Revised Final Report

Transportation Impact Study – 6546 Fallsview Boulevard, Niagara Falls

Prepared for Hennepin Fallsview Inc.
by Arcadis
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1 Introduction

Hennepin Fallsview Inc. (the 'Applicant') is proposing to amend the Official Plan and Zoning By-Law (the 'Application') for the purposes of redeveloping the existing hotel at 6546 Fallsview Boulevard, at the northeast corner of the Fallsview Boulevard and Portage Road / Main Street intersection (the 'Hotel Redevelopment Site'), and to develop a parking facility that will accommodate the majority of hotel guest parking at 6519 Stanley Avenue (the 'Off-site Parking Facility'). Given the interrelated nature of these facilities, both the proposed hotel redevelopment and the proposed off-site parking facility are subject of a single Transportation Impact Study (TIS) report. The hotel redevelopment site is proposed to comprise of approximately 1,140 hotel rooms and 126 residential and/or vacation rental units, in addition to a number of ancillary non-residential uses.

The purpose of this TIS report is to analyze the impact that the proposed development may have on the surrounding transportation network. This report takes into consideration background traffic growth and other proposed developments in the area. The TIS also examines the appropriateness of the proposed parking supply, functional circulation for vehicular traffic, and transportation demand management (TDM) considerations.

This report is outlined with the following sections:

- **Section 1** through **Section 6** discuss the TIS;
- **Section 7** discusses the appropriateness of the proposed parking supply as well as options for TDM;
- **Section 8** discusses the vehicle swept path analysis; and
- **Section 9** discusses the study conclusions and recommendations.

This report was prepared to respond to submission requirements determined through the pre-consultation process. Section 14 of the City's Official Plan requires a pre-application consultation between an applicant and the City prior to submission of an application under the Planning Act to determine submission requirements for a complete application.

The pre-consultation checklists issued in connection with a pre-consultation meeting held on December 15, 2022 included as a submission requirement a Transportation Impact Study and Parking Impact Analysis, each subject to a Terms of Reference to be determined through discussion with City and Regional staff.

This report adheres to the scope of investigation developed by Arcadis and discussed with City of Niagara Falls and Regional Municipality of Niagara staff on January 5, 2023. This correspondence is presented in **Appendix A**.

1.1 Study Area

The proposed development is located on the northeast corner of the Fallsview Boulevard and Portage Road / Main Street intersection, in the City of Niagara Falls, as illustrated in **Exhibit 1-1**.

Exhibit 1-1: Development Study Area

Base Map Source: Google Maps. Retrieved on December 23, 2022 from https://www.google.com/maps/

Under existing conditions, the areas north, west, and south of the development site largely consist of commercial and entertainment uses with several other hotels in the vicinity. The area east of the development is a natural and scenic area with trees, trails, and the Niagara River. This area of the City of Niagara Falls is a renowned touristic destination.

The study area intersections were determined through consultation with the Review Agency staff and consist of the following locations (as noted in **Exhibit 1-1**):

1. Stanley Avenue & Murray Street (signalized);
2. Stanley Avenue & Main Street / Dixon Street (signalized);
3. Stanley Avenue & Proposed Parking Facility Access (unsignalized);
4. Stanley Avenue & Dunn Street (signalized);
5. Fallsview Boulevard & Murray Street (signalized);
6. Fallsview Boulevard & Fallsview Casino Resort Access / Hilton Niagara Falls/Fallsview Hotel & Suites Access (signalized);
7. Fallsview Boulevard & Dixon Street / Fallsview Casino Resort Garage (unsignalized);
8. Fallsview Boulevard & Main Street / Portage Road (signalized);
9. Portage Road & Proposed Hotel Site Access (unsignalized);
10. Portage Road & Fallsview Casino Resort Rear Access (signalized);
11. Fallsview Boulevard & Dunn Street (signalized);
12. Dixon Street & Proposed Parking Facility Access (unsignalized); and
13. Main Street & Murray Street & Allendale Avenue (signalized).

1.2 Analysis Periods

Based on the proposed development's land uses and size, the following analysis periods were used in this study:

- PM Peak Period – 5:00 p.m. to 1:00 a.m. on a typical summer weekend; and
- PM Peak Period – 5:00 p.m. to 1:00 a.m. on a summer long weekend.

1.3 Proposed Development

The proposed development contemplated in the Application includes the proposed Hotel Redevelopment Site and the Off-site Parking Facility. Specifically, the Application contemplates amendments to the Official Plan and Zoning By-law to permit the development of a hotel complex comprised of two high-density hotel buildings collectively containing approximately 1,140 rooms and 126 residential and/or vacation rental units, along with hotel-related food

and beverage areas, a spa, ancillary retail and service uses, as well as a variety of entertainment uses including gaming and gaming-related retail space, and a music entertainment space. The primary access to the Hotel Redevelopment Site would be via Portage Road. Existing uses on the property are proposed to be removed.

On-site parking at 6546 Fallsview Boulevard is proposed to be provided via an underground parking facility and ground floor-level parking spaces. A total of 273 parking spaces are proposed at this location, with the majority on underground levels as longer-term parking. The ground-floor level spaces, of which only a small number a proposed, are intended for short duration use.

The Application also contemplates an off-site structured parking facility with capacity for approximately 1,047 vehicles located at 6519 Stanley Avenue. Access to this facility would be via Stanley Avenue and via Dixon Street. The conceptual site plan for the structured parking facility also includes a terminal that will accommodate hotel guest check-in, luggage transfer/storage, ancillary services, and a guest waiting area for a frequent, dedicated shuttle service connecting to the 6546 Fallsview Boulevard site.

When viewed together, the proposed development features a total of 1,320 proposed parking spaces. It is our understanding that parking for the residential uses and gaming uses would be located at 6546 Fallsview Boulevard (on site), with the parking for the remaining uses split between the on-site facility and 6519 Stanley Avenue (off-site).

Build-out of the proposed development is envisioned to occur in a single phase.

The proposed site plans are illustrated in **Exhibit 1-2** and **Exhibit 1-3**. It must be noted that small changes in building sizes may occur as this development moves through the approval process. However, the assumptions in this report are conservative, and differences in traffic operations from these changes are expected to be negligible.

Exhibit 1-2: Proposed Site Plan – Hotel Redevelopment (6546 Fallsview Boulevard)

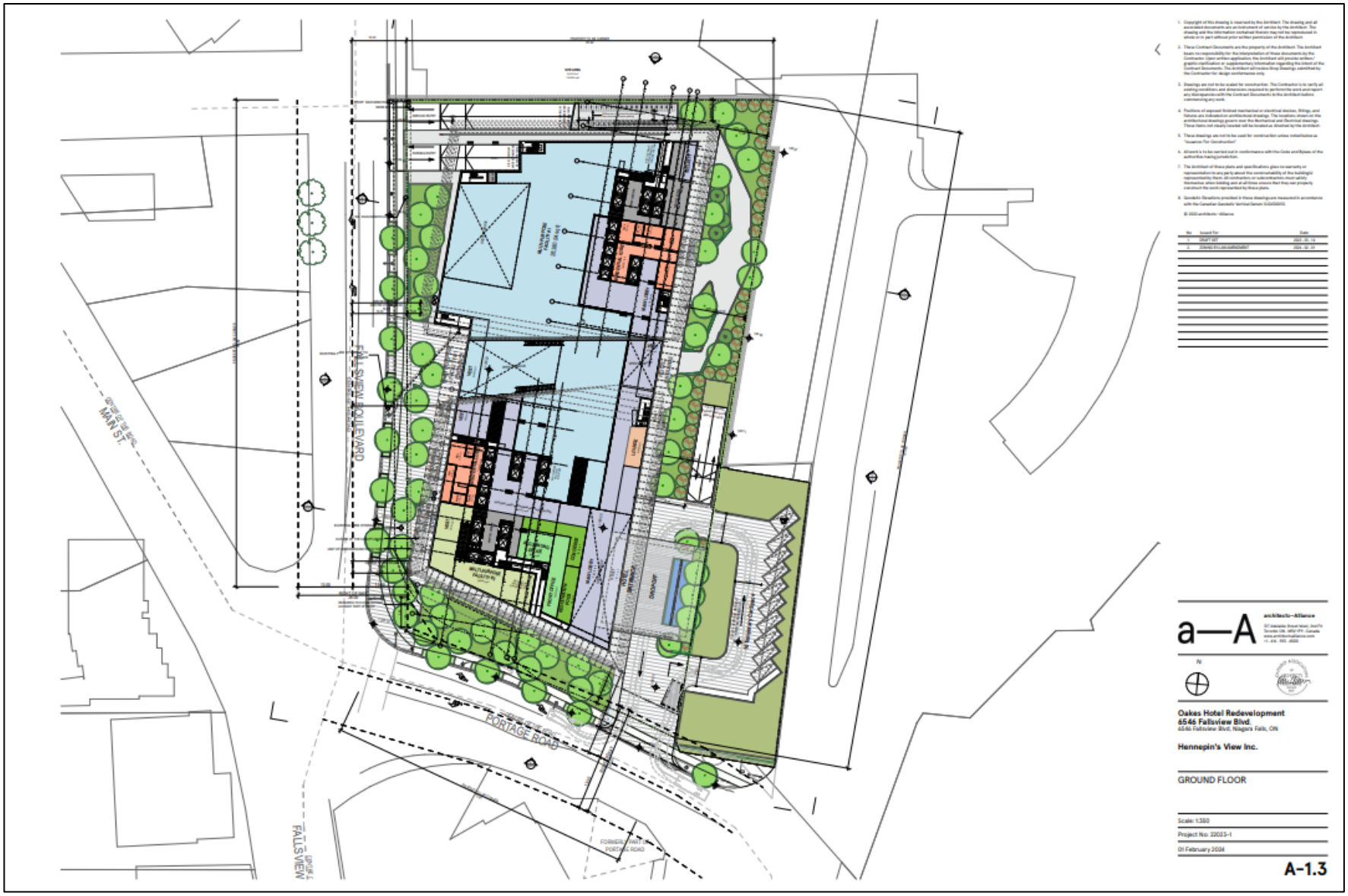


Exhibit 1-3: Proposed Site Plan – Parking Facility (6519 Stanley Avenue)

2 2023 Existing Conditions

This section documents the transportation network in the study area in late 2023 / early 2024, including existing roadways, transit operations, active transportation facilities, traffic control measures, and intersection performance.

2.1 Existing Road Network

Exhibit 2-1 summarizes the characteristics of the study area roadways.

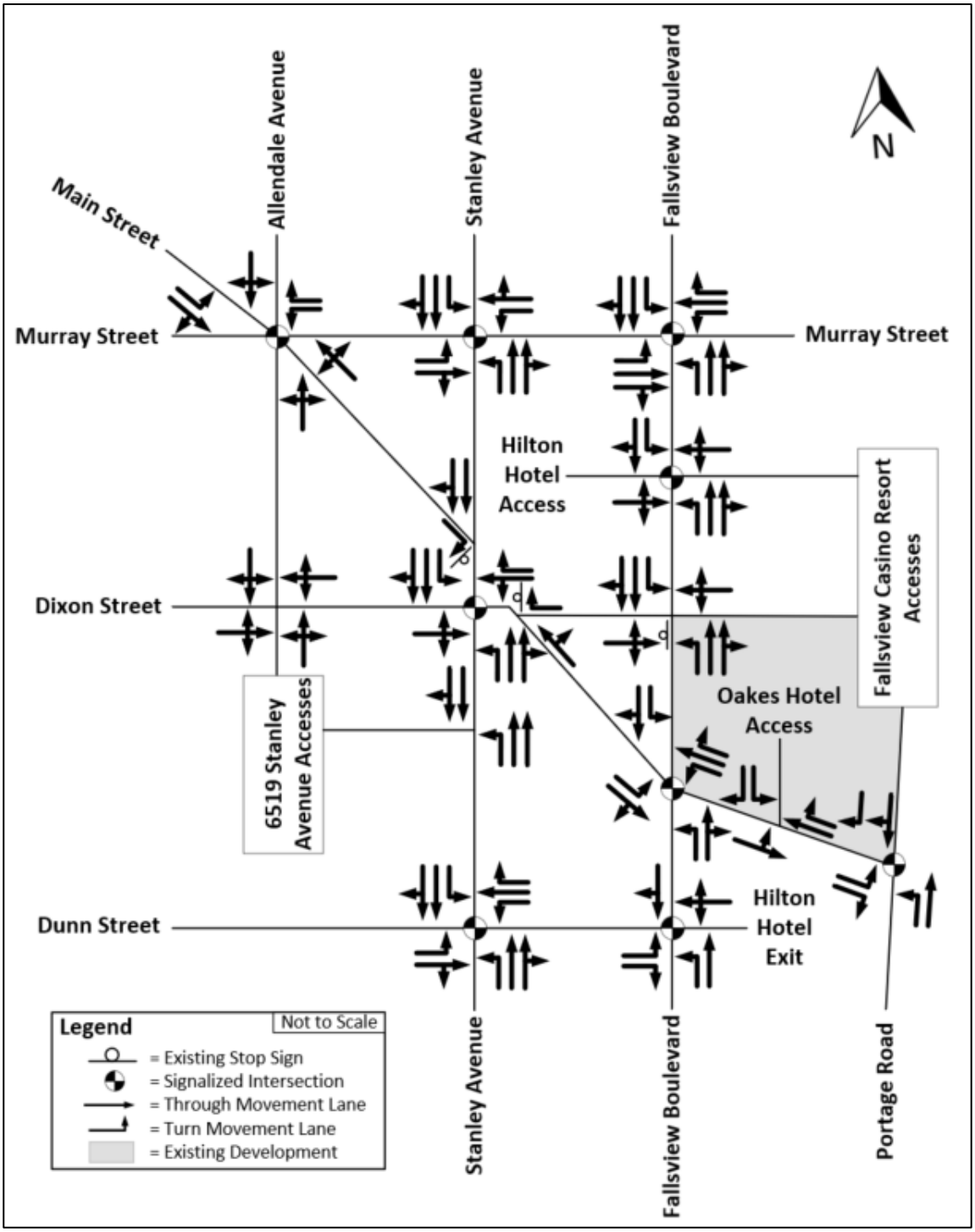
Exhibit 2-1: Study Roadway Characteristics

Street Name	Class.[1]	Orient.	Road Width (Lanes)	Traffic Direction	From	To	On-Street Parking	Speed Limit
Fallsview Boulevard	Local	North / South	2-4	Two-way	Ferry Street	Dead End	Prohibited	50 km/h
Murray Street	Local	East / West	2-4	Two-way	Franklin Avenue	Niagara Parkway	Prohibited east of Allendale Avenue	50 km/h
Portage Road	Arterial	North / South	2-4	Two-way	Fallsview Boulevard	Bridgewater Street	Prohibited	50-60 km/h
Main Street	Arterial	North / South	2-4	Two-way	North Street	Fallsview Boulevard	Prohibited east of Allendale Avenue	50 km/h
Stanley Avenue	Arterial	North / South	2-5	Two-way	Stamford Town Line Road	Dead End	Prohibited north of Marineland Parkway	50-70 km/h
Dunn Street	Local	East / West	2-3	Two-way	Waters Avenue	Fallsview Boulevard	Mostly prohibited east of Kiwanis Crescent	50 km/h
Dixon Street	Local	East / West	2	Two-way	Drummond Road	Fallsview Boulevard	Prohibited east of Stanley Avenue	50 km/h

Lane configurations for study area roadways are illustrated in **Exhibit 2-2**.

[1] Road classifications were obtained from the City of Niagara Falls Transportation Master Plan, dated October 2011. (https://niagarafalls.ca/pdf/transportation/transportation-master-plan-report.pdf)

Exhibit 2-2: Existing Study Area Lane Configurations



2.2 Existing Transit Network

The proposed development site is located within proximity to several Niagara Falls Transit bus routes, which primarily provide access to/from the Main Street and Ferry Street transit hub. The closest transit stops to the development are located directly adjacent to the proposed development site along Fallsview Boulevard. It should be noted that the existing Niagara Region Transit, Niagara Falls Transit, St. Catharines Transit, Welland Transit and Fort Erie Transit systems are in the process of amalgamation. As a result, service changes are expected in the coming years as part of the integration process. In addition, the WEGO visitor transit system provides tourist-oriented transit service to major attractions and destinations within Niagara Falls, and reciprocal transfer privileges with Niagara Falls Transit are available. Finally, intercity operators connecting the Greater Toronto Area to the city and to the Fallsview Casino Resort (such as GO Transit and Flixbus) are also available.

Transit services in close proximity to the development site are illustrated in **Exhibit 2-3** and **Exhibit 2-4**. Service patterns and destinations of the routes in close proximity are detailed in **Exhibit 2-5**.

Exhibit 2-3: Existing Transit Network (Excluding WEGO Routes)

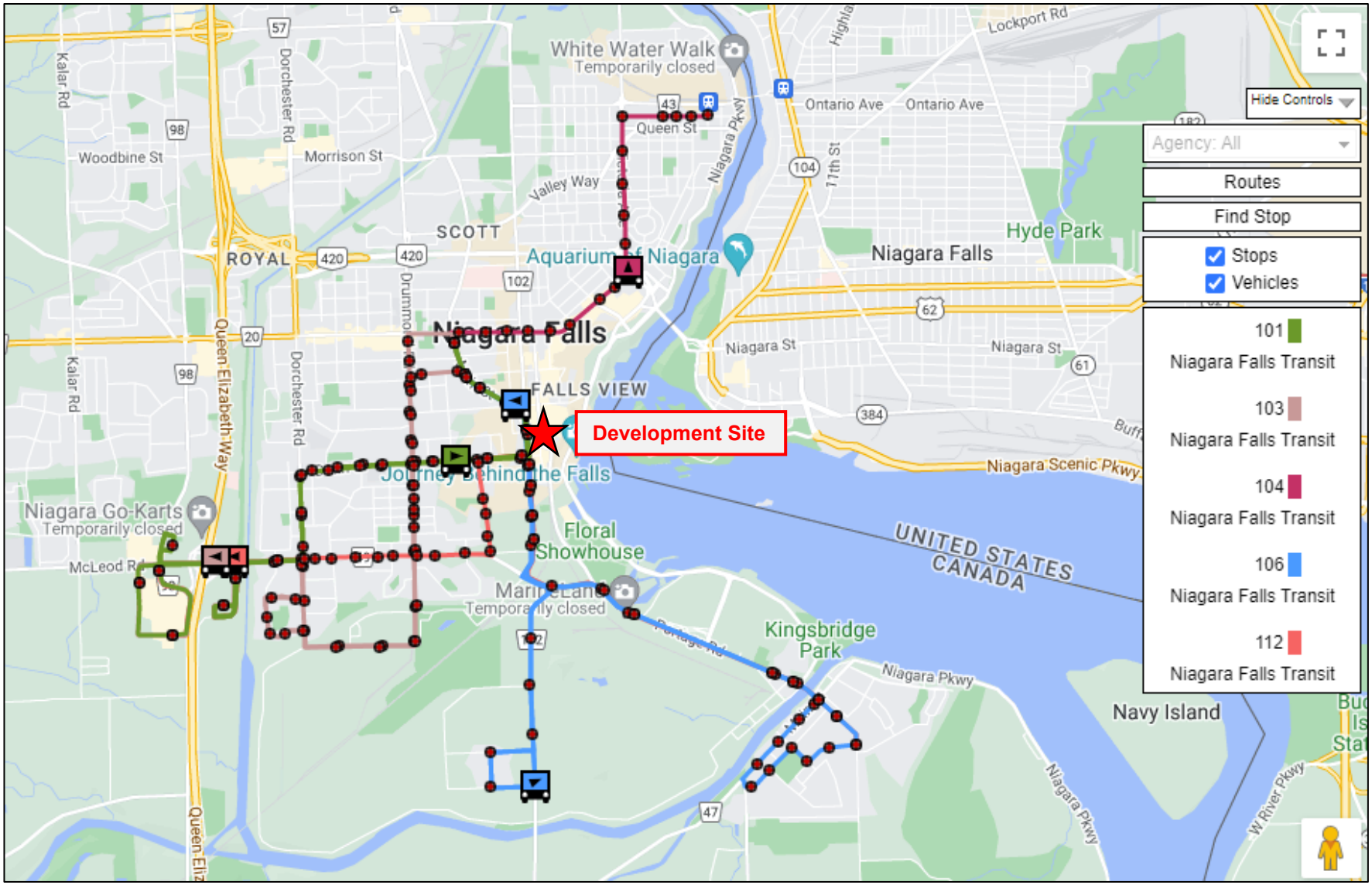


Image Source: Niagara Falls Transit Services. Retrieved December 22, 2022 from http://whereis.yourbus.com/bustime/map/

Exhibit 2-4: WEGO Transit Network

Image Source: WEGO Niagara Falls. Retrieved December 22, 2022 from https://wegoniagarafalls.com/pdf/wego-route-map.pdf

Exhibit 2-5: Existing Transit Service Patterns

Route	Onward Transit Connections	Approximate Walking Distance to Nearest Bus Stop [2]	Average Peak Hour Bus Service Frequency
101	Canadian Drive Hub, Walmart Plaza, Dorchester & Dunn, Main & Ferry Hub	240 metres (4 minutes)	30 minutes
102	Train/Bus Terminal, Morrison/Dorchester, GNGH Hospital, Main & Ferry Hub	1.35 kilometers (23 minutes)	30 minutes
103	Canadian Drive Hub, Walmart Plaza, Dorchester & McLeod, Drummond & McLeod, Main & Ferry Hub	1.35 kilometers (23 minutes)	30 minutes
203	Canadian Drive Hub, Walmart Plaza, Drummond & Dunn, Main & Ferry Hub	1.35 kilometers (23 minutes)	30 minutes
104	Train/Bus Terminal, Ellen & Centre, and Main & Ferry Hub	1.11 kilometers (19 minutes)	30 minutes
204	Train/Bus Terminal, Ellen & Centre, and Main & Ferry Hub	1.11 kilometers (19 minutes)	30 minutes
106	Gunning & Willoughby, Don Murie & Stanley, Stanley & McLeod, Main & Ferry Hub	240 metres (4 minutes)	30 minutes
206	Gunning & Willoughby, Don Murie & Stanley, Dunn & Stanley, Main & Ferry Hub	240 metres (4 minutes)	30 minutes
107	Town & Country Plaza, Church & Stanley, Town & Country Plaza, Main & Ferry Hub	1.35 kilometers (23 minutes)	30 minutes
110	Morrison/Dorchester Hub, Drummond & Valley, Main & Ferry Hub	1.10 kilometers (19 minutes)	30 minutes
210	Morrison/Dorchester Hub, Drummond & Valley, GNGH Hospital, Main & Ferry Hub	1.35 kilometers (23 minutes)	30 minutes
112	Canadian Drive Hub, Walmart Plaza, Ailanthus & McLeod, Gunning & Willoughby	340 metres (6 minutes)	60 minutes
WEGO Red Line	Lundy & Campark, Main & Ferry, Table Rocks / Falls	500 metres (9 minutes)	30 minutes
WEGO Blue Line	Convention Center, Table Rock, Clifton, Victoria/Clifton, Skylon Tower, Copacabana, Convention Center	Directly Adjacent (< 1 minute)	40 minutes
WEGO Green Line	Rapidsview, Table Rock, Downtown, GO/VIA Station, Floral Clock	350 metres [3] (6 minutes)	20-30 minutes
Flixbus	Direct intercity travel	Directly Adjacent (< 1 minute)	Varies

[2] Approximate walking speed of 1 m/s.
[3] Using the Falls Incline Railway.

2.3 Existing Active Transportation Network

The proposed development is well connected to the City of Niagara Falls cycling network and is located in close proximity to waterfront trails east of the site. The available cycling routes are illustrated in **Exhibit 2-6**.

Exhibit 2-6: City of Niagara Falls Bicycle Route Map

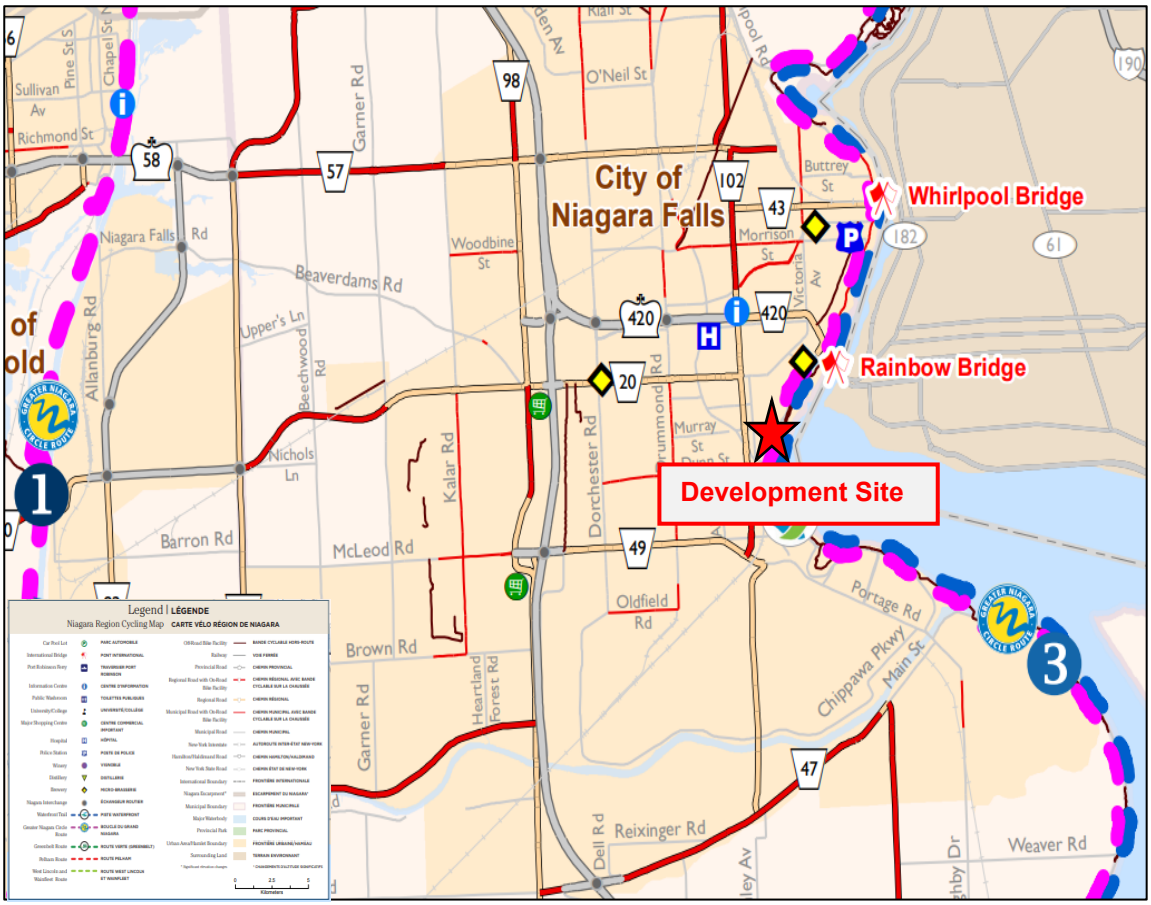


Image Source: Niagara Region. Retrieved July 15, 2022 from https://www.niagararegion.ca/exploring/cycle/bike-map.pdf

2.4 Turning Movement Counts

Existing vehicle turning movement counts (TMCs) for the study area intersections were collected through traffic surveys, neighbouring developments' Traffic Impact Study reports, and correspondence with the City of Niagara Falls, the Niagara Region, and the Niagara Parks Commission. TMCs were collected from these various sources at the following times:

- From 5:00 p.m. to 1:00 a.m. on Sunday, July 1, 2018, and Saturday, July 7, 2018 (summer long weekend and typical summer weekend peak period);

- From 10:00 a.m. to 6:00 p.m. on Saturday, March 23, 2019 (off-season weekend peak period, to which adjustment factors were applied to approximate summer long weekend and typical summer weekend peak period);
- From 5:00 p.m. to 8:00 p.m. on Saturday, April 13, 2019 (off-season weekend peak period, to which adjustment factors were applied to approximate summer long weekend and typical summer weekend peak period); and
- From 10:00 a.m. to 2:00 p.m. on Saturday, July 13, 2019 (typical summer weekend peak period).

Exhibit 2-7 summarizes the TMC data sources, count dates, and peak hours by study area intersection.

Exhibit 2-7: Traffic Data Information

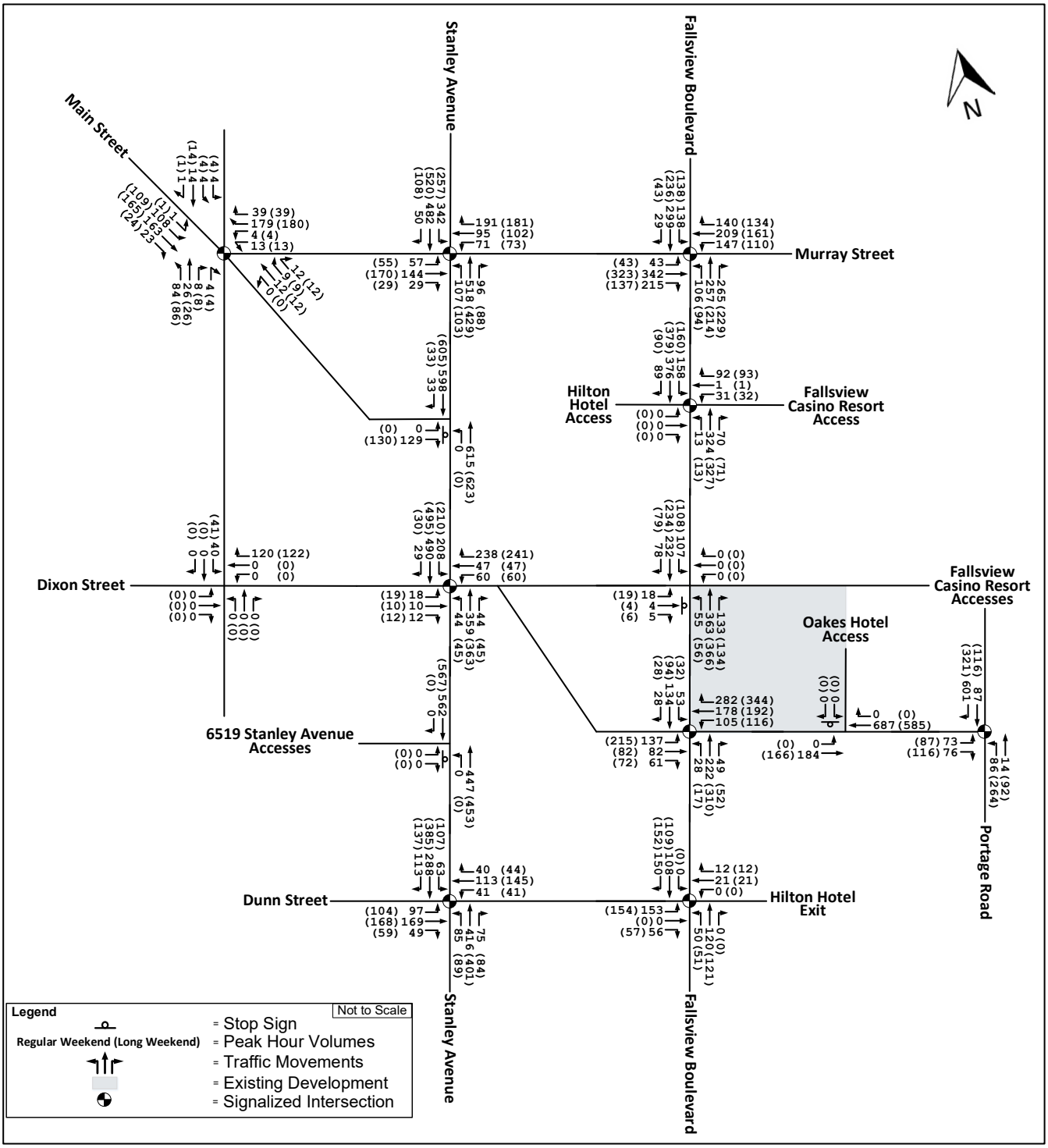
Intersection	Data Source	Count Dates	Peak Hour
Stanley Avenue & Murray Street	City of Niagara Falls and/or Niagara Region and/or Niagara Parks Commission	Sunday, July 1, 2018	5:30 p.m. – 6:30 p.m.
		Saturday, July 7, 2018	5:30 p.m. – 6:30 p.m.
Stanley Avenue & Main Street / Dixon Street	Ontario Traffic Inc.	Saturday, April 13, 2019	5:00 p.m. – 6:00 p.m.
Stanley Avenue & Dunn Street	City of Niagara Falls and/or Niagara Region and/or Niagara Parks Commission	Sunday, July 1, 2018	6:30 p.m. – 7:30 p.m.
		Saturday, July 7, 2018	5:00 p.m. – 6:00 p.m.
Fallsview Boulevard & Murray Street	City of Niagara Falls and/or Niagara Region and/or Niagara Parks Commission	Sunday, July 1, 2018	5:30 p.m. – 6:30 p.m.
		Saturday, July 7, 2018	6:00 p.m. – 7:00 p.m.
Fallsview Boulevard & Fallsview Casino Resort Access / Hilton Niagara Falls/Fallsview Hotel & Suites Access	Ontario Traffic Inc.	Saturday, April 13, 2019	5:00 p.m. – 6:00 p.m.
Fallsview Boulevard & Dixon Street / Fallsview Casino Resort Garage	Ontario Traffic Inc.	Saturday, April 13, 2019	5:30 p.m. – 6:30 p.m.
Fallsview Boulevard & Main Street / Portage Road	City of Niagara Falls and/or Niagara Region and/or Niagara Parks Commission	Sunday, July 1, 2018	6:30 p.m. – 7:30 p.m.
		Saturday, July 7, 2018	5:30 p.m. – 6:30 p.m.
Portage Road & Fallsview Casino Resort Bus Access	City of Niagara Falls and/or Niagara Region and/or Niagara Parks Commission	Sunday, July 1, 2018	7:15 p.m. – 8:15 p.m.
		Saturday, July 7, 2018	10:45 p.m. – 11:45 p.m.
Fallsview Boulevard & Dunn Street	"6740 Fallsview Boulevard (Marriott Fallsview)" TIS Report	Saturday, July 13, 2019	10:45 a.m. – 11:45 a.m.
Main Street & Murray Street & Allendale Avenue	"6609 Stanley Avenue" TIS Report	Saturday, March 23, 2019	4:00 p.m. – 5:00 p.m.

Using the historical counts from **Exhibit 2-7**, TMC adjustment factors were developed by applying compounded annual traffic growth rates along the major study area roadways (Portage Road, Main Street, and Stanley Avenue) to estimate 2023 Existing Conditions traffic volumes. A summary of the estimated 2023 Existing Conditions traffic volumes is presented in **Exhibit 2-8**, with full turning movement count data presented in **Appendix B**.

It should be noted that the Existing Conditions Synchro model is based, in part, on the model developed by Arcadis IBI Group as part of the Niagara Events

Centre Parking and Traffic Study, which is based on data collected in 2018 and 2019 by Ontario Traffic Inc.

Exhibit 2-8: 2023 Existing Conditions Traffic Volumes



2.5 Signal Timing Plans

Signal timing plans for signalized study area intersections were provided by the Niagara Region and the City of Niagara Falls and are presented in **Appendix C**. The signalized study area intersections mostly function under a fully-actuated mode of operation.

As noted in **Section 2.4**, the Existing Conditions Synchro model is based, in part, on the model developed by Arcadis IBI Group as part of the Niagara Events Centre Parking and Traffic Study, which is based on data collected in 2018 and 2019 by Ontario Traffic Inc.

2.6 2023 Existing Conditions Analysis

Using the turning movement counts described in **Section 2.4**, the study area intersections were analyzed using the software package Synchro 11.0, which is based on the ***Highway Capacity Manual*** methodology.

Based on the ***Niagara Region Guidelines for Transportation Impact Studies*** (May 2012), the criteria for identifying critical signalized intersections or movements are as follows:

- Volume to capacity (v/c) ratio exceeds 0.85 for through movements, shared through-right movements, or right-turn movements; or
- v/c ratio exceeds 0.90 for dedicated left-turn movements.

Furthermore, the following criteria were used in identifying critical operations at unsignalized intersections:

- Level of service (LOS) based on average delay per vehicle for individual movements is “D” or worse; or
- 95th percentile queue for an individual lane exceeds the available queuing space.

Exhibit 2-9 and **Exhibit 2-10** detail existing traffic operations at the signalized intersections, and the unsignalized intersection, respectively, for the typical summer weekend and summer long weekend period peak hours. Full Highway Capacity Manual analysis for the 2023 Existing Conditions scenario is presented in **Appendix D**.

2.6.1 Signalized Intersections

The results of the 2023 Existing Conditions traffic operations analysis for signalized intersections are presented in **Exhibit 2-9**.

Exhibit 2-9: 2023 Existing Conditions Traffic Operations – Signalized Intersections Summary

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	B	15	0.36	EBL	C	26.9	0.58	32.1	50
				EBR	C	20.5	0.04	3.6	-
				WBT	C	20.7	0.07	7.6	-
				NBL	A	5.9	0.09	7.0	-
				NBT	A	6.3	0.13	15.9	-
				SBT	B	11.6	0.29	33.5	-
Stanley Avenue and Murray Street	B	19	0.69	EBL	C	32.3	0.37	21.5	15
				EBT	C	32.2	0.41	46.8	-
				WBL	C	31.1	0.29	23.8	25
				WBT	C	34.7	0.57	61.4	-
				NBL	B	16.4	0.31	33.7	35
				NBT	B	15.9	0.41	71.2	-
				SBL	B	13.9	0.71	47.8	55
				SBT	A	9.0	0.26	35.9	-
Fallsview Boulevard and Murray Street	C	26	0.46	EBL	C	24.4	0.12	12.1	30
				EBT	C	32.6	0.57	61.2	-
				WBL	C	23.1	0.53	33.2	35
				WBT	C	27.2	0.38	58.8	-
				WBR	C	24.3	0.10	14.3	-
				NBL	B	16.8	0.22	20.4	10
				NBT	C	24.0	0.32	34.5	-
				SBL	B	17.0	0.37	25.7	65
				SBT	C	22.9	0.27	36.7	-
Stanley Avenue and Dunn Street	B	20	0.34	EBL	C	32.2	0.35	30.7	75
				EBT	C	34.1	0.52	58.5	-
				WBL	C	30.9	0.21	15.9	25
				WBT	C	31.4	0.28	33.3	-
				WBR	C	29.3	0.03	3.0	25
				NBL	B	12.7	0.18	19.9	25
				NBT	B	13.0	0.28	41.8	-
				SBL	B	11.5	0.13	15.2	40
				SBT	B	14.4	0.19	43.6	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	20	0.41	EBL	C	28.4	0.47	41.0	-
				EBT	C	25.8	0.27	32.5	-
				WBL	B	18.3	0.24	22.1	25
				WBT	B	18.9	0.27	37.7	-
				WBR	B	18.2	0.19	14.8	-
				NBL	B	18.4	0.07	10.4	20
				NBT	C	23.0	0.43	66.9	-
				SBL	B	13.1	0.12	12.1	-
				SBT	B	14.0	0.20	30.8	-
Portage Road and Fallsview Casino Rear Access	B	12	0.30	EBL	B	15.0	0.14	12.5	-
				EBR	B	14.5	0.05	6.6	-
				NBL	A	9.2	0.15	14.9	-
				NBT	A	8.2	0.02	3.9	-
				SBT	A	8.7	0.10	14.4	-
				SBR	B	11.6	0.41	17.1	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	8.7	0.30	WBT	C	20.4	0.15	9.3	-
				WBR	B	19.9	0.07	9.6	-
				NBL	A	9.3	0.04	4.0	20
				NBT	B	10.5	0.31	25.0	-
				SBL	A	5.4	0.31	11.0	25
				SBT	A	5.2	0.25	16.7	-
Stanley Avenue and Dixon Street / Main Street	B	16	0.40	EBT	D	38.8	0.18	14.3	-
				WBT	D	46.7	0.63	36.7	-
				WBR	D	38.7	0.18	20.3	-
				NBL	A	5.9	0.09	8.5	65
				NBT	B	10.4	0.22	43.4	-
				SBL	A	4.2	0.34	16.0	140
				SBT	A	6.0	0.26	31.0	-
Allendale Avenue and Main Street and Murray Street	E	60	0.53	WBL	D	40.1	0.10	9.9	55
				WBR	F	87.6	0.93	99.3	-
				NBLTR	D	43.6	0.46	44.5	-
				SBLTR	D	35.4	0.07	11.1	-
				SEL	E	57.4	0.74	75.7	30
				SETR	D	40.8	0.37	39.7	-
				NWLTR	D	35.9	0.11	15.3	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	B	15	0.36	EBL	C	27.0	0.59	32.3	50
				EBR	C	20.5	0.04	3.7	-
				WBT	C	20.7	0.07	7.6	-
				NBL	A	6.0	0.09	7.1	-
				NBT	A	6.3	0.13	16.1	-
				SBT	B	11.7	0.29	34.0	-
Stanley Avenue and Murray Street	B	19	0.57	EBL	D	42.7	0.57	22.1	15
				EBT	D	39.6	0.62	54.6	-
				WBL	D	36.9	0.45	25.3	25
				WBT	D	46.9	0.75	64.7	-
				NBL	B	12.9	0.32	33.6	35
				NBT	B	10.4	0.33	60.1	-
				SBL	A	8.0	0.50	35.8	55
				SBT	A	7.8	0.32	43.4	-
Fallsview Boulevard and Murray Street	C	25	0.43	EBL	C	24.7	0.13	12.2	30
				EBT	C	32.5	0.54	55.8	-
				WBL	C	21.8	0.38	25.9	35
				WBT	C	27.1	0.33	46.8	-
				WBR	C	24.9	0.10	14.1	-
				NBL	B	17.4	0.22	18.6	10
				NBT	C	23.4	0.29	29.6	-
				SBL	B	15.8	0.36	26.1	65
				SBT	C	21.2	0.23	30.8	-
Stanley Avenue and Dunn Street	C	21	0.39	EBL	C	33.2	0.42	33.6	75
				EBT	D	35.8	0.58	61.9	-
				WBL	C	31.1	0.23	16.1	25
				WBT	C	32.4	0.38	42.1	-
				WBR	C	29.1	0.03	4.1	25
				NBL	B	15.4	0.25	23.0	25
				NBT	B	14.9	0.31	43.5	-
				SBL	B	12.4	0.22	23.7	40
				SBT	B	16.1	0.27	56.3	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	23	0.62	EBL	D	38.7	0.76	74.2	-
				EBT	C	24.2	0.30	33.8	-
				WBL	B	17.0	0.28	23.4	25
				WBT	B	17.7	0.30	39.8	-
				WBR	B	17.3	0.25	15.7	-
				NBL	B	17.5	0.04	7.1	20
				NBT	C	26.8	0.63	94.4	-
				SBL	B	14.2	0.11	8.4	-
				SBT	B	14.4	0.16	23.1	-
Portage Road and Fallsview Casino Rear Access	B	12	0.38	EBL	B	15.2	0.18	14.6	-
				EBR	B	14.7	0.09	8.1	-
				NBL	B	13.9	0.51	48.0	-
				NBT	A	8.8	0.12	15.1	-
				SBT	A	9.1	0.15	18.3	-
				SBR	A	9.9	0.24	13.2	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	8.7	0.30	WBT	C	20.4	0.16	9.5	-
				WBR	B	19.9	0.07	9.7	-
				NBL	A	9.3	0.04	4.0	20
				NBT	B	10.5	0.31	25.2	-
				SBL	A	5.4	0.31	11.1	25
				SBT	A	5.2	0.26	16.8	-
Stanley Avenue and Dixon Street / Main Street	B	16	0.40	EBT	D	38.9	0.19	14.6	-
				WBT	D	46.7	0.63	36.7	-
				WBR	D	38.8	0.18	20.5	-
				NBL	A	4.0	0.09	5.9	65
				NBT	B	10.2	0.22	42.4	-
				SBL	A	3.9	0.34	16.0	140
				SBT	A	6.3	0.27	28.7	-
Allendale Avenue and Main Street and Murray Street	E	58	0.54	WBL	D	39.1	0.09	9.9	55
				WBR	F	84.1	0.92	97.3	-
				NBLTR	D	42.5	0.46	44.5	-
				SBLTR	C	34.4	0.07	11.0	-
				SEL	E	55.9	0.73	75.0	30
				SETR	D	39.7	0.37	39.2	-
				NWLTR	C	34.9	0.10	14.9	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 2-9**, during the peak hour on a typical summer weekend in Existing Conditions at the study area signalized intersections, the following critical operation has been observed:

- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement has been observed to have a critical v/c ratio of 0.93.

During the peak hour on a summer long weekend, the following critical operation has been observed:

- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement has been observed to have a critical v/c ratio of 0.92.

2.6.2 Unsignalized Intersections

The results of the 2023 Existing Conditions traffic operations analysis for unsignalized intersections are presented in **Exhibit 2-10**.

Exhibit 2-10: 2023 Existing Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Typical Summer Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	3.7	EBLTR	F	56.8	0.30	8.5	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	C	16.0	0.15	4.1	-
		SBL	B	12.1	0.19	5.2	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	2.2	NBLTR	A	0.0	0.39	0.0	-
		SBLTR	A	9.0	0.05	1.1	-
Summer Long Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	1.8	EBLTR	B	14.4	0.08	1.9	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	A	8.1	0.05	1.2	-
		SBL	A	8.9	0.11	2.9	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	2.3	NBLTR	A	0.0	0.00	0.0	-
		SBLTR	A	9.1	0.05	1.2	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 2-10**, during the peak hour on a typical summer weekend in Existing Conditions at the study area unsignalized intersections, the following critical operation has been observed:

- At the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, the eastbound left-turn, through, and right-turn lane has been observed to have a critical lane LOS of ‘F’.

No movements exceeding critical thresholds were observed during the peak hour on a summer long weekend in Existing Conditions at the study area unsignalized intersections.

3 Future Background Conditions

This section discusses the proposed development horizon year, background traffic growth rate, anticipated future transportation network improvements, other development-related traffic in the study area, and future traffic conditions without the proposed development under the 2033 horizon year.

3.1 Horizon Year

As per the ***City of Niagara Falls Guidelines for the Preparation of Transportation Impact Studies and Site Plan Review*** (November 2011), a ten-year horizon year from the late 2023 / early 2024 date of this TIS (i.e., 2033) was selected for the Future Background Conditions and Future Total Conditions analyses.

3.2 Growth Rate

In lieu of other information and in accordance with the ***City of Niagara Falls Guidelines for the Preparation of Transportation Impact Studies and Site Plan Review*** (November 2011) and the ***Niagara Region Guidelines for Transportation Impact Studies*** (May 2012), an annual growth rate of 2.0% was assumed to account for the impact of growth occurring outside of the study area.

3.3 Future Transportation Network Improvements

Upon review of the ***City of Niagara Falls Transportation Master Plan*** (October 2011), the following major road network improvements within the proposed development's study area were identified:

- Allendale Avenue new connections to Stanley Avenue (Dixon Street to Stanley Avenue and Ferry Street to Forsythe Street);
- Allendale Avenue widening from Forsythe Street to south of Dunn Street;
- Livingston Street / Fallsview Boulevard connection to Portage Road;
- Buchanan Avenue / Fallsview Boulevard widening and realignment from Roberts Street to Livingston Street;
- Possible roundabout at the Allendale Avenue / Main Street / Murray Street intersection; and
- Active transportation recommended on-road routes: Stanley Avenue, Dunn Street, Portage Road / Main Street / Marineland Parkway / Willoughby Drive.

Given uncertainty with respect to the timeline of these improvements, they have not been included in the 2033 Future Background conditions scenario in order to provide a more conservative analysis of traffic operations.

3.4 Background Developments

Upon review of the City of Niagara Falls current planning applications webpage, and based on discussions with City staff regarding development projects in the vicinity of the study area, the following development applications were found to be within the vicinity and to likely introduce notable traffic volumes to study area intersections:

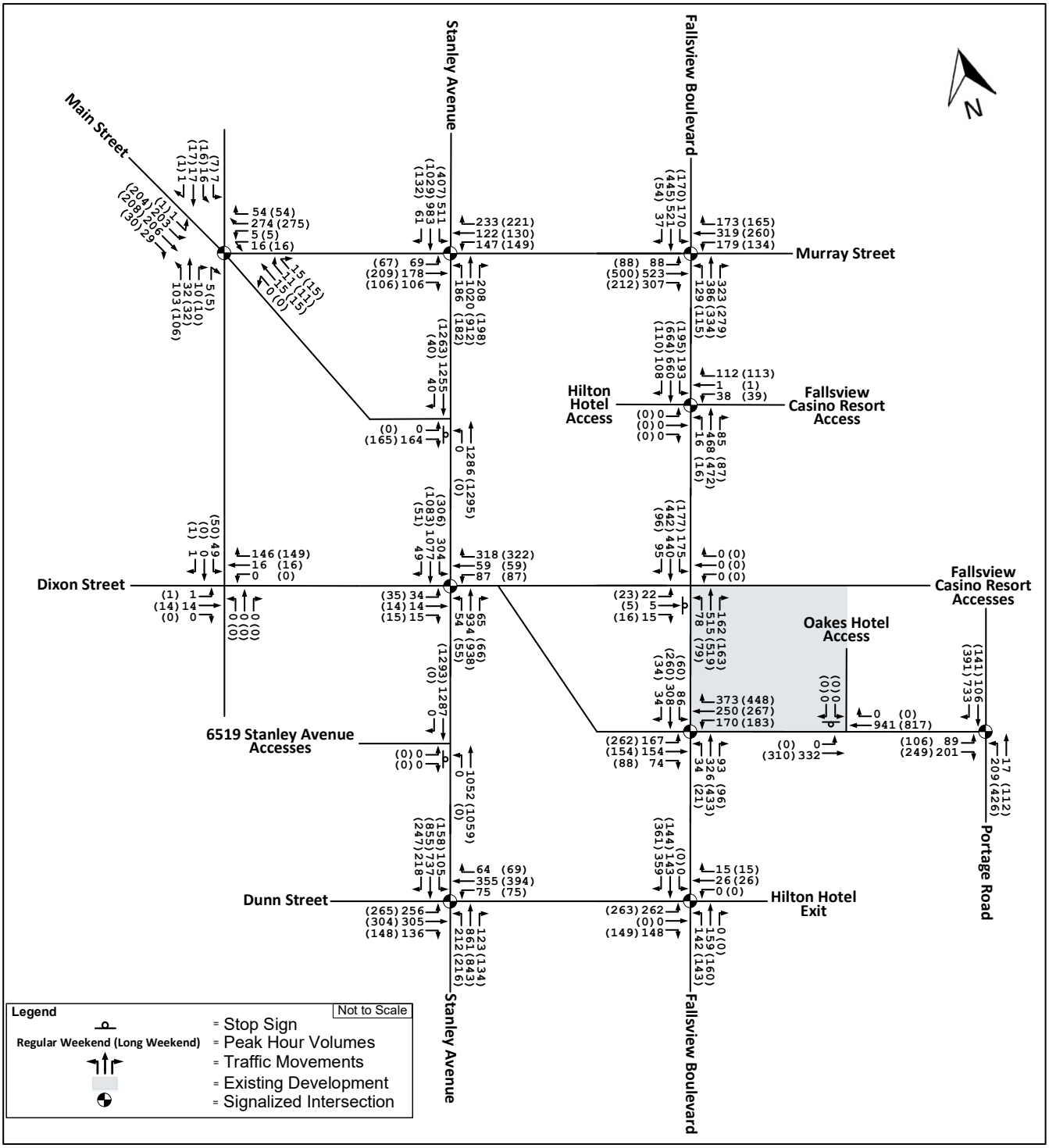
- 5566-5592 Robinson Street and 6158 Allendale Avenue (redevelopment of lands into a high-rise tower extending to 77 storeys with 962 residential condominium units and 516 m^2 of ground floor retail);
- Hyatt Centric Niagara Falls (a 14-storey hotel development which combined with the Hyatt Regency 16-storey hotel would introduce approximately 1,100 hotel rooms);
- 6740 Fallsview Boulevard (a 145-room expansion of existing Marriott Fallsview Hotel);
- 6609 Stanley Avenue (a large mixed-use tower of 72 storeys containing 456 hotel units and 275 residential units);
- 6663 Stanley Avenue (a 30-storey hotel containing 300 rooms, 1,100 m^2 GFA of retail and restaurant and 240 m^2 of hotel assembly space, and two 30-storey residential buildings containing 308 and 275 dwelling units, respectively);
- 6880 Stanley Avenue (a mixed-use development containing 250 hotel rooms, 264 residential units, as well as a 1,491m^2 restaurant and 3,185 m^2 of retail space); and
- Lot 175 Portage Road (a 35-storey building with 367 residential dwelling units and a 25-storey building with 256 residential dwelling units).

Site trip estimates obtained from Transportation Impact Studies provided for these developments have been included in the 2033 Future Background Conditions scenario.

3.5 2033 Future Background Conditions Analysis

The 2033 Future Background Conditions scenario was developed by adding the annual growth and background development-related growth discussed in **Section 3.2** and **Section 3.4** to the Existing Conditions scenario. These volumes are presented in **Exhibit 3-1**.

Exhibit 3-1: 2033 Future Background Conditions Traffic Volumes



The results of the 2033 Future Background analysis are summarized in the following subsections. Full Highway Capacity Manual analysis for the 2033 Future Background Conditions scenario is presented in **Appendix E**.

3.5.1 Signalized Intersections

The results of the 2033 Future Background conditions traffic operations analysis for signalized intersections are presented in **Exhibit 3-2**.

Exhibit 3-2: 2033 Future Background Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	C	21.4	0.70	EBL	D	36.8	0.81	67.4	50
				EBR	B	18.3	0.11	11.6	-
				WBT	B	18.0	0.07	8.9	-
				NBL	B	11.1	0.46	16.1	-
				NBT	A	8.4	0.19	20.0	-
				SBT	C	21.7	0.66	85.2	-
Stanley Avenue and Murray Street	E	66.9	1.45	EBL	D	42.9	0.64	31.8	15
				EBT	D	35.8	0.64	73.8	-
				WBL	E	72.8	0.89	63.6	25
				WBT	D	40.4	0.74	84.3	-
				NBL	E	73.9	1.00	77.9	35
				NBT	C	20.8	0.89	168.3	-
				SBL	F	324.1	1.62	204.6	55
				SBT	B	12.2	0.53	83.3	-
Fallsview Boulevard and Murray Street	C	33.2	0.71	EBL	C	24.3	0.30	21.3	30
				EBT	D	48.3	0.91	118.8	-
				WBL	D	40.2	0.79	56.2	35
				WBT	C	33.3	0.63	92.8	-
				WBR	C	26.3	0.12	15.9	-
				NBL	B	17.9	0.36	24.1	10
				NBT	C	27.7	0.53	63.7	-
				SBL	C	20.4	0.57	31.2	65
				SBT	C	26.3	0.47	64.0	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Stanley Avenue and Dunn Street	D	53.4	1.16	EBL	F	309.5	1.55	125.5	75
				EBT	D	46.5	0.86	138.8	-
				WBL	E	59.8	0.77	41.0	25
				WBT	C	34.0	0.69	97.7	-
				WBR	C	24.9	0.04	8.7	25
				NBL	F	90.6	1.01	94.8	25
				NBT	C	23.9	0.67	108.7	-
				SBL	C	20.2	0.41	23.0	40
				SBT	C	22.6	0.52	118.2	-
Fallsview Boulevard and Main Street / Portage Road	C	23.9	0.63	EBL	C	34.5	0.63	51.2	-
				EBT	C	29.7	0.52	58.9	-
				WBL	B	19.2	0.43	34.0	25
				WBT	B	19.2	0.36	52.6	-
				WBR	B	18.1	0.25	16.5	-
				NBL	C	20.7	0.11	12.2	20
				NBT	C	32.5	0.71	119.9	-
				SBL	B	16.3	0.26	15.9	-
				SBT	B	18.4	0.44	68.5	-
Portage Road and Fallsview Casino Rear Access	B	13.9	0.34	EBL	B	12.9	0.15	14.7	-
				EBR	B	12.8	0.14	10.5	-
				NBL	B	13.9	0.41	34.8	-
				NBT	A	9.8	0.02	4.4	-
				SBT	B	10.6	0.14	16.8	-
				SBR	B	14.8	0.50	18.5	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.6	0.41	WBT	C	21.7	0.19	11.5	-
				WBR	C	21.1	0.08	11.8	-
				NBL	B	10.8	0.07	4.6	20
				NBT	B	12.9	0.46	37.1	-
				SBL	A	5.6	0.38	13.8	25
				SBT	A	5.9	0.42	32.4	-
Stanley Avenue and Dixon Street / Main Street	C	21.9	0.74	EBT	D	36.8	0.28	19.5	-
				WBT	D	47.7	0.70	46.2	-
				WBR	D	37.0	0.31	27.4	-
				NBL	B	10.6	0.22	3.0	65
				NBT	C	23.9	0.72	111.6	-
				SBL	C	32.2	0.73	71.3	140
				SBT	A	9.3	0.61	72.0	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Allendale Avenue and Main Street and Murray Street	F	116.5	0.69	WBL	D	40.6	0.12	11.6	55
				WBR	F	251.1	1.41	162.6	-
				NBLTR	D	47.7	0.58	54.8	-
				SBLTR	D	36.6	0.14	17.6	-
				SEL	E	65.0	0.82	86.8	30
				SETR	D	51.2	0.70	81.1	-
				NWLTR	D	36.2	0.13	17.6	-
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	C	21.6	0.70	EBL	D	37.1	0.82	67.6	50
				EBR	B	18.3	0.11	11.6	-
				WBT	B	18.0	0.07	8.9	-
				NBL	B	11.2	0.47	16.2	-
				NBT	A	8.4	0.19	20.2	-
				SBT	C	22.0	0.67	86.9	-
Stanley Avenue and Murray Street	E	56.7	1.31	EBL	D	35.4	0.54	27.7	15
				EBT	D	38.8	0.73	87.2	-
				WBL	F	102.3	0.99	70.6	25
				WBT	D	40.4	0.75	95.5	-
				NBL	F	172.0	1.28	81.6	35
				NBT	C	22.7	0.91	151.7	-
				SBL	F	229.6	1.40	158.9	55
				SBT	B	15.7	0.66	103.3	-
Fallsview Boulevard and Murray Street	C	31	0.67	EBL	C	24.0	0.28	21.5	30
				EBT	D	45.6	0.88	104.4	-
				WBL	C	30.0	0.65	33.1	35
				WBT	C	32.3	0.57	76.2	-
				WBR	C	26.7	0.12	15.6	-
				NBL	B	17.3	0.32	22.1	10
				NBT	C	26.3	0.47	52.2	-
				SBL	B	18.9	0.54	31.7	65
				SBT	C	25.4	0.45	57.5	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Stanley Avenue and Dunn Street	F	87.6	1.62	EBL	F	576.2	2.15	139.0	75
				EBT	E	65.0	0.96	152.8	-
				WBL	F	99.9	0.91	44.3	25
				WBT	D	42.8	0.82	125.5	-
				WBR	C	24.9	0.05	9.6	25
				NBL	F	269.8	1.47	108.9	25
				NBT	C	27.0	0.74	113.0	-
				SBL	C	26.0	0.64	38.6	40
				SBT	C	25.3	0.66	140.6	-
Fallsview Boulevard and Main Street / Portage Road	D	39.2	0.88	EBL	E	72.6	0.96	102.8	-
				EBT	C	28.0	0.52	63.2	-
				WBL	B	18.2	0.48	36.5	25
				WBT	B	18.2	0.39	56.8	-
				WBR	B	18.6	0.42	38.0	-
				NBL	C	21.7	0.07	8.7	20
				NBT	E	76.2	1.03	179.5	-
				SBL	C	20.3	0.30	11.6	-
				SBT	C	20.4	0.43	59.6	-
Portage Road and Fallsview Casino Rear Access	C	22.2	0.60	EBL	B	13.0	0.19	17.1	-
				EBR	B	12.9	0.18	11.7	-
				NBL	D	45.6	0.95	105.6	-
				NBT	B	10.8	0.16	17.9	-
				SBT	B	11.2	0.21	21.7	-
				SBR	B	12.1	0.29	14.4	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.6	0.41	WBT	C	21.7	0.19	11.8	-
				WBR	C	21.1	0.08	11.8	-
				NBL	B	10.8	0.08	4.6	20
				NBT	B	13.0	0.47	37.6	-
				SBL	A	5.6	0.38	13.9	25
				SBT	A	5.9	0.42	32.8	-
Stanley Avenue and Dixon Street / Main Street	C	21.4	0.74	EBT	D	36.8	0.29	19.9	-
				WBT	D	47.9	0.71	46.2	-
				WBR	D	37.1	0.33	28.7	-
				NBL	B	10.8	0.23	2.4	65
				NBT	C	21.8	0.73	104.9	-
				SBL	C	31.7	0.73	72.9	140
				SBT	B	10.1	0.62	81.8	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Allendale Avenue and Main Street and Murray Street	F	112.3	0.70	WBL	D	39.6	0.12	11.3	55
				WBR	F	242.3	1.39	160.0	-
				NBLTR	D	46.7	0.58	54.6	-
				SBLTR	D	35.6	0.14	17.1	-
				SEL	E	62.4	0.81	85.5	30
				SETR	D	49.9	0.69	80.2	-
				NWLTR	D	35.2	0.13	17.2	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 3-2**, during the peak hour on a typical summer weekend in Future Background Conditions at the study area signalized intersections, the following critical operations are anticipated:

- At the Stanley Avenue and Murray Street intersection, the northbound left-turn and southbound left-turn movements are expected to have critical v/c ratios of 1.00 and 1.62, respectively;
- At the Fallsview Boulevard and Murray Street intersection, the eastbound through movement is expected to have a critical v/c ratio of 0.91;
- At the Stanley Avenue and Dunn Street intersection, the eastbound left-turn, eastbound through, and northbound left-turn movements are expected to have critical v/c ratios of 1.55, 0.86, and 1.01, respectively;
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 1.41.

During the peak hour on a summer long weekend, the following critical operations are anticipated:

- At the Stanley Avenue and Murray Street intersection, the westbound left-turn, northbound left-turn, northbound through, and southbound left-turn movements are expected to have critical v/c ratios of 0.99, 1.28, 0.91, and 1.40, respectively;
- At the Fallsview Boulevard and Murray Street intersection, the eastbound through movement is expected to have a critical v/c ratio of 0.88;
- At the Stanley Avenue and Dunn Street intersection, the eastbound left-turn, eastbound through, westbound left-turn, and northbound left-turn movements are expected to have critical v/c ratios of 2.15, 0.96, 0.91, and 1.47, respectively;

- At the Fallsview Boulevard and Main Street / Portage Road intersection, the eastbound left-turn and northbound through movements are expected to have critical v/c ratios of 0.96 and 1.03, respectively;
- At the Portage Road and Fallsview Casino Rear Access intersection, the northbound left-turn movement is expected to have a critical v/c ratio of 0.95;
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 1.39.

3.5.2 Unsignalized Intersections

The results of the 2033 Future Background conditions traffic operations analysis for unsignalized intersections is presented in **Exhibit 3-3**.

Exhibit 3-3: 2033 Future Background Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Typical Summer Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	20.6	EBLTR	F	801.1	1.82	36.7	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	C	20.7	0.27	8.2	-
		SBL	C	15.7	0.36	12.4	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	2.1	NBLTR	A	0.0	0.39	0.0	-
		SBLTR	A	9.4	0.06	1.5	-
Summer Long Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	2.3	EBLTR	D	25.5	0.18	4.8	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	A	8.9	0.09	2.1	-
		SBL	B	10.3	0.22	6.3	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	2.1	NBLTR	A	0.0	0.39	0.0	-
		SBLTR	A	9.4	0.06	1.5	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 3-3**, during the peak hour on a typical summer weekend in Future Background Conditions at the study area unsignalized intersections, the following critical operation is anticipated:

- At the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, the eastbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of ‘F’.

During the peak hour on a summer long weekend, the following critical operation is anticipated:

- At the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, the eastbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of ‘D’.

4 Future Total Conditions

This section of the report analyzes the impact of the proposed development on the 2033 Future Background Traffic Conditions scenario.

4.1 Proposed Site Access

As discussed in **Section 1.3**, hotel guest parking will be accommodated, primarily, off-site in a structured parking facility located at 6519 Stanley Avenue on the southwest corner of the Stanley Avenue and Dixon Street intersection. The Application contemplates a structured parking facility with capacity for approximately 1,047 vehicles, with vehicle access via Stanley Avenue and Dixon Street. It is our understanding that 912 of the off-site parking spaces will be dedicated to hotel guests, with the remainder available to the general public. The conceptual site plan for the structured parking facility also includes a terminal that will accommodate hotel guest check-in, luggage transfer/storage, a guest waiting area for a dedicated shuttle service, and ancillary services.

In addition, on-site parking at the 6546 Fallsview Boulevard site will also be provided through both an underground parking facility and through ground floor surface parking spaces. This on-site parking will include a total of 273 parking spaces where the majority of those would be provided in the underground parking facility and only 10 of them will be surface “temporary car spaces” on the ground floor.

Based on this, vehicle traffic using the proposed site access is expected to consist to a small number of vehicles remaining on site, as well as vehicles and shuttles engaged in passenger pick-up / drop-off activities.

4.2 Trip Generation

The trips expected to be generated by the proposed development are examined in this section. The net trips generated are then assigned and distributed to the study area road network.

4.2.1 Net Trip Generation

Trip generation rates from the publication Trip Generation Manual, 11th Edition (Institute of Transportation Engineers, October 2021) were used to estimate future automobile trips associated with the proposed development. Based on the nature of the development, its location context, and the data quality, the fitted curve equations for the land use code (LUC) 310: Hotel – General Urban/Suburban, the LUC 222: Multifamily Housing (High-Rise) – General Urban/Suburban – Not Close to Rail Transit, and LUC 473: Casino – General Urban/Suburban were used to calculate the estimated vehicle trips during the peak hours. Trip generation source data is presented in **Appendix G**.

Based on a total of 1,140 hotel rooms and 126 residential units, the proposed development is expected to generate up to 861 vehicle trips during the Saturday

Peak hour (483 inbound trips and 378 outbound trips). However, as there is an existing 275-room hotel on the site, up to 196 vehicle trips during the Saturday Peak hour (110 inbound trips and 86 outbound trips) are already expected to be captured in the existing conditions turning movement counts. The Casino/Gaming aspect of the development with a GFA of 2,648.30 m^2 (28,506.02 ft^2) is expected to generate up to 132 vehicles trips during the Saturday Peak hour (71 inbound trips and 61 outbound trips) with an 85% internal capture reduction as per Trip Generation Handbook 3rd Edition (Institute of Transportation Engineers, September 2017). As a result, the net new trips generation from the proposed development is up to 797 net new vehicle trips during the Saturday Peak hour (444 inbound trips and 353 outbound trips). This is illustrated in **Exhibit 4-1**.

Exhibit 4-1: Proposed Development Trip Generation

6546 Fallsview Boulevard, Niagara Falls				
LUC 310: Hotel – General Urban/Suburban – Proposed 1,140 Rooms				
Term	**Unit**	**Saturday Peak Hour**		
		Inbound	**Outbound**	**Total**
Trip Generation Fitted Curve Equation	vehicle trips / room	T = 0.69(X) + 5.95		
Directional Distribution	-	56%	44%	100%
Gross Vehicular Trips	vehicle trips / hour	**444**	**349**	**793**
LUC 222: Multifamily Housing (High-Rise) – General Urban/Suburban – Not Close to Rail Transit – Proposed 126 Dwelling Units				
Term	**Unit**	**Saturday Peak Hour**		
		Inbound	**Outbound**	**Total**
Trip Generation Fitted Curve Equation	vehicle trips / room	T = 0.30(X) +30.34		
Directional Distribution	-	57%	43%	100%
Gross Vehicular Trips	vehicle trips / hour	**39**	**29**	**68**
LUC 310: Hotel – General Urban/Suburban – Existing 275 Rooms				
Term	**Unit**	**Saturday Peak Hour**		
		Inbound	**Outbound**	**Total**
Trip Generation Fitted Curve Equation	vehicle trips / room	T = 0.69(X) + 5.95		
Directional Distribution	-	56%	44%	100%
Existing Vehicular Trips To Be Removed	vehicle trips / hour	**-110**	**-86**	**-196**
LUC 473: Casino - General Urban/Suburban - 28,506.02 sq. ft.[4]				
Term	**Unit**	**Saturday Peak Hour**		
		Inbound	**Outbound**	**Total**
Average Rate	vehicle trips / 1000 sq. ft. GFA	30.98		
Directional Distribution	-	54%	46%	100%
Internal Trip Capture Reduction	vehicle trips / hour	85%		
		-406	-345	-751
Gross Vehicular Trips	vehicle trips / hour	**71**	**61**	**132**
Total				
Term	**Unit**	**Saturday Peak Hour**		
		Inbound	**Outbound**	**Total**
Net New Vehicular Trips	vehicle trips / hour	**444**	**353**	**797**

[4] Site Plan Update provides a total of 28,380.94 sq. ft. of Casino space. Trips are overestimated as analysis is completed for 28,506.02 sq. ft. of Casino space.

4.2.2 Trip Distribution and Assignment

The trip distribution for site trips was generally determined based on existing travel patterns and the available road network. The 2016 Transportation Tomorrow Survey (TTS) was also used to inform general anticipated travel patterns and trip distribution, though tourist-oriented trips are not necessarily well-represented in the TTS.

Given that offsite parking is proposed, trip distribution was further refined to consider various parking options available to future hotel guests. Based on a discussion with the proponent, it is expected that:

- 5% of guests will seek to park at the hotel site;
- 25% of guests will drop-off or pick-up individuals at the hotel site but park their vehicle at the off-site parking facility;
- 65% of guests will seek to directly park at the parking facility; and
- 5% of guests will seek to park at other parking facilities (i.e. Fallsview Casino Resort, due to a pre-existing discount entitlement).

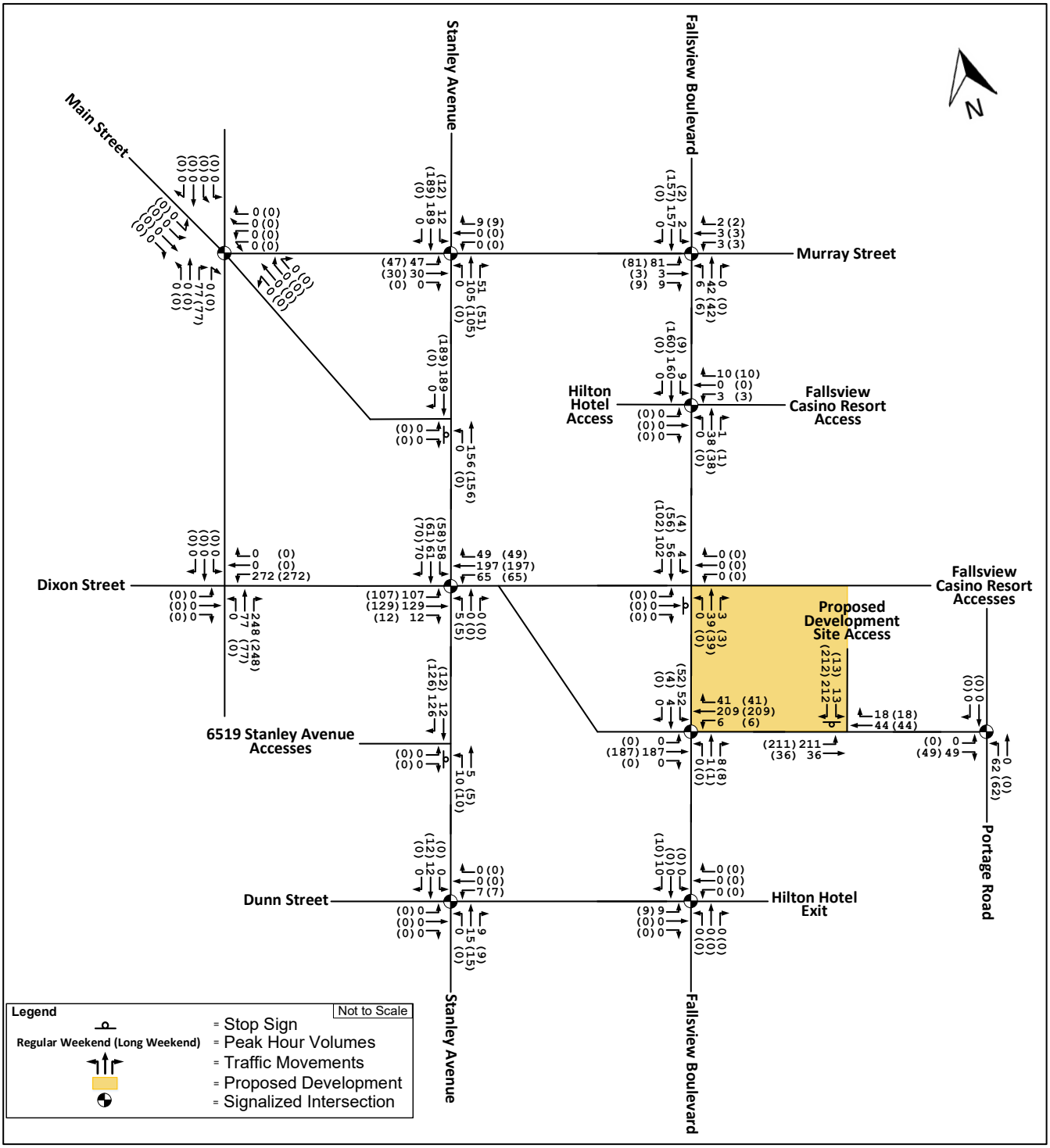
For hotel guests who ultimately park their vehicle at the parking facility, a frequent shuttle service (assumed to operate every 10 minutes) is proposed.

The general trip distribution patterns are presented in **Exhibit 4-2** and the associated site-generated volume patterns are illustrated in **Exhibit 4-3.**

Exhibit 4-2: Site Trip Distribution

To / From	Inbound Trips		Outbound Trips	
	Typical Summer Weekend Peak Hour	Summer Long Weekend Peak Hour	Typical Summer Weekend Peak Hour	Summer Long Weekend Peak Hour
Fallsview Boulevard (north)	35%	35%	35%	35%
Portage Road (south)	15%	15%	15%	15%
Stanley Avenue (north)	45%	45%	45%	45%
Stanley Avenue (south)	5%	5%	5%	5%
Total	**100%**	**100%**	**100%**	**100%**

Exhibit 4-3: Net New Site-Generated Traffic Volumes



4.3 2033 Future Total Conditions Analysis

New trips resulting from the construction of the proposed development were added to the 2033 Future Background Conditions scenario, producing the 2033 Future Total Conditions traffic volumes illustrated in **Exhibit 4-4**.

Using these 2033 Future Total Conditions traffic volumes, traffic operations analysis was conducted to determine future intersection performance with the impact of the proposed development. The results of the traffic operations analysis are presented in the following subsections. Full Highway Capacity Manual analysis for the 2033 Future Total Conditions scenario is presented in **Appendix H**.

4.3.1 Signalized Intersections

The results of the 2033 Future Total Conditions traffic operations analysis for signalized intersections is presented in **Exhibit 4-5**.

Exhibit 4-4: 2033 Future Total Conditions Traffic Volumes

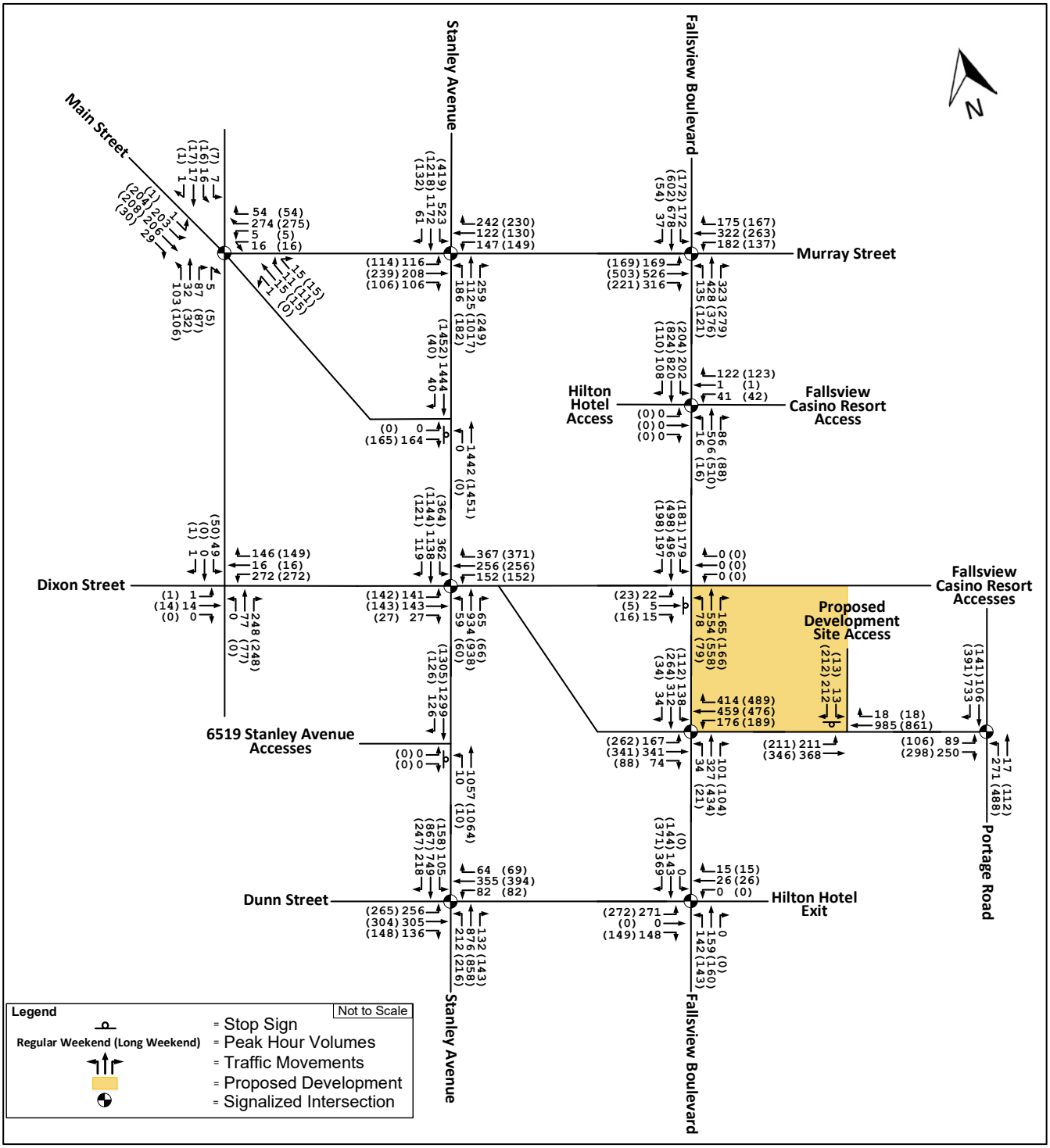


Exhibit 4-5: 2033 Future Total Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	C	22.3	0.71	EBL	D	39.0	0.84	70.8	50
				EBR	B	18.1	0.11	11.6	-
				WBT	B	17.8	0.07	8.9	-
				NBL	B	11.5	0.48	16.1	-
				NBT	A	8.5	0.19	20.0	-
				SBT	C	22.4	0.68	87.7	-
Stanley Avenue and Murray Street	E	79.0	1.51	EBL	F	130.3	1.04	59.9	15
				EBT	D	37.2	0.69	84.1	-
				WBL	F	96.7	0.97	68.3	25
				WBT	D	39.4	0.73	86.5	-
				NBL	F	167.5	1.29	69.7	35
				NBT	D	39.3	1.02	185.0	-
				SBL	F	341.6	1.66	209.6	55
				SBT	B	14.3	0.63	107.2	-
Fallsview Boulevard and Murray Street	C	34.8	0.74	EBL	C	26.0	0.56	37.7	30
				EBT	D	51.7	0.93	121.1	-
				WBL	D	42.4	0.80	53.9	35
				WBT	D	37.6	0.70	93.8	-
				WBR	C	28.2	0.12	16.0	-
				NBL	B	18.8	0.46	25.3	10
				NBT	C	28.3	0.57	71.7	-
				SBL	C	21.4	0.60	31.6	65
				SBT	C	28.5	0.61	85.2	-
Stanley Avenue and Dunn Street	D	52.4	1.18	EBL	F	309.5	1.55	125.5	75
				EBT	D	46.5	0.86	138.8	-
				WBL	E	73.4	0.84	45.1	25
				WBT	C	34.0	0.69	97.7	-
				WBR	C	24.9	0.04	8.7	25
				NBL	F	97.6	1.04	95.6	25
				NBT	C	24.3	0.69	112.3	-
				SBL	B	14.9	0.42	12.5	40
				SBT	B	17.5	0.53	107.6	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	31.2	0.77	EBL	D	51.3	0.81	65.7	-
				EBT	D	50.7	0.89	130.4	-
				WBL	C	28.4	0.69	35.5	25
				WBT	C	24.6	0.65	105.4	-
				WBR	B	18.9	0.28	17.2	-
				NBL	C	23.3	0.11	12.2	20
				NBT	D	39.1	0.78	124.2	-
				SBL	B	19.0	0.47	26.2	-
				SBT	B	19.3	0.44	69.5	-
Portage Road and Fallsview Casino Rear Access	B	14.3	0.37	EBL	B	12.7	0.15	14.7	-
				EBR	B	12.9	0.17	11.6	-
				NBL	B	16.2	0.54	47.2	-
				NBT	A	9.8	0.02	4.4	-
				SBT	B	10.6	0.14	16.8	-
				SBR	B	14.8	0.50	18.5	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.8	0.48	WBT	C	22.1	0.20	12.4	-
				WBR	C	21.4	0.09	12.4	-
				NBL	B	10.9	0.09	4.8	20
				NBT	B	13.1	0.49	40.5	-
				SBL	A	5.7	0.41	14.7	25
				SBT	A	6.4	0.50	43.1	-
Stanley Avenue and Dixon Street / Main Street	F	115.4	1.69	EBT	F	780.3	2.60	141.0	-
				WBT	F	178.0	1.27	166.8	-
				WBR	C	29.6	0.40	40.4	-
				NBL	B	13.3	0.38	4.5	65
				NBT	C	31.4	0.83	112.0	-
				SBL	F	143.6	1.18	125.6	140
				SBT	B	19.5	0.85	103.3	-
Allendale Avenue and Main Street and Murray Street	F	115.5	0.76	WBL	D	40.6	0.12	11.6	55
				WBR	F	251.1	1.41	162.6	-
				NBLTR	E	66.4	0.84	95.5	-
				SBLTR	D	36.9	0.15	17.7	-
				SEL	E	65.0	0.82	86.8	30
				SETR	D	51.2	0.70	81.1	-
				NWLTR	D	36.3	0.13	17.8	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	C	22.5	0.72	EBL	D	39.2	0.84	71.1	50
				EBR	B	18.1	0.11	11.6	-
				WBT	B	17.8	0.07	8.9	-
				NBL	B	11.6	0.48	16.2	-
				NBT	A	8.5	0.19	20.2	-
				SBT	C	22.7	0.69	89.5	-
Stanley Avenue and Murray Street	E	79.5	1.55	EBL	F	81.6	0.90	57.6	15
				EBT	D	41.2	0.78	106.4	-
				WBL	F	135.0	1.09	74.7	25
				WBT	D	39.6	0.75	98.6	-
				NBL	F	443.8	1.92	75.1	35
				NBT	D	50.8	1.06	168.5	-
				SBL	F	248.0	1.44	163.9	55
				SBT	B	19.3	0.78	134.8	-
Fallsview Boulevard and Murray Street	C	32.4	0.70	EBL	C	25.2	0.54	38.3	30
				EBT	D	48.3	0.90	106.9	-
				WBL	C	32.0	0.67	31.5	35
				WBT	D	36.0	0.64	77.2	-
				WBR	C	28.6	0.12	15.8	-
				NBL	B	17.9	0.41	23.3	10
				NBT	C	27.0	0.52	60.6	-
				SBL	B	19.6	0.57	32.1	65
				SBT	C	27.9	0.59	78.9	-
Stanley Avenue and Dunn Street	F	86.8	1.64	EBL	F	576.2	2.15	139.0	75
				EBT	E	65.0	0.96	152.8	-
				WBL	F	125.2	0.99	48.3	25
				WBT	D	42.8	0.82	125.5	-
				WBR	C	24.9	0.05	9.6	25
				NBL	F	286.3	1.51	109.7	25
				NBT	C	27.7	0.76	117.0	-
				SBL	B	18.4	0.65	20.4	40
				SBT	B	20.0	0.67	125.1	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	E	62.8	1.08	EBL	F	227.9	1.37	119.4	-
				EBT	E	63.2	0.96	145.3	-
				WBL	D	36.4	0.79	50.5	25
				WBT	C	26.0	0.71	115.7	-
				WBR	C	20.8	0.50	51.0	-
				NBL	C	23.1	0.07	8.7	20
				NBT	F	95.7	1.08	186.1	-
				SBL	C	22.8	0.54	22.2	-
				SBT	B	19.9	0.42	60.2	-
Portage Road and Fallsview Casino Rear Access	C	34.4	0.69	EBL	B	13.0	0.19	17.1	-
				EBR	B	13.2	0.22	12.7	-
				NBL	F	82.1	1.08	124.6	-
				NBT	B	10.8	0.16	17.9	-
				SBT	B	11.2	0.21	21.7	-
				SBR	B	12.1	0.29	14.4	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.8	0.49	WBT	C	22.2	0.21	13.0	-
				WBR	C	21.5	0.09	12.6	-
				NBL	B	10.8	0.09	4.7	20
				NBT	B	13.1	0.49	40.8	-
				SBL	A	5.8	0.41	14.8	25
				SBT	A	6.4	0.51	43.4	-
Stanley Avenue and Dixon Street / Main Street	F	115.3	1.71	EBT	F	783.7	2.61	141.4	-
				WBT	F	178.0	1.27	166.8	-
				WBR	C	29.7	0.41	41.5	-
				NBL	B	12.9	0.39	3.6	65
				NBT	C	27.4	0.83	105.7	-
				SBL	F	145.7	1.20	116.8	140
				SBT	C	21.8	0.85	126.2	-
Allendale Avenue and Main Street and Murray Street	F	111.4	0.77	WBL	D	39.6	0.12	11.3	55
				WBR	F	242.3	1.39	160.0	-
				NBLTR	E	64.6	0.84	89.8	-
				SBLTR	D	35.8	0.15	17.2	-
				SEL	E	62.4	0.81	85.5	30
				SETR	D	49.9	0.69	80.2	-
				NWLTR	D	35.2	0.13	17.2	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-5**, during the peak hour on a typical summer weekend in Future Total Conditions at the study area signalized intersections, the following critical operations are anticipated:

- At the Stanley Avenue and Murray Street intersection, the eastbound left-turn, westbound left-turn, northbound left-turn, northbound through, and southbound left-turn movements are all expected to have critical v/c ratios of 1.04, 0.97, 1.29, 1.02, and 1.66, respectively;
- At the Fallsview Boulevard and Murray Street intersection, the eastbound through movement is expected to have a critical v/c ratio of 0.93;
- At the Stanley Avenue and Dunn Street intersection, the eastbound left-turn, eastbound through, and northbound left-turn movements are expected to have critical v/c ratios of 1.55, 0.86, and 1.04, respectively;
- At the Fallsview Boulevard and Main Street / Portage Road, the eastbound through movement is expected to have a critical v/c ratio of 0.89;
- At the Stanley Avenue and Dixon Street / Main Street intersection, the eastbound through, westbound through, and southbound left-turn movements are expected to have critical v/c ratios of 2.60, 1.27, and 1.18, respectively; and
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 1.41.

During the peak hour on a summer long weekend, the following critical operations are anticipated:

- At the Stanley Avenue and Murray Street intersection, the westbound left-turn, northbound left-turn, northbound through, and southbound left-turn movements are expected to have critical v/c ratios of 1.09, 1.92, 1.06, and 1.44, respectively;
- At the Fallsview Boulevard and Murray Street intersection, the eastbound through movement is expected to have a critical v/c ratio of 0.90;
- At the Stanley Avenue and Dunn Street intersection, the eastbound left-turn, eastbound through, westbound left-turn, and northbound left-turn movements are expected to have critical v/c ratios of 2.15, 0.96, 0.99, and 1.51, respectively;
- At the Fallsview Boulevard and Main Street / Portage Road intersection, the eastbound left-turn, eastbound through, and northbound through movements are expected to have critical v/c ratios of 1.37, 0.96, and 1.08, respectively;

- At the Portage Road and Fallsview Casino Rear Access intersection, the northbound left-turn movement is expected to have a critical v/c ratio of 1.08;
- At the Stanley Avenue and Dixon Street / Main Street intersection, the eastbound through, westbound through, and southbound left-turn movements are expected to have critical v/c ratios of 2.61, 1.27, and 1.20, respectively; and
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 1.39.

4.3.2 Unsignalized Intersections

The results of the 2033 Future Total Conditions traffic operations analysis for unsignalized intersections is presented in **Exhibit 4-6**.

Exhibit 4-6: 2033 Future Total Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Typical Summer Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	30.7	EBLTR	F	1151.6	2.55	46.8	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	C	23.1	0.30	9.3	-
		SBL	C	16.5	0.39	13.7	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	14.2	EBLTR	A	0.5	0.00	0.0	-
		WBLTR	A	5.4	0.18	5.1	-
		NBLTR	C	17.9	0.56	26.8	-
		SBLTR	F	70.7	0.51	17.6	-
Stanley Ave and 6519 Stanley Avenue Access	0.0	EBL	A	0.0	0.00	0.0	-
		EBR	A	0.0	0.00	0.0	-
		NBL	B	11.5	0.02	0.5	-
Portage Road and Proposed Development Site Access	4.8	EBL	B	10.5	0.35	12.1	-
		SBL	F	99.0	0.27	7.1	-
		SBR	C	18.8	0.47	18.9	-

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Summer Long Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	2.2	EBLTR	C	24.5	0.20	5.6	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	A	9.2	0.09	2.3	-
		SBL	B	10.6	0.23	6.9	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	14.4	EBLTR	A	0.5	0.00	0.0	-
		WBLTR	A	5.4	0.18	5.1	-
		NBLTR	C	18.0	0.57	26.9	-
		SBLTR	F	72.3	0.52	18.2	-
Stanley Ave and 6519 Stanley Avenue Access	0.0	EBL	A	0.0	0.00	0.0	-
		EBR	A	0.0	0.00	0.0	-
		NBL	B	11.5	0.02	0.5	-
Portage Road and Proposed Development Site Access	4.5	EBL	A	9.4	0.31	10.3	-
		SBL	F	70.6	0.20	5.3	-
		SBR	C	16.6	0.43	16.1	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-6**, during the peak hour on a typical summer weekend in Future Total Conditions at the study area unsignalized intersections, the following critical operations are anticipated:

- At the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, the eastbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F';
- At the Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access intersection, the southbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F'; and
- At the Portage Road and Proposed Development Site Access intersection, the southbound left-turn lane is expected to have a critical lane LOS of 'F'.

During the peak hour on a summer long weekend, the following critical operations are anticipated:

- At the Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access intersection, the southbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F'; and
- At the Portage Road and Proposed Development Site Access intersection, the southbound left-turn lane is expected to have a critical lane LOS of 'F'.

5 Traffic Operations Mitigation Measures

As noted in **Section 2.6**, **Section 3.5**, and **Section 4.3**, several movement-specific traffic operations are observed to exceed critical operational thresholds under existing and future conditions. This section discusses measures to mitigate these constraints, as appropriate.

5.1 Signalized Intersections

Based on anticipated instances of movements exceeding critical thresholds, signal timing phase changes were considered to improve operations at the study area signalized intersections. The considered signal timing phase changes are as follows:

- At the Stanley Avenue and Murray Street intersection for both the typical summer and summer long weekend peak periods, the southbound left-turn movement phase was reduced from 18 to 17 seconds, while the northbound through movement phase was increased from 47 to 48 seconds;
- At the Fallsview Boulevard and Murray Street intersection for both the typical summer and summer long weekend peak periods, the northbound left-turn and southbound left-turn movement phases were reduced from 13 to 12 seconds, and the northbound through and southbound through movement phases were increased from 42.6 to 43.0 seconds. In addition:
  - During the typical summer weekend peak hour, the eastbound left-turn and westbound left-turn movement phases were reduced from 13 to 11 seconds, while the eastbound through and westbound through movement phases were increased from 33.3 to 35.9 seconds.
  - During the summer long weekend peak period, the eastbound left-turn and westbound left-turn movement phases were reduced from 13 to 10 seconds, while the eastbound through and westbound through movement phases were increased from 33.3 to 36.9 seconds;
- At the Stanley Avenue and Dunn Street intersection for both the typical summer and summer long weekend peak periods, the southbound left-turn movement phase was reduced from 13 to 11 seconds, while the eastbound through and westbound through movement phases were increased from 37 to 39 seconds;
- At the Fallsview Boulevard and Main Street / Portage Road intersection for the summer long weekend peak period, the southbound left-turn moment phase was reduced from 13 to 10 seconds, the northbound through and southbound through movement

phases were increased from 36.5 to 38 seconds, and the eastbound through movement phase was increased from 33.5 to 35.0 seconds;

- At the Portage Road and Fallsview Casino Rear Access intersection for the summer long weekend Saturday peak period, the overall cycle length was increased by 3 seconds from 62.2 to 65.2 seconds;
- At the Stanley Avenue and Dixon Street / Main Street intersection for both the typical summer and summer long weekend peak periods, the northbound left-turn and southbound left-turn movement phases were reduced from 18 to 17 seconds, while the eastbound through and westbound through movement phases were increased from 35 to 36 seconds; and
- At the Allendale Avenue and Main Street and Murray Street intersection for both the typical summer and summer long weekend Saturday peak periods, the northbound through and southbound through movement (along Main Street) phases were reduced from 31.8 to 30.0 seconds, the westbound right-turn (from Murray Street to Main Street) movement phase was increased from 26.8 to 29 seconds, and the northbound through and southbound through movements (along Allendale Avenue) were decreased from 31.8 to 31.4 seconds.

The results of the 2033 Future Total Mitigated Conditions traffic operations analysis for signalized intersections is presented in **Exhibit 5-1**. Full Highway Capacity Manual analysis for the 2033 Future Total Mitigated Conditions scenario is presented in **Appendix I**.

Exhibit 5-1: 2033 Future Total Conditions Traffic Operations – Signalized Intersections (Mitigated)

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	C	22.3	0.71	EBL	D	39.0	0.84	70.8	50
				EBR	B	18.1	0.11	11.6	-
				WBT	B	17.8	0.07	8.9	-
				NBL	B	11.5	0.48	16.1	-
				NBT	A	8.5	0.19	20.0	-
				SBT	C	22.4	0.68	87.7	-
Stanley Avenue and Murray Street	F	81.6	1.58	EBL	F	130.3	1.04	59.9	15
				EBT	D	37.2	0.69	84.1	-
				WBL	F	96.7	0.97	68.3	25
				WBT	D	39.4	0.73	86.5	-
				NBL	F	168.3	1.29	70.8	35
				NBT	C	32.6	1.00	182.6	-
				SBL	F	380.5	1.75	213.5	55
				SBT	B	14.3	0.63	107.2	-
Fallsview Boulevard and Murray Street	C	33.7	0.78	EBL	C	27.1	0.59	37.3	30
				EBT	D	41.0	0.85	102.3	-
				WBL	F	87.9	0.99	63.7	35
				WBT	C	33.8	0.65	88.9	-
				WBR	C	26.3	0.12	15.2	-
				NBL	B	18.3	0.46	25.6	10
				NBT	C	27.1	0.56	71.1	-
				SBL	C	21.4	0.61	32.0	65
				SBT	C	27.5	0.59	84.5	-
Stanley Avenue and Dunn Street	D	46.7	1.16	EBL	F	225.5	1.36	120.2	75
				EBT	D	39.2	0.81	131.1	-
				WBL	D	41.5	0.68	39.9	25
				WBT	C	31.2	0.64	94.6	-
				WBR	C	23.5	0.04	8.4	25
				NBL	F	123.7	1.11	97.1	25
				NBT	C	25.9	0.71	112.3	-
				SBL	B	16.0	0.46	13.2	40
				SBT	B	18.7	0.55	108.2	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	31.2	0.77	EBL	D	51.3	0.81	65.7	-
				EBT	D	50.7	0.89	130.4	-
				WBL	C	28.4	0.69	35.5	25
				WBT	C	24.6	0.65	105.4	-
				WBR	B	18.9	0.28	17.2	-
				NBL	C	23.3	0.11	12.2	20
				NBT	D	39.1	0.78	124.2	-
				SBL	B	19.0	0.47	26.2	-
				SBT	B	19.3	0.44	69.5	-
Portage Road and Fallsview Casino Rear Access	B	14.3	0.37	EBL	B	12.7	0.15	14.7	-
				EBR	B	12.9	0.17	11.6	-
				NBL	B	16.2	0.54	47.2	-
				NBT	A	9.8	0.02	4.4	-
				SBT	B	10.6	0.14	16.8	-
				SBR	B	14.8	0.50	18.5	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.8	0.48	WBT	C	22.1	0.20	12.4	-
				WBR	C	21.4	0.09	12.4	-
				NBL	B	10.9	0.09	4.8	20
				NBT	B	13.1	0.49	40.5	-
				SBL	A	5.7	0.41	14.7	25
				SBT	A	6.4	0.50	43.1	-
Stanley Avenue and Dixon Street / Main Street	F	106.6	1.66	EBT	F	663.5	2.35	161.1	-
				WBT	F	158.5	1.22	164.1	-
				WBR	C	29.1	0.42	42.9	-
				NBL	B	13.9	0.39	5.1	65
				NBT	C	31.7	0.83	116.1	-
				SBL	F	167.6	1.24	129.1	140
				SBT	C	21.4	0.87	166.7	-
Allendale Avenue and Main Street and Murray Street	F	101.2	0.76	WBL	D	38.5	0.11	11.2	55
				WBR	F	190.4	1.27	156.1	-
				NBLTR	E	68.8	0.85	96.6	-
				SBLTR	D	37.2	0.16	17.8	-
				SEL	E	76.5	0.88	91.3	30
				SETR	E	56.7	0.75	89.6	-
				NWLTR	D	37.9	0.14	18.2	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	C	22.3	0.72	EBL	D	39.0	0.83	70.0	50
				EBR	B	18.2	0.11	11.6	-
				WBT	B	17.9	0.07	8.9	-
				NBL	B	11.5	0.48	16.2	-
				NBT	A	8.4	0.19	20.2	-
				SBT	C	22.5	0.69	88.9	-
Stanley Avenue and Murray Street	E	73.4	1.47	EBL	E	64.2	0.82	51.6	15
				EBT	D	41.2	0.78	106.4	-
				WBL	F	135.0	1.09	74.7	25
				WBT	D	39.4	0.74	98.5	-
				NBL	F	366.6	1.74	77.1	35
				NBT	C	31.9	0.99	167.0	-
				SBL	F	275.8	1.51	165.9	55
				SBT	B	18.5	0.75	126.5	-
Fallsview Boulevard and Murray Street	C	29.9	0.68	EBL	C	24.6	0.49	33.5	30
				EBT	D	40.4	0.84	91.2	-
				WBL	D	40.2	0.76	36.1	35
				WBT	C	32.6	0.59	73.2	-
				WBR	C	26.7	0.12	15.0	-
				NBL	B	17.1	0.38	23.1	10
				NBT	C	25.6	0.50	58.1	-
				SBL	B	19.2	0.57	32.6	65
				SBT	C	26.1	0.55	72.8	-
Stanley Avenue and Dunn Street	E	77.1	1.61	EBL	F	428.0	1.82	134.3	75
				EBT	D	50.6	0.90	145.8	-
				WBL	E	60.3	0.79	43.2	25
				WBT	D	37.4	0.77	118.5	-
				WBR	C	23.5	0.05	9.3	25
				NBL	F	342.1	1.63	85.4	25
				NBT	C	28.4	0.77	115.6	-
				SBL	C	26.1	0.72	23.3	40
				SBT	C	22.0	0.69	132.6	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	D	44.3	0.97	EBL	F	127.2	1.12	109.7	-
				EBT	D	44.5	0.85	123.0	-
				WBL	C	27.2	0.70	36.8	25
				WBT	C	23.2	0.62	96.8	-
				WBR	C	21.1	0.53	57.3	-
				NBL	C	21.4	0.07	8.5	20
				NBT	E	64.6	0.98	179.7	-
				SBL	C	24.1	0.55	18.7	-
				SBT	C	20.6	0.43	62.2	-
Portage Road and Fallsview Casino Rear Access	C	25.1	0.65	EBL	B	14.4	0.20	18.5	-
				EBR	B	14.5	0.21	13.2	-
				NBL	D	53.0	0.99	120.5	-
				NBT	B	10.3	0.15	17.6	-
				SBT	B	10.6	0.19	21.4	-
				SBR	B	11.7	0.29	13.9	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.7	0.47	WBT	C	22.1	0.21	12.5	-
				WBR	C	21.4	0.09	12.2	-
				NBL	B	10.8	0.08	4.7	20
				NBT	B	13.1	0.49	40.2	-
				SBL	A	5.7	0.40	14.5	25
				SBT	A	6.3	0.49	40.6	-
Stanley Avenue and Dixon Street / Main Street	D	54.5	1.26	EBT	F	180.8	1.25	111.0	-
				WBT	F	86.6	1.02	131.8	-
				WBR	C	28.9	0.40	40.5	-
				NBL	B	13.5	0.39	4.2	65
				NBT	C	29.4	0.83	109.2	-
				SBL	F	154.6	1.22	117.9	140
				SBT	C	22.2	0.85	122.6	-
Allendale Avenue and Main Street and Murray Street	F	111.4	0.77	WBL	D	36.5	0.11	11.0	55
				WBR	F	181.6	1.25	153.5	-
				NBLTR	E	66.9	0.85	95.6	-
				SBLTR	D	36.2	0.15	17.3	-
				SEL	E	73.0	0.87	90.0	30
				SETR	E	55.2	0.75	88.4	-
				NWLTR	D	36.8	0.14	17.6	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 5-1**, applying these signal timing plan changes is expected to result in improvements to the critical operations at the various study area

signalized intersections during both peak hour settings when compared to the unmitigated conditions.

While instances of movements exceeding critical thresholds are still expected to be present at various intersections, it must be noted that the most constrained movements for these intersections are comparable to Future Background Conditions. This suggests that, with signal timing plan changes, the proposed development's impact on traffic operations within the study area can be reduced. In addition, as per **Section 3.3** and according to the ***City of Niagara Falls Transportation Master Plan*** (October 2011), there are several major road network improvements – independent of the proposed development but within the site's study area – which are anticipated to be implemented in the short- and medium-term horizon. Improvements to Allendale Avenue, Livingston Street, Fallsview Boulevard and others are expected to further improve traffic operations by providing more capacity (through potential road widenings) and by better distributing traffic (through new connections). Specifically:

- The Allendale Avenue new connection to Stanley Avenue near Livingston Street may mitigate critical operations anticipated at the Stanley Avenue and Dixon Street / Main Street intersection – particularly the critical eastbound through and westbound through movements during both peak hours;
- The planned Livingston Street / Fallsview Boulevard connection to Portage Road can improve conditions at the Fallsview Boulevard and Portage Road / Main Street as well as the Portage Road and Fallsview Casino Rear Access intersections – particularly the critical northbound left-turn movement at the latter intersection during the summer long weekend peak hour – by providing an alternative travel path to motorists utilizing Portage Road; and
- The planned Allendale Avenue and Fallsview Boulevard widening is expected to provide increased north-south capacity to the road network and provide a viable alternative to Stanley Avenue. This can help improve conditions at all Stanley Avenue intersections within the study area:
  - At the Stanley Avenue and Murray Street intersection, the critical westbound left-turn movement during the summer long weekend peak hour can be alleviated through additional westbound left-turn movements at the nearby Fallsview Boulevard and Murray Street intersection – which can be more appealing following the Fallsview Boulevard widening. In addition, volume at the critical northbound through, northbound left-turn and southbound left-turn movements at the Stanley Avenue and Murray Street intersection during both peak hours may elect to travel through the Fallsview Boulevard and Murray Street intersection following the widening.

- At the Stanley Avenue and Dunn Street intersection, the critical eastbound left-turn movement during both peak hours can be alleviated by accommodating additional eastbound left-turn movements at the Fallsview Boulevard and Dunn Street intersection.
- At the Stanley Avenue and Dixon Street / Main Street intersection, the critical southbound left-turn movement during both peak hours can be alleviated by accommodating additional southbound left-turn movements at the Allendale Avenue and Dixon Street intersection following the Allendale Avenue widening.
- At the Fallsview Boulevard and Main Street / Portage Road intersection, the critical northbound through movement during the summer long weekend peak hour can be alleviated following the widening of Fallsview Boulevard.

As further mitigative solutions, additional turning movement capacity (such as dual left-turn lanes or split phase operation) can be considered at intersections – particularly those already identified in the TMP for short and longer-term improvements – as most of the critical operations identified in **Exhibit 5-1** pertain to left-turn movements.

Note that if the proposed signal timing plan changes that were identified in this section were applied to the 2033 Future Background Conditions scenario, traffic operations at the study area intersections would be as presented in **Exhibit 5-2**. Full Highway Capacity Manual analysis for the 2033 Future Background Mitigated Conditions scenario is presented in **Appendix F**.

Exhibit 5-2: 2033 Future Background Conditions Traffic Operations – Signalized Intersections – Mitigated

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	C	21	0.7	EBL	D	36.8	0.81	67.4	50
				EBR	B	18.3	0.11	11.6	-
				WBT	B	18.0	0.07	8.9	-
				NBL	B	11.1	0.46	16.1	-
				NBT	A	8.4	0.19	20.0	-
				SBT	C	21.7	0.66	85.2	-
Stanley Avenue and Murray Street	E	71	1.5	EBL	D	42.9	0.64	31.8	15
				EBT	D	35.8	0.64	73.8	-
				WBL	E	72.8	0.89	63.6	25
				WBT	D	40.4	0.74	84.3	-
				NBL	E	65.6	0.98	75.5	35
				NBT	B	18.2	0.87	164.5	-
				SBL	F	361.9	1.71	208.3	55
				SBT	B	12.2	0.53	83.3	-
Fallsview Boulevard and Murray Street	C	33	0.8	EBL	C	23.7	0.31	21.1	30
				EBT	D	39.4	0.83	100.7	-
				WBL	F	83.6	0.98	64.8	35
				WBT	C	31.4	0.60	87.9	-
				WBR	C	25.2	0.12	15.0	-
				NBL	B	17.5	0.36	24.5	10
				NBT	C	26.6	0.52	63.9	-
				SBL	C	20.3	0.58	31.6	65
				SBT	C	25.4	0.46	63.5	-
Stanley Avenue and Dunn Street	D	48	1.1	EBL	F	225.5	1.36	120.2	75
				EBT	D	39.2	0.81	131.1	-
				WBL	D	36.7	0.63	35.9	25
				WBT	C	31.2	0.64	94.6	-
				WBR	C	23.5	0.04	8.4	25
				NBL	F	114.5	1.08	96.2	25
				NBT	C	25.4	0.69	108.7	-
				SBL	C	22.1	0.44	24.1	40
				SBT	C	24.2	0.54	118.5	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	24	0.6	EBL	C	34.6	0.63	51.2	-
				EBT	C	29.4	0.49	56.4	-
				WBL	B	19.2	0.42	34.0	25
				WBT	B	19.2	0.36	52.6	-
				WBR	B	18.2	0.25	16.5	-
				NBL	C	20.8	0.11	12.2	20
				NBT	C	32.6	0.72	119.9	-
				SBL	B	16.5	0.29	17.4	-
				SBT	B	18.4	0.44	68.5	-
Portage Road and Fallsview Casino Rear Access	B	14	0.3	EBL	B	12.9	0.15	14.7	-
				EBR	B	12.8	0.14	10.5	-
				NBL	B	13.9	0.41	34.8	-
				NBT	A	9.8	0.02	4.4	-
				SBT	B	10.6	0.14	16.8	-
				SBR	B	14.8	0.50	18.5	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.6	0.4	WBT	C	21.7	0.19	11.5	-
				WBR	C	21.1	0.08	11.8	-
				NBL	B	10.8	0.07	4.6	20
				NBT	B	12.9	0.46	37.1	-
				SBL	A	5.6	0.38	13.8	25
				SBT	A	5.9	0.42	32.4	-
Stanley Avenue and Dixon Street / Main Street	C	22	0.7	EBT	D	36.8	0.28	19.4	-
				WBT	D	47.7	0.70	46.2	-
				WBR	D	37.4	0.36	30.8	-
				NBL	B	12.2	0.22	3.1	65
				NBT	C	25.3	0.73	115.8	-
				SBL	C	31.1	0.71	73.3	140
				SBT	A	9.4	0.61	72.5	-
Allendale Avenue and Main Street and Murray Street	F	101	0.7	WBL	D	38.5	0.11	11.2	55
				WBR	F	190.4	1.27	156.1	-
				NBLTR	D	48.6	0.59	55.1	-
				SBLTR	D	36.9	0.15	17.7	-
				SEL	E	76.5	0.88	91.3	30
				SETR	E	65.7	0.75	89.6	-
				NWLTR	D	37.8	0.14	18.0	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	C	22	0.7	EBL	D	37.1	0.82	67.6	50
				EBR	B	18.3	0.11	11.6	-
				WBT	B	18.0	0.07	8.9	-
				NBL	B	11.2	0.47	16.2	-
				NBT	A	8.4	0.19	20.2	-
				SBT	C	22.0	0.67	86.9	-
Stanley Avenue and Murray Street	E	59	1.4	EBL	D	35.4	0.54	27.7	15
				EBT	D	38.8	0.73	87.2	-
				WBL	F	102.3	0.99	70.6	25
				WBT	D	40.4	0.75	95.5	-
				NBL	F	156.8	1.25	78.7	35
				NBT	B	19.3	0.89	148.3	-
				SBL	F	262.3	1.48	162.3	55
				SBT	B	15.7	0.66	103.3	-
Fallsview Boulevard and Murray Street	C	29	0.7	EBL	C	23.7	0.29	21.2	30
				EBT	D	38.8	0.81	90.0	-
				WBL	D	35.6	0.73	34.8	35
				WBT	C	30.4	0.55	72.2	-
				WBR	C	25.4	0.12	14.8	-
				NBL	B	16.8	0.32	22.4	10
				NBT	C	25.3	0.46	51.9	-
				SBL	B	18.7	0.55	32.2	65
				SBT	C	24.7	0.44	57.1	-
Stanley Avenue and Dunn Street	E	78	1.6	EBL	F	428.0	1.82	134.3	75
				EBT	D	50.6	0.90	145.8	-
				WBL	D	51.9	0.73	39.5	25
				WBT	D	37.4	0.77	118.5	-
				WBR	C	23.5	0.05	9.3	25
				NBL	F	327.3	1.60	84.2	25
				NBT	C	27.9	0.76	113.0	-
				SBL	C	34.6	0.70	45.1	40
				SBT	C	27.3	0.68	142.7	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	D	37	0.9	EBL	E	73.4	0.96	101.3	-
				EBT	C	28.8	0.50	59.2	-
				WBL	B	19.2	0.48	35.9	25
				WBT	B	19.3	0.39	56.1	-
				WBR	C	20.3	0.47	47.6	-
				NBL	C	21.4	0.07	8.5	20
				NBT	E	61.3	0.97	176.5	-
				SBL	C	20.9	0.36	13.5	-
				SBT	C	20.5	0.42	61.3	-
Portage Road and Fallsview Casino Rear Access	B	19	0.6	EBL	B	14.4	0.20	18.5	-
				EBR	B	14.3	0.18	12.4	-
				NBL	D	35.5	0.89	105.5	-
				NBT	B	10.3	0.15	17.6	-
				SBT	B	10.6	0.19	21.4	-
				SBR	B	11.7	0.29	13.9	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	9.6	0.4	WBT	C	21.7	0.19	11.8	-
				WBR	C	21.1	0.08	11.8	-
				NBL	B	10.8	0.08	4.6	20
				NBT	B	13.0	0.47	37.6	-
				SBL	A	5.6	0.38	13.9	25
				SBT	A	5.9	0.42	32.8	-
Stanley Avenue and Dixon Street / Main Street	C	22	0.7	EBT	D	36.8	0.29	19.9	-
				WBT	D	47.9	0.71	46.2	-
				WBR	D	37.5	0.38	32.0	-
				NBL	B	12.4	0.23	2.6	65
				NBT	C	24.4	0.75	109.1	-
				SBL	C	30.9	0.71	74.8	140
				SBT	B	10.4	0.62	84.2	-
Allendale Avenue and Main Street and Murray Street	F	96	0.7	WBL	D	37.5	0.11	11.0	55
				WBR	F	181.6	1.25	153.5	-
				NBLTR	D	47.5	0.59	54.8	-
				SBLTR	D	35.9	0.14	17.2	-
				SEL	E	73.0	0.87	90.0	30
				SETR	E	55.2	0.75	88.4	-
				NWLTR	D	36.8	0.14	17.6	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

5.2 Unsignalized Intersections

Based on anticipated instances of movements exceeding critical thresholds, mitigative measures were considered to improve operations at the study area unsignalized intersections. It must be noted that while ***Niagara Region Guidelines for Transportation Impact Studies*** (May 2012) indicates that LOS 'D' or worse is considered critical, levels of delay in this range are generally expected and tolerated by road users in urban areas. As a result, critical delay alone does not necessarily indicate that mitigation measures are required.

That being said, at the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, a traffic control signal could be considered. Although traffic control signals would not necessarily be expected to be warranted at this intersection based on the traffic volume criteria (due to low minor approach volume), they can still be considered in response to high delay from Dixon Street and/or to improve pedestrian connectivity in the study area. As "vehicles have right of way" signage is also currently posted at this intersection in existing conditions to inform pedestrians that there are no dedicated east-west crossings available there, this suggests that this intersection is located along a pedestrian desire line.

6 Traffic Analysis Summary

The proposed development is expected to generate up to 797 net new two-way automobile trips during the Saturday Peak Hour. Based on a comparison between 2033 Future Background Mitigated Conditions and 2033 Future Total Mitigated Conditions, the traffic generated by the proposed development contemplated in the Application is generally not anticipated to have a significant impact on traffic operations at study area intersections as traffic operations are similar for the majority of movements. While instances of movements exceeding critical thresholds are still expected to be present at various intersections, with signal timing plan changes and short and long-term improvement identified in the ***City of Niagara Falls Transportation Master Plan*** (October 2011) which are independent of the proposed development, the proposed development's impact on traffic operations within the study area can be reduced.

For unsignalized intersections, the Fallsview Boulevard and Dixon Street / Fallsview Casino Access, Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access, and the Portage Road and Proposed Development Site Access intersections are all expected to experience operations which exceed delay critical thresholds under Future Total Conditions during both the typical summer weekend and summer long weekend peak hours. However, levels of delay in this range are generally expected and tolerated by road users in urban areas. As a result, critical delay alone does not necessarily indicate that mitigation measures are required. That being said, a traffic control signal could be considered at the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection due to the combination of high delay, movements exceeding capacity limits, and a lack of a protected pedestrian crossing along pedestrian desire lines.

6.1 Sensitivity Analysis: Existing plus Site Traffic Conditions Analysis

Based on a review of 2023 Existing Conditions, 2033 Future Background Conditions, and 2033 Future Total Conditions, traffic volumes generated by planned background developments discussed in **Section 3.4** – as opposed to the proposed development itself – are expected to be a significant cause of critical operations in the future conditions scenario.

In order to understand the relative impacts of the background developments, **Exhibit 6-1** and **Exhibit 6-2** demonstrate signalized and unsignalized intersection operations, respectively, of a scenario with site traffic added to the 2023 Existing Conditions scenario. Full Highway Capacity Manual analysis for this sensitivity analysis scenario is presented in **Appendix J**.

Exhibit 6-1: 2023 Existing plus Site Traffic Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Typical Summer Weekend									
Fallsview Boulevard and Dunn Street	B	15.3	0.38	EBL	C	27.2	0.60	33.5	50
				EBR	C	20.2	0.04	3.6	-
				WBT	C	20.4	0.07	7.5	-
				NBL	A	6.1	0.09	7.2	-
				NBT	A	6.5	0.13	16.3	-
				SBT	B	12.0	0.30	34.9	-
Stanley Avenue and Murray Street	C	20.8	0.82	EBL	D	46.3	0.71	42.1	15
				EBT	C	32.8	0.48	54.8	-
				WBL	C	31.4	0.32	24.2	25
				WBT	C	34.9	0.59	63.1	-
				NBL	B	17.5	0.39	20.0	35
				NBT	B	16.8	0.53	48.1	-
				SBL	C	24.0	0.84	60.4	55
				SBT	A	9.9	0.36	51.3	-
Fallsview Boulevard and Murray Street	C	26.3	0.48	EBL	C	23.2	0.33	28.5	30
				EBT	C	33.3	0.59	61.7	-
				WBL	C	25.5	0.56	33.7	35
				WBT	C	31.5	0.47	60.4	-
				WBR	C	27.8	0.10	14.5	-
				NBL	B	16.5	0.28	21.4	10
				NBT	C	24.2	0.38	43.6	-
				SBL	B	16.7	0.39	26.1	65
				SBT	C	24.1	0.40	55.2	-
Stanley Avenue and Dunn Street	B	18.3	0.35	EBL	C	32.2	0.35	30.7	75
				EBT	C	34.1	0.52	58.5	-
				WBL	C	31.3	0.24	17.9	25
				WBT	C	31.4	0.28	33.3	-
				WBR	C	29.3	0.03	3.0	25
				NBL	B	12.7	0.19	20.0	25
				NBT	B	13.1	0.29	43.8	-
				SBL	A	8.4	0.13	9.9	40
				SBT	A	9.7	0.19	27.8	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	23.8	0.55	EBL	C	32.3	0.58	43.6	-
				EBT	D	35.2	0.71	87.7	-
				WBL	B	19.1	0.35	23.2	25
				WBT	C	21.7	0.55	85.4	-
				WBR	B	17.8	0.22	15.6	-
				NBL	C	20.6	0.07	10.4	20
				NBT	C	26.2	0.48	69.2	-
				SBL	B	15.4	0.26	20.7	-
				SBT	B	15.5	0.21	31.5	-
Portage Road and Fallsview Casino Rear Access	B	11.7	0.30	EBL	B	15.0	0.14	12.5	-
				EBR	B	14.7	0.09	8.4	-
				NBL	B	10.2	0.26	24.4	-
				NBT	A	8.2	0.02	3.9	-
				SBT	A	8.7	0.10	14.4	-
				SBR	B	11.6	0.41	17.1	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	8.7	0.34	WBT	C	20.5	0.17	9.8	-
				WBR	C	20.0	0.08	10.5	-
				NBL	A	9.4	0.05	4.1	20
				NBT	B	10.8	0.34	28.0	-
				SBL	A	5.4	0.33	11.8	25
				SBT	A	5.6	0.35	24.6	-
Stanley Avenue and Dixon Street / Main Street	F	86.5	0.98	EBT	F	441.9	1.85	144.9	-
				WBT	F	117.9	1.11	145.6	-
				WBR	C	27.7	0.21	19.2	-
				NBL	B	17.8	0.14	13.3	65
				NBT	C	23.1	0.31	50.2	-
				SBL	B	10.4	0.52	26.5	140
				SBT	B	13.0	0.43	38.6	-
Allendale Avenue and Main Street and Murray Street	E	58.3	0.55	WBL	D	39.9	0.09	9.9	55
				WBR	F	87.6	0.93	99.3	-
				NBLTR	D	54.8	0.72	76.8	-
				SBLTR	D	35.4	0.07	11.1	-
				SEL	D	42.9	0.43	40.8	30
				SETR	D	45.1	0.55	64.0	-
				NWLTR	D	35.9	0.11	15.3	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Summer Long Weekend									
Fallsview Boulevard and Dunn Street	B	15.3	0.38	EBL	C	27.3	0.61	33.6	50
				EBR	C	20.2	0.04	3.6	-
				WBT	C	20.4	0.07	7.5	-
				NBL	A	6.2	0.10	7.4	-
				NBT	A	6.5	0.13	16.6	-
				SBT	B	12.1	0.31	35.7	-
Stanley Avenue and Murray Street	C	22.9	0.73	EBL	F	127.7	1.01	49.0	15
				EBT	D	41.3	0.68	63.5	-
				WBL	D	36.9	0.49	26.0	25
				WBT	D	45.2	0.74	67.0	-
				NBL	B	15.4	0.41	28.4	35
				NBT	B	12.2	0.45	39.0	-
				SBL	B	10.7	0.61	37.6	55
				SBT	A	9.1	0.42	61.6	-
Fallsview Boulevard and Murray Street	C	25.5	0.45	EBL	C	23.4	0.32	28.8	30
				EBT	C	33.2	0.57	56.8	-
				WBL	C	24.1	0.41	26.5	35
				WBT	C	31.3	0.40	48.0	-
				WBR	C	28.4	0.10	14.3	-
				NBL	B	17.0	0.26	19.6	10
				NBT	C	23.3	0.33	34.5	-
				SBL	B	15.6	0.38	26.5	65
				SBT	C	22.5	0.37	49.6	-
Stanley Avenue and Dunn Street	B	19.3	0.40	EBL	C	33.2	0.42	33.6	75
				EBT	D	35.8	0.58	61.9	-
				WBL	C	31.5	0.26	18.1	25
				WBT	C	32.4	0.38	42.1	-
				WBR	C	29.1	0.03	4.1	25
				NBL	B	15.5	0.26	23.2	25
				NBT	B	15.1	0.33	45.7	-
				SBL	A	9.8	0.23	15.9	40
				SBT	B	10.6	0.28	36.2	-

Intersection	Intersection			Critical Movement					
	LOS	Delay	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Storage Capacity (m)
Fallsview Boulevard and Main Street / Portage Road	C	29.8	0.74	EBL	E	69.0	0.93	87.5	-
				EBT	D	36.0	0.75	102.1	-
				WBL	B	18.8	0.41	25.5	25
				WBT	C	22.0	0.60	92.3	-
				WBR	B	17.8	0.28	16.9	-
				NBL	C	20.8	0.05	7.3	20
				NBT	C	33.8	0.71	103.0	-
				SBL	B	16.9	0.29	17.2	-
				SBT	B	16.0	0.17	24.0	-
Portage Road and Fallsview Casino Rear Access	B	12.9	0.45	EBL	B	15.2	0.18	14.6	-
				EBR	B	14.9	0.12	9.6	-
				NBL	B	16.7	0.63	72.5	-
				NBT	A	8.8	0.12	15.1	-
				SBT	A	9.1	0.15	18.3	-
				SBR	A	9.9	0.24	13.2	-
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	A	8.7	0.34	WBT	C	20.6	0.17	10.0	-
				WBR	C	20.0	0.08	10.6	-
				NBL	A	9.4	0.05	4.1	20
				NBT	B	10.8	0.34	28.3	-
				SBL	A	5.5	0.34	11.9	25
				SBT	A	5.6	0.35	24.8	-
Stanley Avenue and Dixon Street / Main Street	F	87.0	0.99	EBT	F	449.5	1.87	145.4	-
				WBT	F	117.9	1.11	145.6	-
				WBR	C	27.7	0.21	19.5	-
				NBL	B	15.5	0.15	13.0	65
				NBT	C	23.0	0.32	49.0	-
				SBL	A	9.9	0.52	25.1	140
				SBT	B	12.8	0.44	38.3	-
Allendale Avenue and Main Street and Murray Street	E	56.4	0.56	WBL	D	38.9	0.09	9.8	55
				WBR	F	84.1	0.92	97.3	-
				NBLTR	D	53.3	0.71	76.2	-
				SBLTR	C	34.4	0.07	11.0	-
				SEL	D	41.8	0.43	40.2	30
				SETR	D	43.9	0.55	63.4	-
				NWLTR	C	34.9	0.10	14.9	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-5**, during the peak hour on a typical summer weekend for the sensitivity analysis scenario at the study area signalized intersections, the following critical operations are anticipated:

- At the Stanley Avenue and Dixon Street / Main Street intersection, the eastbound through and westbound through movements are expected to have critical v/c ratios of 1.85 and 0.91, respectively; and
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 0.93.

During the peak hour on a summer long weekend, the following critical operations are anticipated:

- At the Stanley Avenue and Murray Street intersection, the eastbound left-turn movement is expected to have a critical v/c ratio of 1.01;
- At the Stanley Avenue and Dixon Street / Main Street intersection, the eastbound through and westbound through movements are expected to have critical v/c ratios of 1.87 and 0.92, respectively; and
- At the Allendale Avenue and Main Street and Murray Street intersection, the westbound right-turn movement is expected to have a critical v/c ratio of 0.92.

Exhibit 6-2: 2023 Existing plus Site Traffic Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Typical Summer Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	3.6	EBLTR	F	72.8	0.36	10.5	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	C	18.1	0.18	4.9	-
		SBL	B	12.5	0.20	5.7	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	12.7	WBLTR	A	5.8	0.18	5.0	-
		NBLTR	C	16.3	0.53	23.8	-
		SBLTR	F	52.1	0.36	11.3	-
Stanley Ave and 6519 Stanley Avenue Access	0.1	EBL	A	0.0	0.00	0.0	-
		EBR	A	0.0	0.00	0.0	-
		NBL	A	8.7	0.01	0.3	-
Portage Road and Proposed Development Site Access	4.5	EBL	A	9.0	0.28	8.7	-
		SBL	E	47.2	0.14	3.6	-
		SBR	B	14.7	0.38	13.7	-

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Storage Capacity (m)
Summer Long Weekend							
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	1.6	EBLTR	C	16.0	0.09	2.2	-
		WBLTR	A	0.0	0.00	0.0	-
		NBL	A	8.6	0.06	1.4	-
		SBL	A	9.1	0.12	3.2	-
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	12.9	WBLTR	A	5.8	0.18	5.0	-
		NBLTR	C	16.4	0.53	23.9	-
		SBLTR	F	53.6	0.38	12.1	-
Stanley Ave and 6519 Stanley Avenue Access	0.1	EBL	A	0.0	0.00	0.0	-
		EBR	A	0.0	0.00	0.0	-
		NBL	A	8.7	0.01	0.3	-
Portage Road and Proposed Development Site Access	4.4	EBL	A	8.5	0.25	7.7	-
		SBL	E	38.0	0.11	2.9	-
		SBR	B	13.5	0.35	12.1	-

Note: Red font represents an intersection/lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-6**, during the peak hour on a typical summer weekend in the sensitivity analysis scenario at the study area unsignalized intersections, the following critical operations are anticipated:

- At the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection, the eastbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F';
- At the Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access intersection, the southbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F'; and
- At the Portage Road and Proposed Development Site Access intersection, the southbound left-turn lane is expected to have a critical lane LOS of 'E'.

During the peak hour on a summer long weekend, the following critical operations are anticipated:

- At the Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access intersection, the southbound left-turn, through, and right-turn lane is expected to have a critical lane LOS of 'F'; and
- At the Portage Road and Proposed Development Site Access intersection, the southbound left-turn lane is expected to have a critical lane LOS of 'E'.

To demonstrate the general potential impacts of development site traffic to traffic operations within the study area in a scenario reflective of background

developments not proceeding to construction, comparisons of signalized and unsignalized intersection operations under 2023 Existing Conditions and Existing plus Site Traffic Conditions are presented in **Exhibit 6-3** and **Exhibit 6-4**, respectively.

Exhibit 6-3: Existing Conditions Signalized Intersection Traffic Operations Comparison

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Typical Summer Weekend										
Fallsview Boulevard and Dunn Street	EBL	26.9	0.58	32.1	27.1	0.60	33.3	0.2	0.02	1.2
	EBR	20.5	0.04	3.6	20.3	0.04	3.6	-0.2	0.00	0.0
	WBT	20.7	0.07	7.6	20.4	0.07	7.5	-0.3	0.00	-0.1
	NBL	5.9	0.09	7.0	6.1	0.09	7.2	0.2	0.00	0.2
	NBT	6.3	0.13	15.9	6.4	0.13	16.2	0.1	0.00	0.3
	SBT	11.6	0.29	33.5	11.9	0.30	35.0	0.3	0.01	1.5
Stanley Avenue and Murray Street	EBL	32.3	0.37	21.5	40.5	0.64	35.2	8.2	0.27	13.7
	EBT	32.2	0.41	46.8	32.8	0.48	54.8	0.6	0.07	8.0
	WBL	31.1	0.29	23.8	31.4	0.32	24.2	0.3	0.03	0.4
	WBT	34.7	0.57	61.4	34.9	0.58	62.8	0.2	0.01	1.4
	NBL	16.4	0.31	33.7	16.2	0.37	18.8	-0.2	0.06	-14.9
	NBT	15.9	0.41	71.2	15.2	0.49	45.6	-0.7	0.08	-25.6
	SBL	13.9	0.71	47.8	19.4	0.79	52.5	5.5	0.08	4.7
	SBT	9.0	0.26	35.9	9.7	0.34	47.8	0.7	0.08	11.9
Fallsview Boulevard and Murray Street	EBL	24.4	0.12	12.1	23.1	0.27	24.2	-1.3	0.15	12.1
	EBT	32.6	0.57	61.2	33.3	0.59	61.6	0.7	0.02	0.4
	WBL	23.1	0.53	33.2	25.3	0.55	33.7	2.2	0.02	0.5
	WBT	27.2	0.38	58.8	31.2	0.46	60.4	4.0	0.08	1.6
	WBR	24.3	0.10	14.3	27.6	0.10	14.5	3.3	0.00	0.2
	NBL	16.8	0.22	20.4	16.3	0.27	21.1	-0.5	0.05	0.7
	NBT	24.0	0.32	34.5	23.9	0.36	41.3	-0.1	0.04	6.8
	SBL	17.0	0.37	25.7	16.6	0.38	26.1	-0.4	0.01	0.4
	SBT	22.9	0.27	36.7	23.5	0.37	50.2	0.6	0.10	13.5

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Stanley Avenue and Dunn Street	EBL	32.2	0.35	30.7	32.2	0.35	30.7	0.0	0.00	0.0
	EBT	34.1	0.52	58.5	34.1	0.52	58.5	0.0	0.00	0.0
	WBL	30.9	0.21	15.9	31.2	0.23	17.5	0.3	0.02	1.6
	WBT	31.4	0.28	33.3	31.4	0.28	33.3	0.0	0.00	0.0
	WBR	29.3	0.03	3.0	29.3	0.03	3.0	0.0	0.00	0.0
	NBL	12.7	0.18	19.9	12.7	0.18	20.0	0.0	0.00	0.1
	NBT	13.0	0.28	41.8	13.1	0.29	43.4	0.1	0.01	1.6
	SBL	11.5	0.13	15.2	8.9	0.13	10.9	-2.6	0.00	-4.3
	SBT	14.4	0.19	43.6	10.4	0.19	31.8	-4.0	0.00	-11.8
Fallsview Boulevard and Main Street / Portage Road	EBL	28.4	0.47	41.0	30.1	0.54	42.9	1.7	0.07	1.9
	EBT	25.8	0.27	32.5	30.7	0.61	74.6	4.9	0.34	42.1
	WBL	18.3	0.24	22.1	19.3	0.34	23.0	1.0	0.10	0.9
	WBT	18.9	0.27	37.7	21.4	0.50	72.1	2.5	0.23	34.4
	WBR	18.2	0.19	14.8	18.4	0.21	15.3	0.2	0.02	0.5
	NBL	18.4	0.07	10.4	19.2	0.07	10.4	0.8	0.00	0.0
	NBT	23.0	0.43	66.9	24.2	0.45	68.6	1.2	0.02	1.7
	SBL	13.1	0.12	12.1	14.0	0.21	18.2	0.9	0.09	6.1
	SBT	14.0	0.20	30.8	14.4	0.20	31.5	0.4	0.00	0.7
Portage Road and Fallsview Casino Rear Access	EBL	15.0	0.14	12.5	15.0	0.14	12.5	0.0	0.00	0.0
	EBR	14.5	0.05	6.6	14.6	0.08	7.9	0.1	0.03	1.3
	NBL	9.2	0.15	14.9	9.9	0.23	21.8	0.7	0.08	6.9
	NBT	8.2	0.02	3.9	8.2	0.02	3.9	0.0	0.00	0.0
	SBT	8.7	0.10	14.4	8.7	0.10	14.4	0.0	0.00	0.0
	SBR	11.6	0.41	17.1	11.6	0.41	17.1	0.0	0.00	0.0

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	WBT	20.4	0.15	9.3	20.5	0.16	9.6	0.1	0.01	0.3
	WBR	19.9	0.07	9.6	20.0	0.07	10.6	0.1	0.00	1.0
	NBL	9.3	0.04	4.0	9.3	0.05	4.1	0.0	0.01	0.1
	NBT	10.5	0.31	25.0	10.7	0.33	27.3	0.2	0.02	2.3
	SBL	5.4	0.31	11.0	5.4	0.32	11.4	0.0	0.01	0.4
	SBT	5.2	0.25	16.7	5.5	0.32	22.5	0.3	0.07	5.8
Stanley Avenue and Dixon Street / Main Street	EBT	38.8	0.18	14.3	94.0	1.00	93.3	55.2	0.82	79.0
	WBT	46.7	0.63	36.7	59.3	0.90	112.4	12.6	0.27	75.7
	WBR	38.7	0.18	20.3	27.6	0.20	19.0	-11.1	0.02	-1.3
	NBL	5.9	0.09	8.5	17.5	0.14	13.2	11.6	0.05	4.7
	NBT	10.4	0.22	43.4	22.8	0.31	50.1	12.4	0.09	6.7
	SBL	4.2	0.34	16.0	10.1	0.50	25.8	5.9	0.16	9.8
	SBT	6.0	0.26	31.0	12.9	0.41	37.7	6.9	0.15	6.7
Allendale Avenue and Main Street and Murray Street	WBL	40.1	0.10	9.9	39.9	0.09	9.9	-0.2	-0.01	0.0
	WBR	87.6	0.93	99.3	87.6	0.93	99.3	0.0	0.00	0.0
	NBLTR	43.6	0.46	44.5	53.1	0.69	72.0	9.5	0.23	27.5
	SBLTR	35.4	0.07	11.1	35.1	0.07	11.1	-0.3	0.00	0.0
	SEL	57.4	0.74	75.7	42.9	0.43	40.8	-14.5	-0.31	-34.9
	SETR	40.8	0.37	39.7	45.1	0.55	64.0	4.3	0.18	24.3
	NWLTR	35.9	0.11	15.3	35.9	0.11	15.3	0.0	0.00	0.0
Summer Long Weekend										
Fallsview Boulevard and Dunn Street	EBL	27.0	0.59	32.3	27.3	0.60	33.5	0.3	0.01	1.2
	EBR	20.5	0.04	3.7	20.3	0.04	3.7	-0.2	0.00	0.0
	WBT	20.7	0.07	7.6	20.4	0.07	7.5	-0.3	0.00	-0.1
	NBL	6.0	0.09	7.1	6.1	0.09	7.3	0.1	0.00	0.2
	NBT	6.3	0.13	16.1	6.4	0.13	16.4	0.1	0.00	0.3
	SBT	11.7	0.29	34.0	12.0	0.30	35.5	0.3	0.01	1.5

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Stanley Avenue and Murray Street	EBL	42.7	0.57	22.1	107.8	0.94	43.6	65.1	0.37	21.5
	EBT	39.6	0.62	54.6	42.5	0.69	63.5	2.9	0.07	8.9
	WBL	36.9	0.45	25.3	37.7	0.51	26.1	0.8	0.06	0.8
	WBT	46.9	0.75	64.7	46.4	0.75	66.1	-0.5	0.00	1.4
	NBL	12.9	0.32	33.6	14.0	0.38	32.5	1.1	0.06	-1.1
	NBT	10.4	0.33	60.1	10.7	0.41	36.5	0.3	0.08	-23.6
	SBL	8.0	0.50	35.8	9.5	0.57	36.9	1.5	0.07	1.1
	SBT	7.8	0.32	43.4	8.7	0.39	57.0	0.9	0.07	13.6
Fallsview Boulevard and Murray Street	EBL	24.7	0.13	12.2	23.2	0.27	24.4	-1.5	0.14	12.2
	EBT	32.5	0.54	55.8	33.2	0.57	56.4	0.7	0.03	0.6
	WBL	21.8	0.38	25.9	23.9	0.41	26.5	2.1	0.03	0.6
	WBT	27.1	0.33	46.8	31.0	0.40	48.0	3.9	0.07	1.2
	WBR	24.9	0.10	14.1	28.2	0.10	14.3	3.3	0.00	0.2
	NBL	17.4	0.22	18.6	16.9	0.24	19.3	-0.5	0.02	0.7
	NBT	23.4	0.29	29.6	23.2	0.32	33.2	-0.2	0.03	3.6
	SBL	15.8	0.36	26.1	15.5	0.37	26.5	-0.3	0.01	0.4
	SBT	21.2	0.23	30.8	22.0	0.33	44.8	0.8	0.10	14.0
Stanley Avenue and Dunn Street	EBL	33.2	0.42	33.6	33.2	0.42	33.6	0.0	0.00	0.0
	EBT	35.8	0.58	61.9	35.8	0.58	61.9	0.0	0.00	0.0
	WBL	31.1	0.23	16.1	31.5	0.26	17.8	0.4	0.03	1.7
	WBT	32.4	0.38	42.1	32.4	0.38	42.1	0.0	0.00	0.0
	WBR	29.1	0.03	4.1	29.1	0.03	4.1	0.0	0.00	0.0
	NBL	15.4	0.25	23.0	15.5	0.25	23.1	0.1	0.00	0.1
	NBT	14.9	0.31	43.5	15.0	0.33	45.2	0.1	0.02	1.7
	SBL	12.4	0.22	23.7	10.5	0.23	17.3	-1.9	0.01	-6.4
	SBT	16.1	0.27	56.3	11.3	0.28	41.1	-4.8	0.01	-15.2

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Fallsview Boulevard and Main Street / Portage Road	EBL	38.7	0.76	74.2	62.2	0.90	84.9	23.5	0.14	10.7
	EBT	24.2	0.30	33.8	32.2	0.66	79.6	8.0	0.36	45.8
	WBL	17.0	0.28	23.4	18.2	0.37	25.4	1.2	0.09	2.0
	WBT	17.7	0.30	39.8	20.6	0.53	78.1	2.9	0.23	38.3
	WBR	17.3	0.25	15.7	17.7	0.28	16.6	0.4	0.03	0.9
	NBL	17.5	0.04	7.1	20.3	0.05	7.3	2.8	0.01	0.2
	NBT	26.8	0.63	94.4	32.6	0.69	101.9	5.8	0.06	7.5
	SBL	14.2	0.11	8.4	16.2	0.24	14.7	2.0	0.13	6.3
	SBT	14.4	0.16	23.1	15.7	0.17	24.0	1.3	0.01	0.9
Portage Road and Fallsview Casino Rear Access	EBL	15.2	0.18	14.6	15.2	0.18	14.6	0.0	0.00	0.0
	EBR	14.7	0.09	8.1	14.8	0.11	9.3	0.1	0.02	1.2
	NBL	13.9	0.51	48.0	15.9	0.60	67.6	2.0	0.09	19.6
	NBT	8.8	0.12	15.1	8.8	0.12	15.1	0.0	0.00	0.0
	SBT	9.1	0.15	18.3	9.1	0.15	18.3	0.0	0.00	0.0
	SBR	9.9	0.24	13.2	9.9	0.24	13.2	0.0	0.00	0.0
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	WBT	20.4	0.16	9.5	20.5	0.17	9.8	0.1	0.01	0.3
	WBR	19.9	0.07	9.7	20.0	0.07	10.5	0.1	0.00	0.8
	NBL	9.3	0.04	4.0	9.4	0.05	4.1	0.1	0.01	0.1
	NBT	10.5	0.31	25.2	10.7	0.34	27.5	0.2	0.03	2.3
	SBL	5.4	0.31	11.1	5.4	0.32	11.6	0.0	0.01	0.5
	SBT	5.2	0.26	16.8	5.5	0.33	22.6	0.3	0.07	5.8
Stanley Avenue and Dixon Street / Main Street	EBT	38.9	0.19	14.6	96.9	1.01	93.5	58.0	0.82	78.9
	WBT	46.7	0.63	36.7	59.3	0.90	112.4	12.6	0.27	75.7
	WBR	38.8	0.18	20.5	27.6	0.21	19.2	-11.2	0.03	-1.3
	NBL	4.0	0.09	5.9	15.5	0.14	12.9	11.5	0.05	7.0
	NBT	10.2	0.22	42.4	22.8	0.31	48.8	12.6	0.09	6.4
	SBL	3.9	0.34	16.0	9.5	0.50	24.3	5.6	0.16	8.3
	SBT	6.3	0.27	28.7	12.8	0.42	37.5	6.5	0.15	8.8

Intersection	Movement	Existing Conditions			Existing plus Site Traffic Conditions			Difference (Existing plus Site Traffic - Existing)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Allendale Avenue and Main Street and Murray Street	WBL	39.1	0.09	9.9	38.9	0.09	9.8	-0.2	0.00	-0.1
	WBR	84.1	0.92	97.3	84.1	0.92	97.3	0.0	0.00	0.0
	NBLTR	42.5	0.46	44.5	51.6	0.69	69.6	9.1	0.23	25.1
	SBLTR	34.4	0.07	11.0	34.4	0.07	11.0	0.0	0.00	0.0
	SEL	55.9	0.73	75.0	41.8	0.43	40.2	-14.1	-0.30	-34.8
	SETR	39.7	0.37	39.2	43.9	0.55	63.4	4.2	0.18	24.2
	NWLTR	34.9	0.10	14.9	34.9	0.10	14.9	0.0	0.00	0.0

Exhibit 6-4: Existing Conditions Unsignalized Intersection Traffic Operations Comparison

Intersection	Lane	Existing Conditions			Existing Conditions plus Site Traffic			Difference (Existing plus Site Traffic - Existing)		
		Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)
Typical Summer Weekend										
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	EBLTR	56.8	0.3	8.5	72.8	0.36	10.5	16.0	0.06	2.0
	WBLTR	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	16.0	0.2	4.1	18.1	0.18	4.9	2.1	0.03	0.8
	SBL	12.1	0.2	5.2	12.5	0.20	5.7	0.4	0.01	0.5
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	EBLTR	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	WBLTR	0.0	0.0	0.0	5.8	0.18	5.0	5.8	0.18	5.0
	NBLTR	0.0	0.4	0.0	16.3	0.53	23.8	16.3	0.14	23.8
	SBLTR	9.0	0.1	1.1	52.1	0.36	11.3	43.1	0.31	10.2
Stanley Ave and 6519 Stanley Avenue Access	EBL	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	EBR	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	0.0	0.0	0.0	8.7	0.01	0.3	8.7	0.01	0.3
Portage Road and Proposed Development Site Access	EBL	0.0	0.0	0.0	9.0	0.28	8.7	9.0	0.28	8.7
	SBL	0.0	0.0	0.0	47.2	0.14	3.6	47.2	0.14	3.6
	SBR	0.0	0.0	0.0	14.7	0.38	13.7	14.7	0.38	13.7
Summer Long Weekend										
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	EBLTR	14.4	0.08	1.9	16.0	0.09	2.2	1.6	0.01	0.3
	WBLTR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	8.1	0.05	1.2	8.6	0.06	1.4	0.5	0.01	0.2
	SBL	8.9	0.11	2.9	9.1	0.12	3.2	0.2	0.01	0.3
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	EBLTR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	WBLTR	0.0	0.00	0.0	5.8	0.18	5.0	5.8	0.18	5.0
	NBLTR	0.0	0.00	0.0	16.4	0.53	23.9	16.4	0.53	23.9
	SBLTR	9.1	0.05	1.2	53.6	0.38	12.1	44.5	0.33	10.9

Intersection	Lane	Existing Conditions			Existing Conditions plus Site Traffic			Difference (Existing plus Site Traffic - Existing)		
		Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)
Stanley Ave and 6519 Stanley Avenue Access	EBL	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	EBR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	0.0	0.00	0.0	8.7	0.01	0.3	8.7	0.01	0.3
Portage Road and Proposed Development Site Access	EBL	0.0	0.00	0.0	8.5	0.25	7.7	8.5	0.25	7.7
	SBL	0.0	0.00	0.0	38.0	0.11	2.9	38.0	0.11	2.9
	SBR	0.0	0.00	0.0	13.5	0.35	12.1	13.5	0.35	12.1

Overall, when comparing the 2023 Existing Conditions scenario with the Existing plus Site Traffic Conditions sensitivity analysis scenario, only the Stanley Avenue and Murray Street and Stanley Avenue and Dixon Street / Main Street intersections exhibit additional critical operations (specifically, the eastbound left-turn movement during the summer long weekend peak hour for the Stanley Avenue and Murray Street intersection), the eastbound through and westbound through movements during both peak hours for the Stanley Avenue and Dixon Street / Main Street intersection, and the westbound right-turn movement during both peak hours for the Allendale Avenue and Main Street and Murray Street intersection. With respect to unsignalized intersections, the only additional critical movement expected is the southbound left-turn movement at the Portage Road and Proposed Development Site Access intersection for both peak hours.

Based on the analysis presented in **Exhibit 6-1** to **Exhibit 6-4**, the following conclusions can be made:

- The impact of the background developments is significantly more pronounced than the proposed development itself, as evident by the fact that only a few movements are estimated to exceed capacity by 1.67 (v/c ratio of 0.18), 0.48 (v/c ratio of 0.63) during the summer typical weekend peak hour, and 0.40 (v/c ratio of 0.57), 0.20 (v/c ratio of 0.76), 1.70 (v/c ratio of 0.19), and 0.50 (v/c ratio of 0.63) during the summer long weekend peak hour in the Existing plus Site Traffic Conditions Scenario. While this specific instance is expected to be addressable through signal timing adjustments, this indicates that – broadly speaking - mitigative measures are primarily required due to the impact of others, rather than the proposed development itself; and
- As one or more planned background developments mentioned in **Section 3.4** may not actually proceed to construction, conditions described in **Section 4.3** and **Section 5** may not actually occur. This indicates that the future conditions analyses presented in their respective sections are conservative, and overall future operations may be better than reported in this study.

6.2 Comparison Between 2033 Mitigated Future Total and Future Background Conditions

To demonstrate the general potential impacts of development site traffic to traffic operations within the study area in future conditions, comparisons of signalized (mitigated conditions) and unsignalized intersection operations under 2033 Future Background Conditions and 2033 Future Total Conditions are presented in **Exhibit 6-5** and **Exhibit 6-6**, respectively.

Exhibit 6-5: 2033 Signalized Intersection Traffic Operations Comparison

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Typical Summer Weekend										
Fallsview Boulevard and Dunn Street	EBL	36.8	0.81	67.4	39.0	0.84	70.8	2.2	0.03	3.4
	EBR	18.3	0.11	11.6	18.1	0.11	11.6	-0.2	0.00	0.0
	WBT	18	0.07	8.9	17.8	0.07	8.9	-0.2	0.00	0.0
	NBL	11.1	0.46	16.1	11.5	0.48	16.1	0.4	0.02	0.0
	NBT	8.4	0.19	20	8.5	0.19	20.0	0.1	0.00	0.0
	SBT	21.7	0.66	85.2	22.4	0.68	87.7	0.7	0.02	2.5
Stanley Avenue and Murray Street	EBL	42.9	0.64	31.8	130.3	1.04	59.9	87.4	0.40	28.1
	EBT	35.8	0.64	73.8	37.2	0.69	84.1	1.4	0.05	10.3
	WBL	72.8	0.89	63.6	96.7	0.97	68.3	23.9	0.08	4.7
	WBT	40.4	0.74	84.3	39.4	0.73	86.5	-1.0	-0.01	2.2
	NBL	65.6	0.98	75.5	168.3	1.29	70.8	102.7	0.31	-4.7
	NBT	18.2	0.87	164.5	32.6	1.00	182.6	14.4	0.13	18.1
	SBL	361.9	1.71	208.3	380.5	1.75	213.5	18.6	0.04	5.2
	SBT	12.2	0.53	83.3	14.3	0.63	107.2	2.1	0.10	23.9
Fallsview Boulevard and Murray Street	EBL	23.7	0.31	21.1	27.1	0.59	37.3	3.4	0.28	16.2
	EBT	39.4	0.83	100.7	41.0	0.85	102.3	1.6	0.02	1.6
	WBL	83.6	0.98	64.8	87.9	0.99	63.7	4.3	0.01	-1.1
	WBT	31.4	0.6	87.9	33.8	0.65	88.9	2.4	0.05	1.0
	WBR	25.2	0.12	15	26.3	0.12	15.2	1.1	0.00	0.2
	NBL	17.5	0.36	24.5	18.3	0.46	25.6	0.8	0.10	1.1
	NBT	26.6	0.52	63.9	27.1	0.56	71.1	0.5	0.04	7.2
	SBL	20.3	0.58	31.6	21.4	0.61	32.0	1.1	0.03	0.4
	SBT	25.4	0.46	63.5	27.5	0.59	84.5	2.1	0.13	21.0

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Stanley Avenue and Dunn Street	EBL	225.5	1.36	120.2	225.5	1.36	120.2	0.0	0.00	0.0
	EBT	39.2	0.81	131.1	39.2	0.81	131.1	0.0	0.00	0.0
	WBL	36.7	0.63	35.9	41.5	0.68	39.9	4.8	0.05	4.0
	WBT	31.2	0.64	94.6	31.2	0.64	94.6	0.0	0.00	0.0
	WBR	23.5	0.04	8.4	23.5	0.04	8.4	0.0	0.00	0.0
	NBL	114.5	1.08	96.2	123.7	1.11	97.1	9.2	0.03	0.9
	NBT	25.4	0.69	108.7	25.9	0.71	112.3	0.5	0.02	3.6
	SBL	22.1	0.44	24.1	16.0	0.46	13.2	-6.1	0.02	-10.9
	SBT	24.2	0.54	118.5	18.7	0.55	108.2	-5.5	0.01	-10.3
Fallsview Boulevard and Main Street / Portage Road	EBL	34.6	0.63	51.2	51.3	0.81	65.7	16.7	0.18	14.5
	EBT	29.4	0.49	56.4	50.7	0.89	130.4	21.3	0.40	74.0
	WBL	19.2	0.42	34	28.4	0.69	35.5	9.2	0.27	1.5
	WBT	19.2	0.36	52.6	24.6	0.65	105.4	5.4	0.29	52.8
	WBR	18.2	0.25	16.5	18.9	0.28	17.2	0.7	0.03	0.7
	NBL	20.8	0.11	12.2	23.3	0.11	12.2	2.5	0.00	0.0
	NBT	32.6	0.72	119.9	39.1	0.78	124.2	6.5	0.06	4.3
	SBL	16.5	0.29	17.4	19.0	0.47	26.2	2.5	0.18	8.8
	SBT	18.4	0.44	68.5	19.3	0.44	69.5	0.9	0.00	1.0
Portage Road and Fallsview Casino Rear Access	EBL	12.9	0.15	14.7	12.7	0.15	14.7	-0.2	0.00	0.0
	EBR	12.8	0.14	10.5	12.9	0.17	11.6	0.1	0.03	1.1
	NBL	13.9	0.41	34.8	16.2	0.54	47.2	2.3	0.13	12.4
	NBT	9.8	0.02	4.4	9.8	0.02	4.4	0.0	0.00	0.0
	SBT	10.6	0.14	16.8	10.6	0.14	16.8	0.0	0.00	0.0
	SBR	14.8	0.5	18.5	14.8	0.50	18.5	0.0	0.00	0.0

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	WBT	21.7	0.19	11.5	22.1	0.20	12.4	0.4	0.01	0.9
	WBR	21.1	0.08	11.8	21.4	0.09	12.4	0.3	0.01	0.6
	NBL	10.8	0.07	4.6	10.9	0.09	4.8	0.1	0.02	0.2
	NBT	12.9	0.46	37.1	13.1	0.49	40.5	0.2	0.03	3.4
	SBL	5.6	0.38	13.8	5.7	0.41	14.7	0.1	0.03	0.9
	SBT	5.9	0.42	32.4	6.4	0.50	43.1	0.5	0.08	10.7
Stanley Avenue and Dixon Street / Main Street	EBT	36.8	0.28	19.4	663.5	2.35	161.1	626.7	2.07	141.7
	WBT	47.7	0.7	46.2	158.5	1.22	164.1	110.8	0.52	117.9
	WBR	37.4	0.36	30.8	29.1	0.42	42.9	-8.3	0.06	12.1
	NBL	12.2	0.22	3.1	13.9	0.39	5.1	1.7	0.17	2.0
	NBT	25.3	0.73	115.8	31.7	0.83	116.1	6.4	0.10	0.3
	SBL	31.1	0.71	73.3	167.6	1.24	129.1	136.5	0.53	55.8
	SBT	9.4	0.61	72.5	21.4	0.87	166.7	12.0	0.26	94.2
Allendale Avenue and Main Street and Murray Street	WBL	38.5	0.11	11.2	38.5	0.11	11.2	0.0	0.00	0.0
	WBR	190.4	1.27	156.1	190.4	1.27	156.1	0.0	0.00	0.0
	NBLTR	48.6	0.59	55.1	68.8	0.85	96.6	20.2	0.26	41.5
	SBLTR	36.9	0.15	17.7	37.2	0.16	17.8	0.3	0.01	0.1
	SEL	76.5	0.88	91.3	76.5	0.88	91.3	0.0	0.00	0.0
	SETR	65.7	0.75	89.6	56.7	0.75	89.6	-9.0	0.00	0.0
	NWLTR	37.8	0.14	18	37.9	0.14	18.2	0.1	0.00	0.2
Summer Long Weekend										
Fallsview Boulevard and Dunn Street	EBL	37.1	0.82	67.6	39.0	0.83	70.0	1.9	0.01	2.4
	EBR	18.3	0.11	11.6	18.2	0.11	11.6	-0.1	0.00	0.0
	WBT	18	0.07	8.9	17.9	0.07	8.9	-0.1	0.00	0.0
	NBL	11.2	0.47	16.2	11.5	0.48	16.2	0.3	0.01	0.0
	NBT	8.4	0.19	20.2	8.4	0.19	20.2	0.0	0.00	0.0
	SBT	22	0.67	86.9	22.5	0.69	88.9	0.5	0.02	2.0

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Stanley Avenue and Murray Street	EBL	35.4	0.54	27.7	64.2	0.82	51.6	28.8	0.28	23.9
	EBT	38.8	0.73	87.2	41.2	0.78	106.4	2.4	0.05	19.2
	WBL	102.3	0.99	70.6	135.0	1.09	74.7	32.7	0.10	4.1
	WBT	40.4	0.75	95.5	39.4	0.74	98.5	-1.0	-0.01	3.0
	NBL	156.8	1.25	78.7	366.6	1.74	77.1	209.8	0.49	-1.6
	NBT	19.3	0.89	148.3	31.9	0.99	167.0	12.6	0.10	18.7
	SBL	262.3	1.48	162.3	275.8	1.51	165.9	13.5	0.03	3.6
	SBT	15.7	0.66	103.3	18.5	0.75	126.5	2.8	0.09	23.2
Fallsview Boulevard and Murray Street	EBL	23.7	0.29	21.2	24.6	0.49	33.5	0.9	0.20	12.3
	EBT	38.8	0.81	90	40.4	0.84	91.2	1.6	0.03	1.2
	WBL	35.6	0.73	34.8	40.2	0.76	36.1	4.6	0.03	1.3
	WBT	30.4	0.55	72.2	32.6	0.59	73.2	2.2	0.04	1.0
	WBR	25.4	0.12	14.8	26.7	0.12	15.0	1.3	0.00	0.2
	NBL	16.8	0.32	22.4	17.1	0.38	23.1	0.3	0.06	0.7
	NBT	25.3	0.46	51.9	25.6	0.50	58.1	0.3	0.04	6.2
	SBL	18.7	0.55	32.2	19.2	0.57	32.6	0.5	0.02	0.4
	SBT	24.7	0.44	57.1	26.1	0.55	72.8	1.4	0.11	15.7
Stanley Avenue and Dunn Street	EBL	428	1.82	134.3	428.0	1.82	134.3	0.0	0.00	0.0
	EBT	50.6	0.9	145.8	50.6	0.90	145.8	0.0	0.00	0.0
	WBL	51.9	0.73	39.5	60.3	0.79	43.2	8.4	0.06	3.7
	WBT	37.4	0.77	118.5	37.4	0.77	118.5	0.0	0.00	0.0
	WBR	23.5	0.05	9.3	23.5	0.05	9.3	0.0	0.00	0.0
	NBL	327.3	1.6	84.2	342.1	1.63	85.4	14.8	0.03	1.2
	NBT	27.9	0.76	113	28.4	0.77	115.6	0.5	0.01	2.6
	SBL	34.6	0.7	45.1	26.1	0.72	23.3	-8.5	0.02	-21.8
	SBT	27.3	0.68	142.7	22.0	0.69	132.6	-5.3	0.01	-10.1

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Fallsview Boulevard and Main Street / Portage Road	EBL	73.4	0.96	101.3	127.2	1.12	109.7	53.8	0.16	8.4
	EBT	28.8	0.5	59.2	44.5	0.85	123.0	15.7	0.35	63.8
	WBL	19.2	0.48	35.9	27.2	0.70	36.8	8.0	0.22	0.9
	WBT	19.3	0.39	56.1	23.2	0.62	96.8	3.9	0.23	40.7
	WBR	20.3	0.47	47.6	21.1	0.53	57.3	0.8	0.06	9.7
	NBL	21.4	0.07	8.5	21.4	0.07	8.5	0.0	0.00	0.0
	NBT	61.3	0.97	176.5	64.6	0.98	179.7	3.3	0.01	3.2
	SBL	20.9	0.36	13.5	24.1	0.55	18.7	3.2	0.19	5.2
	SBT	20.5	0.42	61.3	20.6	0.43	62.2	0.1	0.01	0.9
Portage Road and Fallsview Casino Rear Access	EBL	14.4	0.2	18.5	14.4	0.20	18.5	0.0	0.00	0.0
	EBR	14.3	0.18	12.4	14.5	0.21	13.2	0.2	0.03	0.8
	NBL	35.5	0.89	105.5	53.0	0.99	120.5	17.5	0.10	15.0
	NBT	10.3	0.15	17.6	10.3	0.15	17.6	0.0	0.00	0.0
	SBT	10.6	0.19	21.4	10.6	0.19	21.4	0.0	0.00	0.0
	SBR	11.7	0.29	13.9	11.7	0.29	13.9	0.0	0.00	0.0
Fallsview Boulevard and Hilton Hotel Access / Fallsview Casino Access	WBT	21.7	0.19	11.8	22.1	0.21	12.5	0.4	0.02	0.7
	WBR	21.1	0.08	11.8	21.4	0.09	12.2	0.3	0.01	0.4
	NBL	10.8	0.08	4.6	10.8	0.08	4.7	0.0	0.00	0.1
	NBT	13	0.47	37.6	13.1	0.49	40.2	0.1	0.02	2.6
	SBL	5.6	0.38	13.9	5.7	0.40	14.5	0.1	0.02	0.6
	SBT	5.9	0.42	32.8	6.3	0.49	40.6	0.4	0.07	7.8
Stanley Avenue and Dixon Street / Main Street	EBT	36.8	0.29	19.9	180.8	1.25	111.0	144.0	0.96	91.1
	WBT	47.9	0.71	46.2	86.6	1.02	131.8	38.7	0.31	85.6
	WBR	37.5	0.38	32	28.9	0.40	40.5	-8.6	0.02	8.5
	NBL	12.4	0.23	2.6	13.5	0.39	4.2	1.1	0.16	1.6
	NBT	24.4	0.75	109.1	29.4	0.83	109.2	5.0	0.08	0.1
	SBL	30.9	0.71	74.8	154.6	1.22	117.9	123.7	0.51	43.1
	SBT	10.4	0.62	84.2	22.2	0.85	122.6	11.8	0.23	38.4

Intersection	Movement	2033 Future Background Conditions - Mitigated			2033 Future Total Conditions - Mitigated			Difference (Total - Background)		
		Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)	Delay (s)	v/c Ratio	95th Percentile Queue Length (m)
Allendale Avenue and Main Street and Murray Street	WBL	37.5	0.11	11	36.5	0.11	11.0	-1.0	0.00	0.0
	WBR	181.6	1.25	153.5	181.6	1.25	153.5	0.0	0.00	0.0
	NBLTR	47.5	0.59	54.8	66.9	0.85	95.6	19.4	0.26	40.8
	SBLTR	35.9	0.14	17.2	36.2	0.15	17.3	0.3	0.01	0.1
	SEL	73	0.87	90	73.0	0.87	90.0	0.0	0.00	0.0
	SETR	55.2	0.75	88.4	55.2	0.75	88.4	0.0	0.00	0.0
	NWLTR	36.8	0.14	17.6	36.8	0.14	17.6	0.0	0.00	0.0

Exhibit 6-6: 2033 Unsignalized Intersection Traffic Operations Comparison

Intersection	Lane	2033 Future Background Conditions			2033 Future Total Conditions			Difference (Total-Background)		
		Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)
Typical Summer Weekend										
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	EBLTR	801.1	1.82	36.7	1099.2	2.30	39.2	298.1	0.48	2.5
	WBLTR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	20.7	0.27	8.2	22.4	0.29	9.0	1.7	0.02	0.8
	SBL	15.7	0.36	12.4	16.4	0.38	13.5	0.7	0.02	1.1
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	EBLTR	0.5	0.00	0.0	0.5	0.00	0.0	0.0	0.00	0.0
	WBLTR	0.0	0.00	0.0	4.7	0.13	3.5	4.7	0.13	3.5
	NBLTR	0.0	0.39	0.0	13.6	0.39	14.0	13.6	0.00	14.0
	SBLTR	9.4	0.06	1.5	29.3	0.27	7.9	19.9	0.21	6.4
Stanley Ave and 6519 Stanley Avenue Access	EBL	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	EBR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	0.0	0.00	0.0	11.4	0.01	0.3	11.4	0.01	0.3
Portage Road and Proposed Development Site Access	EBL	0.0	0.00	0.0	8.6	0.26	8.1	8.6	0.26	8.1
	SBL	0.0	0.00	0.0	63.2	0.14	3.5	63.2	0.14	3.5
	SBR	0.0	0.00	0.0	16.2	0.35	12.0	16.2	0.35	12.0
Summer Long Weekend										
Fallsview Boulevard and Dixon Street / Fallsview Casino Access	EBLTR	25.5	0.18	4.8	27.1	0.19	5.2	1.6	0.01	0.4
	WBLTR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	8.9	0.09	2.1	9.1	0.09	2.3	0.2	0.00	0.2
	SBL	10.3	0.22	6.3	10.5	0.23	6.8	0.2	0.01	0.5
Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access	EBLTR	0.5	0.00	0.0	0.5	0.00	0.0	0.0	0.00	0.0
	WBLTR	0.0	0.00	0.0	4.6	0.13	3.5	4.6	0.13	3.5
	NBLTR	0.0	0.39	0.0	13.7	0.39	14.0	13.7	0.00	14.0
	SBLTR	9.4	0.06	1.5	29.6	0.27	8.1	20.2	0.21	6.6

Intersection	Lane	2033 Future Background Conditions			2033 Future Total Conditions			Difference (Total-Background)		
		Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue Length (m)
Stanley Ave and 6519 Stanley Avenue Access	EBL	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	EBR	0.0	0.00	0.0	0.0	0.00	0.0	0.0	0.00	0.0
	NBL	0.0	0.00	0.0	11.4	0.01	0.3	11.4	0.01	0.3
Portage Road and Proposed Development Site Access	EBL	0.0	0.00	0.0	7.9	0.24	6.9	7.9	0.24	6.9
	SBL	0.0	0.00	0.0	48.2	0.11	2.7	48.2	0.11	2.7
	SBR	0.0	0.00	0.0	14.7	0.32	10.4	14.7	0.32	10.4

7 Parking Analysis

The purpose of the parking study is to determine if the proposed parking supply is appropriate to accommodate anticipated demand from the proposed development.

On-site parking at 6546 Fallsview Boulevard is proposed to be provided via an underground parking facility and ground floor-level parking spaces. A total of 273 parking spaces are proposed at this location, with the majority on underground levels as longer-term parking. The ground-floor level spaces, of which only a small number a proposed, are intended for short duration use.

The Application also contemplates an off-site structured parking facility with capacity for approximately 1,047 vehicles located at 6519 Stanley Avenue. Access to this facility would be via Stanley Avenue and via Dixon Street. The conceptual site plan for the structured parking facility also includes a terminal that will accommodate hotel guest check-in, luggage transfer/storage, ancillary services, and a guest waiting area for a frequent, dedicated shuttle service connecting to the 6546 Fallsview Boulevard site.

When viewed together, the proposed development features a total of 1,320 proposed parking spaces. It is our understanding that parking for the residential uses and gaming uses would be located at 6546 Fallsview Boulevard (on site), with the parking for the remaining uses split between the on-site facility and 6519 Stanley Avenue (off-site).

7.1 Parking Demand Review

The property is presently governed by the City of Niagara Falls Zoning By-Law 79-200 (ZBL), with the minimum vehicular parking spaces required shown in **Exhibit 7-1**.

Exhibit 7-1: Minimum ZBL Vehicular Parking Spaces Required

Land Use	ZBL Parking Ratio	Proposed Intensity	Required Parking Spaces
Hotel	1.0 parking space for each 1.25 bedrooms	1,140 hotel bedrooms	912
High-Rise Residential	1.40 parking spaces for each residential dwelling unit	126 residential dwelling units and/or VRUs [5]	Up to 252
Vacation Rental Units (VRU)	2.0 parking spaces for each VRU		
Gaming Space	1.0 parking space per 75 m^2 of floor area	2,648.3 m^2	35
Total			
Total Parking Requirement			1,199
Proposed Supply			**1,320**
Operational Surplus/Deficiency			**121**

As shown in **Exhibit 7-1**, as 1,199 parking spaces are required and 1,320 parking spaces are proposed at both 6546 Fallsview Boulevard and 6519 Stanley Avenue, compliance with the zoning by-law parking requirements is expected.

7.2 Transportation Demand Management Considerations

Transportation Demand Management (TDM) refers to policies, design features, and incentives which encourage sustainable transportation choices. TDM can reduce the intensity of peak hour trips by encouraging deferred travel, can reduce general automobile trips by encouraging the use of non-automobile transportation modes, and can reduce the demand for parking by reducing the need to own and operate a personal vehicle.

As mentioned in **Section 2.3**, the proposed development is well connected to the City of Niagara Falls cycling network and is located in close proximity to the Niagara Parkway trail system along the Niagara River. As such, consideration could be given to facilitating bicycle tourism by providing bicycle rental options for guests as well as associated secure bicycle parking. These measures can encourage guests to utilize sustainable transportation options – rather than the automobile – to explore the broader Niagara region.

[5] It is not certain at this time how many of the 126 units will be residential dwelling units, and how many will be VRUs. However, the amount of parking spaces required would not change based on the ratio of residential dwelling units to VRUs as the parking rate for both uses are shown to be the same.

8 Vehicle Swept Path Analysis

Vehicle swept path analysis was completed using AutoTURN to confirm that the passenger shuttle, waste collection, and delivery vehicles can enter and exit both the hotel and the parking facility sites in a forward motion.

This analysis is presented in **Appendix K**.

9 Conclusions and Recommendations

This section summarizes the key findings of this Transportation Impact Study (TIS).

9.1 TIS Findings

The proposed development is expected to generate up to 797 net new two-way automobile trips during the Saturday Peak Hour. Based on a comparison between 2033 Future Background Mitigated Conditions and 2033 Future Total Mitigated Conditions, the traffic generated by the proposed development is generally not anticipated to have a significant impact on traffic operations at study area intersections as traffic operations are similar for the majority of movements. While instances of movements exceeding critical thresholds are expected to be present at various intersections during peak seasons/times, such impacts could be reduced with signal timing plan changes. Additionally, the implementation of certain short and long-term improvements identified in the ***City of Niagara Falls Transportation Master Plan*** (October 2011) could serve to further reduce impacts.

For unsignalized intersections, the Fallsview Boulevard and Dixon Street / Fallsview Casino Access, Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access, and the Portage Road and Proposed Development Site Access intersections are all expected to experience operations which exceed delay critical thresholds under Future Total Conditions during the typical summer weekend peak hours. The Dixon Street and Allendale Avenue / 6519 Stanley Avenue Access, and the Portage Road and Proposed Development Site Access intersections are all expected to experience operations which exceed delay critical thresholds under Future Total Conditions during the summer long weekend peak hours. However, levels of delay in this range are generally expected and tolerated by road users in urban areas. As a result, critical delay alone does not necessarily indicate that mitigation measures are required. That being said, a traffic control signal could be considered at the Fallsview Boulevard and Dixon Street / Fallsview Casino Access intersection due to the combination of high delay, movements exceeding capacity limits, and a lack of a protected pedestrian crossing along pedestrian desire lines.

For both signalized and unsignalized intersections within the study area, a sensitivity analysis which isolated the impact of the proposed development on a standalone basis demonstrated that the background developments that were considered in this report are the main drivers of new critical operations when compared to the 2023 Existing Conditions scenario. The traffic impacts arising from the proposed development represent only an incremental change in the context of future conditions. As such, the need for mitigative measures to address instances of poor traffic operations described in this report are primarily attributable to the construction of background developments. Also, it should be noted that the described future conditions in this report may prove to be

conservative, as there is the possibility that some of the background developments do not proceed to construction.

9.2 Parking Analysis

The purpose of the parking study is to determine if the proposed parking supply is appropriate to accommodate anticipated demand from the proposed development.

On-site parking at 6546 Fallsview Boulevard is proposed to be provided via an underground parking facility and ground floor-level parking spaces. A total of 273 parking spaces are proposed at this location, with the majority on underground levels as longer-term parking. The ground-floor level spaces, of which only a small number a proposed, are intended for short duration use.

The Application also contemplates an off-site structured parking facility with capacity for approximately 1,047 vehicles located at 6519 Stanley Avenue. Access to this facility would be via Stanley Avenue and via Dixon Street. The conceptual site plan for the structured parking facility also includes a terminal that will accommodate hotel guest check-in, luggage transfer/storage, ancillary services, and a guest waiting area for a frequent, dedicated shuttle service connecting to the 6546 Fallsview Boulevard site.

When viewed together, the proposed development features a total of 1,320 proposed parking spaces. It is our understanding that parking for the residential uses and gaming uses would be located at 6546 Fallsview Boulevard (on site), with the parking for the remaining uses split between the on-site facility and 6519 Stanley Avenue (off-site).

The property is presently governed by the City of Niagara Falls Zoning By-Law 79-200 (ZBL). As shown in **Exhibit 7-1**, as 1,199 parking spaces are required and 1,320 parking spaces are proposed at both 6546 Fallsview Boulevard and 6519 Stanley Avenue, compliance with the zoning by-law parking requirements is expected.

As mentioned in **Section 2.3**, the proposed development is well connected to the City of Niagara Falls cycling network and is located in close proximity to the Niagara Parkway trail system along the Niagara River. As such, consideration could be given to facilitating bicycle tourism by providing bicycle rental options for guests as well as associated secure bicycle parking. These measures can encourage guests to utilize sustainable transportation options – rather than the automobile – to explore the broader Niagara region.

9.3 Vehicle Swept Path Analysis

Vehicle swept path analysis was completed using AutoTURN to confirm that the passenger shuttle, waste collection, and delivery vehicles can enter and exit both the hotel and the parking facility sites in a forward motion.

Appendix A

Scope of Investigation

ARCADIS IBI GROUP
7th Floor – 55 St. Clair Avenue West
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tel 416 596 1930 fax 416 596 0644
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December 16, 2022

Mr. Mathew Bilodeau
Manager of Transportation Engineering
City of Niagara Falls

8208 Heartland Forest Road
Niagara Falls, ON L2H 0L7

Dear Mr. Bilodeau:

SCOPE OF WORK FOR TRANSPORTATION IMPACT STUDY FOR PROPOSED HOTEL DEVELOPMENT AT 6546 FALLSVIEW BOULEVARD AND PROPOSED PARKING FACILITY AT 6519 STANLEY AVENUE, NIAGARA FALLS, ONTARIO

This letter provides our proposed scope of work for a proposed hotel development located at 6546 Fallsview Boulevard in the City of Niagara Falls. The development would be located on the northeast corner of the Fallsview Boulevard & Portage Road / Main Street intersection, and, and would consist of a hotel development with approximately 1,140 rooms. Primary access to the site would be via Portage Road. Existing uses on the property are proposed to be removed. Related to the proposed hotel, a parking facility would be located at 6519 Stanley Avenue in the City of Niagara Falls. This facility would be located on the southwest corner of the Stanley Avenue & Dixon Street intersection, would provide capacity for approximately 1,070 vehicles, with vehicle access via Stanley Avenue and via Dixon Street. Given the interrelated nature of these facilities, it is envisioned that both the proposed hotel and proposed parking facility will be the subject of a single transportation impact study report.

While changes to site plan and site statistics may occur as the development progresses through the approval process, we anticipate that transportation impacts will be consistent with the concept described above. Nevertheless, our submission will reflect the most up-to-date information available.

Work Plan – Transportation Impact Study

The tasks that will be completed for the transportation impact study are as follows:

1. **Analysis Time Periods and Intersections:** Based on the proposed development's land uses and size, we plan to analyze the development peak hours which will occur during the summer typical Saturday peak period (5:00 p.m. to 1:00 a.m.) and the summer long-weekend Saturday peak period (5:00 p.m. to 1:00 a.m.).

   The following intersections will be included in this analysis:

   1. Stanley Avenue & Murray Street (signalized);
   2. Stanley Avenue & Main Street / Dixon Street (signalized);
   3. Stanley Avenue & Proposed Parking Facility Access (unsignalized);
   4. Stanley Avenue & Dunn Street (signalized);

5. Fallsview Boulevard & Murray Street (signalized);
6. Fallsview Boulevard & Fallsview Casino Resort Access / Hilton Niagara Falls/Fallsview Hotel & Suites Access (unsignalized);
7. Fallsview Boulevard & Dixon Street / Fallsview Casino Resort Garage (unsignalized);
8. Fallsview Boulevard & Main Street / Portage Road (signalized);
9. Portage Road & Proposed Hotel Site Access (unsignalized); and
10. Portage Road & Fallsview Casino Resort Rear Access (signalized);
11. Dixon Street & Proposed Parking Facility Access (unsignalized).

2. **2023 Existing Conditions:** The 2023 existing traffic operations will be analyzed using the software program Synchro (version 11) for the summer typical Saturday peak period and the summer long-weekend Saturday peak period, for the intersections listed above. Given the impact of the Coronavirus disease (COVID-19) outbreak, we propose to utilize traffic counts collected in 2018 / 2019 (utilized in the Niagara Events Centre transportation study) and apply appropriate growth factors to estimate “normal” 2023 conditions.

3. **Background Traffic Conditions:** The background traffic volumes will be determined for the study area intersections for a horizon year which coincides with 10 years after the publication date of the transportation study. We will identify an applicable background traffic growth rate and other area developments which may introduce traffic into the study area, based on a review of historical data, City records, and any applicable municipal transportation plans. Any future road network or intersection changes proposed by the City or Region, or outlined in a capital works program, will be taken into consideration.

   The background traffic analysis will identify and determine the impacts of the adjacent developments and background growth without the proposed site traffic.

4. **Site Traffic Generation and Trip Distribution:** The trip generation for the proposed development will be based on the information presented in the Institute of Transportation Engineers (ITE) publication, Trip Generation Manual, 11th Edition. A review of the modal split will also be undertaken to account for the trips being made by non-auto modes of travel. A discussion on trips bound for the proposed hotel, bound for the proposed parking facility, and trips between these facilities, will be presented, as appropriate.

   The trip distribution for the proposed hotel and proposed parking facility, as well as trips between these two locations, will be based on a review of existing travel patterns and the available road network. The forecast site traffic for the proposed development will be added to the road network based on the trip distribution, and assigned to the network based on logical travel routes and available traffic capacity.

5. **Total Traffic Conditions**: The estimated site traffic volumes will be combined with the background traffic volumes to determine the total traffic volumes for the study area intersections.

   Intersection operations analysis will be undertaken for the summer typical Saturday peak period and the summer long-weekend Saturday peak period. Any necessary road improvements required to accommodate total traffic volumes will be identified.

These improvements may include additional turning lanes, storage length modifications, or traffic control measures.

If you have any questions regarding the proposed scope of work for the 6546 Fallsview Boulevard and 6519 Stanley Avenue developments, please do not hesitate to contact me.

Yours truly,

ARCADIS IBI GROUP

Andrae Griffith, B.Urpl, OCAD
Transportation Operations & Safety Analyst
416 596 1930 ext 61450
andrae.griffith@ibigroup.com

Appendix B

Turning Movements Counts

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 20:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

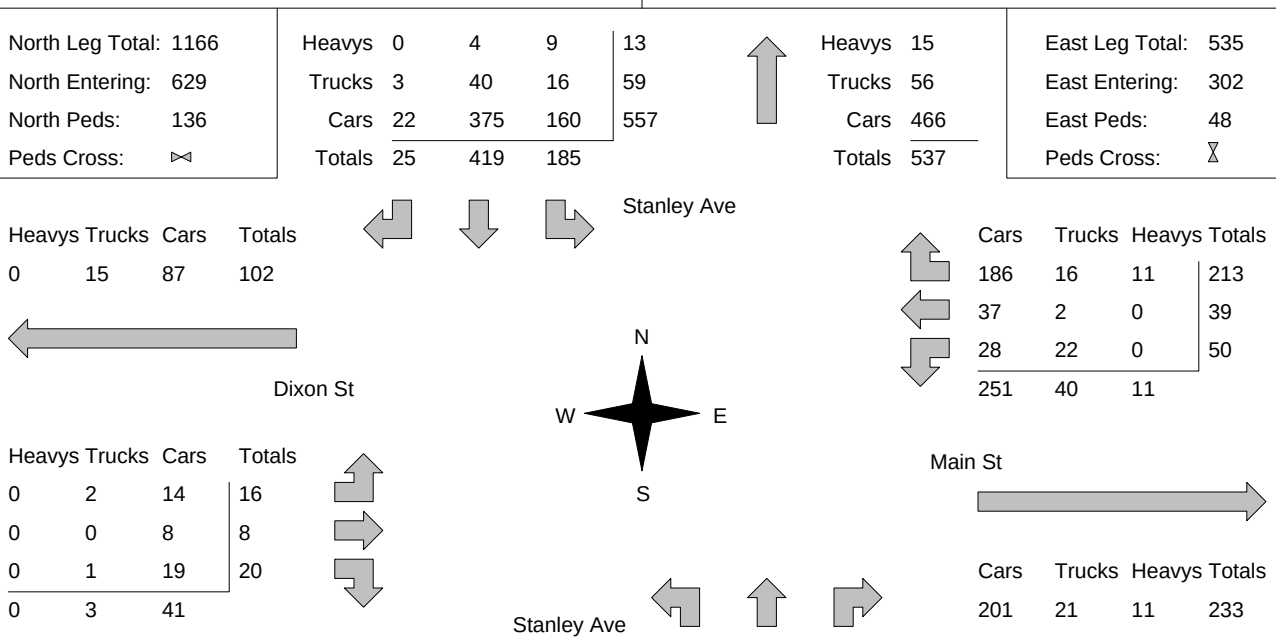
Municipality: Niagara Falls
Site #: 1911200001
Intersection: Stanley Ave & Main St-Dixon St
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S



Comments

Ontario Traffic Inc.

Total Count Diagram

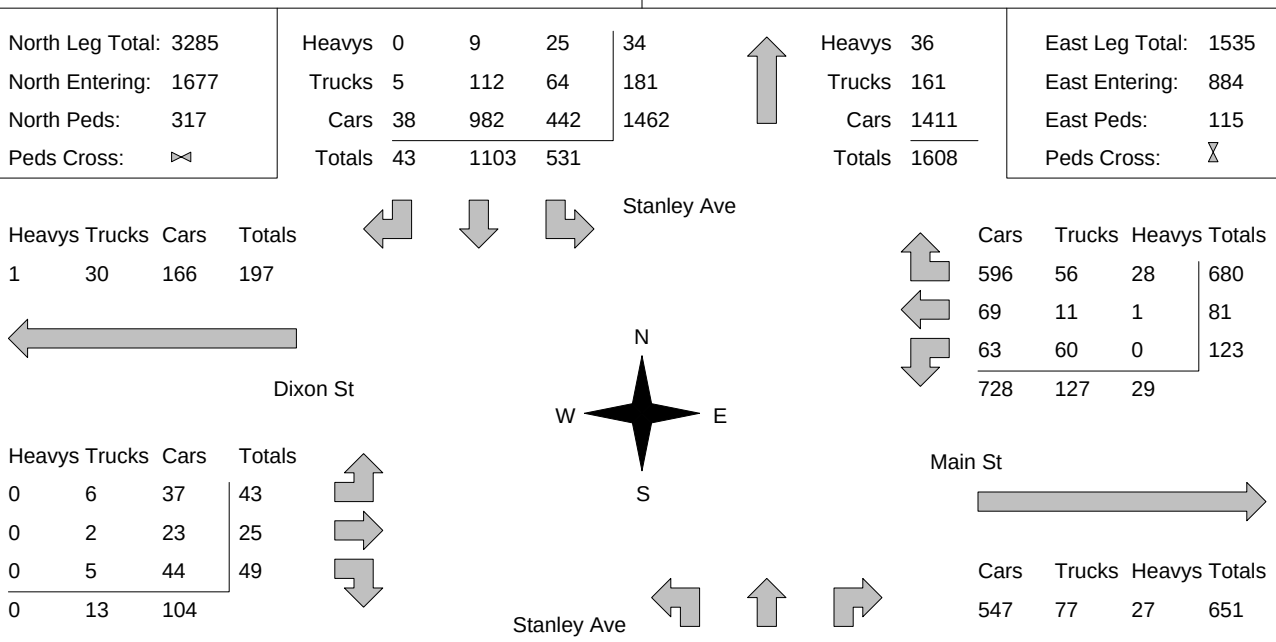
Municipality: Niagara Falls
Site #: 1911200001
Intersection: Stanley Ave & Main St-Dixon St
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Stanley Ave & Main St-Dixon St | **Count Date:** 13-Apr-19 | **Municipality:** Niagara Falls

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	185	419	25	629	136	1015
19:00:00	200	380	6	586	98	914
20:00:00	146	304	12	462	83	801
Totals:	531	1103	43	1677	317	2730

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	38	308	40	386	49
19:00:00	13	289	26	328	16
20:00:00	22	288	29	339	26
Totals:	73	885	95	1053	91

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	50	39	213	302	48	346
19:00:00	37	22	231	290	34	322
20:00:00	36	20	236	292	33	333
Totals:	123	81	680	884	115	1001

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	16	8	20	44	71
19:00:00	10	8	14	32	115
20:00:00	17	9	15	41	104
Totals:	43	25	49	117	290

Calculated Values for Traffic Crossing Major Street

Hours Ending:	0:00	0:00	0:00	0:00	17:00	18:00	19:00	20:00
Crossing Values:	0	0	0	0	0	290	183	182

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	30	30	97	97	4	4	2	2	6	6	0	0	2	2	2	2	0	0	35	35
17:30:00	81	51	186	89	12	8	6	4	17	11	2	2	3	1	2	0	0	0	73	38
17:45:00	118	37	281	95	19	7	11	5	28	11	2	0	6	3	4	2	0	0	118	45
18:00:00	160	42	375	94	22	3	16	5	40	12	3	1	9	3	4	0	0	0	136	18
18:15:00	203	43	466	91	22	0	24	8	50	10	3	0	10	1	6	2	0	0	155	19
18:30:00	241	38	535	69	22	0	33	9	65	15	4	1	10	0	6	0	0	0	190	35
18:45:00	285	44	617	82	24	2	38	5	77	12	4	0	13	3	7	1	0	0	204	14
19:00:00	326	41	704	87	27	3	45	7	88	11	4	0	14	1	7	0	0	0	234	30
19:15:00	373	47	763	59	30	3	51	6	94	6	5	1	18	4	7	0	0	0	262	28
19:30:00	396	23	835	72	32	2	55	4	101	7	5	0	18	0	8	1	0	0	288	26
19:45:00	420	24	909	74	35	3	58	3	105	4	5	0	23	5	8	0	0	0	306	18
20:00:00	442	22	982	73	38	3	64	6	112	7	5	0	25	2	9	1	0	0	317	11
20:15:00	442	0	982	0	38	0	64	0	112	0	5	0	25	0	9	0	0	0	317	0
20:16:24	442	0	982	0	38	0	64	0	112	0	5	0	25	0	9	0	0	0	317	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	7	7	11	11	37	37	3	3	0	0	4	4	0	0	0	0	8	8	17	17
17:30:00	17	10	20	9	81	44	9	6	1	1	8	4	0	0	0	0	9	1	30	13
17:45:00	24	7	32	12	135	54	18	9	1	0	10	2	0	0	0	0	9	0	42	12
18:00:00	28	4	37	5	186	51	22	4	2	1	16	6	0	0	0	0	11	2	48	6
18:15:00	31	3	42	5	221	35	27	5	2	0	20	4	0	0	0	0	14	3	59	11
18:30:00	37	6	48	6	271	50	32	5	3	1	24	4	0	0	0	0	14	0	63	4
18:45:00	41	4	52	4	324	53	35	3	5	2	30	6	0	0	1	1	22	8	72	9
19:00:00	47	6	54	2	386	62	40	5	6	1	34	4	0	0	1	0	24	2	82	10
19:15:00	50	3	60	6	434	48	48	8	7	1	43	9	0	0	1	0	24	0	87	5
19:30:00	55	5	61	1	481	47	50	2	10	3	47	4	0	0	1	0	26	2	95	8
19:45:00	57	2	65	4	539	58	56	6	11	1	50	3	0	0	1	0	28	2	111	16
20:00:00	63	6	69	4	596	57	60	4	11	0	56	6	0	0	1	0	28	0	115	4
20:15:00	63	0	69	0	596	0	60	0	11	0	56	0	0	0	1	0	28	0	115	0
20:16:24	63	0	69	0	596	0	60	0	11	0	56	0	0	0	1	0	28	0	115	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	8	8	68	68	7	7	2	2	9	9	0	0	0	0	0	0	0	0	13	13
17:30:00	15	7	127	59	11	4	3	1	15	6	1	1	0	0	2	2	0	0	29	16
17:45:00	22	7	209	82	24	13	7	4	25	10	4	3	0	0	3	1	0	0	40	11
18:00:00	28	6	266	57	33	9	10	3	38	13	5	1	0	0	4	1	2	2	49	9
18:15:00	30	2	331	65	41	8	10	0	48	10	7	2	0	0	5	1	2	0	58	9
18:30:00	32	2	396	65	47	6	12	2	54	6	8	1	0	0	5	0	2	0	61	3
18:45:00	37	5	466	70	51	4	12	0	58	4	8	0	0	0	6	1	2	0	65	4
19:00:00	38	1	527	61	56	5	13	1	64	6	8	0	0	0	6	0	2	0	65	0
19:15:00	48	10	585	58	69	13	13	0	74	10	11	3	0	0	7	1	2	0	68	3
19:30:00	52	4	645	60	76	7	13	0	84	10	11	0	0	0	7	0	2	0	75	7
19:45:00	57	5	713	68	81	5	13	0	92	8	11	0	0	0	8	1	2	0	82	7
20:00:00	59	2	778	65	82	1	14	1	99	7	11	0	0	0	8	0	2	0	91	9
20:15:00	59	0	778	0	82	0	14	0	99	0	11	0	0	0	8	0	2	0	91	0
20:16:24	59	0	778	0	82	0	14	0	99	0	11	0	0	0	8	0	2	0	91	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	6	6	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	11	11
17:30:00	10	4	3	2	13	9	0	0	0	0	1	1	0	0	0	0	0	0	27	16
17:45:00	12	2	6	3	18	5	0	0	0	0	1	0	0	0	0	0	0	0	53	26
18:00:00	14	2	8	2	19	1	2	2	0	0	1	0	0	0	0	0	0	0	71	18
18:15:00	16	2	8	0	21	2	2	0	0	0	2	1	0	0	0	0	0	0	105	34
18:30:00	18	2	10	2	22	1	3	1	1	1	2	0	0	0	0	0	0	0	136	31
18:45:00	20	2	11	1	28	6	4	1	2	1	3	1	0	0	0	0	0	0	156	20
19:00:00	22	2	14	3	30	2	4	0	2	0	4	1	0	0	0	0	0	0	186	30
19:15:00	28	6	15	1	33	3	4	0	2	0	4	0	0	0	0	0	0	0	224	38
19:30:00	31	3	19	4	38	5	4	0	2	0	5	1	0	0	0	0	0	0	252	28
19:45:00	35	4	22	3	43	5	5	1	2	0	5	0	0	0	0	0	0	0	265	13
20:00:00	37	2	23	1	44	1	6	1	2	0	5	0	0	0	0	0	0	0	290	25
20:15:00	37	0	23	0	44	0	6	0	2	0	5	0	0	0	0	0	0	0	290	0
20:16:24	37	0	23	0	44	0	6	0	2	0	5	0	0	0	0	0	0	0	290	0

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 20:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

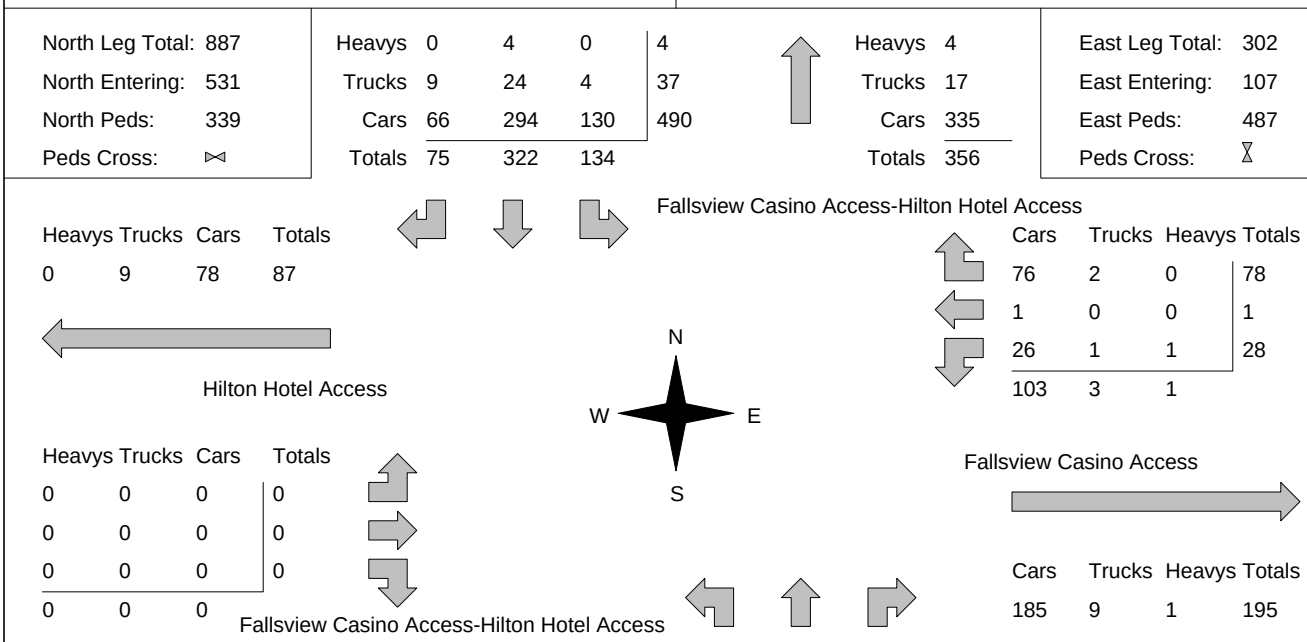
Municipality: Niagara Falls
Site #: 1911200002
Intersection: Fallsview Blvd & Fallsview Casino /
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Fallsview Blvd runs W/E



Comments

Ontario Traffic Inc.

Total Count Diagram

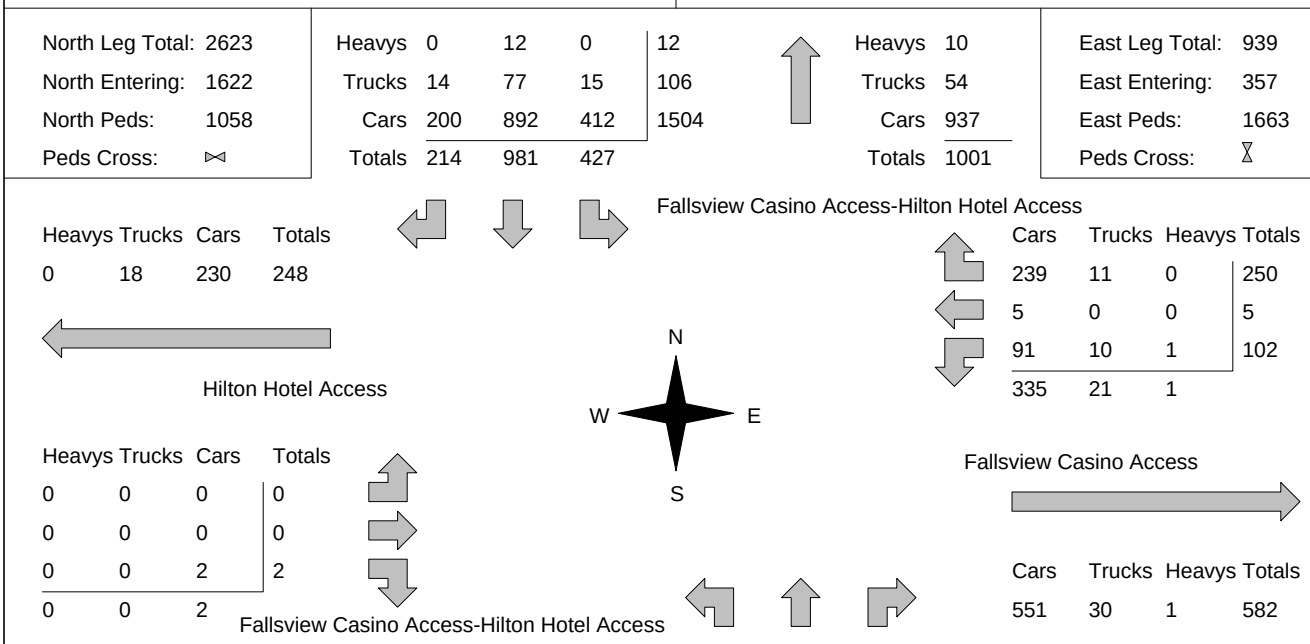
Municipality: Niagara Falls
Site #: 1911200002
Intersection: Fallsview Blvd & Fallsview Casino /
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Fallsview Blvd runs W/E



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Fallsview Blvd & Fallsview Casino | **Count Date:** 13-Apr-19 | **Municipality:** Niagara Falls

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	134	322	75	531	339	881
19:00:00	135	344	71	550	290	845
20:00:00	158	315	68	541	429	831
Totals:	427	981	214	1622	1058	2557

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	11	278	61	350	172
19:00:00	8	243	44	295	174
20:00:00	10	230	50	290	183
Totals:	29	751	155	935	529

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	28	1	78	107	487	107
19:00:00	34	3	82	119	567	120
20:00:00	40	1	90	131	609	132
Totals:	102	5	250	357	1663	359

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	319
19:00:00	0	0	1	1	300
20:00:00	0	0	1	1	445
Totals:	0	0	2	2	1064

Calculated Values for Traffic Crossing Major Street

Hours Ending:	0:00	0:00	0:00	0:00	17:00	18:00	19:00	20:00
Crossing Values:	0	0	0	0	0	1273	1354	1537

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	30	30	84	84	16	16	1	1	6	6	2	2	0	0	2	2	0	0	81	81
17:30:00	72	42	157	73	30	14	1	0	10	4	6	4	0	0	3	1	0	0	180	99
17:45:00	101	29	236	79	44	14	2	1	16	6	7	1	0	0	3	0	0	0	256	76
18:00:00	130	29	294	58	66	22	4	2	24	8	9	2	0	0	4	1	0	0	339	83
18:15:00	167	37	371	77	82	16	7	3	32	8	9	0	0	0	5	1	0	0	389	50
18:30:00	201	34	445	74	96	14	7	0	41	9	10	1	0	0	6	1	0	0	452	63
18:45:00	229	28	528	83	115	19	8	1	48	7	11	1	0	0	7	1	0	0	528	76
19:00:00	259	30	602	74	134	19	10	2	55	7	12	1	0	0	9	2	0	0	629	101
19:15:00	292	33	669	67	150	16	12	2	60	5	12	0	0	0	10	1	0	0	735	106
19:30:00	334	42	738	69	166	16	13	1	65	5	13	1	0	0	12	2	0	0	845	110
19:45:00	370	36	819	81	182	16	13	0	72	7	13	0	0	0	12	0	0	0	965	120
20:00:00	412	42	892	73	200	18	15	2	77	5	14	1	0	0	12	0	0	0	1058	93
20:15:00	412	0	892	0	200	0	15	0	77	0	14	0	0	0	12	0	0	0	1058	0
20:17:35	412	0	892	0	200	0	15	0	77	0	14	0	0	0	12	0	0	0	1058	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	6	6	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	142	142
17:30:00	13	7	0	0	43	28	0	0	0	0	1	1	0	0	0	0	0	0	264	122
17:45:00	19	6	0	0	55	12	0	0	0	0	1	0	0	0	0	0	0	0	369	105
18:00:00	26	7	1	1	76	21	1	1	0	0	2	1	1	1	0	0	0	0	487	118
18:15:00	37	11	1	0	96	20	1	0	0	0	3	1	1	0	0	0	0	0	628	141
18:30:00	44	7	1	0	117	21	2	1	0	0	3	0	1	0	0	0	0	0	792	164
18:45:00	52	8	2	1	130	13	2	0	0	0	5	2	1	0	0	0	0	0	919	127
19:00:00	57	5	4	2	152	22	4	2	0	0	8	3	1	0	0	0	0	0	1054	135
19:15:00	64	7	4	0	171	19	7	3	0	0	9	1	1	0	0	0	0	0	1208	154
19:30:00	73	9	4	0	192	21	9	2	0	0	9	0	1	0	0	0	0	0	1393	185
19:45:00	82	9	5	1	213	21	9	0	0	0	10	1	1	0	0	0	0	0	1538	145
20:00:00	91	9	5	0	239	26	10	1	0	0	11	1	1	0	0	0	0	0	1663	125
20:15:00	91	0	5	0	239	0	10	0	0	0	11	0	1	0	0	0	0	0	1663	0
20:17:35	91	0	5	0	239	0	10	0	0	0	11	0	1	0	0	0	0	0	1663	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	5	5	70	70	18	18	0	0	2	2	1	1	0	0	2	2	0	0	34	34
17:30:00	7	2	131	61	33	15	0	0	7	5	1	0	0	0	3	1	0	0	75	41
17:45:00	7	0	209	78	47	14	0	0	11	4	2	1	0	0	4	1	0	0	134	59
18:00:00	11	4	259	50	55	8	0	0	15	4	5	3	0	0	4	0	1	1	172	38
18:15:00	13	2	322	63	67	12	0	0	18	3	8	3	0	0	5	1	1	0	208	36
18:30:00	15	2	378	56	78	11	1	1	22	4	9	1	0	0	6	1	1	0	265	57
18:45:00	16	1	431	53	84	6	2	1	24	2	9	0	0	0	7	1	1	0	304	39
19:00:00	17	1	485	54	92	8	2	0	29	5	12	3	0	0	7	0	1	0	346	42
19:15:00	18	1	549	64	104	12	3	1	31	2	14	2	0	0	9	2	1	0	383	37
19:30:00	22	4	604	55	115	11	4	1	35	4	15	1	0	0	9	0	1	0	439	56
19:45:00	24	2	653	49	128	13	4	0	38	3	15	0	0	0	9	0	1	0	484	45
20:00:00	25	1	698	45	139	11	4	0	43	5	15	0	0	0	10	1	1	0	529	45
20:15:00	25	0	698	0	139	0	4	0	43	0	15	0	0	0	10	0	1	0	529	0
20:17:35	25	0	698	0	139	0	4	0	43	0	15	0	0	0	10	0	1	0	529	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	73
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	71
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	238	94
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319	81
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	380	61
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	457	77
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	536	79
19:00:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	619	83
19:15:00	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	722	103
19:30:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	844	122
19:45:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	961	117
20:00:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1064	103
20:15:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1064	0
20:17:35	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1064	0

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 20:00:00

One Hour Peak
From: 17:30:00
To: 18:30:00

Municipality: Niagara Falls
Site #: 1911200003
Intersection: Fallsview Blvd & Fallsview Casino /
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

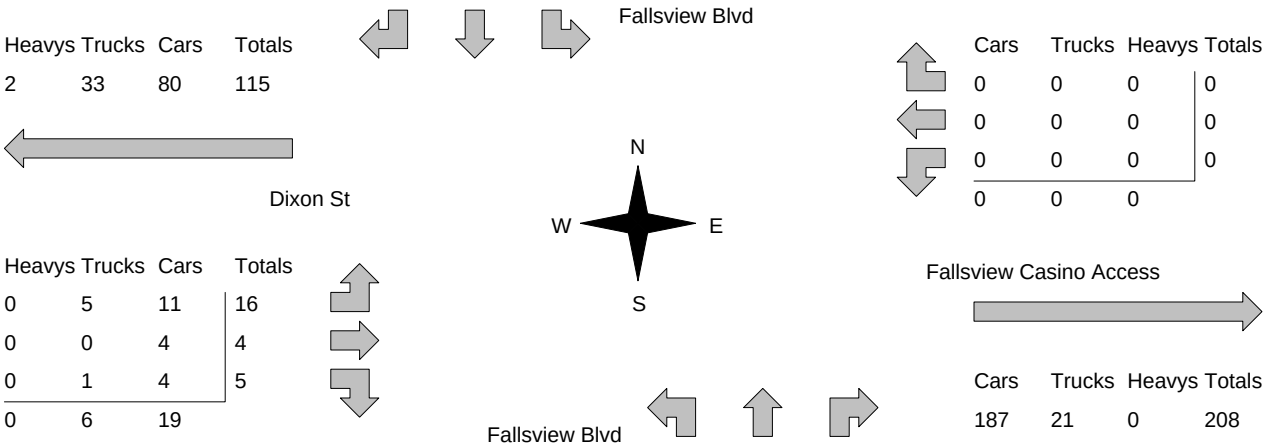
Major Road: Fallsview Blvd runs N/S

North Leg Total:	684			
North Entering:	357			
North Peds:	30			
Peds Cross:	⋈			

Heavys	2	2	0	4
Trucks	9	14	10	33
Cars	57	182	81	320
Totals	68	198	91	

Heavys	4			
Trucks	26			
Cars	297			
Totals	327			

East Leg Total:	208			
East Entering:	0			
East Peds:	559			
Peds Cross:	⧖			



Heavys	Trucks	Cars	Totals
2	33	80	115

Cars	Trucks	Heavys	Totals
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	

Heavys	Trucks	Cars	Totals
0	5	11	16
0	0	4	4
0	1	4	5
0	6	19	

Cars	Trucks	Heavys	Totals
187	21	0	208

Peds Cross:	⧖			
West Peds:	275			
West Entering:	25			
West Leg Total:	140			

Cars	186			
Trucks	15			
Heavys	2			
Totals	203			

Cars	23	286	102	411
Trucks	24	21	11	56
Heavys	0	4	0	4
Totals	47	311	113	

Peds Cross:	⋈			
South Peds:	30			
South Entering:	471			
South Leg Total:	674			

Comments

Ontario Traffic Inc.

Total Count Diagram

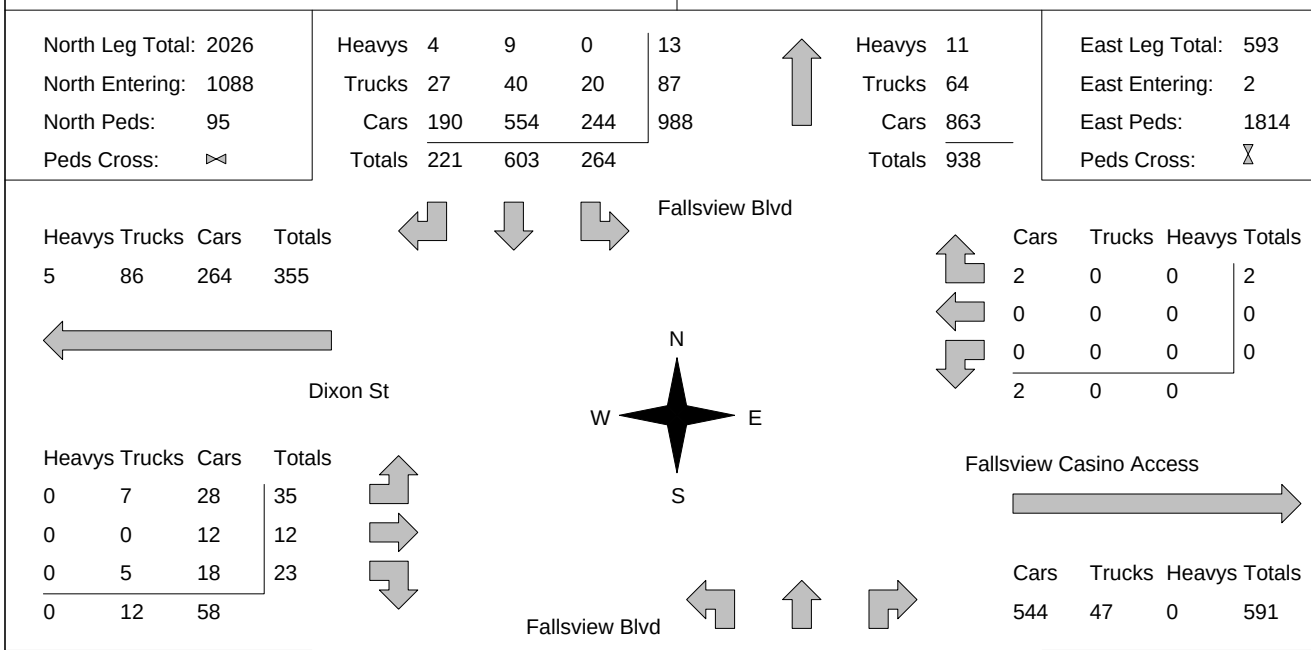
Municipality: Niagara Falls
Site #: 1911200003
Intersection: Fallsview Blvd & Fallsview Casino /
TFR File #: 1
Count date: 13-Apr-19

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Fallsview Blvd & Fallsview Casino | **Count Date:** 13-Apr-19 | **Municipality:** Niagara Falls

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	85	193	72	350	36	822
19:00:00	90	211	76	377	22	819
20:00:00	89	199	73	361	37	797
Totals:	264	603	221	1088	95	2438

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	42	335	95	472	26
19:00:00	49	279	114	442	35
20:00:00	43	287	106	436	18
Totals:	134	901	315	1350	79

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
17:00:00	0	0	0	0	0	0
18:00:00	0	0	1	1	538	21
19:00:00	0	0	1	1	588	29
20:00:00	0	0	0	0	688	22
Totals:	0	0	2	2	1814	72

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
17:00:00	0	0	0	0	0
18:00:00	12	4	4	20	227
19:00:00	17	3	8	28	215
20:00:00	6	5	11	22	302
Totals:	35	12	23	70	744

Calculated Values for Traffic Crossing Major Street

Hours Ending:	0:00	0:00	0:00	0:00	17:00	18:00	19:00	20:00
Crossing Values:	0	0	0	0	0	78	77	66

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	25	25	43	43	23	23	0	0	3	3	3	3	0	0	2	2	0	0	18	18
17:30:00	44	19	91	48	34	11	1	1	5	2	4	1	0	0	2	0	1	1	20	2
17:45:00	59	15	144	53	52	18	4	3	8	3	4	0	0	0	2	0	1	0	30	10
18:00:00	79	20	178	34	63	11	6	2	12	4	7	3	0	0	3	1	2	1	36	6
18:15:00	105	26	223	45	79	16	7	1	17	5	9	2	0	0	3	0	3	1	42	6
18:30:00	125	20	273	50	91	12	11	4	19	2	13	4	0	0	4	1	3	0	50	8
18:45:00	149	24	320	47	107	16	13	2	22	3	15	2	0	0	5	1	3	0	56	6
19:00:00	160	11	371	51	127	20	15	2	26	4	18	3	0	0	7	2	3	0	58	2
19:15:00	175	15	421	50	137	10	18	3	28	2	21	3	0	0	8	1	3	0	70	12
19:30:00	198	23	465	44	150	13	18	0	34	6	22	1	0	0	9	1	4	1	79	9
19:45:00	220	22	513	48	172	22	19	1	37	3	25	3	0	0	9	0	4	0	92	13
20:00:00	244	24	554	41	190	18	20	1	40	3	27	2	0	0	9	0	4	0	95	3
20:15:00	244	0	554	0	190	0	20	0	40	0	27	0	0	0	9	0	4	0	95	0
20:17:47	244	0	554	0	190	0	20	0	40	0	27	0	0	0	9	0	4	0	95	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	134
17:30:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	267	133
17:45:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	418	151
18:00:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	538	120
18:15:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	663	125
18:30:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	826	163
18:45:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	970	144
19:00:00	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1126	156
19:15:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1333	207
19:30:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1525	192
19:45:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1666	141
20:00:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1814	148
20:15:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1814	0
20:17:47	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1814	0

Ontario Traffic Inc.

Count Date: 13-Apr-19 Site #: 1911200003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	5	5	92	92	19	19	5	5	3	3	2	2	0	0	2	2	0	0	5	5
17:30:00	12	7	163	71	39	20	9	4	8	5	6	4	0	0	3	1	0	0	14	9
17:45:00	20	8	252	89	61	22	15	6	13	5	9	3	0	0	4	1	0	0	20	6
18:00:00	22	2	312	60	85	24	20	5	18	5	10	1	0	0	5	1	0	0	26	6
18:15:00	25	3	384	72	119	34	27	7	25	7	13	3	0	0	6	1	0	0	33	7
18:30:00	35	10	449	65	141	22	33	6	29	4	17	4	0	0	7	1	0	0	44	11
18:45:00	43	8	507	58	164	23	38	5	32	3	19	2	1	1	8	1	0	0	55	11
19:00:00	49	6	568	61	189	25	41	3	38	6	20	1	1	0	8	0	0	0	61	6
19:15:00	52	3	645	77	217	28	45	4	43	5	23	3	1	0	10	2	0	0	63	2
19:30:00	59	7	719	74	241	24	52	7	49	6	24	1	1	0	10	0	0	0	75	12
19:45:00	65	6	779	60	265	24	56	4	52	3	26	2	1	0	10	0	0	0	78	3
20:00:00	74	9	833	54	288	23	59	3	57	5	27	1	1	0	11	1	0	0	79	1
20:15:00	74	0	833	0	288	0	59	0	57	0	27	0	1	0	11	0	0	0	79	0
20:17:47	74	0	833	0	288	0	59	0	57	0	27	0	1	0	11	0	0	0	79	0

Ontario Traffic Inc.

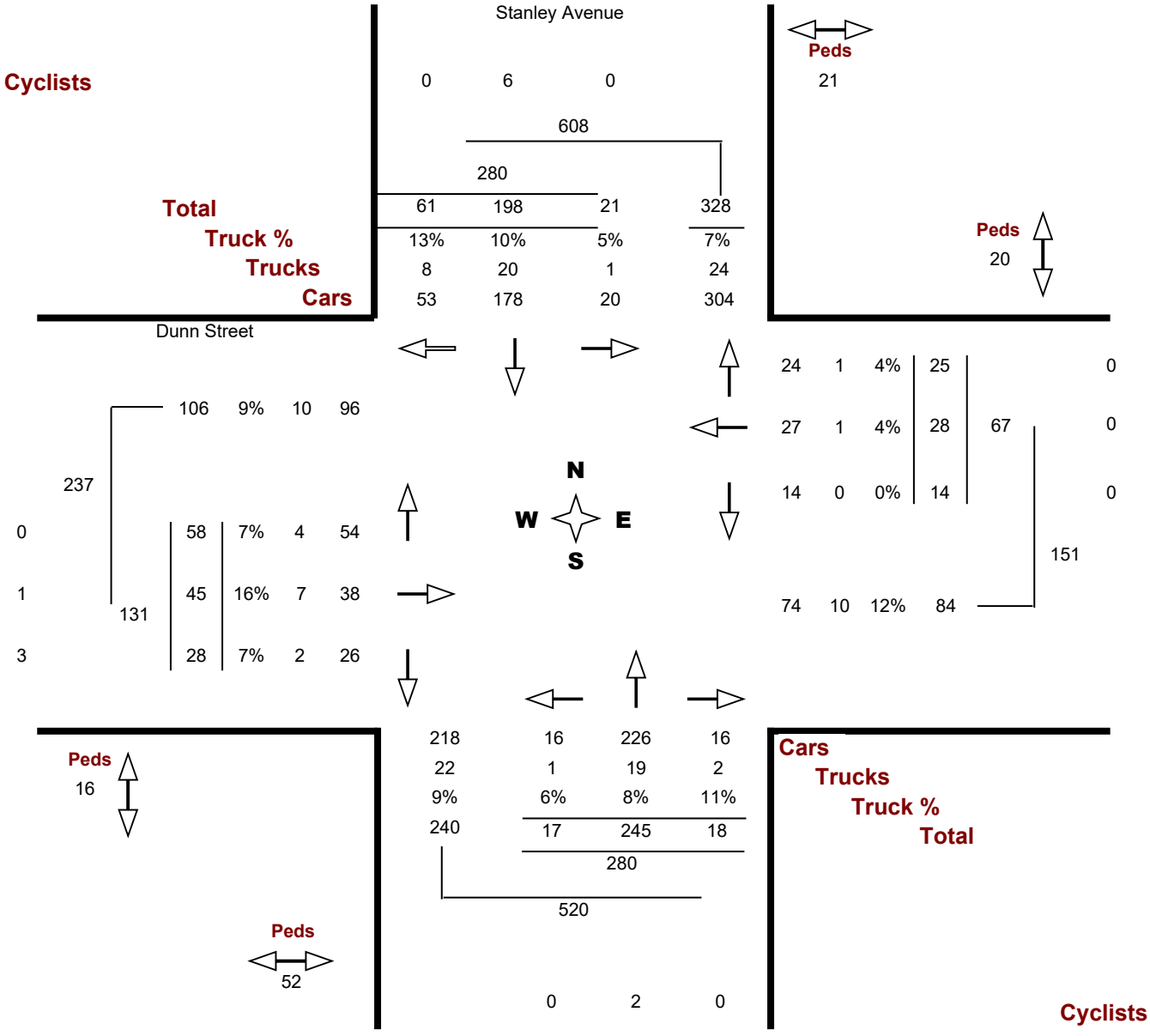
Count Date: 13-Apr-19 Site #: 1911200003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	2	2	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	19	19
17:30:00	7	5	3	0	3	0	0	0	0	0	1	1	0	0	0	0	0	0	62	43
17:45:00	8	1	4	1	3	0	0	0	0	0	1	0	0	0	0	0	0	0	161	99
18:00:00	10	2	4	0	3	0	2	2	0	0	1	0	0	0	0	0	0	0	227	66
18:15:00	15	5	6	2	5	2	2	0	0	0	1	0	0	0	0	0	0	0	279	52
18:30:00	18	3	7	1	7	2	5	3	0	0	2	1	0	0	0	0	0	0	337	58
18:45:00	19	1	7	0	9	2	5	0	0	0	3	1	0	0	0	0	0	0	376	39
19:00:00	22	3	7	0	9	0	7	2	0	0	3	0	0	0	0	0	0	0	442	66
19:15:00	23	1	9	2	15	6	7	0	0	0	3	0	0	0	0	0	0	0	511	69
19:30:00	23	0	12	3	16	1	7	0	0	0	4	1	0	0	0	0	0	0	585	74
19:45:00	25	2	12	0	17	1	7	0	0	0	4	0	0	0	0	0	0	0	650	65
20:00:00	28	3	12	0	18	1	7	0	0	0	5	1	0	0	0	0	0	0	744	94
20:15:00	28	0	12	0	18	0	7	0	0	0	5	0	0	0	0	0	0	0	744	0
20:17:47	28	0	12	0	18	0	7	0	0	0	5	0	0	0	0	0	0	0	744	0

Turning Movements Report - AM Period

Location..... Dunn Street @ Stanley Avenue
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... North south

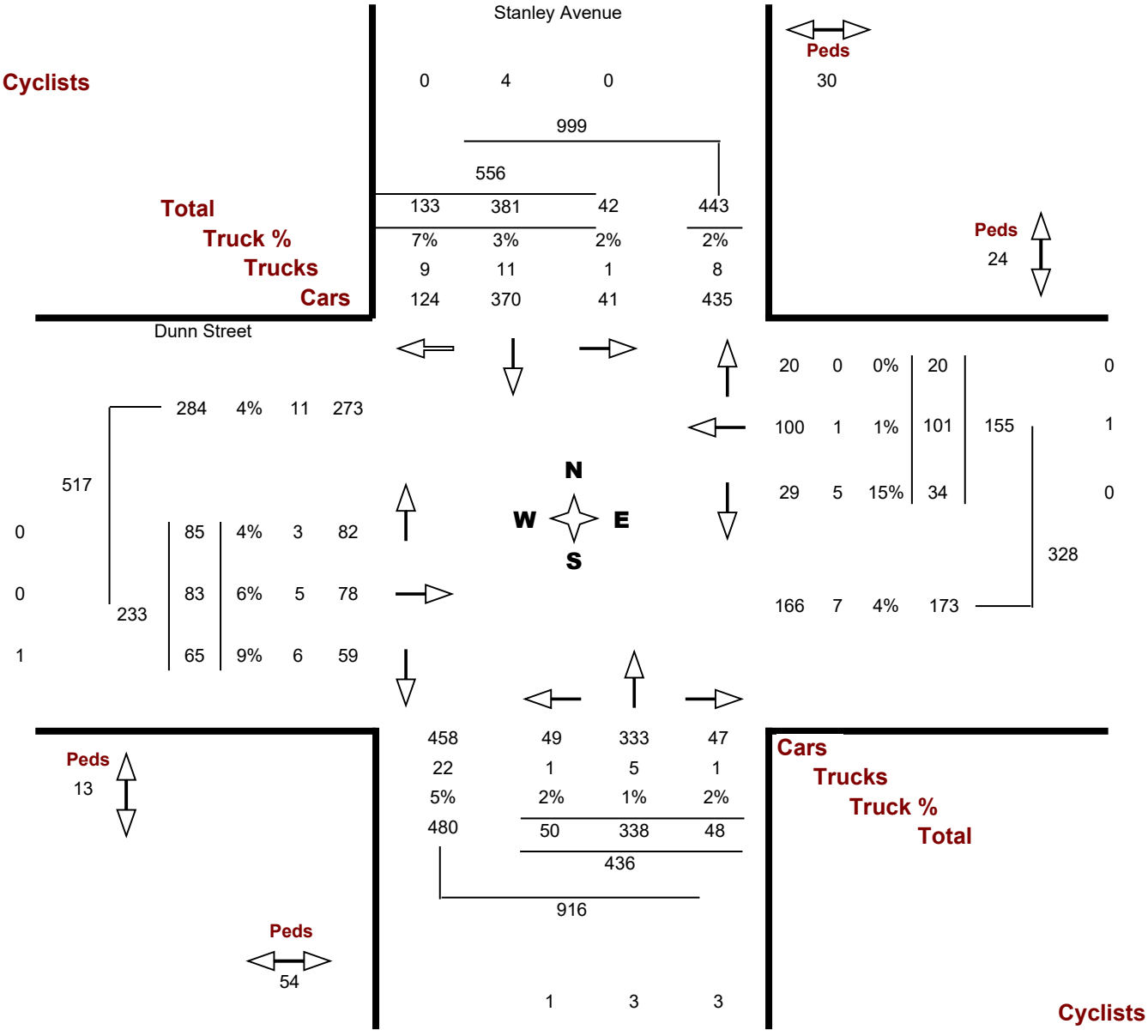
GeoID..... 01581
Count Date. Thursday, 11 August, 2022
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

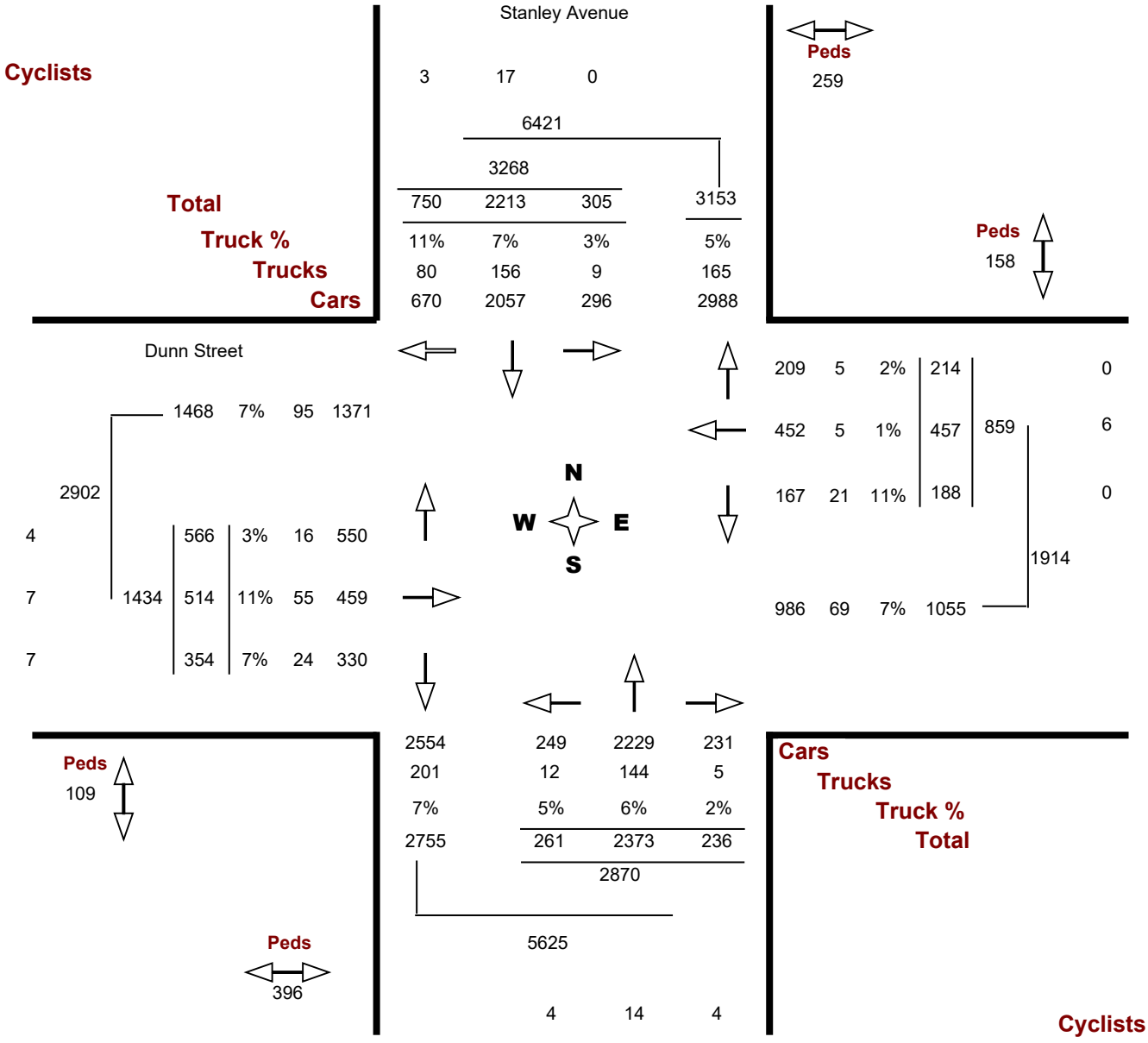
Location..... Dunn Street @ Stanley Avenue
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... North south

GeoID..... 01581
Count Date. Thursday, 11 August, 2022
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Dunn Street @ Stanley Avenue
Municipality..... NIAGARA FALLS
GeoID..... 01581
Count Date..... Thursday, 11 August, 2022



Turning Movement Count - Details Report (15 min)

Location..... Dunn Street @ Stanley Avenue

Municipality..... NIAGARA FALLS

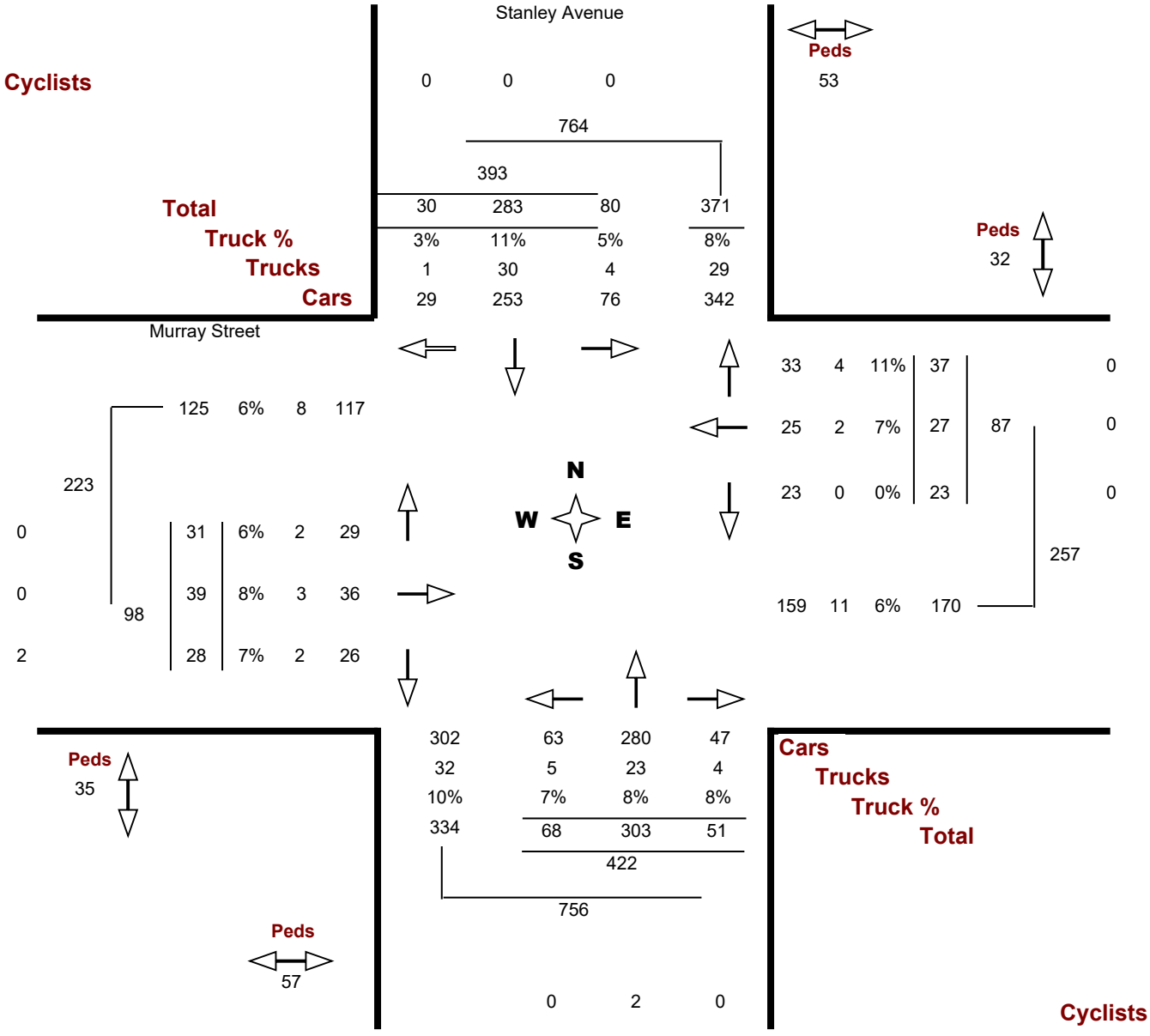
Count Date..... Thursday, August 11, 2022

		Stanley Avenue										Dunn Street									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	4	38	9	0	51	5	43	2	0	50	0	9	4	0	13	12	5	5	0	22
07:15	07:30	1	37	17	0	55	7	34	3	0	44	3	7	1	0	11	10	8	5	0	23
07:30	07:45	3	38	10	0	51	12	43	4	0	59	2	9	3	0	14	17	13	6	0	36
07:45	08:00	1	44	20	0	65	5	45	2	0	52	3	7	5	0	15	18	13	12	0	43
Hourly Total		9	157	56	0	222	29	165	11	0	205	8	32	13	0	53	57	39	28	0	124
08:00	08:15	1	45	13	0	59	8	44	4	0	56	4	4	2	0	10	17	9	4	0	30
08:15	08:30	3	60	12	0	75	4	70	5	0	79	1	5	3	0	9	17	10	9	0	36
08:30	08:45	10	48	17	0	75	1	66	6	0	73	5	11	10	0	26	10	15	8	0	33
08:45	09:00	7	45	19	0	71	4	65	3	0	72	4	8	10	0	22	14	11	7	0	32
Hourly Total		21	198	61	0	280	17	245	18	0	280	14	28	25	0	67	58	45	28	0	131
11:00	11:15	12	95	20	0	127	3	69	10	0	82	4	14	14	0	32	22	17	13	0	52
11:15	11:30	14	81	18	0	113	5	76	5	0	86	5	13	9	0	27	15	17	12	0	44
11:30	11:45	11	61	25	0	97	5	75	8	0	88	5	14	3	0	22	13	18	8	0	39
11:45	12:00	12	67	17	0	96	7	60	4	0	71	7	10	21	0	38	23	17	15	0	55
Hourly Total		49	304	80	0	433	20	280	27	0	327	21	51	47	0	119	73	69	48	0	190
12:00	12:15	10	59	19	0	88	13	72	6	0	91	7	13	6	0	26	14	17	14	0	45
12:15	12:30	15	78	26	0	119	5	91	5	0	101	10	16	10	0	36	14	17	6	0	37
12:30	12:45	6	56	20	0	82	7	69	8	0	84	12	11	9	0	32	11	15	15	0	41
12:45	13:00	7	72	20	0	99	7	63	6	0	76	4	8	3	0	15	25	14	14	0	53
Hourly Total		38	265	85	0	388	32	295	25	0	352	33	48	28	0	109	64	63	49	0	176
13:00	13:15	12	58	22	0	92	9	83	14	0	106	4	4	10	0	18	14	19	10	0	43
13:15	13:30	9	70	15	0	94	14	89	4	0	107	3	13	5	0	21	15	19	10	0	44
13:30	13:45	13	83	20	0	116	5	90	5	0	100	3	10	7	0	20	27	9	10	0	46
13:45	14:00	16	64	23	0	103	8	81	5	0	94	5	20	7	0	32	16	26	7	0	49
Hourly Total		50	275	80	0	405	36	343	28	0	407	15	47	29	0	91	72	73	37	0	182
15:00	15:15	12	70	38	0	120	5	87	8	0	100	8	24	6	0	38	18	23	16	0	57
15:15	15:30	15	80	30	0	125	13	68	12	0	93	10	10	12	0	32	27	22	8	0	57
15:30	15:45	16	91	36	0	143	10	102	14	0	126	8	17	3	0	28	17	26	12	0	55
15:45	16:00	15	70	33	0	118	10	96	11	0	117	8	20	5	0	33	14	20	8	0	42
Hourly Total		58	311	137	0	506	38	353	45	0	436	34	71	26	0	131	76	91	44	0	211
16:00	16:15	10	100	30	0	140	10	92	10	0	112	6	24	6	0	36	15	10	8	0	33

		Stanley Avenue										Dunn Street									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	9	90	27	0	126	12	89	10	0	111	13	23	6	0	42	20	13	22	0	55
16:30	16:45	14	93	29	0	136	18	89	6	0	113	6	26	8	0	40	23	17	15	0	55
16:45	17:00	13	88	31	0	132	11	76	10	0	97	10	23	2	0	35	22	28	20	0	70
Hourly Total		46	371	117	0	534	51	346	36	0	433	35	96	22	0	153	80	68	65	0	213
17:00	17:15	7	98	38	0	143	12	95	16	0	123	5	27	3	0	35	24	14	13	0	51
17:15	17:30	8	102	35	0	145	9	78	16	0	103	13	25	7	0	45	16	24	17	0	57
17:30	17:45	10	67	34	0	111	9	76	12	0	97	3	18	11	0	32	28	11	18	0	57
17:45	18:00	9	65	27	0	101	8	97	2	0	107	7	14	3	0	24	18	17	7	0	42
Hourly Total		34	332	134	0	500	38	346	46	0	430	28	84	24	0	136	86	66	55	0	207
Grand Total		305	2213	750	0	3268	261	2373	236	0	2870	188	457	214	0	859	566	514	354	0	1434
Truck %		3%	7%	11%	0%	7%	5%	6%	2%	0%	6%	11%	1%	2%	0%	4%	3%	11%	7%	0%	7%

Turning Movements Report - AM Period

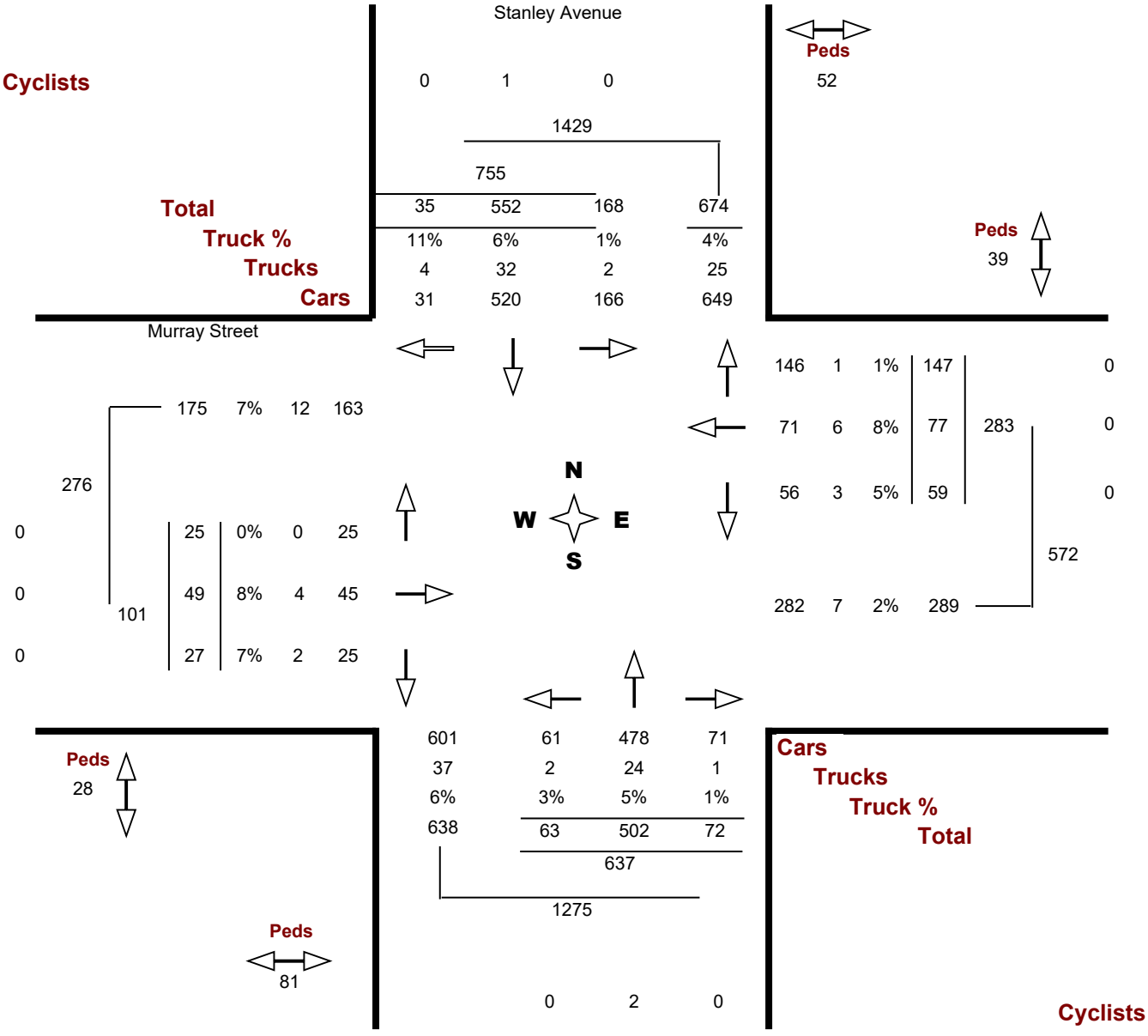
Location.....	Murray Street @ Stanley Avenue	**GeoID.....**	01587
Municipality.	NIAGARA FALLS	**Count Date.**	Thursday, 11 August, 2022
Traffic Cont.		**Count Time.**	07:00 AM — 09:00 AM
Major Dir.....	North south	**Peak Hour..**	08:00 AM — 09:00 AM



Turning Movements Report - PM Period

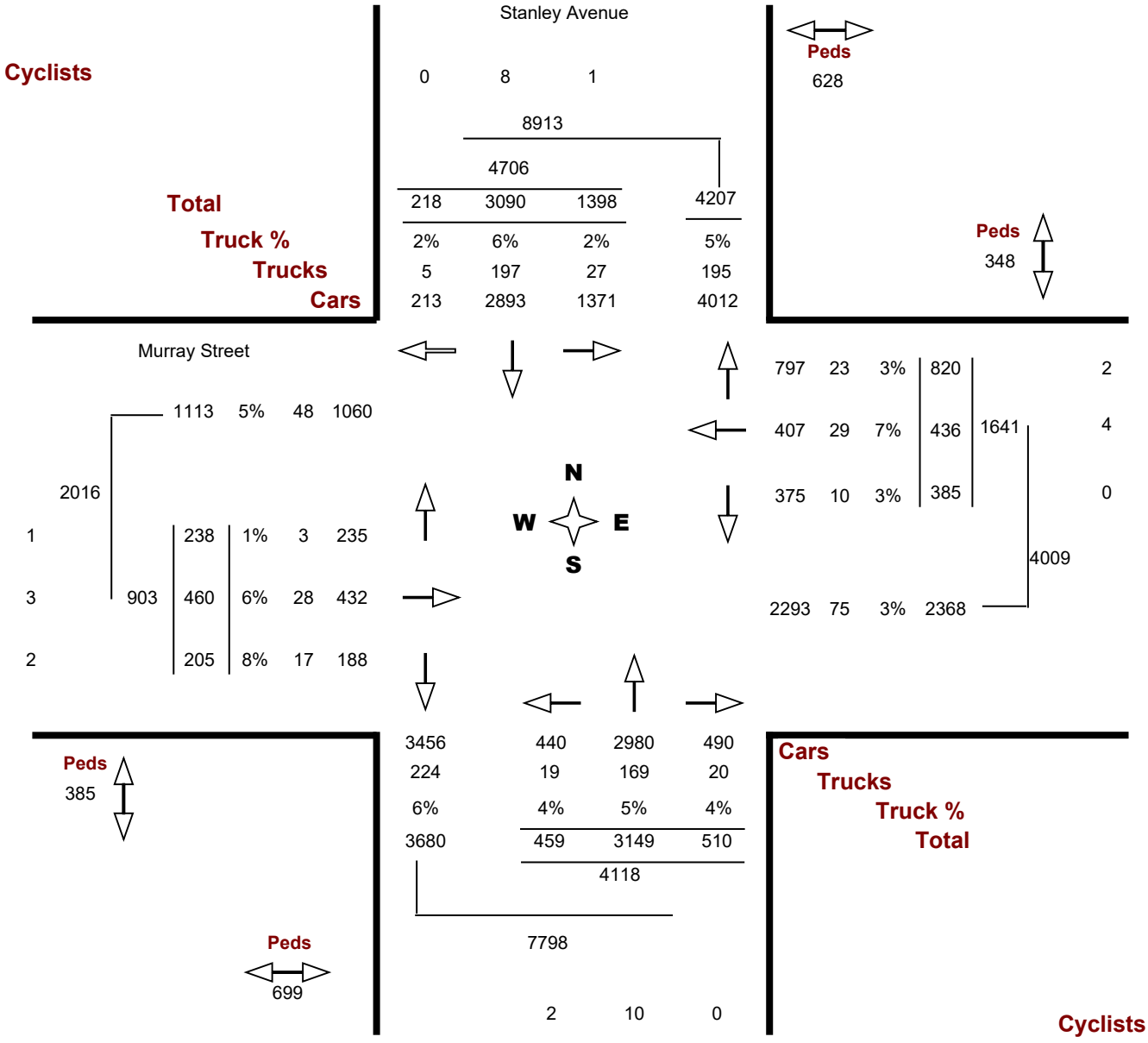
Location..... Murray Street @ Stanley Avenue
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... North south

GeoID..... 01587
Count Date. Thursday, 11 August, 2022
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 03:45 PM — 04:45 PM



Turning Movement Count Report
Full Study

Location..... Murray Street @ Stanley Avenue
Municipality..... NIAGARA FALLS
GeoID..... 01587
Count Date..... Thursday, 11 August, 2022



Turning Movement Count - Details Report (15 min)

Location..... Murray Street @ Stanley Avenue

Municipality..... NIAGARA FALLS

Count Date..... Thursday, August 11, 2022

		Stanley Avenue										Murray Street									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	7	54	7	0	68	9	50	5	0	64	1	3	6	0	10	3	5	6	0	14
07:15	07:30	15	47	6	0	68	12	47	12	0	71	4	3	2	0	9	4	6	6	0	16
07:30	07:45	13	43	8	0	64	12	59	7	0	78	6	7	3	0	16	8	9	6	0	23
07:45	08:00	18	66	3	0	87	16	62	6	0	84	5	7	8	0	20	8	12	14	0	34
Hourly Total		53	210	24	0	287	49	218	30	0	297	16	20	19	0	55	23	32	32	0	87
08:00	08:15	11	65	6	0	82	13	64	11	0	88	3	5	5	0	13	7	4	7	0	18
08:15	08:30	20	72	9	0	101	13	80	10	0	103	4	5	7	0	16	9	11	8	0	28
08:30	08:45	20	59	12	0	91	20	79	15	0	114	9	8	10	0	27	7	14	4	0	25
08:45	09:00	29	87	3	0	119	22	80	15	0	117	7	9	15	0	31	8	10	9	0	27
Hourly Total		80	283	30	0	393	68	303	51	0	422	23	27	37	0	87	31	39	28	0	98
11:00	11:15	46	102	3	0	151	17	107	17	0	141	11	11	28	0	50	12	22	13	0	47
11:15	11:30	52	98	13	0	163	8	105	26	0	139	17	22	31	0	70	11	20	5	0	36
11:30	11:45	47	83	9	0	139	12	99	18	0	129	10	16	12	0	38	13	19	4	0	36
11:45	12:00	61	95	7	0	163	15	107	15	0	137	6	14	23	0	43	10	24	4	0	38
Hourly Total		206	378	32	0	616	52	418	76	0	546	44	63	94	0	201	46	85	26	0	157
12:00	12:15	61	78	6	0	145	8	99	12	0	119	12	12	37	0	61	15	16	7	0	38
12:15	12:30	64	102	9	0	175	14	110	26	0	150	8	16	27	0	51	6	12	3	0	21
12:30	12:45	44	80	9	0	133	13	117	7	0	137	13	16	26	0	55	11	17	9	0	37
12:45	13:00	48	85	5	0	138	18	93	21	0	132	8	16	23	0	47	8	14	5	0	27
Hourly Total		217	345	29	0	591	53	419	66	0	538	41	60	113	0	214	40	59	24	0	123
13:00	13:15	63	94	4	0	161	14	93	17	0	124	8	5	23	0	36	8	25	9	0	42
13:15	13:30	60	95	4	0	159	13	93	15	0	121	13	8	41	0	62	5	19	3	0	27
13:30	13:45	63	96	6	0	165	13	112	30	0	155	15	14	32	0	61	4	18	7	0	29
13:45	14:00	58	98	6	0	162	19	99	24	0	142	13	11	35	0	59	8	18	4	0	30
Hourly Total		244	383	20	0	647	59	397	86	0	542	49	38	131	0	218	25	80	23	0	128
15:00	15:15	63	105	5	0	173	16	116	17	0	149	22	21	26	0	69	4	9	8	0	21
15:15	15:30	50	111	4	0	165	9	96	19	0	124	11	11	37	0	59	9	16	8	0	33
15:30	15:45	62	117	8	0	187	20	113	17	0	150	19	19	35	0	73	5	14	5	0	24
15:45	16:00	42	135	9	0	186	16	129	18	0	163	9	10	38	0	57	6	11	8	0	25
Hourly Total		217	468	26	0	711	61	454	71	0	586	61	61	136	0	258	24	50	29	0	103
16:00	16:15	32	130	9	0	171	16	109	18	0	143	16	26	36	0	78	9	8	7	0	24

		Stanley Avenue										Murray Street									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	50	147	9	0	206	16	126	16	0	158	19	10	36	0	65	4	12	5	0	21
16:30	16:45	44	140	8	0	192	15	138	20	0	173	15	31	37	0	83	6	18	7	0	31
16:45	17:00	53	132	4	0	189	12	115	11	0	138	22	18	31	0	71	5	12	6	0	23
Hourly Total		179	549	30	0	758	59	488	65	0	612	72	85	140	0	297	24	50	25	0	99
17:00	17:15	44	123	8	0	175	11	115	17	0	143	19	18	37	0	74	8	14	5	0	27
17:15	17:30	55	129	3	0	187	17	98	17	0	132	25	24	37	0	86	8	13	2	0	23
17:30	17:45	57	119	12	0	188	14	117	17	0	148	22	15	44	0	81	3	16	5	0	24
17:45	18:00	46	103	4	0	153	16	122	14	0	152	13	25	32	0	70	6	22	6	0	34
Hourly Total		202	474	27	0	703	58	452	65	0	575	79	82	150	0	311	25	65	18	0	108
Grand Total		1398	3090	218	0	4706	459	3149	510	0	4118	385	436	820	0	1641	238	460	205	0	903
Truck %		2%	6%	2%	0%	5%	4%	5%	4%	0%	5%	3%	7%	3%	0%	4%	1%	6%	8%	0%	5%

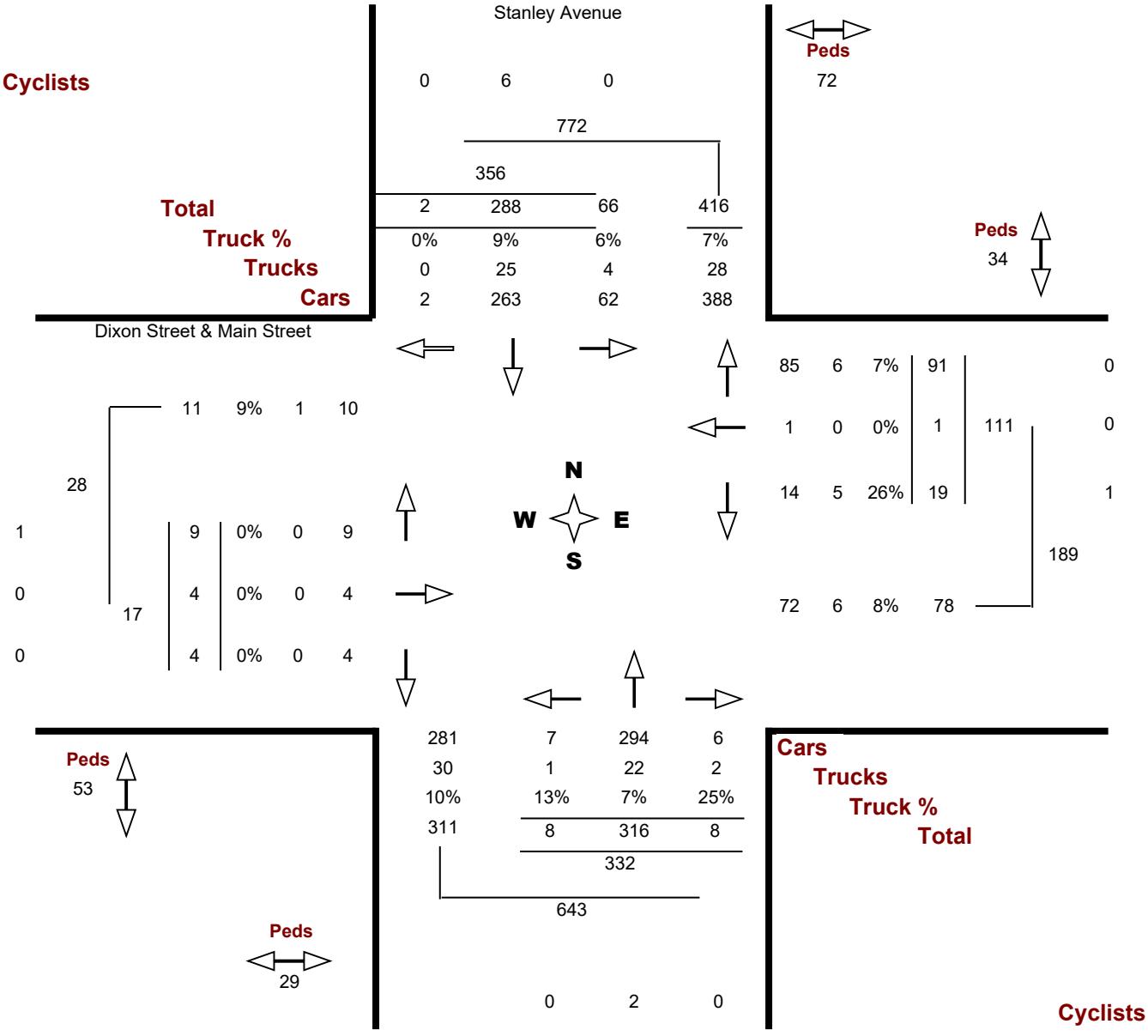
Turning Movements Report - AM Period

Location..... Dixon Street & Main Street @ Stanley Avenue **GeoID.....** 01584

Municipality. NIAGARA FALLS **Count Date.** Thursday, 11 August, 2022

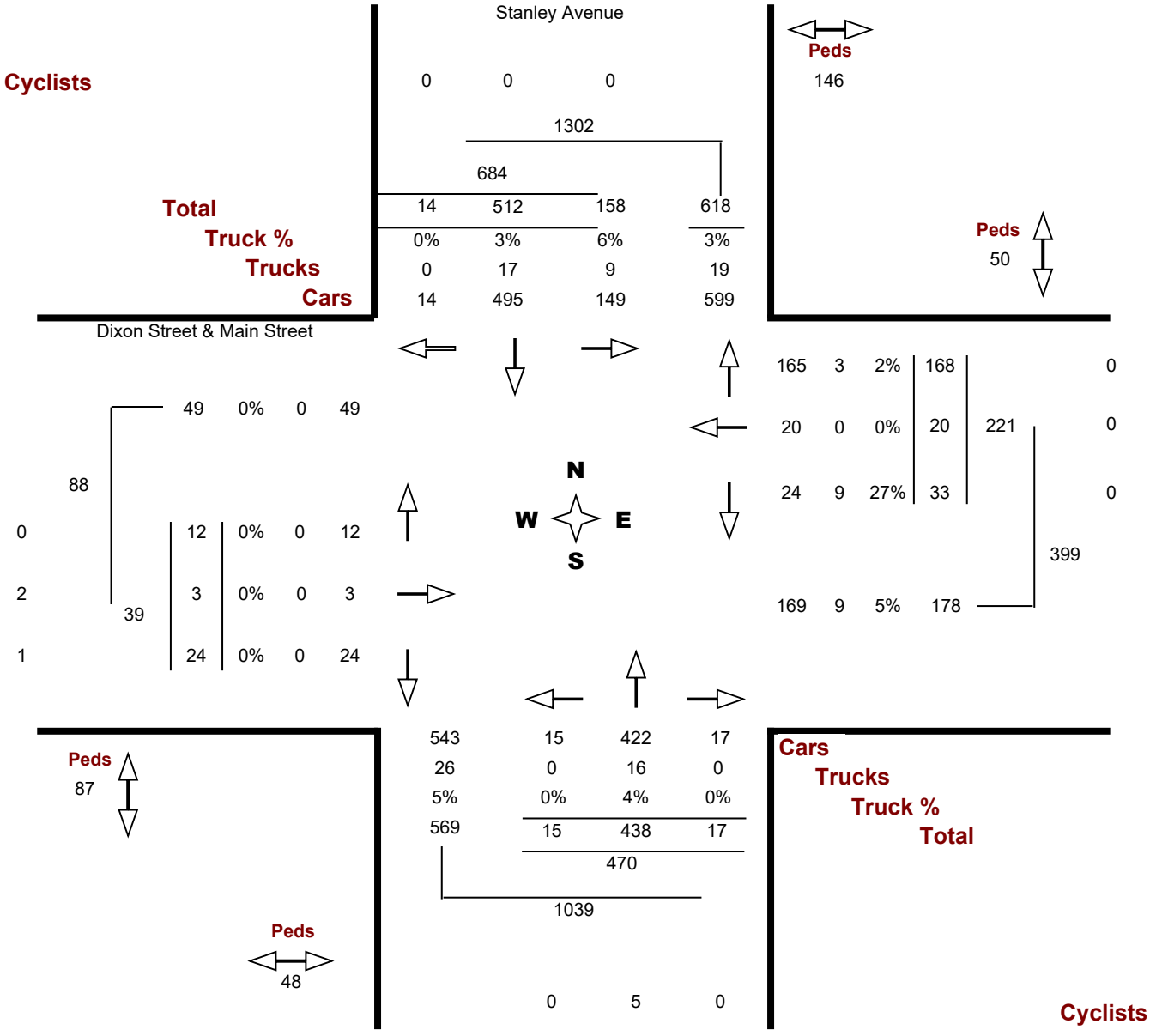
Traffic Cont. **Count Time.** 07:00 AM — 09:00 AM

Major Dir..... North south **Peak Hour..** 08:00 AM — 09:00 AM



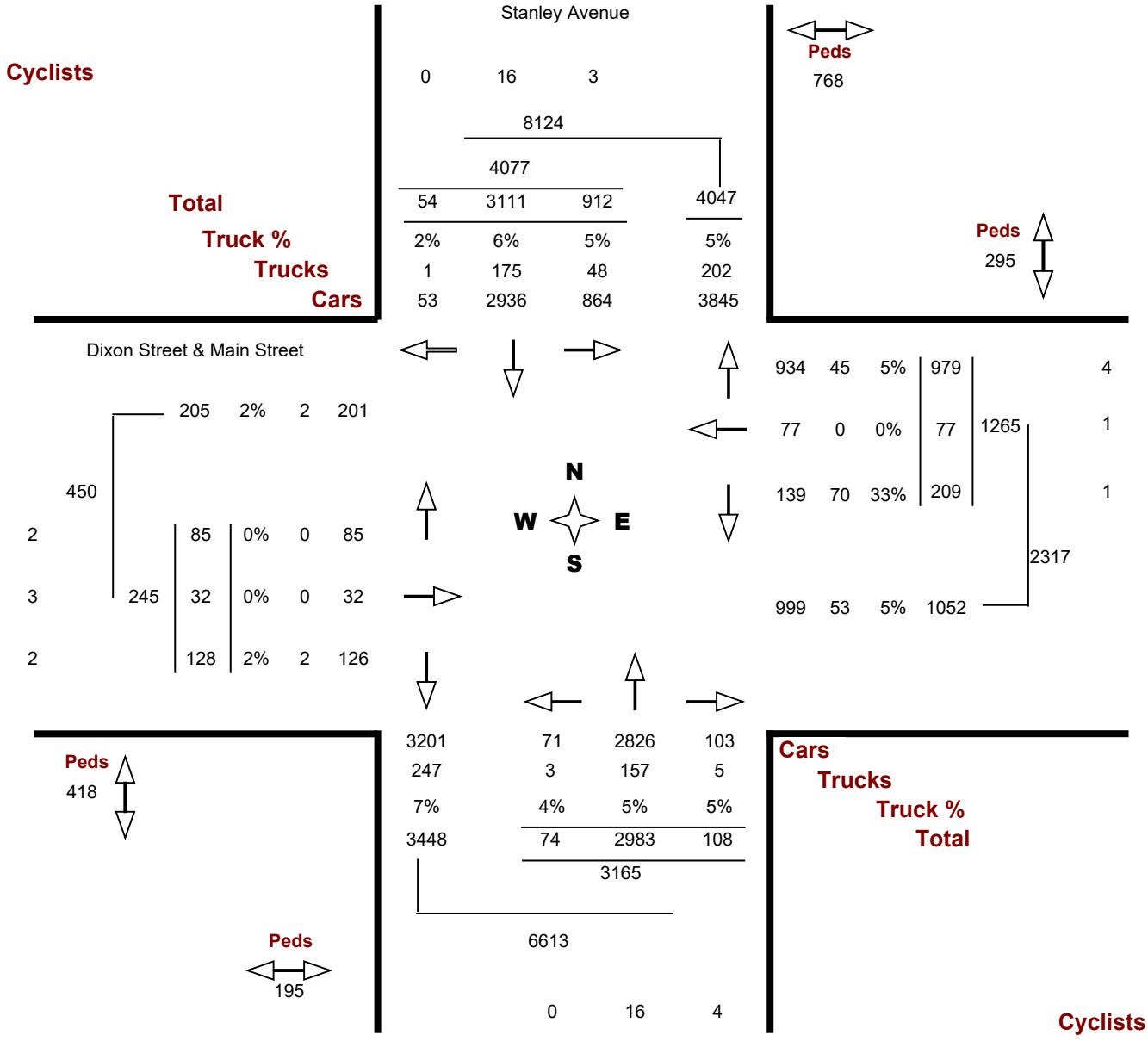
Turning Movements Report - PM Period

Location.....	Dixon Street & Main Street @ Stanley Avenue	**GeoID.....**	01584
Municipality.	NIAGARA FALLS	**Count Date.**	Thursday, 11 August, 2022
Traffic Cont.		**Count Time.**	03:00 PM — 06:00 PM
Major Dir.....	North south	**Peak Hour..**	04:15 PM — 05:15 PM



Turning Movement Count Report
Full Study

Location..... Dixon Street & Main Street @ Stanley Avenue
Municipality..... NIAGARA FALLS
GeoID..... 01584
Count Date..... Thursday, 11 August, 2022



Turning Movement Count - Details Report (15 min)

Location..... Dixon Street & Main Street @ Stanley Avenue

Municipality..... NIAGARA FALLS

Count Date..... Thursday, August 11, 2022

		Stanley Avenue										Dixon Street & Main Street									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	12	55	0	0	67	1	56	0	0	57	4	0	15	0	19	0	0	0	0	0
07:15	07:30	5	52	1	0	58	0	50	0	0	50	5	0	17	0	22	0	0	1	0	1
07:30	07:45	14	49	1	0	64	2	59	0	0	61	3	0	23	0	26	4	0	2	0	6
07:45	08:00	16	77	0	0	93	0	64	1	0	65	3	0	16	0	19	2	0	1	0	3
Hourly Total		47	233	2	0	282	3	229	1	0	233	15	0	71	0	86	6	0	4	0	10
08:00	08:15	20	56	1	0	77	1	58	3	0	62	2	0	20	0	22	1	3	1	0	5
08:15	08:30	15	77	0	0	92	5	79	1	0	85	7	0	25	0	32	1	0	1	0	2
08:30	08:45	16	76	1	0	93	1	86	2	0	89	4	1	25	0	30	6	1	1	0	8
08:45	09:00	15	79	0	0	94	1	93	2	0	96	6	0	21	0	27	1	0	1	0	2
Hourly Total		66	288	2	0	356	8	316	8	0	332	19	1	91	0	111	9	4	4	0	17
11:00	11:15	34	118	2	0	154	2	92	9	0	103	12	1	40	0	53	6	2	4	0	12
11:15	11:30	30	112	0	0	142	1	107	4	0	112	6	2	32	0	40	1	3	4	0	8
11:30	11:45	25	84	1	0	110	2	83	7	0	92	9	2	29	0	40	4	1	9	0	14
11:45	12:00	34	82	3	0	119	1	104	4	0	109	4	0	38	0	42	6	3	8	0	17
Hourly Total		123	396	6	0	525	6	386	24	0	416	31	5	139	0	175	17	9	25	0	51
12:00	12:15	30	78	3	0	111	6	85	6	0	97	5	1	35	0	41	6	1	3	0	10
12:15	12:30	25	108	3	0	136	2	108	6	0	116	8	4	26	0	38	2	2	2	0	6
12:30	12:45	37	72	3	0	112	0	84	2	0	86	7	4	36	0	47	5	2	4	0	11
12:45	13:00	26	93	3	0	122	2	94	5	0	101	8	2	35	0	45	3	0	3	0	6
Hourly Total		118	351	12	0	481	10	371	19	0	400	28	11	132	0	171	16	5	12	0	33
13:00	13:15	28	87	3	0	118	0	91	5	0	96	6	5	27	0	38	5	1	4	0	10
13:15	13:30	32	90	1	0	123	4	100	4	0	108	4	4	24	0	32	0	2	0	0	2
13:30	13:45	28	109	1	0	138	6	114	4	0	124	7	2	27	0	36	3	0	4	0	7
13:45	14:00	28	101	0	0	129	1	104	5	0	110	6	3	25	0	34	2	1	2	0	5
Hourly Total		116	387	5	0	508	11	409	18	0	438	23	14	103	0	140	10	4	10	0	24
15:00	15:15	28	111	0	0	139	0	98	2	0	100	6	1	31	0	38	1	1	5	0	7
15:15	15:30	32	112	2	0	146	2	103	1	0	106	10	4	30	0	44	1	0	7	0	8
15:30	15:45	32	136	3	0	171	6	114	4	0	124	6	5	32	0	43	1	1	8	0	10
15:45	16:00	36	118	0	0	154	2	103	3	0	108	6	1	38	0	45	0	2	4	0	6
Hourly Total		128	477	5	0	610	10	418	10	0	438	28	11	131	0	170	3	4	24	0	31
16:00	16:15	43	130	4	0	177	1	111	1	0	113	7	7	39	0	53	0	0	4	0	4

		Stanley Avenue											Dixon Street & Main Street								
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	49	120	2	0	171	1	113	5	0	119	6	3	39	0	48	3	1	6	0	10
16:30	16:45	38	137	4	0	179	2	119	1	0	122	8	5	46	0	59	3	0	4	0	7
16:45	17:00	39	126	3	0	168	8	93	4	0	105	9	6	33	0	48	2	0	2	0	4
Hourly Total		169	513	13	0	695	12	436	11	0	459	30	21	157	0	208	8	1	16	0	25
17:00	17:15	32	129	5	0	166	4	113	7	0	124	10	6	50	0	66	4	2	12	0	18
17:15	17:30	34	135	2	0	171	1	85	6	0	92	8	5	34	0	47	5	2	11	0	18
17:30	17:45	44	103	0	0	147	5	113	1	0	119	9	1	37	0	47	3	1	3	0	7
17:45	18:00	35	99	2	0	136	4	107	3	0	114	8	2	34	0	44	4	0	7	0	11
Hourly Total		145	466	9	0	620	14	418	17	0	449	35	14	155	0	204	16	5	33	0	54
Grand Total		912	3111	54	0	4077	74	2983	108	0	3165	209	77	979	0	1265	85	32	128	0	245
Truck %		5%	6%	2%	0%	5%	4%	5%	5%	0%	5%	33%	0%	5%	0%	9%	0%	0%	2%	0%	1%

Fallsview Blvd @ Main St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 18:30:00
To: 19:30:00

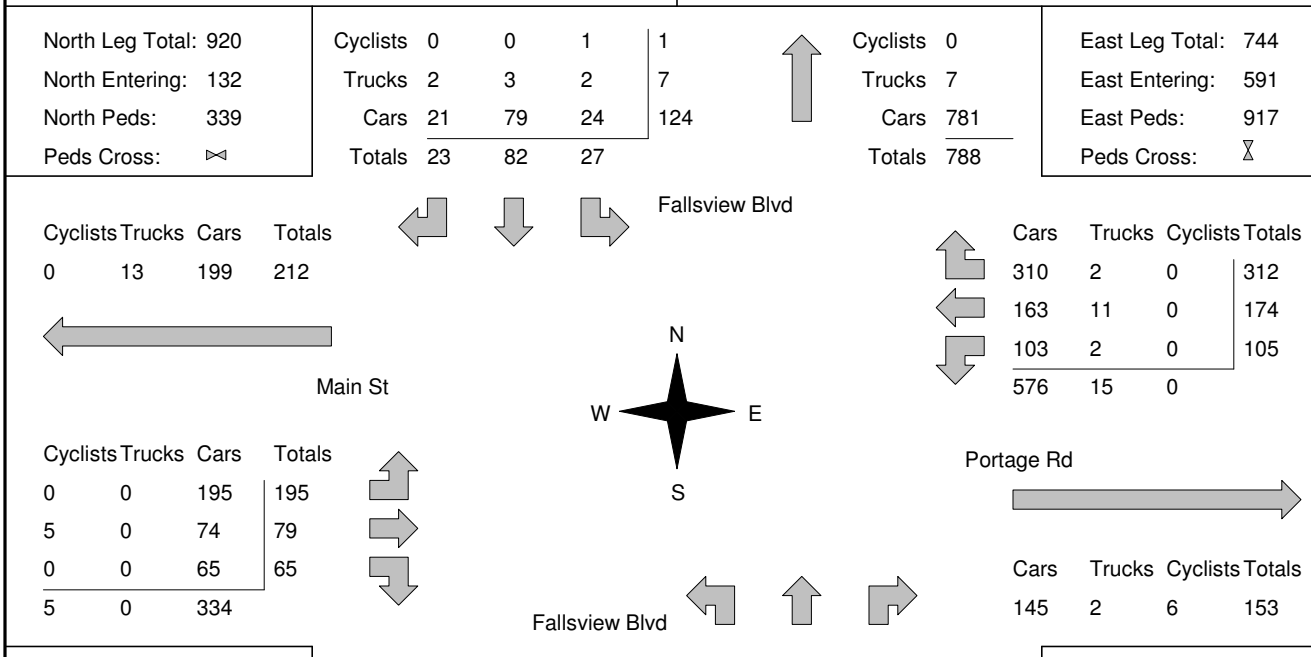
Municipality: Niagara Falls
Site #: 0000000015
Intersection: Main St & Fallsview Blvd
TFR File #: 15
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Main St runs W/E



Comments

Fallsview Blvd @ Main St

Total Count Diagram

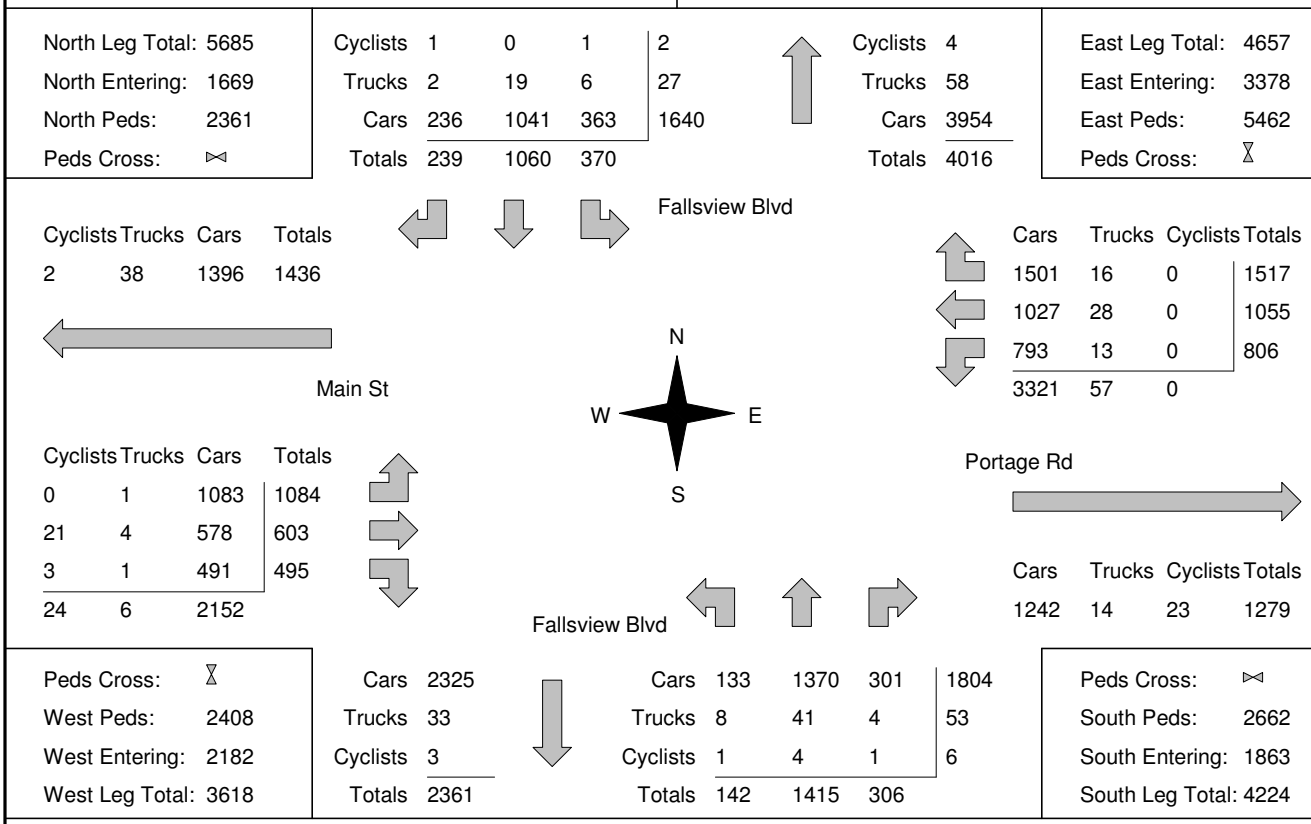
Municipality: Niagara Falls
Site #: 0000000015
Intersection: Main St & Fallsview Blvd
TFR File #: 15
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Main St runs W/E



Comments

Fallsview Blvd @ Murray St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 17:30:00
To: 18:30:00

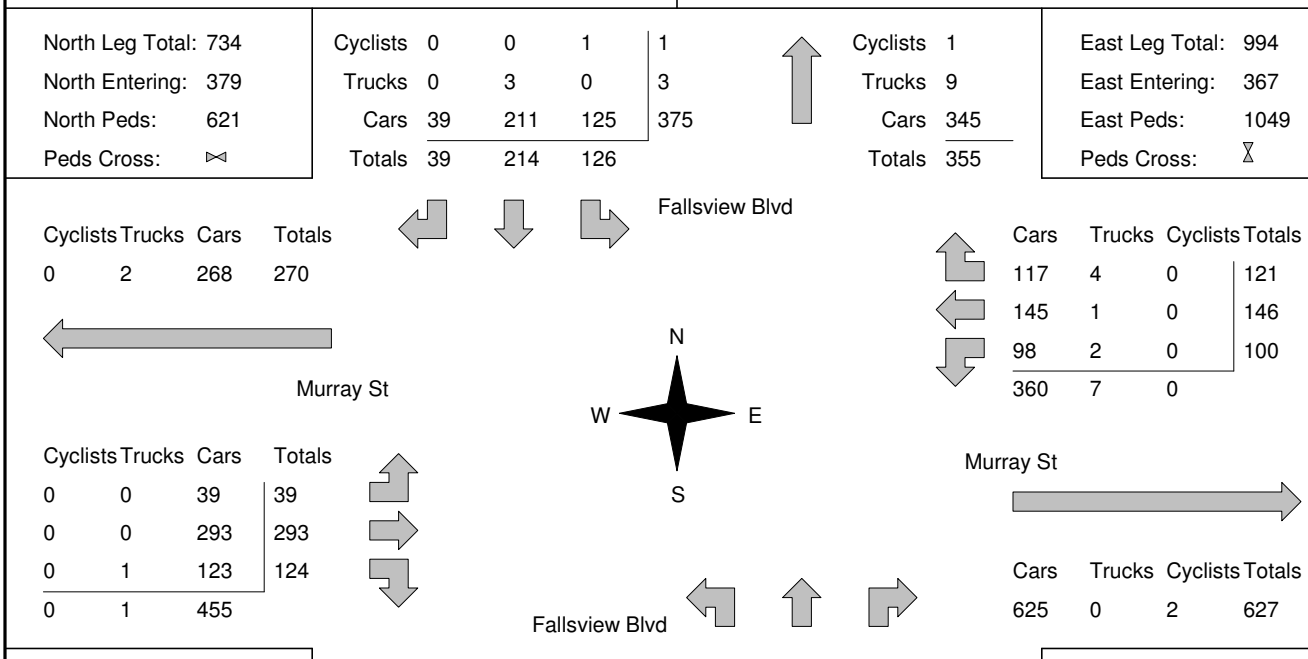
Municipality: Niagara Falls
Site #: 0000000014
Intersection: Fallsview Blvd & Murray St
TFR File #: 14
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Murray St

Total Count Diagram

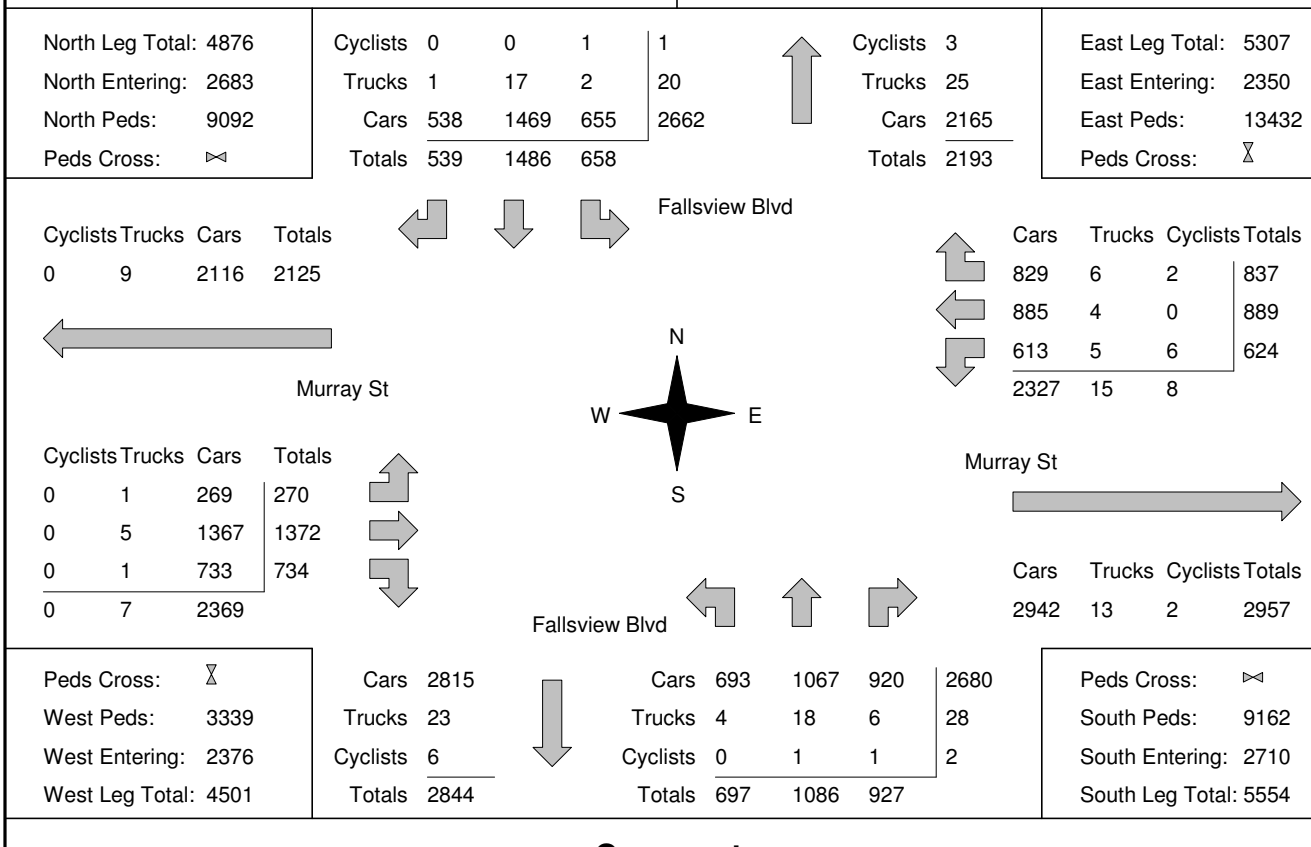
Municipality: Niagara Falls
Site #: 0000000014
Intersection: Fallsview Blvd & Murray St
TFR File #: 14
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Portage Rd @ Fallsview Casino Access

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 19:15:00
To: 20:15:00

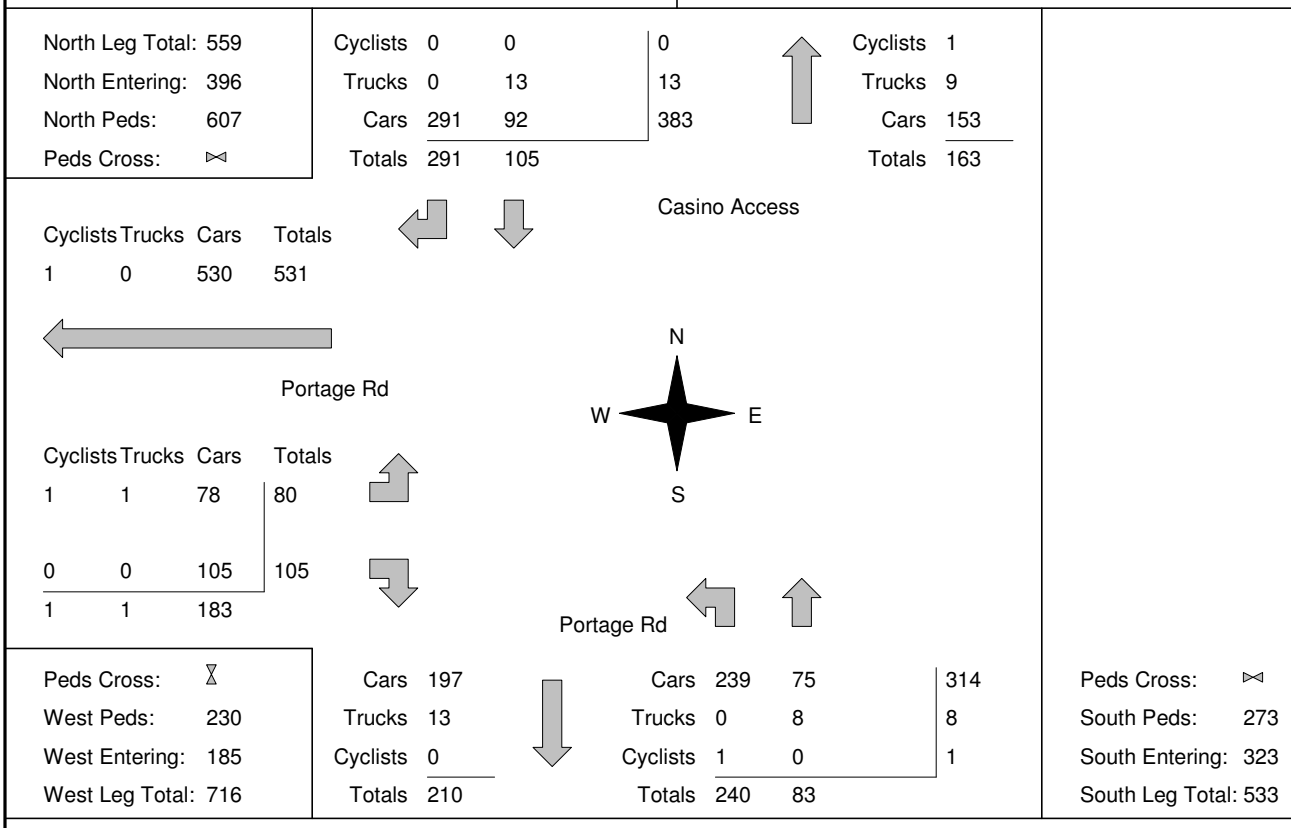
Municipality: Niagara Falls
Site #: 0000000016
Intersection: Portage Rd & Casino Access
TFR File #: 16
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Portage Rd runs N/S



Comments

Portage Rd @ Fallsview Casino Access

Total Count Diagram

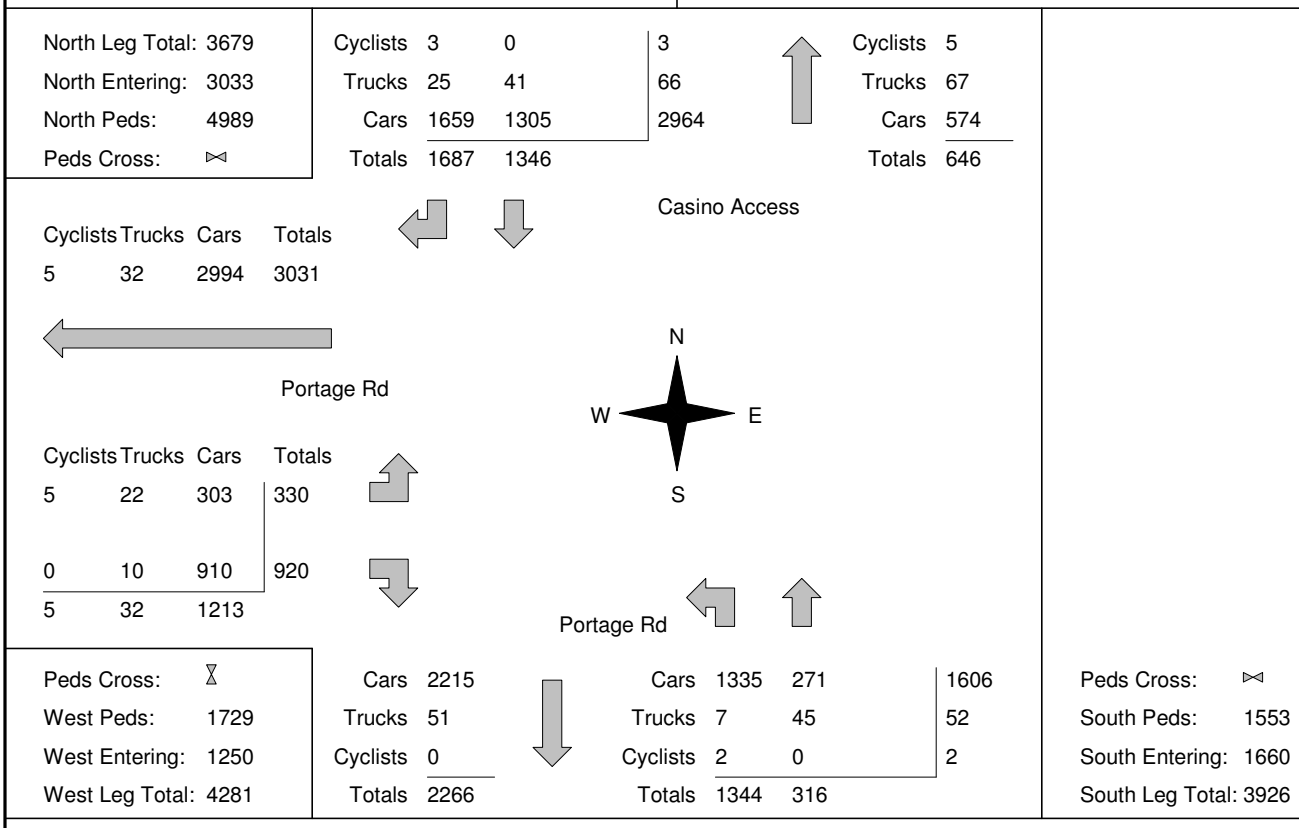
Municipality: Niagara Falls
Site #: 0000000016
Intersection: Portage Rd & Casino Access
TFR File #: 16
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Portage Rd runs N/S



Comments

Stanley Ave @ Dunn St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 18:30:00
To: 19:30:00

Municipality: Niagara Falls
Site #: 0000000005
Intersection: Stanley Ave & Dunn St
TFR File #: 5
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S

North Leg Total: 1068
North Entering: 571
North Peds: 90
Peds Cross: ⋈

Cyclists	0	0	1	1
Trucks	8	3	1	12
Cars	116	346	96	558
Totals	124	349	98	

Cyclists	0
Trucks	3
Cars	494
Totals	497

East Leg Total: 535
East Entering: 209
East Peds: 52
Peds Cross: ⧖

Stanley Ave

Cyclists	Trucks	Cars	Totals
1	12	324	337

Cars	Trucks	Cyclists	Totals
40	0	0	40
128	3	1	132
36	1	0	37
204	4	1	

Dunn St

N
W E
S

Cyclists	Trucks	Cars	Totals
0	2	92	94
0	4	148	152
0	3	50	53
0	9	290	

Dunn St

Cars	Trucks	Cyclists	Totals
320	5	1	326

Stanley Ave

Peds Cross: ⧖
West Peds: 40
West Entering: 299
West Leg Total: 636

Cars	432
Trucks	7
Cyclists	0
Totals	439

Cars	80	362	76	518
Trucks	1	1	0	2
Cyclists	0	0	0	0
Totals	81	363	76	

Peds Cross: ⋈
South Peds: 145
South Entering: 520
South Leg Total: 959

Comments

Stanley Ave @ Dunn St

Total Count Diagram

Municipality: Niagara Falls
Site #: 0000000005
Intersection: Stanley Ave & Dunn St
TFR File #: 5
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S

North Leg Total:	7576
North Entering:	4186
North Peds:	1397
Peds Cross:	⋈

Cyclists	2	5	2	9
Trucks	45	18	4	67
Cars	1082	2549	479	4110
Totals	1129	2572	485	

Cyclists	5
Trucks	22
Cars	3363
Totals	3390

East Leg Total:	3711
East Entering:	1911
East Peds:	307
Peds Cross:	⧖

Stanley Ave

Cyclists	Trucks	Cars	Totals
5	71	2998	3074

Dunn St

Cars	Trucks	Cyclists	Totals
327	1	0	328
1243	19	2	1264
308	11	0	319
1878	31	2	

N
W E
S

Cyclists	Trucks	Cars	Totals
1	8	629	638
1	43	792	836
3	15	377	395
5	66	1798	

Dunn St

Cars	Trucks	Cyclists	Totals
1749	48	3	1800

Stanley Ave

Peds Cross:	⧖
West Peds:	640
West Entering:	1869
West Leg Total:	4943

Cars	3234
Trucks	44
Cyclists	8
Totals	3286

Cars	673	2407	478	3558
Trucks	7	13	1	21
Cyclists	1	4	0	5
Totals	681	2424	479	

Peds Cross:	⋈
South Peds:	1252
South Entering:	3584
South Leg Total:	6870

Comments

Stanley Ave @ Murray St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 17:30:00
To: 18:30:00

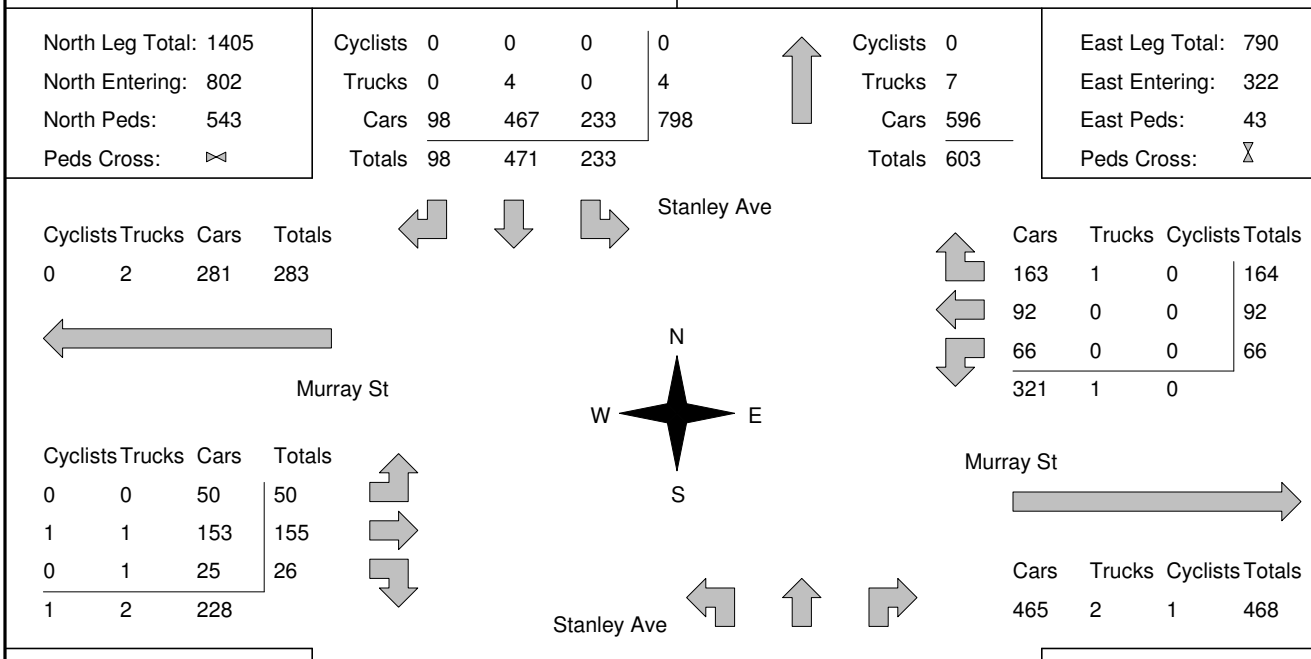
Municipality: Niagara Falls
Site #: 0000000002
Intersection: Stanley Ave & Murray St
TFR File #: 2
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S



Comments

Stanley Ave @ Murray St

Total Count Diagram

Municipality: Niagara Falls
Site #: 0000000002
Intersection: Stanley Ave & Murray St
TFR File #: 2
Count date: 1-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S

North Leg Total:	8648
North Entering:	5114
North Peds:	6499
Peds Cross:	⋈

Cyclists	1	0	0	1
Trucks	1	32	0	33
Cars	868	3029	1183	5080
Totals	870	3061	1183	

Cyclists	5
Trucks	34
Cars	3495
Totals	3534

East Leg Total:	4638
East Entering:	2301
East Peds:	448
Peds Cross:	⧖

Stanley Ave

Cyclists	Trucks	Cars	Totals
4	10	2170	2184

Cars	Trucks	Cyclists	Totals
1062	4	0	1066
811	2	0	813
417	3	2	422
2290	9	2	

Murray St

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	394	395
3	3	749	755
0	4	227	231
3	8	1370	

Murray St

Cars	Trucks	Cyclists	Totals
2329	5	3	2337

Stanley Ave

Peds Cross:	⧖
West Peds:	1873
West Entering:	1381
West Leg Total:	3565

Cars	3673
Trucks	39
Cyclists	2
Totals	3714

Cars	491	2039	397	2927
Trucks	7	29	2	38
Cyclists	3	5	0	8
Totals	501	2073	399	

Peds Cross:	⋈
South Peds:	3274
South Entering:	2973
South Leg Total:	6687

Comments

Fallsview Blvd @ Main St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 17:30:00
To: 18:30:00

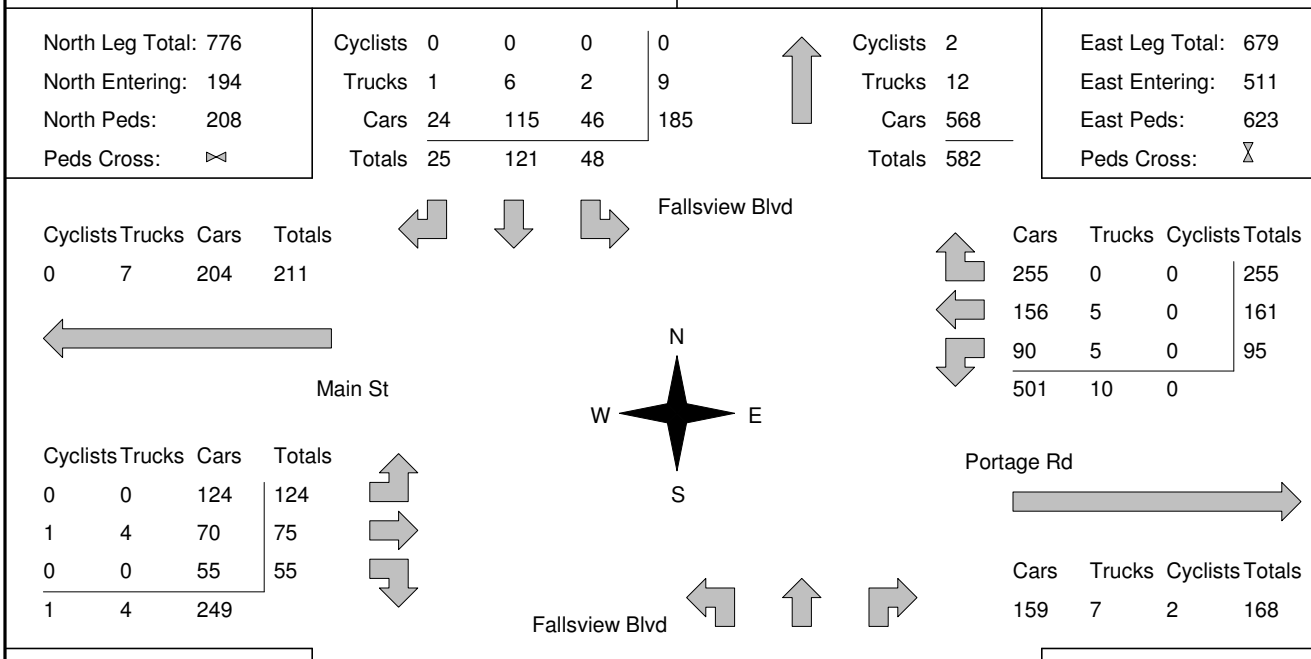
Municipality: Niagara Falls
Site #: 0000000015
Intersection: Main St & Fallsview Blvd
TFR File #: 15
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Main St runs W/E



Comments

Fallsview Blvd @ Main St

Total Count Diagram

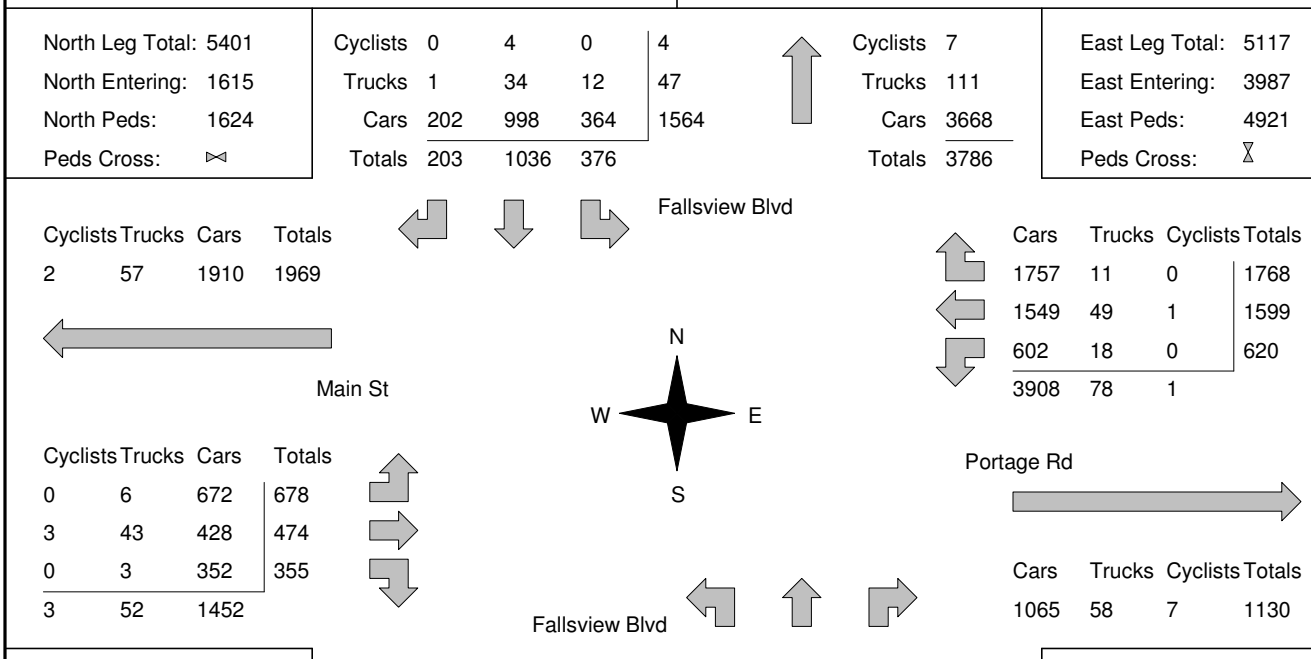
Municipality: Niagara Falls
Site #: 0000000015
Intersection: Main St & Fallsview Blvd
TFR File #: 15
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Main St runs W/E



Comments

Fallsview Blvd @ Murray St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 18:00:00
To: 19:00:00

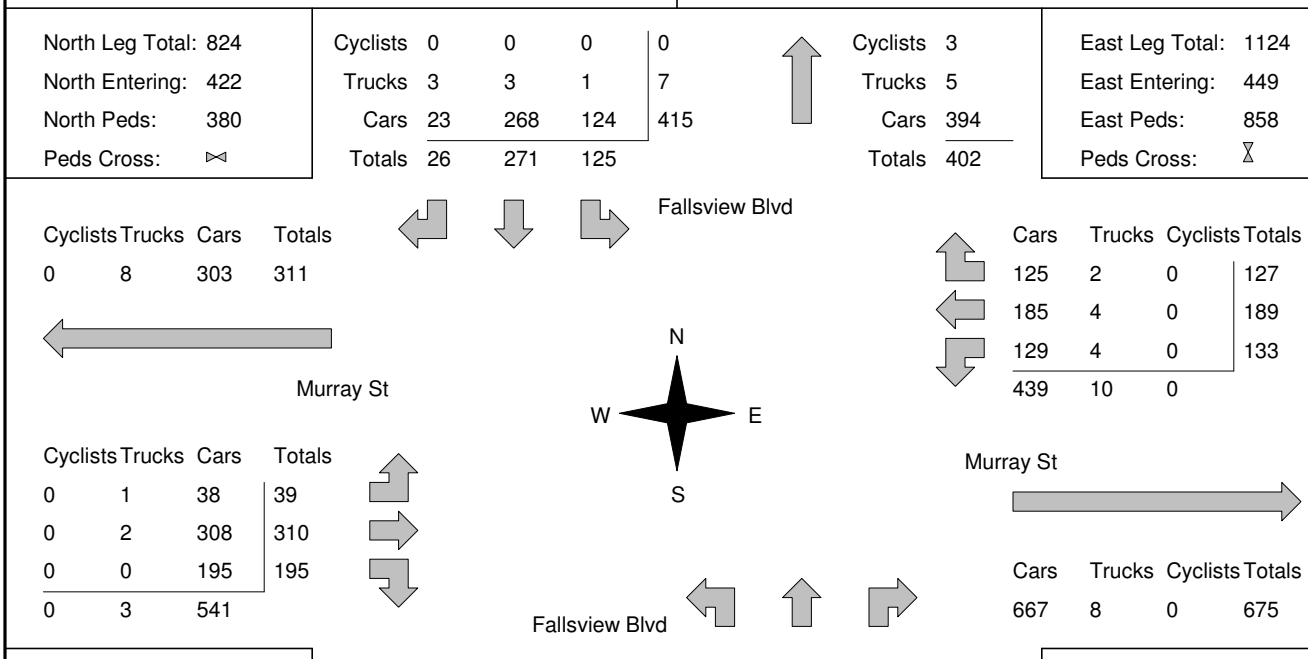
Municipality: Niagara Falls
Site #: 0000000014
Intersection: Fallsview Blvd & Murray St
TFR File #: 14
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Murray St

Total Count Diagram

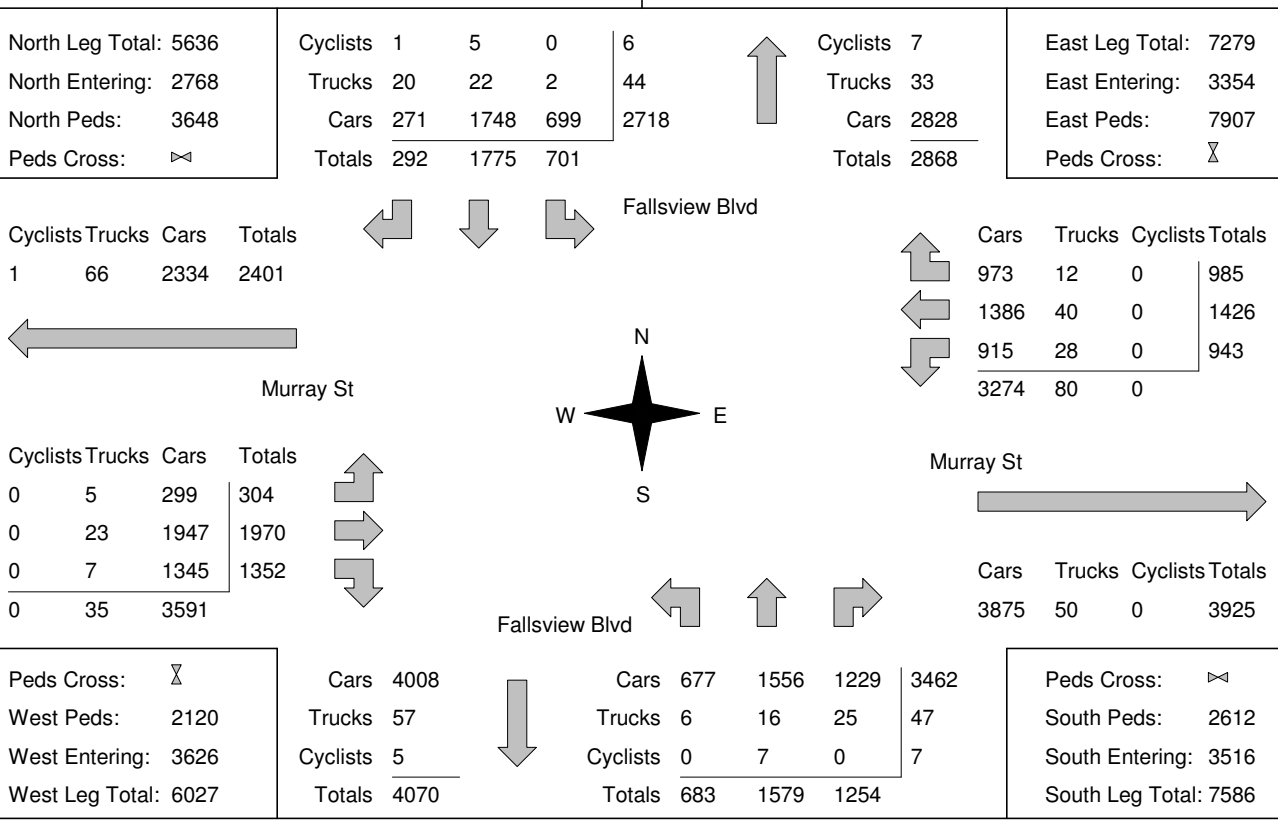
Municipality: Niagara Falls
Site #: 0000000014
Intersection: Fallsview Blvd & Murray St
TFR File #: 14
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Portage Rd @ Fallsview Casino Access

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 22:45:00
To: 23:45:00

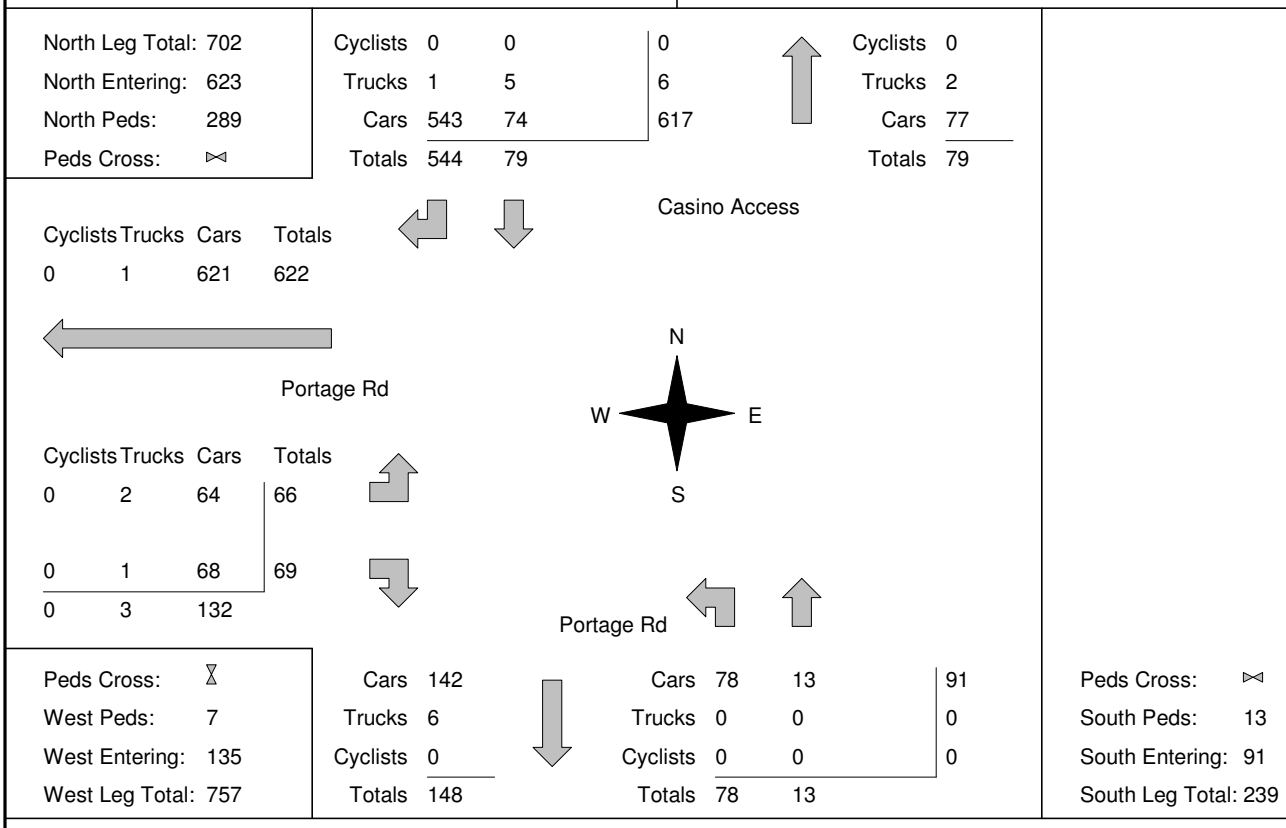
Municipality: Niagara Falls
Site #: 0000000016
Intersection: Portage Rd & Casino Access
TFR File #: 16
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Portage Rd runs N/S



Comments

Portage Rd @ Fallsview Casino Access

Total Count Diagram

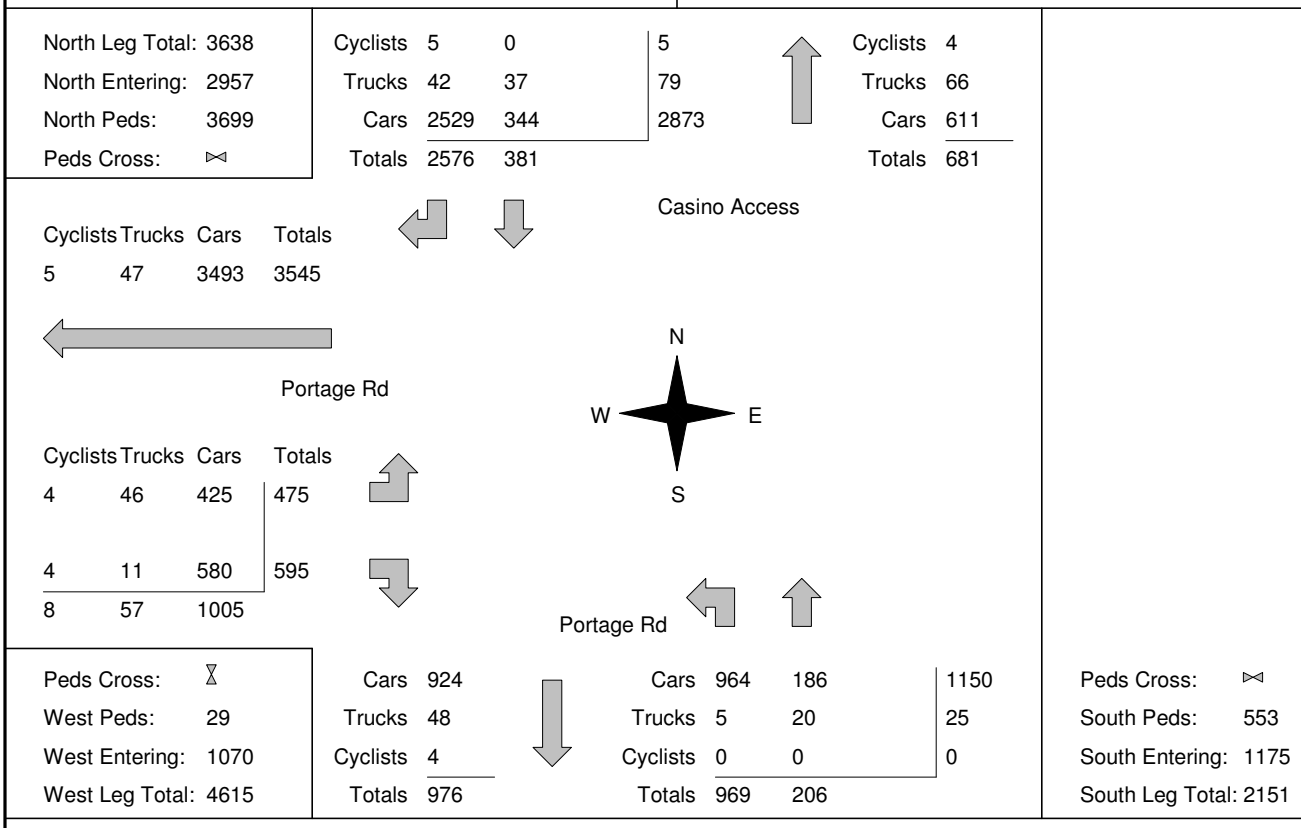
Municipality: Niagara Falls
Site #: 0000000016
Intersection: Portage Rd & Casino Access
TFR File #: 16
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Portage Rd runs N/S



Comments

Stanley Ave @ Dunn St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Niagara Falls
Site #: 0000000005
Intersection: Stanley Ave & Dunn St
TFR File #: 5
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S

North Leg Total:	924
North Entering:	423
North Peds:	51
Peds Cross:	⋈

Cyclists	1	2	0	3
Trucks	15	5	2	22
Cars	87	256	55	398
Totals	103	263	57	

Cyclists	0
Trucks	15
Cars	486
Totals	501

East Leg Total:	454
East Entering:	176
East Peds:	26
Peds Cross:	⧖

Stanley Ave

Cyclists	Trucks	Cars	Totals
2	20	261	283

Cars	Trucks	Cyclists	Totals
35	1	0	36
97	5	1	103
34	3	0	37
166	9	1	

Dunn St

N
W E
S

Cyclists	Trucks	Cars	Totals
0	6	82	88
0	15	138	153
0	0	44	44
0	21	264	

Dunn St

Cars	Trucks	Cyclists	Totals
261	17	0	278

Stanley Ave

Peds Cross:	⧖
West Peds:	36
West Entering:	285
West Leg Total:	568

Cars	334
Trucks	8
Cyclists	2
Totals	344

Cars	77	369	68	514
Trucks	0	8	0	8
Cyclists	0	0	0	0
Totals	77	377	68	

Peds Cross:	⋈
South Peds:	131
South Entering:	522
South Leg Total:	866

Comments

Stanley Ave @ Dunn St

Total Count Diagram

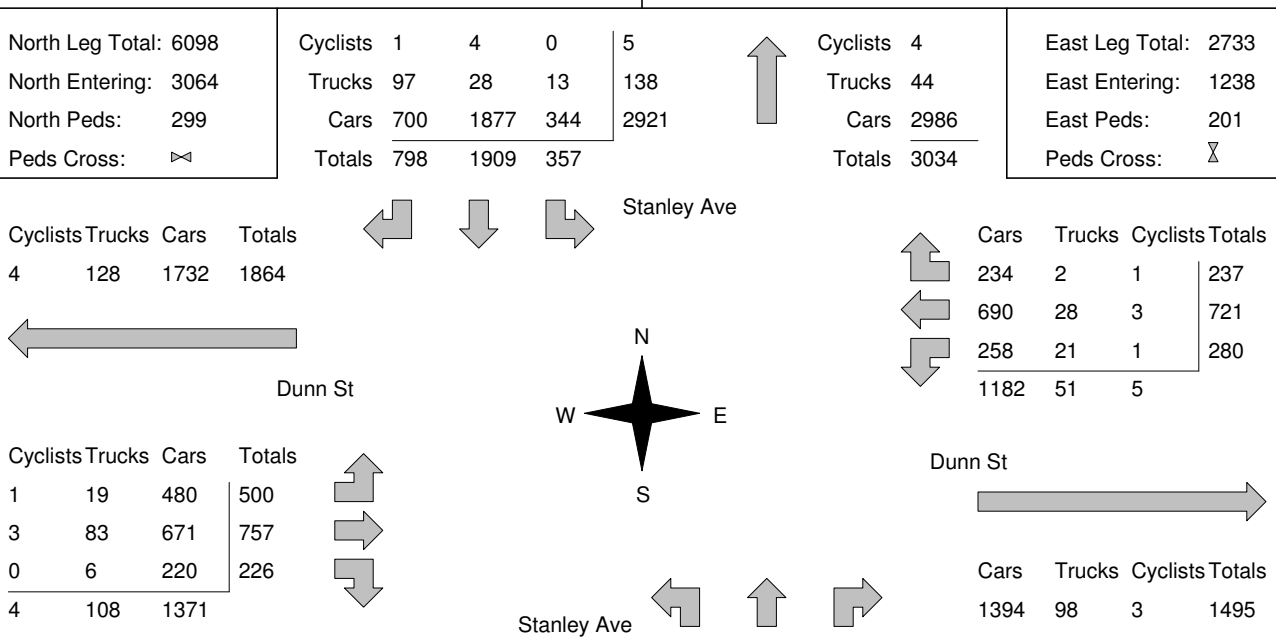
Municipality: Niagara Falls
Site #: 0000000005
Intersection: Stanley Ave & Dunn St
TFR File #: 5
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S



Comments

Stanley Ave @ Murray St

Afternoon Peak Diagram

Specified Period
From: 17:00:00
To: 23:59:00

One Hour Peak
From: 17:30:00
To: 18:30:00

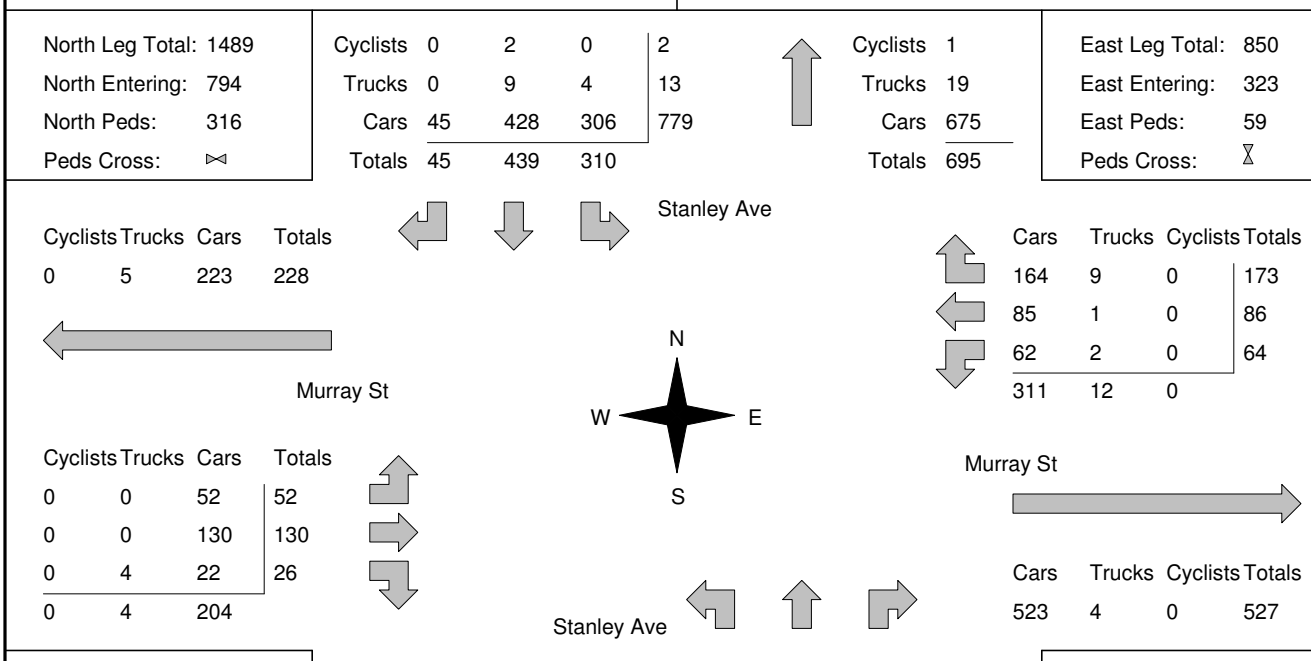
Municipality: Niagara Falls
Site #: 0000000002
Intersection: Stanley Ave & Murray St
TFR File #: 2
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S



Comments

Stanley Ave @ Murray St

Total Count Diagram

Municipality: Niagara Falls
Site #: 0000000002
Intersection: Stanley Ave & Murray St
TFR File #: 2
Count date: 7-Jul-2018

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Stanley Ave runs N/S

North Leg Total:	10363
North Entering:	5201
North Peds:	2556
Peds Cross:	⋈

Cyclists	6	6	0	12
Trucks	0	63	29	92
Cars	455	2675	1967	5097
Totals	461	2744	1996	

Cyclists	4
Trucks	110
Cars	5048
Totals	5162

East Leg Total:	6019
East Entering:	2623
East Peds:	380
Peds Cross:	⧖

Stanley Ave

Cyclists	Trucks	Cars	Totals
7	28	1952	1987

Murray St

Cars	Trucks	Cyclists	Totals
1367	49	0	1416
774	11	1	786
414	6	1	421
2555	66	2	

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	310	310
0	1	871	872
0	15	148	163
0	16	1329	

Murray St

Cars	Trucks	Cyclists	Totals
3360	35	1	3396

Stanley Ave

Peds Cross:	⧖
West Peds:	1032
West Entering:	1345
West Leg Total:	3332

Cars	3237
Trucks	84
Cyclists	7
Totals	3328

Cars	723	3371	522	4616
Trucks	17	61	5	83
Cyclists	0	4	1	5
Totals	740	3436	528	

Peds Cross:	⋈
South Peds:	1267
South Entering:	4704
South Leg Total:	8032

Comments

Fallsview Blvd @ Dunn St

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 10:30:00
To: 11:30:00

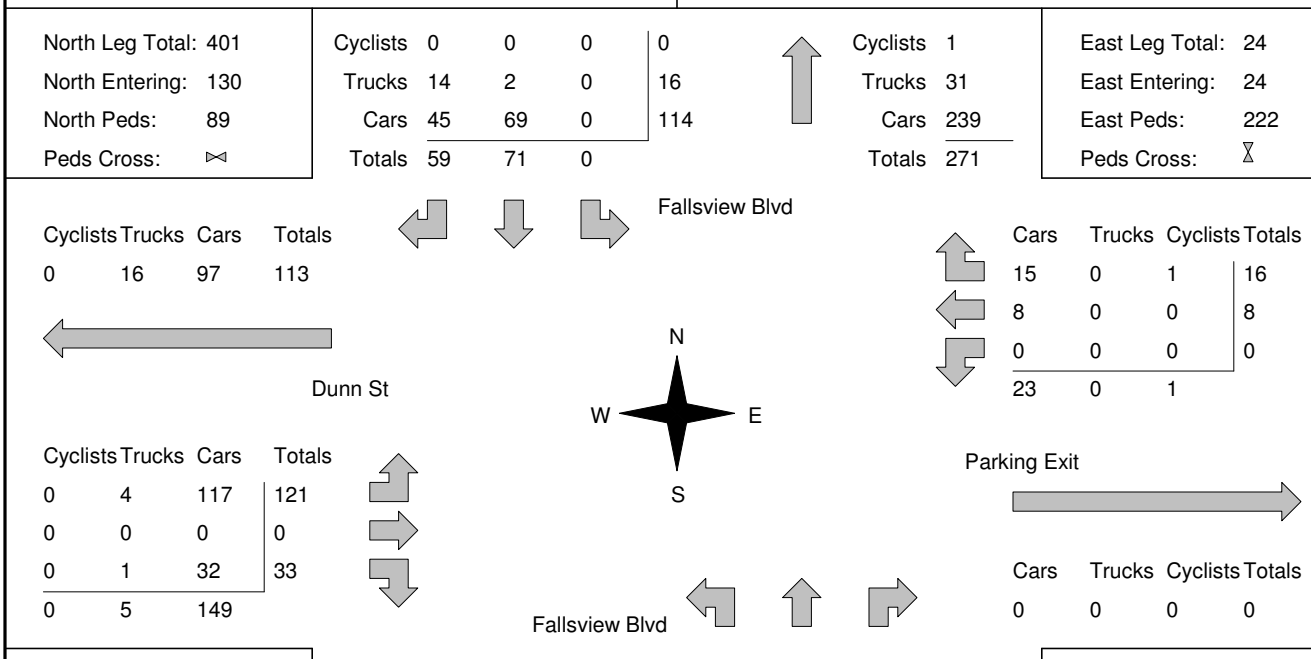
Municipality: Niagara Falls
Site #: 0000000045
Intersection: Fallsview Blvd & Dunn St
TFR File #: 7
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Dunn St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

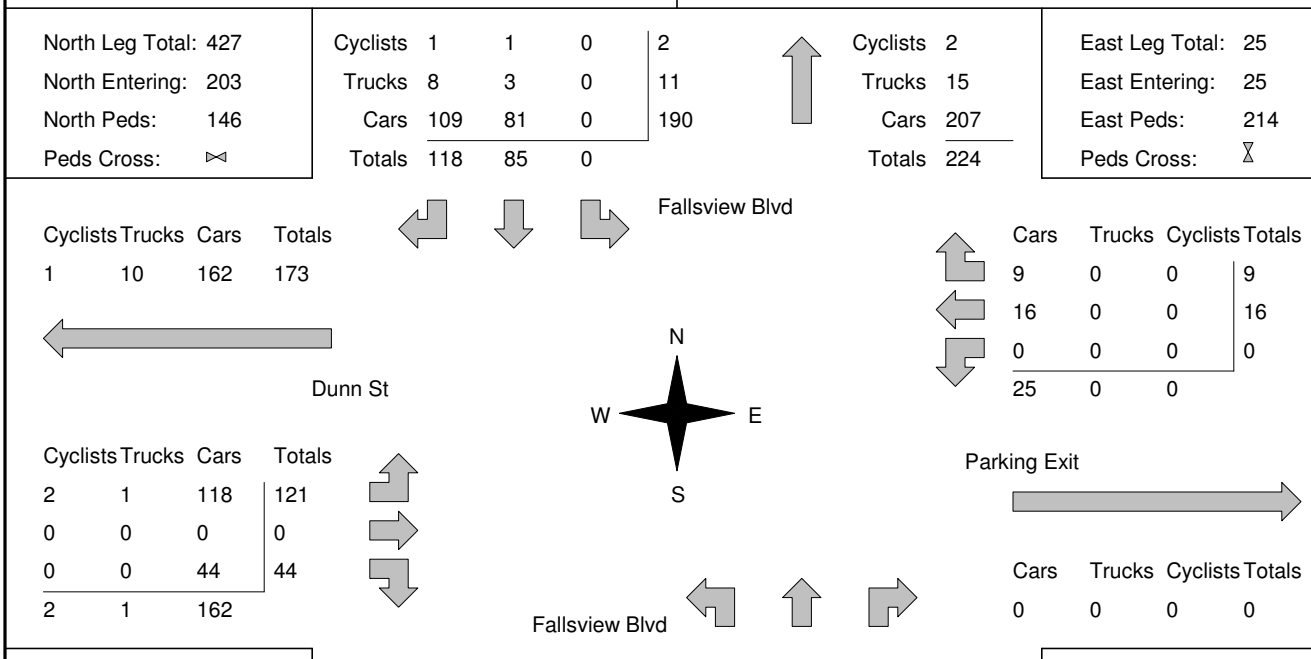
Municipality: Niagara Falls
Site #: 0000000045
Intersection: Fallsview Blvd & Dunn St
TFR File #: 7
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Dunn St

Total Count Diagram

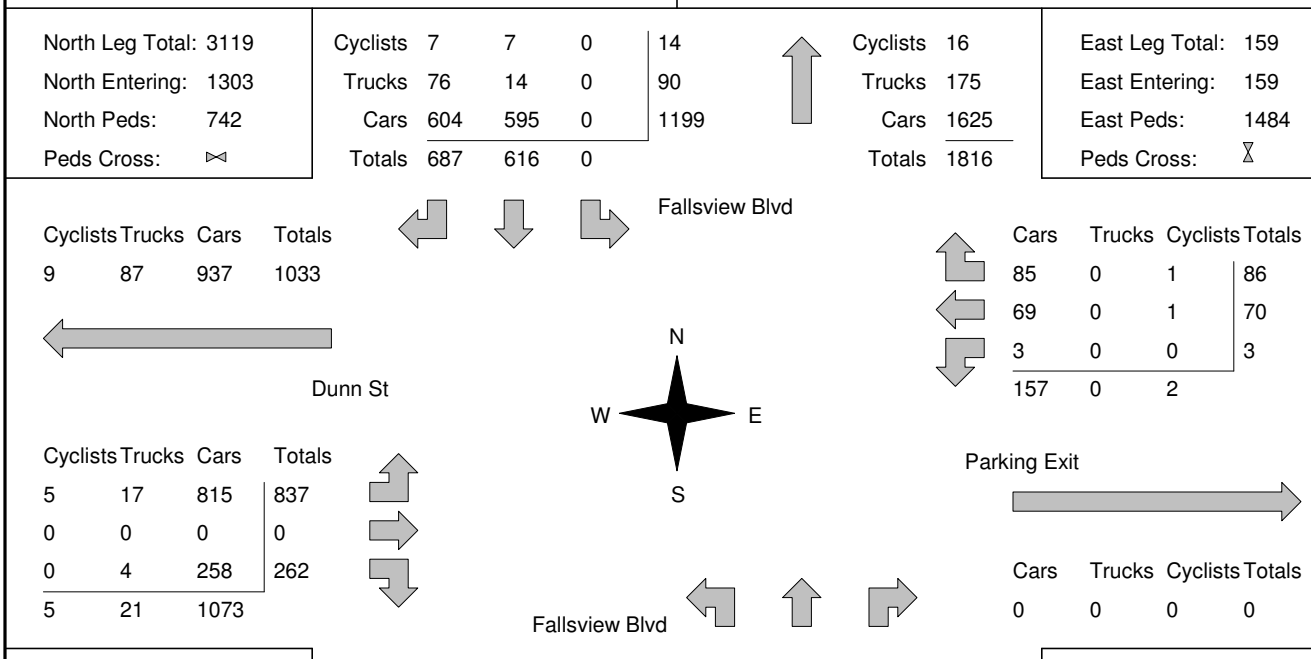
Municipality: Niagara Falls
Site #: 0000000045
Intersection: Fallsview Blvd & Dunn St
TFR File #: 7
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Main St / Portage Rd

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 14:00:00

One Hour Peak
From: 11:15:00
To: 12:15:00

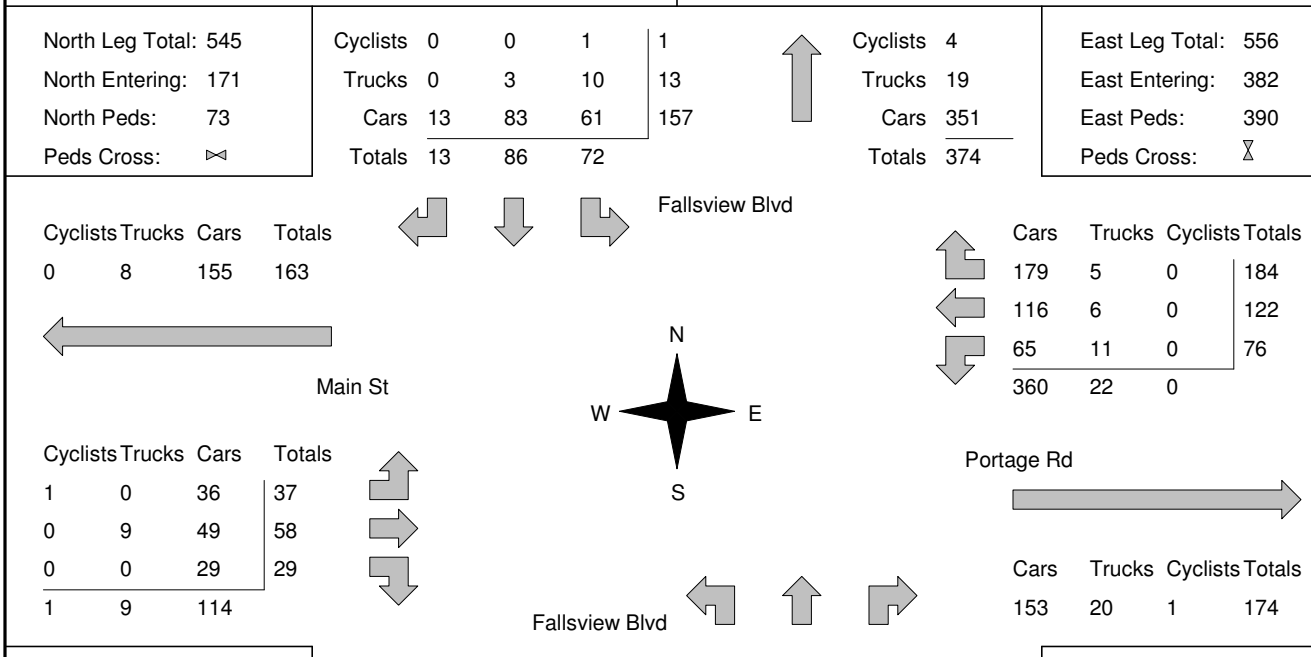
Municipality: Niagara Falls
Site #: 0000000047
Intersection: Fallsview Blvd & Main St
TFR File #: 9
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Main St / Portage Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

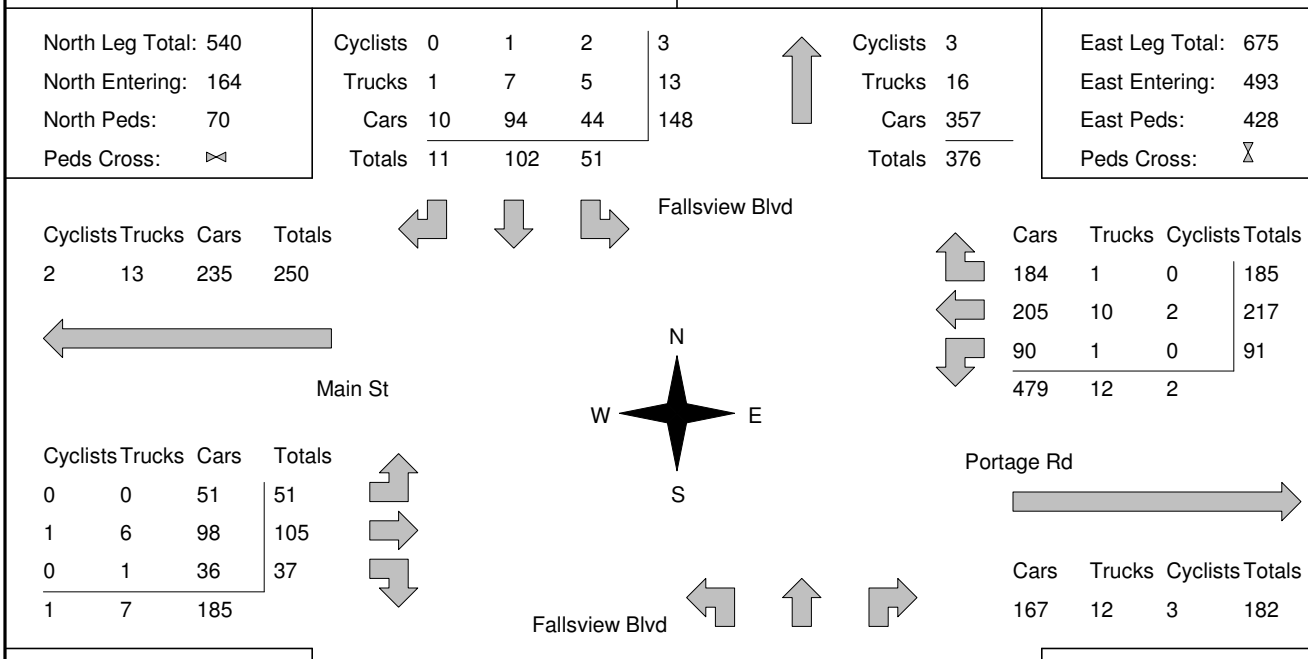
Municipality: Niagara Falls
Site #: 0000000047
Intersection: Fallsview Blvd & Main St
TFR File #: 9
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Fallsview Blvd @ Main St / Portage Rd

Total Count Diagram

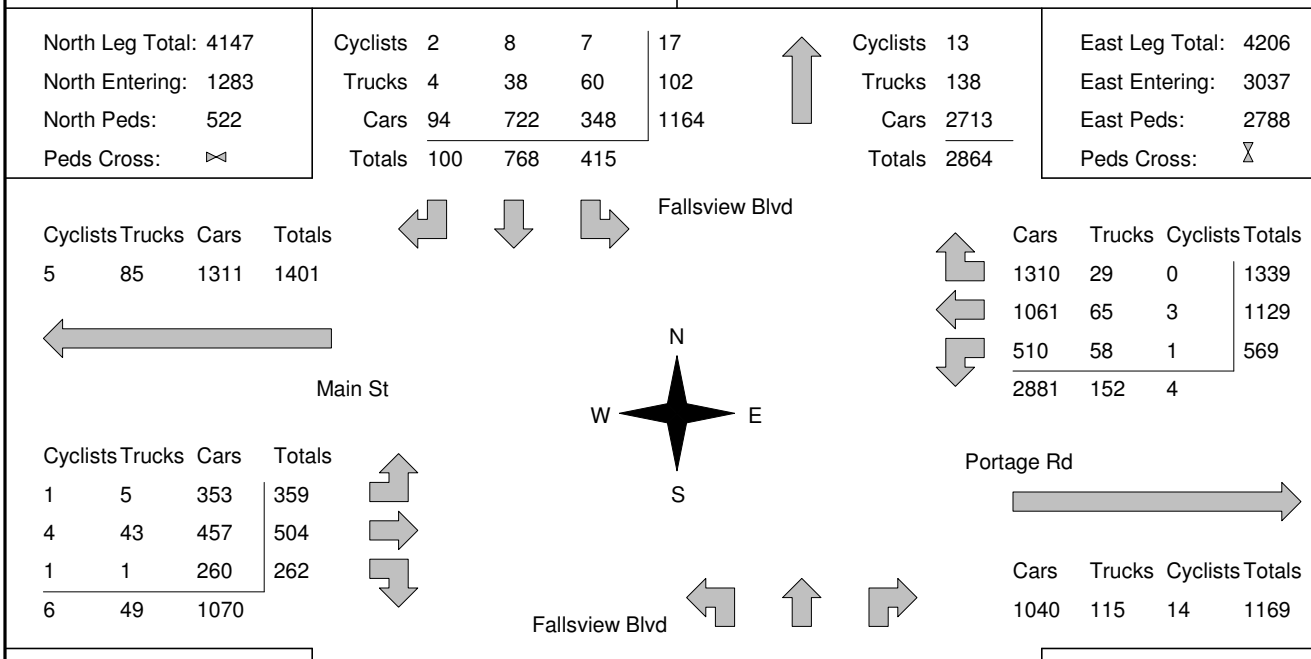
Municipality: Niagara Falls
Site #: 0000000047
Intersection: Fallsview Blvd & Main St
TFR File #: 9
Count date: 10-Jul-2019

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Fallsview Blvd runs N/S



Comments

Appendix C

Signal Timing Plans

Signal Code: DNNFLL

Intersection: DUNN ST. & FALLSVIEW BLVD.

Municipality: niagarafalls

Owner: city

Last Modified: 2019-04-04 3:12:31 PM

Timing Parameters	NBD ADV. FALLSVIEW BLVD.	NBD & SBD THRU FALLSVIEW BLVD.	EBD DUNN ST. & WBD TGIF DRIVEWAY	n/a	n/a	n/a
Min Green	7	20	10	0	0	0
Walk	0	8	7	0	0	0
Ped Clearance	0	16	13	0	0	0
Vehicle Ext.	4	4	4	0	0	0
Max Green	7	25	20	0	0	0
Yellow	3	4.1	4.1	0	0	0
All Red	0	2	2.1	0	0	0

		Offset
Minimum Cycle	42.3	0
Pedestrian Cycle	56.3	
Maximum Cycle	67.3	0
Operation	FA	

Installed On:	2006-02-24
Count Date:	--/--/----

FA = Fully Actuated SA = Semi Actuated FT = Fixed Time

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Signal Code: MANMRR

Intersection: MAIN ST./MURRAY ST. & ALLANDALE DR.

Municipality: niagarafalls

Owner: City

Last Modified: 2021-11-26 8:36:48 AM

Timing Parameters	NBD & SBD MAIN	WBD MURRAY	NBD & SBD ALLANDALE	EXC PED	n/a	n/a
Min Green	10	8	8	0	0	0
Walk	0	0	0	7	0	0
Ped Clearance	0	0	0	14	0	0
Vehicle Ext.	5	5	3	0	0	0
Max Green	25	20	25	0	0	0
Yellow	4.1	4.1	4.1	0	0	0
All Red	2.7	2.7	2.7	0	0	0

		Offset
Minimum Cycle	90.4	0
Pedestrian Cycle	21	
Maximum Cycle	90.4	0
Operation	FT	

Installed On:	2014-12-16
Count Date:	--/--/----

FA = Fully Actuated SA = Semi Actuated FT = Fixed Time

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Signal Code: 020102						
Intersection: RR20(Ferry St.) & RR102 (Stanley Ave.)						
Municipality: niagarafalls						
Owner: Region						
Last Modified: 8/1/2018 12:10:30 PM						
Timing Parameters	**EBD & WBD ADVANCE FERRY ST.**	**EBD & WBD THRU FERRY**	**NBD & SBD ADVANCE STANLEY AVE.**	**NBD & SBD THRU STANLEY**	**n/a**	**n/a**
Min Green	**6**	**8**	**6**	**8**	**0**	**0**
Walk	**0**	**10**	**0**	**10**	**0**	**0**
Ped Clearance	**0**	**17**	**0**	**17**	**0**	**0**
Vehicle Ext.	**2.5**	**2.2**	**2.5**	**2.2**	**0**	**0**
Max Green	**12**	**40**	**10**	**29**	**0**	**0**
Yellow	**3**	**4.1**	**3**	**4.1**	**0**	**0**
All Red	**0**	**2.4**	**0**	**2.4**	**0**	**0**

		Offset
Minimum Cycle	**29**	**0**
Pedestrian Cycle	**67**	
Maximum Cycle	**110**	**6**
Operation	**FA**	

Installed On:
12/10/2015
Count Date:
8/10/2015

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 102DNN						
Intersection: RR102 (STANLEY AVE.) & DUNN ST.						
Municipality: niagarafalls						
Owner: region						
Last Modified: 8/1/2018 12:20:26 PM						
Timing Parameters	**SBD ADV STANLEY AVE.**	**NBD & SBD THRU STANLEY AVE.**	**EBD & WBD THRU DUNN ST.**	**n/a**	**n/a**	**n/a**
Min Green	**6**	**10**	**8**	**0**	**0**	**0**
Walk	**0**	**9**	**10**	**0**	**0**	**0**
Ped Clearance	**0**	**15**	**17**	**0**	**0**	**0**
Vehicle Ext.	**2.7**	**2.5**	**2.5**	**0**	**0**	**0**
Max Green	**10**	**35**	**30**	**0**	**0**	**0**
Yellow	**3**	**4**	**4**	**0**	**0**	**0**
All Red	**0**	**3**	**3**	**0**	**0**	**0**

		Offset
Minimum Cycle	**32**	**0**
Pedestrian Cycle	**65**	
Maximum Cycle	**100**	**34**
Operation	**FA**	

Installed On:
7/29/2014
Count Date:
10/21/2016

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 102H40						
Intersection: RR102 (STANLEY AVE.) & HIGHWAY 420						
Municipality: niagarafalls						
Owner: mto						
Last Modified: 8/1/2018 12:07:01 PM						
Timing Parameters	**EBD PROTECTED LEFT HWY 420**	**WBD PROTECTED LEFT HWY 420**	**EBD & WBD THRU HWY 420**	**SBD STANLEY AVE. (SPLIT)**	**NBD STANLEY AVE. (SPLIT)**	**n/a**
Min Green	**5**	**5**	**20**	**10**	**10**	**0**
Walk	**0**	**0**	**15**	**12**	**15**	**0**
Ped Clearance	**0**	**0**	**28**	**25**	**25**	**0**
Vehicle Ext.	**2.5**	**2**	**4**	**3**	**3**	**0**
Max Green	**19**	**17**	**30**	**15**	**28**	**0**
Yellow	**3**	**3**	**5**	**5**	**5**	**0**
All Red	**2**	**2**	**2**	**2**	**2**	**0**

		Offset
Minimum Cycle	**44**	**0**
Pedestrian Cycle	**97**	
Maximum Cycle	**118**	**0**
Operation	**FA**	

Installed On:
6/2/2017
Count Date:
12/9/2016

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 102MRR						
Intersection: RR102(Stanley Ave.) & Murray St.						
Municipality: niagarafalls						
Owner: region						
Last Modified: 8/1/2018 12:18:30 PM						
Timing Parameters	**SBD ADVANCE STANLEY AVE.**	**NBD & SBD THRU STANLEY AVE.**	**EBD & WBD THRU MURRAY ST.**	**n/a**	**n/a**	**n/a**
Min Green	**6**	**8**	**8**	**0**	**0**	**0**
Walk	**0**	**10**	**10**	**0**	**0**	**0**
Ped Clearance	**0**	**16**	**18**	**0**	**0**	**0**
Vehicle Ext.	**2.3**	**2.5**	**2.3**	**0**	**0**	**0**
Max Green	**15**	**40**	**28**	**0**	**0**	**0**
Yellow	**3**	**4**	**4**	**0**	**0**	**0**
All Red	**0**	**3**	**3**	**0**	**0**	**0**

		Offset
Minimum Cycle	**30**	**0**
Pedestrian Cycle	**68**	
Maximum Cycle	**100**	**96**
Operation	**FA**	

Installed On:
7/29/2014
Count Date:
8/17/2015

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 102RBN						
Intersection: RR102 (STANLEY AVE.) & ROBINSON ST.						
Municipality: niagarafalls						
Owner: region						
Last Modified: 8/1/2018 12:13:20 PM						
Timing Parameters	NBD & SBD THRU STANLEY AVE.	EBD & WBD THRU ROBINSON ST.	n/a	n/a	n/a	n/a
Min Green	8	8	0	0	0	0
Walk	8	8	0	0	0	0
Ped Clearance	13	13	0	0	0	0
Vehicle Ext.	2.2	2.1	0	0	0	0
Max Green	35	20	0	0	0	0
Yellow	4	4	0	0	0	0
All Red	3	3	0	0	0	0

		Offset
Minimum Cycle	30	0
Pedestrian Cycle	56	
Maximum Cycle	100	29
Operation	FA	

Installed On:
2/23/2017
Count Date:
6/14/2018

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 420MCD						
Intersection: RR 420 (Falls Avenue) & MacDonald Avenue						
Municipality: niagarafalls						
Owner: region						
Last Modified: 6/1/2015 11:33:16 AM						
Timing Parameters	**EBD & WBD ADVANCE FALLS AVE.**	**EBD & WBD THRU FALLS AVE.**	**NBD & SBD THRU MacDONALD AVE.**	**n/a**	**n/a**	**n/a**
Min Green	**6**	**10**	**10**	**0**	**0**	**0**
Walk	**0**	**10**	**12**	**0**	**0**	**0**
Ped Clearance	**0**	**16**	**21**	**0**	**0**	**0**
Vehicle Ext.	**2.5**	**5**	**5**	**0**	**0**	**0**
Max Green	**12**	**45**	**25**	**0**	**0**	**0**
Yellow	**3**	**4.1**	**4.1**	**0**	**0**	**0**
All Red	**0**	**2.2**	**3.2**	**0**	**0**	**0**

		Offset
Minimum Cycle	**33.6**	**0**
Pedestrian Cycle	**72.6**	
Maximum Cycle	**98.6**	**0**
Operation	**FA**	

Installed On:
4/15/2009
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: 49W102						
Intersection: RR49 (Marineland Pkwy) & RR102 (Stanley Ave. W.)						
Municipality: niagarafalls						
Owner: Region						
Last Modified: 7/31/2018 3:23:48 PM						
Timing Parameters	**EBD ADVANCE MARINELAND PKWY**	**EBD & WBD THRU MARINELAND PKWY**	**NBD THRU THUNDERING WATERS ENT. (SPLIT)**	**SBD THRU STANLEY AVE. (SPLIT)**	**n/a**	**n/a**
Min Green	**6**	**8**	**8**	**8**	**0**	**0**
Walk	**0**	**12**	**11**	**11**	**0**	**0**
Ped Clearance	**0**	**20**	**19**	**19**	**0**	**0**
Vehicle Ext.	**2.3**	**2.5**	**4**	**4**	**0**	**0**
Max Green	**12**	**35**	**20**	**30**	**0**	**0**
Yellow	**3**	**4.1**	**4.1**	**4.1**	**0**	**0**
All Red	**0**	**3.1**	**3.1**	**3.1**	**0**	**0**

		Offset
Minimum Cycle	**30.4**	**0**
Pedestrian Cycle	**76.4**	
Maximum Cycle	**121.6**	**0**
Operation	**FA**	

Installed On:
8/6/2009
Count Date:
7/24/2013

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: BNDVCT						
Intersection: BENDER STREET & VICTORIA STREET						
Municipality: niagarafalls						
Owner: city						
Last Modified: 7/31/2018 2:37:05 PM						
Timing Parameters	**SBD ADVANCE VICTORIA AVE.**	**NBD & SBD THRU VICTORIA AVE.**	**WBD THRU BENDER ST.**	**n/a**	**--**	**--**
Min Green	**6**	**8**	**8**	**0**	**0**	**0**
Walk	**0**	**10**	**8**	**0**	**0**	**0**
Ped Clearance	**0**	**14**	**12**	**0**	**0**	**0**
Vehicle Ext.	**3**	**3.5**	**2.5**	**0**	**0**	**0**
Max Green	**25**	**35**	**30**	**0**	**0**	**0**
Yellow	**3**	**4.1**	**4.1**	**0**	**0**	**0**
All Red	**0**	**2.2**	**2.2**	**0**	**0**	**0**

		Offset
Minimum Cycle	**28.6**	**0**
Pedestrian Cycle	**50.3**	
Maximum Cycle	**105.6**	**0**
Operation	**FA**	

Installed On:
1/28/2013
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: CLFFLL						
Intersection: CLIFTON HILL & FALLS AVE.						
Municipality: niagarafalls						
Owner: City						
Last Modified: 5/29/2018 10:53:47 AM						
Timing Parameters	EBD & WBD THRU CLIFTON	NBD & SBD THRU FALLS	n/a	n/a	n/a	n/a
Min Green	**31**	**29**	**0**	**0**	**0**	**0**
Walk	**15**	**13**	**0**	**0**	**0**	**0**
Ped Clearance	**16**	**16**	**0**	**0**	**0**	**0**
Vehicle Ext.	**0**	**0**	**0**	**0**	**0**	**0**
Max Green	**31**	**29**	**0**	**0**	**0**	**0**
Yellow	**4.1**	**4.1**	**0**	**0**	**0**	**0**
All Red	**2.2**	**2.2**	**0**	**0**	**0**	**0**

		Offset
Minimum Cycle	72.6	0
Pedestrian Cycle	72.6	
Maximum Cycle	72.6	0
Operation	FT	

Installed On:
5/15/2018
Count Date:
10/6/2012

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: CLFRVR						
Intersection: CLIFTON HILL & RIVER RD.						
Municipality: niagarafalls						
Owner: NPC						
Last Modified: 7/31/2018 1:48:00 PM						
Timing Parameters	**NBD ADVANCE RIVER RD.**	**NBD & SBD THRU RIVER RD.**	**EBD THRU CLIFTON HILL**	**n/a**	**n/a**	**n/a**
Min Green	**6**	**8**	**8**	**0**	**0**	**0**
Walk	**0**	**12**	**12**	**0**	**0**	**0**
Ped Clearance	**0**	**21**	**21**	**0**	**0**	**0**
Vehicle Ext.	**2.4**	**0**	**0**	**0**	**0**	**0**
Max Green	**14**	**33**	**33**	**0**	**0**	**0**
Yellow	**3**	**4.1**	**4.1**	**0**	**0**	**0**
All Red	**0**	**2.7**	**2.9**	**0**	**0**	**0**

		Offset
Minimum Cycle	**29.8**	**0**
Pedestrian Cycle	**79.8**	
Maximum Cycle	**96.8**	**0**
Operation	**FT**	

Installed On:
6/29/2011
Count Date:
10/8/2014

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: CLFVCT						
Intersection: CLIFTON HILL & VICTORIA AVE.						
Municipality: niagarafalls						
Owner: City						
Last Modified: 8/1/2018 11:59:49 AM						
Timing Parameters	**SBD ADVANCE VICTORIA AVE.**	**NBD & SBD THRU VICTORIA AVE.**	**WBD ADVANCE CLIFTON HILL**	**EBD THRU CENTRE ST./WBD CLIFTON HILL**	**n/a**	**n/a**
Min Green	**6**	**10**	**6**	**10**	**0**	**0**
Walk	**0**	**10**	**0**	**10**	**0**	**0**
Ped Clearance	**0**	**16**	**0**	**16**	**0**	**0**
Vehicle Ext.	**3**	**3**	**3**	**3**	**0**	**0**
Max Green	**15**	**35**	**15**	**30**	**0**	**0**
Yellow	**3**	**4.1**	**3**	**4.1**	**0**	**0**
All Red	**0**	**2.7**	**0**	**2.9**	**0**	**0**

		Offset
Minimum Cycle	**33.8**	**0**
Pedestrian Cycle	**65.8**	
Maximum Cycle	**114.8**	**0**
Operation	**FA**	

Installed On:
6/22/2018
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: CSNPRT						
Intersection: CASINO ENT. & PORTAGE RD.						
Municipality: niagarafalls						
Owner: city						
Last Modified: 8/20/2018 4:10:24 PM						
Timing Parameters	**EBD PORTAGE RD.**	**NBD PORTAGE RD. / SBD CASINO DRIVEWAY**	**n/a**	**n/a**	**n/a**	**n/a**
Min Green	**10**	**10**	**0**	**0**	**0**	**0**
Walk	**10**	**0**	**0**	**0**	**0**	**0**
Ped Clearance	**15**	**0**	**0**	**0**	**0**	**0**
Vehicle Ext.	**4**	**0**	**0**	**0**	**0**	**0**
Max Green	**25**	**25**	**0**	**0**	**0**	**0**
Yellow	**4.1**	**4.1**	**0**	**0**	**0**	**0**
All Red	**2**	**2**	**0**	**0**	**0**	**0**

		Offset
Minimum Cycle	**32.2**	**0**
Pedestrian Cycle	**32.2**	
Maximum Cycle	**93.3**	**0**
Operation	**FA**	

Installed On:
4/16/2015
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: ELLFRR						
Intersection: ELLEN/CLARK & FERRY ST.						
Municipality: niagarafalls						
Owner: City						
Last Modified: 3/29/2017 9:07:34 AM						
Timing Parameters	EBD & WBD FERRY	NBD & SBD ELLEN/CLARK	n/a	n/a	n/a	n/a
Min Green	8	8	0	0	0	0
Walk	8	7	0	0	0	0
Ped Clearance	13	10	0	0	0	0
Vehicle Ext.	2.1	2.1	0	0	0	0
Max Green	54	26	0	0	0	0
Yellow	4.1	4.1	0	0	0	0
All Red	2.1	2	0	0	0	0

		Offset
Minimum Cycle	28.3	0
Pedestrian Cycle	50.3	
Maximum Cycle	92.3	0
Operation	FA	

Installed On:
11/19/1988
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: FLLMAN						
Intersection: FALLSVIEW & MAIN ST.						
Municipality: niagarafalls						
Owner: City						
Last Modified: 7/31/2018 1:55:19 PM						
Timing Parameters	**SBD ADVANCE FALLSVIEW**	**NBD & SBD THRU FALLSVIEW**	**WBD ADVANCE MAIN ST.**	**EBD & WBD THRU MAIN ST.**	**n/a**	**n/a**
Min Green	**7**	**20**	**7**	**10**	**0**	**0**
Walk	**0**	**10**	**0**	**10**	**0**	**0**
Ped Clearance	**0**	**17**	**0**	**17**	**0**	**0**
Vehicle Ext.	**4**	**4**	**4**	**4**	**0**	**0**
Max Green	**10**	**30**	**10**	**25**	**0**	**0**
Yellow	**3**	**4.1**	**3**	**4.1**	**0**	**0**
All Red	**0**	**2.4**	**0**	**2.4**	**0**	**0**

		Offset
Minimum Cycle	**43**	**0**
Pedestrian Cycle	**67**	
Maximum Cycle	**94**	**0**
Operation	**FA**	

Installed On:
7/12/1990
Count Date:
2/24/2006

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Signal Code: FLLMRR						
Intersection: FALLSVIEW & MURRAY ST						
Municipality: niagarafalls						
Owner: city						
Last Modified: 11/22/2016 10:46:52 AM						
Timing Parameters	**NBD & SBD ADVANCE FALLSVIEW**	**NBD & SBD THRU FALLSVIEW**	**EBD & WBD ADVANCE MURRAY ST.**	**EBD & WBD THRU MURRAY ST.**	**n/a**	**n/a**
Min Green	**7**	**20**	**7**	**20**	**0**	**0**
Walk	**0**	**13**	**0**	**10**	**0**	**0**
Ped Clearance	**0**	**23**	**0**	**17**	**0**	**0**
Vehicle Ext.	**2.5**	**2.2**	**2.5**	**2.2**	**0**	**0**
Max Green	**10**	**30**	**10**	**25**	**0**	**0**
Yellow	**3**	**4.1**	**3**	**4.1**	**0**	**0**
All Red	**0**	**2.5**	**0**	**2.2**	**0**	**0**

		Offset
Minimum Cycle	**52.9**	**0**
Pedestrian Cycle	**75.9**	
Maximum Cycle	**93.9**	**0**
Operation	**FA**	

Installed On:
12/2/2001
Count Date:
--/--/----

FA = Fully Actuated **SA = Semi Actuated** **FT = Fixed Time**

***Note: you need to change the paper orientation from Portriat to Landscape**

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Appendix D

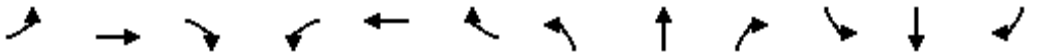
2023 Existing Conditions Synchro Reports

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	153	56	21	50	120	108
Future Volume (vph)	153	56	21	50	120	108
Lane Group Flow (vph)	166	61	36	54	130	280
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.58	0.15	0.10	0.08	0.13	0.33
Control Delay	31.1	2.6	13.9	6.1	7.6	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	31.1	2.6	13.9	6.1	7.6	9.8
Queue Length 50th (m)	18.7	0.0	2.3	2.1	6.3	12.0
Queue Length 95th (m)	32.1	3.6	7.6	7.0	15.9	33.5
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	380	509	501	669	1030	853
Starvation Cap Reductn	0	0	0	0	0	215
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.12	0.07	0.08	0.13	0.44

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	0	56	0	21	12	50	120	0	0	108	150
Future Volume (vph)	153	0	56	0	21	12	50	120	0	0	108	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.91	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1579	
Flt Permitted	0.73		1.00		1.00		0.53	1.00			1.00	
Satd. Flow (perm)	1270		1471		1646		919	1731			1579	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	0	61	0	23	13	54	130	0	0	117	163
RTOR Reduction (vph)	0	0	47	0	10	0	0	0	0	0	62	0
Lane Group Flow (vph)	166	0	14	0	26	0	54	130	0	0	218	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	15.1		15.1		15.1		39.9	39.9			32.1	
Effective Green, g (s)	15.1		15.1		15.1		39.9	39.9			32.1	
Actuated g/C Ratio	0.22		0.22		0.22		0.59	0.59			0.48	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	284		330		369		596	1026			753	
v/s Ratio Prot					0.02		0.01	c0.08			c0.14	
v/s Ratio Perm	c0.13		0.01				0.05					
v/c Ratio	0.58		0.04		0.07		0.09	0.13			0.29	
Uniform Delay, d1	23.3		20.4		20.6		5.9	6.0			10.7	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.6		0.1		0.1		0.1	0.3			1.0	
Delay (s)	26.9		20.5		20.7		5.9	6.3			11.6	
Level of Service	C		C		C		A	A			B	
Approach Delay (s)		25.2			20.7			6.2			11.6	
Approach LOS		C			C			A			B	

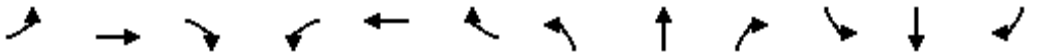
Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	144	71	95	107	518	342	482
Future Volume (vph)	57	144	71	95	107	518	342	482
Lane Group Flow (vph)	62	189	77	311	116	667	372	578
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.38	0.42	0.29	0.64	0.31	0.41	0.67	0.27
Control Delay	36.3	31.8	31.7	27.9	19.5	16.9	15.1	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	31.8	31.7	28.0	19.5	16.9	15.1	9.7
Queue Length 50th (m)	9.5	27.7	11.6	34.3	16.7	51.3	31.8	26.5
Queue Length 95th (m)	21.5	46.8	23.8	61.4	33.7	71.2	47.8	35.9
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	191	520	309	546	372	1608	576	2180
Starvation Cap Reductn	0	0	0	3	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	0.36	0.25	0.57	0.31	0.41	0.65	0.27

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	144	29	71	95	191	107	518	96	342	482	50
Future Volume (vph)	57	144	29	71	95	191	107	518	96	342	482	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.90		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)	1785	1831		1785	1690		1785	3486		1785	3520	
Flt Permitted	0.36	1.00		0.59	1.00		0.43	1.00		0.32	1.00	
Satd. Flow (perm)	684	1831		1107	1690		816	3486		607	3520	
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)	62	157	32	77	103	208	116	563	104	372	524	54
RTOR Reduction (vph)	0	8	0	0	76	0	0	14	0	0	7	0
Lane Group Flow (vph)	62	181	0	77	235	0	116	653	0	372	571	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.3	24.3		24.3	24.3		45.7	45.7		61.7	61.7	
Effective Green, g (s)	24.3	24.3		24.3	24.3		45.7	45.7		61.7	61.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.46	0.46		0.62	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	166	444		269	410		372	1593		527	2171	
v/s Ratio Prot		0.10			c0.14			0.19		c0.09	0.16	
v/s Ratio Perm	0.09			0.07			0.14			c0.34		
v/c Ratio	0.37	0.41		0.29	0.57		0.31	0.41		0.71	0.26	
Uniform Delay, d1	31.5	31.8		30.8	33.3		17.2	18.1		10.1	8.8	
Progression Factor	1.00	1.00		1.00	1.00		0.83	0.83		1.00	1.00	
Incremental Delay, d2	0.8	0.4		0.3	1.4		2.1	0.8		3.8	0.3	
Delay (s)	32.3	32.2		31.1	34.7		16.4	15.9		13.9	9.0	
Level of Service	C	C		C	C		B	B		B	A	
Approach Delay (s)		32.2			34.0			16.0			10.9	
Approach LOS		C			C			B			B	

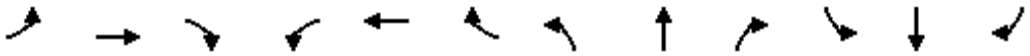
Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	43	342	147	209	140	106	257	138	299
Future Volume (vph)	43	342	147	209	140	106	257	138	299
Lane Group Flow (vph)	47	606	160	227	152	115	567	150	357
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.10	0.63	0.51	0.38	0.25	0.21	0.41	0.34	0.27
Control Delay	18.1	28.5	24.6	30.1	5.9	13.7	12.5	15.2	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	28.5	24.6	30.1	5.9	13.7	12.5	15.2	22.5
Queue Length 50th (m)	5.4	43.2	19.5	35.9	0.0	11.2	20.4	15.0	25.0
Queue Length 95th (m)	12.1	61.2	33.2	58.8	14.3	20.4	34.5	25.7	36.7
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	517	1015	323	598	612	583	1383	453	1312
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	0.09	0.60	0.50	0.38	0.25	0.20	0.41	0.33	0.27

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 99.1
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	342	215	147	209	140	106	257	265	138	299	29
Future Volume (vph)	43	342	215	147	209	140	106	257	265	138	299	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3363		1785	1879	1597	1785	3298		1785	3522	
Flt Permitted	0.62	1.00		0.24	1.00	1.00	0.54	1.00		0.36	1.00	
Satd. Flow (perm)	1159	3363		460	1879	1597	1005	3298		673	3522	
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)	47	372	234	160	227	152	115	279	288	150	325	32
RTOR Reduction (vph)	0	97	0	0	0	104	0	183	0	0	7	0
Lane Group Flow (vph)	47	509	0	160	227	48	115	384	0	150	350	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	31.4	26.8		39.2	31.6	31.6	44.6	36.1		45.8	36.7	
Effective Green, g (s)	31.4	26.8		39.2	31.6	31.6	44.6	36.1		45.8	36.7	
Actuated g/C Ratio	0.31	0.27		0.39	0.32	0.32	0.44	0.36		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	391	898		303	591	503	512	1187		408	1288	
v/s Ratio Prot	0.01	0.15		c0.05	0.12		0.02	0.12		c0.03	0.10	
v/s Ratio Perm	0.03			c0.16		0.03	0.08			c0.13		
v/c Ratio	0.12	0.57		0.53	0.38	0.10	0.22	0.32		0.37	0.27	
Uniform Delay, d1	24.3	31.7		21.4	26.8	24.3	16.5	23.3		16.4	22.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8		1.7	0.4	0.1	0.2	0.7		0.6	0.5	
Delay (s)	24.4	32.6		23.1	27.2	24.3	16.8	24.0		17.0	22.9	
Level of Service	C	C		C	C	C	B	C		B	C	
Approach Delay (s)		32.0			25.2			22.8			21.2	
Approach LOS		C			C			C			C	

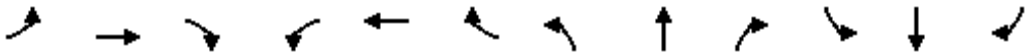
Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	18.9
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	97	169	41	113	40	85	416	63	288
Future Volume (vph)	97	169	41	113	40	85	416	63	288
Lane Group Flow (vph)	105	237	45	123	43	92	534	68	436
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.35	0.54	0.20	0.28	0.10	0.18	0.28	0.12	0.20
Control Delay	33.6	34.9	31.0	31.3	2.5	15.5	13.7	11.3	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	34.9	31.0	31.3	2.5	15.5	13.7	11.3	12.4
Queue Length 50th (m)	16.2	35.9	6.7	18.6	0.0	9.6	29.5	3.9	30.1
Queue Length 95th (m)	30.7	58.5	15.9	33.3	3.0	19.9	41.8	15.2	43.6
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	382	555	277	563	532	509	1905	619	2164
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	0.27	0.43	0.16	0.22	0.08	0.18	0.28	0.11	0.20

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 15: Stanley Ave & Dunn St



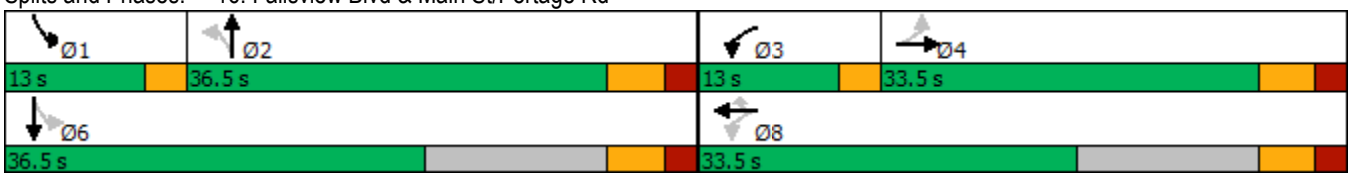
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	169	49	41	113	40	85	416	75	63	288	113
Future Volume (vph)	97	169	49	41	113	40	85	416	75	63	288	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1816		1785	1879	1597	1785	3488		1785	3419	
Flt Permitted	0.68	1.00		0.49	1.00	1.00	0.50	1.00		0.42	1.00	
Satd. Flow (perm)	1274	1816		927	1879	1597	937	3488		783	3419	
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)	105	184	53	45	123	43	92	452	82	68	313	123
RTOR Reduction (vph)	0	11	0	0	0	33	0	12	0	0	36	0
Lane Group Flow (vph)	105	226	0	45	123	10	92	522	0	68	400	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.7	23.7		23.7	23.7	23.7	53.7	53.7		62.3	62.3	
Effective Green, g (s)	23.7	23.7		23.7	23.7	23.7	53.7	53.7		62.3	62.3	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.54	0.54		0.62	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	301	430		219	445	378	503	1873		543	2130	
v/s Ratio Prot		c0.12			0.07			c0.15		0.01	c0.12	
v/s Ratio Perm	0.08			0.05		0.01	0.10			0.07		
v/c Ratio	0.35	0.52		0.21	0.28	0.03	0.18	0.28		0.13	0.19	
Uniform Delay, d1	31.7	33.2		30.6	31.1	29.3	11.9	12.6		7.5	8.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.52	1.76	
Incremental Delay, d2	0.5	0.9		0.3	0.2	0.0	0.8	0.4		0.1	0.2	
Delay (s)	32.2	34.1		30.9	31.4	29.3	12.7	13.0		11.5	14.4	
Level of Service	C	C		C	C	C	B	B		B	B	
Approach Delay (s)		33.5			30.9			12.9			14.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	137	82	105	178	282	28	222	53	134
Future Volume (vph)	137	82	105	178	282	28	222	53	134
Lane Group Flow (vph)	149	155	114	193	307	30	294	58	176
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.47	0.31	0.21	0.27	0.39	0.07	0.43	0.11	0.20
Control Delay	33.3	21.9	16.1	19.1	3.8	23.6	26.3	13.9	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Total Delay	33.3	21.9	16.1	19.1	3.8	23.6	28.6	13.9	15.4
Queue Length 50th (m)	22.0	16.0	11.5	21.8	0.0	3.8	41.0	5.5	17.6
Queue Length 95th (m)	41.0	32.5	22.1	37.7	14.8	10.4	66.9	12.1	30.8
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	395	608	541	921	939	446	679	551	971
Starvation Cap Reductn	0	0	0	0	0	0	255	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	0.38	0.25	0.21	0.21	0.33	0.07	0.69	0.11	0.18

Intersection Summary
Cycle Length: 96
Actuated Cycle Length: 86
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd



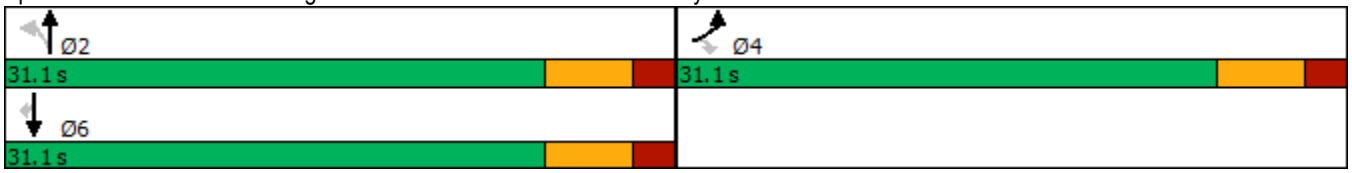
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	82	61	105	178	282	28	222	49	53	134	28
Future Volume (vph)	137	82	61	105	178	282	28	222	49	53	134	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1759		1785	1879	1597	1785	1828		1785	1831	
Flt Permitted	0.64	1.00		0.58	1.00	1.00	0.65	1.00		0.46	1.00	
Satd. Flow (perm)	1195	1759		1095	1879	1597	1214	1828		860	1831	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	89	66	114	193	307	30	241	53	58	146	30
RTOR Reduction (vph)	0	29	0	0	0	190	0	8	0	0	7	0
Lane Group Flow (vph)	149	126	0	114	193	117	30	286	0	58	169	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.0	23.0		33.1	33.1	33.1	31.6	31.6		40.9	40.9	
Effective Green, g (s)	23.0	23.0		33.1	33.1	33.1	31.6	31.6		40.9	40.9	
Actuated g/C Ratio	0.26	0.26		0.38	0.38	0.38	0.36	0.36		0.47	0.47	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	315	465		472	714	607	440	663		471	860	
v/s Ratio Prot		0.07		0.02	c0.10			c0.16		0.01	c0.09	
v/s Ratio Perm	c0.12			0.07		0.07	0.02			0.05		
v/c Ratio	0.47	0.27		0.24	0.27	0.19	0.07	0.43		0.12	0.20	
Uniform Delay, d1	26.9	25.4		17.9	18.6	18.0	18.1	20.9		12.9	13.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.4		0.4	0.3	0.2	0.3	2.0		0.2	0.5	
Delay (s)	28.4	25.8		18.3	18.9	18.2	18.4	23.0		13.1	14.0	
Level of Service	C	C		B	B	B	B	C		B	B	
Approach Delay (s)		27.1			18.4			22.5			13.8	
Approach LOS		C			B			C			B	

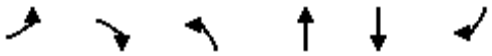
Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	73	76	86	14	87	601
Future Volume (vph)	73	76	86	14	87	601
Lane Group Flow (vph)	79	83	93	15	95	653
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.12	0.13	0.14	0.02	0.10	0.57
Control Delay	12.3	3.9	12.9	11.4	12.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	3.9	12.9	11.4	12.2	3.6
Queue Length 50th (m)	5.5	0.0	6.6	1.0	6.6	0.0
Queue Length 95th (m)	12.5	6.6	14.9	3.9	14.4	17.1
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	767	734	680	980	980	1145
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	0.10	0.11	0.14	0.02	0.10	0.57

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

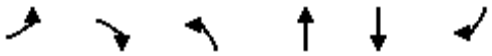
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	73	76	86	14	87	601
Future Volume (vph)	73	76	86	14	87	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.70	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1307	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	83	93	15	95	653
RTOR Reduction (vph)	0	57	0	0	0	337
Lane Group Flow (vph)	79	26	93	15	95	316
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	19.0	19.0	29.2	29.2	29.2	29.2
Effective Green, g (s)	19.0	19.0	29.2	29.2	29.2	29.2
Actuated g/C Ratio	0.31	0.31	0.48	0.48	0.48	0.48
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	561	502	631	908	908	772
v/s Ratio Prot	c0.04			0.01	0.05	
v/s Ratio Perm		0.02	0.07			c0.20
v/c Ratio	0.14	0.05	0.15	0.02	0.10	0.41
Uniform Delay, d1	14.8	14.4	8.7	8.1	8.5	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	0.5	0.0	0.2	1.6
Delay (s)	15.0	14.5	9.2	8.2	8.7	11.6
Level of Service	B	B	A	A	A	B
Approach Delay (s)	14.7			9.0	11.3	
Approach LOS	B			A	B	

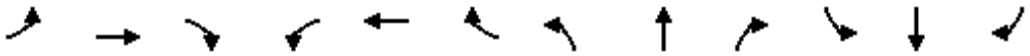
Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	129	0	615	598	33
Future Volume (Veh/h)	0	129	0	615	598	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	140	0	668	650	36
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				55	191	
pX, platoon unblocked	0.97	0.95	0.95			
vC, conflicting volume	1002	343	686			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	719	201	562			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	82	100			
cM capacity (veh/h)	358	772	968			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	140	334	334	433	253
Volume Left	0	0	0	0	0
Volume Right	140	0	0	0	36
cSH	772	1700	1700	1700	1700
Volume to Capacity	0.18	0.20	0.20	0.25	0.15
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.7	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	34.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	4	5	0	0	0	55	363	133	107	232	78
Future Volume (Veh/h)	18	4	5	0	0	0	55	363	133	107	232	78
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)	20	4	5	0	0	0	60	395	145	116	252	85
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	1433	2020	758	1258	1990	575	896			815		
vC1, stage 1 conf vol	1086	1086		862	862							
vC2, stage 2 conf vol	348	935		395	1128							
vCu, unblocked vol	1433	2020	758	1258	1990	575	896			815		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	95	97	100	100	100	85			81		
cM capacity (veh/h)	92	78	174	178	54	344	388			622		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	29	0	60	263	277	116	168	169
Volume Left	20	0	60	0	0	116	0	0
Volume Right	5	0	0	0	145	0	0	85
cSH	98	1700	388	1700	1700	622	1700	1700
Volume to Capacity	0.30	0.00	0.15	0.15	0.16	0.19	0.10	0.10
Queue Length 95th (m)	8.5	0.0	4.1	0.0	0.0	5.2	0.0	0.0
Control Delay (s)	56.8	0.0	16.0	0.0	0.0	12.1	0.0	0.0
Lane LOS	F	A	C			B		
Approach Delay (s)	56.8	0.0	1.6			3.1		
Approach LOS	F	A						

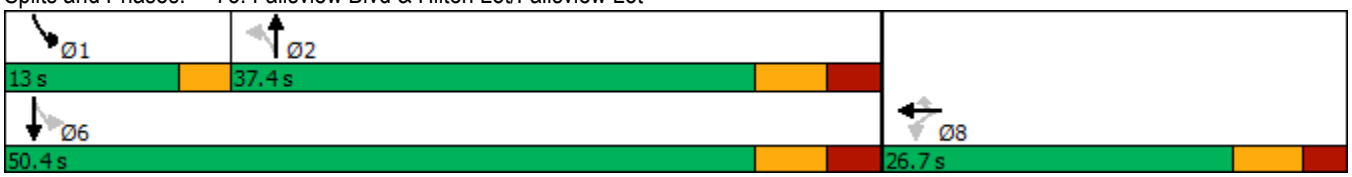
Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	33.5%	ICU Level of Service	A	
Analysis Period (min)	15			

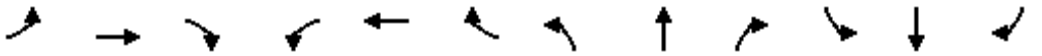
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	92	13	324	158	376
Future Volume (vph)	1	92	13	324	158	376
Lane Group Flow (vph)	35	100	14	428	172	506
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.10	0.25	0.04	0.27	0.25	0.24
Control Delay	20.6	7.0	12.7	12.0	4.8	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	7.0	12.7	12.0	4.8	5.3
Queue Length 50th (m)	3.0	0.0	0.9	14.7	5.6	10.4
Queue Length 95th (m)	9.3	9.6	4.0	25.0	11.0	16.7
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	711	693	505	2020	723	2604
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	0.05	0.14	0.03	0.21	0.24	0.19

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 50.4
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	31	1	92	13	324	70	158	376	89
Future Volume (vph)	0	0	0	31	1	92	13	324	70	158	376	89
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3200		1644	3194	
Flt Permitted					0.95	1.00	0.47	1.00		0.44	1.00	
Satd. Flow (perm)					1650	1471	806	3200		764	3194	
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)	0	0	0	34	1	100	14	352	76	172	409	97
RTOR Reduction (vph)	0	0	0	0	0	86	0	23	0	0	25	0
Lane Group Flow (vph)	0	0	0	0	35	14	14	405	0	172	481	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.2	7.2	21.7	21.7		31.2	31.2	
Effective Green, g (s)					7.2	7.2	21.7	21.7		31.2	31.2	
Actuated g/C Ratio					0.14	0.14	0.41	0.41		0.59	0.59	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	333	1322		562	1898	
v/s Ratio Prot								0.13		c0.04	0.15	
v/s Ratio Perm					0.02	0.01	0.02			c0.14		
v/c Ratio					0.15	0.07	0.04	0.31		0.31	0.25	
Uniform Delay, d1					20.0	19.7	9.2	10.3		4.9	5.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.4	0.2	0.1	0.2		0.4	0.1	
Delay (s)					20.4	19.9	9.3	10.5		5.4	5.2	
Level of Service					C	B	A	B		A	A	
Approach Delay (s)		0.0			20.0			10.5			5.2	
Approach LOS		A			C			B			A	

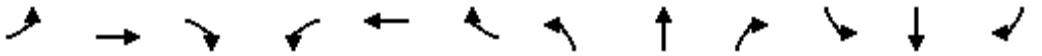
Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	17.1
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	18	10	60	47	238	44	359	208	490
Future Volume (vph)	18	10	60	47	238	44	359	208	490
Lane Group Flow (vph)	0	44	0	116	259	48	438	226	565
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.23		0.63	0.62	0.08	0.22	0.32	0.26
Control Delay		30.9		55.2	11.6	3.8	11.4	4.6	6.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.9		55.2	11.6	3.8	11.4	4.6	6.6
Queue Length 50th (m)		5.4		21.7	0.0	1.6	26.6	8.1	16.5
Queue Length 95th (m)		14.3		36.7	20.3	8.5	43.4	16.0	31.0
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		382		388	598	715	1975	752	2192
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.12		0.30	0.43	0.07	0.22	0.30	0.26

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	10	12	60	47	238	44	359	44	208	490	29
Future Volume (vph)	18	10	12	60	47	238	44	359	44	208	490	29
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.96			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1625			1683	1471	1644	3234		1644	3260	
Flt Permitted		0.80			0.80	1.00	0.44	1.00		0.47	1.00	
Satd. Flow (perm)		1335			1387	1471	761	3234		821	3260	
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)	20	11	13	65	51	259	48	390	48	226	533	32
RTOR Reduction (vph)	0	11	0	0	0	225	0	6	0	0	2	0
Lane Group Flow (vph)	0	33	0	0	116	34	48	432	0	226	563	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		13.3			13.3	13.3	64.6	60.9		72.7	66.0	
Effective Green, g (s)		13.3			13.3	13.3	64.6	60.9		72.7	66.0	
Actuated g/C Ratio		0.13			0.13	0.13	0.65	0.61		0.73	0.66	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		177			184	195	524	1969		669	2151	
v/s Ratio Prot							0.00	0.13		c0.03	0.17	
v/s Ratio Perm		0.02			c0.08	0.02	0.06			c0.22		
v/c Ratio		0.18			0.63	0.18	0.09	0.22		0.34	0.26	
Uniform Delay, d1		38.5			41.0	38.5	6.5	8.8		4.4	7.0	
Progression Factor		1.00			1.00	1.00	0.91	1.16		0.91	0.81	
Incremental Delay, d2		0.3			5.6	0.3	0.0	0.3		0.2	0.3	
Delay (s)		38.8			46.7	38.7	5.9	10.4		4.2	6.0	
Level of Service		D			D	D	A	B		A	A	
Approach Delay (s)		38.8			41.2			10.0			5.5	
Approach LOS		D			D			A			A	

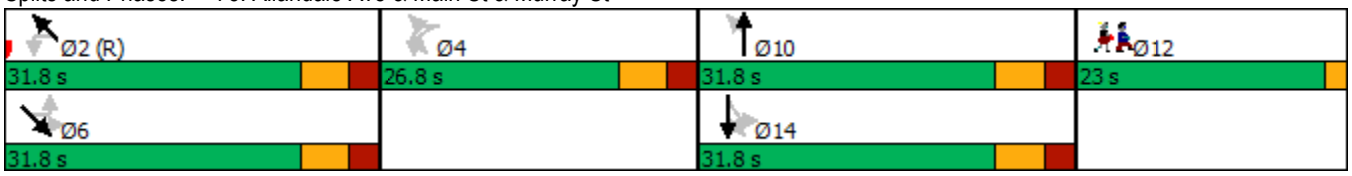
Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	13	4	179	84	26	4	4	14	23	163	1	12
Future Volume (vph)	13	4	179	84	26	4	4	14	23	163	1	12
Lane Group Flow (vph)	0	18	237	0	132	0	0	24	0	202	118	36
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	23.6%	23.6%	23.6%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.10	0.93		0.46			0.07		0.74	0.37	0.11
Control Delay		40.8	88.6		44.4			34.7		58.5	41.5	36.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		40.8	88.6		44.4			34.7		58.5	41.5	36.4
Queue Length 50th (m)		3.4	52.3		25.6			4.1		42.0	22.4	6.4
Queue Length 95th (m)		9.9	#99.3		44.5			11.1		#75.7	39.7	15.3
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		188	254		287			338		274	318	341
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.10	0.93		0.46			0.07		0.74	0.37	0.11

Intersection Summary

Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 90
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	20%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

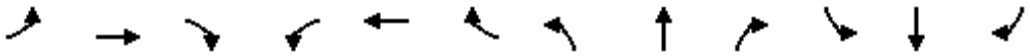
Intersection Summary

Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	4	179	39	84	26	8	4	4	4	14	1
Future Volume (vph)	13	4	179	39	84	26	8	4	4	4	14	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					0.99	
Flt Protected		0.95	1.00			0.97					0.98	
Satd. Flow (prot)		1612	1442			1618					1659	
Flt Permitted		0.63	1.00			0.78					0.91	
Satd. Flow (perm)		1071	1442			1304					1529	
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)	14	4	195	42	91	28	9	4	4	4	15	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	18	237	0	0	132	0	0	0	0	23	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		188	254			287					337	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.16			c0.10					0.02	
v/c Ratio		0.10	0.93			0.46					0.07	
Uniform Delay, d1		39.1	46.0			38.3					35.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.0	41.5			5.2					0.4	
Delay (s)		40.1	87.6			43.6					35.4	
Level of Service		D	F			D					D	
Approach Delay (s)		84.2				43.6					35.4	
Approach LOS		F				D					D	

Intersection Summary			
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	23	163	1	108	12	9	12
Future Volume (vph)	23	163	1	108	12	9	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1444		1550		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1245	1444		1550		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	177	1	117	13	10	13
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	202	118	0	36	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		25.0	25.0		25.0		
Effective Green, g (s)		25.0	25.0		25.0		
Actuated g/C Ratio		0.22	0.22		0.22		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		274	318		341		
v/s Ratio Prot			0.08		0.02		
v/s Ratio Perm		c0.16					
v/c Ratio		0.74	0.37		0.11		
Uniform Delay, d1		41.1	37.5		35.3		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		16.2	3.3		0.6		
Delay (s)		57.4	40.8		35.9		
Level of Service		E	D		D		
Approach Delay (s)			51.3		35.9		
Approach LOS			D		D		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	120	0	0	0	40	0	0
Future Volume (Veh/h)	0	0	0	0	0	120	0	0	0	40	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	130	0	0	0	43	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	130			0			65	130	0	65	65	65
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	130			0			65	130	0	65	65	65
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1468			1636			934	764	1091	934	830	1005

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	130	0	43
Volume Left	0	0	0	43
Volume Right	0	130	0	0
cSH	1700	1636	1700	934
Volume to Capacity	0.00	0.00	0.39	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

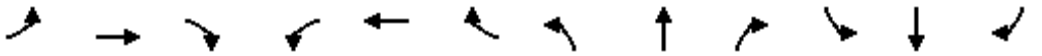
Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	18.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	154	57	21	51	121	109
Future Volume (vph)	154	57	21	51	121	109
Lane Group Flow (vph)	167	62	36	55	132	283
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.59	0.15	0.10	0.08	0.13	0.34
Control Delay	31.2	2.7	13.9	6.1	7.6	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	31.2	2.7	13.9	6.1	7.6	9.9
Queue Length 50th (m)	18.9	0.0	2.3	2.2	6.4	12.2
Queue Length 95th (m)	32.3	3.7	7.6	7.1	16.1	34.0
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	380	509	501	666	1030	852
Starvation Cap Reductn	0	0	0	0	0	215
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.12	0.07	0.08	0.13	0.44

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	0	57	0	21	12	51	121	0	0	109	152
Future Volume (vph)	154	0	57	0	21	12	51	121	0	0	109	152
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.91	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1579	
Flt Permitted	0.73		1.00		1.00		0.53	1.00			1.00	
Satd. Flow (perm)	1270		1471		1646		914	1731			1579	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	0	62	0	23	13	55	132	0	0	118	165
RTOR Reduction (vph)	0	0	48	0	10	0	0	0	0	0	62	0
Lane Group Flow (vph)	167	0	14	0	26	0	55	132	0	0	221	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	15.1		15.1		15.1		39.9	39.9			32.1	
Effective Green, g (s)	15.1		15.1		15.1		39.9	39.9			32.1	
Actuated g/C Ratio	0.22		0.22		0.22		0.59	0.59			0.48	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	284		330		369		593	1026			753	
v/s Ratio Prot					0.02		0.01	c0.08			c0.14	
v/s Ratio Perm	c0.13		0.01				0.05					
v/c Ratio	0.59		0.04		0.07		0.09	0.13			0.29	
Uniform Delay, d1	23.3		20.4		20.6		5.9	6.0			10.7	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.7		0.1		0.1		0.1	0.3			1.0	
Delay (s)	27.0		20.5		20.7		6.0	6.3			11.7	
Level of Service	C		C		C		A	A			B	
Approach Delay (s)		25.2			20.7			6.2			11.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

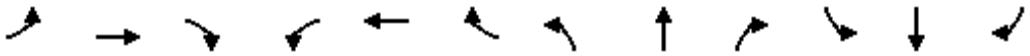
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	170	73	102	103	429	257	520
Future Volume (vph)	55	170	73	102	103	429	257	520
Lane Group Flow (vph)	60	217	79	308	112	562	279	682
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.57	0.62	0.45	0.80	0.32	0.34	0.47	0.32
Control Delay	55.1	41.9	41.6	41.5	15.9	11.1	9.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	41.9	41.6	41.5	15.9	11.1	9.3	8.2
Queue Length 50th (m)	10.6	37.1	13.6	41.2	10.2	26.3	17.1	25.1
Queue Length 95th (m)	22.1	54.6	25.3	64.7	33.6	60.1	35.8	43.4
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	147	480	242	502	347	1654	622	2122
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	0.41	0.45	0.33	0.61	0.32	0.34	0.45	0.32

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	170	29	73	102	181	103	429	88	257	520	108
Future Volume (vph)	55	170	29	73	102	181	103	429	88	257	520	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.90		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1692		1644	1565		1644	3204		1644	3203	
Flt Permitted	0.30	1.00		0.50	1.00		0.39	1.00		0.40	1.00	
Satd. Flow (perm)	526	1692		867	1565		679	3204		685	3203	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	185	32	79	111	197	112	466	96	279	565	117
RTOR Reduction (vph)	0	7	0	0	71	0	0	14	0	0	14	0
Lane Group Flow (vph)	60	210	0	79	237	0	112	548	0	279	668	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.2	20.2		20.2	20.2		51.2	51.2		65.8	65.8	
Effective Green, g (s)	20.2	20.2		20.2	20.2		51.2	51.2		65.8	65.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.51	0.51		0.66	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	106	341		175	316		347	1640		561	2107	
v/s Ratio Prot		0.12			c0.15			0.17		c0.06	0.21	
v/s Ratio Perm	0.11			0.09			0.16			c0.27		
v/c Ratio	0.57	0.62		0.45	0.75		0.32	0.33		0.50	0.32	
Uniform Delay, d1	36.0	36.4		35.0	37.5		14.3	14.4		7.3	7.4	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.69		1.00	1.00	
Incremental Delay, d2	6.8	3.3		1.8	9.4		2.4	0.5		0.7	0.4	
Delay (s)	42.7	39.6		36.9	46.9		12.9	10.4		8.0	7.8	
Level of Service	D	D		D	D		B	B		A	A	
Approach Delay (s)		40.3			44.9			10.8			7.8	
Approach LOS		D			D			B			A	

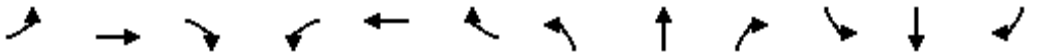
Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	43	323	110	161	134	94	214	138	236
Future Volume (vph)	43	323	110	161	134	94	214	138	236
Lane Group Flow (vph)	47	500	120	175	146	102	482	150	304
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.11	0.58	0.37	0.32	0.26	0.19	0.38	0.34	0.24
Control Delay	18.2	31.0	21.7	29.6	6.2	13.6	12.1	15.2	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	31.0	21.7	29.6	6.2	13.6	12.1	15.2	20.7
Queue Length 50th (m)	5.4	39.3	14.4	27.2	0.0	10.0	16.8	15.1	20.0
Queue Length 95th (m)	12.2	55.8	25.9	46.8	14.1	18.6	29.6	26.1	30.8
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	493	906	336	545	563	560	1267	450	1278
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	0.10	0.55	0.36	0.32	0.26	0.18	0.38	0.33	0.24

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 98.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	323	137	110	161	134	94	214	229	138	236	43
Future Volume (vph)	43	323	137	110	161	134	94	214	229	138	236	43
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3141		1644	1731	1471	1644	3033		1644	3212	
Flt Permitted	0.65	1.00		0.32	1.00	1.00	0.57	1.00		0.40	1.00	
Satd. Flow (perm)	1119	3141		556	1731	1471	980	3033		696	3212	
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)	47	351	149	120	175	146	102	233	249	150	257	47
RTOR Reduction (vph)	0	46	0	0	0	101	0	158	0	0	14	0
Lane Group Flow (vph)	47	454	0	120	175	45	102	324	0	150	290	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	31.4	26.7		38.8	31.1	31.1	43.7	36.7		48.1	38.9	
Effective Green, g (s)	31.4	26.7		38.8	31.1	31.1	43.7	36.7		48.1	38.9	
Actuated g/C Ratio	0.31	0.27		0.39	0.31	0.31	0.43	0.36		0.48	0.39	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	373	833		312	535	454	471	1106		419	1242	
v/s Ratio Prot	0.01	c0.14		c0.03	0.10		0.02	0.11		c0.03	0.09	
v/s Ratio Perm	0.03			0.11		0.03	0.08			c0.14		
v/c Ratio	0.13	0.54		0.38	0.33	0.10	0.22	0.29		0.36	0.23	
Uniform Delay, d1	24.5	31.7		21.0	26.7	24.8	17.2	22.7		15.3	20.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7		0.8	0.4	0.1	0.2	0.7		0.5	0.4	
Delay (s)	24.7	32.5		21.8	27.1	24.9	17.4	23.4		15.8	21.2	
Level of Service	C	C		C	C	C	B	C		B	C	
Approach Delay (s)		31.8			24.9			22.3			19.5	
Approach LOS		C			C			C			B	

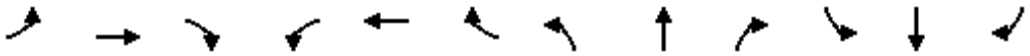
Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	18.9
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	104	168	41	145	44	89	401	107	385
Future Volume (vph)	104	168	41	145	44	89	401	107	385
Lane Group Flow (vph)	113	247	45	158	48	97	527	116	567
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.42	0.60	0.23	0.38	0.12	0.25	0.32	0.21	0.28
Control Delay	36.0	36.8	31.8	33.5	3.3	18.1	15.3	12.0	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	36.8	31.8	33.5	3.3	18.1	15.3	12.0	15.0
Queue Length 50th (m)	17.8	37.8	6.7	24.6	0.0	10.9	30.2	11.5	41.2
Queue Length 95th (m)	33.6	61.9	16.1	42.1	4.1	23.0	43.5	23.7	56.3
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	336	511	247	519	494	386	1643	565	1991
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	0.34	0.48	0.18	0.30	0.10	0.25	0.32	0.21	0.28

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 15: Stanley Ave & Dunn St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	168	59	41	145	44	89	401	84	107	385	137
Future Volume (vph)	104	168	59	41	145	44	89	401	84	107	385	137
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1663		1644	1731	1471	1644	3203		1644	3158	
Flt Permitted	0.65	1.00		0.48	1.00	1.00	0.44	1.00		0.41	1.00	
Satd. Flow (perm)	1122	1663		826	1731	1471	760	3203		717	3158	
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)	113	183	64	45	158	48	97	436	91	116	418	149
RTOR Reduction (vph)	0	14	0	0	0	36	0	15	0	0	31	0
Lane Group Flow (vph)	113	233	0	45	158	12	97	512	0	116	536	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	24.0	24.0		24.0	24.0	24.0	50.8	50.8		62.0	62.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0	24.0	50.8	50.8		62.0	62.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.51	0.51		0.62	0.62	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	269	399		198	415	353	386	1627		520	1957	
v/s Ratio Prot		c0.14			0.09			c0.16		0.02	c0.17	
v/s Ratio Perm	0.10			0.05		0.01	0.13			0.12		
v/c Ratio	0.42	0.58		0.23	0.38	0.03	0.25	0.31		0.22	0.27	
Uniform Delay, d1	32.1	33.6		30.5	31.8	29.1	13.9	14.4		7.9	8.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.54	1.82	
Incremental Delay, d2	1.1	2.2		0.6	0.6	0.0	1.6	0.5		0.2	0.3	
Delay (s)	33.2	35.8		31.1	32.4	29.1	15.4	14.9		12.4	16.1	
Level of Service	C	D		C	C	C	B	B		B	B	
Approach Delay (s)		35.0			31.5			15.0			15.5	
Approach LOS		C			C			B			B	

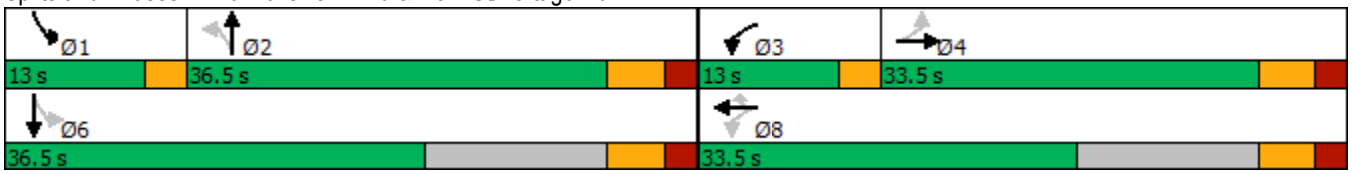
Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

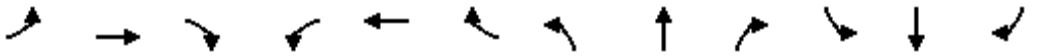
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	215	82	116	192	344	17	310	32	94
Future Volume (vph)	215	82	116	192	344	17	310	32	94
Lane Group Flow (vph)	234	167	126	209	374	18	394	35	132
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.75	0.34	0.25	0.30	0.46	0.04	0.62	0.09	0.18
Control Delay	45.6	20.5	15.4	18.4	4.0	22.3	29.7	14.1	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	8.0	0.0	0.0
Total Delay	45.6	20.5	15.4	18.4	4.1	22.3	37.7	14.1	14.7
Queue Length 50th (m)	37.6	16.5	12.5	23.6	0.0	2.2	59.8	3.3	11.8
Queue Length 95th (m)	#74.2	33.8	23.4	39.8	15.7	7.1	94.4	8.4	23.1
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	365	572	521	863	921	435	638	423	906
Starvation Cap Reductn	0	0	0	0	116	0	201	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	0.64	0.29	0.24	0.24	0.46	0.04	0.90	0.08	0.15

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 83.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





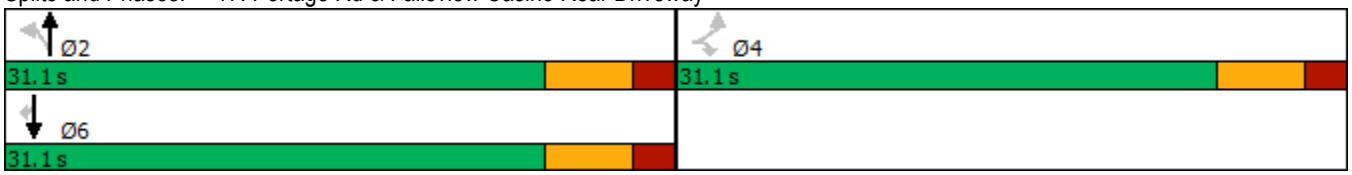
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	82	72	116	192	344	17	310	52	32	94	28
Future Volume (vph)	215	82	72	116	192	344	17	310	52	32	94	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1609		1644	1731	1471	1644	1693		1644	1672	
Flt Permitted	0.63	1.00		0.58	1.00	1.00	0.67	1.00		0.35	1.00	
Satd. Flow (perm)	1085	1609		1002	1731	1471	1164	1693		606	1672	
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)	234	89	78	126	209	374	18	337	57	35	102	30
RTOR Reduction (vph)	0	33	0	0	0	225	0	6	0	0	11	0
Lane Group Flow (vph)	234	134	0	126	209	149	18	388	0	35	121	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	24.0	24.0		33.9	33.9	33.9	31.2	31.2		38.1	38.1	
Effective Green, g (s)	24.0	24.0		33.9	33.9	33.9	31.2	31.2		38.1	38.1	
Actuated g/C Ratio	0.28	0.28		0.40	0.40	0.40	0.37	0.37		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	306	454		451	690	586	427	621		319	749	
v/s Ratio Prot		0.08		0.02	c0.12			c0.23		0.01	c0.07	
v/s Ratio Perm	c0.22			0.09		0.10	0.02			0.04		
v/c Ratio	0.76	0.30		0.28	0.30	0.25	0.04	0.63		0.11	0.16	
Uniform Delay, d1	27.9	23.9		16.7	17.5	17.1	17.3	22.1		14.0	13.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	0.4		0.3	0.2	0.2	0.2	4.7		0.2	0.5	
Delay (s)	38.7	24.2		17.0	17.7	17.3	17.5	26.8		14.2	14.4	
Level of Service	D	C		B	B	B	B	C		B	B	
Approach Delay (s)		32.7			17.4			26.4			14.4	
Approach LOS		C			B			C			B	

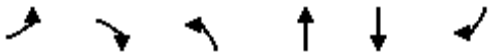
Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	116	264	92	116	321
Future Volume (vph)	87	116	264	92	116	321
Lane Group Flow (vph)	95	126	287	100	126	349
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.16	0.20	0.47	0.11	0.14	0.37
Control Delay	12.7	3.7	17.6	12.4	12.7	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	3.7	17.6	12.4	12.7	3.1
Queue Length 50th (m)	6.6	0.0	25.1	7.0	9.0	0.0
Queue Length 95th (m)	14.6	8.1	48.0	15.1	18.3	13.2
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	706	704	610	902	902	933
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	0.13	0.18	0.47	0.11	0.14	0.37

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

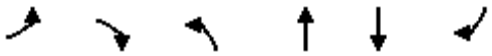
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	87	116	264	92	116	321
Future Volume (vph)	87	116	264	92	116	321
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1170	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	126	287	100	126	349
RTOR Reduction (vph)	0	86	0	0	0	180
Lane Group Flow (vph)	95	40	287	100	126	169
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	19.0	19.0	29.2	29.2	29.2	29.2
Effective Green, g (s)	19.0	19.0	29.2	29.2	29.2	29.2
Actuated g/C Ratio	0.31	0.31	0.48	0.48	0.48	0.48
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	517	462	565	836	836	711
v/s Ratio Prot				0.06	0.07	
v/s Ratio Perm	c0.06	0.03	c0.25			0.11
v/c Ratio	0.18	0.09	0.51	0.12	0.15	0.24
Uniform Delay, d1	15.1	14.6	10.7	8.6	8.7	9.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	3.2	0.3	0.4	0.8
Delay (s)	15.2	14.7	13.9	8.8	9.1	9.9
Level of Service	B	B	B	A	A	A
Approach Delay (s)	14.9			12.6	9.7	
Approach LOS	B			B	A	

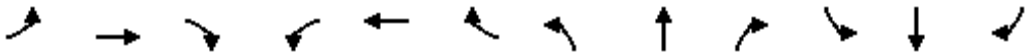
Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	130	0	623	605	33
Future Volume (Veh/h)	0	130	0	623	605	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	141	0	677	658	36
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				55	191	
pX, platoon unblocked	0.97	0.95	0.95			
vC, conflicting volume	1014	347	694			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	747	221	585			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	81	100			
cM capacity (veh/h)	343	753	955			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	141	338	338	439	255
Volume Left	0	0	0	0	0
Volume Right	141	0	0	0	36
cSH	753	1700	1700	1700	1700
Volume to Capacity	0.19	0.20	0.20	0.26	0.15
Queue Length 95th (m)	5.2	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.9	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	34.7%	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)	19	4	6	0	0	0	56	366	134	108	234	79
Future Volume (Veh/h)	19	4	6	0	0	0	56	366	134	108	234	79
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)	21	4	7	0	0	0	61	398	146	117	254	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	852	1197	170	963	1167	272	340			544		
vC1, stage 1 conf vol	531	531		593	593							
vC2, stage 2 conf vol	321	666		370	574							
vCu, unblocked vol	852	1197	170	963	1167	272	340			544		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	99	99	100	100	100	95			89		
cM capacity (veh/h)	384	289	851	360	328	732	1230			1035		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	32	0	61	265	279	117	169	171
Volume Left	21	0	61	0	0	117	0	0
Volume Right	7	0	0	0	146	0	0	86
cSH	417	1700	1230	1700	1700	1035	1700	1700
Volume to Capacity	0.08	0.00	0.05	0.16	0.16	0.11	0.10	0.10
Queue Length 95th (m)	1.9	0.0	1.2	0.0	0.0	2.9	0.0	0.0
Control Delay (s)	14.4	0.0	8.1	0.0	0.0	8.9	0.0	0.0
Lane LOS	B	A	A			A		
Approach Delay (s)	14.4	0.0	0.8			2.3		
Approach LOS	B	A						

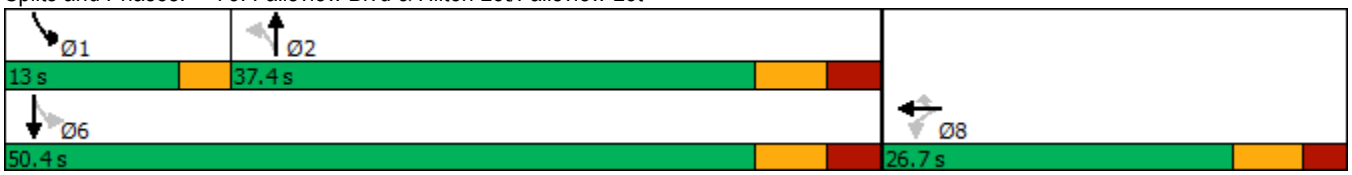
Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	35.5%	ICU Level of Service	A	
Analysis Period (min)	15			

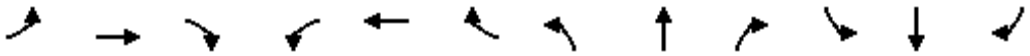
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	93	13	327	160	379
Future Volume (vph)	1	93	13	327	160	379
Lane Group Flow (vph)	36	101	14	432	174	510
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.10	0.25	0.04	0.28	0.25	0.24
Control Delay	20.6	7.1	12.7	12.1	4.8	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	7.1	12.7	12.1	4.8	5.3
Queue Length 50th (m)	3.1	0.0	0.9	14.8	5.7	10.5
Queue Length 95th (m)	9.5	9.7	4.0	25.2	11.1	16.8
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	711	693	503	2020	721	2604
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	0.05	0.15	0.03	0.21	0.24	0.20

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 50.4
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	32	1	93	13	327	71	160	379	90
Future Volume (vph)	0	0	0	32	1	93	13	327	71	160	379	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3200		1644	3193	
Flt Permitted					0.95	1.00	0.46	1.00		0.44	1.00	
Satd. Flow (perm)					1650	1471	803	3200		761	3193	
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)	0	0	0	35	1	101	14	355	77	174	412	98
RTOR Reduction (vph)	0	0	0	0	0	87	0	23	0	0	25	0
Lane Group Flow (vph)	0	0	0	0	36	14	14	409	0	174	485	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.2	7.2	21.7	21.7		31.2	31.2	
Effective Green, g (s)					7.2	7.2	21.7	21.7		31.2	31.2	
Actuated g/C Ratio					0.14	0.14	0.41	0.41		0.59	0.59	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	331	1322		561	1897	
v/s Ratio Prot								0.13		c0.04	0.15	
v/s Ratio Perm					0.02	0.01	0.02			c0.15		
v/c Ratio					0.16	0.07	0.04	0.31		0.31	0.26	
Uniform Delay, d1					20.0	19.7	9.2	10.4		4.9	5.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.5	0.2	0.1	0.2		0.4	0.1	
Delay (s)					20.4	19.9	9.3	10.5		5.4	5.2	
Level of Service					C	B	A	B		A	A	
Approach Delay (s)		0.0			20.1			10.5			5.2	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	17.1
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	10	60	47	241	45	363	210	495
Future Volume (vph)	19	10	60	47	241	45	363	210	495
Lane Group Flow (vph)	0	45	0	116	262	49	444	228	571
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.24		0.63	0.62	0.08	0.23	0.33	0.27
Control Delay		31.2		55.2	11.6	2.8	11.1	4.4	6.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.2		55.2	11.6	2.8	11.1	4.4	6.9
Queue Length 50th (m)		5.6		21.7	0.0	0.6	26.2	8.1	16.5
Queue Length 95th (m)		14.6		36.7	20.5	5.9	42.4	16.0	28.7
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		380		388	600	712	1971	750	2131
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.12		0.30	0.44	0.07	0.23	0.30	0.27

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 76: Stanley Ave & Dixon St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	10	12	60	47	241	45	363	45	210	495	30
Future Volume (vph)	19	10	12	60	47	241	45	363	45	210	495	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.96			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1625			1683	1471	1644	3234		1644	3260	
Flt Permitted		0.80			0.80	1.00	0.44	1.00		0.47	1.00	
Satd. Flow (perm)		1326			1386	1471	757	3234		816	3260	
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)	21	11	13	65	51	262	49	395	49	228	538	33
RTOR Reduction (vph)	0	11	0	0	0	227	0	6	0	0	2	0
Lane Group Flow (vph)	0	34	0	0	116	35	49	438	0	228	569	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		13.3			13.3	13.3	65.7	60.8		72.7	64.8	
Effective Green, g (s)		13.3			13.3	13.3	65.7	60.8		72.7	64.8	
Actuated g/C Ratio		0.13			0.13	0.13	0.66	0.61		0.73	0.65	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		176			184	195	540	1966		666	2112	
v/s Ratio Prot							0.00	0.14		c0.03	0.17	
v/s Ratio Perm		0.03			c0.08	0.02	0.06			c0.22		
v/c Ratio		0.19			0.63	0.18	0.09	0.22		0.34	0.27	
Uniform Delay, d1		38.6			41.0	38.5	6.1	8.9		4.4	7.5	
Progression Factor		1.00			1.00	1.00	0.65	1.12		0.85	0.79	
Incremental Delay, d2		0.3			5.6	0.3	0.0	0.3		0.2	0.3	
Delay (s)		38.9			46.7	38.8	4.0	10.2		3.9	6.3	
Level of Service		D			D	D	A	B		A	A	
Approach Delay (s)		38.9			41.2			9.6			5.6	
Approach LOS		D			D			A			A	

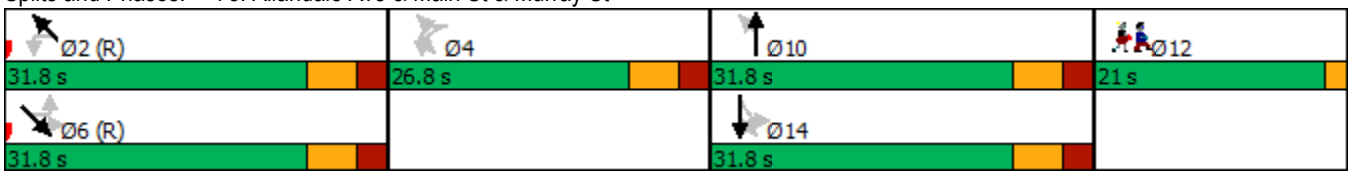
Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	13	4	180	86	26	4	4	14	24	165	1	12
Future Volume (vph)	13	4	180	86	26	4	4	14	24	165	1	12
Lane Group Flow (vph)	0	18	238	0	134	0	0	24	0	205	119	36
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	24.1%	24.1%	24.1%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.09	0.92		0.46			0.07		0.73	0.37	0.10
Control Delay		39.8	85.2		43.3			33.8		57.1	40.4	35.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		39.8	85.2		43.3			33.8		57.1	40.4	35.4
Queue Length 50th (m)		3.3	51.4		25.4			4.0		41.7	22.0	6.3
Queue Length 95th (m)		9.9	#97.3		44.5			11.0		#75.0	39.2	14.9
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		191	258		292			344		279	324	348
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.09	0.92		0.46			0.07		0.73	0.37	0.10

Intersection Summary

Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 90
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

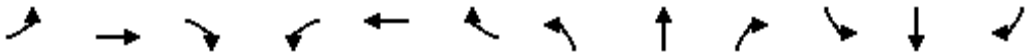
Intersection Summary

Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	4	180	39	86	26	8	4	4	4	14	1
Future Volume (vph)	13	4	180	39	86	26	8	4	4	4	14	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					0.99	
Flt Protected		0.95	1.00			0.97					0.98	
Satd. Flow (prot)		1612	1442			1618					1659	
Flt Permitted		0.63	1.00			0.78					0.91	
Satd. Flow (perm)		1068	1442			1303					1529	
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)	14	4	196	42	93	28	9	4	4	4	15	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	18	238	0	0	134	0	0	0	0	23	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		191	258			292					343	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.17			c0.10					0.02	
v/c Ratio		0.09	0.92			0.46					0.07	
Uniform Delay, d1		38.1	44.9			37.4					34.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.0	39.1			5.1					0.4	
Delay (s)		39.1	84.1			42.5					34.4	
Level of Service		D	F			D					C	
Approach Delay (s)		80.9				42.5					34.4	
Approach LOS		F				D					C	

Intersection Summary			
HCM 2000 Control Delay	57.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	24	165	1	109	12	9	12
Future Volume (vph)	24	165	1	109	12	9	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.85		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1444		1550		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1245	1444		1550		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	179	1	118	13	10	13
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	205	119	0	36	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		25.0	25.0		25.0		
Effective Green, g (s)		25.0	25.0		25.0		
Actuated g/C Ratio		0.22	0.22		0.22		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		279	324		347		
v/s Ratio Prot			0.08		0.02		
v/s Ratio Perm		c0.16					
v/c Ratio		0.73	0.37		0.10		
Uniform Delay, d1		40.1	36.5		34.3		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		15.8	3.2		0.6		
Delay (s)		55.9	39.7		34.9		
Level of Service		E	D		C		
Approach Delay (s)			50.0		34.9		
Approach LOS			D		C		

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	122	0	0	0	41	0	0
Future Volume (Veh/h)	0	0	0	0	0	122	0	0	0	41	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	133	0	0	0	45	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	133			0			66	133	0	66	66	66
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133			0			66	133	0	66	66	66
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1464			1636			932	761	1091	932	828	1003

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	133	0	45
Volume Left	0	0	0	45
Volume Right	0	133	0	0
cSH	1700	1636	1700	932
Volume to Capacity	0.00	0.00	0.39	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	0.0	9.1
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.1
Approach LOS			A	A

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	18.2%	ICU Level of Service		A
Analysis Period (min)	15			

Appendix E

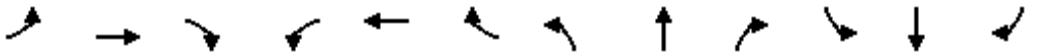
2033 Future Background Conditions Synchro Reports

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	262	148	26	142	159	143
Future Volume (vph)	262	148	26	142	159	143
Lane Group Flow (vph)	285	161	44	154	173	545
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.81	0.31	0.09	0.41	0.19	0.71
Control Delay	42.8	5.3	13.0	10.3	9.2	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	42.8	5.3	13.0	10.3	9.2	19.4
Queue Length 50th (m)	31.2	0.0	2.4	8.8	11.2	36.3
Queue Length 95th (m)	#67.4	11.6	8.9	16.1	20.0	#85.2
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	378	555	506	379	939	772
Starvation Cap Reductn	0	0	0	0	0	107
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.29	0.09	0.41	0.18	0.82

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	0	148	0	26	15	142	159	0	0	143	359
Future Volume (vph)	262	0	148	0	26	15	142	159	0	0	143	359
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1545	
Flt Permitted	0.73		1.00		1.00		0.25	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		424	1731			1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	0	161	0	28	16	154	173	0	0	155	390
RTOR Reduction (vph)	0	0	116	0	12	0	0	0	0	0	127	0
Lane Group Flow (vph)	285	0	45	0	32	0	154	173	0	0	418	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Effective Green, g (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	350		408		457		335	933			629	
v/s Ratio Prot					0.02		c0.04	0.10			c0.27	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.81		0.11		0.07		0.46	0.19			0.66	
Uniform Delay, d1	22.7		18.1		17.9		9.7	7.9			16.2	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.2		0.2		0.1		1.4	0.4			5.5	
Delay (s)	36.8		18.3		18.0		11.1	8.4			21.7	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		30.1			18.0			9.7			21.7	
Approach LOS		C			B			A			C	

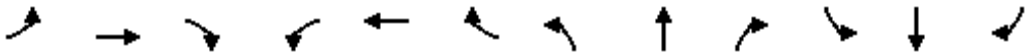
Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	69	178	147	122	186	1020	511	983
Future Volume (vph)	69	178	147	122	186	1020	511	983
Lane Group Flow (vph)	75	308	160	386	202	1335	555	1134
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.64	0.66	0.89	0.78	1.00	0.89	1.59	0.53
Control Delay	57.4	36.6	79.8	36.7	81.5	22.5	304.3	13.0
Queue Delay	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	57.4	36.9	79.8	36.8	81.5	22.5	304.3	13.0
Queue Length 50th (m)	12.5	46.5	28.7	51.0	~44.1	82.3	~140.8	66.1
Queue Length 95th (m)	#31.8	73.8	#63.6	84.3	m#77.9	#168.3	#204.6	83.3
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	131	518	200	543	201	1505	349	2154
Starvation Cap Reductn	0	22	0	5	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	0.57	0.62	0.80	0.72	1.00	0.89	1.59	0.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	178	106	147	122	233	186	1020	208	511	983	61
Future Volume (vph)	69	178	106	147	122	233	186	1020	208	511	983	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.90		1.00	0.97		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)	1785	1774		1785	1694		1785	3479		1785	3539	
Flt Permitted	0.25	1.00		0.38	1.00		0.25	1.00		0.09	1.00	
Satd. Flow (perm)	468	1774		716	1694		471	3479		164	3539	
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)	75	193	115	160	133	253	202	1109	226	555	1068	66
RTOR Reduction (vph)	0	22	0	0	71	0	0	16	0	0	4	0
Lane Group Flow (vph)	75	286	0	160	315	0	202	1319	0	555	1130	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.2	25.2		25.2	25.2		42.8	42.8		60.8	60.8	
Effective Green, g (s)	25.2	25.2		25.2	25.2		42.8	42.8		60.8	60.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.43	0.43		0.61	0.61	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	117	447		180	426		201	1489		342	2151	
v/s Ratio Prot		0.16			0.19			0.38		c0.24	0.32	
v/s Ratio Perm	0.16			c0.22			0.43			c0.74		
v/c Ratio	0.64	0.64		0.89	0.74		1.00	0.89		1.62	0.53	
Uniform Delay, d1	33.4	33.3		36.1	34.4		28.6	26.3		30.8	11.3	
Progression Factor	1.00	1.00		1.00	1.00		0.55	0.54		1.00	1.00	
Incremental Delay, d2	9.5	2.5		36.7	6.0		58.2	6.7		293.4	0.9	
Delay (s)	42.9	35.8		72.8	40.4		73.9	20.8		324.1	12.2	
Level of Service	D	D		E	D		E	C		F	B	
Approach Delay (s)		37.2			49.9			27.8			114.7	
Approach LOS		D			D			C			F	

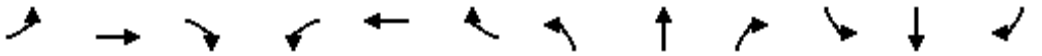
Intersection Summary			
HCM 2000 Control Delay	66.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	523	179	319	173	129	386	170	521
Future Volume (vph)	88	523	179	319	173	129	386	170	521
Lane Group Flow (vph)	96	902	195	347	188	140	771	185	606
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.26	0.93	0.77	0.62	0.31	0.34	0.58	0.54	0.47
Control Delay	19.9	48.1	42.7	37.9	5.9	15.4	20.1	19.7	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	19.9	48.1	42.7	37.9	5.9	15.4	20.4	19.7	26.2
Queue Length 50th (m)	11.3	81.3	24.3	60.8	0.0	13.9	45.0	18.9	47.6
Queue Length 95th (m)	21.3	#118.8	#56.2	92.8	15.9	24.1	63.7	31.2	64.0
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	392	986	254	556	605	430	1334	350	1285
Starvation Cap Reductn	0	0	0	0	0	0	139	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.91	0.77	0.62	0.31	0.33	0.65	0.53	0.47

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 100.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	523	307	179	319	173	129	386	323	170	521	37
Future Volume (vph)	88	523	307	179	319	173	129	386	323	170	521	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.93		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3372		1785	1879	1597	1785	3326		1785	3535	
Flt Permitted	0.39	1.00		0.13	1.00	1.00	0.34	1.00		0.23	1.00	
Satd. Flow (perm)	725	3372		252	1879	1597	642	3326		436	3535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	568	334	195	347	188	140	420	351	185	566	40
RTOR Reduction (vph)	0	83	0	0	0	133	0	147	0	0	5	0
Lane Group Flow (vph)	96	819	0	195	347	55	140	624	0	185	601	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	34.4	27.2		39.6	29.8	29.8	45.0	36.0		46.0	36.5	
Effective Green, g (s)	34.4	27.2		39.6	29.8	29.8	45.0	36.0		46.0	36.5	
Actuated g/C Ratio	0.34	0.27		0.39	0.29	0.29	0.44	0.36		0.45	0.36	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	321	904		246	552	469	386	1180		324	1272	
v/s Ratio Prot	0.02	c0.24		c0.08	0.18		0.03	0.19		c0.05	0.17	
v/s Ratio Perm	0.08			0.23		0.03	0.13			c0.21		
v/c Ratio	0.30	0.91		0.79	0.63	0.12	0.36	0.53		0.57	0.47	
Uniform Delay, d1	23.8	35.9		24.3	31.0	26.2	17.3	26.0		18.0	25.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	12.4		15.9	2.2	0.1	0.6	1.7		2.4	1.3	
Delay (s)	24.3	48.3		40.2	33.3	26.3	17.9	27.7		20.4	26.3	
Level of Service	C	D		D	C	C	B	C		C	C	
Approach Delay (s)		46.0			33.3			26.2			24.9	
Approach LOS		D			C			C			C	

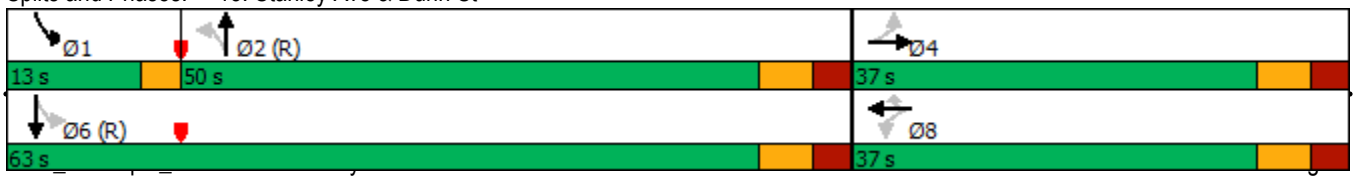
Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	18.9
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

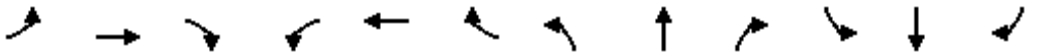
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	256	305	75	355	64	212	861	105	737
Future Volume (vph)	256	305	75	355	64	212	861	105	737
Lane Group Flow (vph)	278	480	82	386	70	230	1070	114	1038
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.55	0.87	0.78	0.69	0.13	1.02	0.67	0.39	0.53
Control Delay	302.9	49.3	79.1	38.2	6.1	94.9	24.1	16.2	21.5
Queue Delay	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0
Total Delay	302.9	49.3	79.1	41.6	6.1	94.9	24.1	16.2	21.5
Queue Length 50th (m)	~76.4	83.9	14.4	65.7	0.0	~44.7	82.0	13.2	99.6
Queue Length 95th (m)	#125.5	#138.8	#41.0	97.7	8.7	#94.8	108.7	m23.0	118.2
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	179	553	105	563	532	226	1589	320	1959
Starvation Cap Reductn	0	0	0	100	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	1.55	0.87	0.78	0.83	0.13	1.02	0.67	0.36	0.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	305	136	75	355	64	212	861	123	105	737	218
Future Volume (vph)	256	305	136	75	355	64	212	861	123	105	737	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1792		1785	1879	1597	1785	3503		1785	3448	
Flt Permitted	0.32	1.00		0.19	1.00	1.00	0.27	1.00		0.15	1.00	
Satd. Flow (perm)	598	1792		354	1879	1597	504	3503		283	3448	
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)	278	332	148	82	386	70	230	936	134	114	801	237
RTOR Reduction (vph)	0	16	0	0	0	49	0	11	0	0	28	0
Lane Group Flow (vph)	278	464	0	82	386	21	230	1059	0	114	1010	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	45.1	45.1		56.0	56.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0	30.0	45.1	45.1		56.0	56.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.45	0.45		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	179	537		106	563	479	227	1579		277	1930	
v/s Ratio Prot		0.26			0.21			0.30		0.03	c0.29	
v/s Ratio Perm	c0.47			0.23		0.01	c0.46			0.20		
v/c Ratio	1.55	0.86		0.77	0.69	0.04	1.01	0.67		0.41	0.52	
Uniform Delay, d1	35.0	33.1		31.9	30.8	24.8	27.4	21.6		13.2	13.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.48	1.59	
Incremental Delay, d2	274.5	13.4		27.9	3.2	0.0	63.2	2.3		0.7	0.9	
Delay (s)	309.5	46.5		59.8	34.0	24.9	90.6	23.9		20.2	22.6	
Level of Service	F	D		E	C	C	F	C		C	C	
Approach Delay (s)		142.9			36.7			35.7			22.3	
Approach LOS		F			D			D			C	

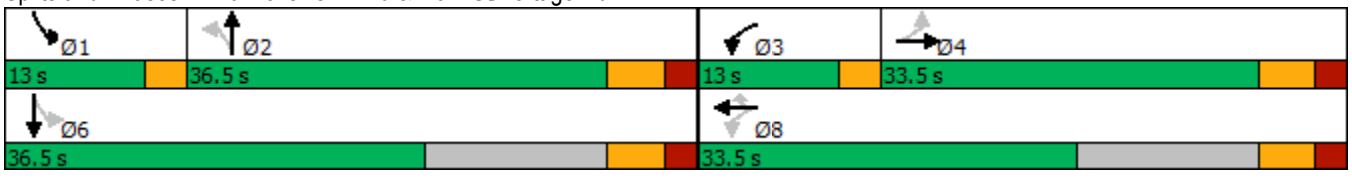
Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

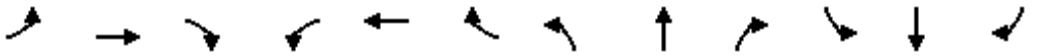
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	167	163	170	250	373	34	326	77	308
Future Volume (vph)	167	163	170	250	373	34	326	77	308
Lane Group Flow (vph)	182	257	185	272	405	37	455	84	372
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.63	0.53	0.40	0.36	0.46	0.11	0.72	0.23	0.45
Control Delay	40.4	30.2	18.5	20.3	3.8	24.6	34.8	15.2	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	51.9	0.0	0.0
Total Delay	40.4	30.2	18.5	20.3	3.8	24.6	86.7	15.2	19.5
Queue Length 50th (m)	28.4	35.2	19.8	32.8	0.0	4.8	72.6	8.1	45.1
Queue Length 95th (m)	51.2	58.9	34.0	52.6	16.5	12.2	#119.9	15.9	68.5
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	344	572	468	863	952	349	636	384	918
Starvation Cap Reductn	0	0	0	0	0	0	220	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	0.53	0.45	0.40	0.32	0.43	0.11	1.09	0.22	0.41

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 89.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





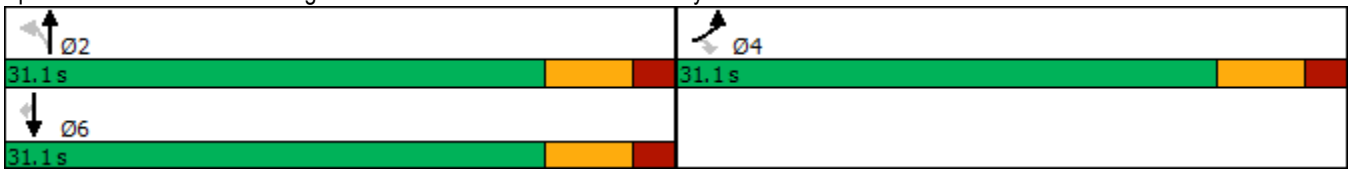
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	163	74	170	250	373	34	326	93	77	308	34
Future Volume (vph)	167	163	74	170	250	373	34	326	93	77	308	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1791		1785	1879	1597	1785	1816		1785	1851	
Flt Permitted	0.59	1.00		0.43	1.00	1.00	0.54	1.00		0.26	1.00	
Satd. Flow (perm)	1112	1791		802	1879	1597	1015	1816		482	1851	
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)	182	177	80	185	272	405	37	354	101	84	335	37
RTOR Reduction (vph)	0	18	0	0	0	242	0	11	0	0	4	0
Lane Group Flow (vph)	182	239	0	185	272	163	37	444	0	84	368	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.2	23.2		36.0	36.0	36.0	30.7	30.7		40.6	40.6	
Effective Green, g (s)	23.2	23.2		36.0	36.0	36.0	30.7	30.7		40.6	40.6	
Actuated g/C Ratio	0.26	0.26		0.40	0.40	0.40	0.34	0.34		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	287	463		429	754	641	347	622		318	838	
v/s Ratio Prot		0.13		c0.05	0.14			c0.24		0.02	c0.20	
v/s Ratio Perm	c0.16			0.13		0.10	0.04			0.10		
v/c Ratio	0.63	0.52		0.43	0.36	0.25	0.11	0.71		0.26	0.44	
Uniform Delay, d1	29.4	28.4		18.3	18.7	17.9	20.1	25.6		15.7	16.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	1.3		1.0	0.4	0.3	0.6	6.9		0.6	1.7	
Delay (s)	34.5	29.7		19.2	19.2	18.1	20.7	32.5		16.3	18.4	
Level of Service	C	C		B	B	B	C	C		B	B	
Approach Delay (s)		31.7			18.7			31.6			18.0	
Approach LOS		C			B			C			B	

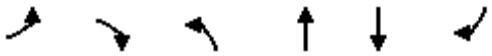
Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	19.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	201	209	17	106	733
Future Volume (vph)	89	201	209	17	106	733
Lane Group Flow (vph)	97	218	227	18	115	797
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.15	0.30	0.41	0.02	0.14	0.70
Control Delay	12.6	3.4	16.1	11.4	12.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.4	16.1	11.4	12.5	5.1
Queue Length 50th (m)	6.8	0.0	18.1	1.2	8.1	0.0
Queue Length 95th (m)	14.7	10.5	34.8	4.4	16.8	18.5
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	756	802	552	809	809	1141
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	0.13	0.27	0.41	0.02	0.14	0.70

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

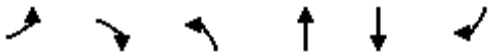
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	201	209	17	106	733
Future Volume (vph)	89	201	209	17	106	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1283	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	218	227	18	115	797
RTOR Reduction (vph)	0	139	0	0	0	454
Lane Group Flow (vph)	97	79	227	18	115	343
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.6	21.6	25.6	25.6	25.6	25.6
Effective Green, g (s)	21.6	21.6	25.6	25.6	25.6	25.6
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	649	580	552	809	809	688
v/s Ratio Prot	c0.05			0.01	0.06	
v/s Ratio Perm		0.05	0.18			c0.22
v/c Ratio	0.15	0.14	0.41	0.02	0.14	0.50
Uniform Delay, d1	12.7	12.7	11.7	9.7	10.2	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	2.3	0.1	0.4	2.6
Delay (s)	12.9	12.8	13.9	9.8	10.6	14.8
Level of Service	B	B	B	A	B	B
Approach Delay (s)	12.8			13.6	14.3	
Approach LOS	B			B	B	

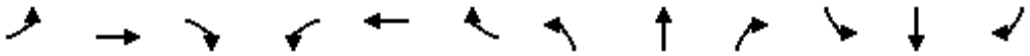
Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	164	0	1286	1255	40
Future Volume (Veh/h)	0	164	0	1286	1255	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)	0	178	0	1398	1364	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)				55	191	
pX, platoon unblocked	0.83	0.82	0.82			
vC, conflicting volume	2084	704	1407			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	900	189	1050			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	74	100			
cM capacity (veh/h)	234	676	548			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	178	699	699	909	498
Volume Left	0	0	0	0	0
Volume Right	178	0	0	0	43
cSH	676	1700	1700	1700	1700
Volume to Capacity	0.26	0.41	0.41	0.53	0.29
Queue Length 95th (m)	8.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	56.7%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	6	0	0	0	78	515	162	175	440	95
Future Volume (Veh/h)	22	5	6	0	0	0	78	515	162	175	440	95
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)	24	5	7	0	0	0	85	560	176	190	478	103
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	1948	2650	880	1752	2613	673	1140			1011		
vC1, stage 1 conf vol	1468	1468		1093	1093							
vC2, stage 2 conf vol	480	1181		658	1520							
vCu, unblocked vol	1948	2650	880	1752	2613	673	1140			1011		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	43	0	95	100	100	100	73			64		
cM capacity (veh/h)	42	4	145	89	4	297	314			525		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	36	0	85	373	363	190	319	262
Volume Left	24	0	85	0	0	190	0	0
Volume Right	7	0	0	0	176	0	0	103
cSH	20	1700	314	1700	1700	525	1700	1700
Volume to Capacity	1.82	0.00	0.27	0.22	0.21	0.36	0.19	0.15
Queue Length 95th (m)	36.7	0.0	8.2	0.0	0.0	12.4	0.0	0.0
Control Delay (s)	801.1	0.0	20.7	0.0	0.0	15.7	0.0	0.0
Lane LOS	F	A	C			C		
Approach Delay (s)	801.1	0.0	2.1			3.9		
Approach LOS	F	A						

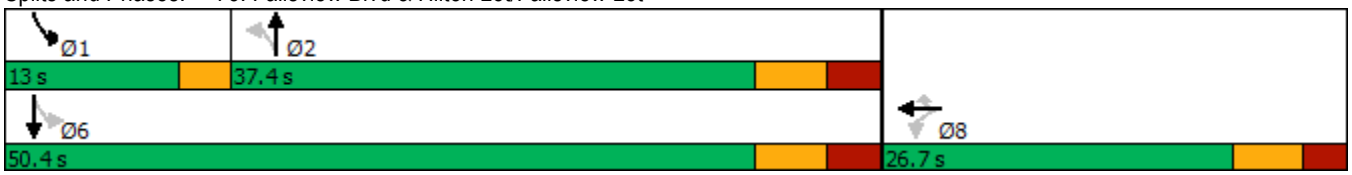
Intersection Summary				
Average Delay	20.6			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

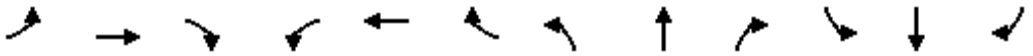
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	112	16	468	193	660
Future Volume (vph)	1	112	16	468	193	660
Lane Group Flow (vph)	42	122	17	601	210	834
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.13	0.32	0.07	0.46	0.34	0.39
Control Delay	22.1	7.9	13.2	14.2	5.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	7.9	13.2	14.2	5.4	6.5
Queue Length 50th (m)	3.7	0.0	1.1	23.4	7.0	21.2
Queue Length 95th (m)	11.5	11.8	4.6	37.1	13.8	32.4
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	632	639	359	1987	648	2566
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	0.07	0.19	0.05	0.30	0.32	0.33

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 53.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	38	1	112	16	468	85	193	660	108
Future Volume (vph)	0	0	0	38	1	112	16	468	85	193	660	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3213		1644	3219	
Flt Permitted					0.95	1.00	0.34	1.00		0.37	1.00	
Satd. Flow (perm)					1650	1471	585	3213		645	3219	
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)	0	0	0	41	1	122	17	509	92	210	717	117
RTOR Reduction (vph)	0	0	0	0	0	105	0	19	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	42	17	17	582	0	210	819	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	21.6	21.6		33.6	33.6	
Effective Green, g (s)					7.6	7.6	21.6	21.6		33.6	33.6	
Actuated g/C Ratio					0.14	0.14	0.39	0.39		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	202	228	1254		554	1955	
v/s Ratio Prot								0.18		0.06	c0.25	
v/s Ratio Perm					0.03	0.01	0.03			0.17		
v/c Ratio					0.19	0.08	0.07	0.46		0.38	0.42	
Uniform Delay, d1					21.1	20.8	10.6	12.5		5.0	5.7	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.5	0.2	0.2	0.4		0.6	0.2	
Delay (s)					21.7	21.1	10.8	12.9		5.6	5.9	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.2			12.9			5.8	
Approach LOS		A			C			B			A	

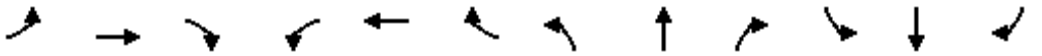
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	17.1
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	14	87	59	318	54	934	304	1077
Future Volume (vph)	34	14	87	59	318	54	934	304	1077
Lane Group Flow (vph)	0	68	0	159	346	59	1086	330	1224
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.33		0.70	0.67	0.19	0.72	0.71	0.61
Control Delay		31.6		54.9	12.1	6.6	25.7	30.0	10.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.6		54.9	12.1	6.6	25.7	30.0	10.3
Queue Length 50th (m)		9.1		29.5	3.8	3.4	97.4	35.3	50.5
Queue Length 95th (m)		19.5		46.2	27.4	m3.0	m111.6	m#71.3	72.0
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		338		376	644	445	1514	466	2016
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.20		0.42	0.54	0.13	0.72	0.71	0.61

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
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.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	14	15	87	59	318	54	934	65	304	1077	49
Future Volume (vph)	34	14	15	87	59	318	54	934	65	304	1077	49
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			1680	1471	1644	3256		1644	3267	
Flt Permitted		0.70			0.78	1.00	0.23	1.00		0.15	1.00	
Satd. Flow (perm)		1171			1346	1471	395	3256		262	3267	
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)	37	15	16	95	64	346	59	1015	71	330	1171	53
RTOR Reduction (vph)	0	12	0	0	0	269	0	5	0	0	2	0
Lane Group Flow (vph)	0	56	0	0	159	77	59	1081	0	330	1222	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.8			16.8	16.8	51.6	46.4		69.2	61.0	
Effective Green, g (s)		16.8			16.8	16.8	51.6	46.4		69.2	61.0	
Actuated g/C Ratio		0.17			0.17	0.17	0.52	0.46		0.69	0.61	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		196			226	247	268	1510		454	1992	
v/s Ratio Prot							0.01	0.33		c0.14	0.37	
v/s Ratio Perm		0.05			c0.12	0.05	0.10			c0.36		
v/c Ratio		0.28			0.70	0.31	0.22	0.72		0.73	0.61	
Uniform Delay, d1		36.3			39.3	36.5	12.1	21.5		16.6	12.2	
Progression Factor		1.00			1.00	1.00	0.86	1.04		1.66	0.66	
Incremental Delay, d2		0.5			8.5	0.4	0.1	1.6		4.7	1.3	
Delay (s)		36.8			47.7	37.0	10.6	23.9		32.2	9.3	
Level of Service		D			D	D	B	C		C	A	
Approach Delay (s)		36.8			40.3			23.2			14.2	
Approach LOS		D			D			C			B	

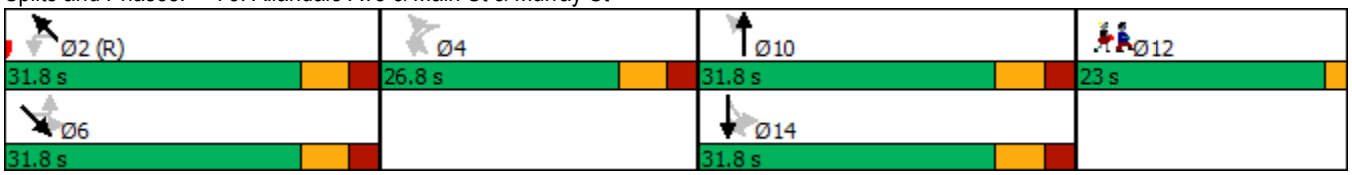
Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	15
Future Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	15
Lane Group Flow (vph)	0	22	357	0	163	0	0	44	0	222	256	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	23.6%	23.6%	23.6%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.12	1.41		0.58			0.15		0.82	0.70	0.13
Control Delay		41.3	240.4		48.7			36.5		66.2	52.2	36.8
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		41.3	240.4		48.7			36.5		66.2	52.2	36.8
Queue Length 50th (m)		4.1	~106.2		32.5			7.7		47.1	52.6	7.9
Queue Length 95th (m)		11.6	#162.6		54.8			17.6		#86.8	81.1	17.6
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		185	254		283			303		272	366	341
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.12	1.41		0.58			0.15		0.82	0.70	0.13

Intersection Summary

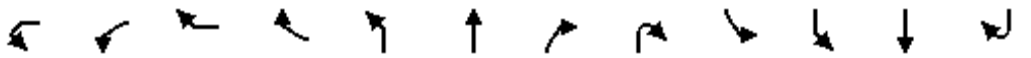
Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 100
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	20%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

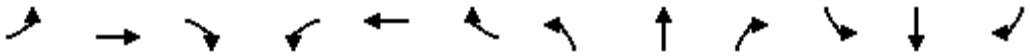


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	274	54	103	32	10	5	7	16	17	1
Future Volume (vph)	16	5	274	54	103	32	10	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					1.00	
Flt Protected		0.95	1.00			0.97					0.97	
Satd. Flow (prot)		1612	1442			1619					1645	
Flt Permitted		0.62	1.00			0.77					0.81	
Satd. Flow (perm)		1051	1442			1284					1372	
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)	17	5	298	59	112	35	11	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	357	0	0	163	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		185	254			283					302	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.13					0.03	
v/c Ratio		0.12	1.41			0.58					0.14	
Uniform Delay, d1		39.3	46.7			39.5					35.6	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.3	204.4			8.3					1.0	
Delay (s)		40.6	251.1			47.7					36.6	
Level of Service		D	F			D					D	
Approach Delay (s)		238.9				47.7					36.6	
Approach LOS		F				D					D	

Intersection Summary			
HCM 2000 Control Delay	116.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	203	206	29	15	11	15
Future Volume (vph)	1	203	206	29	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1665		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1665		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	221	224	32	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	222	256	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		25.0	25.0		25.0		
Effective Green, g (s)		25.0	25.0		25.0		
Actuated g/C Ratio		0.22	0.22		0.22		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		272	367		341		
v/s Ratio Prot			0.15		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.82	0.70		0.13		
Uniform Delay, d1		42.0	40.7		35.5		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		23.0	10.5		0.8		
Delay (s)		65.0	51.2		36.2		
Level of Service		E	D		D		
Approach Delay (s)			57.6		36.2		
Approach LOS			E		D		

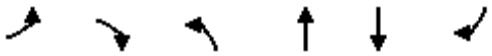
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	0	16	146	0	0	0	49	0	1
Future Volume (Veh/h)	1	14	0	0	16	146	0	0	0	49	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	0	17	159	0	0	0	53	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	176			15			114	193	15	114	114	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	176			15			114	193	15	114	114	96
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	94	100	100
cM capacity (veh/h)	1412			1616			866	705	1070	868	780	965

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	176	0	54
Volume Left	1	0	0	53
Volume Right	0	159	0	1
cSH	1412	1616	1700	870
Volume to Capacity	0.00	0.00	0.39	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.5
Control Delay (s)	0.5	0.0	0.0	9.4
Lane LOS	A		A	A
Approach Delay (s)	0.5	0.0	0.0	9.4
Approach LOS			A	A

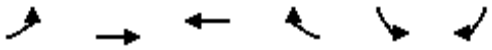
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	20.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1052	1287	0
Future Volume (Veh/h)	0	0	0	1052	1287	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1143	1399	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.88	0.77	0.77			
vC, conflicting volume	1970	700	1399			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	715	13	921			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	325	825	577			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	572	572	933	466
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.34	0.34	0.55	0.27
Queue Length 95th (m)	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
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	332	941	0	0	0
Future Volume (vph)	0	332	941	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	361	1023	0	0	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total (vph)	120	241	682	341	0	0
Volume Left (vph)	0	0	0	0	0	0
Volume Right (vph)	0	0	0	0	0	0
Hadj (s)	0.00	0.00	0.00	0.00	0.00	0.00
Departure Headway (s)	5.5	5.5	4.8	4.8	7.1	7.1
Degree Utilization, x	0.18	0.37	0.91	0.46	0.00	0.00
Capacity (veh/h)	643	641	682	734	487	487
Control Delay (s)	8.5	10.4	35.5	10.6	8.9	8.9
Approach Delay (s)	9.7		27.2		0.0	
Approach LOS	A		D		A	

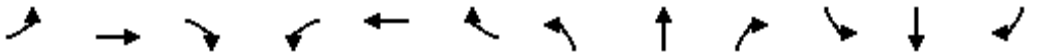
Intersection Summary				
Delay	22.6			
Level of Service	C			
Intersection Capacity Utilization	31.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	263	149	26	143	160	144
Future Volume (vph)	263	149	26	143	160	144
Lane Group Flow (vph)	286	162	44	155	174	549
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.82	0.31	0.09	0.41	0.19	0.72
Control Delay	43.2	5.2	13.0	10.4	9.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.1
Total Delay	43.2	5.2	13.0	10.4	9.2	19.9
Queue Length 50th (m)	31.6	0.0	2.4	8.7	11.1	37.0
Queue Length 95th (m)	#67.6	11.6	8.9	16.2	20.2	#86.9
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	377	554	504	376	939	771
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.29	0.09	0.41	0.19	0.83

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	0	149	0	26	15	143	160	0	0	144	361
Future Volume (vph)	263	0	149	0	26	15	143	160	0	0	144	361
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1545	
Flt Permitted	0.73		1.00		1.00		0.24	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		418	1731			1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	286	0	162	0	28	16	155	174	0	0	157	392
RTOR Reduction (vph)	0	0	117	0	12	0	0	0	0	0	126	0
Lane Group Flow (vph)	286	0	45	0	32	0	155	174	0	0	423	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Effective Green, g (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	350		408		457		332	933			629	
v/s Ratio Prot					0.02		c0.04	0.10			c0.27	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.82		0.11		0.07		0.47	0.19			0.67	
Uniform Delay, d1	22.7		18.1		17.9		9.8	7.9			16.3	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.4		0.2		0.1		1.4	0.4			5.7	
Delay (s)	37.1		18.3		18.0		11.2	8.4			22.0	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		30.3			18.0			9.7			22.0	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	67	209	149	130	182	912	407	1029
Future Volume (vph)	67	209	149	130	182	912	407	1029
Lane Group Flow (vph)	73	342	162	381	198	1206	442	1261
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.54	0.73	0.99	0.78	1.28	0.91	1.38	0.66
Control Delay	47.1	41.0	105.1	38.1	178.5	23.9	213.8	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	41.0	105.1	38.1	178.5	23.9	213.8	15.9
Queue Length 50th (m)	11.9	55.5	30.8	53.1	~50.1	28.9	~99.7	80.8
Queue Length 95th (m)	#27.7	87.2	#70.6	#95.5	m#81.6	#151.7	#158.9	103.3
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	140	478	169	500	155	1322	321	1908
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	0.72	0.96	0.76	1.28	0.91	1.38	0.66

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	209	106	149	130	221	182	912	198	407	1029	132
Future Volume (vph)	67	209	106	149	130	221	182	912	198	407	1029	132
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.91		1.00	0.97		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)	1644	1643		1644	1567		1644	3200		1644	3232	
Flt Permitted	0.29	1.00		0.35	1.00		0.22	1.00		0.09	1.00	
Satd. Flow (perm)	499	1643		605	1567		382	3200		158	3232	
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)	73	227	115	162	141	240	198	991	215	442	1118	143
RTOR Reduction (vph)	0	18	0	0	62	0	0	18	0	0	10	0
Lane Group Flow (vph)	73	324	0	162	319	0	198	1188	0	442	1251	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.2	27.2		27.2	27.2		40.8	40.8		58.8	58.8	
Effective Green, g (s)	27.2	27.2		27.2	27.2		40.8	40.8		58.8	58.8	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.41	0.41		0.59	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	135	446		164	426		155	1305		315	1900	
v/s Ratio Prot		0.20			0.20			0.37		c0.21	0.39	
v/s Ratio Perm	0.15			c0.27			0.52			c0.61		
v/c Ratio	0.54	0.73		0.99	0.75		1.28	0.91		1.40	0.66	
Uniform Delay, d1	31.1	33.0		36.2	33.3		29.6	27.9		30.1	13.8	
Progression Factor	1.00	1.00		1.00	1.00		0.53	0.51		1.00	1.00	
Incremental Delay, d2	4.4	5.8		66.0	7.1		156.3	8.5		199.5	1.8	
Delay (s)	35.4	38.8		102.3	40.4		172.0	22.7		229.6	15.7	
Level of Service	D	D		F	D		F	C		F	B	
Approach Delay (s)		38.2			58.8			43.8			71.2	
Approach LOS		D			E			D			E	

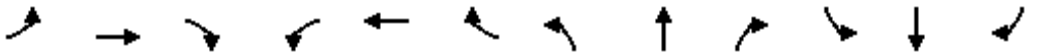
Intersection Summary			
HCM 2000 Control Delay	56.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	500	134	260	165	115	334	170	445
Future Volume (vph)	88	500	134	260	165	115	334	170	445
Lane Group Flow (vph)	96	773	146	283	179	125	666	185	543
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.25	0.90	0.64	0.57	0.33	0.30	0.53	0.51	0.45
Control Delay	19.9	47.6	32.7	36.9	6.3	14.9	18.0	18.7	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	47.6	32.7	36.9	6.3	14.9	18.0	18.7	25.3
Queue Length 50th (m)	11.3	71.6	17.8	48.5	0.0	12.4	35.1	19.1	41.8
Queue Length 95th (m)	21.5	#104.4	#33.1	76.2	15.6	22.1	52.2	31.7	57.5
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	406	896	237	497	550	434	1254	370	1199
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	0.24	0.86	0.62	0.57	0.33	0.29	0.53	0.50	0.45

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 99.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	500	212	134	260	165	115	334	279	170	445	54
Future Volume (vph)	88	500	212	134	260	165	115	334	279	170	445	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3141		1644	1731	1471	1644	3064		1644	3234	
Flt Permitted	0.48	1.00		0.14	1.00	1.00	0.39	1.00		0.29	1.00	
Satd. Flow (perm)	824	3141		245	1731	1471	676	3064		508	3234	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	543	230	146	283	179	125	363	303	185	484	59
RTOR Reduction (vph)	0	46	0	0	0	128	0	147	0	0	9	0
Lane Group Flow (vph)	96	727	0	146	283	51	125	519	0	185	534	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	33.9	26.6		38.1	28.7	28.7	44.9	36.1		46.3	36.8	
Effective Green, g (s)	33.9	26.6		38.1	28.7	28.7	44.9	36.1		46.3	36.8	
Actuated g/C Ratio	0.34	0.26		0.38	0.29	0.29	0.45	0.36		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	337	831		223	494	420	386	1100		341	1184	
v/s Ratio Prot	0.02	c0.23		c0.06	0.16		0.03	0.17		c0.05	0.17	
v/s Ratio Perm	0.08			0.19		0.03	0.12			c0.20		
v/c Ratio	0.28	0.88		0.65	0.57	0.12	0.32	0.47		0.54	0.45	
Uniform Delay, d1	23.6	35.4		23.2	30.7	26.6	16.8	24.8		17.1	24.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	10.2		6.7	1.6	0.1	0.5	1.5		1.8	1.2	
Delay (s)	24.0	45.6		30.0	32.3	26.7	17.3	26.3		18.9	25.4	
Level of Service	C	D		C	C	C	B	C		B	C	
Approach Delay (s)		43.2			30.1			24.9			23.8	
Approach LOS		D			C			C			C	

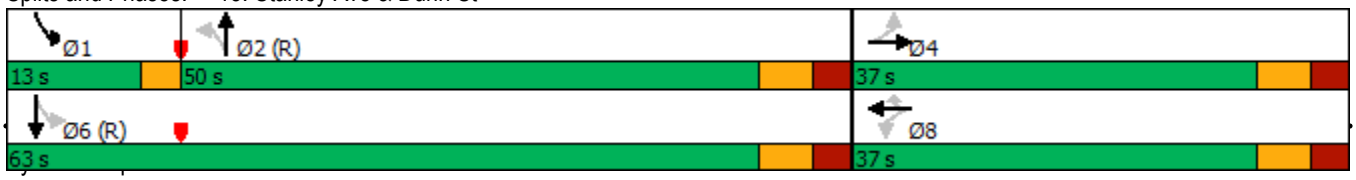
Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	18.9
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

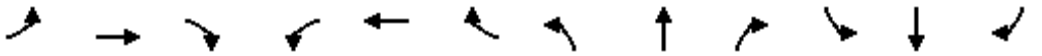
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	304	75	394	69	216	843	158	855
Future Volume (vph)	265	304	75	394	69	216	843	158	855
Lane Group Flow (vph)	288	491	82	428	75	235	1062	172	1197
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	2.15	0.96	0.92	0.82	0.15	1.48	0.75	0.61	0.66
Control Delay	563.7	65.3	114.5	47.5	6.9	273.0	27.2	23.3	24.5
Queue Delay	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0
Total Delay	563.7	65.3	114.5	55.1	6.9	273.0	27.2	23.3	24.5
Queue Length 50th (m)	~89.6	89.4	15.3	76.8	0.0	~63.5	87.7	20.6	116.5
Queue Length 95th (m)	#139.0	#152.8	#44.3	#125.5	9.6	#108.9	113.0	38.6	140.6
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	134	511	89	519	494	159	1420	291	1805
Starvation Cap Reductn	0	0	0	62	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	2.15	0.96	0.92	0.94	0.15	1.48	0.75	0.59	0.66

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ 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.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	304	148	75	394	69	216	843	134	158	855	247
Future Volume (vph)	265	304	148	75	394	69	216	843	134	158	855	247
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1645		1644	1731	1471	1644	3220		1644	3178	
Flt Permitted	0.26	1.00		0.17	1.00	1.00	0.21	1.00		0.15	1.00	
Satd. Flow (perm)	449	1645		300	1731	1471	366	3220		254	3178	
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)	288	330	161	82	428	75	235	916	146	172	929	268
RTOR Reduction (vph)	0	18	0	0	0	53	0	12	0	0	27	0
Lane Group Flow (vph)	288	474	0	82	428	23	235	1050	0	172	1170	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	43.8	43.8		56.0	56.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0	30.0	43.8	43.8		56.0	56.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.44	0.44		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	134	493		90	519	441	160	1410		270	1779	
v/s Ratio Prot		0.29			0.25			0.33		0.06	c0.37	
v/s Ratio Perm	c0.64			0.27		0.02	c0.64			0.30		
v/c Ratio	2.15	0.96		0.91	0.82	0.05	1.47	0.74		0.64	0.66	
Uniform Delay, d1	35.0	34.4		33.7	32.6	24.9	28.1	23.4		14.4	15.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.52	1.54	
Incremental Delay, d2	541.2	30.5		66.1	10.3	0.0	241.7	3.6		4.1	1.6	
Delay (s)	576.2	65.0		99.9	42.8	24.9	269.8	27.0		26.0	25.3	
Level of Service	F	E		F	D	C	F	C		C	C	
Approach Delay (s)		254.0			48.5			71.0			25.4	
Approach LOS		F			D			E			C	

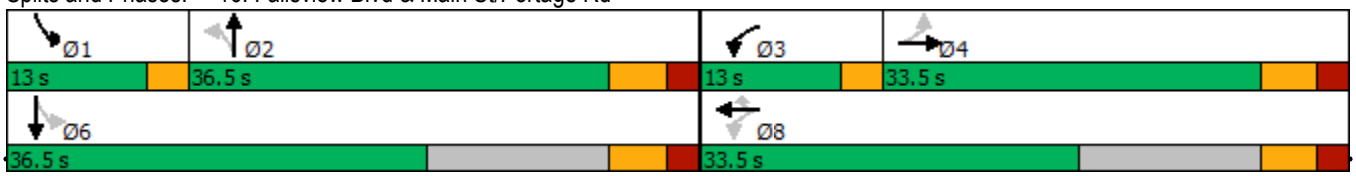
Intersection Summary			
HCM 2000 Control Delay	87.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

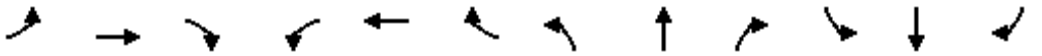
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	262	163	183	267	448	21	433	51	260
Future Volume (vph)	262	163	183	267	448	21	433	51	260
Lane Group Flow (vph)	285	273	199	290	487	23	575	55	320
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.95	0.54	0.45	0.39	0.57	0.07	1.02	0.25	0.44
Control Delay	76.8	29.6	18.7	20.1	7.4	23.4	75.4	16.5	20.3
Queue Delay	0.0	0.0	0.0	0.7	0.5	0.0	31.0	0.0	0.0
Total Delay	76.8	29.6	18.7	20.9	7.9	23.4	106.4	16.5	20.3
Queue Length 50th (m)	50.6	36.9	20.9	34.8	10.9	2.9	~111.6	5.2	37.9
Queue Length 95th (m)	#102.8	63.2	36.5	56.8	38.0	8.7	#179.5	11.6	59.6
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	299	506	452	762	863	323	564	254	809
Starvation Cap Reductn	0	0	0	223	105	0	167	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	0.95	0.54	0.44	0.54	0.64	0.07	1.45	0.22	0.40

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 91.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	163	88	183	267	448	21	433	96	51	260	34
Future Volume (vph)	262	163	88	183	267	448	21	433	96	51	260	34
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1639		1644	1731	1471	1644	1684		1644	1701	
Flt Permitted	0.58	1.00		0.43	1.00	1.00	0.57	1.00		0.12	1.00	
Satd. Flow (perm)	1008	1639		749	1731	1471	980	1684		209	1701	
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)	285	177	96	199	290	487	23	471	104	55	283	37
RTOR Reduction (vph)	0	20	0	0	0	219	0	8	0	0	5	0
Lane Group Flow (vph)	285	253	0	199	290	268	23	567	0	55	315	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	27.1	27.1		39.6	39.6	39.6	30.1	30.1		39.2	39.2	
Effective Green, g (s)	27.1	27.1		39.6	39.6	39.6	30.1	30.1		39.2	39.2	
Actuated g/C Ratio	0.30	0.30		0.43	0.43	0.43	0.33	0.33		0.43	0.43	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	297	483		415	746	634	321	552		184	726	
v/s Ratio Prot		0.15		c0.05	0.17			c0.34		0.02	c0.19	
v/s Ratio Perm	c0.28			0.16		0.18	0.02			0.11		
v/c Ratio	0.96	0.52		0.48	0.39	0.42	0.07	1.03		0.30	0.43	
Uniform Delay, d1	31.8	27.0		17.3	17.8	18.2	21.2	30.8		19.4	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.8	1.0		0.9	0.3	0.5	0.4	45.4		0.9	1.9	
Delay (s)	72.6	28.0		18.2	18.2	18.6	21.7	76.2		20.3	20.4	
Level of Service	E	C		B	B	B	C	E		C	C	
Approach Delay (s)		50.8			18.4			74.1			20.4	
Approach LOS		D			B			E			C	

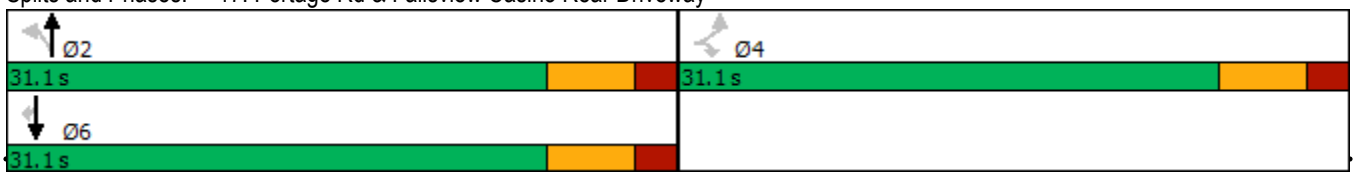
Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

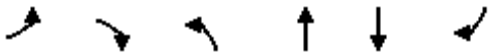
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	249	426	112	141	391
Future Volume (vph)	106	249	426	112	141	391
Lane Group Flow (vph)	115	271	463	122	153	425
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.19	0.38	0.95	0.17	0.21	0.49
Control Delay	13.1	3.7	52.5	12.8	13.1	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	3.7	52.5	12.8	13.1	3.7
Queue Length 50th (m)	8.1	0.0	~52.1	8.7	11.1	0.0
Queue Length 95th (m)	17.1	11.7	#105.6	17.9	21.7	14.4
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	702	784	488	739	739	872
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	0.35	0.95	0.17	0.21	0.49

Intersection Summary

Cycle Length: 62.2
Actuated Cycle Length: 59.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
~ 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.

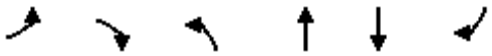
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	249	426	112	141	391
Future Volume (vph)	106	249	426	112	141	391
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1142	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	271	463	122	153	425
RTOR Reduction (vph)	0	172	0	0	0	243
Lane Group Flow (vph)	115	99	463	122	153	182
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	21.5	21.5	25.3	25.3	25.3	25.3
Effective Green, g (s)	21.5	21.5	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	599	536	489	742	742	630
v/s Ratio Prot				0.07	0.09	
v/s Ratio Perm	c0.07	0.07	c0.41			0.12
v/c Ratio	0.19	0.18	0.95	0.16	0.21	0.29
Uniform Delay, d1	12.8	12.8	16.2	10.4	10.6	11.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	29.4	0.5	0.6	1.2
Delay (s)	13.0	12.9	45.6	10.8	11.2	12.1
Level of Service	B	B	D	B	B	B
Approach Delay (s)	13.0			38.4	11.9	
Approach LOS	B			D	B	

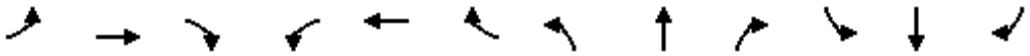
Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	165	0	1295	1263	40
Future Volume (Veh/h)	0	165	0	1295	1263	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)	0	179	0	1408	1373	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)				55	191	
pX, platoon unblocked	0.85	0.76	0.76			
vC, conflicting volume	2098	708	1416			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	664	0	908			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	78	100			
cM capacity (veh/h)	340	826	574			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	704	704	915	501
Volume Left	0	0	0	0	0
Volume Right	179	0	0	0	43
cSH	826	1700	1700	1700	1700
Volume to Capacity	0.22	0.41	0.41	0.54	0.29
Queue Length 95th (m)	6.2	0.0	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.6	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	57.0%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	7	0	0	0	79	519	163	177	442	96
Future Volume (Veh/h)	23	5	7	0	0	0	79	519	163	177	442	96
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)	25	5	8	0	0	0	86	564	177	192	480	104
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	1370	1829	292	1459	1792	370	584			741		
vC1, stage 1 conf vol	916	916		824	824							
vC2, stage 2 conf vol	454	913		634	968							
vCu, unblocked vol	1370	1829	292	1459	1792	370	584			741		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	96	99	100	100	100	91			78		
cM capacity (veh/h)	198	123	710	199	160	632	1001			875		

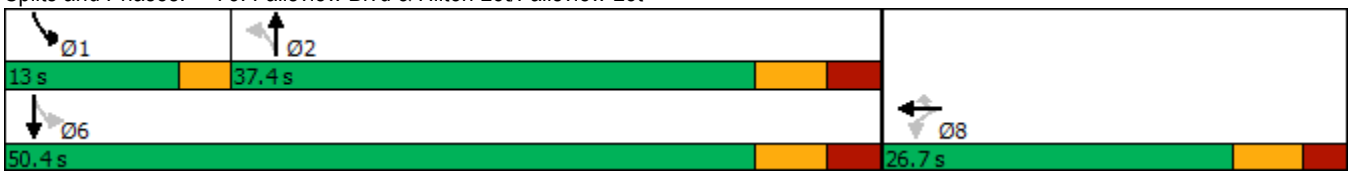
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	0	86	376	365	192	320	264
Volume Left	25	0	86	0	0	192	0	0
Volume Right	8	0	0	0	177	0	0	104
cSH	214	1700	1001	1700	1700	875	1700	1700
Volume to Capacity	0.18	0.00	0.09	0.22	0.21	0.22	0.19	0.16
Queue Length 95th (m)	4.8	0.0	2.1	0.0	0.0	6.3	0.0	0.0
Control Delay (s)	25.5	0.0	8.9	0.0	0.0	10.3	0.0	0.0
Lane LOS	D	A	A			B		
Approach Delay (s)	25.5	0.0	0.9			2.5		
Approach LOS	D	A						

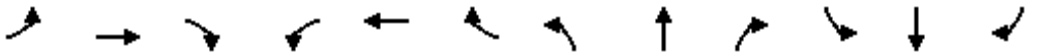
Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	45.2%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	113	16	472	195	664
Future Volume (vph)	1	113	16	472	195	664
Lane Group Flow (vph)	43	123	17	608	212	842
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.13	0.32	0.07	0.47	0.34	0.39
Control Delay	22.2	7.9	13.2	14.2	5.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	7.9	13.2	14.2	5.4	6.5
Queue Length 50th (m)	3.8	0.0	1.1	23.7	7.1	21.5
Queue Length 95th (m)	11.8	11.8	4.6	37.6	13.9	32.8
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	631	639	356	1985	646	2563
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	0.07	0.19	0.05	0.31	0.33	0.33

Intersection Summary
Cycle Length: 77.1
Actuated Cycle Length: 53.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	39	1	113	16	472	87	195	664	110
Future Volume (vph)	0	0	0	39	1	113	16	472	87	195	664	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3211		1644	3218	
Flt Permitted					0.95	1.00	0.34	1.00		0.37	1.00	
Satd. Flow (perm)					1650	1471	580	3211		641	3218	
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)	0	0	0	42	1	123	17	513	95	212	722	120
RTOR Reduction (vph)	0	0	0	0	0	106	0	20	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	43	17	17	588	0	212	827	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	21.6	21.6		33.7	33.7	
Effective Green, g (s)					7.6	7.6	21.6	21.6		33.7	33.7	
Actuated g/C Ratio					0.14	0.14	0.39	0.39		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	226	1251		554	1957	
v/s Ratio Prot								0.18		0.06	c0.26	
v/s Ratio Perm					0.03	0.01	0.03			0.17		
v/c Ratio					0.19	0.08	0.08	0.47		0.38	0.42	
Uniform Delay, d1					21.2	20.9	10.6	12.6		5.0	5.7	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.2	0.2	0.4		0.6	0.2	
Delay (s)					21.7	21.1	10.8	13.0		5.6	5.9	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.3			12.9			5.9	
Approach LOS		A			C			B			A	

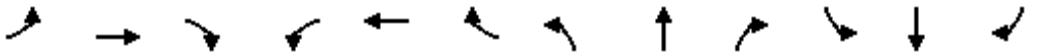
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.4	Sum of lost time (s)	17.1
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	35	14	87	59	322	55	938	306	1083
Future Volume (vph)	35	14	87	59	322	55	938	306	1083
Lane Group Flow (vph)	0	69	0	159	350	60	1092	333	1232
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.33		0.70	0.68	0.20	0.73	0.71	0.61
Control Delay		31.9		55.0	12.6	6.1	23.5	29.7	11.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.9		55.0	12.6	6.1	23.5	29.7	11.2
Queue Length 50th (m)		9.3		29.5	4.5	4.0	97.3	37.0	46.7
Queue Length 95th (m)		19.9		46.2	28.7	m2.4	m104.9	m#72.9	m81.8
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		337		376	644	442	1500	467	2014
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.20		0.42	0.54	0.14	0.73	0.71	0.61

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
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.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	14	15	87	59	322	55	938	66	306	1083	51
Future Volume (vph)	35	14	15	87	59	322	55	938	66	306	1083	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			1680	1471	1644	3256		1644	3266	
Flt Permitted		0.70			0.78	1.00	0.23	1.00		0.15	1.00	
Satd. Flow (perm)		1167			1345	1471	393	3256		255	3266	
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)	38	15	16	95	64	350	60	1020	72	333	1177	55
RTOR Reduction (vph)	0	12	0	0	0	269	0	5	0	0	2	0
Lane Group Flow (vph)	0	57	0	0	159	81	60	1087	0	333	1230	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.8			16.8	16.8	51.1	45.9		69.2	61.0	
Effective Green, g (s)		16.8			16.8	16.8	51.1	45.9		69.2	61.0	
Actuated g/C Ratio		0.17			0.17	0.17	0.51	0.46		0.69	0.61	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		196			225	247	265	1494		458	1992	
v/s Ratio Prot							0.01	0.33		c0.15	0.38	
v/s Ratio Perm		0.05			c0.12	0.06	0.10			c0.36		
v/c Ratio		0.29			0.71	0.33	0.23	0.73		0.73	0.62	
Uniform Delay, d1		36.4			39.3	36.6	12.4	22.0		17.4	12.2	
Progression Factor		1.00			1.00	1.00	0.87	0.98		1.59	0.73	
Incremental Delay, d2		0.5			8.6	0.5	0.0	0.3		4.1	1.2	
Delay (s)		36.8			47.9	37.1	10.8	21.8		31.7	10.1	
Level of Service		D			D	D	B	C		C	B	
Approach Delay (s)		36.8			40.5			21.3			14.7	
Approach LOS		D			D			C			B	

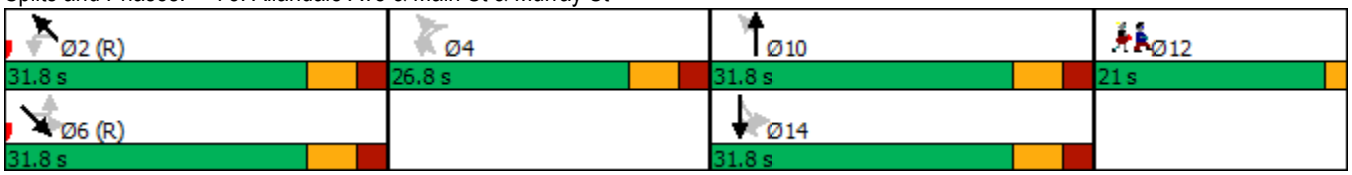
Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Future Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Lane Group Flow (vph)	0	22	358	0	166	0	0	44	0	223	259	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	24.1%	24.1%	24.1%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.12	1.39		0.58			0.14		0.81	0.69	0.13
Control Delay		40.2	232.5		47.7			35.5		63.7	50.7	35.8
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		40.2	232.5		47.7			35.5		63.7	50.7	35.8
Queue Length 50th (m)		4.1	~103.7		32.4			7.6		46.2	52.1	7.7
Queue Length 95th (m)		11.3	#160.0		54.6			17.1		#85.5	80.2	17.2
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		188	258		287			308		277	373	348
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.12	1.39		0.58			0.14		0.81	0.69	0.13

Intersection Summary

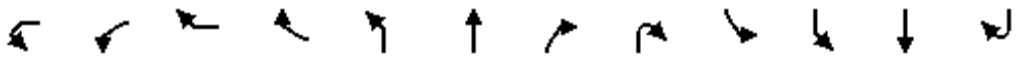
Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 100
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

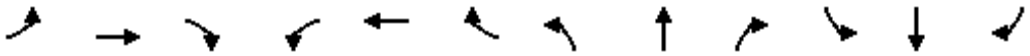


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	275	54	106	32	10	5	7	16	17	1
Future Volume (vph)	16	5	275	54	106	32	10	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					1.00	
Flt Protected		0.95	1.00			0.97					0.97	
Satd. Flow (prot)		1612	1442			1618					1645	
Flt Permitted		0.62	1.00			0.77					0.81	
Satd. Flow (perm)		1050	1442			1282					1371	
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)	17	5	299	59	115	35	11	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	358	0	0	166	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		188	258			287					307	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.13					0.03	
v/c Ratio		0.12	1.39			0.58					0.14	
Uniform Delay, d1		38.3	45.7			38.5					34.6	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.3	196.6			8.2					1.0	
Delay (s)		39.6	242.3			46.7					35.6	
Level of Service		D	F			D					D	
Approach Delay (s)		230.5				46.7					35.6	
Approach LOS		F				D					D	

Intersection Summary			
HCM 2000 Control Delay	112.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	204	208	30	15	11	15
Future Volume (vph)	1	204	208	30	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1664		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1664		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	222	226	33	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	223	259	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		25.0	25.0		25.0		
Effective Green, g (s)		25.0	25.0		25.0		
Actuated g/C Ratio		0.22	0.22		0.22		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		277	373		348		
v/s Ratio Prot			0.16		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.81	0.69		0.13		
Uniform Delay, d1		40.9	39.7		34.5		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		21.5	10.2		0.7		
Delay (s)		62.4	49.9		35.2		
Level of Service		E	D		D		
Approach Delay (s)			55.7		35.2		
Approach LOS			E		D		

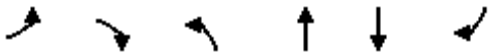
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	0	16	149	0	0	0	50	0	1
Future Volume (Veh/h)	1	14	0	0	16	149	0	0	0	50	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	0	17	162	0	0	0	54	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	179			15			116	196	15	115	115	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			15			116	196	15	115	115	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	94	100	100
cM capacity (veh/h)	1409			1616			864	703	1070	866	778	963

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	179	0	55
Volume Left	1	0	0	54
Volume Right	0	162	0	1
cSH	1409	1616	1700	868
Volume to Capacity	0.00	0.00	0.39	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.5
Control Delay (s)	0.5	0.0	0.0	9.4
Lane LOS	A		A	A
Approach Delay (s)	0.5	0.0	0.0	9.4
Approach LOS			A	A

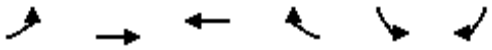
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	20.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1059	1293	0
Future Volume (Veh/h)	0	0	0	1059	1293	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1151	1405	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.88	0.77	0.77			
vC, conflicting volume	1980	702	1405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	640	6	922			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	361	830	575			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	576	576	937	468
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.34	0.34	0.55	0.28
Queue Length 95th (m)	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
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	310	817	0	0	0
Future Volume (Veh/h)	0	310	817	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	337	888	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	888				1056	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888				1056	444
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	771				224	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	112	225	592	296	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	771	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.13	0.35	0.17	0.00	0.00
Queue Length 95th (m)	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
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

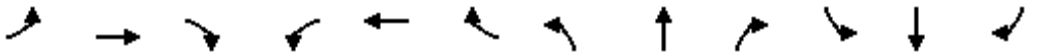
2033 Future Background Conditions Synchro Reports - Mitigated

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	262	148	26	142	159	143
Future Volume (vph)	262	148	26	142	159	143
Lane Group Flow (vph)	285	161	44	154	173	545
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.81	0.31	0.09	0.41	0.19	0.71
Control Delay	42.8	5.3	13.0	10.3	9.2	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	42.8	5.3	13.0	10.3	9.2	19.4
Queue Length 50th (m)	31.2	0.0	2.4	8.8	11.2	36.3
Queue Length 95th (m)	#67.4	11.6	8.9	16.1	20.0	#85.2
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	378	555	506	379	939	772
Starvation Cap Reductn	0	0	0	0	0	107
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.29	0.09	0.41	0.18	0.82

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	0	148	0	26	15	142	159	0	0	143	359
Future Volume (vph)	262	0	148	0	26	15	142	159	0	0	143	359
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1545	
Flt Permitted	0.73		1.00		1.00		0.25	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		424	1731			1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	0	161	0	28	16	154	173	0	0	155	390
RTOR Reduction (vph)	0	0	116	0	12	0	0	0	0	0	127	0
Lane Group Flow (vph)	285	0	45	0	32	0	154	173	0	0	418	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Effective Green, g (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	350		408		457		335	933			629	
v/s Ratio Prot					0.02		c0.04	0.10			c0.27	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.81		0.11		0.07		0.46	0.19			0.66	
Uniform Delay, d1	22.7		18.1		17.9		9.7	7.9			16.2	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.2		0.2		0.1		1.4	0.4			5.5	
Delay (s)	36.8		18.3		18.0		11.1	8.4			21.7	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		30.1			18.0			9.7			21.7	
Approach LOS		C			B			A			C	

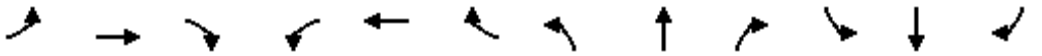
Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	69	178	147	122	186	1020	511	983
Future Volume (vph)	69	178	147	122	186	1020	511	983
Lane Group Flow (vph)	75	308	160	386	202	1335	555	1134
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.64	0.66	0.89	0.78	0.98	0.87	1.68	0.53
Control Delay	57.4	36.6	79.8	36.7	73.1	19.6	342.6	13.0
Queue Delay	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	57.4	36.9	79.8	36.8	73.1	19.6	342.6	13.0
Queue Length 50th (m)	12.5	46.5	28.7	51.0	~43.1	61.1	~144.5	66.1
Queue Length 95th (m)	#31.8	73.8	#63.6	84.3	m#75.5	#164.5	#208.3	83.3
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	131	518	200	543	206	1540	330	2154
Starvation Cap Reductn	0	22	0	5	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	0.57	0.62	0.80	0.72	0.98	0.87	1.68	0.53

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	178	106	147	122	233	186	1020	208	511	983	61
Future Volume (vph)	69	178	106	147	122	233	186	1020	208	511	983	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.90		1.00	0.97		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)	1785	1774		1785	1694		1785	3479		1785	3539	
Flt Permitted	0.25	1.00		0.38	1.00		0.25	1.00		0.09	1.00	
Satd. Flow (perm)	468	1774		716	1694		471	3479		161	3539	
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)	75	193	115	160	133	253	202	1109	226	555	1068	66
RTOR Reduction (vph)	0	22	0	0	71	0	0	16	0	0	4	0
Lane Group Flow (vph)	75	286	0	160	315	0	202	1319	0	555	1130	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.2	25.2		25.2	25.2		43.8	43.8		60.8	60.8	
Effective Green, g (s)	25.2	25.2		25.2	25.2		43.8	43.8		60.8	60.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.44	0.44		0.61	0.61	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	117	447		180	426		206	1523		325	2151	
v/s Ratio Prot		0.16			0.19			0.38		c0.24	0.32	
v/s Ratio Perm	0.16			c0.22			0.43			c0.80		
v/c Ratio	0.64	0.64		0.89	0.74		0.98	0.87		1.71	0.53	
Uniform Delay, d1	33.4	33.3		36.1	34.4		27.7	25.4		30.6	11.3	
Progression Factor	1.00	1.00		1.00	1.00		0.52	0.50		1.00	1.00	
Incremental Delay, d2	9.5	2.5		36.7	6.0		51.1	5.5		331.3	0.9	
Delay (s)	42.9	35.8		72.8	40.4		65.6	18.2		361.9	12.2	
Level of Service	D	D		E	D		E	B		F	B	
Approach Delay (s)		37.2			49.9			24.5			127.1	
Approach LOS		D			D			C			F	

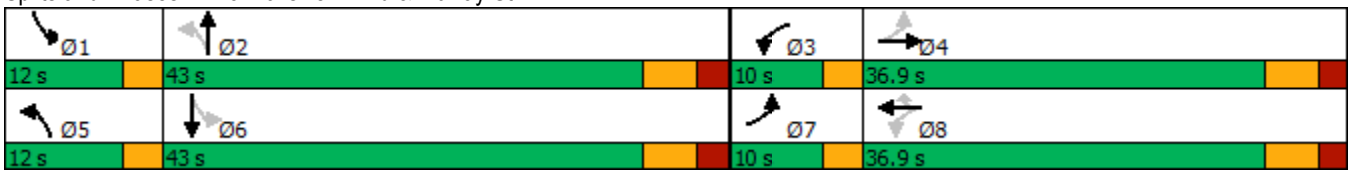
Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

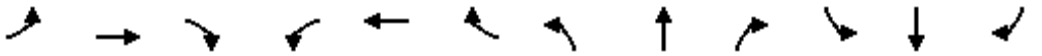
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	523	179	319	173	129	386	170	521
Future Volume (vph)	88	523	179	319	173	129	386	170	521
Lane Group Flow (vph)	96	902	195	347	188	140	771	185	606
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.27	0.86	0.96	0.60	0.30	0.34	0.57	0.55	0.46
Control Delay	19.8	38.4	76.8	35.2	5.4	15.5	19.7	20.0	25.5
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	19.8	39.3	76.8	35.2	5.4	15.5	20.0	20.0	25.5
Queue Length 50th (m)	11.2	76.3	24.1	58.6	0.0	14.1	45.3	19.1	47.6
Queue Length 95th (m)	21.1	100.7	#64.8	87.9	15.0	24.5	63.9	31.6	63.5
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	357	1119	204	586	628	421	1358	344	1308
Starvation Cap Reductn	0	65	0	0	0	0	148	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	0.27	0.86	0.96	0.59	0.30	0.33	0.64	0.54	0.46

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 99.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	523	307	179	319	173	129	386	323	170	521	37
Future Volume (vph)	88	523	307	179	319	173	129	386	323	170	521	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.93		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3372		1785	1879	1597	1785	3326		1785	3535	
Flt Permitted	0.39	1.00		0.13	1.00	1.00	0.34	1.00		0.24	1.00	
Satd. Flow (perm)	725	3372		245	1879	1597	647	3326		450	3535	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	568	334	195	347	188	140	420	351	185	566	40
RTOR Reduction (vph)	0	85	0	0	0	130	0	141	0	0	5	0
Lane Group Flow (vph)	96	817	0	195	347	58	140	630	0	185	601	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	34.7	29.2		37.7	30.7	30.7	44.9	36.5		45.5	36.8	
Effective Green, g (s)	34.7	29.2		37.7	30.7	30.7	44.9	36.5		45.5	36.8	
Actuated g/C Ratio	0.35	0.29		0.38	0.31	0.31	0.45	0.36		0.45	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	308	981		199	575	488	384	1210		319	1296	
v/s Ratio Prot	0.02	0.24		c0.07	0.18		0.03	0.19		c0.05	0.17	
v/s Ratio Perm	0.09			c0.30		0.04	0.13			c0.21		
v/c Ratio	0.31	0.83		0.98	0.60	0.12	0.36	0.52		0.58	0.46	
Uniform Delay, d1	23.1	33.3		26.4	29.6	25.1	16.9	25.0		17.7	24.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	6.1		57.3	1.8	0.1	0.6	1.6		2.6	1.2	
Delay (s)	23.7	39.4		83.6	31.4	25.2	17.5	26.6		20.3	25.4	
Level of Service	C	D		F	C	C	B	C		C	C	
Approach Delay (s)		37.9			43.8			25.2			24.2	
Approach LOS		D			D			C			C	

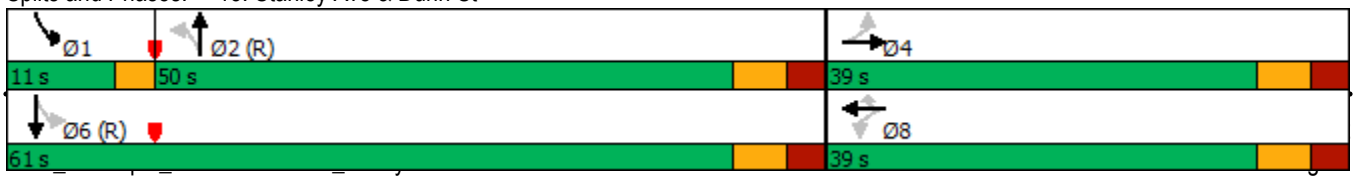
Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.3	Sum of lost time (s)	18.9
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

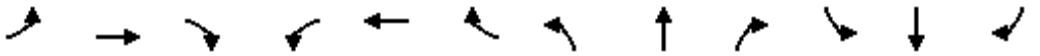
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	256	305	75	355	64	212	861	105	737
Future Volume (vph)	256	305	75	355	64	212	861	105	737
Lane Group Flow (vph)	278	480	82	386	70	230	1070	114	1038
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.36	0.81	0.63	0.64	0.12	1.08	0.70	0.43	0.55
Control Delay	219.2	42.5	52.9	35.0	5.8	117.3	25.5	18.3	23.1
Queue Delay	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0
Total Delay	219.2	42.5	52.9	38.3	5.8	117.3	25.5	18.3	23.1
Queue Length 50th (m)	~71.2	81.1	13.4	63.6	0.0	~50.8	85.5	14.0	100.0
Queue Length 95th (m)	#120.2	#131.1	#35.9	94.6	8.4	#96.2	108.7	m24.1	118.5
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	205	589	131	601	562	212	1537	277	1890
Starvation Cap Reductn	0	0	0	130	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	1.36	0.81	0.63	0.82	0.12	1.08	0.70	0.41	0.55

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	305	136	75	355	64	212	861	123	105	737	218
Future Volume (vph)	256	305	136	75	355	64	212	861	123	105	737	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1792		1785	1879	1597	1785	3503		1785	3448	
Flt Permitted	0.34	1.00		0.22	1.00	1.00	0.26	1.00		0.14	1.00	
Satd. Flow (perm)	640	1792		410	1879	1597	487	3503		269	3448	
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)	278	332	148	82	386	70	230	936	134	114	801	237
RTOR Reduction (vph)	0	16	0	0	0	48	0	11	0	0	28	0
Lane Group Flow (vph)	278	464	0	82	386	22	230	1059	0	114	1010	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.44	0.44		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	204	573		131	601	511	212	1527		257	1861	
v/s Ratio Prot		0.26			0.21			0.30		0.03	c0.29	
v/s Ratio Perm	c0.43			0.20		0.01	c0.47			0.21		
v/c Ratio	1.36	0.81		0.63	0.64	0.04	1.08	0.69		0.44	0.54	
Uniform Delay, d1	34.0	31.2		28.9	29.1	23.4	28.2	22.8		14.3	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.48	1.55	
Incremental Delay, d2	191.5	8.0		7.8	2.1	0.0	86.3	2.6		0.9	1.0	
Delay (s)	225.5	39.2		36.7	31.2	23.5	114.5	25.4		22.1	24.2	
Level of Service	F	D		D	C	C	F	C		C	C	
Approach Delay (s)		107.5			31.0			41.2			24.0	
Approach LOS		F			C			D			C	

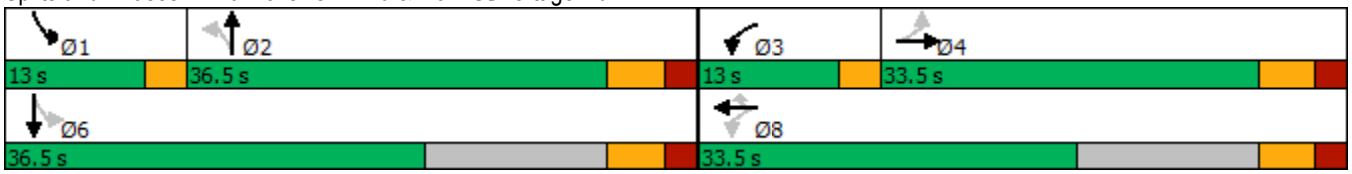
Intersection Summary			
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

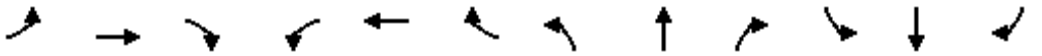
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	167	154	170	250	373	34	326	86	308
Future Volume (vph)	167	154	170	250	373	34	326	86	308
Lane Group Flow (vph)	182	247	185	272	405	37	455	93	372
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.63	0.51	0.39	0.36	0.46	0.11	0.72	0.26	0.45
Control Delay	40.6	29.6	18.5	20.4	3.8	24.6	34.9	15.5	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	52.9	0.0	0.0
Total Delay	40.6	29.6	18.5	20.4	4.0	24.6	87.8	15.5	19.5
Queue Length 50th (m)	28.6	33.5	19.9	33.0	0.0	4.8	73.0	9.0	45.1
Queue Length 95th (m)	51.2	56.4	34.0	52.6	16.5	12.2	#119.9	17.4	68.5
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	344	570	477	862	951	349	635	384	917
Starvation Cap Reductn	0	0	0	0	154	0	220	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	0.53	0.43	0.39	0.32	0.51	0.11	1.10	0.24	0.41

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 89.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





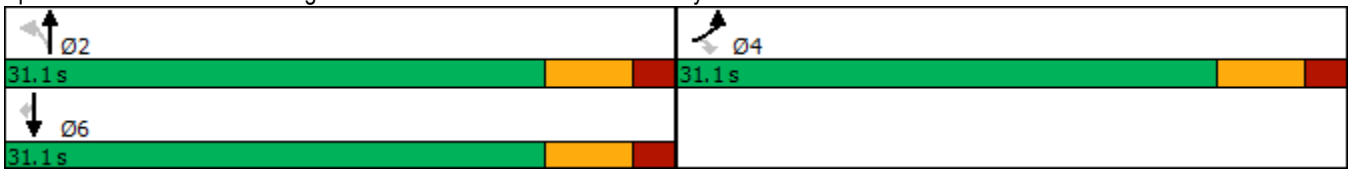
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	154	74	170	250	373	34	326	93	86	308	34
Future Volume (vph)	167	154	74	170	250	373	34	326	93	86	308	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1788		1785	1879	1597	1785	1816		1785	1851	
Flt Permitted	0.59	1.00		0.44	1.00	1.00	0.54	1.00		0.26	1.00	
Satd. Flow (perm)	1112	1788		831	1879	1597	1015	1816		481	1851	
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)	182	167	80	185	272	405	37	354	101	93	335	37
RTOR Reduction (vph)	0	19	0	0	0	242	0	11	0	0	4	0
Lane Group Flow (vph)	182	228	0	185	272	163	37	444	0	93	368	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	23.2	23.2		36.0	36.0	36.0	30.7	30.7		40.7	40.7	
Effective Green, g (s)	23.2	23.2		36.0	36.0	36.0	30.7	30.7		40.7	40.7	
Actuated g/C Ratio	0.26	0.26		0.40	0.40	0.40	0.34	0.34		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	287	462		437	754	640	347	621		320	839	
v/s Ratio Prot		0.13		c0.05	0.14			c0.24		0.02	c0.20	
v/s Ratio Perm	c0.16			0.12		0.10	0.04			0.11		
v/c Ratio	0.63	0.49		0.42	0.36	0.25	0.11	0.72		0.29	0.44	
Uniform Delay, d1	29.5	28.3		18.3	18.8	17.9	20.1	25.7		15.8	16.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	1.1		0.9	0.4	0.3	0.6	6.9		0.7	1.7	
Delay (s)	34.6	29.4		19.2	19.2	18.2	20.8	32.6		16.5	18.4	
Level of Service	C	C		B	B	B	C	C		B	B	
Approach Delay (s)		31.6			18.7			31.7			18.0	
Approach LOS		C			B			C			B	

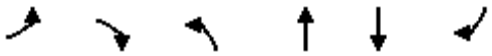
Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	201	209	17	106	733
Future Volume (vph)	89	201	209	17	106	733
Lane Group Flow (vph)	97	218	227	18	115	797
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.15	0.30	0.41	0.02	0.14	0.70
Control Delay	12.6	3.4	16.1	11.4	12.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.4	16.1	11.4	12.5	5.1
Queue Length 50th (m)	6.8	0.0	18.1	1.2	8.1	0.0
Queue Length 95th (m)	14.7	10.5	34.8	4.4	16.8	18.5
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	756	802	552	809	809	1141
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	0.13	0.27	0.41	0.02	0.14	0.70

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

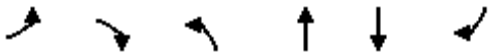
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	201	209	17	106	733
Future Volume (vph)	89	201	209	17	106	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1283	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	218	227	18	115	797
RTOR Reduction (vph)	0	139	0	0	0	454
Lane Group Flow (vph)	97	79	227	18	115	343
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.6	21.6	25.6	25.6	25.6	25.6
Effective Green, g (s)	21.6	21.6	25.6	25.6	25.6	25.6
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	649	580	552	809	809	688
v/s Ratio Prot	c0.05			0.01	0.06	
v/s Ratio Perm		0.05	0.18			c0.22
v/c Ratio	0.15	0.14	0.41	0.02	0.14	0.50
Uniform Delay, d1	12.7	12.7	11.7	9.7	10.2	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	2.3	0.1	0.4	2.6
Delay (s)	12.9	12.8	13.9	9.8	10.6	14.8
Level of Service	B	B	B	A	B	B
Approach Delay (s)	12.8			13.6	14.3	
Approach LOS	B			B	B	

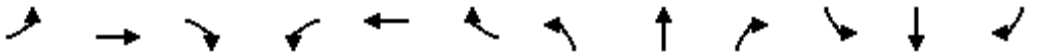
Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.2
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	164	0	1286	1255	40
Future Volume (Veh/h)	0	164	0	1286	1255	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)	0	178	0	1398	1364	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)				55	191	
pX, platoon unblocked	0.82	0.82	0.82			
vC, conflicting volume	2084	704	1407			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	886	189	1050			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	74	100			
cM capacity (veh/h)	237	676	548			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	178	699	699	909	498
Volume Left	0	0	0	0	0
Volume Right	178	0	0	0	43
cSH	676	1700	1700	1700	1700
Volume to Capacity	0.26	0.41	0.41	0.53	0.29
Queue Length 95th (m)	8.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	56.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	15	0	0	0	78	515	162	175	440	95
Future Volume (Veh/h)	22	5	15	0	0	0	78	515	162	175	440	95
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)	24	5	16	0	0	0	85	560	176	190	478	103
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	1948	2650	880	1760	2613	673	1140			1011		
vC1, stage 1 conf vol	1468	1468		1093	1093							
vC2, stage 2 conf vol	480	1181		668	1520							
vCu, unblocked vol	1948	2650	880	1760	2613	673	1140			1011		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	43	0	89	100	100	100	73			64		
cM capacity (veh/h)	42	4	145	83	4	297	314			525		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	0	85	373	363	190	319	262
Volume Left	24	0	85	0	0	190	0	0
Volume Right	16	0	0	0	176	0	0	103
cSH	24	1700	314	1700	1700	525	1700	1700
Volume to Capacity	1.88	0.00	0.27	0.22	0.21	0.36	0.19	0.15
Queue Length 95th (m)	42.8	0.0	8.2	0.0	0.0	12.4	0.0	0.0
Control Delay (s)	764.2	0.0	20.7	0.0	0.0	15.7	0.0	0.0
Lane LOS	F	A	C			C		
Approach Delay (s)	764.2	0.0	2.1			3.9		
Approach LOS	F	A						

Intersection Summary				
Average Delay	23.9			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	770	244	133	597	72	108
Future Volume (Veh/h)	770	244	133	597	72	108
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)	837	265	145	649	78	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	94					
pX, platoon unblocked			0.70		0.70	0.70
vC, conflicting volume			1102		1452	837
vC1, stage 1 conf vol					837	
vC2, stage 2 conf vol					614	
vCu, unblocked vol			928		1430	548
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			72		70	65
cM capacity (veh/h)			519		264	338

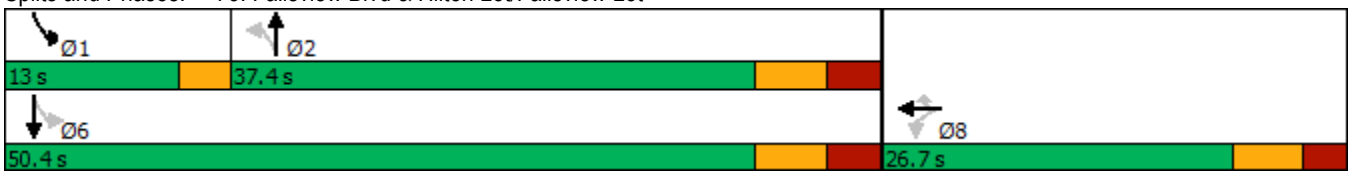
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	837	265	145	324	324	195
Volume Left	0	0	145	0	0	78
Volume Right	0	265	0	0	0	117
cSH	1700	1700	519	1700	1700	304
Volume to Capacity	0.49	0.16	0.28	0.19	0.19	0.64
Queue Length 95th (m)	0.0	0.0	8.6	0.0	0.0	31.3
Control Delay (s)	0.0	0.0	14.6	0.0	0.0	35.8
Lane LOS			B			E
Approach Delay (s)	0.0		2.7			35.8
Approach LOS						E

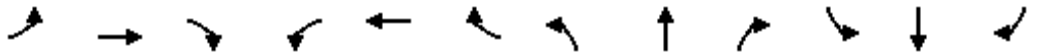
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	112	16	468	193	660
Future Volume (vph)	1	112	16	468	193	660
Lane Group Flow (vph)	42	122	17	601	210	834
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.13	0.32	0.07	0.46	0.34	0.39
Control Delay	22.1	7.9	13.2	14.2	5.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	7.9	13.2	14.2	5.4	6.5
Queue Length 50th (m)	3.7	0.0	1.1	23.4	7.0	21.2
Queue Length 95th (m)	11.5	11.8	4.6	37.1	13.8	32.4
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	632	639	359	1987	648	2566
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	0.07	0.19	0.05	0.30	0.32	0.33

Intersection Summary
Cycle Length: 77.1
Actuated Cycle Length: 53.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	38	1	112	16	468	85	193	660	108
Future Volume (vph)	0	0	0	38	1	112	16	468	85	193	660	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3213		1644	3219	
Flt Permitted					0.95	1.00	0.34	1.00		0.37	1.00	
Satd. Flow (perm)					1650	1471	585	3213		645	3219	
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)	0	0	0	41	1	122	17	509	92	210	717	117
RTOR Reduction (vph)	0	0	0	0	0	105	0	19	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	42	17	17	582	0	210	819	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	21.6	21.6		33.6	33.6	
Effective Green, g (s)					7.6	7.6	21.6	21.6		33.6	33.6	
Actuated g/C Ratio					0.14	0.14	0.39	0.39		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	202	228	1254		554	1955	
v/s Ratio Prot								0.18		0.06	c0.25	
v/s Ratio Perm					0.03	0.01	0.03			0.17		
v/c Ratio					0.19	0.08	0.07	0.46		0.38	0.42	
Uniform Delay, d1					21.1	20.8	10.6	12.5		5.0	5.7	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.5	0.2	0.2	0.4		0.6	0.2	
Delay (s)					21.7	21.1	10.8	12.9		5.6	5.9	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.2			12.9			5.8	
Approach LOS		A			C			B			A	

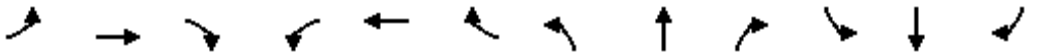
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	17.1
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	14	87	59	318	54	934	304	1077
Future Volume (vph)	34	14	87	59	318	54	934	304	1077
Lane Group Flow (vph)	0	68	0	159	346	59	1086	330	1224
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.33		0.70	0.69	0.20	0.73	0.69	0.61
Control Delay		31.1		54.9	13.7	7.4	26.8	29.6	10.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.1		54.9	13.7	7.4	26.8	29.6	10.4
Queue Length 50th (m)		8.9		29.5	6.2	4.1	99.6	36.4	50.1
Queue Length 95th (m)		19.4		46.2	30.8	m3.1	m115.8	m#73.3	72.5
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		350		390	645	425	1478	476	2016
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.19		0.41	0.54	0.14	0.73	0.69	0.61

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
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.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	14	15	87	59	318	54	934	65	304	1077	49
Future Volume (vph)	34	14	15	87	59	318	54	934	65	304	1077	49
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			1680	1471	1644	3256		1644	3267	
Flt Permitted		0.70			0.78	1.00	0.23	1.00		0.15	1.00	
Satd. Flow (perm)		1171			1346	1471	397	3256		253	3267	
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)	37	15	16	95	64	346	59	1015	71	330	1171	53
RTOR Reduction (vph)	0	13	0	0	0	257	0	5	0	0	2	0
Lane Group Flow (vph)	0	55	0	0	159	89	59	1081	0	330	1222	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.8			16.8	16.8	50.5	45.3		69.2	61.0	
Effective Green, g (s)		16.8			16.8	16.8	50.5	45.3		69.2	61.0	
Actuated g/C Ratio		0.17			0.17	0.17	0.50	0.45		0.69	0.61	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		196			226	247	265	1474		465	1992	
v/s Ratio Prot							0.01	0.33		c0.15	0.37	
v/s Ratio Perm		0.05			c0.12	0.06	0.10			c0.34		
v/c Ratio		0.28			0.70	0.36	0.22	0.73		0.71	0.61	
Uniform Delay, d1		36.3			39.3	36.8	12.7	22.4		17.1	12.2	
Progression Factor		1.00			1.00	1.00	0.95	1.04		1.59	0.67	
Incremental Delay, d2		0.5			8.5	0.5	0.1	1.9		3.9	1.3	
Delay (s)		36.8			47.7	37.4	12.2	25.3		31.1	9.4	
Level of Service		D			D	D	B	C		C	A	
Approach Delay (s)		36.8			40.6			24.6			14.0	
Approach LOS		D			D			C			B	

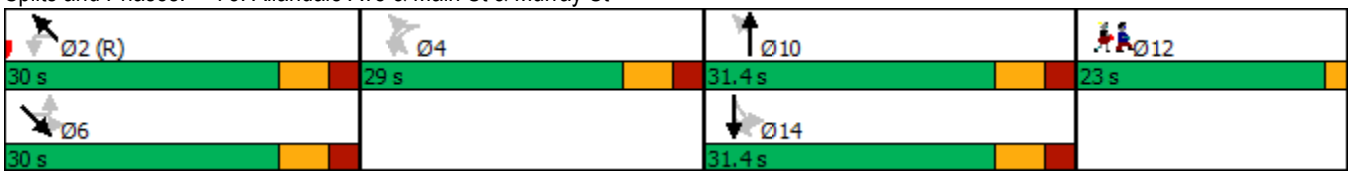
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	15
Future Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	15
Lane Group Flow (vph)	0	22	357	0	163	0	0	44	0	222	256	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	25.6%	25.6%	25.6%	27.7%	27.7%	27.7%	27.7%	27.7%	26.5%	26.5%	26.5%	26.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.27		0.59			0.15		0.88	0.75	0.14
Control Delay		39.2	183.3		49.6			36.9		77.7	57.6	38.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		39.2	183.3		49.6			36.9		77.7	57.6	38.4
Queue Length 50th (m)		4.0	~99.8		32.7			7.8		48.1	53.8	8.0
Queue Length 95th (m)		11.2	#156.1		55.1			17.7		#91.3	#89.6	18.0
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		205	282		278			297		252	340	317
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.11	1.27		0.59			0.15		0.88	0.75	0.14

Intersection Summary

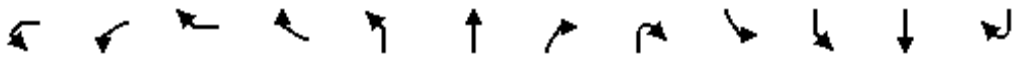
Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 100
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	20%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	274	54	103	32	10	5	7	16	17	1
Future Volume (vph)	16	5	274	54	103	32	10	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					1.00	
Flt Protected		0.95	1.00			0.97					0.97	
Satd. Flow (prot)		1612	1442			1619					1645	
Flt Permitted		0.62	1.00			0.77					0.81	
Satd. Flow (perm)		1051	1442			1284					1370	
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)	17	5	298	59	112	35	11	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	357	0	0	163	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		205	282			278					297	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.13					0.03	
v/c Ratio		0.11	1.27			0.59					0.15	
Uniform Delay, d1		37.5	45.6			39.8					35.9	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.1	144.8			8.8					1.0	
Delay (s)		38.5	190.4			48.6					36.9	
Level of Service		D	F			D					D	
Approach Delay (s)		181.6				48.6					36.9	
Approach LOS		F				D					D	

Intersection Summary			
HCM 2000 Control Delay	100.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

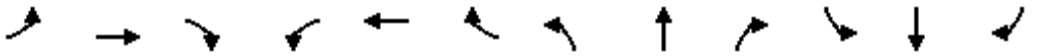
Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	203	206	29	15	11	15
Future Volume (vph)	1	203	206	29	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1665		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1665		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	221	224	32	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	222	256	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		23.2	23.2		23.2		
Effective Green, g (s)		23.2	23.2		23.2		
Actuated g/C Ratio		0.20	0.20		0.20		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		252	340		317		
v/s Ratio Prot			0.15		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.88	0.75		0.14		
Uniform Delay, d1		43.8	42.4		36.9		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		32.8	14.3		0.9		
Delay (s)		76.5	56.7		37.8		
Level of Service		E	E		D		
Approach Delay (s)			65.9		37.8		
Approach LOS			E		D		

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	882	0	0	439	62	37
Future Volume (Veh/h)	882	0	0	439	62	37
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)	959	0	0	477	67	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65			64		
pX, platoon unblocked					0.80	
vC, conflicting volume			959		1436	480
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			959		1420	480
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		35	93
cM capacity (veh/h)			725		104	538

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	480	480	477	107
Volume Left	0	0	0	67
Volume Right	0	0	0	40
cSH	1700	1700	1700	149
Volume to Capacity	0.28	0.28	0.28	0.72
Queue Length 95th (m)	0.0	0.0	0.0	32.3
Control Delay (s)	0.0	0.0	0.0	75.0
Lane LOS				F
Approach Delay (s)	0.0		0.0	75.0
Approach LOS				F

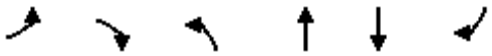
Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	0	16	146	0	0	0	49	0	1
Future Volume (Veh/h)	1	14	0	0	16	146	0	0	0	49	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	0	17	159	0	0	0	53	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	176			15			114	193	15	114	114	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	176			15			114	193	15	114	114	96
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	94	100	100
cM capacity (veh/h)	1412			1616			866	705	1070	868	780	965

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	176	0	54
Volume Left	1	0	0	53
Volume Right	0	159	0	1
cSH	1412	1616	1700	870
Volume to Capacity	0.00	0.00	0.39	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.5
Control Delay (s)	0.5	0.0	0.0	9.4
Lane LOS	A		A	A
Approach Delay (s)	0.5	0.0	0.0	9.4
Approach LOS			A	A

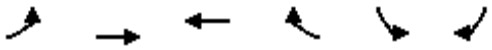
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	20.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1052	1287	0
Future Volume (Veh/h)	0	0	0	1052	1287	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1143	1399	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.88	0.77	0.77			
vC, conflicting volume	1970	700	1399			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	689	13	921			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	339	825	577			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	572	572	933	466
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.34	0.34	0.55	0.27
Queue Length 95th (m)	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
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	332	941	0	0	0
Future Volume (Veh/h)	0	332	941	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	361	1023	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	1023				1204	512
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1023				1204	512
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	686				180	513

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	120	241	682	341	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	686	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.14	0.40	0.20	0.11	0.32
Queue Length 95th (m)	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
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	

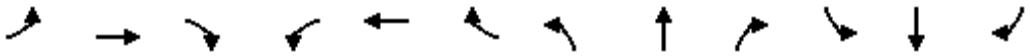
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	263	149	26	143	160	144
Future Volume (vph)	263	149	26	143	160	144
Lane Group Flow (vph)	286	162	44	155	174	549
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.82	0.31	0.09	0.41	0.19	0.72
Control Delay	43.2	5.2	13.0	10.4	9.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.1
Total Delay	43.2	5.2	13.0	10.4	9.2	19.9
Queue Length 50th (m)	31.6	0.0	2.4	8.7	11.1	37.0
Queue Length 95th (m)	#67.6	11.6	8.9	16.2	20.2	#86.9
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	377	554	504	376	939	771
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.29	0.09	0.41	0.19	0.83

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	0	149	0	26	15	143	160	0	0	144	361
Future Volume (vph)	263	0	149	0	26	15	143	160	0	0	144	361
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1545	
Flt Permitted	0.73		1.00		1.00		0.24	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		418	1731			1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	286	0	162	0	28	16	155	174	0	0	157	392
RTOR Reduction (vph)	0	0	117	0	12	0	0	0	0	0	126	0
Lane Group Flow (vph)	286	0	45	0	32	0	155	174	0	0	423	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Effective Green, g (s)	18.7		18.7		18.7		36.3	36.3			27.4	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	350		408		457		332	933			629	
v/s Ratio Prot					0.02		c0.04	0.10			c0.27	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.82		0.11		0.07		0.47	0.19			0.67	
Uniform Delay, d1	22.7		18.1		17.9		9.8	7.9			16.3	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.4		0.2		0.1		1.4	0.4			5.7	
Delay (s)	37.1		18.3		18.0		11.2	8.4			22.0	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		30.3			18.0			9.7			22.0	
Approach LOS		C			B			A			C	

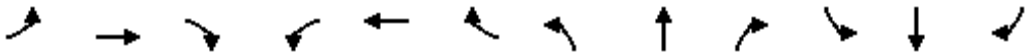
Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	67	209	149	130	182	912	407	1029
Future Volume (vph)	67	209	149	130	182	912	407	1029
Lane Group Flow (vph)	73	342	162	381	198	1206	442	1261
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.54	0.73	0.99	0.78	1.25	0.89	1.45	0.66
Control Delay	47.1	41.0	105.1	38.1	164.7	20.3	245.0	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	41.0	105.1	38.1	164.7	20.3	245.0	15.9
Queue Length 50th (m)	11.9	55.5	30.8	53.1	~49.4	27.9	~103.1	80.8
Queue Length 95th (m)	#27.7	87.2	#70.6	#95.5	m#78.7	#148.3	#162.3	103.3
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	140	478	169	500	159	1353	305	1908
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	0.72	0.96	0.76	1.25	0.89	1.45	0.66

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	209	106	149	130	221	182	912	198	407	1029	132
Future Volume (vph)	67	209	106	149	130	221	182	912	198	407	1029	132
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.91		1.00	0.97		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)	1644	1643		1644	1567		1644	3200		1644	3232	
Flt Permitted	0.29	1.00		0.35	1.00		0.22	1.00		0.09	1.00	
Satd. Flow (perm)	499	1643		605	1567		381	3200		155	3232	
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)	73	227	115	162	141	240	198	991	215	442	1118	143
RTOR Reduction (vph)	0	18	0	0	62	0	0	18	0	0	10	0
Lane Group Flow (vph)	73	324	0	162	319	0	198	1188	0	442	1251	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.2	27.2		27.2	27.2		41.8	41.8		58.8	58.8	
Effective Green, g (s)	27.2	27.2		27.2	27.2		41.8	41.8		58.8	58.8	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.42	0.42		0.59	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	135	446		164	426		159	1337		299	1900	
v/s Ratio Prot		0.20			0.20			0.37		c0.21	0.39	
v/s Ratio Perm	0.15			c0.27			0.52			c0.66		
v/c Ratio	0.54	0.73		0.99	0.75		1.25	0.89		1.48	0.66	
Uniform Delay, d1	31.1	33.0		36.2	33.3		29.1	26.9		29.9	13.8	
Progression Factor	1.00	1.00		1.00	1.00		0.49	0.46		1.00	1.00	
Incremental Delay, d2	4.4	5.8		66.0	7.1		142.5	6.8		232.4	1.8	
Delay (s)	35.4	38.8		102.3	40.4		156.8	19.3		262.3	15.7	
Level of Service	D	D		F	D		F	B		F	B	
Approach Delay (s)		38.2			58.8			38.7			79.7	
Approach LOS		D			E			D			E	

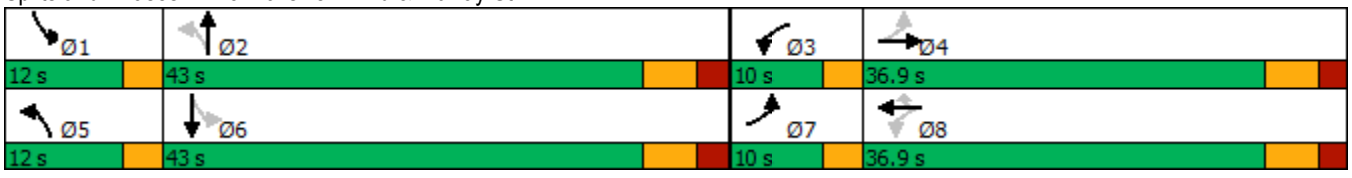
Intersection Summary			
HCM 2000 Control Delay	58.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

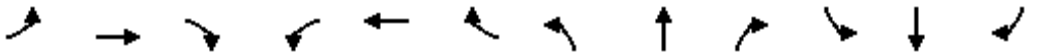
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	500	134	260	165	115	334	170	445
Future Volume (vph)	88	500	134	260	165	115	334	170	445
Lane Group Flow (vph)	96	773	146	283	179	125	666	185	543
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.26	0.84	0.70	0.54	0.32	0.30	0.52	0.52	0.45
Control Delay	19.7	39.6	39.0	34.2	5.8	14.9	17.5	19.0	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	39.6	39.0	34.2	5.8	14.9	17.5	19.0	24.7
Queue Length 50th (m)	11.2	67.4	17.6	46.6	0.0	12.2	34.3	18.8	41.1
Queue Length 95th (m)	21.2	90.0	#34.8	72.2	14.8	22.4	51.9	32.2	57.1
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	375	1021	208	538	580	425	1277	364	1218
Starvation Cap Reductn	0	5	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	0.26	0.76	0.70	0.53	0.31	0.29	0.52	0.51	0.45

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 98.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	500	212	134	260	165	115	334	279	170	445	54
Future Volume (vph)	88	500	212	134	260	165	115	334	279	170	445	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3141		1644	1731	1471	1644	3064		1644	3234	
Flt Permitted	0.48	1.00		0.17	1.00	1.00	0.39	1.00		0.30	1.00	
Satd. Flow (perm)	828	3141		287	1731	1471	676	3064		522	3234	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	543	230	146	283	179	125	363	303	185	484	59
RTOR Reduction (vph)	0	47	0	0	0	125	0	145	0	0	9	0
Lane Group Flow (vph)	96	726	0	146	283	54	125	521	0	185	534	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	33.7	28.2		36.7	29.7	29.7	44.8	36.5		45.6	36.9	
Effective Green, g (s)	33.7	28.2		36.7	29.7	29.7	44.8	36.5		45.6	36.9	
Actuated g/C Ratio	0.34	0.28		0.37	0.30	0.30	0.45	0.37		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	326	892		201	517	439	385	1126		338	1201	
v/s Ratio Prot	0.02	c0.23		c0.05	0.16		0.03	0.17		c0.05	0.17	
v/s Ratio Perm	0.08			0.22		0.04	0.12			c0.20		
v/c Ratio	0.29	0.81		0.73	0.55	0.12	0.32	0.46		0.55	0.44	
Uniform Delay, d1	23.2	33.1		23.3	29.2	25.3	16.3	23.9		16.9	23.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	5.7		12.3	1.2	0.1	0.5	1.4		1.8	1.2	
Delay (s)	23.7	38.8		35.6	30.4	25.4	16.8	25.3		18.7	24.7	
Level of Service	C	D		D	C	C	B	C		B	C	
Approach Delay (s)		37.2			30.2			24.0			23.2	
Approach LOS		D			C			C			C	

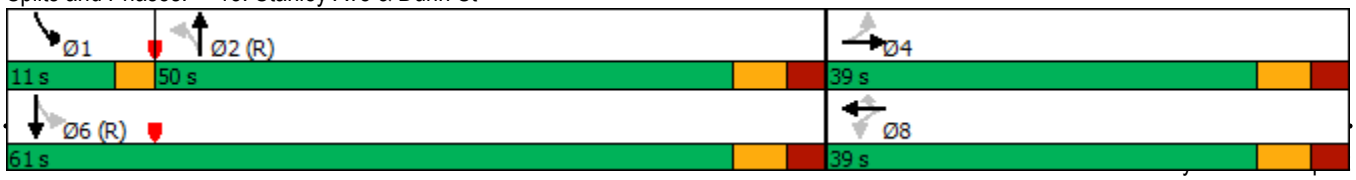
Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	99.3	Sum of lost time (s)	18.9
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

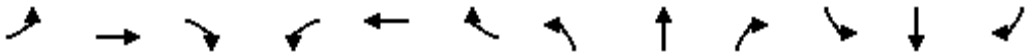
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	304	75	394	69	216	843	158	855
Future Volume (vph)	265	304	75	394	69	216	843	158	855
Lane Group Flow (vph)	288	491	82	428	75	235	1062	172	1197
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.83	0.90	0.73	0.77	0.14	1.60	0.76	0.68	0.69
Control Delay	424.1	52.9	68.7	41.8	6.5	323.4	27.9	30.6	26.5
Queue Delay	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0
Total Delay	424.1	52.9	68.7	49.0	6.5	323.4	27.9	30.6	26.5
Queue Length 50th (m)	~84.8	86.3	14.0	74.4	0.0	~65.4	87.7	21.6	119.8
Queue Length 95th (m)	#134.3	#145.8	#39.5	#118.5	9.3	#84.2	113.0	#45.1	142.7
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	157	544	112	553	522	147	1399	255	1741
Starvation Cap Reductn	0	0	0	88	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	1.83	0.90	0.73	0.92	0.14	1.60	0.76	0.67	0.69

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ 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.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	304	148	75	394	69	216	843	134	158	855	247
Future Volume (vph)	265	304	148	75	394	69	216	843	134	158	855	247
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1645		1644	1731	1471	1644	3220		1644	3178	
Flt Permitted	0.29	1.00		0.20	1.00	1.00	0.20	1.00		0.14	1.00	
Satd. Flow (perm)	494	1645		353	1731	1471	342	3220		248	3178	
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)	288	330	161	82	428	75	235	916	146	172	929	268
RTOR Reduction (vph)	0	18	0	0	0	51	0	13	0	0	27	0
Lane Group Flow (vph)	288	473	0	82	428	24	235	1049	0	172	1170	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.43	0.43		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	158	526		112	553	470	147	1387		244	1716	
v/s Ratio Prot		0.29			0.25			0.33		0.06	c0.37	
v/s Ratio Perm	c0.58			0.23		0.02	c0.69			0.33		
v/c Ratio	1.82	0.90		0.73	0.77	0.05	1.60	0.76		0.70	0.68	
Uniform Delay, d1	34.0	32.5		30.2	30.7	23.5	28.4	24.0		15.5	16.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.73	1.52	
Incremental Delay, d2	394.0	18.1		21.7	6.7	0.0	298.9	3.9		7.6	1.9	
Delay (s)	428.0	50.6		51.9	37.4	23.5	327.3	27.9		34.6	27.3	
Level of Service	F	D		D	D	C	F	C		C	C	
Approach Delay (s)		190.1			37.7			82.2			28.2	
Approach LOS		F			D			F			C	

Intersection Summary			
HCM 2000 Control Delay	78.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	262	154	183	267	448	21	433	60	260
Future Volume (vph)	262	154	183	267	448	21	433	60	260
Lane Group Flow (vph)	285	263	199	290	487	23	575	65	320
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	35.0	35.0	13.0	33.5	33.5	38.0	38.0	10.0	48.0
Total Split (%)	36.5%	36.5%	13.5%	34.9%	34.9%	39.6%	39.6%	10.4%	50.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.95	0.52	0.45	0.39	0.59	0.07	0.96	0.31	0.43
Control Delay	76.6	28.8	19.0	20.6	9.5	23.0	61.2	18.2	20.6
Queue Delay	0.0	0.0	0.0	0.9	0.7	0.0	43.2	0.0	0.0
Total Delay	76.6	28.8	19.0	21.5	10.2	23.0	104.4	18.2	20.6
Queue Length 50th (m)	51.7	35.5	21.5	35.7	17.5	2.9	~113.0	6.4	39.1
Queue Length 95th (m)	#101.3	59.2	35.9	56.1	47.6	8.5	#176.5	13.5	61.3
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	299	509	449	751	827	343	597	209	743
Starvation Cap Reductn	0	0	0	240	117	0	180	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	0.95	0.52	0.44	0.57	0.69	0.07	1.38	0.31	0.43

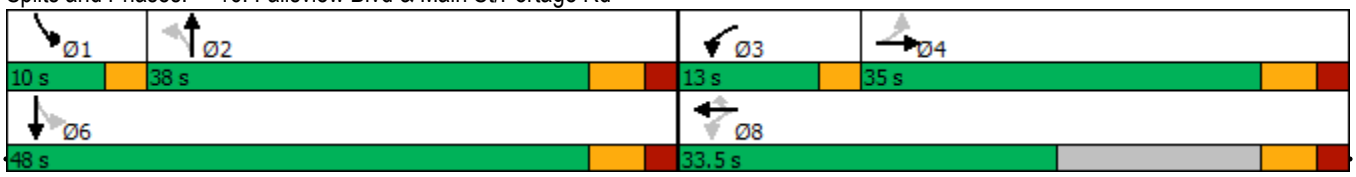
Intersection Summary

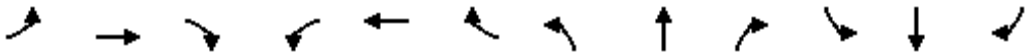
Cycle Length: 96
Actuated Cycle Length: 95.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

~ 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.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





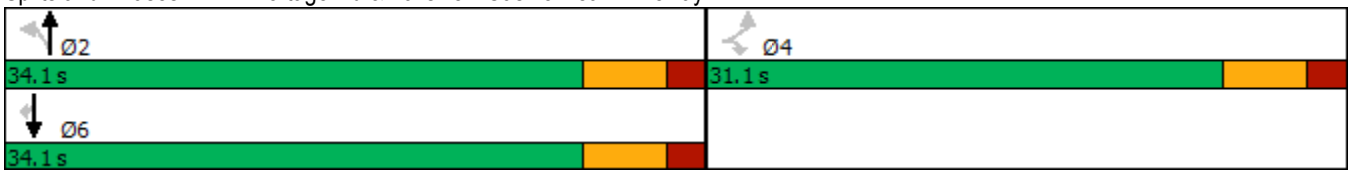
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	154	88	183	267	448	21	433	96	60	260	34
Future Volume (vph)	262	154	88	183	267	448	21	433	96	60	260	34
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1636		1644	1731	1471	1644	1684		1644	1701	
Flt Permitted	0.58	1.00		0.44	1.00	1.00	0.57	1.00		0.13	1.00	
Satd. Flow (perm)	1008	1636		767	1731	1471	980	1684		224	1701	
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)	285	167	96	199	290	487	23	471	104	65	283	37
RTOR Reduction (vph)	0	22	0	0	0	191	0	8	0	0	5	0
Lane Group Flow (vph)	285	241	0	199	290	296	23	567	0	65	315	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Effective Green, g (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Actuated g/C Ratio	0.30	0.30		0.43	0.43	0.43	0.35	0.35		0.44	0.44	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	298	484		416	740	629	340	585		180	743	
v/s Ratio Prot		0.15		0.05	0.17			c0.34		0.02	c0.19	
v/s Ratio Perm	c0.28			0.16		c0.20	0.02			0.14		
v/c Ratio	0.96	0.50		0.48	0.39	0.47	0.07	0.97		0.36	0.42	
Uniform Delay, d1	33.3	28.0		18.4	18.9	19.7	21.0	30.9		19.7	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.1	0.8		0.9	0.3	0.6	0.4	30.4		1.2	1.8	
Delay (s)	73.4	28.8		19.2	19.3	20.3	21.4	61.3		20.9	20.5	
Level of Service	E	C		B	B	C	C	E		C	C	
Approach Delay (s)		52.0			19.8			59.8			20.6	
Approach LOS		D			B			E			C	

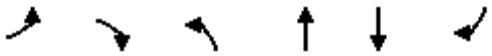
Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	249	426	112	141	391
Future Volume (vph)	106	249	426	112	141	391
Lane Group Flow (vph)	115	271	463	122	153	425
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	34.1	34.1	34.1	34.1
Total Split (%)	47.7%	47.7%	52.3%	52.3%	52.3%	52.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.20	0.39	0.89	0.16	0.19	0.47
Control Delay	14.5	4.0	41.2	12.2	12.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	4.0	41.2	12.2	12.4	3.4
Queue Length 50th (m)	8.9	0.0	51.3	8.7	11.1	0.0
Queue Length 95th (m)	18.5	12.4	#105.5	17.6	21.4	13.9
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	668	758	519	787	787	901
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	0.36	0.89	0.16	0.19	0.47

Intersection Summary
Cycle Length: 65.2
Actuated Cycle Length: 62.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

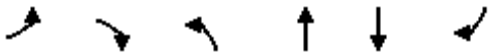
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	249	426	112	141	391
Future Volume (vph)	106	249	426	112	141	391
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1142	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	271	463	122	153	425
RTOR Reduction (vph)	0	177	0	0	0	231
Lane Group Flow (vph)	115	94	463	122	153	194
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	21.6	21.6	28.3	28.3	28.3	28.3
Effective Green, g (s)	21.6	21.6	28.3	28.3	28.3	28.3
Actuated g/C Ratio	0.35	0.35	0.46	0.46	0.46	0.46
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	571	511	520	788	788	670
v/s Ratio Prot				0.07	0.09	
v/s Ratio Perm	c0.07	0.06	c0.41			0.13
v/c Ratio	0.20	0.18	0.89	0.15	0.19	0.29
Uniform Delay, d1	14.2	14.1	15.5	9.9	10.1	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	20.0	0.4	0.5	1.1
Delay (s)	14.4	14.3	35.5	10.3	10.6	11.7
Level of Service	B	B	D	B	B	B
Approach Delay (s)	14.3			30.2	11.4	
Approach LOS	B			C	B	

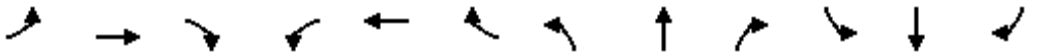
Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	12.2
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	165	0	1295	1263	40
Future Volume (Veh/h)	0	165	0	1295	1263	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)	0	179	0	1408	1373	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)				55	191	
pX, platoon unblocked	0.85	0.76	0.76			
vC, conflicting volume	2098	708	1416			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	647	0	908			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	78	100			
cM capacity (veh/h)	346	826	574			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	704	704	915	501
Volume Left	0	0	0	0	0
Volume Right	179	0	0	0	43
cSH	826	1700	1700	1700	1700
Volume to Capacity	0.22	0.41	0.41	0.54	0.29
Queue Length 95th (m)	6.2	0.0	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.6	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	57.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	16	0	0	0	79	519	163	177	442	96
Future Volume (Veh/h)	23	5	16	0	0	0	79	519	163	177	442	96
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)	25	5	17	0	0	0	86	564	177	192	480	104
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked												
vC, conflicting volume	1370	1829	292	1468	1792	370	584			741		
vC1, stage 1 conf vol	916	916		824	824							
vC2, stage 2 conf vol	454	913		644	968							
vCu, unblocked vol	1370	1829	292	1468	1792	370	584			741		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	96	98	100	100	100	91			78		
cM capacity (veh/h)	198	123	710	194	160	632	1001			875		

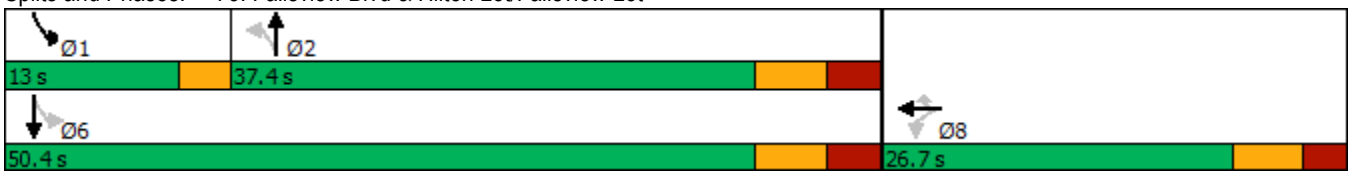
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	47	0	86	376	365	192	320	264
Volume Left	25	0	86	0	0	192	0	0
Volume Right	17	0	0	0	177	0	0	104
cSH	247	1700	1001	1700	1700	875	1700	1700
Volume to Capacity	0.19	0.00	0.09	0.22	0.21	0.22	0.19	0.16
Queue Length 95th (m)	5.2	0.0	2.1	0.0	0.0	6.3	0.0	0.0
Control Delay (s)	23.0	0.0	8.9	0.0	0.0	10.3	0.0	0.0
Lane LOS	C	A	A			B		
Approach Delay (s)	23.0	0.0	0.9			2.5		
Approach LOS	C	A						

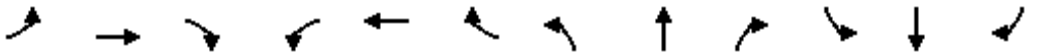
Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	45.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	113	16	472	195	664
Future Volume (vph)	1	113	16	472	195	664
Lane Group Flow (vph)	43	123	17	608	212	842
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.13	0.32	0.07	0.47	0.34	0.39
Control Delay	22.2	7.9	13.2	14.2	5.4	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	7.9	13.2	14.2	5.4	6.5
Queue Length 50th (m)	3.8	0.0	1.1	23.7	7.1	21.5
Queue Length 95th (m)	11.8	11.8	4.6	37.6	13.9	32.8
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	631	639	356	1985	646	2563
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	0.07	0.19	0.05	0.31	0.33	0.33

Intersection Summary
Cycle Length: 77.1
Actuated Cycle Length: 53.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	39	1	113	16	472	87	195	664	110
Future Volume (vph)	0	0	0	39	1	113	16	472	87	195	664	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3211		1644	3218	
Flt Permitted					0.95	1.00	0.34	1.00		0.37	1.00	
Satd. Flow (perm)					1650	1471	580	3211		641	3218	
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)	0	0	0	42	1	123	17	513	95	212	722	120
RTOR Reduction (vph)	0	0	0	0	0	106	0	20	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	43	17	17	588	0	212	827	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	21.6	21.6		33.7	33.7	
Effective Green, g (s)					7.6	7.6	21.6	21.6		33.7	33.7	
Actuated g/C Ratio					0.14	0.14	0.39	0.39		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	226	1251		554	1957	
v/s Ratio Prot								0.18		0.06	c0.26	
v/s Ratio Perm					0.03	0.01	0.03			0.17		
v/c Ratio					0.19	0.08	0.08	0.47		0.38	0.42	
Uniform Delay, d1					21.2	20.9	10.6	12.6		5.0	5.7	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.2	0.2	0.4		0.6	0.2	
Delay (s)					21.7	21.1	10.8	13.0		5.6	5.9	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.3			12.9			5.9	
Approach LOS		A			C			B			A	

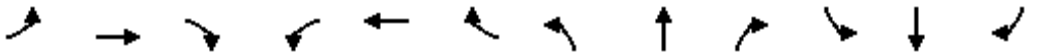
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	55.4	Sum of lost time (s)	17.1
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	35	14	87	59	322	55	938	306	1083
Future Volume (vph)	35	14	87	59	322	55	938	306	1083
Lane Group Flow (vph)	0	69	0	159	350	60	1092	333	1232
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.33		0.70	0.69	0.20	0.75	0.70	0.61
Control Delay		31.9		55.0	14.1	7.0	25.7	29.3	11.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.9		55.0	14.1	7.0	25.7	29.3	11.5
Queue Length 50th (m)		9.3		29.5	6.9	4.2	99.9	38.1	46.6
Queue Length 95th (m)		19.9		46.2	32.0	m2.6	m109.1	m#74.8	m84.2
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		349		390	645	421	1461	479	2014
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.20		0.41	0.54	0.14	0.75	0.70	0.61

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
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.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	14	15	87	59	322	55	938	66	306	1083	51
Future Volume (vph)	35	14	15	87	59	322	55	938	66	306	1083	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			1680	1471	1644	3256		1644	3266	
Flt Permitted		0.70			0.78	1.00	0.23	1.00		0.14	1.00	
Satd. Flow (perm)		1167			1345	1471	393	3256		244	3266	
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)	38	15	16	95	64	350	60	1020	72	333	1177	55
RTOR Reduction (vph)	0	12	0	0	0	257	0	5	0	0	2	0
Lane Group Flow (vph)	0	57	0	0	159	93	60	1087	0	333	1230	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.8			16.8	16.8	49.9	44.7		69.2	61.0	
Effective Green, g (s)		16.8			16.8	16.8	49.9	44.7		69.2	61.0	
Actuated g/C Ratio		0.17			0.17	0.17	0.50	0.45		0.69	0.61	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		196			225	247	261	1455		469	1992	
v/s Ratio Prot							0.01	0.33		c0.15	0.38	
v/s Ratio Perm		0.05			c0.12	0.06	0.10			c0.34		
v/c Ratio		0.29			0.71	0.38	0.23	0.75		0.71	0.62	
Uniform Delay, d1		36.4			39.3	36.9	13.0	23.0		17.9	12.2	
Progression Factor		1.00			1.00	1.00	0.95	1.01		1.53	0.75	
Incremental Delay, d2		0.5			8.6	0.6	0.1	1.1		3.6	1.2	
Delay (s)		36.8			47.9	37.5	12.4	24.4		30.9	10.4	
Level of Service		D			D	D	B	C		C	B	
Approach Delay (s)		36.8			40.7			23.7			14.7	
Approach LOS		D			D			C			B	

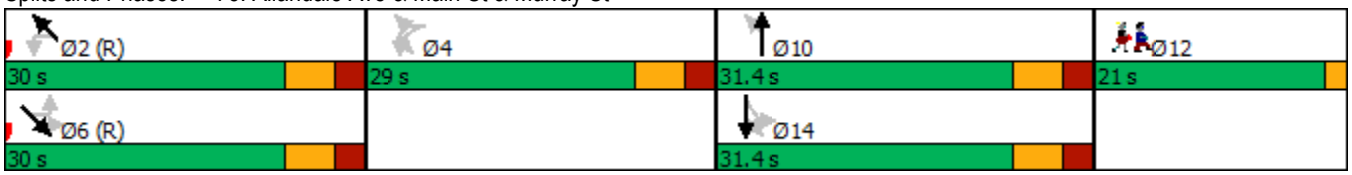
Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Future Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Lane Group Flow (vph)	0	22	358	0	166	0	0	44	0	223	259	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	26.0%	26.0%	26.0%	28.2%	28.2%	28.2%	28.2%	28.2%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.25		0.59			0.15		0.87	0.75	0.14
Control Delay		38.1	175.4		48.4			35.9		74.3	56.1	37.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		38.1	175.4		48.4			35.9		74.3	56.1	37.4
Queue Length 50th (m)		4.0	~97.2		32.5			7.6		47.3	53.2	7.9
Queue Length 95th (m)		11.0	#153.5		54.8			17.2		#90.0	#88.4	17.6
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		209	287		283			303		257	346	323
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.11	1.25		0.59			0.15		0.87	0.75	0.14

Intersection Summary

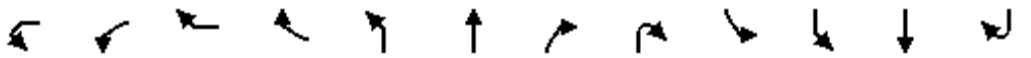
Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 100
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

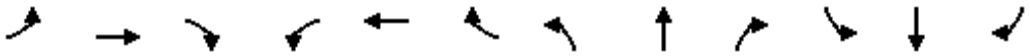


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	275	54	106	32	10	5	7	16	17	1
Future Volume (vph)	16	5	275	54	106	32	10	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.99					1.00	
Flt Protected		0.95	1.00			0.97					0.97	
Satd. Flow (prot)		1612	1442			1618					1645	
Flt Permitted		0.62	1.00			0.77					0.81	
Satd. Flow (perm)		1050	1442			1282					1370	
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)	17	5	299	59	115	35	11	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	358	0	0	166	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		209	287			283					302	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.13					0.03	
v/c Ratio		0.11	1.25			0.59					0.14	
Uniform Delay, d1		36.5	44.6			38.8					34.9	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.0	137.0			8.6					1.0	
Delay (s)		37.5	181.6			47.5					35.9	
Level of Service		D	F			D					D	
Approach Delay (s)		173.3				47.5					35.9	
Approach LOS		F				D					D	

Intersection Summary			
HCM 2000 Control Delay	96.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	204	208	30	15	11	15
Future Volume (vph)	1	204	208	30	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1664		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1664		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	222	226	33	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	223	259	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		23.2	23.2		23.2		
Effective Green, g (s)		23.2	23.2		23.2		
Actuated g/C Ratio		0.21	0.21		0.21		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		257	346		323		
v/s Ratio Prot			0.16		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.87	0.75		0.14		
Uniform Delay, d1		42.6	41.4		35.9		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		30.4	13.8		0.9		
Delay (s)		73.0	55.2		36.8		
Level of Service		E	E		D		
Approach Delay (s)			63.4		36.8		
Approach LOS			E		D		

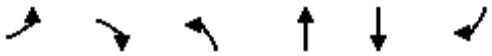
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	0	16	149	0	0	0	50	0	1
Future Volume (Veh/h)	1	14	0	0	16	149	0	0	0	50	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	0	17	162	0	0	0	54	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	179			15			116	196	15	115	115	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			15			116	196	15	115	115	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	94	100	100
cM capacity (veh/h)	1409			1616			864	703	1070	866	778	963

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	179	0	55
Volume Left	1	0	0	54
Volume Right	0	162	0	1
cSH	1409	1616	1700	868
Volume to Capacity	0.00	0.00	0.39	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.5
Control Delay (s)	0.5	0.0	0.0	9.4
Lane LOS	A		A	A
Approach Delay (s)	0.5	0.0	0.0	9.4
Approach LOS			A	A

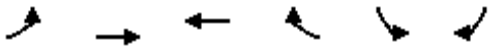
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	20.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1059	1293	0
Future Volume (Veh/h)	0	0	0	1059	1293	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	1151	1405	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.87	0.77	0.77			
vC, conflicting volume	1980	702	1405			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	631	6	922			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	365	830	575			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	0	576	576	937	468
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.34	0.34	0.55	0.28
Queue Length 95th (m)	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
Lane LOS	A	A					
Approach Delay (s)	0.0		0.0			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	310	817	0	0	0
Future Volume (Veh/h)	0	310	817	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	337	888	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	888				1056	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888				1056	444
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	771				224	567

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	112	225	592	296	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	771	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.13	0.35	0.17	0.11	0.32
Queue Length 95th (m)	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
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G

ITE Trip Generation Manual Source Data

Hotel
(310)

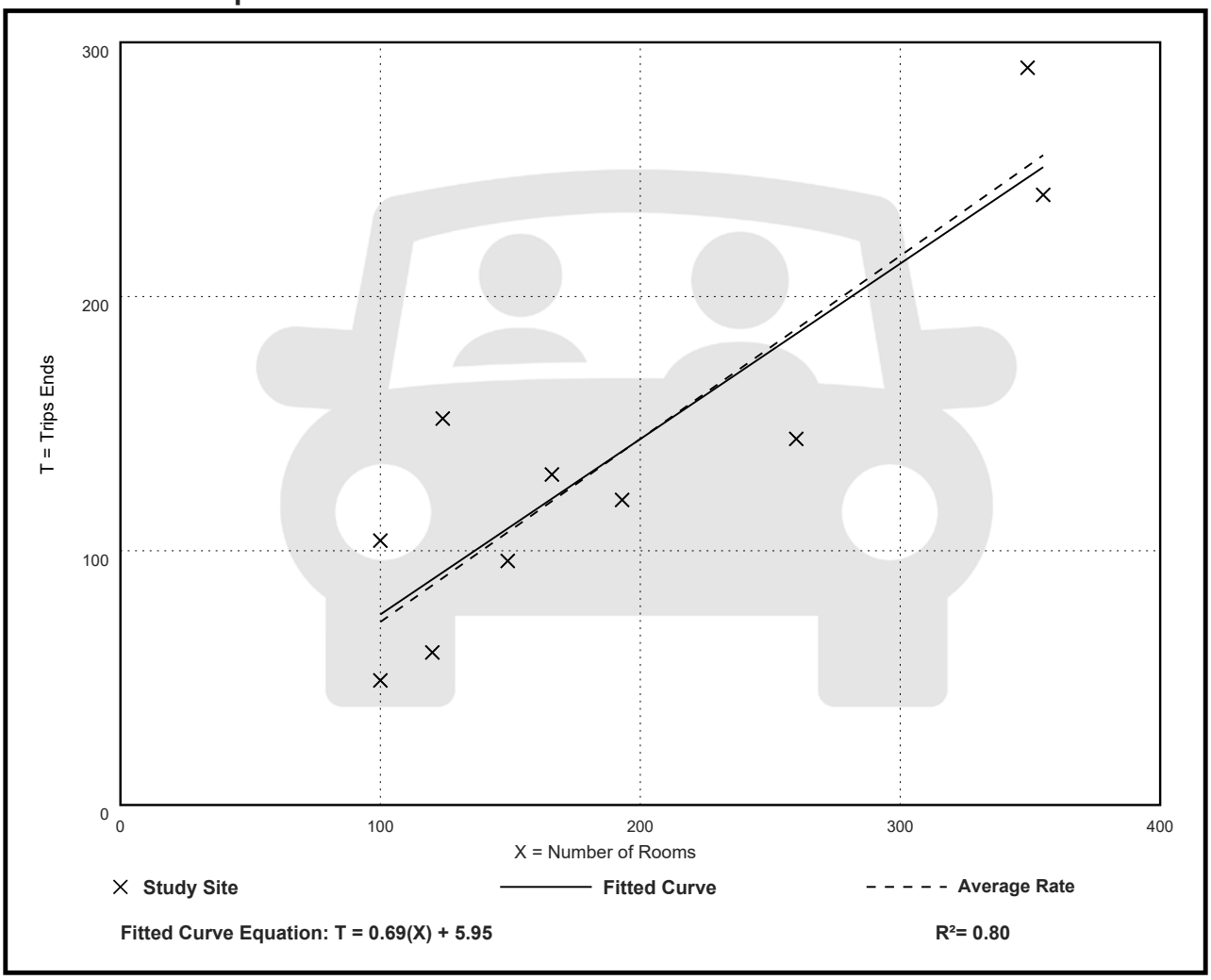
Vehicle Trip Ends vs: Rooms
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. Num. of Rooms: 192
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.72	0.49 - 1.23	0.20

Data Plot and Equation



Fitted Curve Equation: T = 0.69(X) + 5.95

R^2= 0.80

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

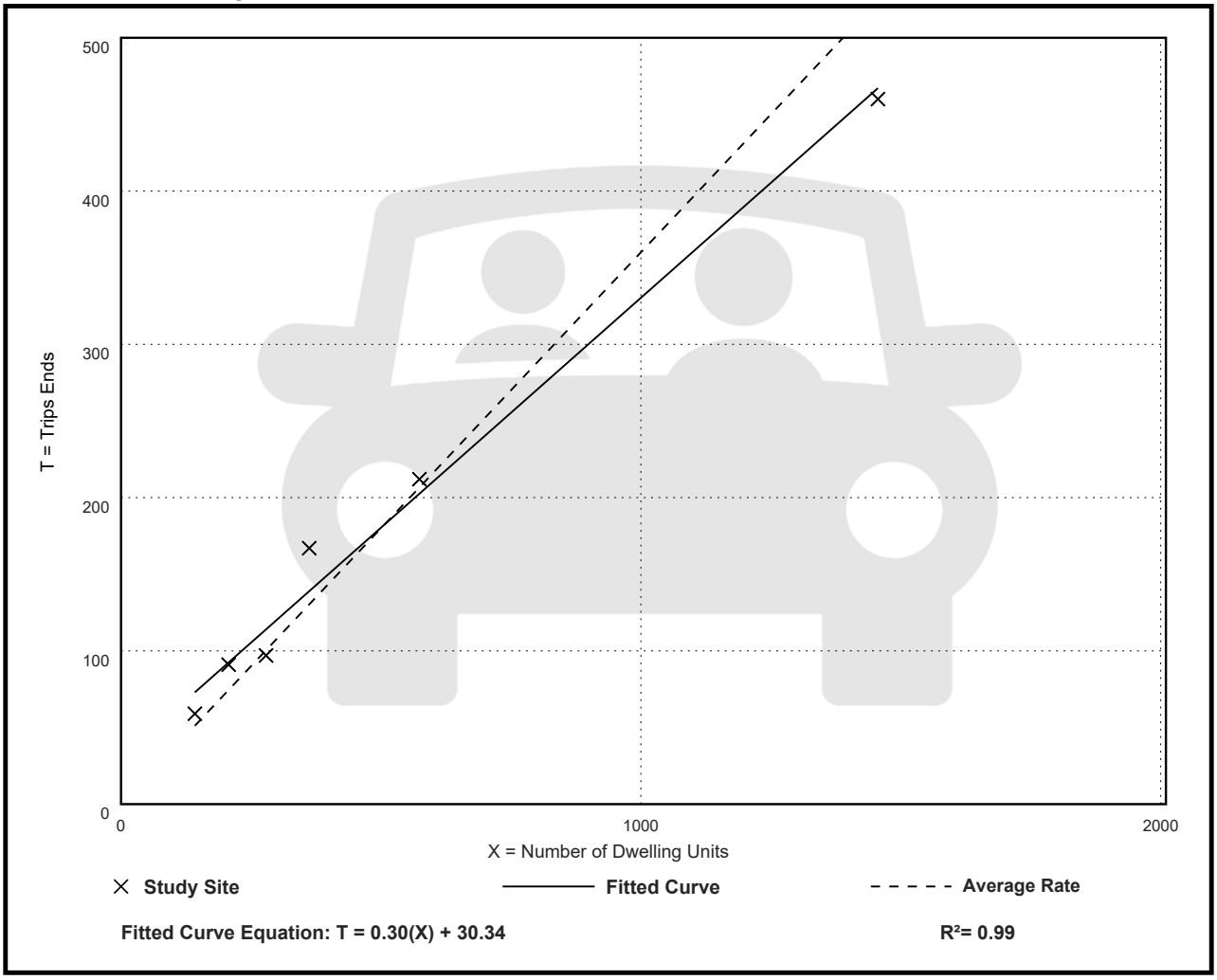
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 503
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.32 - 0.46	0.06

Data Plot and Equation



Fitted Curve Equation: T = 0.30(X) + 30.34

R^2= 0.99

Casino
(473)

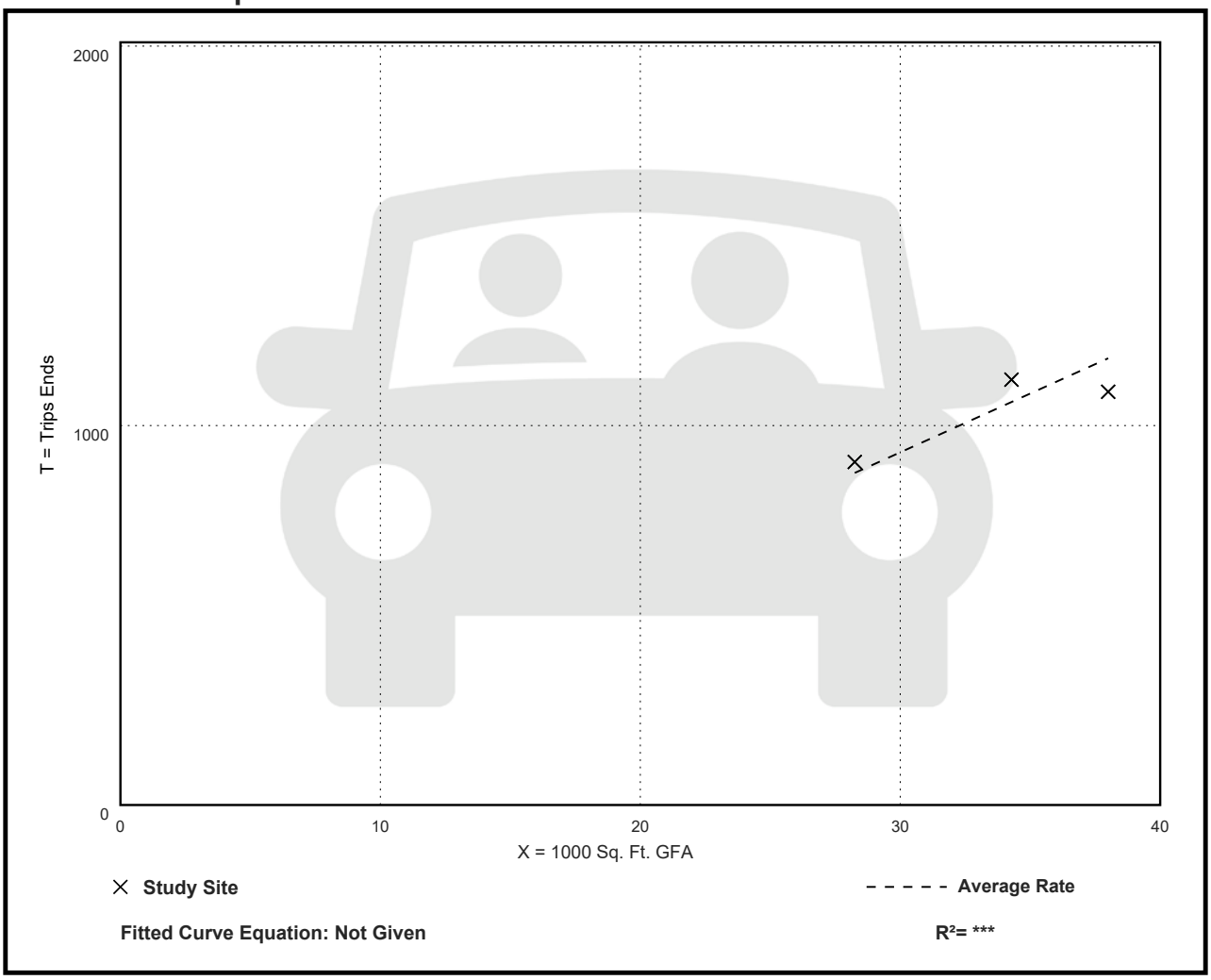
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 34
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
30.98	28.66 - 32.70	2.24

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Appendix H

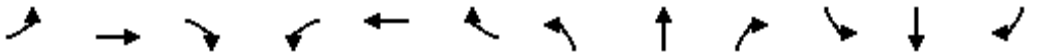
2033 Future Total Conditions Synchro Reports

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	271	148	26	142	159	143
Future Volume (vph)	271	148	26	142	159	143
Lane Group Flow (vph)	295	161	44	154	173	556
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.84	0.30	0.09	0.42	0.19	0.72
Control Delay	44.8	5.2	13.0	10.6	9.2	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.3
Total Delay	44.8	5.2	13.0	10.6	9.2	20.3
Queue Length 50th (m)	33.0	0.0	2.4	8.6	11.0	36.9
Queue Length 95th (m)	#70.8	11.6	8.9	16.1	20.0	#87.7
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	377	553	504	368	932	772
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.29	0.09	0.42	0.19	0.84

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Future Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1543	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		402	1731			1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	0	161	0	28	16	154	173	0	0	155	401
RTOR Reduction (vph)	0	0	116	0	12	0	0	0	0	0	131	0
Lane Group Flow (vph)	295	0	45	0	32	0	154	173	0	0	425	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Effective Green, g (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.40	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	353		413		462		324	928			623	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.84		0.11		0.07		0.48	0.19			0.68	
Uniform Delay, d1	22.7		18.0		17.8		10.0	8.0			16.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.2		0.2		0.1		1.5	0.4			6.0	
Delay (s)	39.0		18.1		17.8		11.5	8.5			22.4	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.6			17.8			9.9			22.4	
Approach LOS		C			B			A			C	

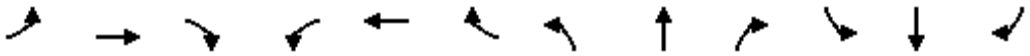
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	208	147	122	186	1125	523	1172
Future Volume (vph)	116	208	147	122	186	1125	523	1172
Lane Group Flow (vph)	126	341	160	396	202	1505	568	1340
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.04	0.70	0.97	0.77	1.29	1.02	1.63	0.63
Control Delay	130.9	39.2	100.8	36.0	172.9	41.8	319.0	15.0
Queue Delay	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	130.9	39.6	100.8	36.1	172.9	41.8	319.0	15.0
Queue Length 50th (m)	24.1	54.1	29.8	52.5	~51.7	~168.0	~145.4	85.5
Queue Length 95th (m)	#59.9	84.1	#68.3	86.5	m#69.7	m#185.0	#209.6	107.2
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	130	517	177	544	157	1472	349	2126
Starvation Cap Reductn	0	25	0	4	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	0.97	0.69	0.90	0.73	1.29	1.02	1.63	0.63

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Future Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1785	1784		1785	1692		1785	3470		1785	3544	
Flt Permitted	0.25	1.00		0.34	1.00		0.20	1.00		0.09	1.00	
Satd. Flow (perm)	466	1784		633	1692		375	3470		167	3544	
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)	126	226	115	160	133	263	202	1223	282	568	1274	66
RTOR Reduction (vph)	0	18	0	0	73	0	0	19	0	0	4	0
Lane Group Flow (vph)	126	323	0	160	323	0	202	1486	0	568	1336	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.1	26.1		26.1	26.1		41.9	41.9		59.9	59.9	
Effective Green, g (s)	26.1	26.1		26.1	26.1		41.9	41.9		59.9	59.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.42	0.42		0.60	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	121	465		165	441		157	1453		342	2122	
v/s Ratio Prot		0.18			0.19			0.43		c0.25	0.38	
v/s Ratio Perm	c0.27			0.25			0.54			c0.74		
v/c Ratio	1.04	0.69		0.97	0.73		1.29	1.02		1.66	0.63	
Uniform Delay, d1	37.0	33.3		36.6	33.8		29.1	29.1		31.6	12.9	
Progression Factor	1.00	1.00		1.00	1.00		0.61	0.59		1.00	1.00	
Incremental Delay, d2	93.3	3.9		60.2	5.6		149.8	22.2		310.1	1.4	
Delay (s)	130.3	37.2		96.7	39.4		167.5	39.3		341.6	14.3	
Level of Service	F	D		F	D		F	D		F	B	
Approach Delay (s)		62.3			55.9			54.5			111.8	
Approach LOS		E			E			D			F	

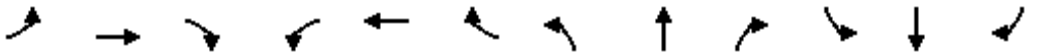
Intersection Summary			
HCM 2000 Control Delay	79.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	169	526	182	322	175	135	428	172	678
Future Volume (vph)	169	526	182	322	175	135	428	172	678
Lane Group Flow (vph)	184	915	198	350	190	147	816	187	777
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.53	0.93	0.77	0.70	0.34	0.44	0.62	0.58	0.61
Control Delay	25.0	49.1	41.0	42.2	6.2	17.4	22.1	20.9	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	25.0	49.1	41.0	42.2	6.2	17.4	22.4	20.9	28.9
Queue Length 50th (m)	22.8	82.5	24.8	62.6	0.0	14.7	51.9	19.1	65.5
Queue Length 95th (m)	37.7	#121.1	#53.9	93.8	16.0	25.3	71.7	31.6	85.2
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	354	988	260	502	566	352	1322	333	1280
Starvation Cap Reductn	0	0	0	0	0	0	139	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	0.52	0.93	0.76	0.70	0.34	0.42	0.69	0.56	0.61

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 101
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Future Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3369		1785	1879	1597	1785	3340		1785	3542	
Flt Permitted	0.32	1.00		0.15	1.00	1.00	0.24	1.00		0.21	1.00	
Satd. Flow (perm)	595	3369		279	1879	1597	448	3340		395	3542	
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)	184	572	343	198	350	190	147	465	351	187	737	40
RTOR Reduction (vph)	0	88	0	0	0	139	0	133	0	0	4	0
Lane Group Flow (vph)	184	827	0	198	350	51	147	683	0	187	773	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	36.3	26.7		36.7	26.9	26.9	45.1	36.0		45.9	36.4	
Effective Green, g (s)	36.3	26.7		36.7	26.9	26.9	45.1	36.0		45.9	36.4	
Actuated g/C Ratio	0.36	0.26		0.36	0.27	0.27	0.45	0.36		0.45	0.36	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	327	891		247	500	425	320	1191		310	1277	
v/s Ratio Prot	0.05	c0.25		c0.08	0.19		0.04	0.20		c0.06	c0.22	
v/s Ratio Perm	0.15			0.21		0.03	0.16			0.22		
v/c Ratio	0.56	0.93		0.80	0.70	0.12	0.46	0.57		0.60	0.61	
Uniform Delay, d1	23.8	36.2		25.6	33.4	28.0	17.7	26.2		18.1	26.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	15.5		16.8	4.3	0.1	1.0	2.0		3.3	2.1	
Delay (s)	26.0	51.7		42.4	37.6	28.2	18.8	28.3		21.4	28.5	
Level of Service	C	D		D	D	C	B	C		C	C	
Approach Delay (s)		47.4			36.5			26.8			27.1	
Approach LOS		D			D			C			C	

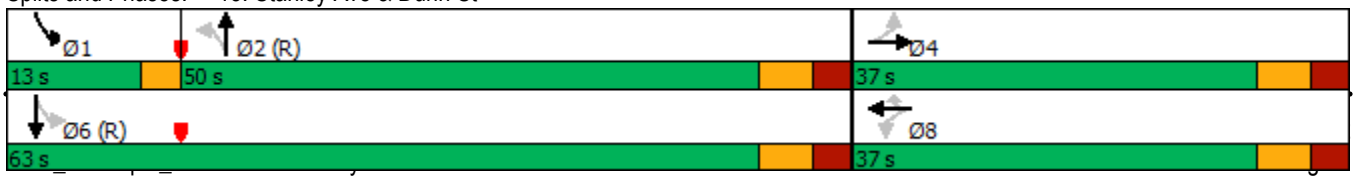
Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	18.9
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

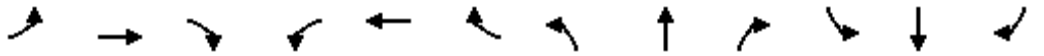
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	256	305	82	355	64	212	876	105	749
Future Volume (vph)	256	305	82	355	64	212	876	105	749
Lane Group Flow (vph)	278	480	89	386	70	230	1095	114	1051
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.55	0.87	0.85	0.69	0.13	1.04	0.69	0.41	0.54
Control Delay	302.9	49.3	90.9	38.2	6.1	100.6	24.5	11.5	16.6
Queue Delay	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0
Total Delay	302.9	49.3	90.9	41.6	6.1	100.6	24.5	11.5	16.6
Queue Length 50th (m)	~76.4	83.9	16.1	65.7	0.0	~48.1	84.7	11.8	94.4
Queue Length 95th (m)	#125.5	#138.8	#45.1	97.7	8.7	#95.6	112.3	m12.5	m107.6
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	179	553	105	563	532	222	1587	312	1958
Starvation Cap Reductn	0	0	0	100	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	1.55	0.87	0.85	0.83	0.13	1.04	0.69	0.37	0.54

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Future Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1792		1785	1879	1597	1785	3500		1785	3449	
Flt Permitted	0.32	1.00		0.19	1.00	1.00	0.26	1.00		0.14	1.00	
Satd. Flow (perm)	598	1792		354	1879	1597	493	3500		267	3449	
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)	278	332	148	89	386	70	230	952	143	114	814	237
RTOR Reduction (vph)	0	16	0	0	0	49	0	12	0	0	27	0
Lane Group Flow (vph)	278	464	0	89	386	21	230	1083	0	114	1024	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	45.1	45.1		56.0	56.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0	30.0	45.1	45.1		56.0	56.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.45	0.45		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	179	537		106	563	479	222	1578		269	1931	
v/s Ratio Prot		0.26			0.21			0.31		0.03	c0.30	
v/s Ratio Perm	c0.47			0.25		0.01	c0.47			0.20		
v/c Ratio	1.55	0.86		0.84	0.69	0.04	1.04	0.69		0.42	0.53	
Uniform Delay, d1	35.0	33.1		32.7	30.8	24.8	27.4	21.8		13.5	13.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.07	1.23	
Incremental Delay, d2	274.5	13.4		40.6	3.2	0.0	70.1	2.5		0.4	0.5	
Delay (s)	309.5	46.5		73.4	34.0	24.9	97.6	24.3		14.9	17.5	
Level of Service	F	D		E	C	C	F	C		B	B	
Approach Delay (s)		142.9			39.3			37.0			17.2	
Approach LOS		F			D			D			B	

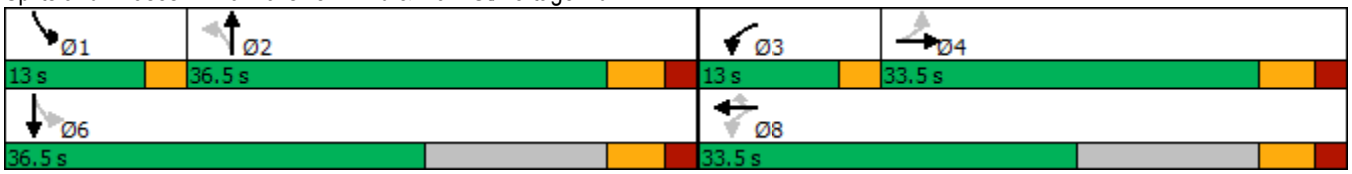
Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

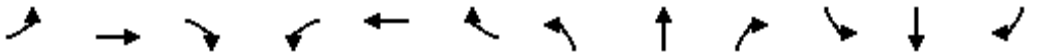
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	167	341	176	459	414	34	327	138	312
Future Volume (vph)	167	341	176	459	414	34	327	138	312
Lane Group Flow (vph)	182	451	191	499	450	37	465	150	376
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.80	0.89	0.66	0.65	0.49	0.11	0.79	0.45	0.45
Control Delay	59.2	53.6	28.0	27.1	3.8	24.9	39.7	18.2	19.8
Queue Delay	0.0	0.0	0.0	5.2	0.4	0.0	54.2	0.0	0.0
Total Delay	59.2	53.6	28.0	32.3	4.2	24.9	93.9	18.2	19.8
Queue Length 50th (m)	31.0	77.6	21.0	71.7	0.0	4.9	76.1	15.1	45.9
Queue Length 95th (m)	#65.7	#130.4	#35.5	105.4	17.2	12.2	#124.2	26.2	69.5
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	239	534	293	800	938	322	591	345	851
Starvation Cap Reductn	0	0	0	233	147	0	216	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	0.76	0.84	0.65	0.88	0.57	0.11	1.24	0.43	0.44

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 94
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





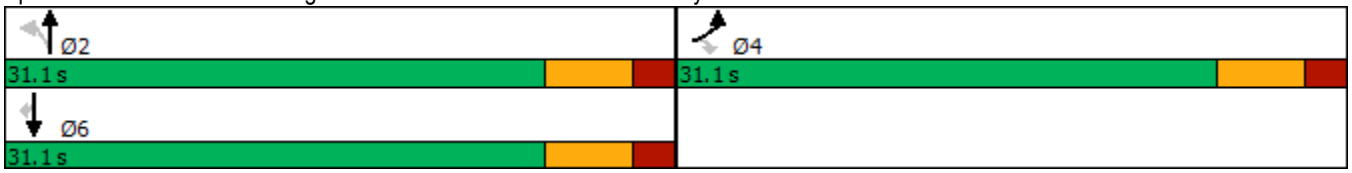
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Future Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1829		1785	1879	1597	1785	1812		1785	1851	
Flt Permitted	0.44	1.00		0.16	1.00	1.00	0.54	1.00		0.21	1.00	
Satd. Flow (perm)	832	1829		305	1879	1597	1011	1812		404	1851	
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)	182	371	80	191	499	450	37	355	110	150	339	37
RTOR Reduction (vph)	0	8	0	0	0	266	0	12	0	0	4	0
Lane Group Flow (vph)	182	443	0	191	499	184	37	453	0	150	372	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Effective Green, g (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Actuated g/C Ratio	0.27	0.27		0.41	0.41	0.41	0.32	0.32		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	226	498		278	767	652	323	580		322	838	
v/s Ratio Prot		c0.24		c0.07	0.27			c0.25		c0.05	0.20	
v/s Ratio Perm	0.22			0.21		0.12	0.04			0.16		
v/c Ratio	0.81	0.89		0.69	0.65	0.28	0.11	0.78		0.47	0.44	
Uniform Delay, d1	31.9	32.8		20.9	22.4	18.6	22.5	29.0		17.6	17.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.4	17.8		7.5	2.2	0.3	0.7	10.1		1.5	1.7	
Delay (s)	51.3	50.7		28.4	24.6	18.9	23.3	39.1		19.0	19.3	
Level of Service	D	D		C	C	B	C	D		B	B	
Approach Delay (s)		50.8			23.0			37.9			19.2	
Approach LOS		D			C			D			B	

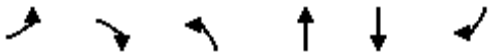
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Lane Group Flow (vph)	97	272	295	18	115	797
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.15	0.36	0.54	0.02	0.14	0.70
Control Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Length 50th (m)	6.8	0.0	25.3	1.2	8.1	0.0
Queue Length 95th (m)	14.7	11.6	47.2	4.4	16.8	18.5
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	763	838	548	803	803	1138
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	0.13	0.32	0.54	0.02	0.14	0.70

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

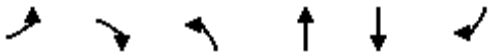
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1283	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	272	295	18	115	797
RTOR Reduction (vph)	0	173	0	0	0	455
Lane Group Flow (vph)	97	99	295	18	115	342
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.5	21.5	25.3	25.3	25.3	25.3
Effective Green, g (s)	21.5	21.5	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	650	581	550	805	805	684
v/s Ratio Prot	0.05			0.01	0.06	
v/s Ratio Perm		c0.06	c0.23			0.21
v/c Ratio	0.15	0.17	0.54	0.02	0.14	0.50
Uniform Delay, d1	12.6	12.7	12.5	9.7	10.3	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	3.7	0.1	0.4	2.6
Delay (s)	12.7	12.9	16.2	9.8	10.6	14.8
Level of Service	B	B	B	A	B	B
Approach Delay (s)	12.9			15.8	14.3	
Approach LOS	B			B	B	

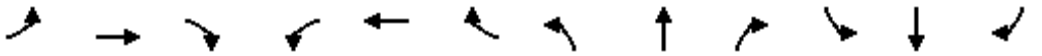
Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	164	0	1442	1444	40
Future Volume (Veh/h)	0	164	0	1442	1444	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)	0	178	0	1567	1570	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)				55	191	
pX, platoon unblocked	0.83	0.75	0.75			
vC, conflicting volume	2375	806	1613			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	891	75	1151			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	76	100			
cM capacity (veh/h)	237	733	461			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	178	784	784	1047	566
Volume Left	0	0	0	0	0
Volume Right	178	0	0	0	43
cSH	733	1700	1700	1700	1700
Volume to Capacity	0.24	0.46	0.46	0.62	0.33
Queue Length 95th (m)	7.2	0.0	0.0	0.0	0.0
Control Delay (s)	11.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.5	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
Future Volume (Veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
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)	24	5	16	0	0	0	85	602	179	195	539	214
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	2096	2821	966	1844	2838	696	1312			1056		
vC1, stage 1 conf vol	1595	1595		1136	1136							
vC2, stage 2 conf vol	501	1226		708	1702							
vCu, unblocked vol	2017	2805	787	1743	2824	696	1164			1056		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	34	0	90	100	100	100	70			61		
cM capacity (veh/h)	37	3	153	84	3	287	283			505		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	0	85	401	380	195	359	394
Volume Left	24	0	85	0	0	195	0	0
Volume Right	16	0	0	0	179	0	0	214
cSH	18	1700	283	1700	1700	505	1700	1700
Volume to Capacity	2.55	0.00	0.30	0.24	0.22	0.39	0.21	0.23
Queue Length 95th (m)	46.8	0.0	9.3	0.0	0.0	13.7	0.0	0.0
Control Delay (s)	1151.6	0.0	23.1	0.0	0.0	16.5	0.0	0.0
Lane LOS	F	A	C			C		
Approach Delay (s)	1151.6	0.0	2.3			3.4		
Approach LOS	F	A						

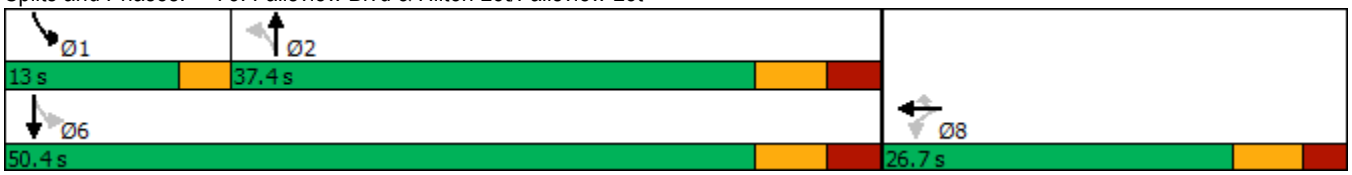
Intersection Summary				
Average Delay	30.7			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			

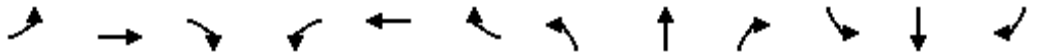
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	122	16	506	202	820
Future Volume (vph)	1	122	16	506	202	820
Lane Group Flow (vph)	46	133	17	643	220	1008
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.14	0.34	0.09	0.49	0.36	0.47
Control Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Length 50th (m)	4.1	0.0	1.1	25.8	7.4	28.2
Queue Length 95th (m)	12.4	12.4	4.8	40.5	14.7	43.1
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	625	640	298	1969	629	2546
Starvation Cap Reductn	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.21	0.06	0.33	0.35	0.41

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 54.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Future Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3217		1644	3231	
Flt Permitted					0.95	1.00	0.28	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	492	3217		609	3231	
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)	0	0	0	45	1	133	17	550	93	220	891	117
RTOR Reduction (vph)	0	0	0	0	0	115	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	46	18	17	625	0	220	996	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Effective Green, g (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	194	1273		540	1975	
v/s Ratio Prot								0.19		0.07	c0.31	
v/s Ratio Perm					0.03	0.01	0.03			0.18		
v/c Ratio					0.20	0.09	0.09	0.49		0.41	0.50	
Uniform Delay, d1					21.5	21.1	10.6	12.7		5.0	6.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.3	0.4		0.7	0.3	
Delay (s)					22.1	21.4	10.9	13.1		5.7	6.4	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.6			13.1			6.3	
Approach LOS		A			C			B			A	

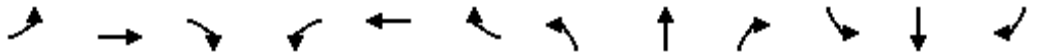
Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	17.1
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	141	143	152	256	367	59	934	362	1138
Future Volume (vph)	141	143	152	256	367	59	934	362	1138
Lane Group Flow (vph)	0	337	0	443	399	64	1086	393	1366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		2.57		1.27	0.62	0.33	0.83	1.15	0.84
Control Delay		748.9		174.6	11.5	8.8	31.8	125.1	20.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		748.9		174.6	11.5	8.8	31.8	125.1	20.0
Queue Length 50th (m)		~110.9		~108.8	11.2	4.9	103.6	~72.0	67.1
Queue Length 95th (m)		#141.0		#166.8	40.4	m4.5	m112.0	m#125.6	m#103.3
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		131		349	644	334	1307	341	1633
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		2.57		1.27	0.62	0.19	0.83	1.15	0.84

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Future Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1672			1699	1471	1644	3256		1644	3241	
Flt Permitted		0.27			0.72	1.00	0.11	1.00		0.12	1.00	
Satd. Flow (perm)		458			1249	1471	198	3256		202	3241	
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)	153	155	29	165	278	399	64	1015	71	393	1237	129
RTOR Reduction (vph)	0	4	0	0	0	233	0	5	0	0	7	0
Lane Group Flow (vph)	0	333	0	0	443	166	64	1081	0	393	1359	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		28.0			28.0	28.0	45.4	40.0		58.0	49.6	
Effective Green, g (s)		28.0			28.0	28.0	45.4	40.0		58.0	49.6	
Actuated g/C Ratio		0.28			0.28	0.28	0.45	0.40		0.58	0.50	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		128			349	411	167	1302		333	1607	
v/s Ratio Prot							0.02	0.33		c0.18	0.42	
v/s Ratio Perm		c0.73			0.35	0.11	0.15			c0.51		
v/c Ratio		2.60			1.27	0.40	0.38	0.83		1.18	0.85	
Uniform Delay, d1		36.0			36.0	29.2	17.3	26.9		27.1	21.9	
Progression Factor		1.00			1.00	1.00	0.74	1.04		1.46	0.67	
Incremental Delay, d2		744.3			142.0	0.4	0.4	3.3		104.0	4.8	
Delay (s)		780.3			178.0	29.6	13.3	31.4		143.6	19.5	
Level of Service		F			F	C	B	C		F	B	
Approach Delay (s)		780.3			107.7			30.4			47.2	
Approach LOS		F			F			C			D	

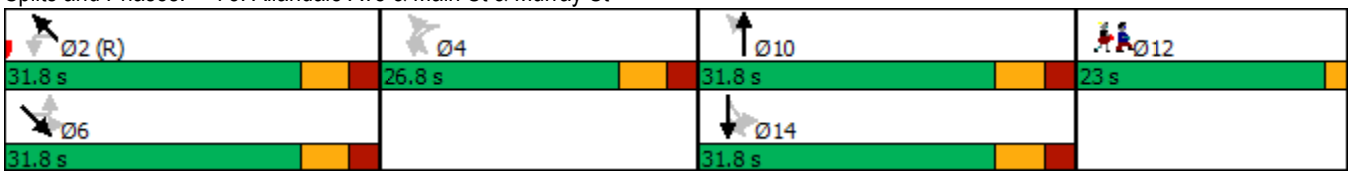
Intersection Summary			
HCM 2000 Control Delay	115.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWL
Lane Configurations												
Traffic Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Future Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Lane Group Flow (vph)	0	22	357	0	247	0	0	44	0	222	256	0
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases					10			14			6	
Permitted Phases	4	4	4	10		14	14		6	6		2
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	23.6%	23.6%	23.6%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.12	1.41		0.84			0.16		0.82	0.70	
Control Delay		41.3	240.4		67.5			36.9		66.2	52.2	
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	
Total Delay		41.3	240.4		67.5			36.9		66.2	52.2	
Queue Length 50th (m)		4.1	~106.2		52.7			7.8		47.1	52.6	
Queue Length 95th (m)		11.6	#162.6		#95.5			17.7		#86.8	81.1	
Internal Link Dist (m)		102.7			229.8			295.5			298.1	
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		185	254		294			280		272	366	
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		0.12	1.41		0.84			0.16		0.82	0.70	

Intersection Summary

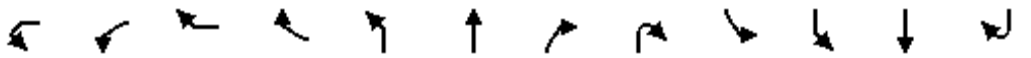
Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	NWT	Ø12
Lane Configurations		
Traffic Volume (vph)	15	
Future Volume (vph)	15	
Lane Group Flow (vph)	45	
Turn Type	NA	
Protected Phases	2	12
Permitted Phases		
Minimum Split (s)	16.8	23.0
Total Split (s)	31.8	23.0
Total Split (%)	28.0%	20%
Yellow Time (s)	4.1	2.0
All-Red Time (s)	2.7	0.0
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.8	
Lead/Lag		
Lead-Lag Optimize?		
v/c Ratio	0.13	
Control Delay	36.8	
Queue Delay	0.0	
Total Delay	36.8	
Queue Length 50th (m)	8.1	
Queue Length 95th (m)	17.8	
Internal Link Dist (m)	208.5	
Turn Bay Length (m)		
Base Capacity (vph)	340	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.13	

Intersection Summary

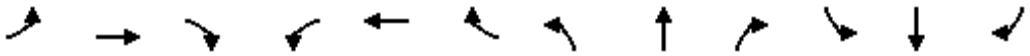


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Future Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1568					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1051	1442			1336					1268	
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)	17	5	298	59	112	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	357	0	0	247	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		185	254			294					279	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.18					0.03	
v/c Ratio		0.12	1.41			0.84					0.15	
Uniform Delay, d1		39.3	46.7			42.3					35.7	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.3	204.4			24.1					1.2	
Delay (s)		40.6	251.1			66.4					36.9	
Level of Service		D	F			E					D	
Approach Delay (s)		238.9				66.4					36.9	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	115.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWL	NWT	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	1	203	206	29	1	15	11	15
Future Volume (vph)	1	203	206	29	1	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8		
Lane Util. Factor		1.00	1.00			1.00		
Frt		1.00	0.98			0.92		
Flt Protected		0.95	1.00			1.00		
Satd. Flow (prot)		1612	1665			1552		
Flt Permitted		0.73	1.00			0.99		
Satd. Flow (perm)		1235	1665			1544		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	221	224	32	1	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	222	256	0	0	45	0	0
Turn Type	Perm	Perm	NA		Perm	NA		
Protected Phases			6			2		
Permitted Phases	6	6			2			
Actuated Green, G (s)		25.0	25.0			25.0		
Effective Green, g (s)		25.0	25.0			25.0		
Actuated g/C Ratio		0.22	0.22			0.22		
Clearance Time (s)		6.8	6.8			6.8		
Lane Grp Cap (vph)		272	367			340		
v/s Ratio Prot			0.15					
v/s Ratio Perm		c0.18				0.03		
v/c Ratio		0.82	0.70			0.13		
Uniform Delay, d1		42.0	40.7			35.5		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		23.0	10.5			0.8		
Delay (s)		65.0	51.2			36.3		
Level of Service		E	D			D		
Approach Delay (s)			57.6			36.3		
Approach LOS			E			D		

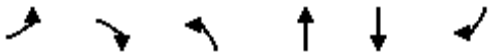
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Future Volume (Veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	296	17	159	0	84	270	53	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	176			15			706	785	15	1018	706	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			15			541	636	15	917	540	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	69	75	49	100	100
cM capacity (veh/h)	1354			1616			323	269	1070	104	305	902

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	472	354	54
Volume Left	1	296	0	53
Volume Right	0	159	270	1
cSH	1354	1616	627	105
Volume to Capacity	0.00	0.18	0.56	0.51
Queue Length 95th (m)	0.0	5.1	26.8	17.6
Control Delay (s)	0.5	5.4	17.9	70.7
Lane LOS	A	A	C	F
Approach Delay (s)	0.5	5.4	17.9	70.7
Approach LOS			C	F

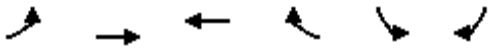
Intersection Summary				
Average Delay	14.2			
Intersection Capacity Utilization	67.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	1057	1299	126
Future Volume (Veh/h)	0	0	10	1057	1299	126
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	1149	1412	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.75	0.64	0.64			
vC, conflicting volume	2077	774	1549			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	432	0	735			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	411	699	563			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	11	574	574	941	608
Volume Left	0	0	11	0	0	0	0
Volume Right	0	0	0	0	0	0	137
cSH	1700	1700	563	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.02	0.34	0.34	0.55	0.36
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	211	368	985	18	13	212
Future Volume (Veh/h)	211	368	985	18	13	212
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)	229	400	1071	20	14	230
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	1091				1739	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1091				1739	546
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	65				73	53
cM capacity (veh/h)	647				52	487

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	362	267	714	377	14	230
Volume Left	229	0	0	0	14	0
Volume Right	0	0	0	20	0	230
cSH	647	1700	1700	1700	52	487
Volume to Capacity	0.35	0.16	0.42	0.22	0.27	0.47
Queue Length 95th (m)	12.1	0.0	0.0	0.0	7.1	18.9
Control Delay (s)	10.5	0.0	0.0	0.0	99.0	18.8
Lane LOS	B				F	C
Approach Delay (s)	6.0		0.0		23.4	
Approach LOS					C	

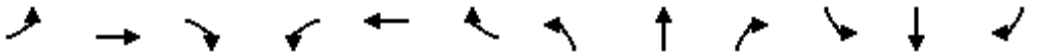
Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	61.2%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	272	149	26	143	160	144
Future Volume (vph)	272	149	26	143	160	144
Lane Group Flow (vph)	296	162	44	155	174	560
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.84	0.31	0.09	0.42	0.19	0.73
Control Delay	45.3	5.2	13.0	10.7	9.2	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.5
Total Delay	45.3	5.2	13.0	10.7	9.2	20.9
Queue Length 50th (m)	33.3	0.0	2.5	8.6	10.9	37.4
Queue Length 95th (m)	#71.1	11.6	8.9	16.2	20.2	#89.5
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	376	553	502	365	931	771
Starvation Cap Reductn	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.29	0.09	0.42	0.19	0.85

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	0	149	0	26	15	143	160	0	0	144	371
Future Volume (vph)	272	0	149	0	26	15	143	160	0	0	144	371
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1544	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		395	1731			1544	
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)	296	0	162	0	28	16	155	174	0	0	157	403
RTOR Reduction (vph)	0	0	117	0	12	0	0	0	0	0	130	0
Lane Group Flow (vph)	296	0	45	0	32	0	155	174	0	0	430	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Effective Green, g (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.40	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	353		413		462		321	928			624	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.22					
v/c Ratio	0.84		0.11		0.07		0.48	0.19			0.69	
Uniform Delay, d1	22.8		18.0		17.8		10.1	8.0			16.6	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.5		0.2		0.1		1.6	0.4			6.1	
Delay (s)	39.2		18.1		17.8		11.6	8.5			22.7	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.8			17.8			10.0			22.7	
Approach LOS		C			B			A			C	

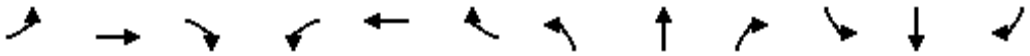
Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	114	239	149	130	182	1017	419	1218
Future Volume (vph)	114	239	149	130	182	1017	419	1218
Lane Group Flow (vph)	124	375	162	391	198	1376	455	1467
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	47.0	47.0	18.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	47.0%	47.0%	18.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.90	0.78	1.09	0.78	1.90	1.06	1.41	0.78
Control Delay	91.5	44.4	136.0	37.6	438.1	52.6	229.0	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	44.4	136.0	37.6	438.1	52.6	229.0	19.5
Queue Length 50th (m)	23.1	63.3	~35.3	54.6	~59.8	~151.4	~104.3	105.7
Queue Length 95th (m)	#57.6	#106.4	#74.7	#98.6	m#75.1	m#168.5	#163.9	134.8
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	138	478	149	502	104	1297	322	1886
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	0.90	0.78	1.09	0.78	1.90	1.06	1.41	0.78

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	239	106	149	130	230	182	1017	249	419	1218	132
Future Volume (vph)	114	239	106	149	130	230	182	1017	249	419	1218	132
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1644	1651		1644	1565		1644	3191		1644	3240	
Flt Permitted	0.28	1.00		0.31	1.00		0.15	1.00		0.09	1.00	
Satd. Flow (perm)	493	1651		534	1565		259	3191		161	3240	
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)	124	260	115	162	141	250	198	1105	271	455	1324	143
RTOR Reduction (vph)	0	16	0	0	64	0	0	22	0	0	8	0
Lane Group Flow (vph)	124	359	0	162	327	0	198	1354	0	455	1459	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.0	28.0		28.0	28.0		40.0	40.0		58.0	58.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0		40.0	40.0		58.0	58.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.40	0.40		0.58	0.58	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	462		149	438		103	1276		315	1879	
v/s Ratio Prot		0.22			0.21			0.42		c0.22	0.45	
v/s Ratio Perm	0.25			c0.30			c0.76			0.62		
v/c Ratio	0.90	0.78		1.09	0.75		1.92	1.06		1.44	0.78	
Uniform Delay, d1	34.6	33.1		36.0	32.8		30.0	30.0		30.9	16.0	
Progression Factor	1.00	1.00		1.00	1.00		0.58	0.56		1.00	1.00	
Incremental Delay, d2	46.9	8.0		99.0	6.8		426.5	34.0		217.1	3.2	
Delay (s)	81.6	41.2		135.0	39.6		443.8	50.8		248.0	19.3	
Level of Service	F	D		F	D		F	D		F	B	
Approach Delay (s)		51.2			67.5			100.2			73.4	
Approach LOS		D			E			F			E	

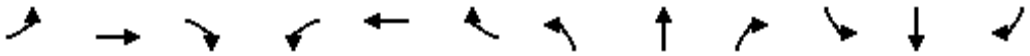
Intersection Summary			
HCM 2000 Control Delay	79.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	169	503	137	263	167	121	376	172	602
Future Volume (vph)	169	503	137	263	167	121	376	172	602
Lane Group Flow (vph)	184	787	149	286	182	132	712	187	713
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	13.0	33.3	13.0	33.3	33.3	13.0	42.6	13.0	42.6
Total Split (%)	12.8%	32.7%	12.8%	32.7%	32.7%	12.8%	41.8%	12.8%	41.8%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.50	0.91	0.64	0.64	0.35	0.39	0.57	0.55	0.60
Control Delay	24.6	48.6	32.1	40.6	6.6	16.5	20.4	19.8	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	48.6	32.1	40.6	6.6	16.5	20.4	19.8	28.4
Queue Length 50th (m)	23.0	73.1	18.2	49.8	0.0	13.1	42.2	19.3	59.6
Queue Length 95th (m)	38.3	#106.9	#31.5	77.2	15.8	23.3	60.6	32.1	78.9
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	371	897	242	467	530	356	1240	351	1196
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	0.50	0.88	0.62	0.61	0.34	0.37	0.57	0.53	0.60

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 100
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	503	221	137	263	167	121	376	279	172	602	54
Future Volume (vph)	169	503	221	137	263	167	121	376	279	172	602	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3138		1644	1731	1471	1644	3078		1644	3247	
Flt Permitted	0.41	1.00		0.15	1.00	1.00	0.28	1.00		0.27	1.00	
Satd. Flow (perm)	702	3138		267	1731	1471	485	3078		465	3247	
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)	184	547	240	149	286	182	132	409	303	187	654	59
RTOR Reduction (vph)	0	49	0	0	0	135	0	130	0	0	6	0
Lane Group Flow (vph)	184	738	0	149	286	47	132	582	0	187	707	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	35.9	26.2		35.3	25.9	25.9	45.0	36.1		46.2	36.7	
Effective Green, g (s)	35.9	26.2		35.3	25.9	25.9	45.0	36.1		46.2	36.7	
Actuated g/C Ratio	0.36	0.26		0.35	0.26	0.26	0.45	0.36		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	343	821		223	447	380	321	1110		326	1190	
v/s Ratio Prot	0.05	c0.24		c0.06	0.17		0.04	0.19		c0.05	c0.22	
v/s Ratio Perm	0.14			0.17		0.03	0.15			0.21		
v/c Ratio	0.54	0.90		0.67	0.64	0.12	0.41	0.52		0.57	0.59	
Uniform Delay, d1	23.6	35.7		24.6	33.0	28.4	17.1	25.2		17.2	25.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	12.6		7.4	3.0	0.1	0.9	1.8		2.4	2.2	
Delay (s)	25.2	48.3		32.0	36.0	28.6	17.9	27.0		19.6	27.9	
Level of Service	C	D		C	D	C	B	C		B	C	
Approach Delay (s)		43.9			32.8			25.6			26.1	
Approach LOS		D			C			C			C	

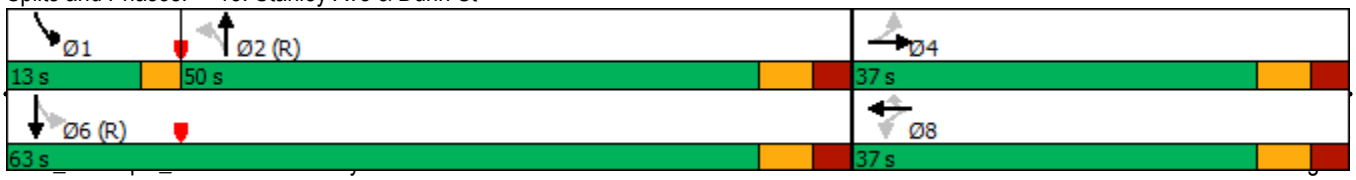
Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

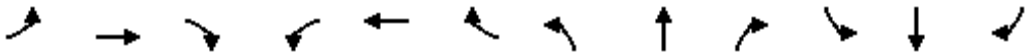
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	304	82	394	69	216	858	158	867
Future Volume (vph)	265	304	82	394	69	216	858	158	867
Lane Group Flow (vph)	288	491	89	428	75	235	1088	172	1210
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	50.0	50.0	13.0	63.0
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	50.0%	50.0%	13.0%	63.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	2.15	0.96	1.00	0.82	0.15	1.52	0.77	0.63	0.67
Control Delay	563.7	65.3	135.2	47.5	6.9	286.9	27.8	16.5	19.4
Queue Delay	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0
Total Delay	563.7	65.3	135.2	55.1	6.9	286.9	27.8	16.5	19.4
Queue Length 50th (m)	~89.6	89.4	17.1	76.8	0.0	~64.3	90.9	19.7	111.4
Queue Length 95th (m)	#139.0	#152.8	#48.3	#125.5	9.6	#109.7	117.0	m20.4	m125.1
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	134	511	89	519	494	155	1421	283	1806
Starvation Cap Reductn	0	0	0	62	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	2.15	0.96	1.00	0.94	0.15	1.52	0.77	0.61	0.67

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	304	148	82	394	69	216	858	143	158	867	247
Future Volume (vph)	265	304	148	82	394	69	216	858	143	158	867	247
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1645		1644	1731	1471	1644	3218		1644	3179	
Flt Permitted	0.26	1.00		0.17	1.00	1.00	0.21	1.00		0.14	1.00	
Satd. Flow (perm)	449	1645		300	1731	1471	357	3218		239	3179	
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)	288	330	161	89	428	75	235	933	155	172	942	268
RTOR Reduction (vph)	0	18	0	0	0	53	0	13	0	0	26	0
Lane Group Flow (vph)	288	474	0	89	428	23	235	1075	0	172	1184	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	43.8	43.8		56.0	56.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0	30.0	43.8	43.8		56.0	56.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.44	0.44		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	134	493		90	519	441	156	1409		263	1780	
v/s Ratio Prot		0.29			0.25			0.33		0.06	c0.37	
v/s Ratio Perm	c0.64			0.30		0.02	c0.66			0.31		
v/c Ratio	2.15	0.96		0.99	0.82	0.05	1.51	0.76		0.65	0.67	
Uniform Delay, d1	35.0	34.4		34.8	32.6	24.9	28.1	23.7		14.8	15.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.05	1.23	
Incremental Delay, d2	541.2	30.5		90.4	10.3	0.0	258.2	4.0		2.9	1.0	
Delay (s)	576.2	65.0		125.2	42.8	24.9	286.3	27.7		18.4	20.0	
Level of Service	F	E		F	D	C	F	C		B	B	
Approach Delay (s)		254.0			52.9			73.6			19.8	
Approach LOS		F			D			E			B	

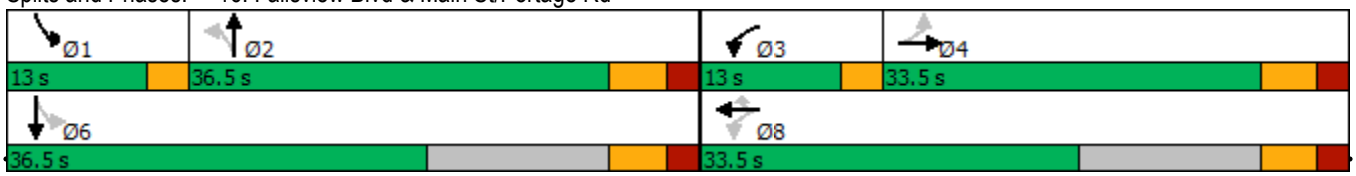
Intersection Summary			
HCM 2000 Control Delay	86.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

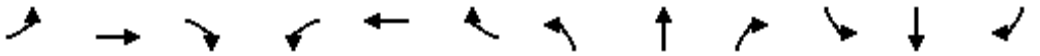
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	262	341	189	476	489	21	434	112	264
Future Volume (vph)	262	341	189	476	489	21	434	112	264
Lane Group Flow (vph)	285	467	205	517	532	23	585	122	324
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	1.37	0.96	0.76	0.71	0.63	0.07	1.08	0.52	0.43
Control Delay	224.5	65.9	36.8	29.5	9.7	24.1	95.4	22.2	19.8
Queue Delay	0.0	0.0	0.0	9.4	0.7	0.0	9.6	0.0	0.0
Total Delay	224.5	65.9	36.8	38.9	10.4	24.1	105.0	22.2	19.8
Queue Length 50th (m)	~70.1	82.5	22.7	76.9	17.1	3.0	~120.8	12.1	38.5
Queue Length 95th (m)	#119.4	#145.3	#50.5	115.7	51.0	8.7	#186.1	22.2	60.2
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	208	487	271	730	843	309	540	251	776
Starvation Cap Reductn	0	0	0	181	98	0	162	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	1.37	0.96	0.76	0.94	0.71	0.07	1.55	0.49	0.42

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 94.8
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	341	88	189	476	489	21	434	104	112	264	34
Future Volume (vph)	262	341	88	189	476	489	21	434	104	112	264	34
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1677		1644	1731	1471	1644	1680		1644	1701	
Flt Permitted	0.42	1.00		0.16	1.00	1.00	0.56	1.00		0.12	1.00	
Satd. Flow (perm)	733	1677		279	1731	1471	977	1680		210	1701	
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)	285	371	96	205	517	532	23	472	113	122	287	37
RTOR Reduction (vph)	0	10	0	0	0	223	0	9	0	0	5	0
Lane Group Flow (vph)	285	457	0	205	517	309	23	576	0	122	319	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	27.0	27.0		39.8	39.8	39.8	30.0	30.0		41.9	41.9	
Effective Green, g (s)	27.0	27.0		39.8	39.8	39.8	30.0	30.0		41.9	41.9	
Actuated g/C Ratio	0.29	0.29		0.42	0.42	0.42	0.32	0.32		0.44	0.44	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	208	478		258	727	618	309	532		227	752	
v/s Ratio Prot		0.27		c0.08	0.30			c0.34		c0.05	0.19	
v/s Ratio Perm	c0.39			0.25		0.21	0.02			0.19		
v/c Ratio	1.37	0.96		0.79	0.71	0.50	0.07	1.08		0.54	0.42	
Uniform Delay, d1	33.9	33.3		21.0	22.7	20.1	22.6	32.4		20.4	18.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	194.1	30.0		15.4	3.3	0.6	0.5	63.3		2.4	1.8	
Delay (s)	227.9	63.2		36.4	26.0	20.8	23.1	95.7		22.8	19.9	
Level of Service	F	E		D	C	C	C	F		C	B	
Approach Delay (s)		125.7			25.5			93.0			20.7	
Approach LOS		F			C			F			C	

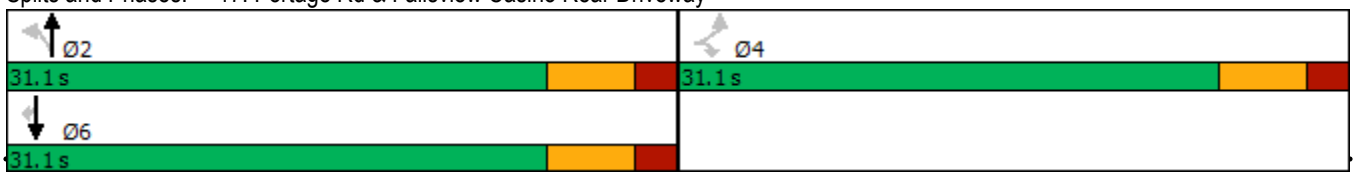
Intersection Summary			
HCM 2000 Control Delay	62.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	94.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

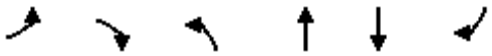
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	298	488	112	141	391
Future Volume (vph)	106	298	488	112	141	391
Lane Group Flow (vph)	115	324	530	122	153	425
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.19	0.44	1.09	0.17	0.21	0.49
Control Delay	13.1	3.9	89.6	12.8	13.1	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	3.9	89.6	12.8	13.1	3.7
Queue Length 50th (m)	8.1	0.0	~73.9	8.7	11.1	0.0
Queue Length 95th (m)	17.1	12.7	#124.6	17.9	21.7	14.4
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	702	814	488	739	739	872
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	0.40	1.09	0.17	0.21	0.49

Intersection Summary

Cycle Length: 62.2
Actuated Cycle Length: 59.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
~ 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.

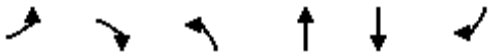
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	298	488	112	141	391
Future Volume (vph)	106	298	488	112	141	391
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1142	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	324	530	122	153	425
RTOR Reduction (vph)	0	206	0	0	0	243
Lane Group Flow (vph)	115	118	530	122	153	182
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	21.5	21.5	25.3	25.3	25.3	25.3
Effective Green, g (s)	21.5	21.5	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	599	536	489	742	742	630
v/s Ratio Prot				0.07	0.09	
v/s Ratio Perm	0.07	c0.08	c0.46			0.12
v/c Ratio	0.19	0.22	1.08	0.16	0.21	0.29
Uniform Delay, d1	12.8	13.0	16.9	10.4	10.6	11.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	65.2	0.5	0.6	1.2
Delay (s)	13.0	13.2	82.1	10.8	11.2	12.1
Level of Service	B	B	F	B	B	B
Approach Delay (s)	13.1			68.8	11.9	
Approach LOS	B			E	B	

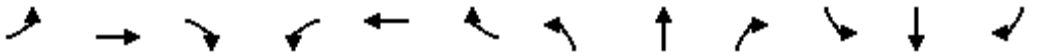
Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	165	0	1451	1452	40
Future Volume (Veh/h)	0	165	0	1451	1452	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)	0	179	0	1577	1578	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)				55	191	
pX, platoon unblocked	0.81	0.66	0.66			
vC, conflicting volume	2388	810	1621			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	599	0	924			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	100			
cM capacity (veh/h)	356	724	497			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	788	788	1052	569
Volume Left	0	0	0	0	0
Volume Right	179	0	0	0	43
cSH	724	1700	1700	1700	1700
Volume to Capacity	0.25	0.46	0.46	0.62	0.33
Queue Length 95th (m)	7.4	0.0	0.0	0.0	0.0
Control Delay (s)	11.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.6	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	16	0	0	0	79	558	166	181	498	198
Future Volume (Veh/h)	23	5	16	0	0	0	79	558	166	181	498	198
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)	25	5	17	0	0	0	86	607	180	197	541	215
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1518	2002	378	1553	2019	394	756			787		
vC1, stage 1 conf vol	1042	1042		869	869							
vC2, stage 2 conf vol	476	959		684	1150							
vCu, unblocked vol	1387	1914	147	1426	1933	394	558			787		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	95	98	100	100	100	91			77		
cM capacity (veh/h)	187	103	809	206	133	611	940			841		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	47	0	86	405	382	197	361	395
Volume Left	25	0	86	0	0	197	0	0
Volume Right	17	0	0	0	180	0	0	215
cSH	231	1700	940	1700	1700	841	1700	1700
Volume to Capacity	0.20	0.00	0.09	0.24	0.22	0.23	0.21	0.23
Queue Length 95th (m)	5.6	0.0	2.3	0.0	0.0	6.9	0.0	0.0
Control Delay (s)	24.5	0.0	9.2	0.0	0.0	10.6	0.0	0.0
Lane LOS	C	A	A			B		
Approach Delay (s)	24.5	0.0	0.9			2.2		
Approach LOS	C	A						

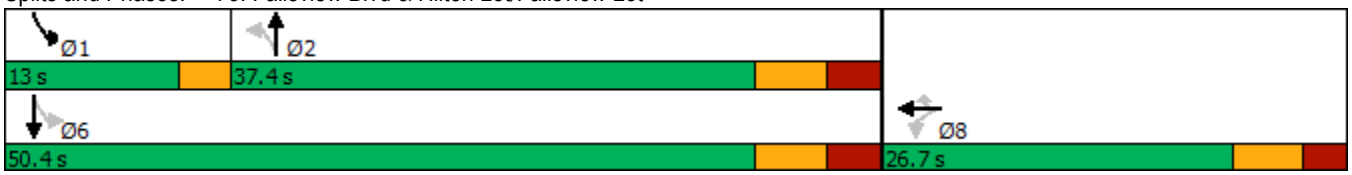
Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	46.7%	ICU Level of Service		A
Analysis Period (min)	15			

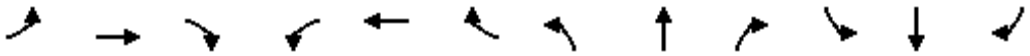
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	123	16	510	204	824
Future Volume (vph)	1	123	16	510	204	824
Lane Group Flow (vph)	47	134	17	650	222	1016
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.15	0.34	0.09	0.49	0.37	0.47
Control Delay	23.0	8.1	13.4	14.4	5.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	8.1	13.4	14.4	5.6	7.2
Queue Length 50th (m)	4.2	0.0	1.1	26.2	7.4	28.6
Queue Length 95th (m)	13.0	12.6	4.7	40.8	14.8	43.4
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	623	639	296	1963	626	2535
Starvation Cap Reductn	0	0	0	0	0	121
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.21	0.06	0.33	0.35	0.42

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 54.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	42	1	123	16	510	88	204	824	110
Future Volume (vph)	0	0	0	42	1	123	16	510	88	204	824	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3215		1644	3230	
Flt Permitted					0.95	1.00	0.28	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	488	3215		603	3230	
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)	0	0	0	46	1	134	17	554	96	222	896	120
RTOR Reduction (vph)	0	0	0	0	0	116	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	47	18	17	632	0	222	1004	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.7	7.7	22.4	22.4		34.5	34.5	
Effective Green, g (s)					7.7	7.7	22.4	22.4		34.5	34.5	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					225	201	194	1279		537	1979	
v/s Ratio Prot								0.20		0.07	c0.31	
v/s Ratio Perm					0.03	0.01	0.03			0.19		
v/c Ratio					0.21	0.09	0.09	0.49		0.41	0.51	
Uniform Delay, d1					21.6	21.2	10.6	12.7		5.0	6.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.3	0.4		0.7	0.3	
Delay (s)					22.2	21.5	10.8	13.1		5.8	6.4	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.7			13.1			6.3	
Approach LOS		A			C			B			A	

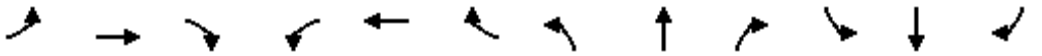
Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	17.1
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	142	143	152	256	371	60	938	364	1144
Future Volume (vph)	142	143	152	256	371	60	938	364	1144
Lane Group Flow (vph)	0	338	0	443	403	65	1092	396	1375
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	18.0	47.0	18.0	47.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	18.0%	47.0%	18.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		2.58		1.27	0.63	0.34	0.84	1.16	0.84
Control Delay		752.3		174.6	11.8	6.9	27.8	125.8	22.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		752.3		174.6	11.8	6.9	27.8	125.8	22.3
Queue Length 50th (m)		~111.3		~108.8	11.8	4.0	103.6	~73.7	73.8
Queue Length 95th (m)		#141.4		#166.8	41.5	m3.6	m105.7	m#116.8	m#126.2
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		131		349	644	331	1307	340	1632
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		2.58		1.27	0.63	0.20	0.84	1.16	0.84

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	143	27	152	256	371	60	938	66	364	1144	121
Future Volume (vph)	142	143	27	152	256	371	60	938	66	364	1144	121
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1672			1699	1471	1644	3256		1644	3241	
Flt Permitted		0.27			0.72	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)		458			1249	1471	193	3256		198	3241	
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)	154	155	29	165	278	403	65	1020	72	396	1243	132
RTOR Reduction (vph)	0	4	0	0	0	233	0	5	0	0	7	0
Lane Group Flow (vph)	0	334	0	0	443	170	65	1087	0	396	1368	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		28.0			28.0	28.0	45.4	40.0		58.0	49.6	
Effective Green, g (s)		28.0			28.0	28.0	45.4	40.0		58.0	49.6	
Actuated g/C Ratio		0.28			0.28	0.28	0.45	0.40		0.58	0.50	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		128			349	411	165	1302		331	1607	
v/s Ratio Prot							0.02	0.33		c0.18	0.42	
v/s Ratio Perm		c0.73			0.35	0.12	0.16			c0.51		
v/c Ratio		2.61			1.27	0.41	0.39	0.83		1.20	0.85	
Uniform Delay, d1		36.0			36.0	29.3	17.4	27.0		27.3	22.0	
Progression Factor		1.00			1.00	1.00	0.74	0.99		1.41	0.80	
Incremental Delay, d2		747.7			142.0	0.4	0.1	0.6		107.2	4.2	
Delay (s)		783.7			178.0	29.7	12.9	27.4		145.7	21.8	
Level of Service		F			F	C	B	C		F	C	
Approach Delay (s)		783.7			107.3			26.6			49.5	
Approach LOS		F			F			C			D	

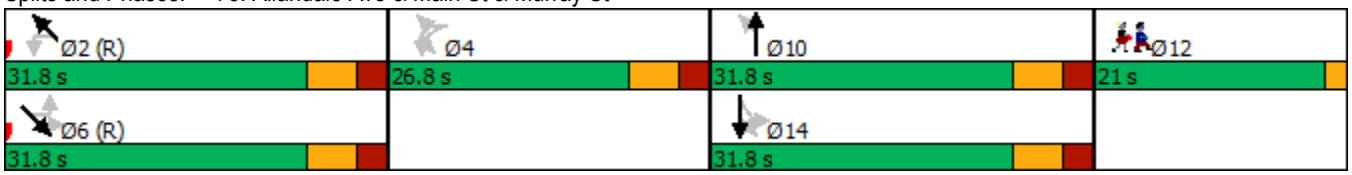
Intersection Summary			
HCM 2000 Control Delay	115.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Future Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Lane Group Flow (vph)	0	22	358	0	250	0	0	44	0	223	259	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	26.8	26.8	26.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Total Split (%)	24.1%	24.1%	24.1%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.12	1.39		0.84			0.15		0.81	0.69	0.13
Control Delay		40.2	232.5		65.7			35.9		63.7	50.7	35.8
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		40.2	232.5		65.7			35.9		63.7	50.7	35.8
Queue Length 50th (m)		4.1	~103.7		52.2			7.6		46.2	52.1	7.7
Queue Length 95th (m)		11.3	#160.0		#94.5			17.2		#85.5	80.2	17.2
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		188	258		299			286		277	373	348
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.12	1.39		0.84			0.15		0.81	0.69	0.13

Intersection Summary

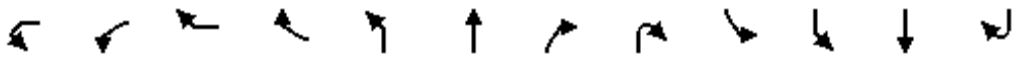
Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

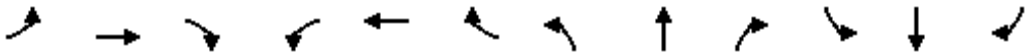


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Future Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1569					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1050	1442			1334					1274	
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)	17	5	299	59	115	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	358	0	0	250	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		20.0	20.0			25.0					25.0	
Effective Green, g (s)		20.0	20.0			25.0					25.0	
Actuated g/C Ratio		0.18	0.18			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		188	258			299					285	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.19					0.03	
v/c Ratio		0.12	1.39			0.84					0.15	
Uniform Delay, d1		38.3	45.7			41.2					34.7	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.3	196.6			23.3					1.1	
Delay (s)		39.6	242.3			64.6					35.8	
Level of Service		D	F			E					D	
Approach Delay (s)		230.5				64.6					35.8	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	111.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	204	208	30	15	11	15
Future Volume (vph)	1	204	208	30	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1664		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1664		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	222	226	33	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	223	259	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		25.0	25.0		25.0		
Effective Green, g (s)		25.0	25.0		25.0		
Actuated g/C Ratio		0.22	0.22		0.22		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		277	373		348		
v/s Ratio Prot			0.16		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.81	0.69		0.13		
Uniform Delay, d1		40.9	39.7		34.5		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		21.5	10.2		0.7		
Delay (s)		62.4	49.9		35.2		
Level of Service		E	D		D		
Approach Delay (s)			55.7		35.2		
Approach LOS			E		D		

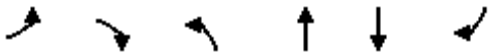
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	272	16	149	0	77	248	50	0	1
Future Volume (Veh/h)	1	14	0	272	16	149	0	77	248	50	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	296	17	162	0	84	270	54	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	179			15			708	788	15	1019	707	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			15			543	639	15	919	541	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	69	75	48	100	100
cM capacity (veh/h)	1354			1616			322	268	1070	103	304	902

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	475	354	55
Volume Left	1	296	0	54
Volume Right	0	162	270	1
cSH	1354	1616	625	105
Volume to Capacity	0.00	0.18	0.57	0.52
Queue Length 95th (m)	0.0	5.1	26.9	18.2
Control Delay (s)	0.5	5.4	18.0	72.3
Lane LOS	A	A	C	F
Approach Delay (s)	0.5	5.4	18.0	72.3
Approach LOS			C	F

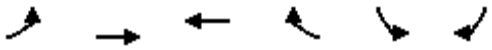
Intersection Summary				
Average Delay	14.4			
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	1064	1305	126
Future Volume (Veh/h)	0	0	10	1064	1305	126
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	1157	1418	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.76	0.64	0.64			
vC, conflicting volume	2087	778	1555			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	0	730			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	482	694	562			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	11	578	578	945	610
Volume Left	0	0	11	0	0	0	0
Volume Right	0	0	0	0	0	0	137
cSH	1700	1700	562	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.02	0.34	0.34	0.56	0.36
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	211	346	861	18	13	212
Future Volume (Veh/h)	211	346	861	18	13	212
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)	229	376	936	20	14	230
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	956				1592	478
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	956				1592	478
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				80	57
cM capacity (veh/h)	727				68	539

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	354	251	624	332	14	230
Volume Left	229	0	0	0	14	0
Volume Right	0	0	0	20	0	230
cSH	727	1700	1700	1700	68	539
Volume to Capacity	0.31	0.15	0.37	0.20	0.20	0.43
Queue Length 95th (m)	10.3	0.0	0.0	0.0	5.3	16.1
Control Delay (s)	9.4	0.0	0.0	0.0	70.6	16.6
Lane LOS	A				F	C
Approach Delay (s)	5.5		0.0		19.7	
Approach LOS					C	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix I

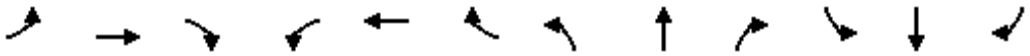
2033 Future Total Conditions Synchro Reports - Mitigated

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	271	148	26	142	159	143
Future Volume (vph)	271	148	26	142	159	143
Lane Group Flow (vph)	295	161	44	154	173	556
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.84	0.30	0.09	0.42	0.19	0.72
Control Delay	44.8	5.2	13.0	10.6	9.2	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.3
Total Delay	44.8	5.2	13.0	10.6	9.2	20.3
Queue Length 50th (m)	33.0	0.0	2.4	8.6	11.0	36.9
Queue Length 95th (m)	#70.8	11.6	8.9	16.1	20.0	#87.7
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	377	553	504	368	932	772
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.29	0.09	0.42	0.19	0.84

Intersection Summary

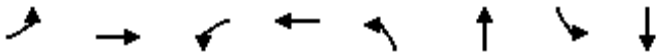
Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Future Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1543	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		402	1731			1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	0	161	0	28	16	154	173	0	0	155	401
RTOR Reduction (vph)	0	0	116	0	12	0	0	0	0	0	131	0
Lane Group Flow (vph)	295	0	45	0	32	0	154	173	0	0	425	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Effective Green, g (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.40	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	353		413		462		324	928			623	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.84		0.11		0.07		0.48	0.19			0.68	
Uniform Delay, d1	22.7		18.0		17.8		10.0	8.0			16.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.2		0.2		0.1		1.5	0.4			6.0	
Delay (s)	39.0		18.1		17.8		11.5	8.5			22.4	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.6			17.8			9.9			22.4	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

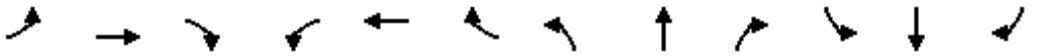


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	208	147	122	186	1125	523	1172
Future Volume (vph)	116	208	147	122	186	1125	523	1172
Lane Group Flow (vph)	126	341	160	396	202	1505	568	1340
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.04	0.70	0.97	0.77	1.29	1.00	1.72	0.63
Control Delay	130.9	39.2	100.8	36.0	175.4	35.1	358.3	15.0
Queue Delay	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	130.9	39.6	100.8	36.1	175.4	35.1	358.3	15.0
Queue Length 50th (m)	24.1	54.1	29.8	52.5	~52.5	~165.9	~149.3	85.5
Queue Length 95th (m)	#59.9	84.1	#68.3	86.5	m#70.8	m#182.6	#213.5	107.2
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	130	517	177	544	157	1507	331	2126
Starvation Cap Reductn	0	25	0	4	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	0.97	0.69	0.90	0.73	1.29	1.00	1.72	0.63

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Future Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1785	1784		1785	1692		1785	3470		1785	3544	
Flt Permitted	0.25	1.00		0.34	1.00		0.20	1.00		0.09	1.00	
Satd. Flow (perm)	466	1784		633	1692		367	3470		164	3544	
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)	126	226	115	160	133	263	202	1223	282	568	1274	66
RTOR Reduction (vph)	0	18	0	0	73	0	0	19	0	0	4	0
Lane Group Flow (vph)	126	323	0	160	323	0	202	1486	0	568	1336	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.1	26.1		26.1	26.1		42.9	42.9		59.9	59.9	
Effective Green, g (s)	26.1	26.1		26.1	26.1		42.9	42.9		59.9	59.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.43	0.43		0.60	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	121	465		165	441		157	1488		325	2122	
v/s Ratio Prot		0.18			0.19			0.43		c0.24	0.38	
v/s Ratio Perm	c0.27			0.25			0.55			c0.80		
v/c Ratio	1.04	0.69		0.97	0.73		1.29	1.00		1.75	0.63	
Uniform Delay, d1	37.0	33.3		36.6	33.8		28.6	28.5		31.5	12.9	
Progression Factor	1.00	1.00		1.00	1.00		0.60	0.57		1.00	1.00	
Incremental Delay, d2	93.3	3.9		60.2	5.6		151.2	16.2		348.9	1.4	
Delay (s)	130.3	37.2		96.7	39.4		168.3	32.6		380.5	14.3	
Level of Service	F	D		F	D		F	C		F	B	
Approach Delay (s)		62.3			55.9			48.6			123.3	
Approach LOS		E			E			D			F	

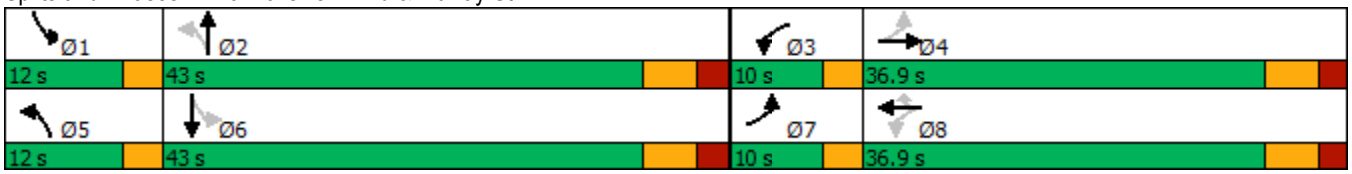
Intersection Summary			
HCM 2000 Control Delay	81.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

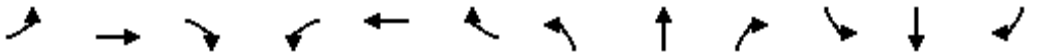
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	169	526	182	322	175	135	428	172	678
Future Volume (vph)	169	526	182	322	175	135	428	172	678
Lane Group Flow (vph)	184	915	198	350	190	147	816	187	777
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.56	0.86	0.95	0.65	0.32	0.44	0.60	0.58	0.60
Control Delay	26.4	38.7	75.1	37.5	5.6	17.5	21.3	21.4	28.1
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	26.4	39.8	75.1	37.5	5.6	17.5	21.7	21.4	28.1
Queue Length 50th (m)	22.5	77.5	24.5	59.3	0.0	14.9	51.5	19.4	65.2
Queue Length 95th (m)	37.3	102.3	#63.7	88.9	15.2	25.6	71.1	32.0	84.5
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	331	1121	209	577	621	344	1350	326	1305
Starvation Cap Reductn	0	66	0	0	0	0	149	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	0.56	0.87	0.95	0.61	0.31	0.43	0.68	0.57	0.60

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 99.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Future Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3369		1785	1879	1597	1785	3340		1785	3542	
Flt Permitted	0.34	1.00		0.14	1.00	1.00	0.24	1.00		0.22	1.00	
Satd. Flow (perm)	644	3369		262	1879	1597	455	3340		410	3542	
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)	184	572	343	198	350	190	147	465	351	187	737	40
RTOR Reduction (vph)	0	89	0	0	0	135	0	131	0	0	4	0
Lane Group Flow (vph)	184	826	0	198	350	55	147	685	0	187	773	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	35.7	28.7		35.7	28.7	28.7	45.0	36.5		45.4	36.7	
Effective Green, g (s)	35.7	28.7		35.7	28.7	28.7	45.0	36.5		45.4	36.7	
Actuated g/C Ratio	0.36	0.29		0.36	0.29	0.29	0.45	0.37		0.45	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	310	968		200	540	459	318	1221		306	1302	
v/s Ratio Prot	0.04	0.25		c0.07	0.19		0.04	0.21		c0.05	0.22	
v/s Ratio Perm	0.17			c0.28		0.03	0.17			c0.22		
v/c Ratio	0.59	0.85		0.99	0.65	0.12	0.46	0.56		0.61	0.59	
Uniform Delay, d1	24.1	33.6		27.8	31.1	26.2	17.3	25.3		17.8	25.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	7.4		60.1	2.7	0.1	1.1	1.9		3.6	2.0	
Delay (s)	27.1	41.0		87.9	33.8	26.3	18.3	27.1		21.4	27.5	
Level of Service	C	D		F	C	C	B	C		C	C	
Approach Delay (s)		38.6			46.4			25.8			26.3	
Approach LOS		D			D			C			C	

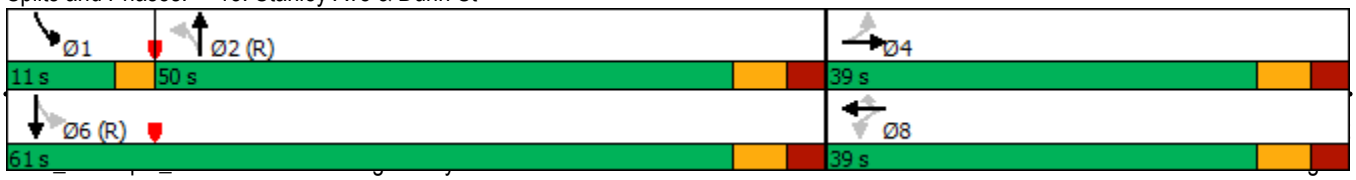
Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	18.9
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

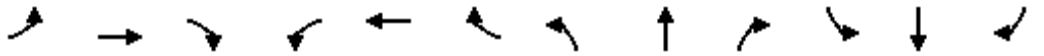
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	256	305	82	355	64	212	876	105	749
Future Volume (vph)	256	305	82	355	64	212	876	105	749
Lane Group Flow (vph)	278	480	89	386	70	230	1095	114	1051
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.36	0.81	0.68	0.64	0.12	1.11	0.71	0.44	0.56
Control Delay	219.2	42.5	58.1	35.0	5.8	124.8	25.9	12.7	17.8
Queue Delay	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0
Total Delay	219.2	42.5	58.1	38.3	5.8	124.8	25.9	12.7	17.8
Queue Length 50th (m)	~71.2	81.1	14.9	63.6	0.0	~51.7	88.4	12.5	95.8
Queue Length 95th (m)	#120.2	#131.1	#39.9	94.6	8.4	#97.1	112.3	m13.2	m108.2
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	205	589	131	601	562	208	1536	268	1889
Starvation Cap Reductn	0	0	0	130	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	1.36	0.81	0.68	0.82	0.12	1.11	0.71	0.43	0.56

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Future Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1792		1785	1879	1597	1785	3500		1785	3449	
Flt Permitted	0.34	1.00		0.22	1.00	1.00	0.25	1.00		0.13	1.00	
Satd. Flow (perm)	640	1792		410	1879	1597	477	3500		253	3449	
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)	278	332	148	89	386	70	230	952	143	114	814	237
RTOR Reduction (vph)	0	16	0	0	0	48	0	12	0	0	27	0
Lane Group Flow (vph)	278	464	0	89	386	22	230	1083	0	114	1024	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.44	0.44		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	204	573		131	601	511	207	1526		249	1862	
v/s Ratio Prot		0.26			0.21			0.31		0.03	c0.30	
v/s Ratio Perm	c0.43			0.22		0.01	c0.48			0.21		
v/c Ratio	1.36	0.81		0.68	0.64	0.04	1.11	0.71		0.46	0.55	
Uniform Delay, d1	34.0	31.2		29.5	29.1	23.4	28.2	23.0		14.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.06	1.20	
Incremental Delay, d2	191.5	8.0		12.0	2.1	0.0	95.5	2.8		0.5	0.6	
Delay (s)	225.5	39.2		41.5	31.2	23.5	123.7	25.9		16.0	18.7	
Level of Service	F	D		D	C	C	F	C		B	B	
Approach Delay (s)		107.5			31.9			42.8			18.4	
Approach LOS		F			C			D			B	

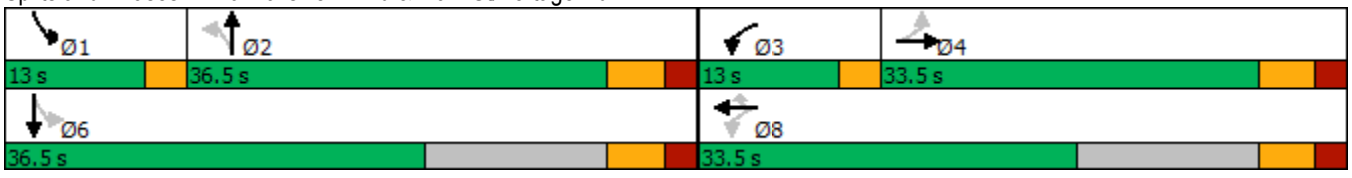
Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

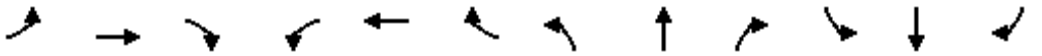
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	167	341	176	459	414	34	327	138	312
Future Volume (vph)	167	341	176	459	414	34	327	138	312
Lane Group Flow (vph)	182	451	191	499	450	37	465	150	376
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.80	0.89	0.66	0.65	0.49	0.11	0.79	0.45	0.45
Control Delay	59.2	53.6	28.0	27.1	3.8	24.9	39.7	18.2	19.8
Queue Delay	0.0	0.0	0.0	5.2	0.4	0.0	54.2	0.0	0.0
Total Delay	59.2	53.6	28.0	32.3	4.2	24.9	93.9	18.2	19.8
Queue Length 50th (m)	31.0	77.6	21.0	71.7	0.0	4.9	76.1	15.1	45.9
Queue Length 95th (m)	#65.7	#130.4	#35.5	105.4	17.2	12.2	#124.2	26.2	69.5
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	239	534	293	800	938	322	591	345	851
Starvation Cap Reductn	0	0	0	233	147	0	216	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	0.76	0.84	0.65	0.88	0.57	0.11	1.24	0.43	0.44

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 94
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





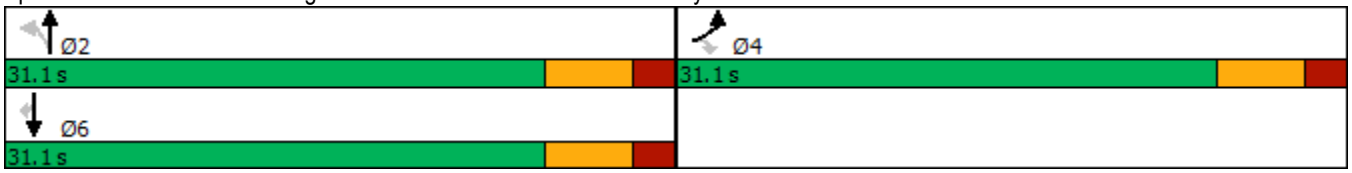
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Future Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1829		1785	1879	1597	1785	1812		1785	1851	
Flt Permitted	0.44	1.00		0.16	1.00	1.00	0.54	1.00		0.21	1.00	
Satd. Flow (perm)	832	1829		305	1879	1597	1011	1812		404	1851	
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)	182	371	80	191	499	450	37	355	110	150	339	37
RTOR Reduction (vph)	0	8	0	0	0	266	0	12	0	0	4	0
Lane Group Flow (vph)	182	443	0	191	499	184	37	453	0	150	372	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Effective Green, g (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Actuated g/C Ratio	0.27	0.27		0.41	0.41	0.41	0.32	0.32		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	226	498		278	767	652	323	580		322	838	
v/s Ratio Prot		c0.24		c0.07	0.27			c0.25		c0.05	0.20	
v/s Ratio Perm	0.22			0.21		0.12	0.04			0.16		
v/c Ratio	0.81	0.89		0.69	0.65	0.28	0.11	0.78		0.47	0.44	
Uniform Delay, d1	31.9	32.8		20.9	22.4	18.6	22.5	29.0		17.6	17.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.4	17.8		7.5	2.2	0.3	0.7	10.1		1.5	1.7	
Delay (s)	51.3	50.7		28.4	24.6	18.9	23.3	39.1		19.0	19.3	
Level of Service	D	D		C	C	B	C	D		B	B	
Approach Delay (s)		50.8			23.0			37.9			19.2	
Approach LOS		D			C			D			B	

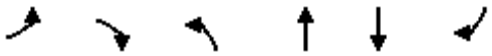
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Lane Group Flow (vph)	97	272	295	18	115	797
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.15	0.36	0.54	0.02	0.14	0.70
Control Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Length 50th (m)	6.8	0.0	25.3	1.2	8.1	0.0
Queue Length 95th (m)	14.7	11.6	47.2	4.4	16.8	18.5
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	763	838	548	803	803	1138
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	0.13	0.32	0.54	0.02	0.14	0.70

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

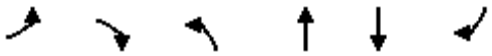
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1283	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	272	295	18	115	797
RTOR Reduction (vph)	0	173	0	0	0	455
Lane Group Flow (vph)	97	99	295	18	115	342
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.5	21.5	25.3	25.3	25.3	25.3
Effective Green, g (s)	21.5	21.5	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	650	581	550	805	805	684
v/s Ratio Prot	0.05			0.01	0.06	
v/s Ratio Perm		c0.06	c0.23			0.21
v/c Ratio	0.15	0.17	0.54	0.02	0.14	0.50
Uniform Delay, d1	12.6	12.7	12.5	9.7	10.3	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	3.7	0.1	0.4	2.6
Delay (s)	12.7	12.9	16.2	9.8	10.6	14.8
Level of Service	B	B	B	A	B	B
Approach Delay (s)	12.9			15.8	14.3	
Approach LOS	B			B	B	

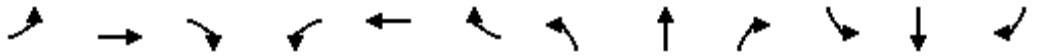
Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	164	0	1442	1444	40
Future Volume (Veh/h)	0	164	0	1442	1444	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)	0	178	0	1567	1570	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)				55	191	
pX, platoon unblocked	0.83	0.75	0.75			
vC, conflicting volume	2375	806	1613			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	891	75	1151			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	76	100			
cM capacity (veh/h)	237	733	461			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	178	784	784	1047	566
Volume Left	0	0	0	0	0
Volume Right	178	0	0	0	43
cSH	733	1700	1700	1700	1700
Volume to Capacity	0.24	0.46	0.46	0.62	0.33
Queue Length 95th (m)	7.2	0.0	0.0	0.0	0.0
Control Delay (s)	11.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.5	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
Future Volume (Veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
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)	24	5	16	0	0	0	85	602	179	195	539	214
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	2096	2821	966	1844	2838	696	1312			1056		
vC1, stage 1 conf vol	1595	1595		1136	1136							
vC2, stage 2 conf vol	501	1226		708	1702							
vCu, unblocked vol	2017	2805	787	1743	2824	696	1164			1056		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	34	0	90	100	100	100	70			61		
cM capacity (veh/h)	37	3	153	84	3	287	283			505		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	0	85	401	380	195	359	394
Volume Left	24	0	85	0	0	195	0	0
Volume Right	16	0	0	0	179	0	0	214
cSH	18	1700	283	1700	1700	505	1700	1700
Volume to Capacity	2.55	0.00	0.30	0.24	0.22	0.39	0.21	0.23
Queue Length 95th (m)	46.8	0.0	9.3	0.0	0.0	13.7	0.0	0.0
Control Delay (s)	1151.6	0.0	23.1	0.0	0.0	16.5	0.0	0.0
Lane LOS	F	A	C			C		
Approach Delay (s)	1151.6	0.0	2.3			3.4		
Approach LOS	F	A						

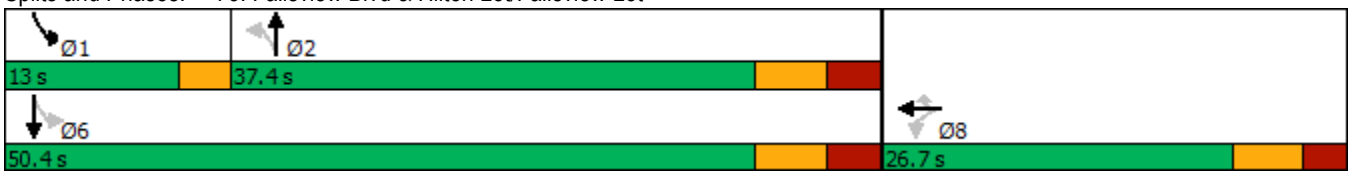
Intersection Summary				
Average Delay	30.7			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			

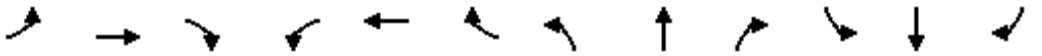
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	122	16	506	202	820
Future Volume (vph)	1	122	16	506	202	820
Lane Group Flow (vph)	46	133	17	643	220	1008
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.14	0.34	0.09	0.49	0.36	0.47
Control Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Length 50th (m)	4.1	0.0	1.1	25.8	7.4	28.2
Queue Length 95th (m)	12.4	12.4	4.8	40.5	14.7	43.1
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	625	640	298	1969	629	2546
Starvation Cap Reductn	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.21	0.06	0.33	0.35	0.41

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 54.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Future Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3217		1644	3231	
Flt Permitted					0.95	1.00	0.28	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	492	3217		609	3231	
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)	0	0	0	45	1	133	17	550	93	220	891	117
RTOR Reduction (vph)	0	0	0	0	0	115	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	46	18	17	625	0	220	996	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Effective Green, g (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	194	1273		540	1975	
v/s Ratio Prot								0.19		0.07	c0.31	
v/s Ratio Perm					0.03	0.01	0.03			0.18		
v/c Ratio					0.20	0.09	0.09	0.49		0.41	0.50	
Uniform Delay, d1					21.5	21.1	10.6	12.7		5.0	6.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.3	0.4		0.7	0.3	
Delay (s)					22.1	21.4	10.9	13.1		5.7	6.4	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.6			13.1			6.3	
Approach LOS		A			C			B			A	

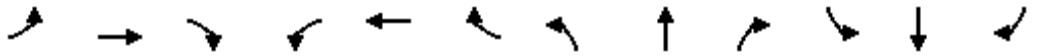
Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	17.1
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	141	143	152	256	367	59	934	362	1138
Future Volume (vph)	141	143	152	256	367	59	934	362	1138
Lane Group Flow (vph)	0	337	0	443	399	64	1086	393	1366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		2.31		1.22	0.62	0.34	0.83	1.21	0.85
Control Delay		630.8		156.0	12.1	9.6	32.0	146.8	21.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		630.8		156.0	12.1	9.6	32.0	146.8	21.7
Queue Length 50th (m)		~107.7		~106.1	13.2	4.7	105.0	~75.4	68.4
Queue Length 95th (m)		#161.1		#164.1	42.9	m5.1	m116.1	m#129.1	m#166.7
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		146		362	645	310	1307	325	1599
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		2.31		1.22	0.62	0.21	0.83	1.21	0.85

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Future Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1672			1699	1471	1644	3256		1644	3241	
Flt Permitted		0.29			0.72	1.00	0.11	1.00		0.12	1.00	
Satd. Flow (perm)		493			1251	1471	183	3256		202	3241	
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)	153	155	29	165	278	399	64	1015	71	393	1237	129
RTOR Reduction (vph)	0	4	0	0	0	219	0	5	0	0	7	0
Lane Group Flow (vph)	0	333	0	0	443	180	64	1081	0	393	1359	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Effective Green, g (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Actuated g/C Ratio		0.29			0.29	0.29	0.46	0.40		0.57	0.48	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		142			362	426	163	1302		317	1571	
v/s Ratio Prot							0.02	0.33		c0.17	0.42	
v/s Ratio Perm		c0.68			0.35	0.12	0.16			c0.53		
v/c Ratio		2.35			1.22	0.42	0.39	0.83		1.24	0.87	
Uniform Delay, d1		35.5			35.5	28.7	17.6	26.9		26.7	22.9	
Progression Factor		1.00			1.00	1.00	0.76	1.05		1.47	0.69	
Incremental Delay, d2		628.0			123.0	0.4	0.5	3.5		128.4	5.6	
Delay (s)		663.5			158.5	29.1	13.9	31.7		167.6	21.4	
Level of Service		F			F	C	B	C		F	C	
Approach Delay (s)		663.5			97.2			30.7			54.0	
Approach LOS		F			F			C			D	

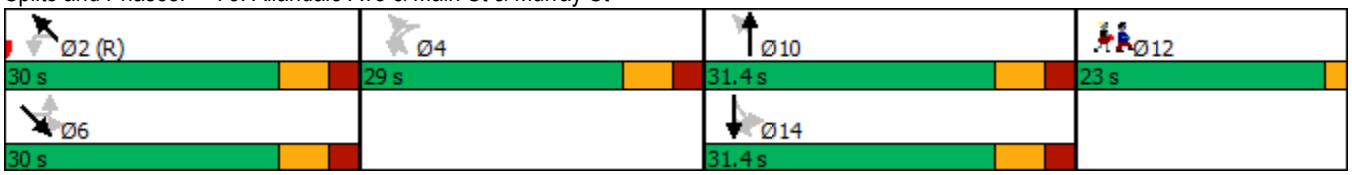
Intersection Summary			
HCM 2000 Control Delay	106.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWL
Lane Configurations												
Traffic Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Future Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Lane Group Flow (vph)	0	22	357	0	247	0	0	44	0	222	256	0
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases					10			14			6	
Permitted Phases	4	4	4	10		14	14		6	6		2
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	25.6%	25.6%	25.6%	27.7%	27.7%	27.7%	27.7%	27.7%	26.5%	26.5%	26.5%	26.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.27		0.85			0.16		0.88	0.75	
Control Delay		39.2	183.3		70.0			37.3		77.7	57.6	
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	
Total Delay		39.2	183.3		70.0			37.3		77.7	57.6	
Queue Length 50th (m)		4.0	~99.8		53.0			7.8		48.1	53.8	
Queue Length 95th (m)		11.2	#156.1		#96.6			17.8		#91.3	#89.6	
Internal Link Dist (m)		102.7			229.8			295.5			298.1	
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		205	282		289			274		252	340	
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		0.11	1.27		0.85			0.16		0.88	0.75	

Intersection Summary

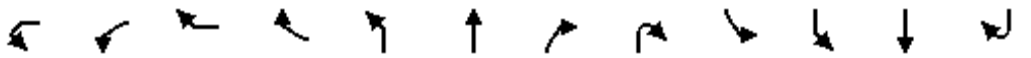
Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	NWT	Ø12
Lane Configurations		
Traffic Volume (vph)	15	
Future Volume (vph)	15	
Lane Group Flow (vph)	45	
Turn Type	NA	
Protected Phases	2	12
Permitted Phases		
Minimum Split (s)	16.8	23.0
Total Split (s)	30.0	23.0
Total Split (%)	26.5%	20%
Yellow Time (s)	4.1	2.0
All-Red Time (s)	2.7	0.0
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.8	
Lead/Lag		
Lead-Lag Optimize?		
v/c Ratio	0.14	
Control Delay	38.5	
Queue Delay	0.0	
Total Delay	38.5	
Queue Length 50th (m)	8.3	
Queue Length 95th (m)	18.2	
Internal Link Dist (m)	208.5	
Turn Bay Length (m)		
Base Capacity (vph)	315	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.14	

Intersection Summary

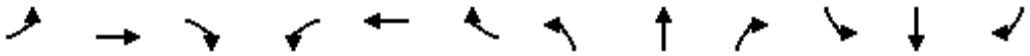


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Future Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1568					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1051	1442			1336					1262	
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)	17	5	298	59	112	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	357	0	0	247	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		205	282			289					273	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.18					0.03	
v/c Ratio		0.11	1.27			0.85					0.16	
Uniform Delay, d1		37.5	45.6			42.7					36.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.1	144.8			26.2					1.2	
Delay (s)		38.5	190.4			68.8					37.2	
Level of Service		D	F			E					D	
Approach Delay (s)		181.6				68.8					37.2	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	101.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWL	NWT	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	1	203	206	29	1	15	11	15
Future Volume (vph)	1	203	206	29	1	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8		
Lane Util. Factor		1.00	1.00			1.00		
Frt		1.00	0.98			0.92		
Flt Protected		0.95	1.00			1.00		
Satd. Flow (prot)		1612	1665			1552		
Flt Permitted		0.73	1.00			0.99		
Satd. Flow (perm)		1235	1665			1544		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	221	224	32	1	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	222	256	0	0	45	0	0
Turn Type	Perm	Perm	NA		Perm	NA		
Protected Phases			6			2		
Permitted Phases	6	6			2			
Actuated Green, G (s)		23.2	23.2			23.2		
Effective Green, g (s)		23.2	23.2			23.2		
Actuated g/C Ratio		0.20	0.20			0.20		
Clearance Time (s)		6.8	6.8			6.8		
Lane Grp Cap (vph)		252	340			315		
v/s Ratio Prot			0.15					
v/s Ratio Perm		c0.18				0.03		
v/c Ratio		0.88	0.75			0.14		
Uniform Delay, d1		43.8	42.4			37.0		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		32.8	14.3			1.0		
Delay (s)		76.5	56.7			37.9		
Level of Service		E	E			D		
Approach Delay (s)			65.9			37.9		
Approach LOS			E			D		

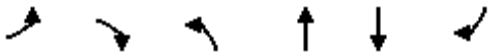
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Future Volume (Veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	296	17	159	0	84	270	53	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	176			15			706	785	15	1018	706	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			15			545	639	15	919	544	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	69	75	49	100	100
cM capacity (veh/h)	1359			1616			322	269	1070	104	305	906

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	472	354	54
Volume Left	1	296	0	53
Volume Right	0	159	270	1
cSH	1359	1616	627	105
Volume to Capacity	0.00	0.18	0.56	0.51
Queue Length 95th (m)	0.0	5.1	26.8	17.6
Control Delay (s)	0.5	5.4	17.9	70.7
Lane LOS	A	A	C	F
Approach Delay (s)	0.5	5.4	17.9	70.7
Approach LOS			C	F

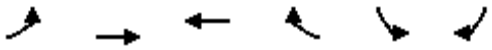
Intersection Summary				
Average Delay	14.2			
Intersection Capacity Utilization	67.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	1057	1299	126
Future Volume (Veh/h)	0	0	10	1057	1299	126
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	1149	1412	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.75	0.63	0.63			
vC, conflicting volume	2077	774	1549			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	375	0	707			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	443	690	570			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	11	574	574	941	608
Volume Left	0	0	11	0	0	0	0
Volume Right	0	0	0	0	0	0	137
cSH	1700	1700	570	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.02	0.34	0.34	0.55	0.36
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.4	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	211	368	985	18	13	212
Future Volume (Veh/h)	211	368	985	18	13	212
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)	229	400	1071	20	14	230
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	1091				1739	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1091				1739	546
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	65				73	53
cM capacity (veh/h)	647				52	487

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	362	267	714	377	14	230
Volume Left	229	0	0	0	14	0
Volume Right	0	0	0	20	0	230
cSH	647	1700	1700	1700	52	487
Volume to Capacity	0.35	0.16	0.42	0.22	0.27	0.47
Queue Length 95th (m)	12.1	0.0	0.0	0.0	7.1	18.9
Control Delay (s)	10.5	0.0	0.0	0.0	99.0	18.8
Lane LOS	B				F	C
Approach Delay (s)	6.0		0.0		23.4	
Approach LOS					C	

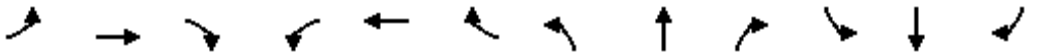
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	270	149	26	143	160	144
Future Volume (vph)	270	149	26	143	160	144
Lane Group Flow (vph)	293	162	44	155	174	559
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.83	0.31	0.09	0.42	0.19	0.73
Control Delay	44.8	5.2	13.0	10.6	9.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.4
Total Delay	44.8	5.2	13.0	10.6	9.2	20.7
Queue Length 50th (m)	32.8	0.0	2.5	8.6	11.0	37.3
Queue Length 95th (m)	#70.0	11.6	8.9	16.2	20.2	#88.9
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	376	553	503	368	934	771
Starvation Cap Reductn	0	0	0	0	0	111
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.29	0.09	0.42	0.19	0.85

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	0	149	0	26	15	143	160	0	0	144	370
Future Volume (vph)	270	0	149	0	26	15	143	160	0	0	144	370
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1544	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		399	1731			1544	
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)	293	0	162	0	28	16	155	174	0	0	157	402
RTOR Reduction (vph)	0	0	117	0	12	0	0	0	0	0	130	0
Lane Group Flow (vph)	293	0	45	0	32	0	155	174	0	0	429	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.8		18.8		18.8		36.2	36.2			27.3	
Effective Green, g (s)	18.8		18.8		18.8		36.2	36.2			27.3	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	351		410		459		323	931			626	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.22					
v/c Ratio	0.83		0.11		0.07		0.48	0.19			0.69	
Uniform Delay, d1	22.8		18.0		17.8		10.0	8.0			16.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.2		0.2		0.1		1.5	0.4			6.0	
Delay (s)	39.0		18.2		17.9		11.5	8.4			22.5	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.6			17.9			9.9			22.5	
Approach LOS		C			B			A			C	

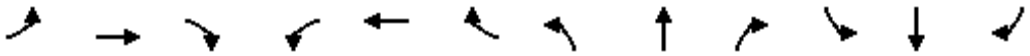
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	239	149	130	182	988	415	1174
Future Volume (vph)	105	239	149	130	182	988	415	1174
Lane Group Flow (vph)	114	375	162	389	198	1322	451	1419
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.82	0.78	1.09	0.78	1.74	0.99	1.48	0.75
Control Delay	76.7	44.4	136.0	37.5	371.6	33.6	257.4	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	44.4	136.0	37.5	371.6	33.6	257.4	18.6
Queue Length 50th (m)	20.6	63.3	~35.3	54.3	~57.6	40.4	~106.3	99.4
Queue Length 95th (m)	#51.6	#106.4	#74.7	#98.5	m#77.1	m#167.0	#165.9	126.5
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	139	478	149	501	114	1330	305	1887
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	0.82	0.78	1.09	0.78	1.74	0.99	1.48	0.75

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	239	106	149	130	228	182	988	228	415	1174	132
Future Volume (vph)	105	239	106	149	130	228	182	988	228	415	1174	132
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1644	1651		1644	1565		1644	3196		1644	3238	
Flt Permitted	0.29	1.00		0.31	1.00		0.16	1.00		0.09	1.00	
Satd. Flow (perm)	498	1651		534	1565		280	3196		157	3238	
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)	114	260	115	162	141	248	198	1074	248	451	1276	143
RTOR Reduction (vph)	0	16	0	0	63	0	0	20	0	0	8	0
Lane Group Flow (vph)	114	359	0	162	326	0	198	1302	0	451	1411	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.0	28.0		28.0	28.0		41.0	41.0		58.0	58.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0		41.0	41.0		58.0	58.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.41	0.41		0.58	0.58	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	462		149	438		114	1310		299	1878	
v/s Ratio Prot		0.22			0.21			0.41		c0.21	0.44	
v/s Ratio Perm	0.23			c0.30			c0.71			0.66		
v/c Ratio	0.82	0.78		1.09	0.74		1.74	0.99		1.51	0.75	
Uniform Delay, d1	33.6	33.1		36.0	32.7		29.5	29.4		30.4	15.6	
Progression Factor	1.00	1.00		1.00	1.00		0.52	0.50		1.00	1.00	
Incremental Delay, d2	30.5	8.0		99.0	6.7		351.4	17.3		245.4	2.8	
Delay (s)	64.2	41.2		135.0	39.4		366.6	31.9		275.8	18.5	
Level of Service	E	D		F	D		F	C		F	B	
Approach Delay (s)		46.5			67.5			75.5			80.5	
Approach LOS		D			E			E			F	

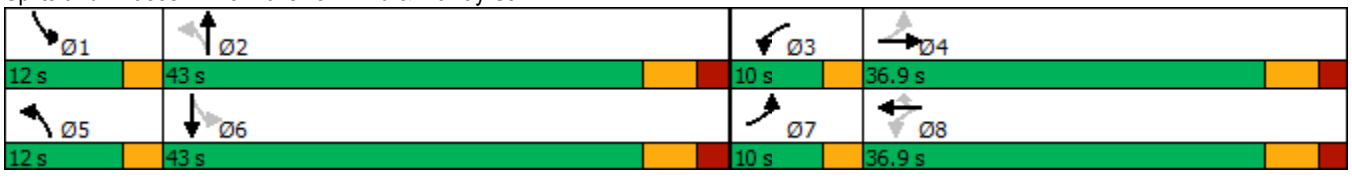
Intersection Summary			
HCM 2000 Control Delay	73.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

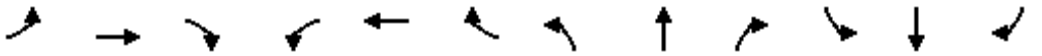
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	503	137	263	167	119	366	172	562
Future Volume (vph)	148	503	137	263	167	119	366	172	562
Lane Group Flow (vph)	161	783	149	286	182	129	701	187	670
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.46	0.84	0.72	0.59	0.34	0.36	0.55	0.54	0.55
Control Delay	23.8	40.0	41.0	36.2	6.0	16.0	19.1	19.9	26.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	40.1	41.0	36.2	6.0	16.0	19.1	19.9	26.8
Queue Length 50th (m)	19.6	68.5	18.0	47.3	0.0	12.8	39.6	19.2	54.2
Queue Length 95th (m)	33.5	91.2	#36.1	73.2	15.0	23.1	58.1	32.6	72.8
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	351	1021	206	537	582	367	1268	349	1217
Starvation Cap Reductn	0	7	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	0.46	0.77	0.72	0.53	0.31	0.35	0.55	0.54	0.55

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 98.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	503	217	137	263	167	119	366	279	172	562	54
Future Volume (vph)	148	503	217	137	263	167	119	366	279	172	562	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3139		1644	1731	1471	1644	3075		1644	3245	
Flt Permitted	0.43	1.00		0.16	1.00	1.00	0.31	1.00		0.28	1.00	
Satd. Flow (perm)	750	3139		285	1731	1471	535	3075		489	3245	
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)	161	547	236	149	286	182	129	398	303	187	611	59
RTOR Reduction (vph)	0	49	0	0	0	131	0	133	0	0	7	0
Lane Group Flow (vph)	161	734	0	149	286	51	129	568	0	187	663	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	34.6	27.6		34.6	27.6	27.6	44.8	36.5		45.6	36.9	
Effective Green, g (s)	34.6	27.6		34.6	27.6	27.6	44.8	36.5		45.6	36.9	
Actuated g/C Ratio	0.35	0.28		0.35	0.28	0.28	0.45	0.37		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	326	877		196	484	411	336	1137		327	1213	
v/s Ratio Prot	0.03	c0.23		c0.05	0.17		0.03	0.18		c0.05	0.20	
v/s Ratio Perm	0.14			0.21		0.03	0.14			c0.21		
v/c Ratio	0.49	0.84		0.76	0.59	0.12	0.38	0.50		0.57	0.55	
Uniform Delay, d1	23.4	33.4		24.4	30.7	26.5	16.4	24.0		16.8	24.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	7.0		15.8	1.9	0.1	0.7	1.6		2.4	1.8	
Delay (s)	24.6	40.4		40.2	32.6	26.7	17.1	25.6		19.2	26.1	
Level of Service	C	D		D	C	C	B	C		B	C	
Approach Delay (s)		37.7			32.7			24.3			24.6	
Approach LOS		D			C			C			C	

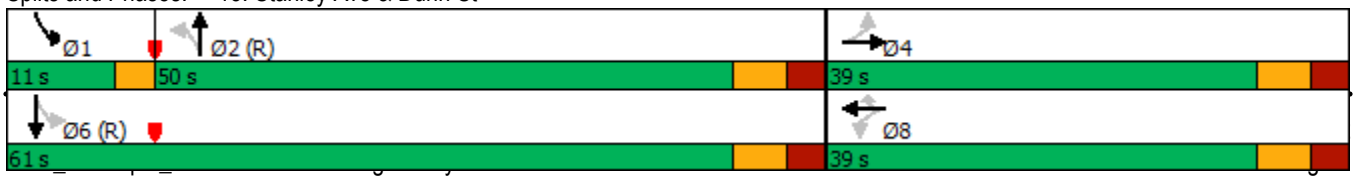
Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	18.9
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

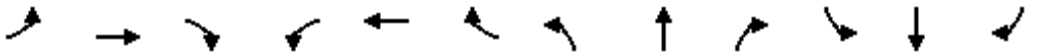
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	304	81	394	69	216	854	158	864
Future Volume (vph)	265	304	81	394	69	216	854	158	864
Lane Group Flow (vph)	288	491	88	428	75	235	1081	172	1207
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.83	0.90	0.79	0.77	0.14	1.63	0.77	0.69	0.69
Control Delay	424.1	52.9	76.6	41.8	6.5	337.8	28.4	23.3	21.4
Queue Delay	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0
Total Delay	424.1	52.9	76.6	49.0	6.5	337.8	28.4	23.3	21.4
Queue Length 50th (m)	~84.8	86.3	15.4	74.4	0.0	~66.0	90.1	21.0	112.9
Queue Length 95th (m)	#134.3	#145.8	#43.2	#118.5	9.3	#85.4	115.6	m23.3	m132.6
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	157	544	112	553	522	144	1399	250	1743
Starvation Cap Reductn	0	0	0	88	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	1.83	0.90	0.79	0.92	0.14	1.63	0.77	0.69	0.69

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	304	148	81	394	69	216	854	141	158	864	247
Future Volume (vph)	265	304	148	81	394	69	216	854	141	158	864	247
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1645		1644	1731	1471	1644	3218		1644	3179	
Flt Permitted	0.29	1.00		0.20	1.00	1.00	0.19	1.00		0.14	1.00	
Satd. Flow (perm)	494	1645		353	1731	1471	336	3218		236	3179	
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)	288	330	161	88	428	75	235	928	153	172	939	268
RTOR Reduction (vph)	0	18	0	0	0	51	0	13	0	0	26	0
Lane Group Flow (vph)	288	473	0	88	428	24	235	1068	0	172	1181	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.43	0.43		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	158	526		112	553	470	144	1386		238	1716	
v/s Ratio Prot		0.29			0.25			0.33		0.06	c0.37	
v/s Ratio Perm	c0.58			0.25		0.02	c0.70			0.33		
v/c Ratio	1.82	0.90		0.79	0.77	0.05	1.63	0.77		0.72	0.69	
Uniform Delay, d1	34.0	32.5		30.9	30.7	23.5	28.4	24.2		15.8	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.26	1.23	
Incremental Delay, d2	394.0	18.1		29.4	6.7	0.0	313.6	4.2		6.1	1.3	
Delay (s)	428.0	50.6		60.3	37.4	23.5	342.1	28.4		26.1	22.0	
Level of Service	F	D		E	D	C	F	C		C	C	
Approach Delay (s)		190.1			39.1			84.4			22.5	
Approach LOS		F			D			F			C	

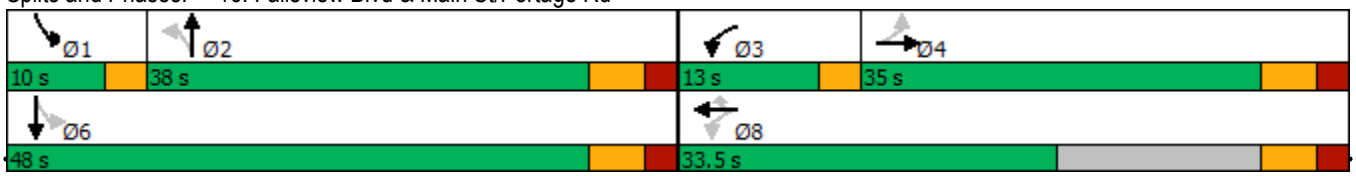
Intersection Summary			
HCM 2000 Control Delay	77.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

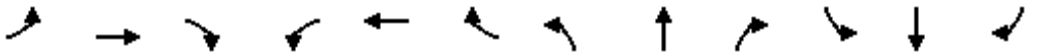
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	262	306	188	425	479	21	434	88	264
Future Volume (vph)	262	306	188	425	479	21	434	88	264
Lane Group Flow (vph)	285	429	204	462	521	23	583	96	324
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	35.0	35.0	13.0	33.5	33.5	38.0	38.0	10.0	48.0
Total Split (%)	36.5%	36.5%	13.5%	34.9%	34.9%	39.6%	39.6%	10.4%	50.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	1.11	0.84	0.66	0.62	0.63	0.07	0.98	0.47	0.44
Control Delay	124.5	47.5	27.1	25.7	11.1	23.1	64.6	22.4	20.8
Queue Delay	0.0	0.0	0.0	4.2	0.9	0.0	40.7	0.0	0.0
Total Delay	124.5	47.5	27.1	29.8	12.0	23.1	105.3	22.4	20.8
Queue Length 50th (m)	~61.2	72.0	22.2	64.5	23.3	2.9	~116.2	9.7	39.7
Queue Length 95th (m)	#109.7	#123.0	#36.8	96.8	57.3	8.5	#179.7	18.7	62.2
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	256	508	312	750	826	342	596	203	742
Starvation Cap Reductn	0	0	0	208	112	0	178	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	1.11	0.84	0.65	0.85	0.73	0.07	1.39	0.47	0.44

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 95.7
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	306	88	188	425	479	21	434	102	88	264	34
Future Volume (vph)	262	306	88	188	425	479	21	434	102	88	264	34
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1672		1644	1731	1471	1644	1681		1644	1701	
Flt Permitted	0.50	1.00		0.22	1.00	1.00	0.56	1.00		0.12	1.00	
Satd. Flow (perm)	861	1672		388	1731	1471	977	1681		209	1701	
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)	285	333	96	204	462	521	23	472	111	96	287	37
RTOR Reduction (vph)	0	11	0	0	0	191	0	8	0	0	5	0
Lane Group Flow (vph)	285	418	0	204	462	330	23	575	0	96	319	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Effective Green, g (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Actuated g/C Ratio	0.30	0.30		0.43	0.43	0.43	0.35	0.35		0.44	0.44	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	254	494		292	740	629	339	584		174	743	
v/s Ratio Prot		0.25		c0.07	0.27			c0.34		c0.03	0.19	
v/s Ratio Perm	c0.33			0.23		0.22	0.02			0.21		
v/c Ratio	1.12	0.85		0.70	0.62	0.53	0.07	0.98		0.55	0.43	
Uniform Delay, d1	33.9	31.9		20.1	21.5	20.3	21.0	31.1		20.4	18.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	93.3	12.7		7.1	1.6	0.8	0.4	33.5		3.7	1.8	
Delay (s)	127.2	44.5		27.2	23.2	21.1	21.4	64.6		24.1	20.6	
Level of Service	F	D		C	C	C	C	E		C	C	
Approach Delay (s)		77.5			23.0			63.0			21.4	
Approach LOS		E			C			E			C	

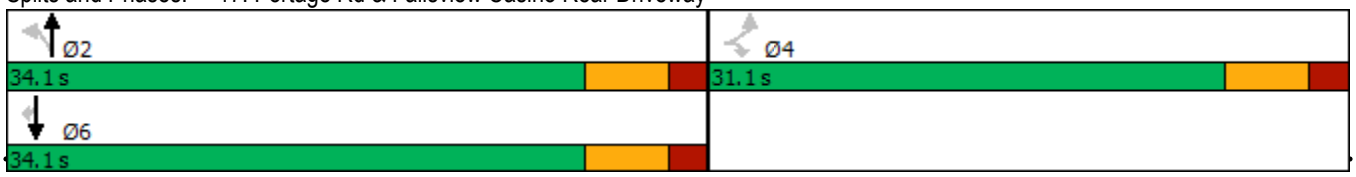
Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

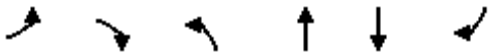
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	284	472	112	141	391
Future Volume (vph)	106	284	472	112	141	391
Lane Group Flow (vph)	115	309	513	122	153	425
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	34.1	34.1	34.1	34.1
Total Split (%)	47.7%	47.7%	52.3%	52.3%	52.3%	52.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.20	0.43	0.99	0.16	0.19	0.47
Control Delay	14.5	4.1	59.8	12.2	12.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	4.1	59.8	12.2	12.4	3.4
Queue Length 50th (m)	8.9	0.0	~69.3	8.7	11.1	0.0
Queue Length 95th (m)	18.5	13.2	#120.5	17.6	21.4	13.9
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	668	781	519	787	787	901
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	0.40	0.99	0.16	0.19	0.47

Intersection Summary

Cycle Length: 65.2
Actuated Cycle Length: 62.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
~ 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.

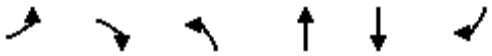
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	284	472	112	141	391
Future Volume (vph)	106	284	472	112	141	391
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1142	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	309	513	122	153	425
RTOR Reduction (vph)	0	202	0	0	0	231
Lane Group Flow (vph)	115	107	513	122	153	194
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	21.6	21.6	28.3	28.3	28.3	28.3
Effective Green, g (s)	21.6	21.6	28.3	28.3	28.3	28.3
Actuated g/C Ratio	0.35	0.35	0.46	0.46	0.46	0.46
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	571	511	520	788	788	670
v/s Ratio Prot				0.07	0.09	
v/s Ratio Perm	0.07	c0.07	c0.45			0.13
v/c Ratio	0.20	0.21	0.99	0.15	0.19	0.29
Uniform Delay, d1	14.2	14.2	16.7	9.9	10.1	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	36.3	0.4	0.5	1.1
Delay (s)	14.4	14.5	53.0	10.3	10.6	11.7
Level of Service	B	B	D	B	B	B
Approach Delay (s)	14.4			44.8	11.4	
Approach LOS	B			D	B	

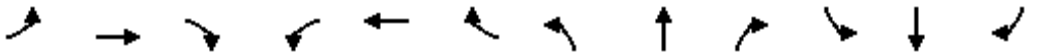
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	165	0	1401	1408	40
Future Volume (Veh/h)	0	165	0	1401	1408	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)	0	179	0	1523	1530	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)				55	191	
pX, platoon unblocked	0.84	0.69	0.69			
vC, conflicting volume	2313	786	1573			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	0	922			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	76	100			
cM capacity (veh/h)	379	749	514			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	762	762	1020	553
Volume Left	0	0	0	0	0
Volume Right	179	0	0	0	43
cSH	749	1700	1700	1700	1700
Volume to Capacity	0.24	0.45	0.45	0.60	0.33
Queue Length 95th (m)	7.1	0.0	0.0	0.0	0.0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.3	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	7	0	0	0	79	549	165	181	483	173
Future Volume (Veh/h)	23	5	7	0	0	0	79	549	165	181	483	173
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)	25	5	8	0	0	0	86	597	179	197	525	188
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1484	1961	356	1526	1966	388	713			776		
vC1, stage 1 conf vol	1013	1013		858	858							
vC2, stage 2 conf vol	470	948		667	1107							
vCu, unblocked vol	1387	1895	188	1431	1900	388	567			776		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	95	99	100	100	100	91			77		
cM capacity (veh/h)	188	107	779	206	139	616	954			849		

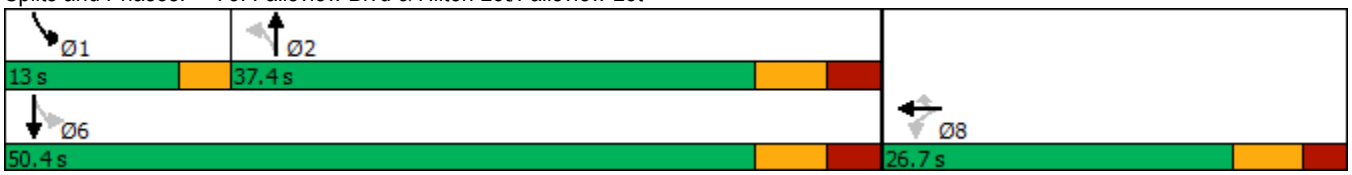
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	0	86	398	378	197	350	363
Volume Left	25	0	86	0	0	197	0	0
Volume Right	8	0	0	0	179	0	0	188
cSH	200	1700	954	1700	1700	849	1700	1700
Volume to Capacity	0.19	0.00	0.09	0.23	0.22	0.23	0.21	0.21
Queue Length 95th (m)	5.2	0.0	2.3	0.0	0.0	6.8	0.0	0.0
Control Delay (s)	27.1	0.0	9.1	0.0	0.0	10.5	0.0	0.0
Lane LOS	D	A	A			B		
Approach Delay (s)	27.1	0.0	0.9			2.3		
Approach LOS	D	A						

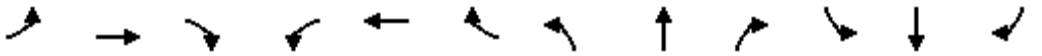
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	46.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	120	16	501	200	784
Future Volume (vph)	1	120	16	501	200	784
Lane Group Flow (vph)	46	130	17	641	217	972
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.14	0.33	0.08	0.49	0.36	0.45
Control Delay	22.7	8.0	13.4	14.4	5.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	8.0	13.4	14.4	5.6	7.1
Queue Length 50th (m)	4.0	0.0	1.1	25.5	7.2	26.8
Queue Length 95th (m)	12.5	12.2	4.7	40.2	14.5	40.6
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	626	639	311	1972	630	2545
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.05	0.33	0.34	0.40

Intersection Summary
Cycle Length: 77.1
Actuated Cycle Length: 54.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	41	1	120	16	501	88	200	784	110
Future Volume (vph)	0	0	0	41	1	120	16	501	88	200	784	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3214		1644	3227	
Flt Permitted					0.95	1.00	0.29	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	510	3214		611	3227	
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)	0	0	0	45	1	130	17	545	96	217	852	120
RTOR Reduction (vph)	0	0	0	0	0	112	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	46	18	17	623	0	217	960	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	22.1	22.1		34.2	34.2	
Effective Green, g (s)					7.6	7.6	22.1	22.1		34.2	34.2	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					224	199	201	1270		541	1974	
v/s Ratio Prot								0.19		0.07	c0.30	
v/s Ratio Perm					0.03	0.01	0.03			0.18		
v/c Ratio					0.21	0.09	0.08	0.49		0.40	0.49	
Uniform Delay, d1					21.5	21.1	10.6	12.7		5.0	6.0	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.2	0.4		0.7	0.3	
Delay (s)					22.1	21.4	10.8	13.1		5.7	6.3	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.6			13.0			6.1	
Approach LOS		A			C			B			A	

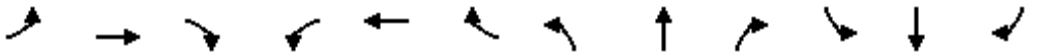
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	17.1
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	104	111	141	203	359	60	938	352	1133
Future Volume (vph)	104	111	141	203	359	60	938	352	1133
Lane Group Flow (vph)	0	260	0	374	390	65	1092	383	1341
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		1.24		1.02	0.60	0.33	0.84	1.19	0.84
Control Delay		175.9		88.0	11.4	8.2	29.8	134.7	22.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		175.9		88.0	11.4	8.2	29.8	134.7	22.7
Queue Length 50th (m)		~62.6		~74.4	11.8	4.5	105.0	~71.2	72.9
Queue Length 95th (m)		#111.0		#131.8	40.5	m4.2	m109.2	m#117.9	m#122.6
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		209		368	645	316	1307	323	1601
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		1.24		1.02	0.60	0.21	0.84	1.19	0.84

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	111	24	141	203	359	60	938	66	352	1133	100
Future Volume (vph)	104	111	24	141	203	359	60	938	66	352	1133	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1671			1696	1471	1644	3256		1644	3248	
Flt Permitted		0.41			0.73	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)		707			1270	1471	196	3256		198	3248	
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)	113	121	26	153	221	390	65	1020	72	383	1232	109
RTOR Reduction (vph)	0	4	0	0	0	219	0	5	0	0	6	0
Lane Group Flow (vph)	0	256	0	0	374	171	65	1087	0	383	1335	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Effective Green, g (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Actuated g/C Ratio		0.29			0.29	0.29	0.46	0.40		0.57	0.48	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		205			368	426	168	1302		315	1575	
v/s Ratio Prot							0.02	0.33		c0.17	0.41	
v/s Ratio Perm		c0.36			0.29	0.12	0.15			c0.52		
v/c Ratio		1.25			1.02	0.40	0.39	0.83		1.22	0.85	
Uniform Delay, d1		35.5			35.5	28.5	17.4	27.0		26.9	22.5	
Progression Factor		1.00			1.00	1.00	0.76	1.02		1.42	0.80	
Incremental Delay, d2		145.3			51.1	0.4	0.2	1.9		116.3	4.3	
Delay (s)		180.8			86.6	28.9	13.5	29.4		154.6	22.2	
Level of Service		F			F	C	B	C		F	C	
Approach Delay (s)		180.8			57.1			28.6			51.6	
Approach LOS		F			E			C			D	

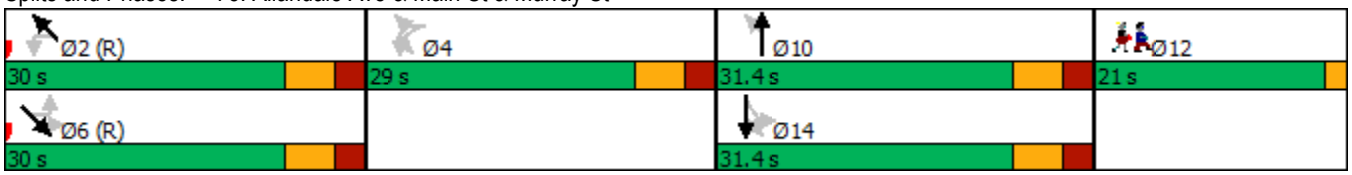
Intersection Summary			
HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Future Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Lane Group Flow (vph)	0	22	358	0	250	0	0	44	0	223	259	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	26.0%	26.0%	26.0%	28.2%	28.2%	28.2%	28.2%	28.2%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.25		0.85			0.16		0.87	0.75	0.14
Control Delay		38.1	175.4		68.1			36.2		74.3	56.1	37.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		38.1	175.4		68.1			36.2		74.3	56.1	37.4
Queue Length 50th (m)		4.0	~97.2		52.5			7.6		47.3	53.2	7.9
Queue Length 95th (m)		11.0	#153.5		#95.6			17.3		#90.0	#88.4	17.6
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		209	287		294			281		257	346	323
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.11	1.25		0.85			0.16		0.87	0.75	0.14

Intersection Summary

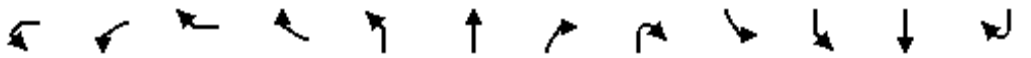
Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

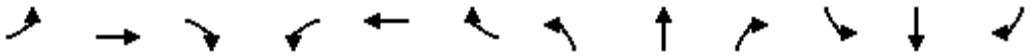


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Future Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1569					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1050	1442			1334					1268	
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)	17	5	299	59	115	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	358	0	0	250	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		209	287			294					280	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.19					0.03	
v/c Ratio		0.11	1.25			0.85					0.15	
Uniform Delay, d1		36.5	44.6			41.6					35.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.0	137.0			25.3					1.2	
Delay (s)		37.5	181.6			66.9					36.2	
Level of Service		D	F			E					D	
Approach Delay (s)		173.3				66.9					36.2	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	97.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	204	208	30	15	11	15
Future Volume (vph)	1	204	208	30	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1664		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1664		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	222	226	33	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	223	259	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		23.2	23.2		23.2		
Effective Green, g (s)		23.2	23.2		23.2		
Actuated g/C Ratio		0.21	0.21		0.21		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		257	346		323		
v/s Ratio Prot			0.16		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.87	0.75		0.14		
Uniform Delay, d1		42.6	41.4		35.9		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		30.4	13.8		0.9		
Delay (s)		73.0	55.2		36.8		
Level of Service		E	E		D		
Approach Delay (s)			63.4		36.8		
Approach LOS			E		D		

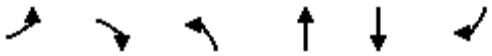
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	198	16	149	0	68	175	50	0	1
Future Volume (Veh/h)	1	14	0	198	16	149	0	68	175	50	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	215	17	162	0	74	190	54	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	179			15			546	626	15	772	545	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			15			546	626	15	772	545	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			100	79	82	73	100	100
cM capacity (veh/h)	1409			1616			405	349	1070	198	389	963

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	394	264	55
Volume Left	1	215	0	54
Volume Right	0	162	190	1
cSH	1409	1616	678	201
Volume to Capacity	0.00	0.13	0.39	0.27
Queue Length 95th (m)	0.0	3.5	14.0	8.1
Control Delay (s)	0.5	4.6	13.7	29.6
Lane LOS	A	A	B	D
Approach Delay (s)	0.5	4.6	13.7	29.6
Approach LOS			B	D

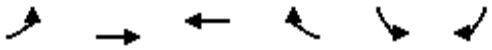
Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	58.3%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	6	1064	1302	104
Future Volume (Veh/h)	0	0	6	1064	1302	104
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	7	1157	1415	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.77	0.64	0.64			
vC, conflicting volume	2064	764	1528			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	0	716			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	497	703	576			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	7	578	578	943	585
Volume Left	0	0	7	0	0	0	0
Volume Right	0	0	0	0	0	0	113
cSH	1700	1700	576	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.01	0.34	0.34	0.55	0.34
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.3	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	160	336	850	13	9	161
Future Volume (Veh/h)	160	336	850	13	9	161
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)	174	365	924	14	10	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	938				1462	469
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	938				1462	469
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	76				89	68
cM capacity (veh/h)	739				93	546

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	296	243	616	322	10	175
Volume Left	174	0	0	0	10	0
Volume Right	0	0	0	14	0	175
cSH	739	1700	1700	1700	93	546
Volume to Capacity	0.24	0.14	0.36	0.19	0.11	0.32
Queue Length 95th (m)	6.9	0.0	0.0	0.0	2.7	10.4
Control Delay (s)	7.9	0.0	0.0	0.0	48.2	14.7
Lane LOS	A				E	B
Approach Delay (s)	4.3		0.0		16.5	
Approach LOS					C	

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix J

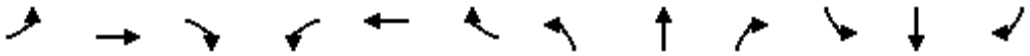
Existing Plus Site Traffic Conditions Synchro Reports

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	271	148	26	142	159	143
Future Volume (vph)	271	148	26	142	159	143
Lane Group Flow (vph)	295	161	44	154	173	556
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.84	0.30	0.09	0.42	0.19	0.72
Control Delay	44.8	5.2	13.0	10.6	9.2	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.3
Total Delay	44.8	5.2	13.0	10.6	9.2	20.3
Queue Length 50th (m)	33.0	0.0	2.4	8.6	11.0	36.9
Queue Length 95th (m)	#70.8	11.6	8.9	16.1	20.0	#87.7
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	377	553	504	368	932	772
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.29	0.09	0.42	0.19	0.84

Intersection Summary

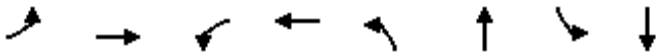
Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Future Volume (vph)	271	0	148	0	26	15	142	159	0	0	143	369
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1543	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		402	1731			1543	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	0	161	0	28	16	154	173	0	0	155	401
RTOR Reduction (vph)	0	0	116	0	12	0	0	0	0	0	131	0
Lane Group Flow (vph)	295	0	45	0	32	0	154	173	0	0	425	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Effective Green, g (s)	18.9		18.9		18.9		36.1	36.1			27.2	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.40	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	353		413		462		324	928			623	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.21					
v/c Ratio	0.84		0.11		0.07		0.48	0.19			0.68	
Uniform Delay, d1	22.7		18.0		17.8		10.0	8.0			16.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.2		0.2		0.1		1.5	0.4			6.0	
Delay (s)	39.0		18.1		17.8		11.5	8.5			22.4	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.6			17.8			9.9			22.4	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

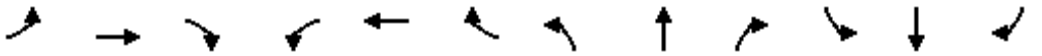


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	116	208	147	122	186	1125	523	1172
Future Volume (vph)	116	208	147	122	186	1125	523	1172
Lane Group Flow (vph)	126	341	160	396	202	1505	568	1340
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	35.0	35.0	35.0	35.0	33.0	33.0	10.0	33.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.04	0.70	0.97	0.77	1.29	1.00	1.72	0.63
Control Delay	130.9	39.2	100.8	36.0	175.4	35.1	358.3	15.0
Queue Delay	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	130.9	39.6	100.8	36.1	175.4	35.1	358.3	15.0
Queue Length 50th (m)	24.1	54.1	29.8	52.5	~52.5	~165.9	~149.3	85.5
Queue Length 95th (m)	#59.9	84.1	#68.3	86.5	m#70.8	m#182.6	#213.5	107.2
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	130	517	177	544	157	1507	331	2126
Starvation Cap Reductn	0	25	0	4	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	0.97	0.69	0.90	0.73	1.29	1.00	1.72	0.63

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Future Volume (vph)	116	208	106	147	122	242	186	1125	259	523	1172	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1785	1784		1785	1692		1785	3470		1785	3544	
Flt Permitted	0.25	1.00		0.34	1.00		0.20	1.00		0.09	1.00	
Satd. Flow (perm)	466	1784		633	1692		367	3470		164	3544	
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)	126	226	115	160	133	263	202	1223	282	568	1274	66
RTOR Reduction (vph)	0	18	0	0	73	0	0	19	0	0	4	0
Lane Group Flow (vph)	126	323	0	160	323	0	202	1486	0	568	1336	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	26.1	26.1		26.1	26.1		42.9	42.9		59.9	59.9	
Effective Green, g (s)	26.1	26.1		26.1	26.1		42.9	42.9		59.9	59.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.43	0.43		0.60	0.60	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.5	2.5		2.3	2.5	
Lane Grp Cap (vph)	121	465		165	441		157	1488		325	2122	
v/s Ratio Prot		0.18			0.19			0.43		c0.24	0.38	
v/s Ratio Perm	c0.27			0.25			0.55			c0.80		
v/c Ratio	1.04	0.69		0.97	0.73		1.29	1.00		1.75	0.63	
Uniform Delay, d1	37.0	33.3		36.6	33.8		28.6	28.5		31.5	12.9	
Progression Factor	1.00	1.00		1.00	1.00		0.60	0.57		1.00	1.00	
Incremental Delay, d2	93.3	3.9		60.2	5.6		151.2	16.2		348.9	1.4	
Delay (s)	130.3	37.2		96.7	39.4		168.3	32.6		380.5	14.3	
Level of Service	F	D		F	D		F	C		F	B	
Approach Delay (s)		62.3			55.9			48.6			123.3	
Approach LOS		E			E			D			F	

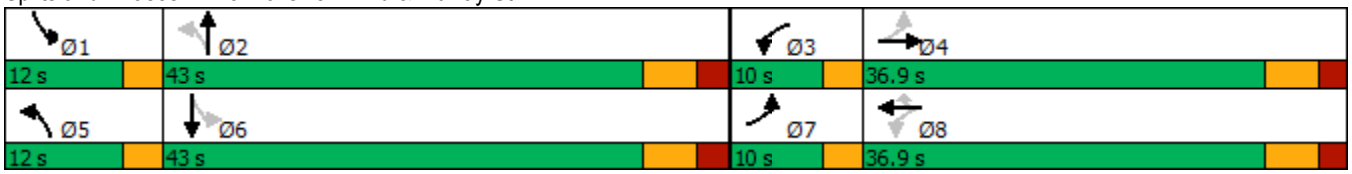
Intersection Summary			
HCM 2000 Control Delay	81.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

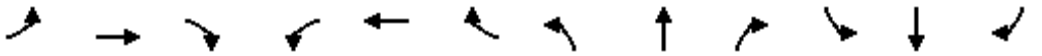
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	169	526	182	322	175	135	428	172	678
Future Volume (vph)	169	526	182	322	175	135	428	172	678
Lane Group Flow (vph)	184	915	198	350	190	147	816	187	777
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.56	0.86	0.95	0.65	0.32	0.44	0.60	0.58	0.60
Control Delay	26.4	38.7	75.1	37.5	5.6	17.5	21.3	21.4	28.1
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	26.4	39.8	75.1	37.5	5.6	17.5	21.7	21.4	28.1
Queue Length 50th (m)	22.5	77.5	24.5	59.3	0.0	14.9	51.5	19.4	65.2
Queue Length 95th (m)	37.3	102.3	#63.7	88.9	15.2	25.6	71.1	32.0	84.5
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	331	1121	209	577	621	344	1350	326	1305
Starvation Cap Reductn	0	66	0	0	0	0	149	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	0.56	0.87	0.95	0.61	0.31	0.43	0.68	0.57	0.60

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 99.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Future Volume (vph)	169	526	316	182	322	175	135	428	323	172	678	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	3369		1785	1879	1597	1785	3340		1785	3542	
Flt Permitted	0.34	1.00		0.14	1.00	1.00	0.24	1.00		0.22	1.00	
Satd. Flow (perm)	644	3369		262	1879	1597	455	3340		410	3542	
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)	184	572	343	198	350	190	147	465	351	187	737	40
RTOR Reduction (vph)	0	89	0	0	0	135	0	131	0	0	4	0
Lane Group Flow (vph)	184	826	0	198	350	55	147	685	0	187	773	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	35.7	28.7		35.7	28.7	28.7	45.0	36.5		45.4	36.7	
Effective Green, g (s)	35.7	28.7		35.7	28.7	28.7	45.0	36.5		45.4	36.7	
Actuated g/C Ratio	0.36	0.29		0.36	0.29	0.29	0.45	0.37		0.45	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	310	968		200	540	459	318	1221		306	1302	
v/s Ratio Prot	0.04	0.25		c0.07	0.19		0.04	0.21		c0.05	0.22	
v/s Ratio Perm	0.17			c0.28		0.03	0.17			c0.22		
v/c Ratio	0.59	0.85		0.99	0.65	0.12	0.46	0.56		0.61	0.59	
Uniform Delay, d1	24.1	33.6		27.8	31.1	26.2	17.3	25.3		17.8	25.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	7.4		60.1	2.7	0.1	1.1	1.9		3.6	2.0	
Delay (s)	27.1	41.0		87.9	33.8	26.3	18.3	27.1		21.4	27.5	
Level of Service	C	D		F	C	C	B	C		C	C	
Approach Delay (s)		38.6			46.4			25.8			26.3	
Approach LOS		D			D			C			C	

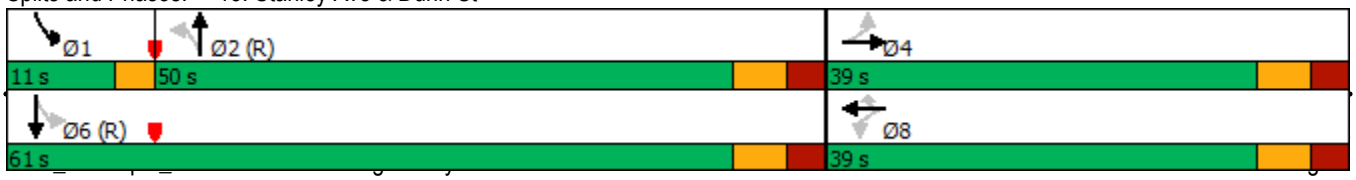
Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	18.9
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

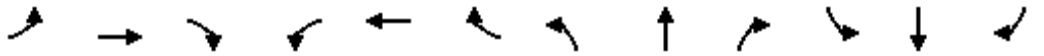
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	256	305	82	355	64	212	876	105	749
Future Volume (vph)	256	305	82	355	64	212	876	105	749
Lane Group Flow (vph)	278	480	89	386	70	230	1095	114	1051
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.36	0.81	0.68	0.64	0.12	1.11	0.71	0.44	0.56
Control Delay	219.2	42.5	58.1	35.0	5.8	124.8	25.9	12.7	17.8
Queue Delay	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0
Total Delay	219.2	42.5	58.1	38.3	5.8	124.8	25.9	12.7	17.8
Queue Length 50th (m)	~71.2	81.1	14.9	63.6	0.0	~51.7	88.4	12.5	95.8
Queue Length 95th (m)	#120.2	#131.1	#39.9	94.6	8.4	#97.1	112.3	m13.2	m108.2
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	205	589	131	601	562	208	1536	268	1889
Starvation Cap Reductn	0	0	0	130	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	1.36	0.81	0.68	0.82	0.12	1.11	0.71	0.43	0.56

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Future Volume (vph)	256	305	136	82	355	64	212	876	132	105	749	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1792		1785	1879	1597	1785	3500		1785	3449	
Flt Permitted	0.34	1.00		0.22	1.00	1.00	0.25	1.00		0.13	1.00	
Satd. Flow (perm)	640	1792		410	1879	1597	477	3500		253	3449	
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)	278	332	148	89	386	70	230	952	143	114	814	237
RTOR Reduction (vph)	0	16	0	0	0	48	0	12	0	0	27	0
Lane Group Flow (vph)	278	464	0	89	386	22	230	1083	0	114	1024	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.6	43.6		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.44	0.44		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.7	2.5	
Lane Grp Cap (vph)	204	573		131	601	511	207	1526		249	1862	
v/s Ratio Prot		0.26			0.21			0.31		0.03	c0.30	
v/s Ratio Perm	c0.43			0.22		0.01	c0.48			0.21		
v/c Ratio	1.36	0.81		0.68	0.64	0.04	1.11	0.71		0.46	0.55	
Uniform Delay, d1	34.0	31.2		29.5	29.1	23.4	28.2	23.0		14.6	15.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.06	1.20	
Incremental Delay, d2	191.5	8.0		12.0	2.1	0.0	95.5	2.8		0.5	0.6	
Delay (s)	225.5	39.2		41.5	31.2	23.5	123.7	25.9		16.0	18.7	
Level of Service	F	D		D	C	C	F	C		B	B	
Approach Delay (s)		107.5			31.9			42.8			18.4	
Approach LOS		F			C			D			B	

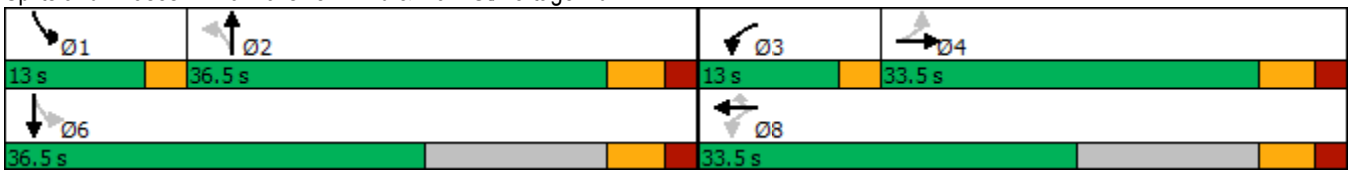
Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

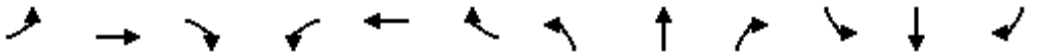
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	167	341	176	459	414	34	327	138	312
Future Volume (vph)	167	341	176	459	414	34	327	138	312
Lane Group Flow (vph)	182	451	191	499	450	37	465	150	376
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	33.5	33.5	13.0	33.5	33.5	36.5	36.5	13.0	36.5
Total Split (%)	34.9%	34.9%	13.5%	34.9%	34.9%	38.0%	38.0%	13.5%	38.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	0.80	0.89	0.66	0.65	0.49	0.11	0.79	0.45	0.45
Control Delay	59.2	53.6	28.0	27.1	3.8	24.9	39.7	18.2	19.8
Queue Delay	0.0	0.0	0.0	5.2	0.4	0.0	54.2	0.0	0.0
Total Delay	59.2	53.6	28.0	32.3	4.2	24.9	93.9	18.2	19.8
Queue Length 50th (m)	31.0	77.6	21.0	71.7	0.0	4.9	76.1	15.1	45.9
Queue Length 95th (m)	#65.7	#130.4	#35.5	105.4	17.2	12.2	#124.2	26.2	69.5
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	239	534	293	800	938	322	591	345	851
Starvation Cap Reductn	0	0	0	233	147	0	216	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	0.76	0.84	0.65	0.88	0.57	0.11	1.24	0.43	0.44

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 94
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





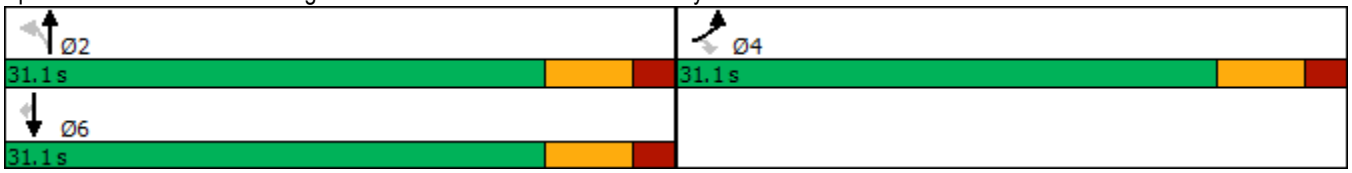
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Future Volume (vph)	167	341	74	176	459	414	34	327	101	138	312	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1829		1785	1879	1597	1785	1812		1785	1851	
Flt Permitted	0.44	1.00		0.16	1.00	1.00	0.54	1.00		0.21	1.00	
Satd. Flow (perm)	832	1829		305	1879	1597	1011	1812		404	1851	
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)	182	371	80	191	499	450	37	355	110	150	339	37
RTOR Reduction (vph)	0	8	0	0	0	266	0	12	0	0	4	0
Lane Group Flow (vph)	182	443	0	191	499	184	37	453	0	150	372	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Effective Green, g (s)	25.6	25.6		38.4	38.4	38.4	30.1	30.1		42.6	42.6	
Actuated g/C Ratio	0.27	0.27		0.41	0.41	0.41	0.32	0.32		0.45	0.45	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	226	498		278	767	652	323	580		322	838	
v/s Ratio Prot		c0.24		c0.07	0.27			c0.25		c0.05	0.20	
v/s Ratio Perm	0.22			0.21		0.12	0.04			0.16		
v/c Ratio	0.81	0.89		0.69	0.65	0.28	0.11	0.78		0.47	0.44	
Uniform Delay, d1	31.9	32.8		20.9	22.4	18.6	22.5	29.0		17.6	17.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.4	17.8		7.5	2.2	0.3	0.7	10.1		1.5	1.7	
Delay (s)	51.3	50.7		28.4	24.6	18.9	23.3	39.1		19.0	19.3	
Level of Service	D	D		C	C	B	C	D		B	B	
Approach Delay (s)		50.8			23.0			37.9			19.2	
Approach LOS		D			C			D			B	

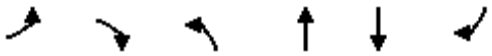
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Lane Group Flow (vph)	97	272	295	18	115	797
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	31.1	31.1	31.1	31.1
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.15	0.36	0.54	0.02	0.14	0.70
Control Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	3.4	18.7	11.4	12.6	5.1
Queue Length 50th (m)	6.8	0.0	25.3	1.2	8.1	0.0
Queue Length 95th (m)	14.7	11.6	47.2	4.4	16.8	18.5
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	763	838	548	803	803	1138
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	0.13	0.32	0.54	0.02	0.14	0.70

Intersection Summary
Cycle Length: 62.2
Actuated Cycle Length: 59.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

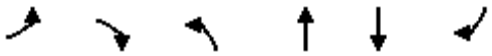
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	250	271	17	106	733
Future Volume (vph)	89	250	271	17	106	733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1785	1597	1785	1879	1879	1597
Flt Permitted	0.95	1.00	0.68	1.00	1.00	1.00
Satd. Flow (perm)	1785	1597	1283	1879	1879	1597
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	272	295	18	115	797
RTOR Reduction (vph)	0	173	0	0	0	455
Lane Group Flow (vph)	97	99	295	18	115	342
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.5	21.5	25.3	25.3	25.3	25.3
Effective Green, g (s)	21.5	21.5	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.36	0.36	0.43	0.43	0.43	0.43
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	4.0	4.0	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	650	581	550	805	805	684
v/s Ratio Prot	0.05			0.01	0.06	
v/s Ratio Perm		c0.06	c0.23			0.21
v/c Ratio	0.15	0.17	0.54	0.02	0.14	0.50
Uniform Delay, d1	12.6	12.7	12.5	9.7	10.3	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	3.7	0.1	0.4	2.6
Delay (s)	12.7	12.9	16.2	9.8	10.6	14.8
Level of Service	B	B	B	A	B	B
Approach Delay (s)	12.9			15.8	14.3	
Approach LOS	B			B	B	

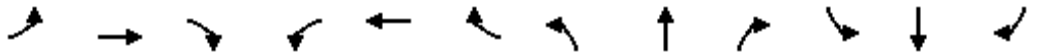
Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	164	0	1442	1444	40
Future Volume (Veh/h)	0	164	0	1442	1444	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)	0	178	0	1567	1570	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)				55	191	
pX, platoon unblocked	0.83	0.75	0.75			
vC, conflicting volume	2375	806	1613			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	891	75	1151			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	76	100			
cM capacity (veh/h)	237	733	461			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	178	784	784	1047	566
Volume Left	0	0	0	0	0
Volume Right	178	0	0	0	43
cSH	733	1700	1700	1700	1700
Volume to Capacity	0.24	0.46	0.46	0.62	0.33
Queue Length 95th (m)	7.2	0.0	0.0	0.0	0.0
Control Delay (s)	11.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.5	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	62.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
Future Volume (Veh/h)	22	5	15	0	0	0	78	554	165	179	496	197
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)	24	5	16	0	0	0	85	602	179	195	539	214
Pedestrians		559			275			30			30	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		49			24			3			3	
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	2096	2821	966	1844	2838	696	1312			1056		
vC1, stage 1 conf vol	1595	1595		1136	1136							
vC2, stage 2 conf vol	501	1226		708	1702							
vCu, unblocked vol	2017	2805	787	1743	2824	696	1164			1056		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	34	0	90	100	100	100	70			61		
cM capacity (veh/h)	37	3	153	84	3	287	283			505		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	0	85	401	380	195	359	394
Volume Left	24	0	85	0	0	195	0	0
Volume Right	16	0	0	0	179	0	0	214
cSH	18	1700	283	1700	1700	505	1700	1700
Volume to Capacity	2.55	0.00	0.30	0.24	0.22	0.39	0.21	0.23
Queue Length 95th (m)	46.8	0.0	9.3	0.0	0.0	13.7	0.0	0.0
Control Delay (s)	1151.6	0.0	23.1	0.0	0.0	16.5	0.0	0.0
Lane LOS	F	A	C			C		
Approach Delay (s)	1151.6	0.0	2.3			3.4		
Approach LOS	F	A						

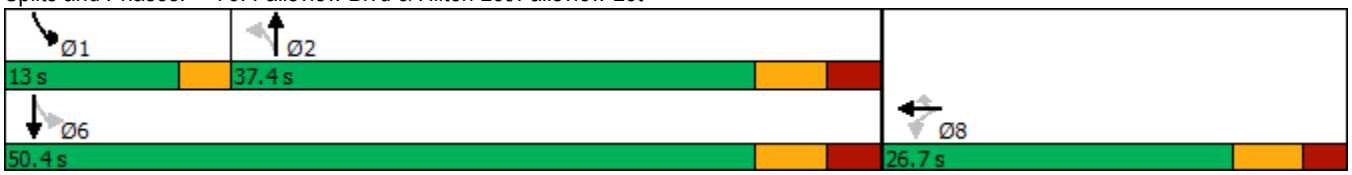
Intersection Summary				
Average Delay	30.7			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			

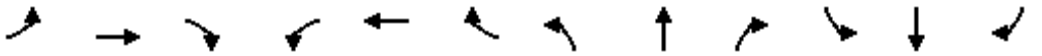
Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	122	16	506	202	820
Future Volume (vph)	1	122	16	506	202	820
Lane Group Flow (vph)	46	133	17	643	220	1008
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.14	0.34	0.09	0.49	0.36	0.47
Control Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	8.0	13.6	14.5	5.6	7.2
Queue Length 50th (m)	4.1	0.0	1.1	25.8	7.4	28.2
Queue Length 95th (m)	12.4	12.4	4.8	40.5	14.7	43.1
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	625	640	298	1969	629	2546
Starvation Cap Reductn	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.21	0.06	0.33	0.35	0.41

Intersection Summary

Cycle Length: 77.1
Actuated Cycle Length: 54.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Future Volume (vph)	0	0	0	41	1	122	16	506	86	202	820	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3217		1644	3231	
Flt Permitted					0.95	1.00	0.28	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	492	3217		609	3231	
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)	0	0	0	45	1	133	17	550	93	220	891	117
RTOR Reduction (vph)	0	0	0	0	0	115	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	46	18	17	625	0	220	996	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Effective Green, g (s)					7.7	7.7	22.2	22.2		34.3	34.3	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					226	201	194	1273		540	1975	
v/s Ratio Prot								0.19		0.07	c0.31	
v/s Ratio Perm					0.03	0.01	0.03			0.18		
v/c Ratio					0.20	0.09	0.09	0.49		0.41	0.50	
Uniform Delay, d1					21.5	21.1	10.6	12.7		5.0	6.1	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.3	0.4		0.7	0.3	
Delay (s)					22.1	21.4	10.9	13.1		5.7	6.4	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.6			13.1			6.3	
Approach LOS		A			C			B			A	

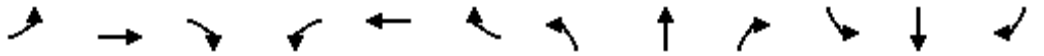
Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	17.1
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	141	143	152	256	367	59	934	362	1138
Future Volume (vph)	141	143	152	256	367	59	934	362	1138
Lane Group Flow (vph)	0	337	0	443	399	64	1086	393	1366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		2.31		1.22	0.62	0.34	0.83	1.21	0.85
Control Delay		630.8		156.0	12.1	9.6	32.0	146.8	21.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		630.8		156.0	12.1	9.6	32.0	146.8	21.7
Queue Length 50th (m)		~107.7		~106.1	13.2	4.7	105.0	~75.4	68.4
Queue Length 95th (m)		#161.1		#164.1	42.9	m5.1	m116.1	m#129.1	m#166.7
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		146		362	645	310	1307	325	1599
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		2.31		1.22	0.62	0.21	0.83	1.21	0.85

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Future Volume (vph)	141	143	27	152	256	367	59	934	65	362	1138	119
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1672			1699	1471	1644	3256		1644	3241	
Flt Permitted		0.29			0.72	1.00	0.11	1.00		0.12	1.00	
Satd. Flow (perm)		493			1251	1471	183	3256		202	3241	
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)	153	155	29	165	278	399	64	1015	71	393	1237	129
RTOR Reduction (vph)	0	4	0	0	0	219	0	5	0	0	7	0
Lane Group Flow (vph)	0	333	0	0	443	180	64	1081	0	393	1359	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Effective Green, g (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Actuated g/C Ratio		0.29			0.29	0.29	0.46	0.40		0.57	0.48	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		142			362	426	163	1302		317	1571	
v/s Ratio Prot							0.02	0.33		c0.17	0.42	
v/s Ratio Perm		c0.68			0.35	0.12	0.16			c0.53		
v/c Ratio		2.35			1.22	0.42	0.39	0.83		1.24	0.87	
Uniform Delay, d1		35.5			35.5	28.7	17.6	26.9		26.7	22.9	
Progression Factor		1.00			1.00	1.00	0.76	1.05		1.47	0.69	
Incremental Delay, d2		628.0			123.0	0.4	0.5	3.5		128.4	5.6	
Delay (s)		663.5			158.5	29.1	13.9	31.7		167.6	21.4	
Level of Service		F			F	C	B	C		F	C	
Approach Delay (s)		663.5			97.2			30.7			54.0	
Approach LOS		F			F			C			D	

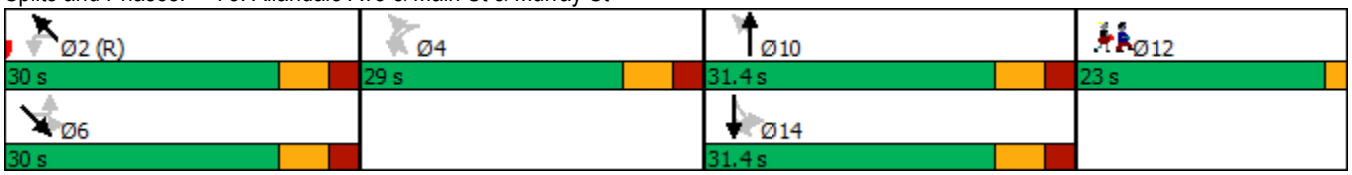
Intersection Summary			
HCM 2000 Control Delay	106.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWL
Lane Configurations												
Traffic Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Future Volume (vph)	16	5	274	103	32	7	16	17	1	203	206	1
Lane Group Flow (vph)	0	22	357	0	247	0	0	44	0	222	256	0
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases					10			14			6	
Permitted Phases	4	4	4	10		14	14		6	6		2
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	25.6%	25.6%	25.6%	27.7%	27.7%	27.7%	27.7%	27.7%	26.5%	26.5%	26.5%	26.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.27		0.85			0.16		0.88	0.75	
Control Delay		39.2	183.3		70.0			37.3		77.7	57.6	
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	
Total Delay		39.2	183.3		70.0			37.3		77.7	57.6	
Queue Length 50th (m)		4.0	~99.8		53.0			7.8		48.1	53.8	
Queue Length 95th (m)		11.2	#156.1		#96.6			17.8		#91.3	#89.6	
Internal Link Dist (m)		102.7			229.8			295.5			298.1	
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		205	282		289			274		252	340	
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		0.11	1.27		0.85			0.16		0.88	0.75	

Intersection Summary

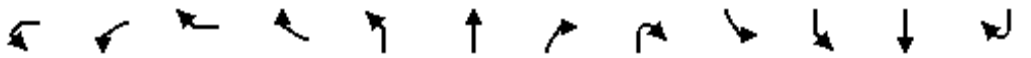
Cycle Length: 113.4
Actuated Cycle Length: 113.4
Offset: 0 (0%), Referenced to phase 2:NWTL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	NWT	Ø12
Lane Configurations		
Traffic Volume (vph)	15	
Future Volume (vph)	15	
Lane Group Flow (vph)	45	
Turn Type	NA	
Protected Phases	2	12
Permitted Phases		
Minimum Split (s)	16.8	23.0
Total Split (s)	30.0	23.0
Total Split (%)	26.5%	20%
Yellow Time (s)	4.1	2.0
All-Red Time (s)	2.7	0.0
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	6.8	
Lead/Lag		
Lead-Lag Optimize?		
v/c Ratio	0.14	
Control Delay	38.5	
Queue Delay	0.0	
Total Delay	38.5	
Queue Length 50th (m)	8.3	
Queue Length 95th (m)	18.2	
Internal Link Dist (m)	208.5	
Turn Bay Length (m)		
Base Capacity (vph)	315	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.14	

Intersection Summary

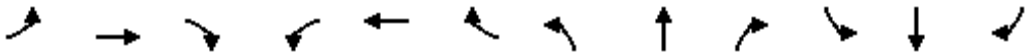


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Future Volume (vph)	16	5	274	54	103	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1568					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1051	1442			1336					1262	
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)	17	5	298	59	112	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	357	0	0	247	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		205	282			289					273	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.18					0.03	
v/c Ratio		0.11	1.27			0.85					0.16	
Uniform Delay, d1		37.5	45.6			42.7					36.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.1	144.8			26.2					1.2	
Delay (s)		38.5	190.4			68.8					37.2	
Level of Service		D	F			E					D	
Approach Delay (s)		181.6				68.8					37.2	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	101.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWL	NWT	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	1	203	206	29	1	15	11	15
Future Volume (vph)	1	203	206	29	1	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8		
Lane Util. Factor		1.00	1.00			1.00		
Frt		1.00	0.98			0.92		
Flt Protected		0.95	1.00			1.00		
Satd. Flow (prot)		1612	1665			1552		
Flt Permitted		0.73	1.00			0.99		
Satd. Flow (perm)		1235	1665			1544		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	221	224	32	1	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	222	256	0	0	45	0	0
Turn Type	Perm	Perm	NA		Perm	NA		
Protected Phases			6			2		
Permitted Phases	6	6			2			
Actuated Green, G (s)		23.2	23.2			23.2		
Effective Green, g (s)		23.2	23.2			23.2		
Actuated g/C Ratio		0.20	0.20			0.20		
Clearance Time (s)		6.8	6.8			6.8		
Lane Grp Cap (vph)		252	340			315		
v/s Ratio Prot			0.15					
v/s Ratio Perm		c0.18				0.03		
v/c Ratio		0.88	0.75			0.14		
Uniform Delay, d1		43.8	42.4			37.0		
Progression Factor		1.00	1.00			1.00		
Incremental Delay, d2		32.8	14.3			1.0		
Delay (s)		76.5	56.7			37.9		
Level of Service		E	E			D		
Approach Delay (s)			65.9			37.9		
Approach LOS			E			D		

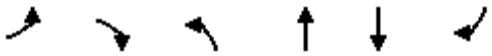
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Future Volume (Veh/h)	1	14	0	272	16	146	0	77	248	49	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	296	17	159	0	84	270	53	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	176			15			706	785	15	1018	706	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			15			545	639	15	919	544	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			100	69	75	49	100	100
cM capacity (veh/h)	1359			1616			322	269	1070	104	305	906

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	472	354	54
Volume Left	1	296	0	53
Volume Right	0	159	270	1
cSH	1359	1616	627	105
Volume to Capacity	0.00	0.18	0.56	0.51
Queue Length 95th (m)	0.0	5.1	26.8	17.6
Control Delay (s)	0.5	5.4	17.9	70.7
Lane LOS	A	A	C	F
Approach Delay (s)	0.5	5.4	17.9	70.7
Approach LOS			C	F

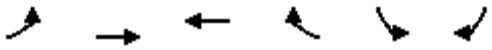
Intersection Summary				
Average Delay	14.2			
Intersection Capacity Utilization	67.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	1057	1299	126
Future Volume (Veh/h)	0	0	10	1057	1299	126
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	1149	1412	137
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.75	0.63	0.63			
vC, conflicting volume	2077	774	1549			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	375	0	707			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	443	690	570			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	11	574	574	941	608
Volume Left	0	0	11	0	0	0	0
Volume Right	0	0	0	0	0	0	137
cSH	1700	1700	570	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.02	0.34	0.34	0.55	0.36
Queue Length 95th (m)	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.4	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	211	368	985	18	13	212
Future Volume (Veh/h)	211	368	985	18	13	212
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)	229	400	1071	20	14	230
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	1091				1739	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1091				1739	546
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	65				73	53
cM capacity (veh/h)	647				52	487

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	362	267	714	377	14	230
Volume Left	229	0	0	0	14	0
Volume Right	0	0	0	20	0	230
cSH	647	1700	1700	1700	52	487
Volume to Capacity	0.35	0.16	0.42	0.22	0.27	0.47
Queue Length 95th (m)	12.1	0.0	0.0	0.0	7.1	18.9
Control Delay (s)	10.5	0.0	0.0	0.0	99.0	18.8
Lane LOS	B				F	C
Approach Delay (s)	6.0		0.0		23.4	
Approach LOS					C	

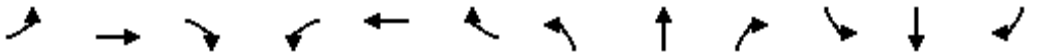
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	270	149	26	143	160	144
Future Volume (vph)	270	149	26	143	160	144
Lane Group Flow (vph)	293	162	44	155	174	559
Turn Type	Perm	Perm	NA	pm+pt	NA	NA
Protected Phases			8	5	2	6
Permitted Phases	4	4		2		
Detector Phase	4	4	8	5	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	5.5	20.0	20.0
Minimum Split (s)	26.2	26.2	26.2	10.0	30.1	30.1
Total Split (s)	26.2	26.2	26.2	10.0	41.1	31.1
Total Split (%)	38.9%	38.9%	38.9%	14.9%	61.1%	46.2%
Yellow Time (s)	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	2.1	2.1	2.1	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	3.0	6.1	6.1
Lead/Lag				Lead		Lag
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	C-Min	C-Min
v/c Ratio	0.83	0.31	0.09	0.42	0.19	0.73
Control Delay	44.8	5.2	13.0	10.6	9.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.4
Total Delay	44.8	5.2	13.0	10.6	9.2	20.7
Queue Length 50th (m)	32.8	0.0	2.5	8.6	11.0	37.3
Queue Length 95th (m)	#70.0	11.6	8.9	16.2	20.2	#88.9
Internal Link Dist (m)			8.0		230.0	55.6
Turn Bay Length (m)	50.0					
Base Capacity (vph)	376	553	503	368	934	771
Starvation Cap Reductn	0	0	0	0	0	111
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.29	0.09	0.42	0.19	0.85

Intersection Summary

Cycle Length: 67.3
Actuated Cycle Length: 67.3
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Fallsview Blvd & Embassy Suites



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	0	149	0	26	15	143	160	0	0	144	370
Future Volume (vph)	270	0	149	0	26	15	143	160	0	0	144	370
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Lane Util. Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Frt	1.00		0.85		0.95		1.00	1.00			0.89	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1644		1471		1646		1644	1731			1544	
Flt Permitted	0.73		1.00		1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1260		1471		1646		399	1731			1544	
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)	293	0	162	0	28	16	155	174	0	0	157	402
RTOR Reduction (vph)	0	0	117	0	12	0	0	0	0	0	130	0
Lane Group Flow (vph)	293	0	45	0	32	0	155	174	0	0	429	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		NA		pm+pt	NA		Perm	NA	
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.8		18.8		18.8		36.2	36.2			27.3	
Effective Green, g (s)	18.8		18.8		18.8		36.2	36.2			27.3	
Actuated g/C Ratio	0.28		0.28		0.28		0.54	0.54			0.41	
Clearance Time (s)	6.2		6.2		6.2		3.0	6.1			6.1	
Vehicle Extension (s)	4.0		4.0		4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	351		410		459		323	931			626	
v/s Ratio Prot					0.02		c0.04	0.10			c0.28	
v/s Ratio Perm	c0.23		0.03				0.22					
v/c Ratio	0.83		0.11		0.07		0.48	0.19			0.69	
Uniform Delay, d1	22.8		18.0		17.8		10.0	8.0			16.5	
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	16.2		0.2		0.1		1.5	0.4			6.0	
Delay (s)	39.0		18.2		17.9		11.5	8.4			22.5	
Level of Service	D		B		B		B	A			C	
Approach Delay (s)		31.6			17.9			9.9			22.5	
Approach LOS		C			B			A			C	

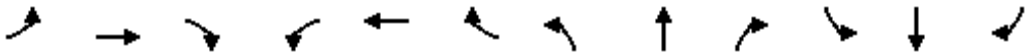
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	105	239	149	130	182	988	415	1174
Future Volume (vph)	105	239	149	130	182	988	415	1174
Lane Group Flow (vph)	114	375	162	389	198	1322	451	1419
Turn Type	Perm	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases		4		8		2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	1	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	8.0
Minimum Split (s)	26.0	26.0	26.0	26.0	24.0	24.0	10.0	28.0
Total Split (s)	35.0	35.0	35.0	35.0	48.0	48.0	17.0	65.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	48.0%	48.0%	17.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	0.0	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)	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag					Lag	Lag	Lead	
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	0.82	0.78	1.09	0.78	1.74	0.99	1.48	0.75
Control Delay	76.7	44.4	136.0	37.5	371.6	33.6	257.4	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	44.4	136.0	37.5	371.6	33.6	257.4	18.6
Queue Length 50th (m)	20.6	63.3	~35.3	54.3	~57.6	40.4	~106.3	99.4
Queue Length 95th (m)	#51.6	#106.4	#74.7	#98.5	m#77.1	m#167.0	#165.9	126.5
Internal Link Dist (m)		102.7		40.9		167.0		298.0
Turn Bay Length (m)	15.0		25.0		35.0		55.0	
Base Capacity (vph)	139	478	149	501	114	1330	305	1887
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	0.82	0.78	1.09	0.78	1.74	0.99	1.48	0.75

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 96 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Stanley Ave & Murray St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	239	106	149	130	228	182	988	228	415	1174	132
Future Volume (vph)	105	239	106	149	130	228	182	988	228	415	1174	132
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.90		1.00	0.97		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)	1644	1651		1644	1565		1644	3196		1644	3238	
Flt Permitted	0.29	1.00		0.31	1.00		0.16	1.00		0.09	1.00	
Satd. Flow (perm)	498	1651		534	1565		280	3196		157	3238	
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)	114	260	115	162	141	248	198	1074	248	451	1276	143
RTOR Reduction (vph)	0	16	0	0	63	0	0	20	0	0	8	0
Lane Group Flow (vph)	114	359	0	162	326	0	198	1302	0	451	1411	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.0	28.0		28.0	28.0		41.0	41.0		58.0	58.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0		41.0	41.0		58.0	58.0	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.41	0.41		0.58	0.58	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		3.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	462		149	438		114	1310		299	1878	
v/s Ratio Prot		0.22			0.21			0.41		c0.21	0.44	
v/s Ratio Perm	0.23			c0.30			c0.71			0.66		
v/c Ratio	0.82	0.78		1.09	0.74		1.74	0.99		1.51	0.75	
Uniform Delay, d1	33.6	33.1		36.0	32.7		29.5	29.4		30.4	15.6	
Progression Factor	1.00	1.00		1.00	1.00		0.52	0.50		1.00	1.00	
Incremental Delay, d2	30.5	8.0		99.0	6.7		351.4	17.3		245.4	2.8	
Delay (s)	64.2	41.2		135.0	39.4		366.6	31.9		275.8	18.5	
Level of Service	E	D		F	D		F	C		F	B	
Approach Delay (s)		46.5			67.5			75.5			80.5	
Approach LOS		D			E			E			F	

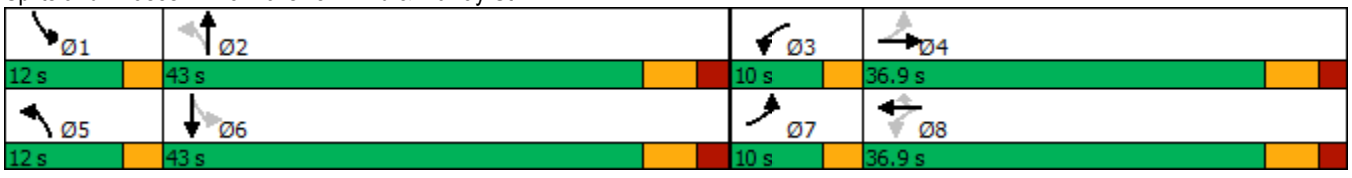
Intersection Summary			
HCM 2000 Control Delay	73.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

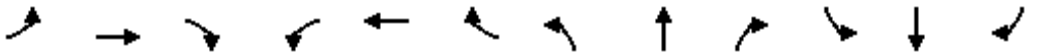
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	148	503	137	263	167	119	366	172	562
Future Volume (vph)	148	503	137	263	167	119	366	172	562
Lane Group Flow (vph)	161	783	149	286	182	129	701	187	670
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.5	20.0	7.0	20.0	20.0	5.5	20.0	7.0	20.0
Minimum Split (s)	10.0	33.3	10.0	33.3	33.3	10.0	42.6	10.0	42.6
Total Split (s)	10.0	36.9	10.0	36.9	36.9	12.0	43.0	12.0	43.0
Total Split (%)	9.8%	36.2%	9.8%	36.2%	36.2%	11.8%	42.2%	11.8%	42.2%
Yellow Time (s)	3.0	4.1	3.0	4.1	4.1	3.0	4.1	3.0	4.1
All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	2.5	0.0	2.5
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	6.3	3.0	6.3	6.3	3.0	6.6	3.0	6.6
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	Max	None	Max
v/c Ratio	0.46	0.84	0.72	0.59	0.34	0.36	0.55	0.54	0.55
Control Delay	23.8	40.0	41.0	36.2	6.0	16.0	19.1	19.9	26.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	40.1	41.0	36.2	6.0	16.0	19.1	19.9	26.8
Queue Length 50th (m)	19.6	68.5	18.0	47.3	0.0	12.8	39.6	19.2	54.2
Queue Length 95th (m)	33.5	91.2	#36.1	73.2	15.0	23.1	58.1	32.6	72.8
Internal Link Dist (m)		39.6		70.0			112.9		294.7
Turn Bay Length (m)	30.0		35.0			10.0		65.0	
Base Capacity (vph)	351	1021	206	537	582	367	1268	349	1217
Starvation Cap Reductn	0	7	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	0.46	0.77	0.72	0.53	0.31	0.35	0.55	0.54	0.55

Intersection Summary

Cycle Length: 101.9
Actuated Cycle Length: 98.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Fallsview Blvd & Murray St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	503	217	137	263	167	119	366	279	172	562	54
Future Volume (vph)	148	503	217	137	263	167	119	366	279	172	562	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	3139		1644	1731	1471	1644	3075		1644	3245	
Flt Permitted	0.43	1.00		0.16	1.00	1.00	0.31	1.00		0.28	1.00	
Satd. Flow (perm)	750	3139		285	1731	1471	535	3075		489	3245	
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)	161	547	236	149	286	182	129	398	303	187	611	59
RTOR Reduction (vph)	0	49	0	0	0	131	0	133	0	0	7	0
Lane Group Flow (vph)	161	734	0	149	286	51	129	568	0	187	663	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	34.6	27.6		34.6	27.6	27.6	44.8	36.5		45.6	36.9	
Effective Green, g (s)	34.6	27.6		34.6	27.6	27.6	44.8	36.5		45.6	36.9	
Actuated g/C Ratio	0.35	0.28		0.35	0.28	0.28	0.45	0.37		0.46	0.37	
Clearance Time (s)	3.0	6.3		3.0	6.3	6.3	3.0	6.6		3.0	6.6	
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)	326	877		196	484	411	336	1137		327	1213	
v/s Ratio Prot	0.03	c0.23		c0.05	0.17		0.03	0.18		c0.05	0.20	
v/s Ratio Perm	0.14			0.21		0.03	0.14			c0.21		
v/c Ratio	0.49	0.84		0.76	0.59	0.12	0.38	0.50		0.57	0.55	
Uniform Delay, d1	23.4	33.4		24.4	30.7	26.5	16.4	24.0		16.8	24.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	7.0		15.8	1.9	0.1	0.7	1.6		2.4	1.8	
Delay (s)	24.6	40.4		40.2	32.6	26.7	17.1	25.6		19.2	26.1	
Level of Service	C	D		D	C	C	B	C		B	C	
Approach Delay (s)		37.7			32.7			24.3			24.6	
Approach LOS		D			C			C			C	

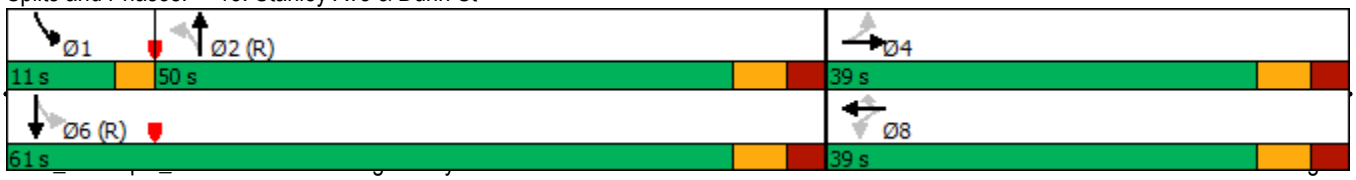
Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	18.9
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

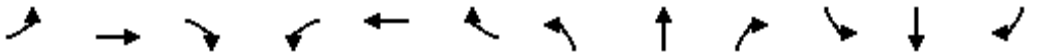
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	265	304	81	394	69	216	854	158	864
Future Volume (vph)	265	304	81	394	69	216	854	158	864
Lane Group Flow (vph)	288	491	88	428	75	235	1081	172	1207
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	10.0	10.0	6.0	10.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	32.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0
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)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
v/c Ratio	1.83	0.90	0.79	0.77	0.14	1.63	0.77	0.69	0.69
Control Delay	424.1	52.9	76.6	41.8	6.5	337.8	28.4	23.3	21.4
Queue Delay	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0
Total Delay	424.1	52.9	76.6	49.0	6.5	337.8	28.4	23.3	21.4
Queue Length 50th (m)	~84.8	86.3	15.4	74.4	0.0	~66.0	90.1	21.0	112.9
Queue Length 95th (m)	#134.3	#145.8	#43.2	#118.5	9.3	#85.4	115.6	m23.3	m132.6
Internal Link Dist (m)		213.7		94.8			227.1		103.4
Turn Bay Length (m)	75.0		25.0		25.0	25.0		40.0	
Base Capacity (vph)	157	544	112	553	522	144	1399	250	1743
Starvation Cap Reductn	0	0	0	88	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	1.83	0.90	0.79	0.92	0.14	1.63	0.77	0.69	0.69

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Stanley Ave & Dunn St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	304	148	81	394	69	216	854	141	158	864	247
Future Volume (vph)	265	304	148	81	394	69	216	854	141	158	864	247
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1645		1644	1731	1471	1644	3218		1644	3179	
Flt Permitted	0.29	1.00		0.20	1.00	1.00	0.19	1.00		0.14	1.00	
Satd. Flow (perm)	494	1645		353	1731	1471	336	3218		236	3179	
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)	288	330	161	88	428	75	235	928	153	172	939	268
RTOR Reduction (vph)	0	18	0	0	0	51	0	13	0	0	26	0
Lane Group Flow (vph)	288	473	0	88	428	24	235	1068	0	172	1181	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	43.1	43.1		54.0	54.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.43	0.43		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		3.0	7.0	
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)	158	526		112	553	470	144	1386		238	1716	
v/s Ratio Prot		0.29			0.25			0.33		0.06	c0.37	
v/s Ratio Perm	c0.58			0.25		0.02	c0.70			0.33		
v/c Ratio	1.82	0.90		0.79	0.77	0.05	1.63	0.77		0.72	0.69	
Uniform Delay, d1	34.0	32.5		30.9	30.7	23.5	28.4	24.2		15.8	16.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.26	1.23	
Incremental Delay, d2	394.0	18.1		29.4	6.7	0.0	313.6	4.2		6.1	1.3	
Delay (s)	428.0	50.6		60.3	37.4	23.5	342.1	28.4		26.1	22.0	
Level of Service	F	D		E	D	C	F	C		C	C	
Approach Delay (s)		190.1			39.1			84.4			22.5	
Approach LOS		F			D			F			C	

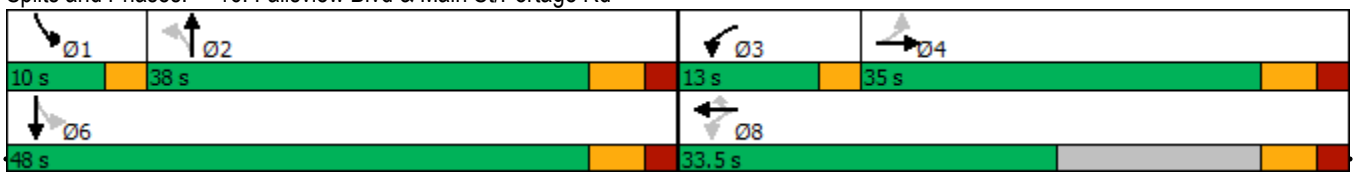
Intersection Summary			
HCM 2000 Control Delay	77.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

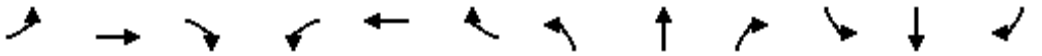
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	262	306	188	425	479	21	434	88	264
Future Volume (vph)	262	306	188	425	479	21	434	88	264
Lane Group Flow (vph)	285	429	204	462	521	23	583	96	324
Turn Type	Perm	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4	3	8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	33.5	33.5	10.0	33.5	33.5	33.5	33.5	10.0	33.5
Total Split (s)	35.0	35.0	13.0	33.5	33.5	38.0	38.0	10.0	48.0
Total Split (%)	36.5%	36.5%	13.5%	34.9%	34.9%	39.6%	39.6%	10.4%	50.0%
Yellow Time (s)	4.1	4.1	3.0	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.4	2.4	0.0	2.4	2.4	2.4	2.4	0.0	2.4
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)	6.5	6.5	3.0	6.5	6.5	6.5	6.5	3.0	6.5
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
v/c Ratio	1.11	0.84	0.66	0.62	0.63	0.07	0.98	0.47	0.44
Control Delay	124.5	47.5	27.1	25.7	11.1	23.1	64.6	22.4	20.8
Queue Delay	0.0	0.0	0.0	4.2	0.9	0.0	40.7	0.0	0.0
Total Delay	124.5	47.5	27.1	29.8	12.0	23.1	105.3	22.4	20.8
Queue Length 50th (m)	~61.2	72.0	22.2	64.5	23.3	2.9	~116.2	9.7	39.7
Queue Length 95th (m)	#109.7	#123.0	#36.8	96.8	57.3	8.5	#179.7	18.7	62.2
Internal Link Dist (m)		140.5		63.8			55.6		114.8
Turn Bay Length (m)			25.0			20.0			
Base Capacity (vph)	256	508	312	750	826	342	596	203	742
Starvation Cap Reductn	0	0	0	208	112	0	178	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	1.11	0.84	0.65	0.85	0.73	0.07	1.39	0.47	0.44

Intersection Summary

Cycle Length: 96
Actuated Cycle Length: 95.7
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 16: Fallsview Blvd & Main St/Portage Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	306	88	188	425	479	21	434	102	88	264	34
Future Volume (vph)	262	306	88	188	425	479	21	434	102	88	264	34
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1644	1672		1644	1731	1471	1644	1681		1644	1701	
Flt Permitted	0.50	1.00		0.22	1.00	1.00	0.56	1.00		0.12	1.00	
Satd. Flow (perm)	861	1672		388	1731	1471	977	1681		209	1701	
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)	285	333	96	204	462	521	23	472	111	96	287	37
RTOR Reduction (vph)	0	11	0	0	0	191	0	8	0	0	5	0
Lane Group Flow (vph)	285	418	0	204	462	330	23	575	0	96	319	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Effective Green, g (s)	28.5	28.5		41.2	41.2	41.2	33.5	33.5		42.1	42.1	
Actuated g/C Ratio	0.30	0.30		0.43	0.43	0.43	0.35	0.35		0.44	0.44	
Clearance Time (s)	6.5	6.5		3.0	6.5	6.5	6.5	6.5		3.0	6.5	
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)	254	494		292	740	629	339	584		174	743	
v/s Ratio Prot		0.25		c0.07	0.27			c0.34		c0.03	0.19	
v/s Ratio Perm	c0.33			0.23		0.22	0.02			0.21		
v/c Ratio	1.12	0.85		0.70	0.62	0.53	0.07	0.98		0.55	0.43	
Uniform Delay, d1	33.9	31.9		20.1	21.5	20.3	21.0	31.1		20.4	18.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	93.3	12.7		7.1	1.6	0.8	0.4	33.5		3.7	1.8	
Delay (s)	127.2	44.5		27.2	23.2	21.1	21.4	64.6		24.1	20.6	
Level of Service	F	D		C	C	C	C	E		C	C	
Approach Delay (s)		77.5			23.0			63.0			21.4	
Approach LOS		E			C			E			C	

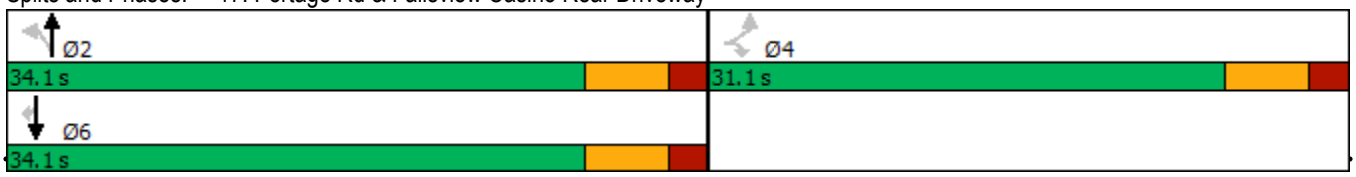
Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

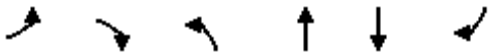
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	284	472	112	141	391
Future Volume (vph)	106	284	472	112	141	391
Lane Group Flow (vph)	115	309	513	122	153	425
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	31.1	31.1	16.1	16.1	16.1	16.1
Total Split (s)	31.1	31.1	34.1	34.1	34.1	34.1
Total Split (%)	47.7%	47.7%	52.3%	52.3%	52.3%	52.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
v/c Ratio	0.20	0.43	0.99	0.16	0.19	0.47
Control Delay	14.5	4.1	59.8	12.2	12.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	4.1	59.8	12.2	12.4	3.4
Queue Length 50th (m)	8.9	0.0	~69.3	8.7	11.1	0.0
Queue Length 95th (m)	18.5	13.2	#120.5	17.6	21.4	13.9
Internal Link Dist (m)	9.1			121.3	66.9	
Turn Bay Length (m)						
Base Capacity (vph)	668	781	519	787	787	901
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	0.40	0.99	0.16	0.19	0.47

Intersection Summary

Cycle Length: 65.2
Actuated Cycle Length: 62.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
~ 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.

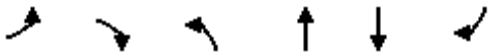
Splits and Phases: 17: Portage Rd & Fallsview Casino Rear Driveway





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	106	284	472	112	141	391
Future Volume (vph)	106	284	472	112	141	391
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1644	1471	1644	1731	1731	1471
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1644	1471	1142	1731	1731	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	309	513	122	153	425
RTOR Reduction (vph)	0	202	0	0	0	231
Lane Group Flow (vph)	115	107	513	122	153	194
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	21.6	21.6	28.3	28.3	28.3	28.3
Effective Green, g (s)	21.6	21.6	28.3	28.3	28.3	28.3
Actuated g/C Ratio	0.35	0.35	0.46	0.46	0.46	0.46
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	571	511	520	788	788	670
v/s Ratio Prot				0.07	0.09	
v/s Ratio Perm	0.07	c0.07	c0.45			0.13
v/c Ratio	0.20	0.21	0.99	0.15	0.19	0.29
Uniform Delay, d1	14.2	14.2	16.7	9.9	10.1	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	36.3	0.4	0.5	1.1
Delay (s)	14.4	14.5	53.0	10.3	10.6	11.7
Level of Service	B	B	D	B	B	B
Approach Delay (s)	14.4			44.8	11.4	
Approach LOS	B			D	B	

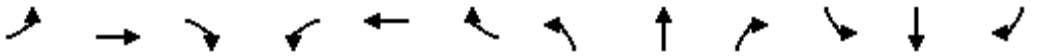
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	165	0	1401	1408	40
Future Volume (Veh/h)	0	165	0	1401	1408	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)	0	179	0	1523	1530	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)				55	191	
pX, platoon unblocked	0.84	0.69	0.69			
vC, conflicting volume	2313	786	1573			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	0	922			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	76	100			
cM capacity (veh/h)	379	749	514			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	179	762	762	1020	553
Volume Left	0	0	0	0	0
Volume Right	179	0	0	0	43
cSH	749	1700	1700	1700	1700
Volume to Capacity	0.24	0.45	0.45	0.60	0.33
Queue Length 95th (m)	7.1	0.0	0.0	0.0	0.0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.3	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	7	0	0	0	79	549	165	181	483	173
Future Volume (Veh/h)	23	5	7	0	0	0	79	549	165	181	483	173
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)	25	5	8	0	0	0	86	597	179	197	525	188
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (m)								139			114	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1484	1961	356	1526	1966	388	713			776		
vC1, stage 1 conf vol	1013	1013		858	858							
vC2, stage 2 conf vol	470	948		667	1107							
vCu, unblocked vol	1387	1895	188	1431	1900	388	567			776		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	95	99	100	100	100	91			77		
cM capacity (veh/h)	188	107	779	206	139	616	954			849		

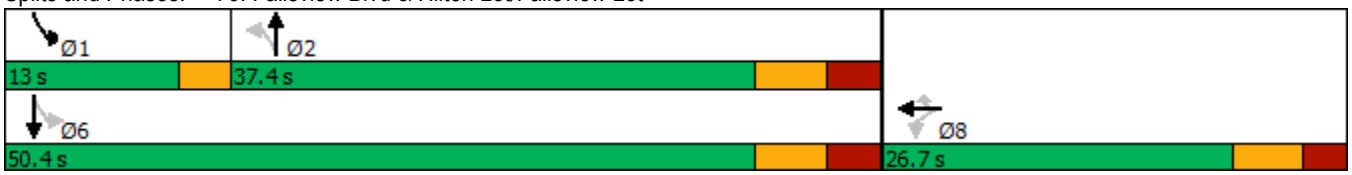
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	0	86	398	378	197	350	363
Volume Left	25	0	86	0	0	197	0	0
Volume Right	8	0	0	0	179	0	0	188
cSH	200	1700	954	1700	1700	849	1700	1700
Volume to Capacity	0.19	0.00	0.09	0.23	0.22	0.23	0.21	0.21
Queue Length 95th (m)	5.2	0.0	2.3	0.0	0.0	6.8	0.0	0.0
Control Delay (s)	27.1	0.0	9.1	0.0	0.0	10.5	0.0	0.0
Lane LOS	D	A	A			B		
Approach Delay (s)	27.1	0.0	0.9			2.3		
Approach LOS	D	A						

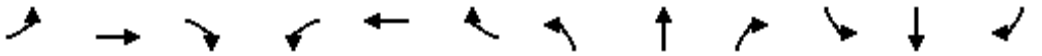
Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	46.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	120	16	501	200	784
Future Volume (vph)	1	120	16	501	200	784
Lane Group Flow (vph)	46	130	17	641	217	972
Turn Type	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases	8			2	1	6
Permitted Phases		8	2		6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0	7.0	20.0
Minimum Split (s)	26.7	26.7	33.4	33.4	10.0	33.4
Total Split (s)	26.7	26.7	37.4	37.4	13.0	50.4
Total Split (%)	34.6%	34.6%	48.5%	48.5%	16.9%	65.4%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	4.1
All-Red Time (s)	2.6	2.6	3.3	3.3	0.0	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	7.4	7.4	3.0	7.4
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.14	0.33	0.08	0.49	0.36	0.45
Control Delay	22.7	8.0	13.4	14.4	5.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	8.0	13.4	14.4	5.6	7.1
Queue Length 50th (m)	4.0	0.0	1.1	25.5	7.2	26.8
Queue Length 95th (m)	12.5	12.2	4.7	40.2	14.5	40.6
Internal Link Dist (m)	32.2			90.4		112.9
Turn Bay Length (m)			20.0		25.0	
Base Capacity (vph)	626	639	311	1972	630	2545
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.05	0.33	0.34	0.40

Intersection Summary
Cycle Length: 77.1
Actuated Cycle Length: 54.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Fallsview Blvd & Hilton Lot/Fallsview Lot





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	41	1	120	16	501	88	200	784	110
Future Volume (vph)	0	0	0	41	1	120	16	501	88	200	784	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Lane Util. Factor					1.00	1.00	1.00	0.95		1.00	0.95	
Frt					1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected					0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)					1650	1471	1644	3214		1644	3227	
Flt Permitted					0.95	1.00	0.29	1.00		0.35	1.00	
Satd. Flow (perm)					1650	1471	510	3214		611	3227	
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)	0	0	0	45	1	130	17	545	96	217	852	120
RTOR Reduction (vph)	0	0	0	0	0	112	0	18	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	46	18	17	623	0	217	960	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases					8			2		1	6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					7.6	7.6	22.1	22.1		34.2	34.2	
Effective Green, g (s)					7.6	7.6	22.1	22.1		34.2	34.2	
Actuated g/C Ratio					0.14	0.14	0.40	0.40		0.61	0.61	
Clearance Time (s)					6.7	6.7	7.4	7.4		3.0	7.4	
Vehicle Extension (s)					4.0	4.0	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)					224	199	201	1270		541	1974	
v/s Ratio Prot								0.19		0.07	c0.30	
v/s Ratio Perm					0.03	0.01	0.03			0.18		
v/c Ratio					0.21	0.09	0.08	0.49		0.40	0.49	
Uniform Delay, d1					21.5	21.1	10.6	12.7		5.0	6.0	
Progression Factor					1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2					0.6	0.3	0.2	0.4		0.7	0.3	
Delay (s)					22.1	21.4	10.8	13.1		5.7	6.3	
Level of Service					C	C	B	B		A	A	
Approach Delay (s)		0.0			21.6			13.0			6.1	
Approach LOS		A			C			B			A	

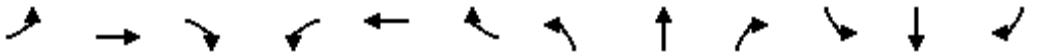
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	17.1
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	104	111	141	203	359	60	938	352	1133
Future Volume (vph)	104	111	141	203	359	60	938	352	1133
Lane Group Flow (vph)	0	260	0	374	390	65	1092	383	1341
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0	8.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	9.0	37.0	9.0	37.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	17.0	47.0	17.0	47.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	36.0%	17.0%	47.0%	17.0%	47.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	3.0	7.0	3.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		1.24		1.02	0.60	0.33	0.84	1.19	0.84
Control Delay		175.9		88.0	11.4	8.2	29.8	134.7	22.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		175.9		88.0	11.4	8.2	29.8	134.7	22.7
Queue Length 50th (m)		~62.6		~74.4	11.8	4.5	105.0	~71.2	72.9
Queue Length 95th (m)		#111.0		#131.8	40.5	m4.2	m109.2	m#117.9	m#122.6
Internal Link Dist (m)		100.0		3.9			71.5		31.5
Turn Bay Length (m)						65.0		140.0	
Base Capacity (vph)		209		368	645	316	1307	323	1601
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		1.24		1.02	0.60	0.21	0.84	1.19	0.84

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 85 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 76: Stanley Ave & Dixon St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	111	24	141	203	359	60	938	66	352	1133	100
Future Volume (vph)	104	111	24	141	203	359	60	938	66	352	1133	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1671			1696	1471	1644	3256		1644	3248	
Flt Permitted		0.41			0.73	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)		707			1270	1471	196	3256		198	3248	
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)	113	121	26	153	221	390	65	1020	72	383	1232	109
RTOR Reduction (vph)	0	4	0	0	0	219	0	5	0	0	6	0
Lane Group Flow (vph)	0	256	0	0	374	171	65	1087	0	383	1335	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Effective Green, g (s)		29.0			29.0	29.0	45.5	40.0		57.0	48.5	
Actuated g/C Ratio		0.29			0.29	0.29	0.46	0.40		0.57	0.48	
Clearance Time (s)		7.0			7.0	7.0	3.0	7.0		3.0	7.0	
Vehicle Extension (s)		2.3			2.3	2.3	2.3	2.5		2.3	2.5	
Lane Grp Cap (vph)		205			368	426	168	1302		315	1575	
v/s Ratio Prot							0.02	0.33		c0.17	0.41	
v/s Ratio Perm		c0.36			0.29	0.12	0.15			c0.52		
v/c Ratio		1.25			1.02	0.40	0.39	0.83		1.22	0.85	
Uniform Delay, d1		35.5			35.5	28.5	17.4	27.0		26.9	22.5	
Progression Factor		1.00			1.00	1.00	0.76	1.02		1.42	0.80	
Incremental Delay, d2		145.3			51.1	0.4	0.2	1.9		116.3	4.3	
Delay (s)		180.8			86.6	28.9	13.5	29.4		154.6	22.2	
Level of Service		F			F	C	B	C		F	C	
Approach Delay (s)		180.8			57.1			28.6			51.6	
Approach LOS		F			E			C			D	

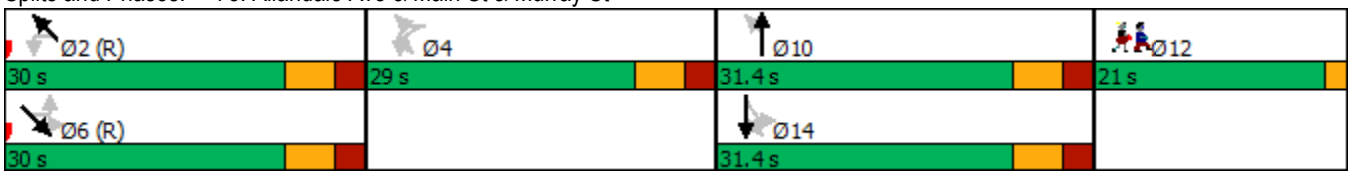
Intersection Summary			
HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL2	WBL	WBR	NBL	NBT	SBL2	SBL	SBT	SEL2	SEL	SET	NWT
Lane Configurations												
Traffic Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Future Volume (vph)	16	5	275	106	32	7	16	17	1	204	208	15
Lane Group Flow (vph)	0	22	358	0	250	0	0	44	0	223	259	44
Turn Type	Perm	Perm	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	NA
Protected Phases					10			14			6	2
Permitted Phases	4	4	4	10		14	14		6	6		
Minimum Split (s)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	16.8	16.8	16.8	16.8
Total Split (s)	29.0	29.0	29.0	31.4	31.4	31.4	31.4	31.4	30.0	30.0	30.0	30.0
Total Split (%)	26.0%	26.0%	26.0%	28.2%	28.2%	28.2%	28.2%	28.2%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)		6.8	6.8		6.8			6.8		6.8	6.8	6.8
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.11	1.25		0.85			0.16		0.87	0.75	0.14
Control Delay		38.1	175.4		68.1			36.2		74.3	56.1	37.4
Queue Delay		0.0	0.0		0.0			0.0		0.0	0.0	0.0
Total Delay		38.1	175.4		68.1			36.2		74.3	56.1	37.4
Queue Length 50th (m)		4.0	~97.2		52.5			7.6		47.3	53.2	7.9
Queue Length 95th (m)		11.0	#153.5		#95.6			17.3		#90.0	#88.4	17.6
Internal Link Dist (m)		102.7			229.8			295.5			298.1	208.5
Turn Bay Length (m)		55.0								30.0		
Base Capacity (vph)		209	287		294			281		257	346	323
Starvation Cap Reductn		0	0		0			0		0	0	0
Spillback Cap Reductn		0	0		0			0		0	0	0
Storage Cap Reductn		0	0		0			0		0	0	0
Reduced v/c Ratio		0.11	1.25		0.85			0.16		0.87	0.75	0.14

Intersection Summary

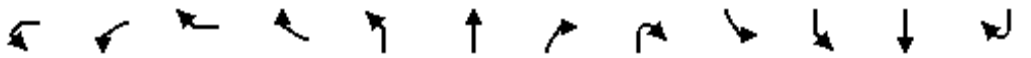
Cycle Length: 111.4
Actuated Cycle Length: 111.4
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 78: Allandale Ave & Main St & Murray St



Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	19%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

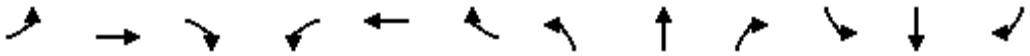


Movement	WBL2	WBL	WBR	WBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Future Volume (vph)	16	5	275	54	106	32	87	5	7	16	17	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8			6.8					6.8	
Lane Util. Factor		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.95					1.00	
Flt Protected		0.95	1.00			0.98					0.97	
Satd. Flow (prot)		1612	1442			1569					1645	
Flt Permitted		0.62	1.00			0.83					0.75	
Satd. Flow (perm)		1050	1442			1334					1268	
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)	17	5	299	59	115	35	95	5	8	17	18	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	358	0	0	250	0	0	0	0	43	0
Turn Type	Perm	Perm	Perm		Perm	NA			Perm	Perm	NA	
Protected Phases						10					14	
Permitted Phases	4	4	4		10				14	14		
Actuated Green, G (s)		22.2	22.2			24.6					24.6	
Effective Green, g (s)		22.2	22.2			24.6					24.6	
Actuated g/C Ratio		0.20	0.20			0.22					0.22	
Clearance Time (s)		6.8	6.8			6.8					6.8	
Lane Grp Cap (vph)		209	287			294					280	
v/s Ratio Prot												
v/s Ratio Perm		0.02	c0.25			c0.19					0.03	
v/c Ratio		0.11	1.25			0.85					0.15	
Uniform Delay, d1		36.5	44.6			41.6					35.0	
Progression Factor		1.00	1.00			1.00					1.00	
Incremental Delay, d2		1.0	137.0			25.3					1.2	
Delay (s)		37.5	181.6			66.9					36.2	
Level of Service		D	F			E					D	
Approach Delay (s)		173.3				66.9					36.2	
Approach LOS		F				E					D	

Intersection Summary			
HCM 2000 Control Delay	97.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	111.4	Sum of lost time (s)	22.4
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SET	SER	NWT	NWR	NWR2
Lane Configurations							
Traffic Volume (vph)	1	204	208	30	15	11	15
Future Volume (vph)	1	204	208	30	15	11	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.8	6.8		6.8		
Lane Util. Factor		1.00	1.00		1.00		
Frt		1.00	0.98		0.91		
Flt Protected		0.95	1.00		1.00		
Satd. Flow (prot)		1612	1664		1551		
Flt Permitted		0.73	1.00		1.00		
Satd. Flow (perm)		1236	1664		1551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	222	226	33	16	12	16
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	223	259	0	44	0	0
Turn Type	Perm	Perm	NA		NA		
Protected Phases			6		2		
Permitted Phases	6	6					
Actuated Green, G (s)		23.2	23.2		23.2		
Effective Green, g (s)		23.2	23.2		23.2		
Actuated g/C Ratio		0.21	0.21		0.21		
Clearance Time (s)		6.8	6.8		6.8		
Lane Grp Cap (vph)		257	346		323		
v/s Ratio Prot			0.16		0.03		
v/s Ratio Perm		c0.18					
v/c Ratio		0.87	0.75		0.14		
Uniform Delay, d1		42.6	41.4		35.9		
Progression Factor		1.00	1.00		1.00		
Incremental Delay, d2		30.4	13.8		0.9		
Delay (s)		73.0	55.2		36.8		
Level of Service		E	E		D		
Approach Delay (s)			63.4		36.8		
Approach LOS			E		D		

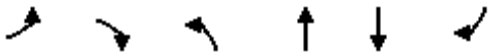
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	14	0	198	16	149	0	68	175	50	0	1
Future Volume (Veh/h)	1	14	0	198	16	149	0	68	175	50	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	15	0	215	17	162	0	74	190	54	0	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					124							
pX, platoon unblocked												
vC, conflicting volume	179			15			546	626	15	772	545	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			15			546	626	15	772	545	98
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			100	79	82	73	100	100
cM capacity (veh/h)	1409			1616			405	349	1070	198	389	963

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	394	264	55
Volume Left	1	215	0	54
Volume Right	0	162	190	1
cSH	1409	1616	678	201
Volume to Capacity	0.00	0.13	0.39	0.27
Queue Length 95th (m)	0.0	3.5	14.0	8.1
Control Delay (s)	0.5	4.6	13.7	29.6
Lane LOS	A	A	B	D
Approach Delay (s)	0.5	4.6	13.7	29.6
Approach LOS			B	D

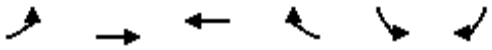
Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	58.3%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	6	1064	1302	104
Future Volume (Veh/h)	0	0	6	1064	1302	104
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	7	1157	1415	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				127	95	
pX, platoon unblocked	0.77	0.64	0.64			
vC, conflicting volume	2064	764	1528			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	0	716			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	497	703	576			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	7	578	578	943	585
Volume Left	0	0	7	0	0	0	0
Volume Right	0	0	0	0	0	0	113
cSH	1700	1700	576	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.01	0.34	0.34	0.55	0.34
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	11.3	0.0	0.0	0.0	0.0
Lane LOS	A	A	B				
Approach Delay (s)	0.0		0.1			0.0	
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		



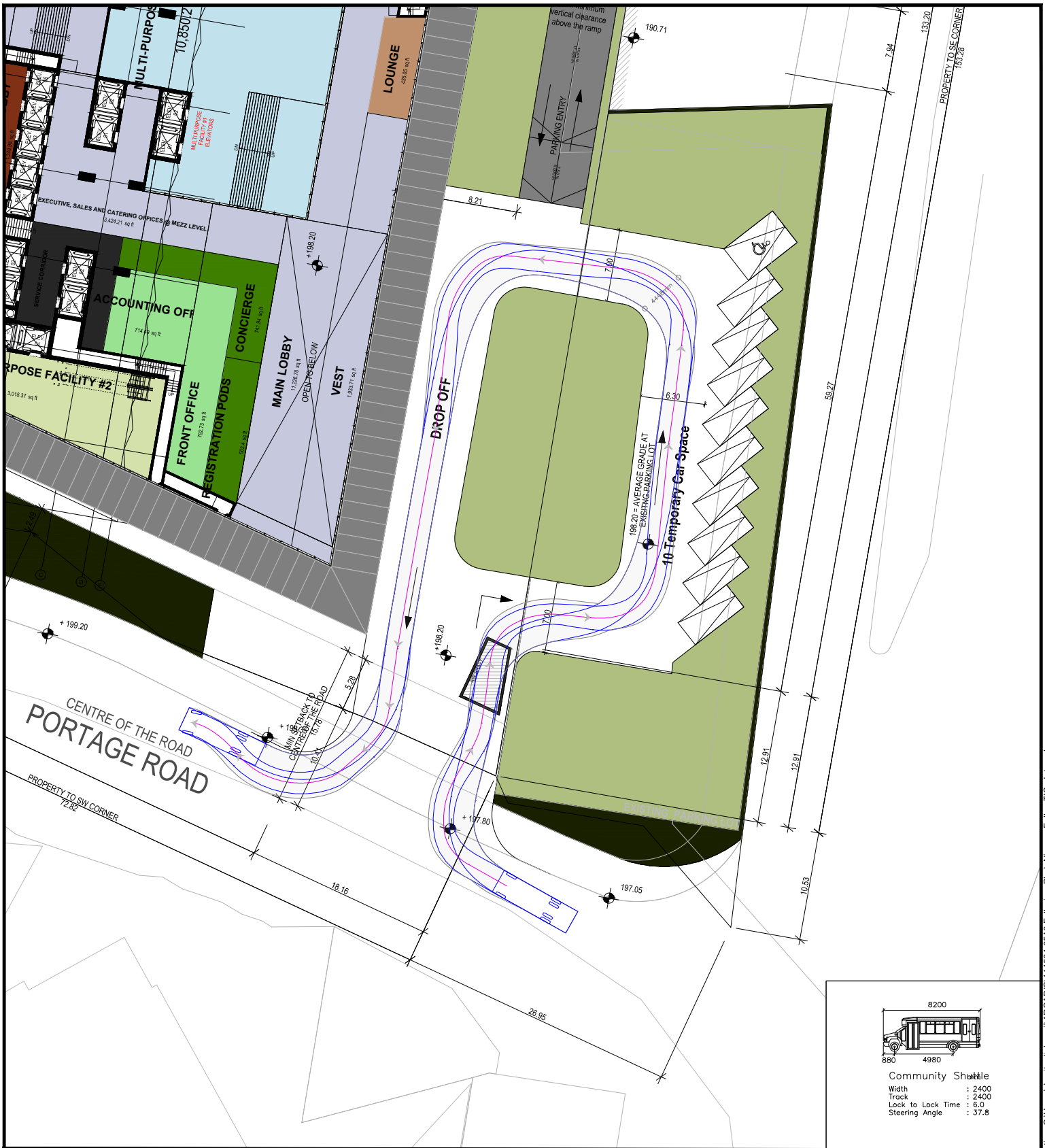
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	160	336	850	13	9	161
Future Volume (Veh/h)	160	336	850	13	9	161
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	365	924	14	10	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		88	33			
pX, platoon unblocked						
vC, conflicting volume	938				1462	469
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	938				1462	469
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	76				89	68
cM capacity (veh/h)	739				93	546

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	296	243	616	322	10	175
Volume Left	174	0	0	0	10	0
Volume Right	0	0	0	14	0	175
cSH	739	1700	1700	1700	93	546
Volume to Capacity	0.24	0.14	0.36	0.19	0.11	0.32
Queue Length 95th (m)	6.9	0.0	0.0	0.0	2.7	10.4
Control Delay (s)	7.9	0.0	0.0	0.0	48.2	14.7
Lane LOS	A				E	B
Approach Delay (s)	4.3		0.0		16.5	
Approach LOS					C	

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix K

Vehicle Swept Path Analysis



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6546 FALLSVIEW BOULEVARD & 6519 STANLEY AVENUE, NIAGARA FALLS, ONTARIO

PROJECT NAME
OAKES HOTEL REDEVELOPMENT
6546 FALLSVIEW BOULEVARD & 6519 STANLEY AVENUE, NIAGARA FALLS, ONTARIO

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CHECKED BY:	APPROVED BY:
A.G.	A.G.
PROJECT NO:	
141561	

FIGURE NAME
VEHICLE MANEUVERING GIAGRAM - COMMUNITY SHUTTLE

FIGURE NO.	REVISION
1	2.0

SCALE CHECK
1 in 10mm

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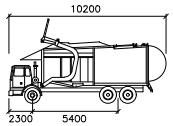

Modern Garbage Truck (Niagara)

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

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FIGURE NAME
VEHICLE MANEUVERING DIAGRAM - MODERN GARBAGE TRUCK

FIGURE NO.	REVISION
3	2.0

SCALE CHECK
1 in 10mm

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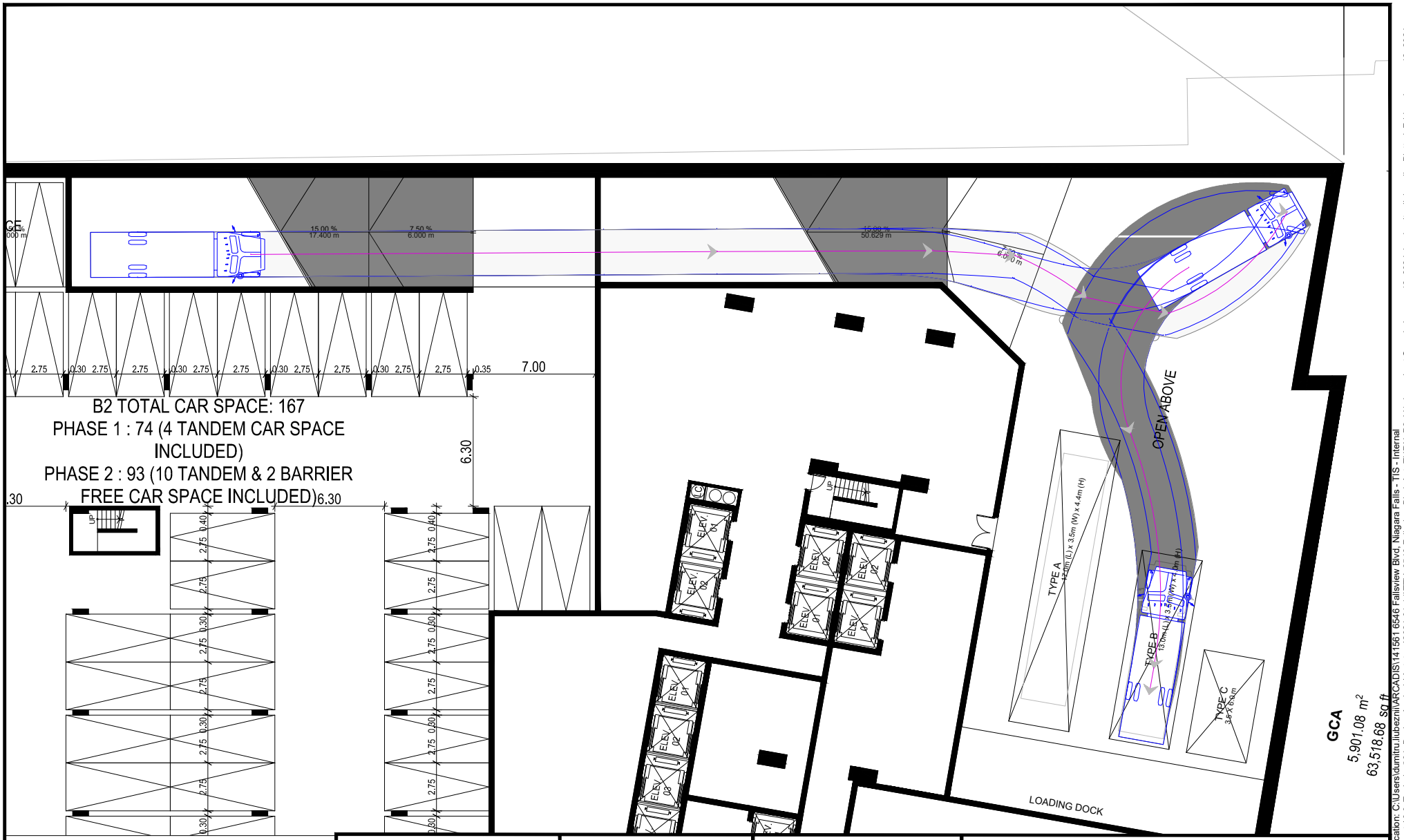

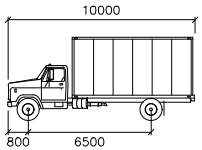

MSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

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6546 FALLSVIEW BOULEVARD & 6519 STANLEY AVENUE, NIAGARA FALLS, ONTARIO

SCALE:	DATE:
1:300	2024-01-12
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D.L.	D.L.
CHECKED BY:	APPROVED BY:
A.G.	A.G.
PROJECT NO:	
141561	

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Arcadis Professional Services (Canada) Inc.
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - MSU (P2)

FIGURE NO.	REVISION
3	2.0

SCALE CHECK
1 in

10mm

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