		29.7	32.1		6.2	9.7		6.5	9.1	
Progression Factor	1.00	1.00		1.00	1.00		2.02	2.11		1.00	1.00	
Incremental Delay, d2	1.3	0.8		1.2	5.5		0.4	2.2		1.1	1.9	
Delay (s)	30.4	31.0		30.9	37.7		12.9	22.6		7.6	11.0	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		30.9			36.1			22.2			10.7	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	10	10	270	10	20	270
Future Volume (vph)	10	10	270	10	20	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	11	11	293	11	22	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	11	293	11	22	293
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	10	10	270	10	20	270
Future Volume (Veh/h)	10	10	270	10	20	270
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	293	11	22	293
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			23		610	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			23		610	13
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		94	73
cM capacity (veh/h)			1591		375	1068

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	11	293	11	315
Volume Left	0	0	293	0	22
Volume Right	0	11	0	0	293
cSH	1700	1700	1591	1700	1149
Volume to Capacity	0.01	0.01	0.18	0.01	0.27
Queue Length 95th (m)	0.0	0.0	5.4	0.0	9.0
Control Delay (s)	0.0	0.0	7.8	0.0	10.0
Lane LOS			A		B
Approach Delay (s)	0.0		7.5		10.0
Approach LOS					B

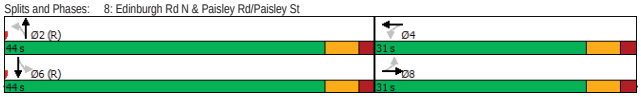
Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Future Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.959			0.982			0.986			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1792	0	1805	1841	0	1805	1865	0	1736	1847	0
Flt Permitted	0.286			0.286			0.237			0.271		
Satd. Flow (perm)	539	1792	0	540	1841	0	449	1865	0	494	1847	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			10			10			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	81	328	124	65	398	54	113	570	59	108	575	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	452	0	65	452	0	113	629	0	108	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.45	0.73		0.36	0.73		0.50	0.66		0.43	0.71	
Control Delay	29.3	27.7		26.1	29.8		21.7	17.7		18.5	19.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.3	27.7		26.1	29.8		21.7	17.7		18.5	19.2	
LOS	C	C		C	C		C	B		B	B	
Approach Delay		27.9			29.3			18.3			19.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 93.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues m) Future Background (2031) PM - Phase 1

8: Edinburgh Rd N & Paisley Rd/Paisley St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	452	65	452	113	629	108	672
v/c Ratio	0.45	0.73	0.36	0.73	0.50	0.66	0.43	0.71
Control Delay	29.3	27.7	26.1	29.8	21.7	17.7	18.5	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	27.7	26.1	29.8	21.7	17.7	18.5	19.2
Queue Length 50th (m)	8.6	47.5	7.2	57.2	10.4	64.3	9.5	70.7
Queue Length 95th (m)	m19.9	#84.9	18.7	#92.1	27.5	100.4	23.8	110.9
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	179	615	180	620	227	949	250	943
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	0.45	0.73	0.36	0.73	0.50	0.66	0.43	0.71

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) PM - Phase 1

8: Edinburgh Rd N & Paisley Rd/Paisley St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Future Volume (vph)	75	305	115	60	370	50	105	530	55	100	535	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1790	1792		1795	1841		1800	1865		1732	1848	
Flt Permitted	0.29	1.00		0.29	1.00		0.24	1.00		0.27	1.00	
Satd. Flow (perm)	539	1792		540	1841		448	1865		493	1848	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	328	124	65	398	54	113	570	59	108	575	97
RTOR Reduction (vph)	0	18	0	0	7	0	0	5	0	0	8	0
Lane Group Flow (vph)	81	434	0	65	445	0	113	624	0	108	664	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	179	597		180	613		226	944		249	936	
v/s Ratio Prot		c0.24			0.24			0.33			c0.36	
v/s Ratio Perm	0.15			0.12			0.25			0.22		
v/c Ratio	0.45	0.73		0.36	0.73		0.50	0.66		0.43	0.71	
Uniform Delay, d1	19.6	22.0		18.9	22.0		12.2	13.7		11.7	14.2	
Progression Factor	1.02	0.95		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	6.9		5.5	7.4		7.7	3.6		5.4	4.5	
Delay (s)	27.3	27.9		24.5	29.4		19.9	17.4		17.1	18.8	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		27.8			28.7			17.7			18.6	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings m) Future Background (2031) PM - Phase 1

9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	405	1	0	415	195	2	0	0	215	0	295
Future Volume (vph)	295	405	1	0	415	195	2	0	0	215	0	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor	1.00	1.00			0.99			1.00			1.00	0.99
Frt					0.957							0.850
Flt Protected	0.950							0.950			0.950	
Satd. Flow (prot)	1805	1881	0	0	1793	0	0	1805	0	0	1787	1615
Flt Permitted	0.148							0.522			0.757	
Satd. Flow (perm)	281	1881	0	0	1793	0	0	991	0	0	1419	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36							317
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	317	435	1	0	446	210	2	0	0	231	0	317
Shared Lane Traffic (%)												
Lane Group Flow (vph)	317	436	0	0	656	0	0	2	0	0	231	317
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lanes, Volumes, Timings m) Future Background (2031) PM - Phase 1

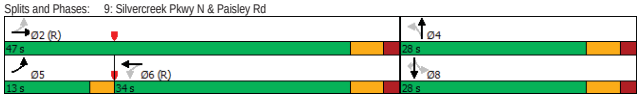
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	49.1	46.1			31.3			16.9			16.9	16.9
Actuated g/C Ratio	0.65	0.61			0.42			0.23			0.23	0.23
v/c Ratio	0.75	0.38			0.85			0.01			0.72	0.52
Control Delay	24.8	9.3			42.3			19.5			39.6	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	24.8	9.3			42.3			19.5			39.6	6.2
LOS	C	A			D			B			D	A
Approach Delay		15.8			42.3			19.5			20.3	
Approach LOS		B			D			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues m) Future Background (2031) PM - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	317	436	656	2	231	317
v/c Ratio	0.75	0.38	0.85	0.01	0.72	0.52
Control Delay	24.8	9.3	42.3	19.5	39.6	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	9.3	42.3	19.5	39.6	6.2
Queue Length 50th (m)	20.7	29.5	103.4	0.2	31.6	0.0
Queue Length 95th (m)	#69.3	55.8	#164.8	1.7	51.2	17.4
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	423	1156	769	290	416	691
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	0.75	0.38	0.85	0.01	0.56	0.46

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

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) PM - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	295	405	1	0	415	195	2	0	0	215	0	295
Future Volume (vph)	295	405	1	0	415	195	2	0	0	215	0	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.95			0.95	1.00
Satd. Flow (prot)	1805	1880			1792			1804			1781	1594
Flt Permitted	0.15	1.00			1.00			0.52			0.76	1.00
Satd. Flow (perm)	282	1880			1792			991			1418	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	317	435	1	0	446	210	2	0	0	231	0	317
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	246
Lane Group Flow (vph)	317	436	0	0	635	0	0	2	0	0	231	71
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.1	46.1			31.3			16.9			16.9	16.9
Effective Green, g (s)	46.1	46.1			31.3			16.9			16.9	16.9
Actuated g/C Ratio	0.61	0.61			0.42			0.23			0.23	0.23
Clearance Time (s)	3.0	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)	412	1155			747			223			319	359
v/s Ratio Prot	c0.12	0.23			c0.35							
v/s Ratio Perm	0.35							0.00			c0.16	0.04
v/c Ratio	0.77	0.38			0.85			0.01			0.72	0.20
Uniform Delay, d1	13.9	7.3			19.7			22.5			26.9	23.6
Progression Factor	1.00	1.00			1.61			1.00			1.00	1.00
Incremental Delay, d2	8.4	0.9			9.3			0.0			7.9	0.3
Delay (s)	22.3	8.2			41.1			22.6			34.8	23.8
Level of Service	C	A			D			C			C	C
Approach Delay (s)		14.1			41.1			22.6			28.5	
Approach LOS		B			D			C			C	

Intersection Summary

HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings m) Future Background (2031) PM - Phase 1
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	75	0	1395	225	0	0	0	0	0	0
Future Volume (vph)	0	900	75	0	1395	225	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	978	82	0	1516	245	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	978	82	0	1516	245	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.3%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis m) Future Background (2031) PM - Phase 1
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	900	75	0	1395	225	0	0	0	0	0	0
Future Volume (Veh/h)	0	900	75	0	1395	225	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	978	82	0	1516	245	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	1517			979			1485	2496	328	1844	2496	507
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1088			979			1052	2208	328	1462	2208	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	567			713			160	39	673	80	39	953

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	326	326	326	82	505	505	505	245
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	245
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.19	0.05	0.30	0.30	0.30	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary

Average Delay	0.0		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

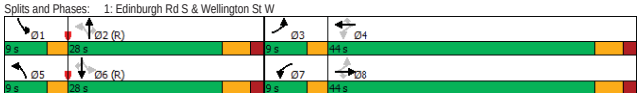
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Future Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.396			0.246			0.387			0.488		
Satd. Flow (perm)	741	3574	1575	458	3505	1487	735	3610	1583	927	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			209			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	31.2	20.5	20.5	35.9	24.7	24.7	46.8	36.1	36.1	42.7	32.5	32.5
Actuated g/C Ratio	0.35	0.23	0.23	0.40	0.27	0.27	0.52	0.40	0.40	0.47	0.36	0.36
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		29.9			26.3			15.6			17.3	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	36.2	6.5	23.0	30.5	2.6	13.5	21.2	4.4	9.6	20.5	2.5
Queue Length 50th (m)	8.7	49.7	0.0	19.5	44.2	0.0	11.7	31.5	0.0	3.8	37.3	0.9
Queue Length 95th (m)	16.8	62.2	11.5	32.0	58.8	4.5	22.7	47.9	15.1	6.5	55.7	5.0
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	345	1509	727	329	1479	690	487	1447	759	510	1305	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.38	0.15	0.53	0.36	0.10	0.26	0.32	0.28	0.12	0.37	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Future Volume (vph)	80	555	105	170	525	70	125	450	205	60	475	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.40	1.00	1.00	0.25	1.00	1.00	0.39	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	744	3574	1575	458	3505	1487	735	3610	1583	927	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	566	107	173	536	71	128	459	209	61	485	71
RTOR Reduction (vph)	0	0	82	0	0	52	0	0	128	0	0	46
Lane Group Flow (vph)	82	566	25	173	536	19	128	459	81	61	485	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.7	21.2	21.2	34.2	24.7	24.7	43.7	34.8	34.8	37.9	31.9	31.9
Effective Green, g (s)	27.7	21.2	21.2	34.2	24.7	24.7	43.7	34.8	34.8	37.9	31.9	31.9
Actuated g/C Ratio	0.31	0.24	0.24	0.38	0.27	0.27	0.49	0.39	0.39	0.42	0.35	0.35
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	304	841	371	319	961	408	462	1395	612	448	1279	572
v/s Ratio Prot	0.02	c0.16		c0.06	0.15		c0.03	0.13		0.01	c0.13	
v/s Ratio Perm	0.06		0.02	0.15		0.01	0.11		0.05	0.05		0.02
v/c Ratio	0.27	0.67	0.07	0.54	0.56	0.05	0.28	0.33	0.13	0.14	0.38	0.04
Uniform Delay, d1	22.6	31.3	26.7	20.0	28.0	24.0	13.1	19.4	17.8	15.6	21.7	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.86	1.10
Incremental Delay, d2	0.5	2.1	0.1	1.9	0.7	0.0	0.3	0.6	0.4	0.1	0.8	0.1
Delay (s)	23.1	33.4	26.8	21.9	28.7	24.1	13.4	20.0	18.3	11.7	19.4	21.1
Level of Service	C	C	C	C	C	C	B	C	B	B	B	C
Approach Delay (s)		31.3			26.7			18.5			18.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

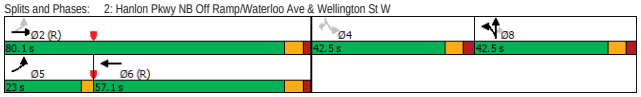
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	570	0	0	735	10	295	55	160	5	0	170
Future Volume (vph)	90	570	0	0	735	10	295	55	160	5	0	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.967		0.950		
Satd. Flow (prot)	1736	5085	0	0	5126	0	1681	1722	1599	1805	0	1599
Flt Permitted	0.321						0.950	0.967		0.323		
Satd. Flow (perm)	586	5085	0	0	5126	0	1681	1722	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				163			173
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	92	582	0	0	750	10	301	56	163	5	0	173
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	92	582	0	0	760	0	178	179	163	5	0	173
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	111.8	107.7			95.8		22.9	22.9	22.9	12.4		12.4
Actuated g/C Ratio	0.68	0.65			0.58		0.14	0.14	0.14	0.08		0.08
v/c Ratio	0.20	0.18			0.26		0.76	0.75	0.45	0.11		0.62
Control Delay	11.8	12.4			18.6		88.4	86.7	11.6	73.8		18.8
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	11.8	12.4			18.6		88.4	86.7	11.6	73.8		18.8
LOS	B	B			B		F	F	B	E		B
Approach Delay		12.3			18.6			63.7			20.3	
Approach LOS		B			B			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 55.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	92	582	760	178	179	163	5	173
v/c Ratio	0.20	0.18	0.26	0.76	0.75	0.45	0.11	0.62
Control Delay	11.8	12.4	18.6	88.4	86.7	11.6	73.8	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	12.4	18.6	88.4	86.7	11.6	73.8	18.8
Queue Length 50th (m)	9.7	26.1	43.6	63.4	63.6	0.0	1.7	0.0
Queue Length 95th (m)	22.6	43.1	69.7	88.6	89.0	21.4	6.4	24.5
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	535	3316	2976	356	365	467	130	475
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	0.17	0.18	0.26	0.50	0.49	0.35	0.04	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	570	0	0	735	10	295	55	160	5	0	170
Future Volume (vph)	90	570	0	0	735	10	295	55	160	5	0	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5126		1681	1721	1599	1805		1599
Flt Permitted	0.32	1.00			1.00		0.95	0.97	1.00	0.32		1.00
Satd. Flow (perm)	587	5085			5126		1681	1721	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	92	582	0	0	750	10	301	56	163	5	0	173
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	140	0	0	160
Lane Group Flow (vph)	92	582	0	0	760	0	178	179	23	5	0	13
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	107.7	107.7			95.9		22.9	22.9	22.9	12.4		12.4
Effective Green, g (s)	107.7	107.7			95.9		22.9	22.9	22.9	12.4		12.4
Actuated g/C Ratio	0.65	0.65			0.58		0.14	0.14	0.14	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	444	3317			2977		233	238	221	46		120
v/s Ratio Prot	c0.01	0.11			c0.15		c0.11	0.10				
v/s Ratio Perm	0.12								0.01	c0.01		0.01
v/c Ratio	0.21	0.18			0.26		0.76	0.75	0.10	0.11		0.11
Uniform Delay, d1	10.8	11.3			17.0		68.5	68.4	62.1	71.2		71.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2	0.1			0.2		13.8	12.6	0.2	1.0		0.4
Delay (s)	11.0	11.4			17.2		82.3	80.9	62.3	72.2		71.6
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		11.3			17.2			75.6			71.6	
Approach LOS		B			B			E			E	

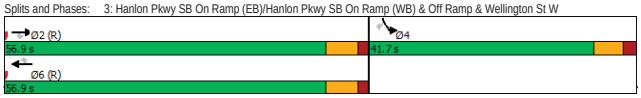
Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	395	0	870	160	0	0	0	175	0	145
Future Volume (vph)	0	605	395	0	870	160	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			407			130						104
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	624	407	0	897	165	0	0	0	180	0	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	624	407	0	897	165	0	0	0	180	0	149
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.6	73.6		73.6	73.6				11.4		11.4
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
v/c Ratio		0.17	0.32		0.24	0.14				0.45		0.55
Control Delay		3.9	1.1		4.1	1.4				44.1		22.4
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		3.9	1.1		4.1	1.4				44.1		22.4
LOS		A	A		A	A				D		C
Approach Delay		2.8			3.7						34.3	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	624	407	897	165	180	149
v/c Ratio	0.17	0.32	0.24	0.14	0.45	0.55
Control Delay	3.9	1.1	4.1	1.4	44.1	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	1.1	4.1	1.4	44.1	22.4
Queue Length 50th (m)	10.4	0.0	15.9	1.4	17.8	8.5
Queue Length 95th (m)	16.9	7.7	24.9	7.3	27.3	26.8
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3760	1272	3796	1186	1230	623
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	0.17	0.32	0.24	0.14	0.15	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	395	0	870	160	0	0	0	175	0	145
Future Volume (vph)	0	605	395	0	870	160	0	0	0	175	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	624	407	0	897	165	0	0	0	180	0	149
RTOR Reduction (vph)	0	0	103	0	0	33	0	0	0	0	0	92
Lane Group Flow (vph)	0	624	304	0	897	132	0	0	0	180	0	57
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.6	73.6		73.6	73.6				11.4		11.4
Effective Green, g (s)		73.6	73.6		73.6	73.6				11.4		11.4
Actuated g/C Ratio		0.75	0.75		0.75	0.75				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3759	1168		3795	1153				400		181
v/s Ratio Prot		0.12			0.18					c0.05		
v/s Ratio Perm			c0.19			0.09						0.04
v/c Ratio		0.17	0.26		0.24	0.11				0.45		0.32
Uniform Delay, d1		3.6	3.9		3.8	3.5				40.7		40.0
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.1	0.2				0.8		1.0
Delay (s)		3.7	4.5		4.0	3.7				41.5		41.0
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.0			3.9			0.0			41.3	
Approach LOS		A			A			A			D	

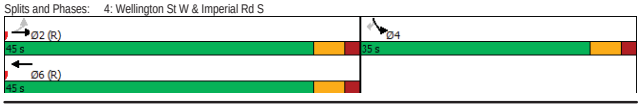
Intersection Summary					
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.29				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	39.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	590	565	310	395	60
Future Volume (vph)	70	590	565	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.947			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3325	0	1787	1615
Flt Permitted		0.744			0.950	
Satd. Flow (perm)	0	2615	3325	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			180			65
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	634	608	333	425	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	709	941	0	425	65
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.49	0.49		0.79	0.12
Control Delay		13.7	10.6		36.6	5.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.7	10.6		36.6	5.3
LOS		B	B		D	A
Approach Delay		13.7	10.6		32.5	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	709	941	425	65
v/c Ratio	0.49	0.49	0.79	0.12
Control Delay	13.7	10.6	36.6	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.7	10.6	36.6	5.3
Queue Length 50th (m)	34.5	35.8	61.6	0.0
Queue Length 95th (m)	59.4	62.2	84.0	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1450	1924	655	633
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	0.49	0.65	0.10

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	590	565	310	395	60
Future Volume (vph)	70	590	565	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3325		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2616	3325		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	634	608	333	425	65
RTOR Reduction (vph)	0	0	81	0	0	46
Lane Group Flow (vph)	0	709	860	0	425	20
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.0	44.0		24.0	24.0
Effective Green, g (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1438	1828		536	484
v/s Ratio Prot			0.26		c0.24	
v/s Ratio Perm		c0.27				0.01
v/c Ratio		0.49	0.47		0.79	0.04
Uniform Delay, d1		11.1	10.9		25.7	19.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.2	0.9		7.9	0.0
Delay (s)		12.3	11.8		33.6	19.9
Level of Service		B	B		C	B
Approach Delay (s)		12.3	11.8		31.8	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.60		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		80.9%	ICU Level of Service	D
Analysis Period (min)		15		

c Critical Lane Group

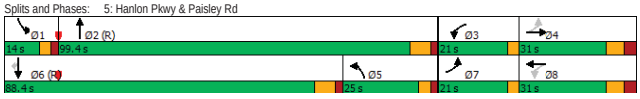
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	310	365	195	320	20	370	1200	205	35	1100	135
Future Volume (vph)	135	310	365	195	320	20	370	1200	205	35	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.431			0.315			0.950			0.950		
Satd. Flow (perm)	818	3574	1579	592	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293		3				183			138
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	138	316	372	199	327	20	378	1224	209	36	1122	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	316	372	199	347	0	378	1224	209	36	1122	138
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	39.2	19.5	165.4	45.7	23.5		23.9	97.5	165.4	8.8	79.9	79.9
Actuated g/C Ratio	0.24	0.12	1.00	0.28	0.14		0.14	0.59	1.00	0.05	0.48	0.48
v/c Ratio	0.49	0.75	0.24	0.67	0.68		0.76	0.59	0.13	0.39	0.66	0.16
Control Delay	51.9	82.0	0.4	59.4	73.8		77.9	24.4	0.2	87.9	36.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.9	82.0	0.4	59.4	73.8		77.9	24.4	0.2	87.9	36.2	4.3
LOS	D	F	A	E	E		E	C	A	F	D	A
Approach Delay		40.2			68.6			32.7			34.3	
Approach LOS		D			E			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 38.9		Intersection LOS: D	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	316	372	199	347	378	1224	209	36	1122	138
v/c Ratio	0.49	0.75	0.24	0.67	0.68	0.76	0.59	0.13	0.39	0.66	0.16
Control Delay	51.9	82.0	0.4	59.4	73.8	77.9	24.4	0.2	87.9	36.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.9	82.0	0.4	59.4	73.8	77.9	24.4	0.2	87.9	36.2	4.3
Queue Length 50th (m)	36.8	56.6	0.0	55.3	59.7	65.6	146.5	0.0	12.3	158.7	0.0
Queue Length 95th (m)	56.7	73.2	0.0	80.1	79.7	82.9	171.6	0.0	25.8	193.1	13.4
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	316	496	1579	305	532	504	2089	1579	98	1784	890
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.64	0.24	0.65	0.65	0.75	0.59	0.13	0.37	0.63	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	310	365	195	320	20	370	1200	205	35	1100	135
Future Volume (vph)	135	310	365	195	320	20	370	1200	205	35	1100	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3574	1579	1787	3576		3467	3505	1579	1752	3505	1615
Flt Permitted	0.43	1.00	1.00	0.31	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	819	3574	1579	592	3576		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	138	316	372	199	327	20	378	1224	209	36	1122	138
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	72
Lane Group Flow (vph)	138	316	372	199	344	0	378	1224	209	36	1122	66
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	34.3	19.5	165.4	41.3	23.5		24.8	96.5	165.4	7.2	78.9	78.9
Effective Green, g (s)	34.3	19.5	165.4	41.3	23.5		24.8	96.5	165.4	7.2	78.9	78.9
Actuated g/C Ratio	0.21	0.12	1.00	0.25	0.14		0.15	0.58	1.00	0.04	0.48	0.48
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	257	421	1579	283	508		519	2044	1579	76	1671	770
v/s Ratio Prot	0.05	0.09		c0.08	0.10		c0.11	0.35		0.02	c0.32	
v/s Ratio Perm	0.06		0.24	c0.10					0.13			0.04
v/c Ratio	0.54	0.75	0.24	0.70	0.68		0.73	0.60	0.13	0.47	0.67	0.09
Uniform Delay, d1	56.3	70.6	0.0	52.8	67.4		67.1	22.1	0.0	77.2	33.3	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	7.4	0.4	7.7	3.6		5.1	1.3	0.2	4.6	2.2	0.2
Delay (s)	58.5	78.0	0.4	60.4	70.9		72.2	23.4	0.2	81.8	35.4	23.8
Level of Service	E	E	A	E	E		E	C	A	F	D	C
Approach Delay (s)		39.8			67.1			30.9			35.5	
Approach LOS		D			E			C			D	

Intersection Summary

HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

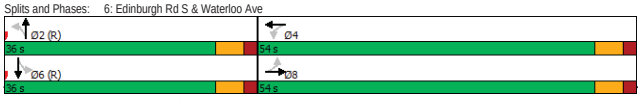
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Future Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.98	0.99		1.00	1.00		1.00	1.00	
Frt		0.969			0.954			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1801	0	1805	1761	0	1805	1858	0	1805	1883	0
Flt Permitted	0.627			0.667			0.417			0.386		
Satd. Flow (perm)	1185	1801	0	1248	1761	0	791	1858	0	732	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			38			8			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	44	104	27	60	99	44	33	549	71	33	544	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	131	0	60	143	0	33	620	0	33	566	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
v/c Ratio	0.28	0.50		0.36	0.53		0.06	0.46		0.06	0.41	
Control Delay	36.9	35.1		39.1	32.2		4.9	12.3		5.1	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.9	35.1		39.1	32.2		4.9	12.3		5.1	6.5	
LOS	D	D		D	C		A	B		A	A	
Approach Delay		35.5			34.2			12.0			6.5	
Approach LOS		D			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 62.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	131	60	143	33	620	33	566
v/c Ratio	0.28	0.50	0.36	0.53	0.06	0.46	0.06	0.41
Control Delay	36.9	35.1	39.1	32.2	4.9	12.3	5.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	35.1	39.1	32.2	4.9	12.3	5.1	6.5
Queue Length 50th (m)	7.4	18.9	10.2	18.1	0.8	33.9	1.3	30.4
Queue Length 95th (m)	15.6	32.2	19.8	32.2	5.5	101.0	5.7	71.8
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	632	970	665	956	578	1360	535	1377
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	0.07	0.14	0.09	0.15	0.06	0.46	0.06	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Future Volume (vph)	40	95	25	55	90	40	30	500	65	30	495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		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)	1796	1800		1778	1761		1799	1857		1800	1883	
Flt Permitted	0.63	1.00		0.67	1.00		0.42	1.00		0.39	1.00	
Satd. Flow (perm)	1185	1800		1249	1761		789	1857		731	1883	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	104	27	60	99	44	33	549	71	33	544	22
RTOR Reduction (vph)	0	19	0	0	33	0	0	2	0	0	1	0
Lane Group Flow (vph)	44	112	0	60	110	0	33	618	0	33	565	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Effective Green, g (s)	12.2	12.2		12.2	12.2		65.8	65.8		65.8	65.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	160	244		169	238		576	1357		534	1376	
v/s Ratio Prot		0.06			c0.06			c0.33			0.30	
v/s Ratio Perm	0.04			0.05			0.04			0.05		
v/c Ratio	0.28	0.46		0.36	0.46		0.06	0.46		0.06	0.41	
Uniform Delay, d1	34.9	35.9		35.3	35.9		3.4	4.9		3.4	4.7	
Progression Factor	1.00	1.00		1.00	1.00		0.98	1.91		1.00	1.00	
Incremental Delay, d2	0.9	1.4		1.3	1.4		0.2	1.1		0.2	0.9	
Delay (s)	35.9	37.2		36.6	37.3		3.5	10.4		3.6	5.6	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		36.9			37.1			10.1			5.5	
Approach LOS		D			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.46				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	5	15	175	5	10	165
Future Volume (vph)	5	15	175	5	10	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	102.4			908.3	140.7	
Travel Time (s)	7.4			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	5	16	190	5	11	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	16	190	5	11	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	175	5	10	165
Future Volume (Veh/h)	5	15	175	5	10	165
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	16	190	5	11	179
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			22		392	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			22		392	7
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		98	83
cM capacity (veh/h)			1599		542	1077

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	5	16	190	5	190
Volume Left	0	0	190	0	11
Volume Right	0	16	0	0	179
cSH	1700	1700	1599	1700	1143
Volume to Capacity	0.00	0.01	0.12	0.00	0.17
Queue Length 95th (m)	0.0	0.0	3.2	0.0	4.8
Control Delay (s)	0.0	0.0	7.6	0.0	9.2
Lane LOS			A		A
Approach Delay (s)	0.0		7.4		9.2
Approach LOS					A

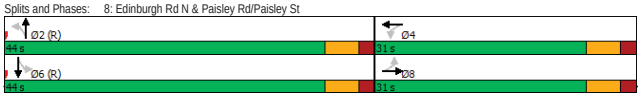
Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Future Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.962			0.970			0.992			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1800	0	1805	1813	0	1805	1881	0	1671	1855	0
Flt Permitted	0.453			0.375			0.372			0.385		
Satd. Flow (perm)	850	1800	0	709	1813	0	706	1881	0	674	1855	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			18			6			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	86	285	97	38	258	65	113	462	27	59	435	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	382	0	38	323	0	113	489	0	59	505	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.30	0.62		0.16	0.52		0.32	0.51		0.17	0.53	
Control Delay	22.6	23.8		19.9	22.7		14.0	14.5		11.7	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.6	23.8		19.9	22.7		14.0	14.5		11.7	14.6	
LOS	C	C		B	C		B	B		B	B	
Approach Delay		23.6			22.4			14.4			14.3	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	382	38	323	113	489	59	505
v/c Ratio	0.30	0.62	0.16	0.52	0.32	0.51	0.17	0.53
Control Delay	22.6	23.8	19.9	22.7	14.0	14.5	11.7	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	23.8	19.9	22.7	14.0	14.5	11.7	14.6
Queue Length 50th (m)	9.1	37.8	3.9	36.0	9.3	44.9	4.5	46.1
Queue Length 95th (m)	m20.5	62.1	11.0	60.2	20.8	70.5	11.3	72.7
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	283	616	236	616	357	956	341	947
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	0.30	0.62	0.16	0.52	0.32	0.51	0.17	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Future Volume (vph)	80	265	90	35	240	60	105	430	25	55	405	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1782	1800		1796	1813		1804	1881		1663	1855	
Flt Permitted	0.45	1.00		0.38	1.00		0.37	1.00		0.39	1.00	
Satd. Flow (perm)	850	1800		709	1813		706	1881		675	1855	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	285	97	38	258	65	113	462	27	59	435	70
RTOR Reduction (vph)	0	17	0	0	12	0	0	3	0	0	8	0
Lane Group Flow (vph)	86	365	0	38	311	0	113	486	0	59	497	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	283	600		236	604		357	953		342	939	
v/s Ratio Prot		c0.20			0.17			0.26			c0.27	
v/s Ratio Perm	0.10			0.05			0.16			0.09		
v/c Ratio	0.30	0.61		0.16	0.51		0.32	0.51		0.17	0.53	
Uniform Delay, d1	18.5	20.9		17.6	20.1		10.9	12.3		10.0	12.5	
Progression Factor	1.02	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	4.3		1.5	3.1		2.3	1.9		1.1	2.1	
Delay (s)	21.6	24.4		19.1	23.2		13.2	14.3		11.1	14.6	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		23.9			22.8			14.1			14.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

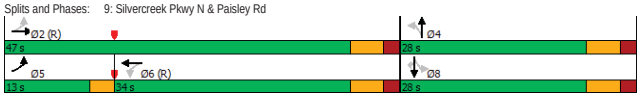
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	330	5	0	325	150	2	2	0	190	5	205
Future Volume (vph)	215	330	5	0	325	150	2	2	0	190	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						1.00			1.00	0.99
Frt		0.998			0.957							0.850
Flt Protected	0.950							0.976			0.953	
Satd. Flow (prot)	1805	1859	0	0	1801	0	0	1854	0	0	1811	1599
Flt Permitted	0.329							0.874			0.729	
Satd. Flow (perm)	625	1859	0	0	1801	0	0	1659	0	0	1383	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			35							214
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			82.6			380.4	
Travel Time (s)		14.5			78.0			5.9			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	224	344	5	0	339	156	2	2	0	198	5	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	349	0	0	495	0	0	4	0	0	203	214
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	50.0	47.0			35.1			16.0			16.0	16.0
Actuated g/C Ratio	0.67	0.63			0.47			0.21			0.21	0.21
v/c Ratio	0.40	0.30			0.57			0.01			0.69	0.42
Control Delay	8.0	8.2			24.5			20.0			38.8	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	8.0	8.2			24.5			20.0			38.8	6.2
LOS	A	A			C			B			D	A
Approach Delay		8.1			24.5			20.0			22.1	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues m) Future Background (2031) SAT - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	224	349	495	4	203	214
v/c Ratio	0.40	0.30	0.57	0.01	0.69	0.42
Control Delay	8.0	8.2	24.5	20.0	38.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	8.2	24.5	20.0	38.8	6.2
Queue Length 50th (m)	10.9	21.0	64.2	0.5	27.9	0.0
Queue Length 95th (m)	24.6	43.1	106.0	2.6	45.2	14.7
Internal Link Dist (m)		177.0	1059.9	58.6	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	575	1165	862	486	405	613
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	0.39	0.30	0.57	0.01	0.50	0.35

Intersection Summary

HCM Signalized Intersection Capacity Analysis m) Future Background (2031) SAT - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	330	5	0	325	150	2	2	0	190	5	205
Future Volume (vph)	215	330	5	0	325	150	2	2	0	190	5	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1805	1859			1802			1852			1809	1577
Flt Permitted	0.33	1.00			1.00			0.87			0.73	1.00
Satd. Flow (perm)	625	1859			1802			1659			1383	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	224	344	5	0	339	156	2	2	0	198	5	214
RTOR Reduction (vph)	0	1	0	0	19	0	0	0	0	0	0	168
Lane Group Flow (vph)	224	348	0	0	476	0	0	4	0	0	203	46
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	47.0	47.0			35.1			16.0			16.0	16.0
Effective Green, g (s)	47.0	47.0			35.1			16.0			16.0	16.0
Actuated g/C Ratio	0.63	0.63			0.47			0.21			0.21	0.21
Clearance Time (s)	3.0	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)	531	1164			843			353			295	336
v/s Ratio Prot	c0.05	0.19			c0.26							
v/s Ratio Perm	0.21							0.00			c0.15	0.03
v/c Ratio	0.42	0.30			0.57			0.01			0.69	0.14
Uniform Delay, d1	7.3	6.4			14.4			23.3			27.2	23.9
Progression Factor	1.00	1.00			1.41			1.00			1.00	1.00
Incremental Delay, d2	0.5	0.7			2.5			0.0			6.5	0.2
Delay (s)	7.8	7.1			22.8			23.3			33.7	24.1
Level of Service	A	A			C			C			C	C
Approach Delay (s)		7.4			22.8			23.3			28.8	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	79.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings m) Future Background (2031) SAT - Phase 1
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	75	0	965	160	0	0	0	0	0	0
Future Volume (vph)	0	620	75	0	965	160	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	674	82	0	1049	174	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	82	0	1049	174	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.0%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis m) Future Background (2031) SAT - Phase 1
16: Hanlon Pkwy NB On Ramp (WB)/Hanlon Pkwy NB On Ramp (EB) & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	75	0	965	160	0	0	0	0	0	0
Future Volume (Veh/h)	0	620	75	0	965	160	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	674	82	0	1049	174	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	1050			675			1026	1725	227	1276	1725	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	822			675			796	1541	227	1062	1541	77
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	766			926			264	109	782	169	109	913

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	225	225	225	82	350	350	350	174
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	174
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.13	0.13	0.05	0.21	0.21	0.21	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

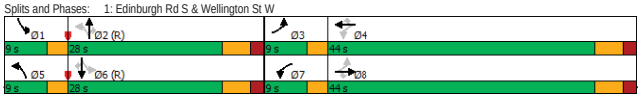
Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	22.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	820	180	115	535	50	185	580	210	60	545	80
Future Volume (vph)	115	820	180	115	535	50	185	580	210	60	545	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.95	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3471	1538	1703	3438	1615	1752	3539	1553	1703	3505	1615
Flt Permitted	0.338			0.152			0.241			0.333		
Satd. Flow (perm)	634	3471	1508	272	3438	1570	443	3539	1476	590	3505	1573
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			109			173			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Adj. Flow (vph)	129	921	202	129	601	56	208	652	236	67	612	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	921	202	129	601	56	208	652	236	67	612	90
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		3	3		3	3		11	11		11	11
Act Effct Green (s)	40.9	31.1	31.1	41.3	31.3	31.3	39.0	28.8	28.8	33.7	23.8	23.8
Actuated g/C Ratio	0.45	0.35	0.35	0.46	0.35	0.35	0.43	0.32	0.32	0.37	0.26	0.26
v/c Ratio	0.34	0.77	0.31	0.55	0.50	0.09	0.62	0.58	0.40	0.22	0.66	0.18
Control Delay	14.3	30.5	3.9	20.9	24.2	0.7	29.2	29.9	10.9	13.6	29.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	30.5	3.9	20.9	24.2	0.7	29.2	29.9	10.9	13.6	29.6	3.0
LOS	B	C	A	C	C	A	C	C	B	B	C	A
Approach Delay		24.5			21.9			25.7			25.1	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	921	202	129	601	56	208	652	236	67	612	90
v/c Ratio	0.34	0.77	0.31	0.55	0.50	0.09	0.62	0.58	0.40	0.22	0.66	0.18
Control Delay	14.3	30.5	3.9	20.9	24.2	0.7	29.2	29.9	10.9	13.6	29.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	30.5	3.9	20.9	24.2	0.7	29.2	29.9	10.9	13.6	29.6	3.0
Queue Length 50th (m)	12.2	77.6	0.0	12.3	45.1	0.0	23.4	54.2	8.5	4.7	57.0	2.2
Queue Length 95th (m)	19.0	86.7	12.1	19.1	52.7	1.0	#60.7	77.0	29.4	9.5	68.6	3.7
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	375	1465	753	235	1451	725	338	1131	589	306	938	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.63	0.27	0.55	0.41	0.08	0.62	0.58	0.40	0.22	0.65	0.18

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)	115	820	180	115	535	50	185	580	210	60	545	80
Future Volume (vph)	115	820	180	115	535	50	185	580	210	60	545	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	3471	1508	1703	3438	1570	1751	3539	1476	1696	3505	1573
Flt Permitted	0.34	1.00	1.00	0.15	1.00	1.00	0.24	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	636	3471	1508	273	3438	1570	444	3539	1476	595	3505	1573
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	129	921	202	129	601	56	208	652	236	67	612	90
RTOR Reduction (vph)	0	0	132	0	0	37	0	0	119	0	0	66
Lane Group Flow (vph)	129	921	70	129	601	19	208	652	117	67	612	24
Confl. Peds. (#/hr)	3		5	5		3	8		24	24		8
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	4%	5%	6%	5%	0%	3%	2%	4%	6%	3%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	37.9	31.1	31.1	38.3	31.3	31.3	36.9	28.2	28.2	29.5	23.8	23.8
Effective Green, g (s)	37.9	31.1	31.1	38.3	31.3	31.3	36.9	28.2	28.2	29.5	23.8	23.8
Actuated g/C Ratio	0.42	0.35	0.35	0.43	0.35	0.35	0.41	0.31	0.31	0.33	0.26	0.26
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354	1199	521	227	1195	546	328	1108	462	264	926	415
v/s Ratio Prot	0.03	c0.27		c0.04	0.17		c0.07	0.18		0.02	0.17	
v/s Ratio Perm	0.13		0.05	0.20		0.01	c0.19		0.08	0.07		0.02
v/c Ratio	0.36	0.77	0.13	0.57	0.50	0.04	0.63	0.59	0.25	0.25	0.66	0.06
Uniform Delay, d1	16.5	26.2	20.2	17.9	23.2	19.4	18.8	26.0	23.1	21.3	29.5	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.85	0.54
Incremental Delay, d2	0.6	3.0	0.1	3.2	0.3	0.0	4.0	2.3	1.3	0.5	3.5	0.2
Delay (s)	17.2	29.3	20.3	21.1	23.5	19.4	22.7	28.3	24.4	15.7	28.6	13.5
Level of Service	B	C	C	C	C	B	C	C	C	B	C	B
Approach Delay (s)		26.6			22.8			26.4			25.7	
Approach LOS		C			C			C			C	

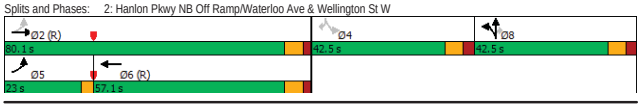
Intersection Summary					
HCM 2000 Control Delay		25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.71			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization		71.0%	ICU Level of Service	C	
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	900	0	0	775	5	195	95	235	5	0	310
Future Volume (vph)	175	900	0	0	775	5	195	95	235	5	0	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00				1.00							
Frt					0.999				0.850			0.850
Flt Protected	0.950						0.950	0.982		0.950		
Satd. Flow (prot)	1736	4988	0	0	4983	0	1633	1730	1599	1805	0	1583
Flt Permitted	0.281						0.950	0.982		0.296		
Satd. Flow (perm)	513	4988	0	0	4983	0	1633	1730	1599	562	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				258			316
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Adj. Flow (vph)	192	989	0	0	852	5	214	104	258	5	0	341
Shared Lane Traffic (%)							27%					
Lane Group Flow (vph)	192	989	0	0	857	0	156	162	258	5	0	341
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	112.1	108.0			92.5		21.4	21.4	21.4	13.5		13.5
Actuated g/C Ratio	0.68	0.65			0.56		0.13	0.13	0.13	0.08		0.08
v/c Ratio	0.44	0.30			0.31		0.74	0.72	0.60	0.11		0.81
Control Delay	14.4	13.7			21.6		88.5	86.2	12.3	71.4		25.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	14.4	13.7			21.6		88.5	86.2	12.3	71.4		25.3
LOS	B	B			C		F	F	B	E		C
Approach Delay		13.8			21.6			53.7			25.9	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	192	989	857	156	162	258	5	341
v/c Ratio	0.44	0.30	0.31	0.74	0.72	0.60	0.11	0.81
Control Delay	14.4	13.7	21.6	88.5	86.2	12.3	71.4	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	13.7	21.6	88.5	86.2	12.3	71.4	25.3
Queue Length 50th (m)	20.7	47.3	52.0	55.6	57.6	0.0	1.7	8.4
Queue Length 95th (m)	45.4	79.5	88.9	80.0	82.1	26.8	6.3	43.9
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	496	3263	2791	346	366	542	119	584
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	0.39	0.30	0.31	0.45	0.44	0.48	0.04	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	900	0	0	775	5	195	95	235	5	0	310
Future Volume (vph)	175	900	0	0	775	5	195	95	235	5	0	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	1735	4988			4984		1633	1731	1599	1805		1583
Flt Permitted	0.28	1.00			1.00		0.95	0.98	1.00	0.30		1.00
Satd. Flow (perm)	513	4988			4984		1633	1731	1599	563		1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	192	989	0	0	852	5	214	104	258	5	0	341
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	225	0	0	290
Lane Group Flow (vph)	192	989	0	0	857	0	156	162	33	5	0	51
Confl. Peds. (#/hr)	1						1					
Heavy Vehicles (%)	4%	4%	0%	0%	4%	0%	5%	1%	1%	0%	0%	2%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	108.1	108.1			92.6		21.4	21.4	21.4	13.5		13.5
Effective Green, g (s)	108.1	108.1			92.6		21.4	21.4	21.4	13.5		13.5
Actuated g/C Ratio	0.65	0.65			0.56		0.13	0.13	0.13	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	428	3265			2795		211	224	207	46		129
v/s Ratio Prot	c0.03	0.20			0.17		c0.10	0.09				
v/s Ratio Perm	c0.26								0.02	0.01		c0.03
v/c Ratio	0.45	0.30			0.31		0.74	0.72	0.16	0.11		0.39
Uniform Delay, d1	11.6	12.3			19.2		69.2	69.0	63.9	70.2		71.9
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.8	0.2			0.3		12.7	11.0	0.4	1.0		2.0
Delay (s)	12.4	12.5			19.5		81.9	80.0	64.2	71.3		73.9
Level of Service	B	B			B		F	E	E	E		E
Approach Delay (s)		12.5			19.5			73.4			73.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

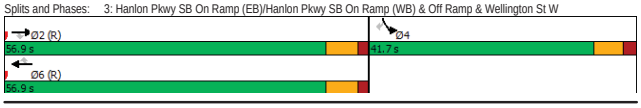
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	955	465	0	875	195	0	0	0	200	0	95
Future Volume (vph)	0	955	465	0	875	195	0	0	0	200	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor						0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	4940	1538	0	4988	1583	0	0	0	3242	0	1455
Flt Permitted										0.950		
Satd. Flow (perm)	0	4940	1538	0	4988	1548	0	0	0	3242	0	1455
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			468			158						97
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Adj. Flow (vph)	0	1005	489	0	921	205	0	0	0	211	0	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1005	489	0	921	205	0	0	0	211	0	100
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		0	0		0	0						
Act Effct Green (s)		72.9	72.9		72.9	72.9				12.1		12.1
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.28	0.39		0.25	0.17				0.53		0.38
Control Delay		4.6	1.5		4.5	1.6				45.3		13.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.6	1.5		4.5	1.6				45.3		13.0
LOS		A	A		A	A				D		B
Approach Delay		3.6			3.9						34.9	
Approach LOS		A			A						C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1005	489	921	205	211	100
v/c Ratio	0.28	0.39	0.25	0.17	0.53	0.38
Control Delay	4.6	1.5	4.5	1.6	45.3	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	1.5	4.5	1.6	45.3	13.0
Queue Length 50th (m)	19.9	0.9	17.8	2.1	20.9	0.6
Queue Length 95th (m)	29.1	9.7	26.3	8.7	31.4	15.0
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3651	1258	3687	1185	1150	579
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	0.28	0.39	0.25	0.17	0.18	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	955	465	0	875	195	0	0	0	200	0	95
Future Volume (vph)	0	955	465	0	875	195	0	0	0	200	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		4940	1538		4988	1548				3242		1455
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		4940	1538		4988	1548				3242		1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1005	489	0	921	205	0	0	0	211	0	100
RTOR Reduction (vph)	0	0	122	0	0	41	0	0	0	0	0	85
Lane Group Flow (vph)	0	1005	367	0	921	164	0	0	0	211	0	15
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	0%	5%	5%	0%	4%	2%	0%	0%	0%	8%	0%	11%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		72.9	72.9		72.9	72.9				12.1		12.1
Effective Green, g (s)		72.9	72.9		72.9	72.9				12.1		12.1
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3652	1137		3687	1144				397		178
v/s Ratio Prot		0.20			0.18					c0.07		
v/s Ratio Perm			c0.24			0.11						0.01
v/c Ratio		0.28	0.32		0.25	0.14				0.53		0.08
Uniform Delay, d1		4.2	4.4		4.1	3.7				40.6		38.3
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.2	0.3				1.4		0.2
Delay (s)		4.4	5.2		4.3	4.0				42.0		38.5
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.6			4.2			0.0			40.9	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	38.8%	ICU Level of Service		A	
Analysis Period (min)	15				

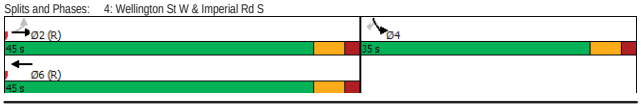
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	965	695	175	445	75
Future Volume (vph)	65	965	695	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	1.00			
Frt			0.970			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3397	3314	0	1770	1599
Flt Permitted		0.816			0.950	
Satd. Flow (perm)	0	2781	3314	0	1770	1599
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			54			78
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Adj. Flow (vph)	68	1005	724	182	464	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	906	0	464	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
v/c Ratio		0.72	0.50		0.84	0.14
Control Delay		18.4	12.9		39.6	5.2
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.4	12.9		39.6	5.2
LOS		B	B		D	A
Approach Delay		18.4	12.9		34.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1073	906	464	78
v/c Ratio	0.72	0.50	0.84	0.14
Control Delay	18.4	12.9	39.6	5.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.4	12.9	39.6	5.2
Queue Length 50th (m)	65.6	43.5	67.0	0.0
Queue Length 95th (m)	98.8	64.8	98.4	8.4
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1493	1805	641	629
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	0.50	0.72	0.12

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	965	695	175	445	75
Future Volume (vph)	65	965	695	175	445	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3397	3314		1770	1599
Flt Permitted		0.82	1.00		0.95	1.00
Satd. Flow (perm)		2781	3314		1770	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	1005	724	182	464	78
RTOR Reduction (vph)	0	0	25	0	0	54
Lane Group Flow (vph)	0	1073	881	0	464	24
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	5%	6%	5%	6%	2%	1%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		43.0	43.0		25.0	25.0
Effective Green, g (s)		43.0	43.0		25.0	25.0
Actuated g/C Ratio		0.54	0.54		0.31	0.31
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1494	1781		553	499
v/s Ratio Prot			0.27		c0.26	
v/s Ratio Perm		c0.39				0.02
v/c Ratio		0.72	0.49		0.84	0.05
Uniform Delay, d1		13.9	11.7		25.6	19.2
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.0	1.0		10.8	0.0
Delay (s)		16.9	12.6		36.4	19.2
Level of Service		B	B		D	B
Approach Delay (s)		16.9	12.6		33.9	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	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)	100	330	335	175	195	25	170	1460	210	25	1090	50
Future Volume (vph)	100	330	335	175	195	25	170	1460	210	25	1090	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3438	1583	1787	3471	0	3303	3343	1568	1597	3282	1482
Flt Permitted	0.611			0.298			0.950			0.950		
Satd. Flow (perm)	1085	3438	1583	561	3471	0	3303	3343	1568	1597	3282	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252		7				183			102
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Adj. Flow (vph)	102	337	342	179	199	26	173	1490	214	26	1112	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	337	342	179	225	0	173	1490	214	26	1112	51
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	38.8	20.7	165.4	45.1	24.6		18.8	101.1	165.4	8.5	85.5	85.5
Actuated g/C Ratio	0.23	0.13	1.00	0.27	0.15		0.11	0.61	1.00	0.05	0.52	0.52
v/c Ratio	0.34	0.79	0.22	0.64	0.43		0.46	0.73	0.14	0.32	0.66	0.06
Control Delay	48.3	83.4	0.3	58.6	64.5		71.3	27.4	0.2	86.1	33.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	83.4	0.3	58.6	64.5		71.3	27.4	0.2	86.1	33.5	0.1
LOS	D	F	A	E	E		E	C	A	F	C	A
Approach Delay		42.5			61.9			28.4			33.3	
Approach LOS		D			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	337	342	179	225	173	1490	214	26	1112	51
v/c Ratio	0.34	0.79	0.22	0.64	0.43	0.46	0.73	0.14	0.32	0.66	0.06
Control Delay	48.3	83.4	0.3	58.6	64.5	71.3	27.4	0.2	86.1	33.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	83.4	0.3	58.6	64.5	71.3	27.4	0.2	86.1	33.5	0.1
Queue Length 50th (m)	26.9	60.3	0.0	49.3	36.1	28.7	205.3	0.0	8.9	155.4	0.0
Queue Length 95th (m)	44.0	78.4	0.0	72.7	52.1	41.0	244.0	0.0	20.5	192.2	0.0
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	348	480	1583	291	535	447	2058	1568	87	1754	839
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.70	0.22	0.62	0.42	0.39	0.72	0.14	0.30	0.63	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	330	335	175	195	25	170	1460	210	25	1090	50
Future Volume (vph)	100	330	335	175	195	25	170	1460	210	25	1090	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	3438	1583	1787	3470		3303	3343	1568	1597	3282	1482
Flt Permitted	0.61	1.00	1.00	0.30	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1086	3438	1583	561	3470		3303	3343	1568	1597	3282	1482
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	102	337	342	179	199	26	173	1490	214	26	1112	51
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	25
Lane Group Flow (vph)	102	337	342	179	219	0	173	1490	214	26	1112	26
Heavy Vehicles (%)	7%	5%	2%	1%	2%	4%	6%	8%	3%	13%	10%	9%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	33.8	20.7	165.4	40.7	24.6		20.9	99.0	165.4	5.3	83.4	83.4
Effective Green, g (s)	33.8	20.7	165.4	40.7	24.6		20.9	99.0	165.4	5.3	83.4	83.4
Actuated g/C Ratio	0.20	0.13	1.00	0.25	0.15		0.13	0.60	1.00	0.03	0.50	0.50
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	269	430	1583	264	516		417	2000	1568	51	1654	747
v/s Ratio Prot	0.03	c0.10		c0.07	0.06		0.05	c0.45		0.02	c0.34	
v/s Ratio Perm	0.05		0.22	0.10					0.14			0.02
v/c Ratio	0.38	0.78	0.22	0.68	0.42		0.41	0.74	0.14	0.51	0.67	0.03
Uniform Delay, d1	55.7	70.2	0.0	52.7	64.0		66.6	24.1	0.0	78.8	30.8	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	9.0	0.3	6.7	0.6		0.7	2.6	0.2	7.8	2.2	0.1
Delay (s)	56.6	79.2	0.3	59.4	64.5		67.3	26.6	0.2	86.6	33.0	20.8
Level of Service	E	E	A	E	E		E	C	A	F	C	C
Approach Delay (s)		41.7			62.3			27.4			33.6	
Approach LOS		D			E			C			C	

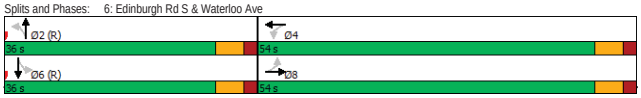
Intersection Summary					
HCM 2000 Control Delay		35.1	HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		0.75			
Actuated Cycle Length (s)		165.4	Sum of lost time (s)		23.4
Intersection Capacity Utilization		86.2%	ICU Level of Service		E
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	240	45	75	135	25	20	570	95	45	490	40
Future Volume (vph)	70	240	45	75	135	25	20	570	95	45	490	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.976			0.977			0.979			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1782	0	1752	1785	0	1805	1820	0	1770	1840	0
Flt Permitted	0.605			0.346			0.372			0.279		
Satd. Flow (perm)	1112	1782	0	632	1785	0	704	1820	0	518	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			16			10			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Adj. Flow (vph)	76	261	49	82	147	27	22	620	103	49	533	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	310	0	82	174	0	22	723	0	49	576	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	7	7		7	7		7	7		7	7	
Act Effct Green (s)	21.1	21.1		21.1	21.1		56.9	56.9		56.9	56.9	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
v/c Ratio	0.29	0.72		0.55	0.40		0.05	0.63		0.15	0.49	
Control Delay	29.2	39.1		43.3	27.8		21.4	30.6		10.1	11.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.2	39.1		43.3	27.8		21.4	30.6		10.1	11.8	
LOS	C	D		D	C		C	C		B	B	
Approach Delay		37.2			32.7			30.3			11.7	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	76	310	82	174	22	723	49	576
v/c Ratio	0.29	0.72	0.55	0.40	0.05	0.63	0.15	0.49
Control Delay	29.2	39.1	43.3	27.8	21.4	30.6	10.1	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	39.1	43.3	27.8	21.4	30.6	10.1	11.8
Queue Length 50th (m)	11.4	49.5	13.2	24.3	2.2	104.6	3.3	50.0
Queue Length 95th (m)	21.2	69.4	25.8	38.1	m7.1	167.7	10.9	96.2
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	593	957	337	959	445	1154	327	1165
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.32	0.24	0.18	0.05	0.63	0.15	0.49

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	240	45	75	135	25	20	570	95	45	490	40
Future Volume (vph)	70	240	45	75	135	25	20	570	95	45	490	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.98		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)	1747	1782		1738	1785		1794	1819		1763	1840	
Flt Permitted	0.61	1.00		0.35	1.00		0.37	1.00		0.28	1.00	
Satd. Flow (perm)	1113	1782		633	1785		703	1819		518	1840	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	261	49	82	147	27	22	620	103	49	533	43
RTOR Reduction (vph)	0	12	0	0	12	0	0	4	0	0	2	0
Lane Group Flow (vph)	76	298	0	82	162	0	22	719	0	49	574	0
Confl. Peds. (#/hr)	8		12	12		8	11		10	10		11
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	3%	7%	3%	4%	0%	0%	2%	0%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	21.1	21.1		21.1	21.1		56.9	56.9		56.9	56.9	
Effective Green, g (s)	21.1	21.1		21.1	21.1		56.9	56.9		56.9	56.9	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.63	0.63	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	260	417		148	418		444	1150		327	1163	
v/s Ratio Prot		c0.17			0.09			c0.40			0.31	
v/s Ratio Perm	0.07			0.13			0.03			0.09		
v/c Ratio	0.29	0.71		0.55	0.39		0.05	0.63		0.15	0.49	
Uniform Delay, d1	28.3	31.7		30.3	29.0		6.3	10.1		6.7	8.8	
Progression Factor	1.00	1.00		1.00	1.00		2.49	2.39		1.00	1.00	
Incremental Delay, d2	0.6	5.7		4.4	0.6		0.2	2.3		1.0	1.5	
Delay (s)	28.9	37.4		34.7	29.6		15.8	26.4		7.7	10.3	
Level of Service	C	D		C	C		B	C		A	B	
Approach Delay (s)		35.7			31.2			26.0			10.1	
Approach LOS		D			C			C			B	

Intersection Summary					
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	40	65	250	15	20	260
Future Volume (vph)	40	65	250	15	20	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1568
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		7	7			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	3%
Adj. Flow (vph)	43	71	272	16	22	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	71	272	16	22	283
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	40	65	250	15	20	260
Future Volume (Veh/h)	40	65	250	15	20	260
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	71	272	16	22	283
Pedestrians	1			1	7	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	1	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			121		611	51
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		611	51
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			81		94	72
cM capacity (veh/h)			1458		372	1007

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	43	71	272	16	305
Volume Left	0	0	272	0	22
Volume Right	0	71	0	0	283
cSH	1700	1700	1458	1700	1086
Volume to Capacity	0.03	0.04	0.19	0.01	0.28
Queue Length 95th (m)	0.0	0.0	5.5	0.0	9.3
Control Delay (s)	0.0	0.0	8.0	0.0	10.3
Lane LOS			A		B
Approach Delay (s)	0.0		7.6		10.3
Approach LOS					B

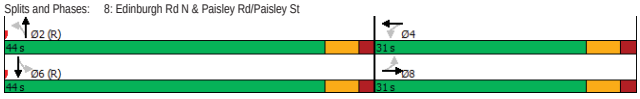
Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	470	70	95	410	75
Future Volume (vph)	75	330	70	50	235	80	75	470	70	95	410	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.98	0.99		0.99	0.98		0.99	1.00		1.00	0.99	
Frt		0.974			0.962			0.981			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1703	1758	0	1805	1747	0	1656	1836	0	1656	1801	0
Flt Permitted	0.428			0.307			0.353			0.304		
Satd. Flow (perm)	749	1758	0	580	1747	0	609	1836	0	528	1801	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25			14			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Adj. Flow (vph)	82	359	76	54	255	87	82	511	76	103	446	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	435	0	54	342	0	82	587	0	103	528	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	13	13		13	13		9	9		9	9	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.33	0.73		0.28	0.57		0.27	0.63		0.39	0.57	
Control Delay	24.6	29.8		23.3	23.5		13.5	16.7		16.8	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.6	29.8		23.3	23.5		13.5	16.7		16.8	15.5	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		29.0			23.5			16.3			15.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	435	54	342	82	587	103	528
v/c Ratio	0.33	0.73	0.28	0.57	0.27	0.63	0.39	0.57
Control Delay	24.6	29.8	23.3	23.5	13.5	16.7	16.8	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	29.8	23.3	23.5	13.5	16.7	16.8	15.5
Queue Length 50th (m)	8.7	48.5	5.8	38.2	6.5	57.8	8.8	49.4
Queue Length 95th (m)	m20.7	#86.2	15.4	64.2	15.9	90.8	21.7	78.6
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	249	596	193	599	308	937	267	921
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	0.33	0.73	0.28	0.57	0.27	0.63	0.39	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	330	70	50	235	80	75	470	70	95	410	75
Future Volume (vph)	75	330	70	50	235	80	75	470	70	95	410	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.98	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		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)	1662	1758		1794	1746		1638	1835		1651	1801	
Flt Permitted	0.43	1.00		0.31	1.00		0.35	1.00		0.30	1.00	
Satd. Flow (perm)	749	1758		580	1746		608	1835		529	1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	359	76	54	255	87	82	511	76	103	446	82
RTOR Reduction (vph)	0	10	0	0	17	0	0	7	0	0	9	0
Lane Group Flow (vph)	82	425	0	54	325	0	82	580	0	103	519	0
Confl. Peds. (#/hr)	29		9	9		29	20		7	7		20
Heavy Vehicles (%)	6%	5%	3%	0%	4%	0%	9%	1%	2%	9%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	249	586		193	582		308	929		268	912	
v/s Ratio Prot		c0.24			0.19			c0.32			0.29	
v/s Ratio Perm	0.11			0.09			0.13			0.19		
v/c Ratio	0.33	0.73		0.28	0.56		0.27	0.62		0.38	0.57	
Uniform Delay, d1	18.7	22.0		18.4	20.5		10.5	13.4		11.3	12.8	
Progression Factor	1.08	1.02		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	7.0		3.6	3.8		2.1	3.2		4.1	2.6	
Delay (s)	23.4	29.5		22.0	24.3		12.7	16.5		15.5	15.4	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		28.5			24.0			16.0			15.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

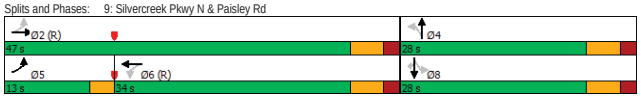
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	355	1	0	315	155	0	1	0	170	1	130
Future Volume (vph)	215	355	1	0	315	155	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00			0.98						0.97	0.98
Frt					0.955							0.850
Flt Protected	0.950										0.953	
Satd. Flow (prot)	1752	1793	0	0	1724	0	0	1900	0	0	1775	1553
Flt Permitted	0.250										0.727	
Satd. Flow (perm)	458	1793	0	0	1724	0	0	1900	0	0	1313	1525
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					38							159
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	262	433	1	0	384	189	0	1	0	207	1	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	262	434	0	0	573	0	0	1	0	0	208	159
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		8		8	8		8	8		8	8	8
Act Effct Green (s)	49.4	46.4			33.7			16.6			16.6	16.6
Actuated g/C Ratio	0.66	0.62			0.45			0.22			0.22	0.22
v/c Ratio	0.56	0.39			0.72			0.00			0.72	0.35
Control Delay	10.9	9.5			31.1			20.0			40.5	6.1
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	10.9	9.5			31.1			20.0			40.5	6.1
LOS	B	A			C			B			D	A
Approach Delay		10.0			31.1			20.0			25.6	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Queues
9: Silvercreek Pkwy N & Paisley Rd

n) Future Total (2031) AM - Phase 1

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	262	434	573	1	208	159
v/c Ratio	0.56	0.39	0.72	0.00	0.72	0.35
Control Delay	10.9	9.5	31.1	20.0	40.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	9.5	31.1	20.0	40.5	6.1
Queue Length 50th (m)	13.7	29.3	80.8	0.1	28.6	0.0
Queue Length 95th (m)	25.7	49.4	#114.7	1.1	41.5	9.9
Internal Link Dist (m)		177.0	1059.9	93.7	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	483	1109	795	557	385	559
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	0.54	0.39	0.72	0.00	0.54	0.28

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Silvercreek Pkwy N & Paisley Rd

n) Future Total (2031) AM - Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	355	1	0	315	155	0	1	0	170	1	130
Future Volume (vph)	215	355	1	0	315	155	0	1	0	170	1	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.98			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00			1.00			0.97	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1749	1792			1725			1900			1721	1525
Flt Permitted	0.25	1.00			1.00			1.00			0.73	1.00
Satd. Flow (perm)	460	1792			1725			1900			1314	1525
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	262	433	1	0	384	189	0	1	0	207	1	159
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	124
Lane Group Flow (vph)	262	434	0	0	552	0	0	1	0	0	208	35
Confl. Peds. (#/hr)	18		5	5		18	6		18	18		6
Heavy Vehicles (%)	3%	6%	0%	0%	2%	7%	0%	0%	0%	2%	0%	4%
Turn Type	pm+pt	NA			NA			NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.4	46.4			33.7			16.6			16.6	16.6
Effective Green, g (s)	46.4	46.4			33.7			16.6			16.6	16.6
Actuated g/C Ratio	0.62	0.62			0.45			0.22			0.22	0.22
Clearance Time (s)	3.0	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)	451	1108			775			420			290	337
v/s Ratio Prot	c0.08	0.24			c0.32			0.00				
v/s Ratio Perm	0.28										c0.16	0.02
v/c Ratio	0.58	0.39			0.71			0.00			0.72	0.10
Uniform Delay, d1	9.0	7.2			16.7			22.7			27.0	23.3
Progression Factor	1.00	1.00			1.42			1.00			1.00	1.00
Incremental Delay, d2	1.9	1.0			5.2			0.0			8.2	0.1
Delay (s)	10.9	8.2			28.9			22.8			35.2	23.4
Level of Service	B	A			C			C			D	C
Approach Delay (s)		9.2			28.9			22.8			30.1	
Approach LOS		A			C			C			C	

Intersection Summary

HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
11: Silvercreek Pkwy S & Street D

n) Future Total (2031) AM - Phase 1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	45	0	15	10	0	45
Future Volume (vph)	45	0	15	10	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				45.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.945			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1760	0	1863	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1760	0	1863	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	95.3		499.5			106.5
Travel Time (s)	6.9		36.0			7.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	0	16	11	0	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	0	27	0	0	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.3%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: Silvercreek Pkwy S & Street D

n) Future Total (2031) AM - Phase 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	0	15	10	0	45
Future Volume (Veh/h)	45	0	15	10	0	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	0	16	11	0	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	70	22			27	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	22			27	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	934	1056			1587	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	49	27	0	49
Volume Left	49	0	0	0
Volume Right	0	11	0	0
cSH	934	1700	1700	1700
Volume to Capacity	0.05	0.02	0.00	0.03
Queue Length 95th (m)	1.3	0.0	0.0	0.0
Control Delay (s)	9.1	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.1	0.0	0.0	
Approach LOS	A			

Intersection Summary

Average Delay	3.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1010	70	0	1005	200	0	0	0	0	0	0
Future Volume (vph)	0	1010	70	0	1005	200	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1098	76	0	1092	217	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1098	76	0	1092	217	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1010	70	0	1005	200	0	0	0	0	0	0
Future Volume (Veh/h)	0	1010	70	0	1005	200	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1098	76	0	1092	217	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	1093			1099			1464	2192	368	1460	2192	366
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	823			1099			1224	2009	368	1219	2009	39
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	756			643			127	55	634	128	55	955

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	366	366	366	76	364	364	364	217
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	76	0	0	0	217
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.22	0.22	0.04	0.21	0.21	0.21	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

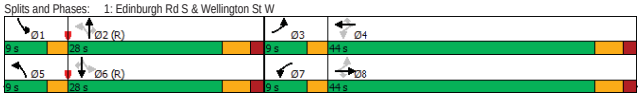
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	660	180	240	765	75	195	690	230	60	665	75
Future Volume (vph)	115	660	180	240	765	75	195	690	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3539	1599	1770	3539	1599	1805	3610	1583	1770	3610	1599
Flt Permitted	0.226			0.229			0.218			0.335		
Satd. Flow (perm)	429	3539	1577	426	3539	1555	413	3610	1535	622	3610	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184			109			159			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Adj. Flow (vph)	117	673	184	245	781	77	199	704	235	61	679	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	673	184	245	781	77	199	704	235	61	679	77
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		1	1		1	1		5	5		5	5
Act Effct Green (s)	35.3	25.6	25.6	37.6	28.8	28.8	44.1	32.9	32.9	36.9	26.6	26.6
Actuated g/C Ratio	0.39	0.28	0.28	0.42	0.32	0.32	0.49	0.37	0.37	0.41	0.30	0.30
v/c Ratio	0.43	0.67	0.32	0.83	0.69	0.13	0.52	0.53	0.35	0.18	0.64	0.14
Control Delay	19.3	31.2	4.8	44.3	30.3	2.3	19.2	26.2	10.6	10.8	25.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	31.2	4.8	44.3	30.3	2.3	19.2	26.2	10.6	10.8	25.9	2.1
LOS	B	C	A	D	C	A	B	C	B	B	C	A
Approach Delay		24.8			31.4			21.8			22.6	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Queues
n) Future Total (2031) PM - Phase 1

1: Edinburgh Rd S & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	117	673	184	245	781	77	199	704	235	61	679	77
v/c Ratio	0.43	0.67	0.32	0.83	0.69	0.13	0.52	0.53	0.35	0.18	0.64	0.14
Control Delay	19.3	31.2	4.8	44.3	30.3	2.3	19.2	26.2	10.6	10.8	25.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	31.2	4.8	44.3	30.3	2.3	19.2	26.2	10.6	10.8	25.9	2.1
Queue Length 50th (m)	12.4	56.0	0.0	28.3	67.5	0.0	19.6	53.6	9.3	3.4	59.9	1.6
Queue Length 95th (m)	20.1	66.2	13.2	#56.7	78.7	4.9	37.8	82.7	31.6	m6.0	71.8	m2.4
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	270	1494	772	296	1494	719	386	1320	662	348	1065	538
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.45	0.24	0.83	0.52	0.11	0.52	0.53	0.35	0.18	0.64	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
n) Future Total (2031) PM - Phase 1

1: Edinburgh Rd S & Wellington St W

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	660	180	240	765	75	195	690	230	60	665	75
Future Volume (vph)	115	660	180	240	765	75	195	690	230	60	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3539	1577	1769	3539	1555	1804	3610	1537	1767	3610	1565
Flt Permitted	0.23	1.00	1.00	0.23	1.00	1.00	0.22	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	429	3539	1577	427	3539	1555	414	3610	1537	623	3610	1565
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	117	673	184	245	781	77	199	704	235	61	679	77
RTOR Reduction (vph)	0	0	130	0	0	52	0	0	103	0	0	55
Lane Group Flow (vph)	117	673	54	245	781	25	199	704	132	61	679	22
Confl. Peds. (#/hr)	3		1	1		3	6		10	10		6
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	2%	1%	2%	2%	1%	0%	0%	2%	2%	0%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	31.7	26.3	26.3	36.7	28.8	28.8	40.8	31.7	31.7	32.0	25.9	25.9
Effective Green, g (s)	31.7	26.3	26.3	36.7	28.8	28.8	40.8	31.7	31.7	32.0	25.9	25.9
Actuated g/C Ratio	0.35	0.29	0.29	0.41	0.32	0.32	0.45	0.35	0.35	0.36	0.29	0.29
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	1034	460	291	1132	497	371	1271	541	299	1038	450
v/s Ratio Prot	0.03	0.19		c0.07	0.22		c0.07	0.20		0.01	c0.19	
v/s Ratio Perm	0.15		0.03	c0.27		0.02	0.17		0.09	0.06		0.01
v/c Ratio	0.50	0.65	0.12	0.84	0.69	0.05	0.54	0.55	0.24	0.20	0.65	0.05
Uniform Delay, d1	20.8	27.8	23.3	20.4	26.7	21.1	16.4	23.5	20.7	19.4	28.1	23.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.80	0.61
Incremental Delay, d2	1.7	1.5	0.1	19.3	1.8	0.0	1.5	1.7	1.1	0.3	2.8	0.2
Delay (s)	22.5	29.3	23.5	39.7	28.5	21.2	17.9	25.2	21.7	13.9	25.4	14.2
Level of Service	C	C	C	D	C	C	B	C	C	B	C	B
Approach Delay (s)		27.4			30.5			23.2			23.5	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
n) Future Total (2031) PM - Phase 1

2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	800	0	0	1035	15	415	130	150	10	0	305
Future Volume (vph)	200	800	0	0	1035	15	415	130	150	10	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998				0.850			0.850
Flt Protected	0.950						0.950	0.974		0.950		
Satd. Flow (prot)	1787	5136	0	0	5124	0	1698	1749	1599	1805	0	1599
Flt Permitted	0.185						0.950	0.974		0.242		
Satd. Flow (perm)	348	5136	0	0	5124	0	1698	1749	1599	460	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1				155			236
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Adj. Flow (vph)	206	825	0	0	1067	15	428	134	155	10	0	314
Shared Lane Traffic (%)							35%					
Lane Group Flow (vph)	206	825	0	0	1082	0	278	284	155	10	0	314
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lanes, Volumes, Timings
n) Future Total (2031) PM - Phase 1

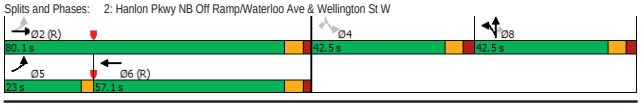
2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	97.7	93.6			76.0		33.0	33.0	33.0	16.5		16.5
Actuated g/C Ratio	0.59	0.57			0.46		0.20	0.20	0.20	0.10		0.10
v/c Ratio	0.62	0.28			0.46		0.82	0.81	0.35	0.22		0.84
Control Delay	26.8	20.6			34.2		82.0	80.8	8.8	75.6		38.9
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	26.8	20.6			34.2		82.0	80.8	8.8	75.6		38.9
LOS	C	C			C		F	F	A	E		D
Approach Delay		21.8			34.2			65.7			40.0	
Approach LOS		C			C			E			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 37.9		Intersection LOS: D	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	206	825	1082	278	284	155	10	314
v/c Ratio	0.62	0.28	0.46	0.82	0.81	0.35	0.22	0.84
Control Delay	26.8	20.6	34.2	82.0	80.8	8.8	75.6	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	20.6	34.2	82.0	80.8	8.8	75.6	38.9
Queue Length 50th (m)	31.2	51.4	90.7	97.6	99.7	0.0	3.3	27.3
Queue Length 95th (m)	61.6	80.7	139.3	126.8	128.9	19.3	9.7	62.0
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	380	2911	2359	379	391	478	97	524
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	0.54	0.28	0.46	0.73	0.73	0.32	0.10	0.60

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	800	0	0	1035	15	415	130	150	10	0	305
Future Volume (vph)	200	800	0	0	1035	15	415	130	150	10	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
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	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1787	5136			5124		1698	1749	1599	1805		1599
Flt Permitted	0.18	1.00			1.00		0.95	0.97	1.00	0.24		1.00
Satd. Flow (perm)	347	5136			5124		1698	1749	1599	461		1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	206	825	0	0	1067	15	428	134	155	10	0	314
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	124	0	0	212
Lane Group Flow (vph)	206	825	0	0	1081	0	278	284	31	10	0	102
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	93.5	93.5			75.9		33.0	33.0	33.0	16.5		16.5
Effective Green, g (s)	93.5	93.5			75.9		33.0	33.0	33.0	16.5		16.5
Actuated g/C Ratio	0.57	0.57			0.46		0.20	0.20	0.20	0.10		0.10
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	323	2908			2355		339	349	319	46		159
v/s Ratio Prot	c0.06	0.16			0.21		c0.16	0.16				
v/s Ratio Perm	c0.30								0.02	0.02		c0.06
v/c Ratio	0.64	0.28			0.46		0.82	0.81	0.10	0.22		0.64
Uniform Delay, d1	19.9	18.5			30.5		63.2	63.1	53.9	68.4		71.4
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	4.1	0.2			0.6		14.6	13.5	0.1	2.4		8.2
Delay (s)	24.0	18.7			31.2		77.8	76.6	54.0	70.7		79.6
Level of Service	C	B			C		E	E	D	E		E
Approach Delay (s)		19.8			31.2			72.2			79.3	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

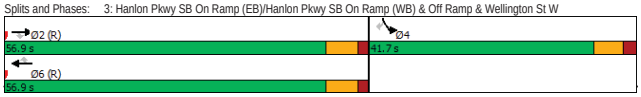
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	855	515	0	1305	195	0	0	0	230	0	85
Future Volume (vph)	0	855	515	0	1305	195	0	0	0	230	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5085	1599	0	5136	1583	0	0	0	3467	0	1524
Flt Permitted										0.950		
Satd. Flow (perm)	0	5085	1565	0	5136	1545	0	0	0	3467	0	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			542			106						43
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Adj. Flow (vph)	0	900	542	0	1374	205	0	0	0	242	0	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	900	542	0	1374	205	0	0	0	242	0	89
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		72.5	72.5		72.5	72.5				12.5		12.5
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.13		0.13
v/c Ratio		0.24	0.42		0.36	0.18				0.55		0.39
Control Delay		4.5	1.5		5.2	2.5				45.0		27.0
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.5	1.5		5.2	2.5				45.0		27.0
LOS		A	A		A	A				D		C
Approach Delay		3.4			4.9						40.2	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	900	542	1374	205	242	89
v/c Ratio	0.24	0.42	0.36	0.18	0.55	0.39
Control Delay	4.5	1.5	5.2	2.5	45.0	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	1.5	5.2	2.5	45.0	27.0
Queue Length 50th (m)	17.6	0.0	30.3	4.7	23.9	8.5
Queue Length 95th (m)	25.9	8.8	42.8	12.3	35.0	22.8
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3738	1294	3776	1164	1230	568
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	0.24	0.42	0.36	0.18	0.20	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	855	515	0	1305	195	0	0	0	230	0	85
Future Volume (vph)	0	855	515	0	1305	195	0	0	0	230	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1565		5136	1545				3467		1524
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1565		5136	1545				3467		1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	900	542	0	1374	205	0	0	0	242	0	89
RTOR Reduction (vph)	0	0	143	0	0	28	0	0	0	0	0	38
Lane Group Flow (vph)	0	900	399	0	1374	177	0	0	0	242	0	51
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	1%	0%	1%	2%	0%	0%	0%	1%	0%	6%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		72.5	72.5		72.5	72.5				12.5		12.5
Effective Green, g (s)		72.5	72.5		72.5	72.5				12.5		12.5
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.13		0.13
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3738	1150		3776	1136				439		193
v/s Ratio Prot		0.18			c0.27					c0.07		
v/s Ratio Perm			0.25			0.11						0.03
v/c Ratio		0.24	0.35		0.36	0.16				0.55		0.27
Uniform Delay, d1		4.2	4.6		4.7	3.9				40.4		38.9
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.8		0.3	0.3				1.5		0.7
Delay (s)		4.4	5.5		5.0	4.2				41.9		39.7
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.8			4.9			0.0			41.3	
Approach LOS		A			A			A			D	

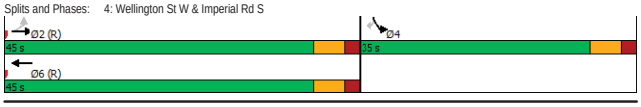
Intersection Summary					
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.39				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	44.9%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	940	855	410	375	60
Future Volume (vph)	70	940	855	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.951			0.850
Flt Protected		0.997			0.950	
Satd. Flow (prot)	0	3533	3342	0	1787	1615
Flt Permitted		0.694			0.950	
Satd. Flow (perm)	0	2460	3342	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			141			62
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Adj. Flow (vph)	72	969	881	423	387	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1041	1304	0	387	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
v/c Ratio		0.74	0.66		0.77	0.12
Control Delay		18.7	13.5		36.9	5.8
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		18.7	13.5		36.9	5.8
LOS		B	B		D	A
Approach Delay		18.7	13.5		32.6	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Queues
n) Future Total (2031) PM - Phase 1

4: Wellington St W & Imperial Rd S

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1041	1304	387	62
v/c Ratio	0.74	0.66	0.77	0.12
Control Delay	18.7	13.5	36.9	5.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.7	13.5	36.9	5.8
Queue Length 50th (m)	60.6	62.5	56.4	0.0
Queue Length 95th (m)	#116.9	103.5	78.3	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1402	1965	647	624
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.66	0.60	0.10

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
n) Future Total (2031) PM - Phase 1

4: Wellington St W & Imperial Rd S

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	940	855	410	375	60
Future Volume (vph)	70	940	855	410	375	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3532	3343		1787	1615
Flt Permitted		0.69	1.00		0.95	1.00
Satd. Flow (perm)		2460	3343		1787	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	969	881	423	387	62
RTOR Reduction (vph)	0	0	61	0	0	45
Lane Group Flow (vph)	0	1041	1243	0	387	17
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	0%	2%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		45.6	45.6		22.4	22.4
Effective Green, g (s)		45.6	45.6		22.4	22.4
Actuated g/C Ratio		0.57	0.57		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1402	1905		500	452
v/s Ratio Prot			0.37		c0.22	
v/s Ratio Perm		c0.42				0.01
v/c Ratio		0.74	0.65		0.77	0.04
Uniform Delay, d1		12.8	11.8		26.5	21.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		3.6	1.8		7.3	0.0
Delay (s)		16.4	13.5		33.8	21.0
Level of Service		B	B		C	C
Approach Delay (s)		16.4	13.5		32.0	
Approach LOS		B	B		C	

Intersection Summary

HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
n) Future Total (2031) PM - Phase 1

5: Hanlon Pkwy & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	375	395	255	450	35	425	1220	310	45	1635	140
Future Volume (vph)	125	375	395	255	450	35	425	1220	310	45	1635	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00							
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1615	1805	3567	0	3467	3374	1599	1805	3471	1615
Flt Permitted	0.214			0.250			0.950			0.950		
Satd. Flow (perm)	402	3574	1595	475	3567	0	3467	3374	1599	1805	3471	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			261		4				260			128
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Adj. Flow (vph)	129	387	407	263	464	36	438	1258	320	46	1686	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	387	407	263	500	0	438	1258	320	46	1686	144
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lanes, Volumes, Timings
n) Future Total (2031) PM - Phase 1

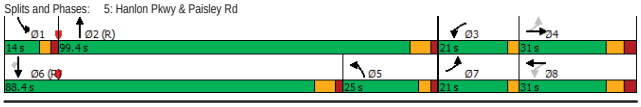
5: Hanlon Pkwy & Paisley Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	41.7	22.4	165.4	47.5	26.1		20.0	95.6	165.4	8.6	81.6	81.6
Actuated g/C Ratio	0.25	0.14	1.00	0.29	0.16		0.12	0.58	1.00	0.05	0.49	0.49
v/c Ratio	0.58	0.80	0.26	0.94	0.88		1.05	0.65	0.20	0.49	0.99	0.17
Control Delay	55.8	82.4	0.4	89.5	84.8		124.1	26.2	0.3	93.9	59.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	82.4	0.4	89.5	84.8		124.1	26.2	0.3	93.9	59.5	5.1
LOS	E	F	A	F	F		F	C	A	F	E	A
Approach Delay		42.5			86.4			43.4			56.2	
Approach LOS		D			F			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 165.4
Actuated Cycle Length: 165.4
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 53.4 — Intersection LOS: D
Intersection Capacity Utilization 102.4% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Queues
5: Hanlon Pkwy & Paisley Rd

n) Future Total (2031) PM - Phase 1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	387	407	263	500	438	1258	320	46	1686	144
v/c Ratio	0.58	0.80	0.26	0.94	0.88	1.05	0.65	0.20	0.49	0.99	0.17
Control Delay	55.8	82.4	0.4	89.5	84.8	124.1	26.2	0.3	93.9	59.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	82.4	0.4	89.5	84.8	124.1	26.2	0.3	93.9	59.5	5.1
Queue Length 50th (m)	34.1	69.2	0.0	75.6	89.6	~84.4	158.1	0.0	15.8	300.8	2.8
Queue Length 95th (m)	53.4	89.3	0.0	#120.9	#134.0	#121.8	183.5	0.0	30.9	#359.2	15.5
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	261	496	1595	281	566	419	1949	1599	98	1711	861
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.78	0.26	0.94	0.88	1.05	0.65	0.20	0.47	0.99	0.17

Intersection Summary

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

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

HCM Signalized Intersection Capacity Analysis
5: Hanlon Pkwy & Paisley Rd

n) Future Total (2031) PM - Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	375	395	255	450	35	425	1220	310	45	1635	140
Future Volume (vph)	125	375	395	255	450	35	425	1220	310	45	1635	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1595	1805	3567		3467	3374	1599	1805	3471	1615
Flt Permitted	0.21	1.00	1.00	0.25	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	403	3574	1595	475	3567		3467	3374	1599	1805	3471	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	387	407	263	464	36	438	1258	320	46	1686	144
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	66
Lane Group Flow (vph)	129	387	407	263	497	0	438	1258	320	46	1686	78
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	1%	7%	1%	0%	4%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	36.7	22.4	165.4	43.4	26.1		21.0	94.6	165.4	7.0	80.6	80.6
Effective Green, g (s)	36.7	22.4	165.4	43.4	26.1		21.0	94.6	165.4	7.0	80.6	80.6
Actuated g/C Ratio	0.22	0.14	1.00	0.26	0.16		0.13	0.57	1.00	0.04	0.49	0.49
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	209	484	1595	269	562		440	1929	1599	76	1691	786
v/s Ratio Prot	0.05	0.11		c0.11	0.14		c0.13	0.37		0.03	c0.49	
v/s Ratio Perm	0.08		0.26	c0.15					0.20			0.05
v/c Ratio	0.62	0.80	0.26	0.98	0.88		1.00	0.65	0.20	0.61	1.00	0.10
Uniform Delay, d1	54.5	69.3	0.0	55.3	68.2		72.2	24.2	0.0	77.8	42.3	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	9.0	0.4	48.2	15.2		41.5	1.7	0.3	12.9	21.2	0.3
Delay (s)	59.8	78.3	0.4	103.5	83.4		113.6	25.9	0.3	90.7	63.5	23.1
Level of Service	E	E	A	F	F		F	C	A	F	E	C
Approach Delay (s)		41.4			90.3			40.9			61.0	
Approach LOS		D			F			D			E	

Intersection Summary

HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

n) Future Total (2031) PM - Phase 1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	165	40	90	255	45	40	640	85	50	630	50
Future Volume (vph)	60	165	40	90	255	45	40	640	85	50	630	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.971			0.978			0.982			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1815	0	1805	1831	0	1805	1856	0	1770	1875	0
Flt Permitted	0.339			0.528			0.296			0.267		
Satd. Flow (perm)	623	1815	0	996	1831	0	562	1856	0	496	1875	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			15			8			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Adj. Flow (vph)	62	170	41	93	263	46	41	660	88	52	649	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	211	0	93	309	0	41	748	0	52	701	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
6: Edinburgh Rd S & Waterloo Ave

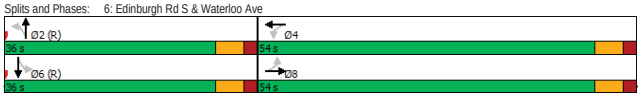
n) Future Total (2031) PM - Phase 1

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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		4	4		4	4	
Act Effct Green (s)	20.6	20.6		20.6	20.6		57.4	57.4		57.4	57.4	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
v/c Ratio	0.44	0.49		0.41	0.72		0.11	0.63		0.16	0.59	
Control Delay	37.7	29.8		33.4	39.4		17.8	26.5		10.1	13.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.7	29.8		33.4	39.4		17.8	26.5		10.1	13.1	
LOS	D	C		C	D		B	C		B	B	
Approach Delay		31.6			38.0			26.1			12.9	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	211	93	309	41	748	52	701
v/c Ratio	0.44	0.49	0.41	0.72	0.11	0.63	0.16	0.59
Control Delay	37.7	29.8	33.4	39.4	17.8	26.5	10.1	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	29.8	33.4	39.4	17.8	26.5	10.1	13.1
Queue Length 50th (m)	9.7	30.0	14.5	49.7	2.5	87.5	3.4	65.8
Queue Length 95th (m)	20.4	45.8	26.2	69.9	m12.6	167.6	11.2	124.5
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	332	977	531	983	358	1186	316	1197
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	0.19	0.22	0.18	0.31	0.11	0.63	0.16	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	165	40	90	255	45	40	640	85	50	630	50
Future Volume (vph)	60	165	40	90	255	45	40	640	85	50	630	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1750	1815		1794	1830		1802	1857		1764	1875	
Flt Permitted	0.34	1.00		0.53	1.00		0.30	1.00		0.27	1.00	
Satd. Flow (perm)	625	1815		997	1830		561	1857		496	1875	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	62	170	41	93	263	46	41	660	88	52	649	52
RTOR Reduction (vph)	0	16	0	0	12	0	0	3	0	0	2	0
Lane Group Flow (vph)	62	195	0	93	297	0	41	745	0	52	699	0
Confl. Peds. (#/hr)	10		7	7		10	4		9	9		4
Confl. Bikes (#/hr)			2			2			2			
Heavy Vehicles (%)	2%	1%	2%	0%	1%	0%	0%	0%	1%	2%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.6	20.6		20.6	20.6		57.4	57.4		57.4	57.4	
Effective Green, g (s)	20.6	20.6		20.6	20.6		57.4	57.4		57.4	57.4	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.64	0.64		0.64	0.64	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	143	415		228	418		357	1184		316	1195	
v/s Ratio Prot		0.11			c0.16			c0.40			0.37	
v/s Ratio Perm	0.10			0.09			0.07			0.10		
v/c Ratio	0.43	0.47		0.41	0.71		0.11	0.63		0.16	0.59	
Uniform Delay, d1	29.7	30.0		29.5	32.0		6.4	9.9		6.6	9.4	
Progression Factor	1.00	1.00		1.00	1.00		2.00	2.10		1.00	1.00	
Incremental Delay, d2	2.1	0.8		1.2	5.6		0.6	2.3		1.1	2.1	
Delay (s)	31.8	30.8		30.7	37.6		13.3	23.0		7.7	11.5	
Level of Service	C	C		C	D		B	C		A	B	
Approach Delay (s)		31.0			36.0			22.5			11.3	
Approach LOS		C			D			C			B	

Intersection Summary

HCM 2000 Control Delay	22.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	79.0%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	30	45	270	40	75	270
Future Volume (vph)	30	45	270	40	75	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1770	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1770	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%
Adj. Flow (vph)	33	49	293	43	82	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	49	293	43	82	293
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	30	45	270	40	75	270
Future Volume (Veh/h)	30	45	270	40	75	270
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	49	293	43	82	293
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			83		664	35
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			83		664	35
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			81		76	72
cM capacity (veh/h)			1513		345	1039

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	33	49	293	43	375
Volume Left	0	0	293	0	82
Volume Right	0	49	0	0	293
cSH	1700	1700	1513	1700	1330
Volume to Capacity	0.02	0.03	0.19	0.03	0.28
Queue Length 95th (m)	0.0	0.0	5.7	0.0	9.3
Control Delay (s)	0.0	0.0	8.0	0.0	11.8
Lane LOS			A		B
Approach Delay (s)	0.0		6.9		11.8
Approach LOS					B

Intersection Summary

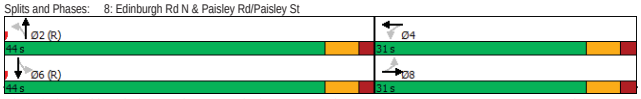
Average Delay	8.5			
Intersection Capacity Utilization	32.4%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	70	370	50	105	540	60	100	545	90
Future Volume (vph)	75	305	115	70	370	50	105	540	60	100	545	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.959			0.982			0.985			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1792	0	1805	1841	0	1805	1863	0	1736	1849	0
Flt Permitted	0.286			0.286			0.228			0.257		
Satd. Flow (perm)	539	1792	0	540	1841	0	432	1863	0	469	1849	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			10			11			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Adj. Flow (vph)	81	328	124	75	398	54	113	581	65	108	586	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	452	0	75	452	0	113	646	0	108	683	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		4	4		4	4	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.45	0.73		0.42	0.73		0.52	0.68		0.46	0.72	
Control Delay	29.2	27.7		28.1	29.8		23.0	18.2		19.7	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.2	27.7		28.1	29.8		23.0	18.2		19.7	19.5	
LOS	C	C		C	C		C	B		B	B	
Approach Delay		27.9			29.6			18.9			19.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	81	452	75	452	113	646	108	683
v/c Ratio	0.45	0.73	0.42	0.73	0.52	0.68	0.46	0.72
Control Delay	29.2	27.7	28.1	29.8	23.0	18.2	19.7	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	27.7	28.1	29.8	23.0	18.2	19.7	19.5
Queue Length 50th (m)	8.6	47.5	8.5	57.2	10.6	66.9	9.7	72.5
Queue Length 95th (m)	m19.9	#84.9	21.6	#92.1	28.5	104.4	24.7	114.2
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	179	615	180	620	218	949	237	944
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	0.45	0.73	0.42	0.73	0.52	0.68	0.46	0.72

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	305	115	70	370	50	105	540	60	100	545	90
Future Volume (vph)	75	305	115	70	370	50	105	540	60	100	545	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		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)	1790	1792		1795	1841		1800	1862		1732	1849	
Flt Permitted	0.29	1.00		0.29	1.00		0.23	1.00		0.26	1.00	
Satd. Flow (perm)	539	1792		540	1841		432	1862		469	1849	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	328	124	75	398	54	113	581	65	108	586	97
RTOR Reduction (vph)	0	18	0	0	7	0	0	5	0	0	8	0
Lane Group Flow (vph)	81	434	0	75	445	0	113	641	0	108	675	0
Confl. Peds. (#/hr)	13		9	9		13	8		5	5		8
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	4%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	179	597		180	613		218	943		237	936	
v/s Ratio Prot		c0.24			0.24			0.34			c0.37	
v/s Ratio Perm	0.15			0.14			0.26			0.23		
v/c Ratio	0.45	0.73		0.42	0.73		0.52	0.68		0.46	0.72	
Uniform Delay, d1	19.6	22.0		19.4	22.0		12.4	13.9		11.9	14.4	
Progression Factor	1.02	0.95		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	6.9		7.0	7.4		8.5	3.9		6.2	4.8	
Delay (s)	27.3	27.9		26.3	29.4		20.9	17.9		18.1	19.2	
Level of Service	C	C		C	C		C	B		B	B	
Approach Delay (s)		27.8			28.9			18.3			19.0	
Approach LOS		C			C			B			B	

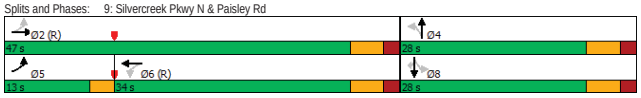
Intersection Summary					
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	94.2%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	405	1	0	415	195	2	0	0	215	0	305
Future Volume (vph)	300	405	1	0	415	195	2	0	0	215	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor	1.00	1.00			0.99			1.00			1.00	0.99
Frt					0.957							0.850
Flt Protected	0.950							0.950			0.950	
Satd. Flow (prot)	1805	1881	0	0	1793	0	0	1805	0	0	1787	1615
Flt Permitted	0.145							0.523			0.757	
Satd. Flow (perm)	275	1881	0	0	1793	0	0	993	0	0	1419	1594
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36							328
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	323	435	1	0	446	210	2	0	0	231	0	328
Shared Lane Traffic (%)												
Lane Group Flow (vph)	323	436	0	0	656	0	0	2	0	0	231	328
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	49.0	46.0			31.1			17.0			17.0	17.0
Actuated g/C Ratio	0.65	0.61			0.41			0.23			0.23	0.23
v/c Ratio	0.77	0.38			0.86			0.01			0.72	0.53
Control Delay	26.4	9.4			42.8			19.5			39.0	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	26.4	9.4			42.8			19.5			39.0	6.2
LOS	C	A			D			B			D	A
Approach Delay		16.7			42.8			19.5			19.8	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	323	436	656	2	231	328
v/c Ratio	0.77	0.38	0.86	0.01	0.72	0.53
Control Delay	26.4	9.4	42.8	19.5	39.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	9.4	42.8	19.5	39.0	6.2
Queue Length 50th (m)	22.3	29.5	103.4	0.2	31.6	0.0
Queue Length 95th (m)	#72.5	55.8	#164.8	1.7	51.2	17.7
Internal Link Dist (m)		177.0	1059.9	93.7	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	422	1153	763	291	416	699
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	0.77	0.38	0.86	0.01	0.56	0.47

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)	300	405	1	0	415	195	2	0	0	215	0	305
Future Volume (vph)	300	405	1	0	415	195	2	0	0	215	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.95			0.95	1.00
Satd. Flow (prot)	1805	1880			1792			1804			1781	1594
Flt Permitted	0.15	1.00			1.00			0.52			0.76	1.00
Satd. Flow (perm)	276	1880			1792			993			1418	1594
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	323	435	1	0	446	210	2	0	0	231	0	328
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	254
Lane Group Flow (vph)	323	436	0	0	635	0	0	2	0	0	231	74
Confl. Peds. (#/hr)	3		1	1		3	1		2	2		1
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	46.0	46.0			31.1			17.0			17.0	17.0
Effective Green, g (s)	46.0	46.0			31.1			17.0			17.0	17.0
Actuated g/C Ratio	0.61	0.61			0.41			0.23			0.23	0.23
Clearance Time (s)	3.0	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)	411	1153			743			225			321	361
v/s Ratio Prot	c0.12	0.23			c0.35							
v/s Ratio Perm	0.36							0.00			c0.16	0.05
v/c Ratio	0.79	0.38			0.85			0.01			0.72	0.21
Uniform Delay, d1	14.6	7.3			19.9			22.5			26.8	23.5
Progression Factor	1.00	1.00			1.61			1.00			1.00	1.00
Incremental Delay, d2	9.5	0.9			9.5			0.0			7.5	0.3
Delay (s)	24.2	8.2			41.5			22.5			34.3	23.8
Level of Service	C	A			D			C			C	C
Approach Delay (s)		15.0			41.5			22.5			28.2	
Approach LOS		B			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0		
Intersection Capacity Utilization	81.6%	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)	25	0	45	40	0	30
Future Volume (vph)	25	0	45	40	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				45.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.937			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1745	0	1863	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1745	0	1863	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	95.3		499.5			106.5
Travel Time (s)	6.9		36.0			7.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	49	43	0	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	92	0	0	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	0	45	40	0	30
Future Volume (Veh/h)	25	0	45	40	0	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	0	49	43	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	104	70			92	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	70			92	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	895	992			1503	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	27	92	0	33
Volume Left	27	0	0	0
Volume Right	0	43	0	0
cSH	895	1700	1700	1700
Volume to Capacity	0.03	0.05	0.00	0.02
Queue Length 95th (m)	0.7	0.0	0.0	0.0
Control Delay (s)	9.1	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.1	0.0	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	940	75	0	1410	240	0	0	0	0	0	0
Future Volume (vph)	0	940	75	0	1410	240	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	1022	82	0	1533	261	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1022	82	0	1533	261	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	940	75	0	1410	240	0	0	0	0	0	0
Future Volume (Veh/h)	0	940	75	0	1410	240	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1022	82	0	1533	261	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	1534			1023			1535	2557	343	1876	2557	513
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1076			1023			1077	2257	343	1470	2257	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	568			686			152	36	659	78	36	944

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	341	341	341	82	511	511	511	261
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	261
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.20	0.20	0.05	0.30	0.30	0.30	0.15
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

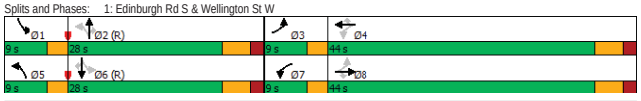
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	530	70	125	455	205	60	480	70
Future Volume (vph)	80	555	105	170	530	70	125	455	205	60	480	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			30.0			25.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97						
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3574	1599	1770	3505	1538	1805	3610	1583	1805	3610	1615
Flt Permitted	0.391			0.245			0.384			0.485		
Satd. Flow (perm)	731	3574	1575	456	3505	1487	730	3610	1583	922	3610	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			209			109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		907.2			320.9			347.9			227.6	
Travel Time (s)		65.3			23.1			25.0			16.4	
Confl. Peds. (#/hr)	5		2	2		5						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	82	566	107	173	541	71	128	464	209	61	490	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	566	107	173	541	71	128	464	209	61	490	71
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	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	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	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	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Detector Phase	3	8	8	7	4	4	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0	9.0	23.0	23.0
Total Split (s)	9.0	44.0	44.0	9.0	44.0	44.0	9.0	28.0	28.0	9.0	28.0	28.0
Total Split (%)	10.0%	48.9%	48.9%	10.0%	48.9%	48.9%	10.0%	31.1%	31.1%	10.0%	31.1%	31.1%
Maximum Green (s)	6.0	38.0	38.0	6.0	38.0	38.0	6.0	22.0	22.0	6.0	22.0	22.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	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	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0
Pedestrian Calls (#/hr)		2	2		2	2		0	0		0	0
Act Effct Green (s)	31.2	20.5	20.5	35.8	24.6	24.6	46.8	36.1	36.1	42.8	32.6	32.6
Actuated g/C Ratio	0.35	0.23	0.23	0.40	0.27	0.27	0.52	0.40	0.40	0.48	0.36	0.36
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.3	36.2	6.5	23.2	30.7	2.6	13.5	21.2	4.4	9.6	20.4	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	36.2	6.5	23.2	30.7	2.6	13.5	21.2	4.4	9.6	20.4	2.3
LOS	B	D	A	C	C	A	B	C	A	A	C	A
Approach Delay		30.0			26.5			15.6			17.3	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 80 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Edinburgh Rd S & Wellington St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	566	107	173	541	71	128	464	209	61	490	71
v/c Ratio	0.24	0.70	0.24	0.53	0.56	0.15	0.26	0.32	0.28	0.12	0.37	0.11
Control Delay	17.3	36.2	6.5	23.2	30.7	2.6	13.5	21.2	4.4	9.6	20.4	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	36.2	6.5	23.2	30.7	2.6	13.5	21.2	4.4	9.6	20.4	2.3
Queue Length 50th (m)	8.7	49.7	0.0	19.5	44.7	0.0	11.7	31.9	0.0	3.9	37.8	0.9
Queue Length 95th (m)	16.8	62.2	11.5	32.2	59.4	4.5	22.6	48.3	15.1	6.8	55.7	4.5
Internal Link Dist (m)		883.2			296.9			323.9			203.6	
Turn Bay Length (m)	40.0		60.0	50.0		60.0	25.0		30.0	30.0		40.0
Base Capacity (vph)	342	1509	727	327	1479	690	486	1449	760	508	1307	654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.38	0.15	0.53	0.37	0.10	0.26	0.32	0.28	0.12	0.37	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	105	170	530	70	125	455	205	60	480	70
Future Volume (vph)	80	555	105	170	530	70	125	455	205	60	480	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1783	3574	1575	1769	3505	1487	1805	3610	1583	1805	3610	1615
Flt Permitted	0.39	1.00	1.00	0.25	1.00	1.00	0.38	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	734	3574	1575	456	3505	1487	729	3610	1583	922	3610	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	82	566	107	173	541	71	128	464	209	61	490	71
RTOR Reduction (vph)	0	0	82	0	0	52	0	0	128	0	0	46
Lane Group Flow (vph)	82	566	25	173	541	19	128	464	81	61	490	25
Confl. Peds. (#/hr)	5		2	2		5						
Heavy Vehicles (%)	1%	1%	1%	2%	3%	5%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	27.6	21.1	21.1	34.1	24.6	24.6	43.8	34.9	34.9	38.0	32.0	32.0
Effective Green, g (s)	27.6	21.1	21.1	34.1	24.6	24.6	43.8	34.9	34.9	38.0	32.0	32.0
Actuated g/C Ratio	0.31	0.23	0.23	0.38	0.27	0.27	0.49	0.39	0.39	0.42	0.36	0.36
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	300	837	369	318	958	406	461	1399	613	448	1283	574
v/s Ratio Prot	0.02	c0.16		c0.06	0.15		c0.03	0.13		0.01	c0.14	
v/s Ratio Perm	0.06		0.02	0.15		0.01	0.11		0.05	0.05		0.02
v/c Ratio	0.27	0.68	0.07	0.54	0.56	0.05	0.28	0.33	0.13	0.14	0.38	0.04
Uniform Delay, d1	22.7	31.3	26.8	20.0	28.1	24.1	13.0	19.4	17.8	15.5	21.6	19.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.86	1.03
Incremental Delay, d2	0.5	2.2	0.1	1.9	0.8	0.0	0.3	0.6	0.4	0.1	0.8	0.1
Delay (s)	23.2	33.5	26.9	21.9	28.9	24.1	13.4	20.0	18.2	11.8	19.4	19.6
Level of Service	C	C	C	C	C	C	B	B	B	B	B	B
Approach Delay (s)		31.5			26.9			18.5			18.6	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay		24.1	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.48			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)		18.0
Intersection Capacity Utilization		61.6%	ICU Level of Service		B
Analysis Period (min)		15			

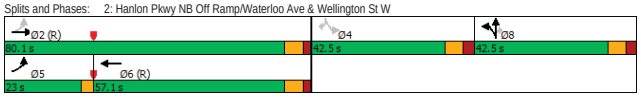
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	570	0	0	735	15	295	65	160	5	0	220
Future Volume (vph)	125	570	0	0	735	15	295	65	160	5	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		0.0	0.0		185.0	0.0		170.0	0.0		0.0
Storage Lanes	1		0	0		1	1		1	1		1
Taper Length (m)	65.0			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.997				0.850			0.850
Flt Protected	0.950						0.950	0.969		0.950		
Satd. Flow (prot)	1736	5085	0	0	5121	0	1681	1727	1599	1805	0	1599
Flt Permitted	0.318						0.950	0.969		0.323		
Satd. Flow (perm)	581	5085	0	0	5121	0	1681	1727	1599	614	0	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2				163			224
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		105.1			907.2			375.6			140.7	
Travel Time (s)		7.6			65.3			27.0			10.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Adj. Flow (vph)	128	582	0	0	750	15	301	66	163	5	0	224
Shared Lane Traffic (%)							40%					
Lane Group Flow (vph)	128	582	0	0	765	0	181	186	163	5	0	224
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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2		1	2	1	1		1
Detector Template	Left	Thru			Thru		Left	Thru	Right	Left		Right
Leading Detector (m)	2.0	10.0			10.0		2.0	10.0	2.0	2.0		2.0
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)	2.0	0.6			0.6		2.0	0.6	2.0	2.0		2.0
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2								8	4		4
Detector Phase	5	2			6		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	7.0	20.0			20.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	10.0	34.1			34.1		42.5	42.5	42.5	17.5		17.5
Total Split (s)	23.0	80.1			57.1		42.5	42.5	42.5	42.5		42.5
Total Split (%)	13.9%	48.5%			34.6%		25.7%	25.7%	25.7%	25.7%		25.7%
Maximum Green (s)	20.0	73.0			50.0		35.0	35.0	35.0	35.0		35.0
Yellow Time (s)	3.0	5.0			5.0		4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	0.0	2.1			2.1		3.0	3.0	3.0	3.0		3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Max			C-Max		Min	Min	Min	None		None
Walk Time (s)		7.0			7.0		2.0	2.0	2.0			
Flash Dont Walk (s)		20.0			20.0		33.0	33.0	33.0			
Pedestrian Calls (#/hr)		0			0		0	0	0			
Act Effct Green (s)	111.4	107.3			94.3		23.3	23.3	23.3	12.4		12.4
Actuated g/C Ratio	0.67	0.65			0.57		0.14	0.14	0.14	0.08		0.08
v/c Ratio	0.28	0.18			0.26		0.77	0.77	0.45	0.11		0.69
Control Delay	12.5	12.5			19.5		88.2	87.6	11.5	73.8		19.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	12.5	12.5			19.5		88.2	87.6	11.5	73.8		19.0
LOS	B	B			B		F	F	B	E		B
Approach Delay		12.5			19.5			64.4			20.2	
Approach LOS		B			B			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 165.1			
Actuated Cycle Length: 165.1			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 28.0		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Hanlon Pkwy NB Off Ramp/Waterloo Ave & Wellington St W



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	128	582	765	181	186	163	5	224
v/c Ratio	0.28	0.18	0.26	0.77	0.77	0.45	0.11	0.69
Control Delay	12.5	12.5	19.5	88.2	87.6	11.5	73.8	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	12.5	19.5	88.2	87.6	11.5	73.8	19.0
Queue Length 50th (m)	13.8	26.3	45.0	64.5	66.3	0.0	1.7	0.0
Queue Length 95th (m)	30.5	43.4	72.4	90.0	92.0	21.4	6.4	27.5
Internal Link Dist (m)		81.1	883.2		351.6			
Turn Bay Length (m)	110.0					170.0		
Base Capacity (vph)	532	3305	2925	356	366	467	130	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.26	0.51	0.51	0.35	0.04	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	570	0	0	735	15	295	65	160	5	0	220
Future Volume (vph)	125	570	0	0	735	15	295	65	160	5	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Lane Util. Factor	1.00	0.91			0.91		0.95	0.95	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.97	1.00	0.95		1.00
Satd. Flow (prot)	1736	5085			5122		1681	1726	1599	1805		1599
Flt Permitted	0.32	1.00			1.00		0.95	0.97	1.00	0.32		1.00
Satd. Flow (perm)	580	5085			5122		1681	1726	1599	613		1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	128	582	0	0	750	15	301	66	163	5	0	224
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	140	0	0	207
Lane Group Flow (vph)	128	582	0	0	764	0	181	186	23	5	0	17
Heavy Vehicles (%)	4%	2%	0%	0%	1%	0%	2%	0%	1%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Split	NA	Perm	Perm		Perm
Protected Phases	5	2			6		8	8				
Permitted Phases	2								8	4		4
Actuated Green, G (s)	107.3	107.3			94.3		23.3	23.3	23.3	12.4		12.4
Effective Green, g (s)	107.3	107.3			94.3		23.3	23.3	23.3	12.4		12.4
Actuated g/C Ratio	0.65	0.65			0.57		0.14	0.14	0.14	0.08		0.08
Clearance Time (s)	3.0	7.1			7.1		7.5	7.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	446	3304			2925		237	243	225	46		120
v/s Ratio Prot	c0.02	0.11			0.15		0.11	c0.11				
v/s Ratio Perm	c0.17								0.01	0.01		c0.01
v/c Ratio	0.29	0.18			0.26		0.76	0.77	0.10	0.11		0.14
Uniform Delay, d1	11.2	11.4			17.8		68.3	68.3	61.8	71.2		71.4
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	0.1			0.2		13.6	13.4	0.2	1.0		0.5
Delay (s)	11.6	11.5			18.1		81.8	81.7	62.0	72.2		71.9
Level of Service	B	B			B		F	F	E	E		E
Approach Delay (s)		11.5			18.1			75.7			71.9	
Approach LOS		B			B			E			E	

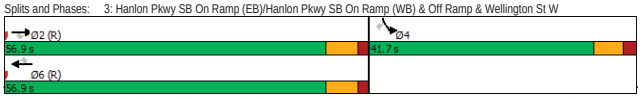
Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	165.1	Sum of lost time (s)	25.1
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	615	395	0	885	170	0	0	0	200	0	145
Future Volume (vph)	0	615	395	0	885	170	0	0	0	200	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		30.0	0.0		20.0	0.0		0.0	200.0		90.0
Storage Lanes	0		1	0		1	0		0	1		1
Taper Length (m)	7.5			7.5			7.5			25.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor			0.98			0.98						
Frt			0.850			0.850						0.850
Flt Protected										0.950		
Satd. Flow (prot)	0	5036	1599	0	5085	1583	0	0	0	3467	0	1568
Flt Permitted										0.950		
Satd. Flow (perm)	0	5036	1566	0	5085	1545	0	0	0	3467	0	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			407			136						99
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		625.8			346.7			193.8			243.0	
Travel Time (s)		45.1			25.0			14.0			17.5	
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Adj. Flow (vph)	0	634	407	0	912	175	0	0	0	206	0	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	634	407	0	912	175	0	0	0	206	0	149
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)		0.0			0.0			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2	1		2	1				1		1
Detector Template		Thru	Right		Thru	Right				Left		Right
Leading Detector (m)		10.0	2.0		10.0	2.0				2.0		2.0
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)		0.6	2.0		0.6	2.0				2.0		2.0
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)		9.4			9.4							
Detector 2 Size(m)		0.6			0.6							
Detector 2 Type		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							
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Detector Phase		2	2		6	6				4		4
Switch Phase												
Minimum Initial (s)		20.0	20.0		20.0	20.0				10.0		10.0
Minimum Split (s)		29.9	29.9		29.9	29.9				16.7		16.7
Total Split (s)		56.9	56.9		56.9	56.9				41.7		41.7
Total Split (%)		57.7%	57.7%		57.7%	57.7%				42.3%		42.3%
Maximum Green (s)		50.0	50.0		50.0	50.0				35.0		35.0
Yellow Time (s)		5.0	5.0		5.0	5.0				4.5		4.5
All-Red Time (s)		1.9	1.9		1.9	1.9				2.2		2.2
Lost Time Adjust (s)		0.0	0.0		0.0	0.0				0.0		0.0
Total Lost Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Recall Mode		C-Max	C-Max		C-Max	C-Max				Min		Min
Walk Time (s)		7.0	7.0		7.0	7.0						
Flash Dont Walk (s)		16.0	16.0		16.0	16.0						
Pedestrian Calls (#/hr)		1	1		1	1						
Act Effct Green (s)		73.2	73.2		73.2	73.2				11.8		11.8
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
v/c Ratio		0.17	0.32		0.24	0.15				0.50		0.55
Control Delay		4.0	1.2		4.3	1.5				44.6		23.3
Queue Delay		0.0	0.0		0.0	0.0				0.0		0.0
Total Delay		4.0	1.2		4.3	1.5				44.6		23.3
LOS		A	A		A	A				D		C
Approach Delay		2.9			3.8						35.7	
Approach LOS		A			A						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 98.6			
Actuated Cycle Length: 98.6			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Hanlon Pkwy SB On Ramp (EB)/Hanlon Pkwy SB On Ramp (WB) & Off Ramp & Wellington St W



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	634	407	912	175	206	149
v/c Ratio	0.17	0.32	0.24	0.15	0.50	0.55
Control Delay	4.0	1.2	4.3	1.5	44.6	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	1.2	4.3	1.5	44.6	23.3
Queue Length 50th (m)	11.1	0.0	17.0	1.7	20.4	9.3
Queue Length 95th (m)	17.4	7.8	25.7	7.7	30.6	27.8
Internal Link Dist (m)	601.8		322.7			
Turn Bay Length (m)		30.0		20.0	200.0	90.0
Base Capacity (vph)	3740	1267	3776	1182	1230	620
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	0.17	0.32	0.24	0.15	0.17	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	615	395	0	885	170	0	0	0	200	0	145
Future Volume (vph)	0	615	395	0	885	170	0	0	0	200	0	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5036	1566		5085	1545				3467		1568
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5036	1566		5085	1545				3467		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	634	407	0	912	175	0	0	0	206	0	149
RTOR Reduction (vph)	0	0	105	0	0	35	0	0	0	0	0	87
Lane Group Flow (vph)	0	634	302	0	912	140	0	0	0	206	0	62
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	3%	1%	0%	2%	2%	0%	0%	0%	1%	0%	3%
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		2			6					4		
Permitted Phases			2			6						4
Actuated Green, G (s)		73.2	73.2		73.2	73.2				11.8		11.8
Effective Green, g (s)		73.2	73.2		73.2	73.2				11.8		11.8
Actuated g/C Ratio		0.74	0.74		0.74	0.74				0.12		0.12
Clearance Time (s)		6.9	6.9		6.9	6.9				6.7		6.7
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3738	1162		3775	1146				414		187
v/s Ratio Prot		0.13			0.18					c0.06		
v/s Ratio Perm			c0.19			0.09						0.04
v/c Ratio		0.17	0.26		0.24	0.12				0.50		0.33
Uniform Delay, d1		3.7	4.1		4.0	3.6				40.6		39.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.5		0.2	0.2				0.9		1.0
Delay (s)		3.8	4.6		4.1	3.8				41.6		40.8
Level of Service		A	A		A	A				D		D
Approach Delay (s)		4.1			4.1			0.0			41.3	
Approach LOS		A			A			A			D	

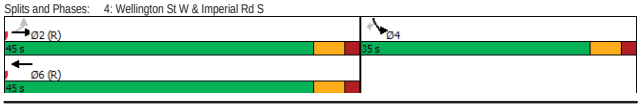
Intersection Summary					
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.29				
Actuated Cycle Length (s)	98.6	Sum of lost time (s)		13.6	
Intersection Capacity Utilization	39.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	600	580	310	395	60
Future Volume (vph)	70	600	580	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			0.0	0.0	100.0
Storage Lanes	0			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor		1.00	0.99			
Frt			0.948			0.850
Flt Protected		0.995			0.950	
Satd. Flow (prot)	0	3498	3329	0	1787	1615
Flt Permitted		0.741			0.950	
Satd. Flow (perm)	0	2605	3329	0	1787	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			171			65
Link Speed (k/h)		50	50		50	
Link Distance (m)		258.7	625.8		734.4	
Travel Time (s)		18.6	45.1		52.9	
Confl. Peds. (#/hr)	3			3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Adj. Flow (vph)	75	645	624	333	425	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	720	957	0	425	65
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
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)	2.0	0.6	0.6		2.0	2.0
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)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4
Switch Phase						
Minimum Initial (s)	17.0	17.0	17.0		7.0	7.0
Minimum Split (s)	36.0	36.0	36.0		24.0	24.0
Total Split (s)	45.0	45.0	45.0		35.0	35.0
Total Split (%)	56.3%	56.3%	56.3%		43.8%	43.8%
Maximum Green (s)	39.0	39.0	39.0		29.0	29.0
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
Total Lost Time (s)		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	C-Min	C-Min	C-Min		Min	Min
Walk Time (s)	17.0	17.0	17.0		7.0	7.0
Flash Dont Walk (s)	13.0	13.0	13.0		11.0	11.0
Pedestrian Calls (#/hr)	1	1	1		0	0
Act Effct Green (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
v/c Ratio		0.50	0.50		0.79	0.12
Control Delay		13.9	10.9		36.6	5.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		13.9	10.9		36.6	5.3
LOS		B	B		D	A
Approach Delay		13.9	10.9		32.5	
Approach LOS		B	B		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Wellington St W & Imperial Rd S



Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	720	957	425	65
v/c Ratio	0.50	0.50	0.79	0.12
Control Delay	13.9	10.9	36.6	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.9	10.9	36.6	5.3
Queue Length 50th (m)	35.2	37.4	61.6	0.0
Queue Length 95th (m)	60.6	64.3	84.0	7.5
Internal Link Dist (m)	234.7	601.8	710.4	
Turn Bay Length (m)				100.0
Base Capacity (vph)	1444	1922	655	633
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	0.50	0.65	0.10

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	600	580	310	395	60
Future Volume (vph)	70	600	580	310	395	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3497	3328		1787	1615
Flt Permitted		0.74	1.00		0.95	1.00
Satd. Flow (perm)		2604	3328		1787	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	645	624	333	425	65
RTOR Reduction (vph)	0	0	77	0	0	46
Lane Group Flow (vph)	0	720	880	0	425	20
Confl. Peds. (#/hr)	3			3		
Heavy Vehicles (%)	0%	3%	3%	0%	1%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		44.0	44.0		24.0	24.0
Effective Green, g (s)		44.0	44.0		24.0	24.0
Actuated g/C Ratio		0.55	0.55		0.30	0.30
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1432	1830		536	484
v/s Ratio Prot			0.26		c0.24	
v/s Ratio Perm		c0.28				0.01
v/c Ratio		0.50	0.48		0.79	0.04
Uniform Delay, d1		11.2	11.0		25.7	19.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.3	0.9		7.9	0.0
Delay (s)		12.5	11.9		33.6	19.9
Level of Service		B	B		C	B
Approach Delay (s)		12.5	11.9		31.8	
Approach LOS		B	B		C	

Intersection Summary				
HCM 2000 Control Delay		16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.61		
Actuated Cycle Length (s)		80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization		81.6%	ICU Level of Service	D
Analysis Period (min)		15		

c Critical Lane Group

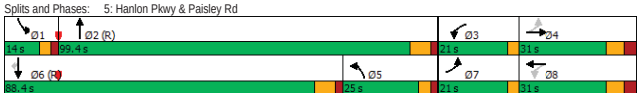
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	310	370	205	320	20	375	1210	215	35	1110	135
Future Volume (vph)	135	310	370	205	320	20	375	1210	215	35	1110	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		40.0	50.0		0.0	135.0		190.0	150.0		140.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	40.0			20.0			60.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	1.00				0.99	1.00		
Frt			0.850		0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3574	1599	1787	3575	0	3467	3505	1599	1752	3505	1615
Flt Permitted	0.453			0.315			0.950			0.950		
Satd. Flow (perm)	860	3574	1579	592	3575	0	3467	3505	1579	1752	3505	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			297		3				183			138
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		336.0			201.0			525.2			387.7	
Travel Time (s)		24.2			14.5			27.0			19.9	
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Adj. Flow (vph)	138	316	378	209	327	20	383	1235	219	36	1133	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	316	378	209	347	0	383	1235	219	36	1133	138
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)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		8.0	5.0		8.0	5.0	5.0
Minimum Split (s)	10.0	31.0		10.0	31.0		13.0	59.4		13.0	59.4	59.4
Total Split (s)	21.0	31.0		21.0	31.0		25.0	99.4		14.0	88.4	88.4
Total Split (%)	12.7%	18.7%		12.7%	18.7%		15.1%	60.1%		8.5%	53.4%	53.4%
Maximum Green (s)	18.0	23.0		18.0	23.0		20.0	92.0		9.0	81.0	81.0
Yellow Time (s)	3.0	4.5		3.0	4.5		3.0	5.4		3.0	5.4	5.4
All-Red Time (s)	0.0	3.5		0.0	3.5		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		0.0	0.0	0.0
Total Lost Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	None	Min		None	Min		None	C-Min		None	C-Min	C-Min
Walk Time (s)		8.0			8.0			42.0			42.0	42.0
Flash Dont Walk (s)		15.0			15.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s)	39.2	19.5	165.4	46.3	24.2		24.1	96.9	165.4	8.8	79.0	79.0
Actuated g/C Ratio	0.24	0.12	1.00	0.28	0.15		0.15	0.59	1.00	0.05	0.48	0.48
v/c Ratio	0.48	0.75	0.24	0.68	0.66		0.76	0.60	0.14	0.39	0.68	0.16
Control Delay	51.1	82.0	0.4	60.1	72.5		78.1	24.9	0.2	87.9	37.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	82.0	0.4	60.1	72.5		78.1	24.9	0.2	87.9	37.1	4.3
LOS	D	F	A	E	E		E	C	A	F	D	A
Approach Delay		39.8			67.8			33.0			35.0	
Approach LOS		D			E			C			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 165.4			
Actuated Cycle Length: 165.4			
Offset: 13 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 39.1		Intersection LOS: D	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Hanlon Pkwy & Paisley Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	316	378	209	347	383	1235	219	36	1133	138
v/c Ratio	0.48	0.75	0.24	0.68	0.66	0.76	0.60	0.14	0.39	0.68	0.16
Control Delay	51.1	82.0	0.4	60.1	72.5	78.1	24.9	0.2	87.9	37.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	82.0	0.4	60.1	72.5	78.1	24.9	0.2	87.9	37.1	4.3
Queue Length 50th (m)	36.6	56.6	0.0	57.9	59.4	66.3	150.3	0.0	12.3	163.3	0.0
Queue Length 95th (m)	56.7	73.2	0.0	84.3	79.7	84.4	174.1	0.0	25.8	194.5	13.3
Internal Link Dist (m)		312.0			177.0		501.2			363.7	
Turn Bay Length (m)	35.0		40.0	50.0		135.0		190.0	150.0		140.0
Base Capacity (vph)	323	496	1579	310	541	506	2079	1579	98	1774	885
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.64	0.24	0.67	0.64	0.76	0.59	0.14	0.37	0.64	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	310	370	205	320	20	375	1210	215	35	1110	135
Future Volume (vph)	135	310	370	205	320	20	375	1210	215	35	1110	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	8.0	4.0	3.0	8.0		5.0	7.4	4.0	5.0	7.4	7.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	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	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1804	3574	1579	1787	3576		3467	3505	1579	1752	3505	1615
Flt Permitted	0.45	1.00	1.00	0.31	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	860	3574	1579	592	3576		3467	3505	1579	1752	3505	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	138	316	378	209	327	20	383	1235	219	36	1133	138
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	73
Lane Group Flow (vph)	138	316	378	209	344	0	383	1235	219	36	1133	65
Confl. Peds. (#/hr)	1		1	1		1			1	1		
Heavy Vehicles (%)	0%	1%	1%	1%	0%	0%	1%	3%	1%	3%	3%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8					Free			6
Actuated Green, G (s)	34.2	19.5	165.4	41.9	24.2		25.1	95.9	165.4	7.2	78.0	78.0
Effective Green, g (s)	34.2	19.5	165.4	41.9	24.2		25.1	95.9	165.4	7.2	78.0	78.0
Actuated g/C Ratio	0.21	0.12	1.00	0.25	0.15		0.15	0.58	1.00	0.04	0.47	0.47
Clearance Time (s)	3.0	8.0		3.0	8.0		5.0	7.4		5.0	7.4	7.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	261	421	1579	290	523		526	2032	1579	76	1652	761
v/s Ratio Prot	0.05	0.09		c0.08	0.10		c0.11	0.35		0.02	c0.32	
v/s Ratio Perm	0.06		0.24	c0.10					0.14			0.04
v/c Ratio	0.53	0.75	0.24	0.72	0.66		0.73	0.61	0.14	0.47	0.69	0.09
Uniform Delay, d1	56.4	70.6	0.0	52.6	66.7		66.9	22.5	0.0	77.2	34.1	24.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	7.4	0.4	8.5	3.0		5.0	1.4	0.2	4.6	2.3	0.2
Delay (s)	58.3	78.0	0.4	61.1	69.7		71.9	23.9	0.2	81.8	36.5	24.3
Level of Service	E	E	A	E	E		E	C	A	F	D	C
Approach Delay (s)		39.4			66.5			31.1			36.4	
Approach LOS		D			E			C			D	

Intersection Summary

HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	165.4	Sum of lost time (s)	23.4
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

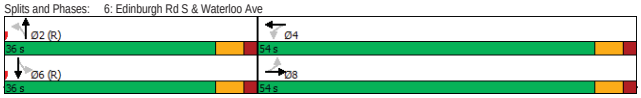
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	100	30	55	95	40	35	500	65	30	495	40
Future Volume (vph)	60	100	30	55	95	40	35	500	65	30	495	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	25.0		0.0	60.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.0			30.0			15.0			15.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.965			0.955			0.983			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1793	0	1805	1763	0	1805	1858	0	1805	1868	0
Flt Permitted	0.612			0.628			0.403			0.385		
Satd. Flow (perm)	1157	1793	0	1176	1763	0	764	1858	0	730	1868	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			36			8			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		908.3			272.5			227.6			400.0	
Travel Time (s)		65.4			19.6			16.4			28.8	
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Adj. Flow (vph)	66	110	33	60	104	44	38	549	71	33	544	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	143	0	60	148	0	38	620	0	33	588	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		36.0	36.0		36.0	36.0	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	48.0	48.0		48.0	48.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Min	Min		Min	Min		C-Min	C-Min		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		16.0	16.0		16.0	16.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	6	6		6	6		3	3		3	3	
Act Effct Green (s)	12.4	12.4		12.4	12.4		65.6	65.6		65.6	65.6	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
v/c Ratio	0.42	0.53		0.37	0.54		0.07	0.46		0.06	0.43	
Control Delay	41.4	35.3		39.7	33.2		5.1	12.4		5.2	6.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.4	35.3		39.7	33.2		5.1	12.4		5.2	6.8	
LOS	D	D		D	C		A	B		A	A	
Approach Delay		37.2			35.1			12.0			6.7	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 69 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 16.0 — Intersection LOS: B
Intersection Capacity Utilization 62.3% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Edinburgh Rd S & Waterloo Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	143	60	148	38	620	33	588
v/c Ratio	0.42	0.53	0.37	0.54	0.07	0.46	0.06	0.43
Control Delay	41.4	35.3	39.7	33.2	5.1	12.4	5.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	35.3	39.7	33.2	5.1	12.4	5.2	6.8
Queue Length 50th (m)	11.3	20.2	10.2	19.3	1.0	33.7	1.4	32.9
Queue Length 95th (m)	21.6	34.2	19.9	34.0	6.1	100.9	5.7	75.7
Internal Link Dist (m)		884.3		248.5		203.6		376.0
Turn Bay Length (m)	20.0		25.0		60.0		40.0	
Base Capacity (vph)	617	968	627	957	556	1355	531	1362
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	0.15	0.10	0.15	0.07	0.46	0.06	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	100	30	55	95	40	35	500	65	30	495	40
Future Volume (vph)	60	100	30	55	95	40	35	500	65	30	495	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		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)	1796	1793		1779	1764		1800	1857		1800	1868	
Flt Permitted	0.61	1.00		0.63	1.00		0.40	1.00		0.39	1.00	
Satd. Flow (perm)	1157	1793		1177	1764		764	1857		730	1868	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	66	110	33	60	104	44	38	549	71	33	544	44
RTOR Reduction (vph)	0	22	0	0	31	0	0	2	0	0	1	0
Lane Group Flow (vph)	66	121	0	60	117	0	38	618	0	33	587	0
Confl. Peds. (#/hr)	3		14	14		3	5		5	5		5
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	2%	0%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		65.6	65.6		65.6	65.6	
Effective Green, g (s)	12.4	12.4		12.4	12.4		65.6	65.6		65.6	65.6	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73		0.73	0.73	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	159	247		162	243		556	1353		532	1361	
v/s Ratio Prot		c0.07			0.07			c0.33			0.31	
v/s Ratio Perm	0.06			0.05			0.05			0.05		
v/c Ratio	0.42	0.49		0.37	0.48		0.07	0.46		0.06	0.43	
Uniform Delay, d1	35.5	35.9		35.3	35.8		3.5	5.0		3.5	4.8	
Progression Factor	1.00	1.00		1.00	1.00		0.99	1.90		1.00	1.00	
Incremental Delay, d2	1.8	1.5		1.4	1.5		0.2	1.1		0.2	1.0	
Delay (s)	37.2	37.4		36.7	37.3		3.7	10.5		3.7	5.8	
Level of Service	D	D		D	D		A	B		A	A	
Approach Delay (s)		37.3			37.1			10.1			5.7	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay: 15.2 — HCM 2000 Level of Service: B
HCM 2000 Volume to Capacity ratio: 0.46
Actuated Cycle Length (s): 90.0 — Sum of lost time (s): 12.0
Intersection Capacity Utilization: 62.3% — ICU Level of Service: B
Analysis Period (min): 15
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	35	65	175	35	60	165
Future Volume (vph)	35	65	175	35	60	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	100.0		0.0	60.0
Storage Lanes		1	1		1	1
Taper Length (m)			15.0		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1900	1615	1787	1900	1805	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1900	1615	1787	1900	1805	1599
Link Speed (k/h)	50			50	50	
Link Distance (m)	499.5			908.3	140.7	
Travel Time (s)	36.0			65.4	10.1	
Confl. Peds. (#/hr)		1	1			
Confl. Bikes (#/hr)		1				2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	38	71	190	38	65	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	71	190	38	65	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	35	65	175	35	60	165
Future Volume (Veh/h)	35	65	175	35	60	165
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	71	190	38	65	179
Pedestrians	1			1	1	
Lane Width (m)	3.6			3.6	3.6	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						8
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			110		458	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			110		458	40
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		87	83
cM capacity (veh/h)			1485		492	1032

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	38	71	190	38	244
Volume Left	0	0	190	0	65
Volume Right	0	71	0	0	179
cSH	1700	1700	1485	1700	1407
Volume to Capacity	0.02	0.04	0.13	0.02	0.17
Queue Length 95th (m)	0.0	0.0	3.5	0.0	5.0
Control Delay (s)	0.0	0.0	7.8	0.0	10.3
Lane LOS			A		B
Approach Delay (s)	0.0		6.5		10.3
Approach LOS					B

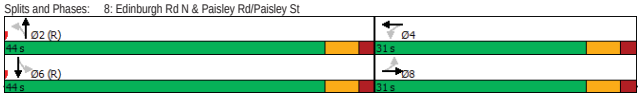
Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	45	240	60	105	440	35	55	415	65
Future Volume (vph)	80	265	90	45	240	60	105	440	35	55	415	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	100.0		0.0	65.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			30.0			20.0		
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
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		0.99	1.00	
Frt		0.962			0.970			0.989			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1800	0	1805	1813	0	1805	1875	0	1671	1857	0
Flt Permitted	0.453			0.375			0.363			0.367		
Satd. Flow (perm)	850	1800	0	709	1813	0	689	1875	0	642	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			18			8			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1083.9			189.3			400.2			263.0	
Travel Time (s)		78.0			13.6			28.8			18.9	
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Adj. Flow (vph)	86	285	97	48	258	65	113	473	38	59	446	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	382	0	48	323	0	113	511	0	59	516	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)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
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)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Detector Phase	8	8		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		31.0	31.0		34.0	34.0		34.0	34.0	
Total Split (s)	31.0	31.0		31.0	31.0		44.0	44.0		44.0	44.0	
Total Split (%)	41.3%	41.3%		41.3%	41.3%		58.7%	58.7%		58.7%	58.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	4.0	4.0		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		2.0	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		6.0	6.0	
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	Max	Max		Max	Max		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	9.0	9.0		9.0	9.0		13.0	13.0		13.0	13.0	
Flash Dont Walk (s)	16.0	16.0		16.0	16.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	7	7		7	7		3	3		3	3	
Act Effct Green (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.30	0.62		0.20	0.52		0.32	0.54		0.18	0.54	
Control Delay	22.6	23.8		20.7	22.7		14.2	14.9		11.9	14.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.6	23.8		20.7	22.7		14.2	14.9		11.9	14.9	
LOS	C	C		C	C		B	B		B	B	
Approach Delay		23.5			22.5			14.8			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 4 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 83.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Edinburgh Rd N & Paisley Rd/Paisley St



Queues
8: Edinburgh Rd N & Paisley Rd/Paisley St

n) Future Total (2031) SAT - Phase 1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	382	48	323	113	511	59	516
v/c Ratio	0.30	0.62	0.20	0.52	0.32	0.54	0.18	0.54
Control Delay	22.6	23.8	20.7	22.7	14.2	14.9	11.9	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	23.8	20.7	22.7	14.2	14.9	11.9	14.9
Queue Length 50th (m)	9.1	37.8	5.0	36.0	9.3	47.6	4.5	47.6
Queue Length 95th (m)	m20.5	62.1	13.3	60.2	21.0	74.5	11.5	75.2
Internal Link Dist (m)		1059.9		165.3		376.2		239.0
Turn Bay Length (m)	30.0		100.0		65.0		60.0	
Base Capacity (vph)	283	616	236	616	349	953	325	948
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	0.30	0.62	0.20	0.52	0.32	0.54	0.18	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
8: Edinburgh Rd N & Paisley Rd/Paisley St

n) Future Total (2031) SAT - Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	265	90	45	240	60	105	440	35	55	415	65
Future Volume (vph)	80	265	90	45	240	60	105	440	35	55	415	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	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		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.96		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)	1782	1800		1796	1813		1804	1874		1663	1856	
Flt Permitted	0.45	1.00		0.38	1.00		0.36	1.00		0.37	1.00	
Satd. Flow (perm)	850	1800		709	1813		689	1874		642	1856	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	285	97	48	258	65	113	473	38	59	446	70
RTOR Reduction (vph)	0	17	0	0	12	0	0	4	0	0	7	0
Lane Group Flow (vph)	86	365	0	48	311	0	113	507	0	59	509	0
Confl. Peds. (#/hr)	15		7	7		15	1		9	9		1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	283	600		236	604		349	949		325	940	
v/s Ratio Prot		c0.20			0.17			0.27			c0.27	
v/s Ratio Perm	0.10			0.07			0.16			0.09		
v/c Ratio	0.30	0.61		0.20	0.51		0.32	0.53		0.18	0.54	
Uniform Delay, d1	18.5	20.9		17.9	20.1		10.9	12.5		10.1	12.6	
Progression Factor	1.02	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	4.3		1.9	3.1		2.4	2.2		1.2	2.2	
Delay (s)	21.6	24.4		19.8	23.2		13.4	14.7		11.3	14.8	
Level of Service	C	C		B	C		B	B		B	B	
Approach Delay (s)		23.9			22.8			14.4			14.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	83.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

n) Future Total (2031) SAT - Phase 1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	330	5	0	325	150	2	2	0	190	5	215
Future Volume (vph)	225	330	5	0	325	150	2	2	0	190	5	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Ped Bike Factor		1.00						1.00			1.00	0.99
Frt		0.998			0.957							0.850
Flt Protected	0.950							0.976			0.953	
Satd. Flow (prot)	1805	1859	0	0	1801	0	0	1854	0	0	1811	1599
Flt Permitted	0.328							0.874			0.729	
Satd. Flow (perm)	623	1859	0	0	1801	0	0	1659	0	0	1383	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			35							224
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.0			1083.9			117.7			380.4	
Travel Time (s)		14.5			78.0			8.5			27.4	
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Adj. Flow (vph)	234	344	5	0	339	156	2	2	0	198	5	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	234	349	0	0	495	0	0	4	0	0	203	224
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)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	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
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	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
Detector 1 Queue (s)	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
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
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			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	

Lanes, Volumes, Timings
9: Silvercreek Pkwy N & Paisley Rd

n) Future Total (2031) SAT - Phase 1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	10.0	31.0		31.0	31.0		28.0	28.0		28.0	28.0	28.0
Total Split (s)	13.0	47.0		34.0	34.0		28.0	28.0		28.0	28.0	28.0
Total Split (%)	17.3%	62.7%		45.3%	45.3%		37.3%	37.3%		37.3%	37.3%	37.3%
Maximum Green (s)	10.0	41.0		28.0	28.0		22.0	22.0		22.0	22.0	22.0
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	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)	3.0	6.0			6.0			6.0			6.0	6.0
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	3.0
Recall Mode	None	C-Min		C-Min	C-Min		Min	Min		Min	Min	Min
Walk Time (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Flash Dont Walk (s)		14.0		14.0	14.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		1		1	1		1	1		1	1	1
Act Effct Green (s)	50.0	47.0			35.0			16.0			16.0	16.0
Actuated g/C Ratio	0.67	0.63			0.47			0.21			0.21	0.21
v/c Ratio	0.42	0.30			0.58			0.01			0.69	0.44
Control Delay	8.1	8.2			24.7			20.0			38.8	6.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	8.1	8.2			24.7			20.0			38.8	6.2
LOS	A	A			C			B			D	A
Approach Delay		8.2			24.7			20.0			21.7	
Approach LOS		A			C			B			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 22 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Silvercreek Pkwy N & Paisley Rd

Queues n) Future Total (2031) SAT - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	234	349	495	4	203	224
v/c Ratio	0.42	0.30	0.58	0.01	0.69	0.44
Control Delay	8.1	8.2	24.7	20.0	38.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.2	24.7	20.0	38.8	6.2
Queue Length 50th (m)	11.5	21.0	64.3	0.5	27.9	0.0
Queue Length 95th (m)	25.7	43.1	106.0	2.6	45.2	15.1
Internal Link Dist (m)		177.0	1059.9	93.7	356.4	
Turn Bay Length (m)						
Base Capacity (vph)	575	1165	859	486	405	620
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	0.41	0.30	0.58	0.01	0.50	0.36

Intersection Summary

HCM Signalized Intersection Capacity Analysis n) Future Total (2031) SAT - Phase 1
9: Silvercreek Pkwy N & Paisley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	330	5	0	325	150	2	2	0	190	5	215
Future Volume (vph)	225	330	5	0	325	150	2	2	0	190	5	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	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
Frpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	1.00
Frt	1.00	1.00			0.96			1.00			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)	1805	1859			1802			1852			1809	1577
Flt Permitted	0.33	1.00			1.00			0.87			0.73	1.00
Satd. Flow (perm)	623	1859			1802			1659			1383	1577
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	234	344	5	0	339	156	2	2	0	198	5	224
RTOR Reduction (vph)	0	1	0	0	19	0	0	0	0	0	0	176
Lane Group Flow (vph)	234	348	0	0	476	0	0	4	0	0	203	48
Confl. Peds. (#/hr)			2	2			2		1	1		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	47.0	47.0			35.0			16.0			16.0	16.0
Effective Green, g (s)	47.0	47.0			35.0			16.0			16.0	16.0
Actuated g/C Ratio	0.63	0.63			0.47			0.21			0.21	0.21
Clearance Time (s)	3.0	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)	532	1164			840			353			295	336
v/s Ratio Prot	c0.05	0.19			c0.26							
v/s Ratio Perm	0.22							0.00			c0.15	0.03
v/c Ratio	0.44	0.30			0.57			0.01			0.69	0.14
Uniform Delay, d1	7.3	6.4			14.5			23.3			27.2	23.9
Progression Factor	1.00	1.00			1.41			1.00			1.00	1.00
Incremental Delay, d2	0.6	0.7			2.6			0.0			6.5	0.2
Delay (s)	7.9	7.1			22.9			23.3			33.7	24.1
Level of Service	A	A			C			C			C	C
Approach Delay (s)		7.4			22.9			23.3			28.7	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	79.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lanes, Volumes, Timings n) Future Total (2031) SAT - Phase 1
11: Silvercreek Pkwy S & Street D

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	0	40	40	0	40
Future Volume (vph)	40	0	40	40	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				45.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.932			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1736	0	1863	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1736	0	1863	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	95.3		499.5			106.5
Travel Time (s)	6.9		36.0			7.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	0	43	43	0	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	86	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	14.6%	ICU Level of Service A		
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis n) Future Total (2031) SAT - Phase 1
11: Silvercreek Pkwy S & Street D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	40	0	40	40	0	40
Future Volume (Veh/h)	40	0	40	40	0	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	0	43	43	0	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	108	64			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	64			86	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	890	1000			1510	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	43	86	0	43
Volume Left	43	0	0	0
Volume Right	0	43	0	0
cSH	890	1700	1700	1700
Volume to Capacity	0.05	0.05	0.00	0.03
Queue Length 95th (m)	1.2	0.0	0.0	0.0
Control Delay (s)	9.3	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.3	0.0	0.0	
Approach LOS	A			

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	14.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	655	75	0	990	185	0	0	0	0	0	0
Future Volume (vph)	0	655	75	0	990	185	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	0.0		30.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850						
Flt Protected												
Satd. Flow (prot)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	5085	1583	0	5085	1583	0	0	0	0	0	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		346.7			105.1			193.3			265.8	
Travel Time (s)		25.0			7.6			13.9			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	712	82	0	1076	201	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	712	82	0	1076	201	0	0	0	0	0	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)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	655	75	0	990	185	0	0	0	0	0	0
Future Volume (Veh/h)	0	655	75	0	990	185	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	712	82	0	1076	201	0	0	0	0	0	0
Pedestrians		1			1			1			1	
Lane Width (m)		3.6			3.6			0.0			0.0	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		347			105							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	1077			713			1073	1790	239	1315	1790	361
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	846			713			842	1607	239	1101	1607	82
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	749			896			244	99	767	158	99	906

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4
Volume Total	237	237	237	82	359	359	359	201
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	82	0	0	0	201
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.14	0.14	0.14	0.05	0.21	0.21	0.21	0.12
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								
Approach Delay (s)	0.0				0.0			
Approach LOS								

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	22.5%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX D:
Signal Warrants

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MOVEMENT
IN URBAN
ENVIRONMENTS BAGRO

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision | GO TO Justification:

What are the intersecting roadways? Silvercreek Parkway at Street A / Street C

What is the direction of the Main Road street? North-South

When was the data collected? 2031 Total Traffic

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

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	35	180	5	55	0	40	10	150	45	20	0	20	0
8:00	33	97	11	39	0	33	11	102	52	6	0	8	0
9:00	37	107	12	43	0	37	12	114	58	6	0	9	0
12:30	41	120	14	48	0	41	14	127	65	7	0	10	0
13:30	44	127	15	51	0	44	15	134	69	7	0	11	0
16:00	52	152	17	61	0	52	17	161	83	9	0	13	0
17:00	58	171	19	68	0	58	19	180	93	10	0	15	0
18:00	60	175	20	70	0	60	20	185	95	10	0	15	0
Total	**360**	**1,129**	**113**	**435**	**0**	**365**	**118**	**1,153**	**560**	**75**	**0**	**101**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	0	0	0	0	0	0	0	0	
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street A / Street C Count Date: 2031 Total Traffic

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
1A	480	720	600	900	560	392	435	487	517	617	691	710		
	COMPLIANCE %				78	54	60	68	72	86	96	99	612	77
1B	120	170	120	170	135	86	95	106	113	135	151	155		
	COMPLIANCE %				79	51	56	62	66	79	89	91	574	72
Restricted Flow Signal Justification 1:					Both 1A and 1B 100% Fullfilled each of 8 hours					Yes ☐		No ☑		
					Lesser of 1A or 1B at least 80% fulfilled each of 8 hours					Yes ☐		No ☑		

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
2A	480	720	600	900	425	306	340	381	404	482	540	555		
	COMPLIANCE %				59	43	47	53	56	67	75	77	477	60
2B	50	75	50	75	75	45	49	55	58	70	78	80		
	COMPLIANCE %				100	60	65	73	77	93	100	100	669	84
Restricted Flow Signal Justification 2:					Both 2A and 2B 100% Fullfilled each of 8 hours					Yes ☐		No ☑		
					Lesser of 2A or 2B at least 80% fulfilled each of 8 hours					Yes ☐		No ☑		

Justification 3: Combination

Combination Justification 1 and 2

	Justification Satisfied 80% or More			Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	7:00	425	95	296	32 %	45 %
	16:00	482	113	270	42 %	
	17:00	540	126	245	51 %	
	18:00	555	130	239	55 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street A / Street C

Count Date: 2031 Total Traffic

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600	Not Justified				
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street A / Street C Count Date: 2031 Total Traffic

Summary Results

Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	77	%	☐	☑
	B	Crossing Volume	72	%		
2. Delay to Cross Traffic	A	Main Road	60	%	☐	☑
	B	Crossing Road	84	%		
3. Combination	A	Justificaton 1	72	%	☐	☑
	B	Justification 2	60	%		
4. 4-Hr Volume			45	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
$C_{i,y}$	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648	☐	☑
	Total Collisions will ***Increase*** after this intersection is signalized			

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision | GO TO Justification:

What are the intersecting roadways? Silvercreek Parkway at Street D / Street E

What is the direction of the Main Road street? North-South

When was the data collected? 2031 Total Traffic

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban **Population >= 10,000 AND Speed < 70 km/hr**

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

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	35	140	5	55	0	45	10	160	40	20	0	25	0
8:00	47	94	11	39	0	39	11	91	39	6	0	8	0
9:00	52	104	12	43	0	43	12	101	43	6	0	9	0
12:30	58	117	14	48	0	48	14	113	48	7	0	10	0
13:30	62	123	15	51	0	51	15	120	51	7	0	11	0
16:00	74	148	17	61	0	61	17	143	61	9	0	13	0
17:00	83	166	19	68	0	68	19	161	68	10	0	15	0
18:00	85	170	20	70	0	70	20	165	70	10	0	15	0
Total	**496**	**1,062**	**113**	**435**	**0**	**425**	**118**	**1,054**	**420**	**75**	**0**	**106**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	0	0	0	0	0	0	0	0	
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street D / Street E

Count Date: 2031 Total Traffic

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
1A	480	720	600	900	535	385	425	477	506	604	677	695		
	COMPLIANCE %				74	53	59	66	70	84	94	97	598	75
1B	120	170	120	170	145	92	101	113	120	144	161	165		
	COMPLIANCE %				85	54	59	66	71	85	95	97	612	77
Restricted Flow Signal Justification 1:					Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
2A	480	720	600	900	390	293	324	364	386	460	516	530		
	COMPLIANCE %				54	41	45	51	54	64	72	74	453	57
2B	50	75	50	75	75	45	49	55	58	70	78	80		
	COMPLIANCE %				100	60	65	73	77	93	100	100	669	84
Restricted Flow Signal Justification 2:					Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑									
					Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑									

Justification 3: Combination

Combination Justification 1 and 2

	Justification Satisfied 80% or More			Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	390	100	313	32 %	46 %
	16:00	460	122	280	44 %	
	17:00	516	136	255	53 %	
	18:00	530	140	249	56 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street D / Street E

Count Date: 2031 Total Traffic

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600	Not Justified				
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway at Street D / Street E Count Date: 2031 Total Traffic

Summary Results

Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	75	%	☐	☑
	B	Crossing Volume	77	%		
2. Delay to Cross Traffic	A	Main Road	57	%	☐	☑
	B	Crossing Road	84	%		
3. Combination	A	Justificaton 1	75	%	☐	☑
	B	Justification 2	57	%		
4. 4-Hr Volume			46	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
$C_{i,y}$	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648	☐	☑
	Total Collisions will ***Increase*** after this intersection is signalized			

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision | GO TO Justification:

What are the intersecting roadways? Silvercreek Parkway / Waterloo Avenue

What is the direction of the Main Road street? East-West

When was the data collected? 2031 Total Traffic

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban **Population >= 10,000 AND Speed < 70 km/hr**

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	0	40	205	170	0	260	250	20	0	0	0	0	0
8:00	0	26	136	113	0	172	165	13	0	0	0	0	0
9:00	0	22	112	93	0	142	137	11	0	0	0	0	0
12:30	0	21	108	90	0	137	132	11	0	0	0	0	0
13:30	0	20	104	86	0	132	127	10	0	0	0	0	0
16:00	0	25	130	108	0	165	159	13	0	0	0	0	0
17:00	0	40	225	255	0	265	265	50	0	0	0	0	0
18:00	0	9	53	60	0	62	62	12	0	0	0	0	0
Total	**0**	**203**	**1,073**	**975**	**0**	**1,335**	**1,297**	**140**	**0**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue Count Date: 2031 Total Traffic

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
1A	480	720	600	900	945	625	517	499	479	600	1,100	258		
	COMPLIANCE %				100	87	72	69	67	83	100	36	614	77
1B	180	255	180	255	430	285	235	227	218	273	520	122		
	COMPLIANCE %				100	100	92	89	85	100	100	48	715	89

Restricted Flow Signal Justification 1:

Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑

Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
2A	480	720	600	900	515	340	282	272	261	327	580	136		
	COMPLIANCE %				72	47	39	38	36	45	81	19	377	47
2B	50	75	50	75	170	113	93	90	86	108	255	60		
	COMPLIANCE %				100	100	100	100	100	100	100	80	780	98

Restricted Flow Signal Justification 2:

Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑

Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	7:00	515	430	255	100 %	91 %
	8:00	340	285	339	84 %	
	16:00	327	273	345	79 %	
	17:00	580	520	228	100 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue

Count Date: 2031 Total Traffic

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440	Not Justified				
	1440 - 2600					
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue Count Date: 2031 Total Traffic

Summary Results

Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	77	%	☐	☑
	B	Crossing Volume	89	%		
2. Delay to Cross Traffic	A	Main Road	47	%	☐	☑
	B	Crossing Road	98	%		
3. Combination	A	Justificaton 1	77	%	☐	☑
	B	Justification 2	47	%		
4. 4-Hr Volume			91	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
$C_{i,y}$	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648	☐	☑
	Total Collisions will ***Increase*** after this intersection is signalized			

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision | GO TO Justification:

What are the intersecting roadways? Silvercreek Parkway / Waterloo Avenue

What is the direction of the Main Road street? East-West

When was the data collected? 2031 Total Traffic - Phase 1

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 1

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 3

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	0	40	65	20	0	260	250	15	0	0	0	0	0
8:00	0	26	43	13	0	172	165	10	0	0	0	0	0
9:00	0	22	36	11	0	142	137	8	0	0	0	0	0
12:30	0	21	34	11	0	137	132	8	0	0	0	0	0
13:30	0	15	23	38	0	137	137	20	0	0	0	0	0
16:00	0	19	29	48	0	172	172	25	0	0	0	0	0
17:00	0	30	45	75	0	270	270	40	0	0	0	0	0
18:00	0	7	11	18	0	63	63	9	0	0	0	0	0
Total	**0**	**180**	**286**	**234**	**0**	**1,353**	**1,326**	**135**	**0**	**0**	**0**	**0**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue

Count Date: 2031 Total Traffic - Phase 1

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
1A	480	720	600	900	650	429	356	343	370	465	730	171		
	COMPLIANCE %				90	60	49	48	51	65	100	24	487	61
1B	180	255	180	255	280	185	153	148	175	220	345	81		
	COMPLIANCE %				100	73	60	58	69	86	100	32	577	72

Restricted Flow Signal Justification 1:

Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑

Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☑	FREE FLOW ☐	RESTR. FLOW ☐	7:00	8:00	9:00	12:30	13:30	16:00	17:00	18:00		
2A	480	720	600	900	370	244	203	195	195	245	385	90		
	COMPLIANCE %				51	34	28	27	27	34	53	13	268	33
2B	50	75	50	75	20	13	11	11	38	48	75	18		
	COMPLIANCE %				27	17	15	15	51	64	100	24	312	39

Restricted Flow Signal Justification 2:

Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑

Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	7:00	370	280	323	87 %	73 %
	8:00	244	185	390	47 %	
	16:00	245	220	390	56 %	
	17:00	385	345	316	100 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue

Count Date: 2031 Total Traffic - Phase 1

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440	Not Justified				
	1440 - 2600					
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Silvercreek Parkway / Waterloo Avenue Count Date: 2031 Total Traffic - Phase 1

Summary Results

Justification			Compliance		Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	61	%	☐	☑
	B	Crossing Volume	72	%		
2. Delay to Cross Traffic	A	Main Road	33	%	☐	☑
	B	Crossing Road	39	%		
3. Combination	A	Justificaton 1	61	%	☐	☑
	B	Justification 2	33	%		
4. 4-Hr Volume			73	%	☐	☑
5. Collision Experience			0	%	☐	☑
6. Pedestrians	A	Volume	Justification not met		☐	☑
	B	Delay	Justification not met			

Proposed Collision Justification (Justification 5A)

Return to Justifications 1- 6

INPUT

a.- Intersection type (no input required): 3

b.- What year is the intersection being considered for traffic signals? 2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach-ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

ANALYSIS

Reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10		---
Parameter k	0.81	0.81	0.81	0.81	0.81		0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15		2.15
$C_{i,y}$	0.680	0.696	0.712	0.741	1.000		1.000
Comp. Ratio for Period	3.829						1.000

Non-reducible Collisions

	2000	2001	2002	2003	2004		2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4		---
Parameter k	1.47	1.47	1.47	1.47	1.47		1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38		1.38
$C_{i,y}$	0.849	0.860	0.870	0.890	1.000		1.000
Comp. Ratio for Period	4.469						1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

RESULTS

Justification	Compliance		Signal Justified? YES	Signal Justified? NO
5. Collision Experience	Net Safety Change	2.648	☐	☑
	Total Collisions will ***Increase*** after this intersection is signalized			

APPENDIX E:
Grade Separation Assessment Guidelines

BA Consulting Group Ltd.
300 – 45 St. Clair Ave. W
Toronto ON M4V 1K9
TEL 416 961 7110
EMAIL bagroup@bagroup.com

MOVEMENT
IN URBAN
ENVIRONMENTS BAGRO

GRADE SEPARATION ASSESSMENT GUIDELINES

These guidelines help railway companies and road authorities assess when to consider grade crossings for grade separation, or otherwise eliminate them, thereby removing a road/rail conflict zone.

About these guidelines

These guidelines respond to the 2015 Transportation Safety Board (TSB) Recommendation R15-04, made after the fatal collision between an OC Transpo bus and a VIA Rail passenger train at an at-grade railway crossing in Ottawa, Ontario, on September 18, 2013. This recommendation specifies that "The Department of Transport provide specific guidance as to when grade separation should be considered."

In February 2018, Transport Canada funded a literature review on grade separation approaches, done at the University of Manitoba. To obtain a copy of the final report of this study, "Review of Research and Practice on the Implementation of Grade Separation," please contact the Rail Safety Directorate at railsafety@tc.gc.ca

What to consider in assessing grade crossings for grade separation

Where possible, you should not assess a crossing in isolation. Rather, consider it in the context of the rail corridor in which it and adjacent crossings are located.

As well, these guidelines do not preclude further evaluation of a location. A site-specific study and feasibility analysis are essential to establish whether or not a grade separation is possible.

The table below lists:

- criteria with thresholds
- additional criteria with no established thresholds, which you may consider as part of a more detailed analysis
    - These criteria do not have thresholds because the range, or manner in which they are treated or quantified, may vary significantly from one location to another

Table 1.0: Criteria to consider in assessing grade crossings for grade separation

Criteria		***Value or threshold for grade separation candidates***
Criteria (with threshold)	***Traffic and Safety-related criteria***	
	Traffic volume	AADT* exceeds 100,000
	Train volume	Average of 150 or more trains per day*

	Vehicle speed	Posted/Unposted highway speed equals or exceeds 90 km/h.
	Cross product	Cross product exceeds 1 million*
	Queuing	Existing crossings where there are known queuing issues and an entranceway or intersection is within 30m of the nearest rail of the crossing. **Note**: New grade crossings are not permitted where the train speed is more than 25km/h, and there is an entranceway or intersection within 30m of the nearest rail of the proposed crossing.
	Maximum train speed	Train speed exceeds 177 km/h (110 mph).
	Vehicle delay	Exceeds 40 vehicle hours per day.
	Level of service	If the highway/roadway facility is performing at a level of service below its intended minimum design level 10 percent or more of the time.
Other criteria for consideration in identifying locations for further assessment		
Criteria (without threshold)	• **Collision history or predicted collisions** • **Blocked crossing issues** • **Number of highway/roadway lanes** • **Number of railway tracks** • **Type of railway traffic (i.e. passenger, dangerous goods)** • **Highway functional classification** • **Road surface type** • **Environmental impacts** • **Air quality / emissions** • **Noise disruptions in community**	• **Type of roadway traffic (pedestrians and cyclists, vulnerable road users, emergency services, school buses, dangerous goods)** • **Various adaptations of 'cross product' (i.e. consideration of the number of occupants such as passenger rail, bus or transit)** • **Development, community and social impacts (quality of life, community cohesion, aesthetics, business disruption)** • **Feasibility and constructability** • **Other (secondary) network impacts** • **General physical conditions** • **Land use**

**For further information on measuring these values, please consult the Institute of Transportation Engineers (ITE), Transportation Association of Canada (TAC) and other relevant manuals or guidance material relevant within your jurisdiction.*

Note: It may be appropriate to consider a combination of criteria when assessing a crossing for grade separation.

Terms to know

Annual average daily traffic (AADT): The average daily vehicular traffic volume for a given year at a site.

Cross product: A product of the average number of trains per day multiplied by the AADT at a grade crossing.

Highway functional classification: The category of highway that defines the role it plays in serving traffic flow through a road network.

Level of service (LOS): A qualitative measure used to relate the quality of vehicular traffic service. Used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measures like vehicle speed, density and congestion. Defined in terms of volume-capacity (V/C) to quantify the average operational condition of the grade crossing during the peak hour.

Queuing: The study of traffic behavior in a segment of a roadway, where demand exceeds available capacity. In the context of grade crossings, where nearby entrances or intersections are close to the crossing, vehicular traffic on the road approach may extend across a railway crossing or into the track area.

Vehicle delay: The time lost by a vehicle due to traffic-related causes beyond the control of the driver.

Vulnerable road users: According to the *Ontario Highway Traffic Act*, vulnerable road users include:

- pedestrians
- people on a bicycle or a motor-assisted bicycle
- people in a wheelchair or other mobility device
- roadway workers
- emergency responders outside their motor vehicle

They are vulnerable due to lack of protection they have from traffic.

APPENDIX F:
Existing Train Data

BA Consulting Group Ltd.
300 – 45 St. Clair Ave. W
Toronto ON M4V 1K9
TEL 416 961 7110
EMAIL bagroup@bagroup.com

Study ID: BAC21K2H

Location: Rail Crossings Location 1 SILVERCREEK PARKWAY N & RAIL LINE SOUTH OF PAISLEY ST (Camera ID: SCU621)

Schedules: Saturday, Feb 27, 2021 @ 12:00 AM to Saturday, Mar 6, 2021 @ 12:00 AM

Type of Train	Direction	Train Arrival Time at the enty point / platform	Train Leaving Time at the exit point / Platform	Duration of train crossing (mm:ss)	Duration of train crossing (seconds)	No of train Cars	Estimated Train Speed (m/sec)
Cargo	EB	2-27-2021 2:47:48 AM	2-27-2021 2:54:05 AM	6m 17s	377.00000012	114	8.20
Passenger	EB	2-27-2021 9:51:31 AM	2-27-2021 9:51:39 AM	0m 8s	7.99999998	6	20.34
Passenger	WB	2-27-2021 6:57:15 PM	2-27-2021 6:57:22 PM	0m 7s	6.99999975	6	23.25
Cargo	WB	2-27-2021 11:20:05 PM	2-27-2021 11:20:58 PM	0m 53s	52.99999982	46	23.54
Cargo	EB	2-28-2021 12:54:00 AM	2-28-2021 12:54:42 AM	0m 42s	42.00000039	30	19.37
Passenger	EB	2-28-2021 9:58:32 AM	2-28-2021 9:58:40 AM	0m 8s	7.99999998	6	20.34
Cargo	WB	2-28-2021 10:40:09 AM	2-28-2021 10:40:16 AM	0m 7s	6.99999975	2	7.75
Cargo	EB	2-28-2021 4:12:33 PM	2-28-2021 4:14:08 PM	1m 35s	95.00000020	16	4.57
Passenger	WB	2-28-2021 7:02:05 PM	2-28-2021 7:02:12 PM	0m 7s	6.99999975	6	23.25
Cargo	WB	3-1-2021 1:13:27 AM	3-1-2021 1:14:35 AM	1m 8s	68.00000018	49	19.54
Cargo	EB	3-1-2021 3:36:54 AM	3-1-2021 3:39:37 AM	2m 43s	162.99999976	43	7.15
Passenger	EB	3-1-2021 5:51:56 AM	3-1-2021 5:52:06 AM	0m 10s	9.99999982	6	16.27
Passenger	EB	3-1-2021 6:52:08 AM	3-1-2021 6:52:21 AM	0m 13s	12.99999990	7	14.60
Passenger	EB	3-1-2021 7:52:26 AM	3-1-2021 7:52:36 AM	0m 10s	10.00000045	7	18.98
Passenger	EB	3-1-2021 10:07:26 AM	3-1-2021 10:07:40 AM	0m 14s	14.00000013	6	11.62
Cargo	EB	3-1-2021 3:05:52 PM	3-1-2021 3:12:52 PM	7m 0s	420.00000011	24	1.55
Passenger	WB	3-1-2021 5:13:32 PM	3-1-2021 5:13:40 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-1-2021 6:12:54 PM	3-1-2021 6:13:02 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-1-2021 6:58:13 PM	3-1-2021 6:58:20 PM	0m 7s	7.00000038	6	23.25
Passenger	WB	3-1-2021 7:13:37 PM	3-1-2021 7:13:46 PM	0m 9s	8.99999959	7	21.09
Passenger	EB	3-2-2021 5:52:56 AM	3-2-2021 5:53:14 AM	0m 18s	17.99999981	7	10.55
Passenger	EB	3-2-2021 6:52:17 AM	3-2-2021 6:52:30 AM	0m 13s	12.99999990	7	14.60
Passenger	EB	3-2-2021 7:52:27 AM	3-2-2021 7:52:37 AM	0m 10s	9.99999982	7	18.98
Cargo	EB	3-2-2021 9:27:59 AM	3-2-2021 9:28:23 AM	0m 24s	23.99999995	9	10.17
Passenger	EB	3-2-2021 9:52:11 AM	3-2-2021 9:52:22 AM	0m 11s	11.00000006	6	14.79
Cargo	WB	3-2-2021 11:25:32 AM	3-2-2021 11:25:55 AM	0m 23s	22.99999972	8	9.43
Passenger	WB	3-2-2021 5:12:54 PM	3-2-2021 5:13:02 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-2-2021 6:13:42 PM	3-2-2021 6:13:52 PM	0m 10s	10.00000045	7	18.98
Passenger	WB	3-2-2021 6:57:07 PM	3-2-2021 6:57:17 PM	0m 10s	9.99999982	6	16.27
Passenger	WB	3-2-2021 7:13:05 PM	3-2-2021 7:13:13 PM	0m 8s	7.99999998	7	23.73
Cargo	WB	3-3-2021 12:10:13 AM	3-3-2021 12:12:30 AM	2m 17s	136.99999996	70	13.86
Cargo	EB	3-3-2021 3:29:47 AM	3-3-2021 3:35:23 AM	5m 36s	335.99999996	84	6.78
Passenger	EB	3-3-2021 5:52:43 AM	3-3-2021 5:53:00 AM	0m 17s	17.00000020	7	11.17
Passenger	EB	3-3-2021 6:52:05 AM	3-3-2021 6:52:18 AM	0m 13s	12.99999990	7	14.60
Passenger	EB	3-3-2021 7:52:38 AM	3-3-2021 7:52:48 AM	0m 10s	9.99999982	7	18.98
Passenger	EB	3-3-2021 9:45:13 AM	3-3-2021 9:45:21 AM	0m 8s	7.99999998	6	20.34
Cargo	WB	3-3-2021 9:53:24 AM	3-3-2021 9:58:07 AM	4m 43s	282.99999952	12	1.15
Cargo	EB	3-3-2021 11:39:12 AM	3-3-2021 11:40:24 AM	1m 12s	71.99999986	24	9.04
Passenger	WB	3-3-2021 5:12:17 PM	3-3-2021 5:12:25 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-3-2021 6:13:40 PM	3-3-2021 6:13:50 PM	0m 10s	9.99999982	7	18.98
Passenger	WB	3-3-2021 6:54:52 PM	3-3-2021 6:54:58 PM	0m 6s	6.00000015	6	27.12
Passenger	WB	3-3-2021 7:13:34 PM	3-3-2021 7:13:43 PM	0m 9s	8.99999959	7	21.09
Cargo	WB	3-3-2021 11:04:31 PM	3-3-2021 11:04:56 PM	0m 25s	25.00000019	18	19.53
Cargo	EB	3-4-2021 1:39:51 AM	3-4-2021 1:41:51 AM	2m 0s	120.00000039	34	7.68
Passenger	EB	3-4-2021 5:53:10 AM	3-4-2021 5:53:25 AM	0m 15s	15.00000036	7	12.66
Passenger	EB	3-4-2021 6:51:44 AM	3-4-2021 6:51:58 AM	0m 14s	14.00000013	7	13.56
Passenger	EB	3-4-2021 7:52:12 AM	3-4-2021 7:52:21 AM	0m 9s	8.99999959	7	21.09
Cargo	EB	3-4-2021 8:45:34 AM	3-4-2021 8:45:59 AM	0m 25s	25.00000019	17	18.44

Passenger	EB	3-4-2021 9:45:51 AM	3-4-2021 9:46:00 AM	0m 9s	9.00000022	6	18.08
Cargo	WB	3-4-2021 10:58:56 AM	3-4-2021 10:59:21 AM	0m 25s	25.00000019	9	9.76
Passenger	WB	3-4-2021 5:12:41 PM	3-4-2021 5:12:49 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-4-2021 6:13:42 PM	3-4-2021 6:13:50 PM	0m 8s	7.99999998	7	23.73
Cargo	WB	3-4-2021 6:57:53 PM	3-4-2021 6:58:00 PM	0m 7s	6.99999975	6	23.25
Passenger	WB	3-4-2021 7:15:35 PM	3-4-2021 7:15:43 PM	0m 8s	7.99999998	7	23.73
Cargo	WB	3-5-2021 12:26:07 AM	3-5-2021 12:28:26 AM	2m 19s	139.00000043	70	13.66
Cargo	EB	3-5-2021 4:07:39 AM	3-5-2021 4:47:53 AM	40m 14s	2413.99999978	103	1.16
Passenger	EB	3-5-2021 5:52:36 AM	3-5-2021 5:52:50 AM	0m 14s	14.00000013	7	13.56
Passenger	EB	3-5-2021 6:51:35 AM	3-5-2021 6:51:43 AM	0m 8s	7.99999998	7	23.73
Passenger	EB	3-5-2021 7:52:03 AM	3-5-2021 7:52:12 AM	0m 9s	9.00000022	7	21.09
Passenger	EB	3-5-2021 10:41:56 AM	3-5-2021 10:42:05 AM	0m 9s	8.99999959	6	18.08
Cargo	EB	3-5-2021 2:19:04 PM	3-5-2021 2:20:39 PM	1m 35s	95.00000020	2	0.57
Cargo	WB	3-5-2021 2:46:55 PM	3-5-2021 2:58:33 PM	11m 38s	697.99999972	28	1.09
Passenger	WB	3-5-2021 5:11:44 PM	3-5-2021 5:11:52 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-5-2021 6:12:34 PM	3-5-2021 6:12:42 PM	0m 8s	7.99999998	7	23.73
Passenger	WB	3-5-2021 6:57:47 PM	3-5-2021 6:57:54 PM	0m 7s	6.99999975	6	23.25
Passenger	WB	3-5-2021 7:14:38 PM	3-5-2021 7:14:47 PM	0m 9s	9.00000022	7	21.09
Passenger	WB	3-5-2021 10:27:21 PM	3-5-2021 10:28:03 PM	0m 42s	42.00000039	38	24.54
**Estimated Train Speed is calculated on the basis of assumption that the length of each train car is 89 feet.							

Notes:

Row 21, Cargo, EB, 2021 03 01:
Weather is clear, snow on ground but tracks are clear. Enters at 15:05:52, very slowly. Comes to a stops at 15:06:55. Resumes at 15:09:50, exits at 15:12:18.

Row 42, Cargo, WB, 20201 03 03:
Weather is clear, snow on ground but tracks are clear. Enters at 9:53:24. Train Stops at 9:54:34, man in high-vis vest seen walking along the train. Train resumes at 9:57:56, exits at 9:58:07.

Row 61, Cargo, EB, 2021 03 05:
Clear Night, snow on ground but tracks are clear. Enters at 4:07:39 moving very slowly, stopping at 4:08:30. Restarts at 4:09:20. Moving at very slow speed, stops again at 4:10:20.
Resumes at 4:42:30 at a decent speed. Exits at 4:47:54.

Row 66, Cargo, EB, 2021 03 05:
Weather is clear, snow on ground but tracks are clear. Enters at 14:19:04. Stops at 14:19:18, waits, resumes at 14:20:30, Exits at 14:20:39.

Row 67, Cargo, WB, 2021 03 05
Weather is clear, snow on ground but tracks are clear. Enters at 14:46:55, slowing to a stop at 14:47:25. Waits. Resumes at 14:48:30. Stops at 2:51:15, reverses at 2:53:45.
Stops at 2:55:58, Hi-Vis guy is seen at train. Resumes in original direction at 2:56:15. Exits 2:58:34.

Study ID: BAC21K2H
Location: Rail Crossings Location 2 SILVERCREEK PARKWAY S & RAIL LINE NORTH OF WATERLOO AVE (Camera ID: SCU3KE)
Schedules: Saturday, Feb 27, 2021 @ 12:00 AM to Saturday, Mar 6, 2021 @ 12:00 AM

Type of Train	Direction	Train Arrival Time at the enty point / platform	Train Leaving Time at the exit point / Platform	Duration of train crossing (mm:ss)	Duration of train crossing (seconds)	No of train Cars	Estimated Train Speed (m/sec)
Cargo	Eastbound	February 28, 2021 9:40:46 AM	February 28, 2021 9:41:03 AM	17s	17.00000020	3	4.79
Cargo	Westbound	February 28, 2021 4:36:30 PM	February 28, 2021 4:36:42 PM	12s	12.00000029	2	4.52
Cargo	Eastbound	March 1, 2021 8:59:56 AM	March 1, 2021 9:00:17 AM	21s	21.00000051	3	3.87
Cargo	Westbound	March 1, 2021 12:40:07 PM	March 1, 2021 12:40:31 PM	24s	23.99999995	5	5.65
Cargo	Eastbound	March 2, 2021 9:00:48 AM	March 2, 2021 9:01:08 AM	20s	20.00000027	5	6.78
Cargo	Westbound	March 2, 2021 1:44:20 PM	March 2, 2021 1:44:40 PM	20s	20.00000027	4	5.42
Cargo	Eastbound	March 3, 2021 8:40:46 AM	March 3, 2021 8:40:59 AM	13s	12.99999990	2	4.17
Cargo	Westbound	March 3, 2021 12:27:48 PM	March 3, 2021 12:28:15 PM	27s	27.00000003	5	5.02
Cargo	Eastbound	March 4, 2021 9:03:53 AM	March 4, 2021 9:04:17 AM	24s	23.99999995	5	5.65
Cargo	Westbound	March 4, 2021 1:21:50 PM	March 4, 2021 1:22:11 PM	21s	20.99999988	4	5.17

**Estimated Train Speed is calculated on the basis of assumption that the length of each train car is 89 feet.

APPENDIX G:
Metrolinx Correspondence

BA Consulting Group Ltd.
300 – 45 St. Clair Ave. W
Toronto ON M4V 1K9
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EMAIL bagroup@bagroup.com

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From: Rail Data Requests
To: Yvonne Lo
Cc: Tony To; Steven X. Kwan; Astrid Clos
Subject: RE: Rail Traffic Data Request - Hwy 6/Paisley, Guelph
Date: January 21, 2021 5:29:00 PM
Attachments: image001.png

Hi Yvonne:

Sorry for the delay. Further to your request dated August 19, 2020, the subject lands (Hwy 6/Paisley Road) are located adjacent to the Metrolinx Guelph Subdivision which carries Kitchener GO rail services.

It's anticipated that GO rail service on this Subdivision will be comprised of diesel trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 45 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive	2 Diesel Locomotives		1 Diesel Locomotive	2 Diesel Locomotives
Day (0700-2300)	23	15	Night (2300-0700)	7	0

The current design track design speed near the subject lands is 70 mph (113 km/h).

There are *anti-whistling by-laws* in effect at the Alma St., Edinburgh Rd., Yorkshire St. and Glasgow St. at-grade crossings.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase. That's why, in addition to studying the environmental impacts of traditional electrification, Metrolinx has studied the feasibility of another form of electrification - hydrogen powered vehicles.

Both options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams are currently completing the bids that will close in 2021. GO Expansion construction will get underway in 2022.

Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to

contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

EDMOND WU, MCIP, RPP
Project Manager
Third Party Projects Review, Capital Projects Group
Metrolinx | 20 Bay Street | Suite 600 | Toronto | Ontario | M5J 2W3
T: 416.202.8513 | C: 437.240.8613

METROLINX

From: Rail Data Requests
Sent: October 20, 2020 17:09
To: Yvonne Lo <ylo@hgcengineering.com>
Cc: Tony To <Tony.To@metrolinx.com>; 'Steven X. Kwan' <kwan@bagroup.com>; Astrid Clos <astrid.clos@ajcplanning.ca>
Subject: RE: Rail Traffic Data Request - Hwy 6/Paisley, Guelph

Hi Yvonne:

I apologize for the delay in responding to your request. At this time, Metrolinx is continuing to refine GO Expansion Environmental Assessments as well as the associated rail traffic forecast updates. As such we are not in a position to provide this information to you at present. We have been told that the EA process will be completed shortly, however, and we will be sure to contact you to provide the new data at that time.

Further to your request dated August 19, 2020, the subject property (Highway 6/Paisley Road, Guelph) is located adjacent to Metrolinx's Guelph Subdivision which carries Kitchener GO Train services. We note we do not maintain information pertaining to idling and stationary activities at stations – that would be up to the consultant to collect that information for a typical weekday period.

The maximum track design speed at this location on this corridor is 70 mph (113 km/h).

There are anti-whistling by-laws in place at the Alma St., Edinburgh Rd., Yorkshire St. and Glasgow St. crossings.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO and UP Express rail network and we are currently working towards the next phase. Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. We can, however, provide the following interim information which may be helpful;

1. At lower speeds, train noise is dominated by the powertrain. At higher speeds, train noise is dominated by the wheel- track interaction. Hence, at higher speeds, the noise level and spectrum of electric trains is expected to be very similar, if not identical, to those of equivalent diesel trains.

2. Along with electrification, Metrolinx will intensify service levels along all of its corridors to deliver the promised GO Expansion service. Everything else being equal, this will likely result in an overall increase in train noise emissions.

Given the above considerations, it would be prudent, for the purposes of acoustical analyses, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability, and passenger demand.

It should be noted that this information is only as it pertains to Metrolinx trains. It would be prudent to contact other rail operators in the area directly for their rail traffic information.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

EDMOND WU, MCIP, RPP
Project Manager
Third Party Projects Review, Capital Projects Group
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T: 416.202.8513 | C: 437.240.8613

From: Yvonne Lo [mailto:ylo@hgcengineering.com]
Sent: Wednesday, August 19, 2020 5:18 PM
To: Rail Data Requests
Cc: Tony To; 'Steven X. Kwan'; Astrid Clos
Subject: Rail Traffic Data Request - Guelph, ON

Hi,

We are currently updating a noise feasibility study for a proposed development located east of Highway 6/Hanlon Parkway, south of Paisley Rd and Metrolinx's Guelph Subdivision, and north of Highway 7 and another railway line in Guelph, Ontario.

The location is provided in the link below.

https://goo.gl/maps/FTrAnMhC2tkS3wZF9

We are requesting the following information for Metrolinx's Guelph Subdivision in the vicinity of the site:

- Rail data including number of trains per day/night, speed, number of cars and locomotives
- Any information regarding idling of engines or shunting of train cars

Thank you.

Best,

Yvonne Lo, BASc, PEng
Project Consultant

HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 **e**: ylo@hgcengineering.com
Visit our website: www.hgcengineering.com **Follow Us** – LinkedIn | Twitter | YouTube

This e-mail is intended only for the person or entity to which it is addressed. If you received this in error, please contact the sender and delete all copies of the e-mail together with any attachments.

APPENDIX H:
Rail Crossing Vehicle Delay Calculations

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			Existing Conditions + Development Only		Future Conditions	
			Value	Notes	Value	Notes
Table 1	a)	Average delay (s) per Train	54	Based on existing train data - average of duration of train crossing. Excludes Saturday, Sunday and 40m 12s outlier	54	Assumes same as existing
	b)	Average trains per day	13	Based on existing train data - average number of trains per day. Excludes Saturday and Sunday	52	Based on advice from Metrolinx + 2 for VIA rail + 5 for cargo (existing data)
	c)	Projected PM peak hour two-way volume	360	Based on projected site traffic volumes	560	Based on projected site traffic volumes, with addition of 200 two-way diverted trips along Silvercreek
	d)	Assumed average vehicles per second	0.1	c) / (3600 s per hour)	0.16	c) / (3600 s per hour)
	e)	Estimated vehicle delay (s) per train	150	See table 2 below	237	See table below
	f)	Estimated vehicle delay (s) per day	1950	b) x e)	12324	b) x e)
	g)	Estimated vehicle delay (h) per day	0.5	f) / (3600 s per hour)	3.4	f) / (3600 s per hour)

	h) Train Delay	i) Average Vehicle Delay			
Table 2	54	5		9	
	53	5		8	
	52	5		8	
	51	5		8	
	50	5		8	
	49	5		8	
	48	5		8	
	47	5		8	
	46	5		7	
	45	5		7	
	44	4		7	
	43	4		7	
	42	4		7	
	41	4		7	
	40	4		6	
	39	4		6	
	38	4		6	
	37	4		6	
	36	4		6	
	35	4		6	
	34	3		5	
	33	3		5	
	32	3		5	
	31	3		5	
	30	3		5	
	29	3		5	
	28	3		4	
	27	3	d) x h)	4	d) x h)
	26	3		4	
	25	3		4	
	24	2		4	
	23	2		4	
	22	2		4	
	21	2		3	
	20	2		3	
	19	2		3	
	18	2		3	
	17	2		3	
	16	2		3	
	15	2		2	
	14	1		2	
	13	1		2	
	12	1		2	
	11	1		2	
	10	1		2	
	9	1		1	
	8	1		1	
	7	1		1	
	6	1		1	
	5	1		1	
	4	0		1	
	3	0		0	
	2	0		0	
	1	0		0	
	Total	**150**	Sum of i)	**237**	Sum of i)

APPENDIX I:
Sight Distance Review Figure

BA Consulting Group Ltd.
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EMAIL bagroup@bagroup.com

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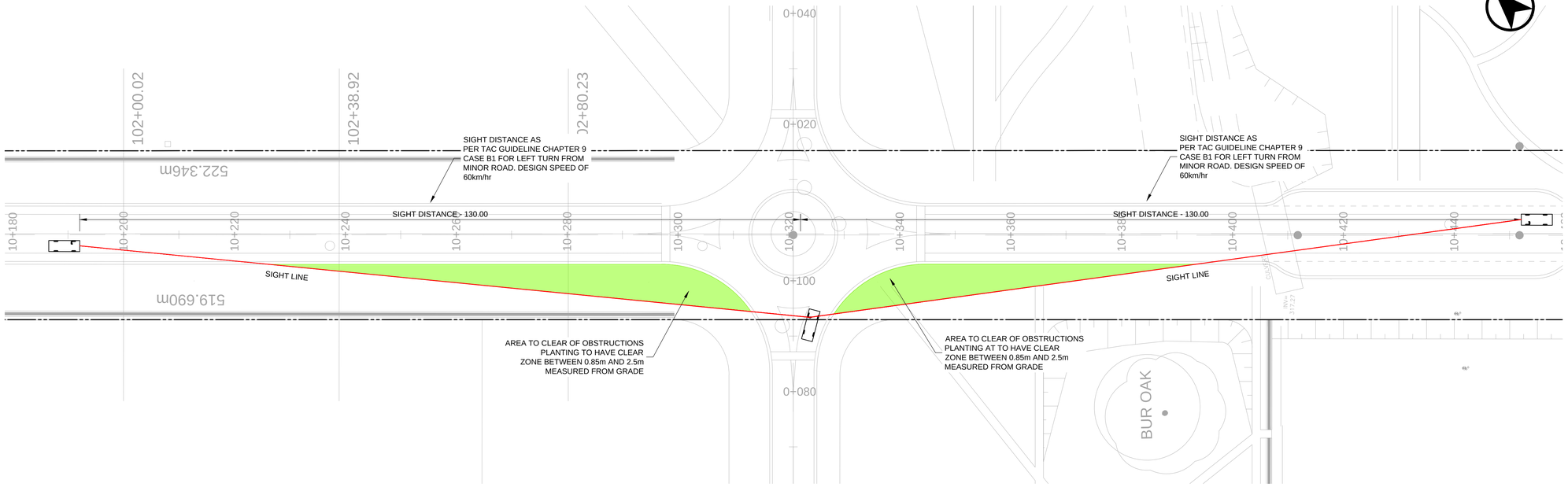
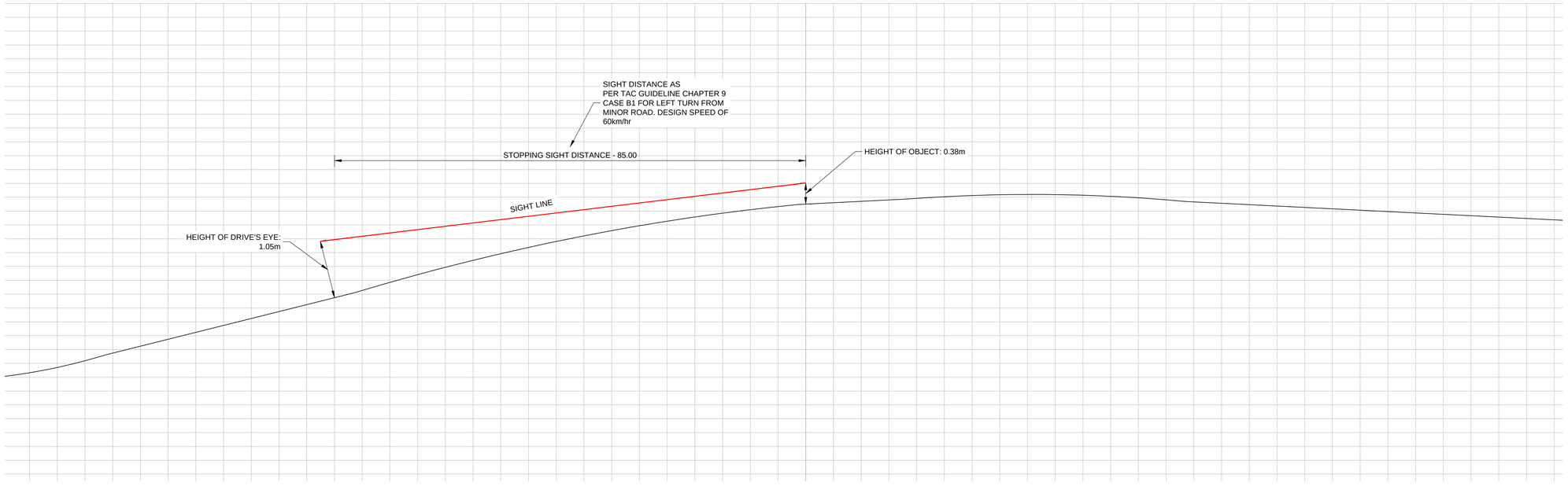
HORIZONTAL SIGHT DISTANCE



VERITCAL SIGHT DISTANCE



02	01-18-22	MSB	ISSUED FOR SUBMISSION
01	11-03-20	MSB	ISSUED FOR SUBMISSION
00	07-23-20	MSB	DRAFT ISSUED FOR TEAM REVIEW

BA Group

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SILVERCREEK

SIGHT DISTANCE REVIEW

STREET 'A/C'

Date: JULY 23, 2020

Project No.: 6087-13

Scale: 1:400 (0 2 4 6 8 10 20m)

SD01

Date Plotted: January 19, 2022 Filename: \\baltp01.tor.bagroup.com\cad\6087-13\BA\Sight Distance Review\2022\R05-January 18-2022\BA-SILVERCREEK-SD-R05-6087-13.dwg

APPENDIX J:
Concept Plan – Silvercreek Parkway / Street A

BA Consulting Group Ltd.
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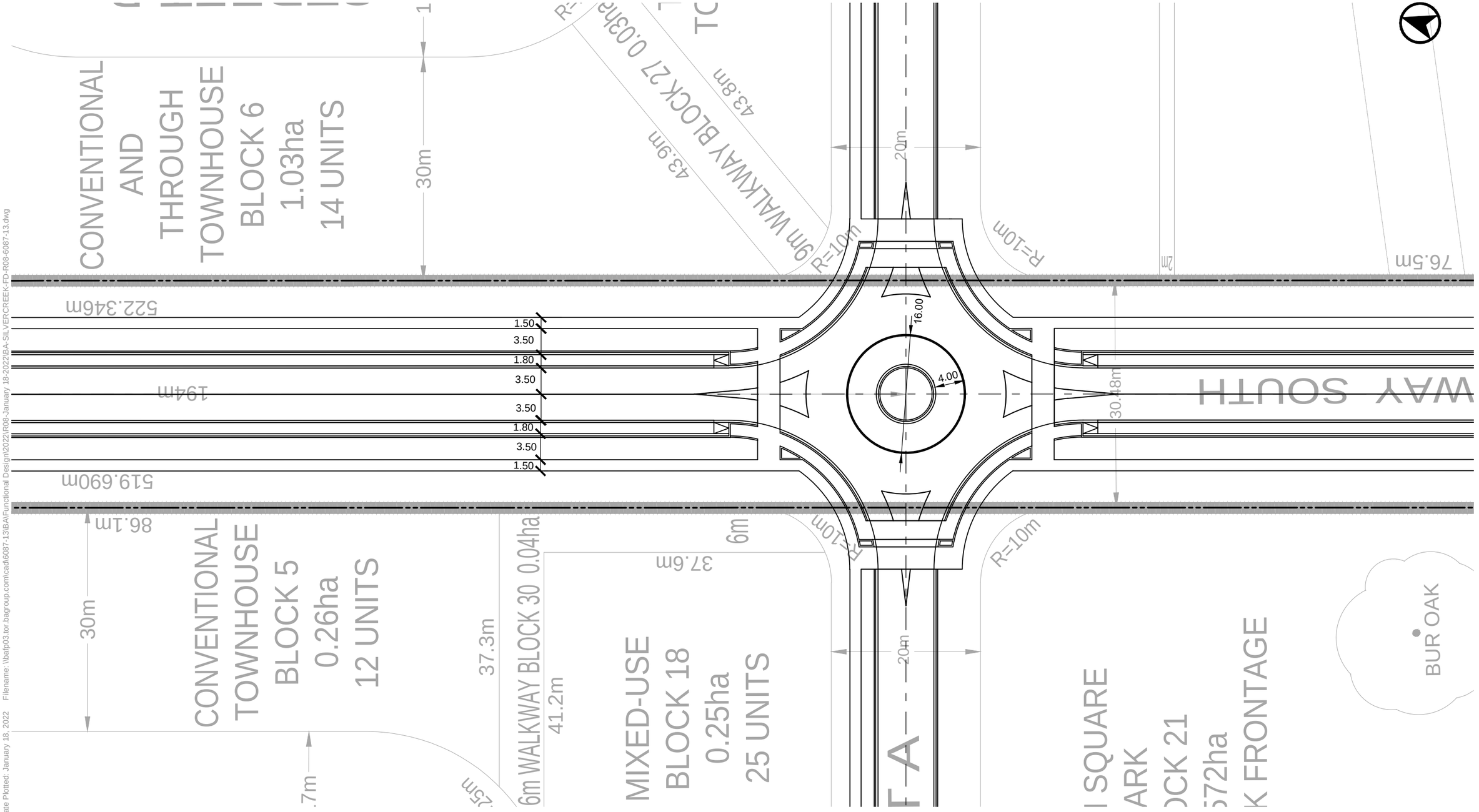

Date Plotted: January 18, 2022 Filename: \\baifp03.tor.bagroup.com\cad\6087-13\BA\Functional Design\2022\R08-January 18-2022\BA-SILVERCREEK-FD-R08-6087-13.dwg

BA Group

SILVERCREEK

FUNCTIONAL ROAD PLAN

PROPOSED SILVERCREEK PARKWAY SOUTH ROAD MODIFICATION

SILVERCREEK PARKWAY SOUTH ROAD / STREET 'A' INTERSECTION

Project:	SILVERCREEK
Project No.	6087-13
Date:	JANUARY 18, 2022
Revised:	--

Scale 1:500 (0 5 10 15 20m)

Drawing No. FD-02