Lot 175 Portage Road
City of Niagara Falls
Transportation Impact and Parking Study

Paradigm Transportation Solutions Limited

August 2022
220026

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Project Summary

Project Number
220026

Date: August 2022
Version 0.1.0

Lot 175 Portage Road
City of Niagara Falls
Transportation Impact and Parking Study

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Executive Summary

Content

Rudanco Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact and Parking Study, for a proposed high-rise residential development located on Lot 175 Portage Road in the City of Niagara Falls. Lot 175 Portage Road is located generally between McLeod Road and Marineland Parkway on the west side of Portage Road.

This report is part of a required Official Plan Amendment, Zoning By-law Amendment and Site Plan Approval application.

This study determines the impacts of the development traffic on the surrounding road network, forecasts the site's parking demand and identifies any modifications recommended to accommodate the site generated traffic.

Development Concept

The development concept includes two high-rise towers with a podium building containing a total of 623 units. Tower A is 35 storeys with 367 units and Tower B is 25 storeys with 256 units. Build-out is expected to occur in one phase by Year 2027. A total parking supply of 779 spaces is proposed within a multilevel parking structure.

Vehicle access is proposed by a one-way driveway looped to Portage Road. The driveway loop is located approximately 250 metres north of Marineland Parkway.

Conclusions

Transportation Impact Study

The main findings and conclusions of this study are as follows:

- **Base Year Traffic Conditions**: Critical movements are noted at the Portage Road and Private Driveway (Casino Driveway) intersection.
- **Site Trip Generation**: The subject site is forecast to generate approximately 156, 185 and 217 new vehicle trips during the AM, PM, and Saturday peak hours, respectively.
- **Background Traffic Conditions**: Capacity issues are expected to occur at the Portage Road intersection with Private Driveway

and at the Marineland Parkway intersection with Stanley Avenue/Thundering Waters.

- **Total Traffic Conditions**: The critical movements forecast to occur under the background traffic conditions are expected to continue to occur with the addition of site generated traffic.

  Site generated traffic results in one new critical movement at the study area intersections.

- During the PM peak hour, the westbound left-turn lane at the intersection of Marineland Parkway and Stanley Avenue Boulevard is forecast to operated at a LOS C with a v/c ratio greater than 0.85.
- **Remedial Measures**: No remedial measures are required to support development of the site.

Parking Justification Study

- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. TDM measures are aimed at walking, transit, cycling, parking, and education/promotion.
- The site's parking supply consists of 779 parking spaces (1.20 spaces per unit).
- Under the City's Zoning By-law, a total of 872 parking spaces (1.40 spaces per unit) is mandated.
- Planning policy within the City and the Region encourage intensification within Built-up Areas and support reduced parking standards as a means of encouraging intensification;
- Data extracted from the Transportation Tomorrow Survey (TTS) indicate vehicle ownership rates for apartment dwellers is 0.74 vehicles per household. This suggests an occupant parking supply of 461 would be sufficient. With 779 spaces proposed, the forecast demand is less than the proposed supply.
- Proxy site survey data suggests a parking demand rate of 0.90 spaces per unit. The forecast parking demand for the subject site is 561 spaces. With 779 spaces proposed, the forecast demand is less than the proposed supply.

Recommendations

Based on the findings of this study, it is recommended that:

- The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- It is recommended that signage and pavement markings be provided on the driveway approaches to identify the one-way travel directions.
- The road authorities should continue to monitor and adjust traffic control signal timings to reflect changes in real world traffic volumes.

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1 Introduction

1.1 Overview

Rudanco Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact and Parking Study for a proposed high-rise residential development located on Lot 175 Portage Road in the City of Niagara Falls. **Figure 1.1** illustrates the site location. The subject site is located within the Tourist Commercial area.

The scope of the study includes:

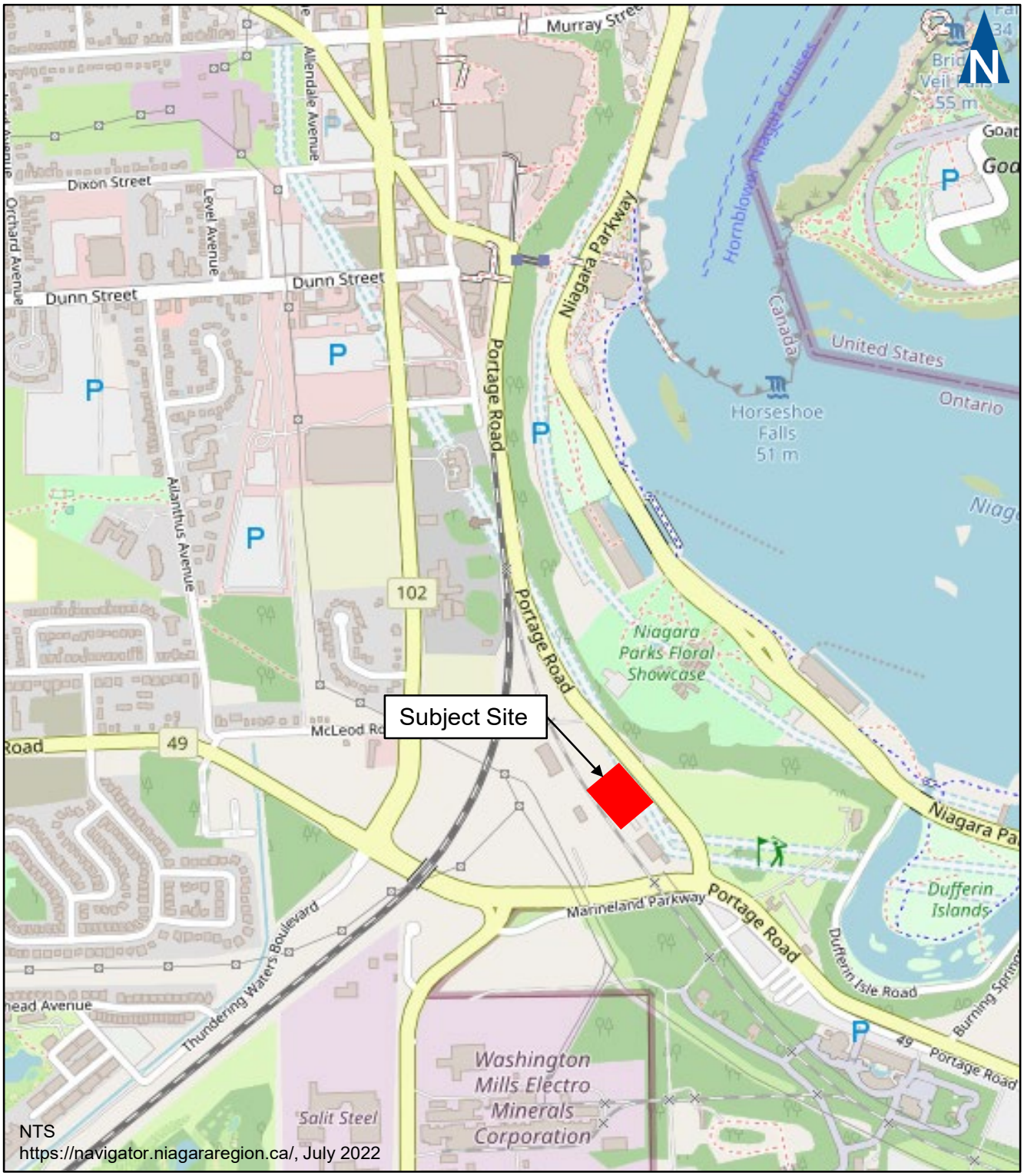
- Determine and assess the current study area traffic conditions;
- Forecast the additional traffic generated by the proposed development;
- Analyze the impacts of the additional traffic on the study area road network;
- Recommend necessary remedial measures to mitigate any identified impacts;
- An assessment of heavy vehicle circulation within the site; and
- Determine the sites parking demand and requirements.

Appendix A contains the pre-study consultation material and responses from the Niagara Region and the City of Niagara Falls. The study has been conducted in general accordance with the Niagara Region Guidelines for Transportation Impact Studies[1]. The analysis periods assessed include weekday AM and PM peak hours and the Saturday mid-day peak hour

The study area intersections include:

- Portage Road and Marineland Parkway (signalized);
- Marineland Parkway and Stanley Avenue/Thundering Waters Boulevard (signalized);
- Marineland Parkway and Stanley Avenue (signalized);
- Portage Road at Fallsview Boulevard(signalized);
- Portage Road/Private Driveway (Casino Driveway) (signalized); and
- The proposed site driveways

[1]Guidelines for Transportation Impact Studies, Niagara Region, May 2012



Site Location

Lot 175 Portage Road
220026

Figure 1.1

2 Existing Conditions

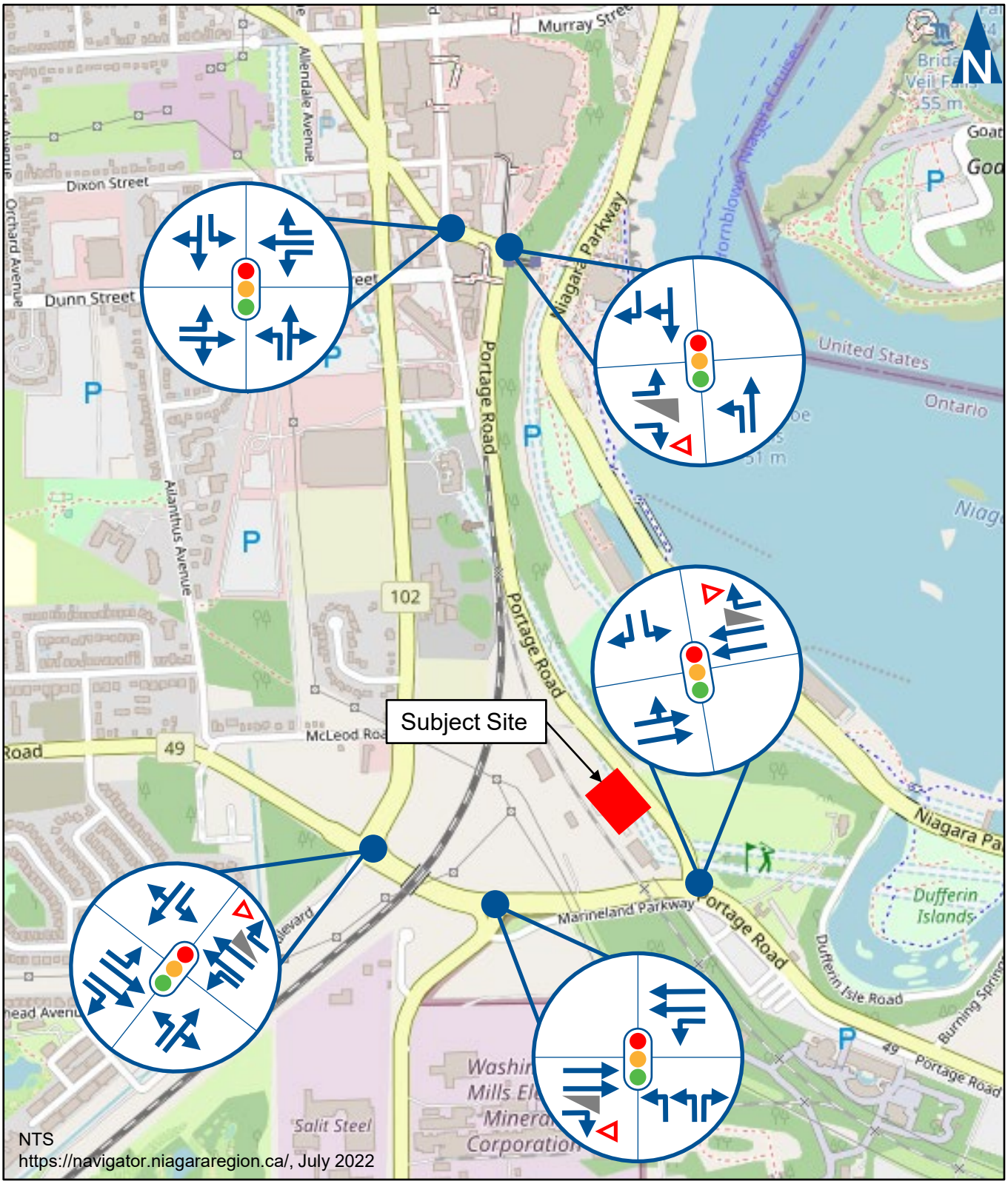
2.1 Road Network

The roadways[2] of interest within the study area include:

- **Portage Road** is a north/south local road with a posted speed limit of 50 km/h. The road has a two-lane rural cross-section which transitions to an urban cross-section north of Hotel Hill Road. The intersection with Marineland Parkway, Fallsview Boulevard and Private Driveway (Casino Driveway) is signalized.
- **Stanley Avenue** (Regional Road 102) is a north/south regional road with a posted speed limit of 50 km/h. The road has a four-lane urban cross section with a centre two-way left-turn lane. The intersection with Marineland Parkway is signalized.
- **Thundering Waters Boulevard** is a north/south local road with an assumed speed limit of 50 km/h. The road has a four-lane urban cross section that reduces to two-lanes south of Dixon Street. The intersection with Marineland Parkway is signalized, where the north leg changes name to Stanley Avenue.
- **Marineland Parkway** (Regional Road 49) is an east/west regional road with a posted speed limit of 50 km/h. The road has a four-lane urban cross section and is under the Niagara Region jurisdiction to the west of Stanley Avenue (south leg) and City of Niagara Falls to the east.
- **Main Street** is an east/west local road with an assumed speed limit of 50 km/h. The roadway falls under the City of Niagara Falls jurisdiction. The road has a two-lane urban cross section. The intersection with Fallsview Boulevard is signalized.
- **Fallsview Boulevard** is a north/south local road with an assumed speed limit of 50 km/h. The roadway falls under the City of Niagara Falls jurisdiction. The road has a four-lane urban cross section that reduces to two-lanes south of Dixon Street. The intersection with Main Street/Portage Road is signalized.

Figure 2.1 illustrates the existing lane configuration and traffic control at the study area intersections.

[2] Niagara Region Road Classification Map, February 2022



Existing Lane Configuration and Traffic Control

Lot 175 Portage Road
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Figure 2.1

2.2 Pedestrian Network

Sidewalks are present on most roadways within the study area. The following sidewalks are provided:

- **Portage Road**: Sidewalks are provided on the west side of the roadway from Marineland Parkway to about 225 metres to the north. A paved trail continues on the east side of the road. The sidewalk is in poor condition with no connection to the east side of the road. The paved trail on the east side of the road is poorly marked near the subject site. The trail ends about 400 metres north of McLeod Road. No pedestrian connection is available to Fallsview Boulevard.
- **Stanley Avenue**: Sidewalks are provided on the east and west side of Stanley Avenue north of McLeod Road. Sidewalks are provided on the west side of Stanley Avenue south of McLeod Road.
- **Main Street**: Sidewalks are provided on the north and south side of the roadway within the study area.
- **Marineland Parkway:** Sidewalks are provided on the south side of Marineland Parkway east of Stanley Avenue (south leg). Sidewalks are then provided on the north side of Marineland Parkway west of Stanley Avenue (south leg). No sidewalks are provided west of Stanley Avenue (north leg).
- **Fallsview Boulevard** Sidewalks are provided on both sides of the roadway.

The signalized intersections in the study area provide opportunities for pedestrians to cross at a controlled location. The signalized Marineland Parkway intersections do not have crosswalks on all legs as the sidewalks are limited in the area.

2.3 Cycling Network

The existing cycling network in the study area is limited. **Figure 2.3** illustrates the existing and proposed cycling network.

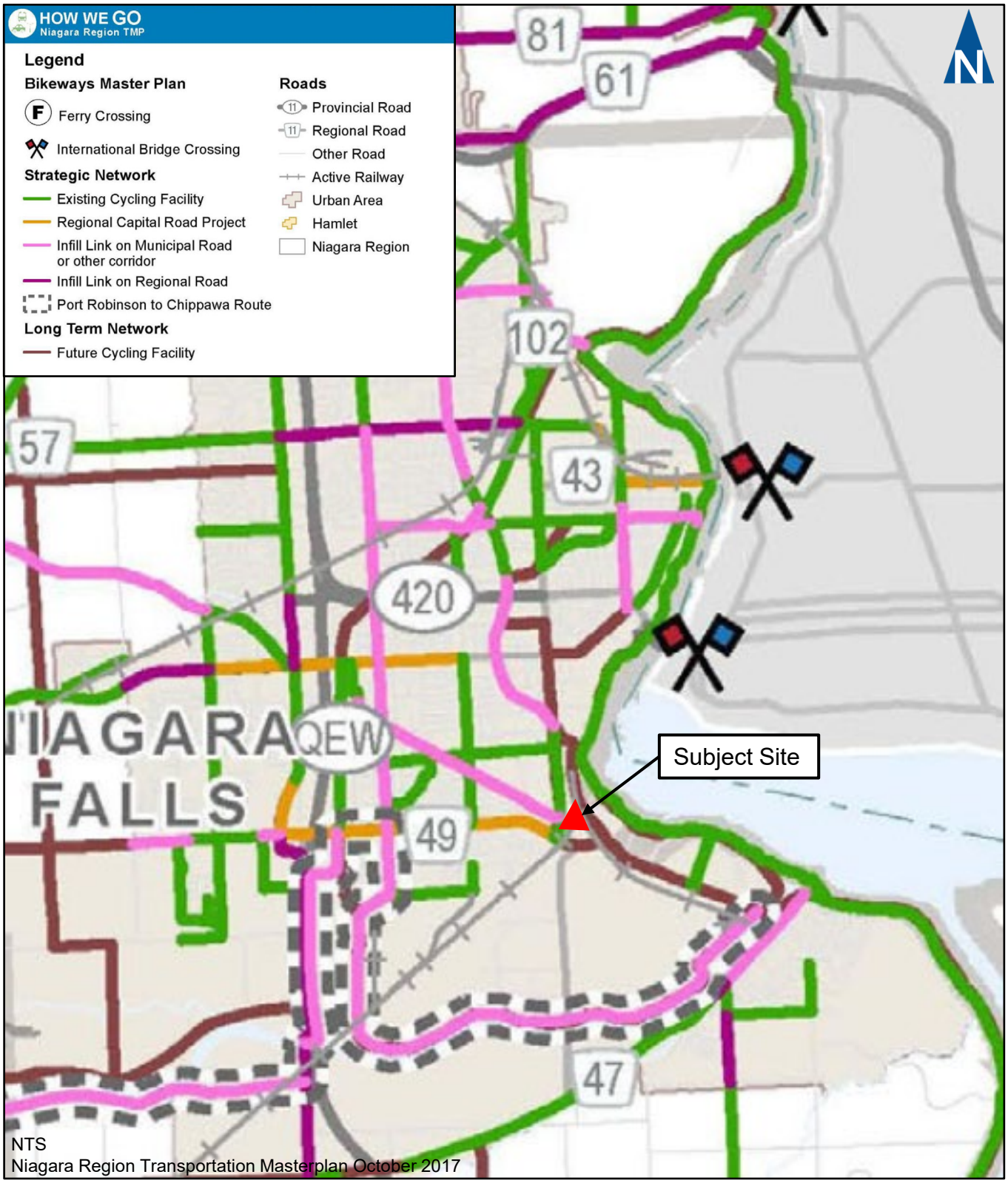
The only existing cycling infrastructure is along Stanley Avenue, where an urban shoulder is provided in both directions.

The Niagara Region Transportation Master Plan[3] proposes cycling facilities on the following roadways:

- Portage Road from Main Street to Weightman Bridge
- Marineland Parkway from Portage Road to McLeod Road

Timing of these improvements and the cycling facility type are unknown.

[3] Niagara Region Transportation Masterplan, IBI Group, October 2017



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Existing and Proposed Cycling Network

Lot 175 Portage Road
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Figure 2.2

2.4 Transit Network

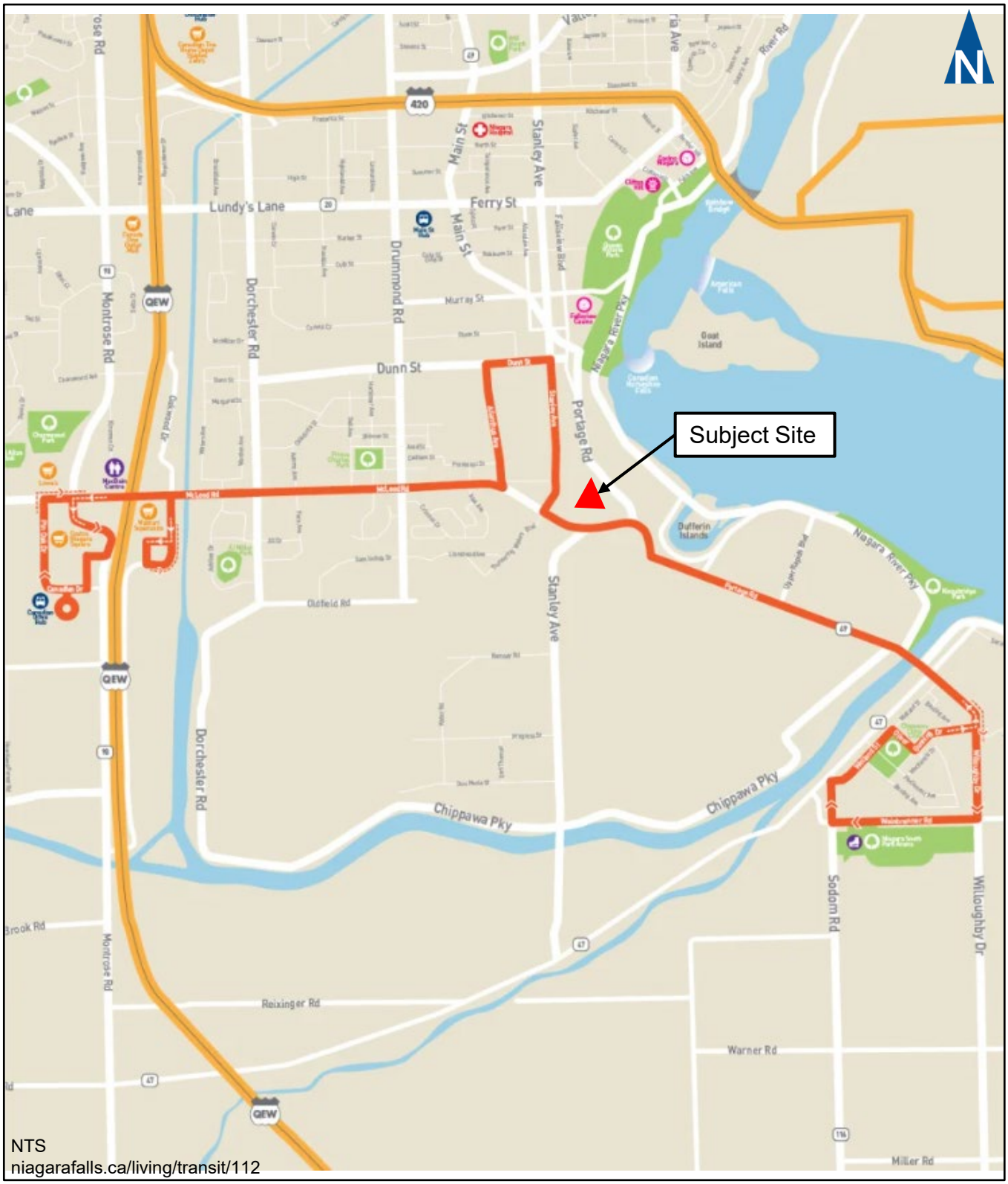
Transit service in the area is provided by Niagara Falls Transit. Three transit routes are in operation within the immediate area. These routes provide connectivity to the larger City-Wide transit network.

Figure 2.3A-B illustrates the existing transit network. The following routes operate along the adjacent roadways:

- **Route 106** operates along Portage Road and Stanley Avenue 7 days a week. Service is provided between Gunning & Willoughby and the Main & Ferry HUB. Service headways are approximately 60 minutes between 6:00 AM and 6:00 PM.
- **Route 112** operates along Portage Road and McLeod Road 7 days a week. Service is provided between the Canadian Drive Hub and Gunning & Willoughby. Service headways are approximately 60 minutes between 7:00 AM and 6:00 PM.
- **Route 206** provides evening service along the same route as Route 106. Weekday and Saturday service headways are approximately 30 minutes between 6:00 PM to 11:30 PM. While Sunday and Holiday service is provided from 6:00 AM to 10:58 PM.

Figure 2.4 illustrates the existing transit stops within 500 metres of the subject site and the following is noted:

- The closest northbound/westbound transit stop is located south of Marineland Parkway on the east side of Portage Road. The stop has a walk time of about four minutes. Walking trips to the stop would be difficult due to discontinuous and uncontrolled crossings.
- The closest southbound transit stop is located south of Marineland Parkway on the west side of Portage Road. The stop has a walk time of about four minutes. Walking trips to the stop would be difficult due to discontinuous and uncontrolled crossings.



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Existing Transit Routes – Route 112

Lot 175 Portage Road
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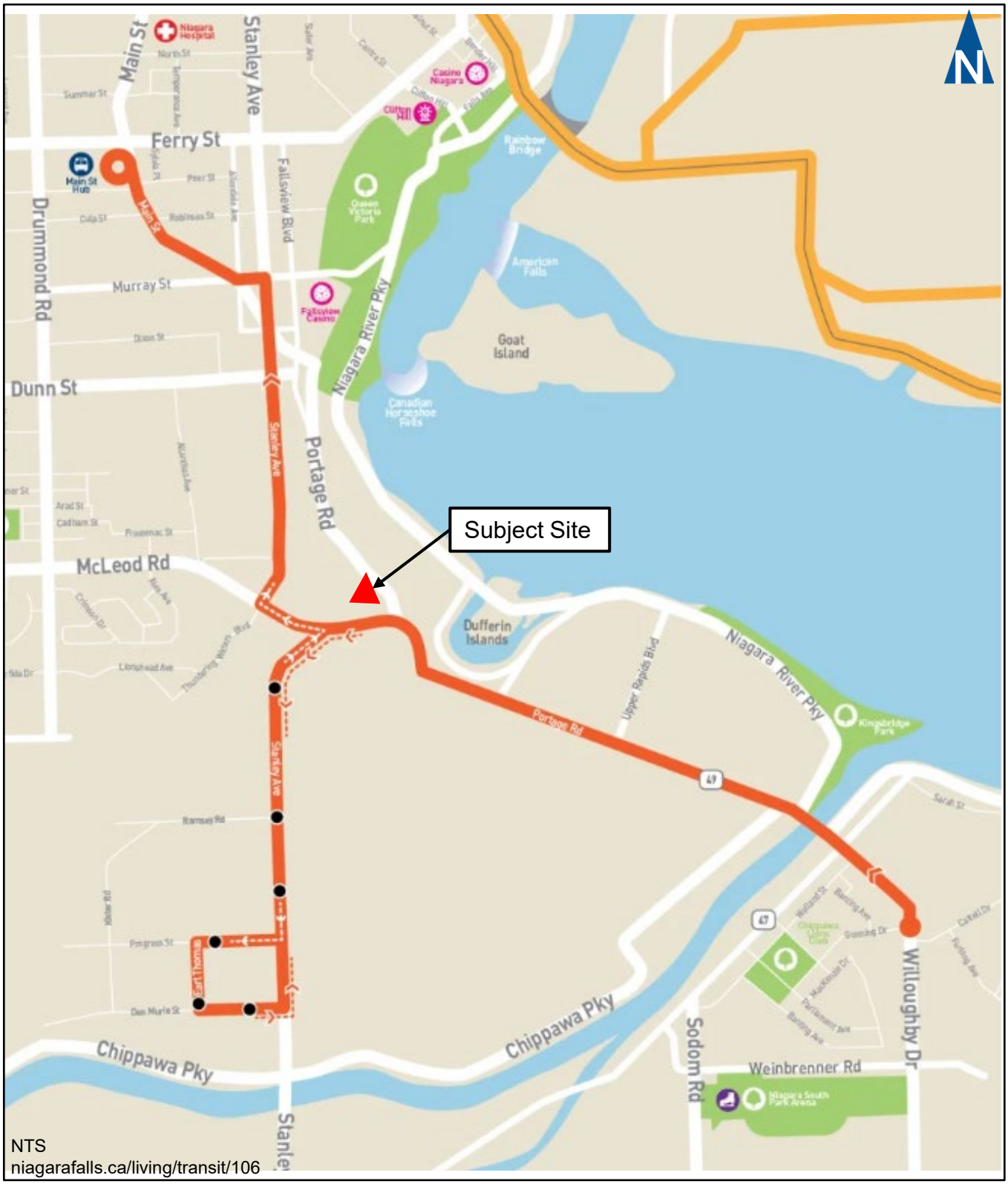
Figure 2.3A



Existing Transit Routes – Route 106/206

Lot 175 Portage Road
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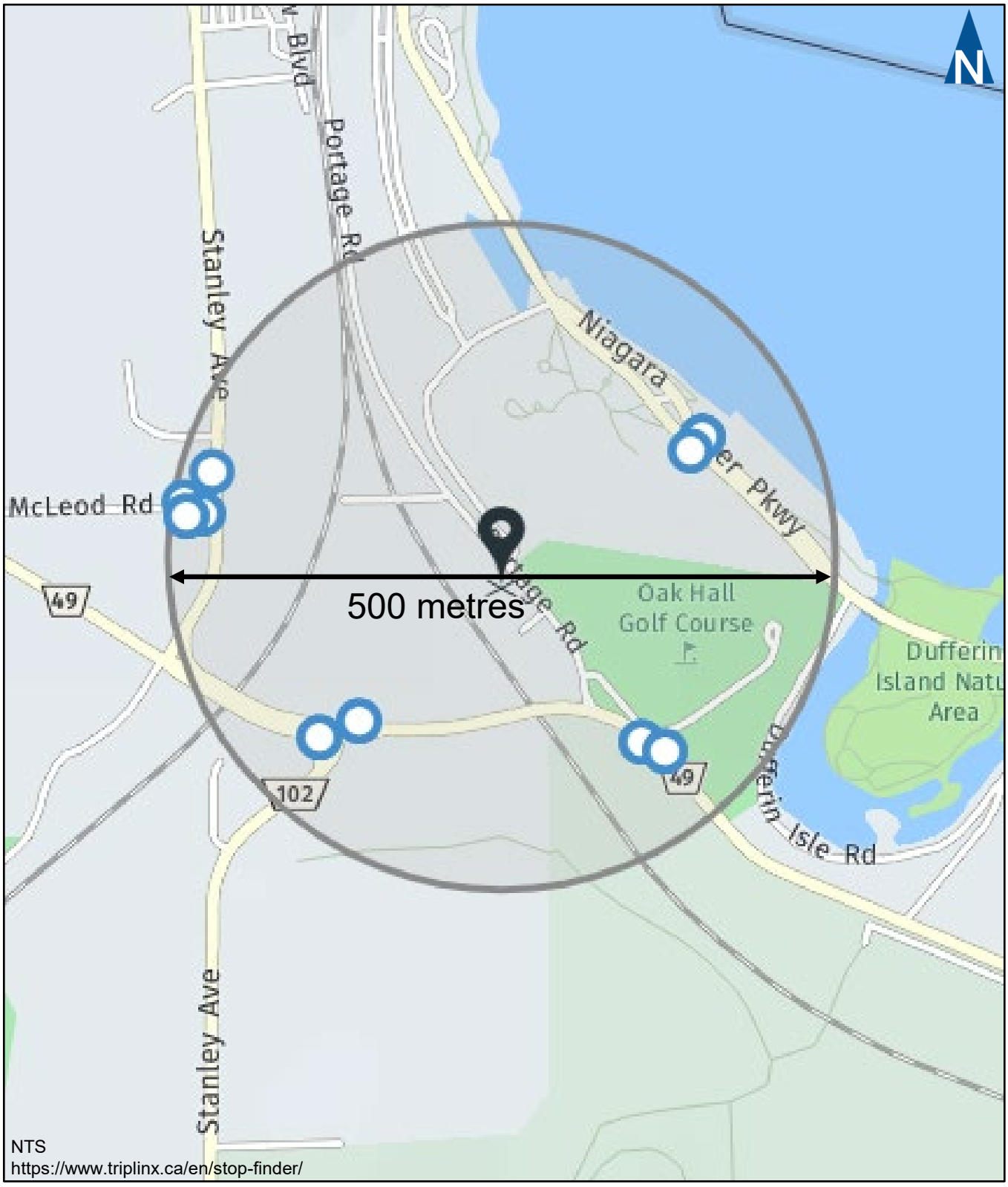
Figure 2.3B



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Existing Transit Stops

Lot 175 Portage Road
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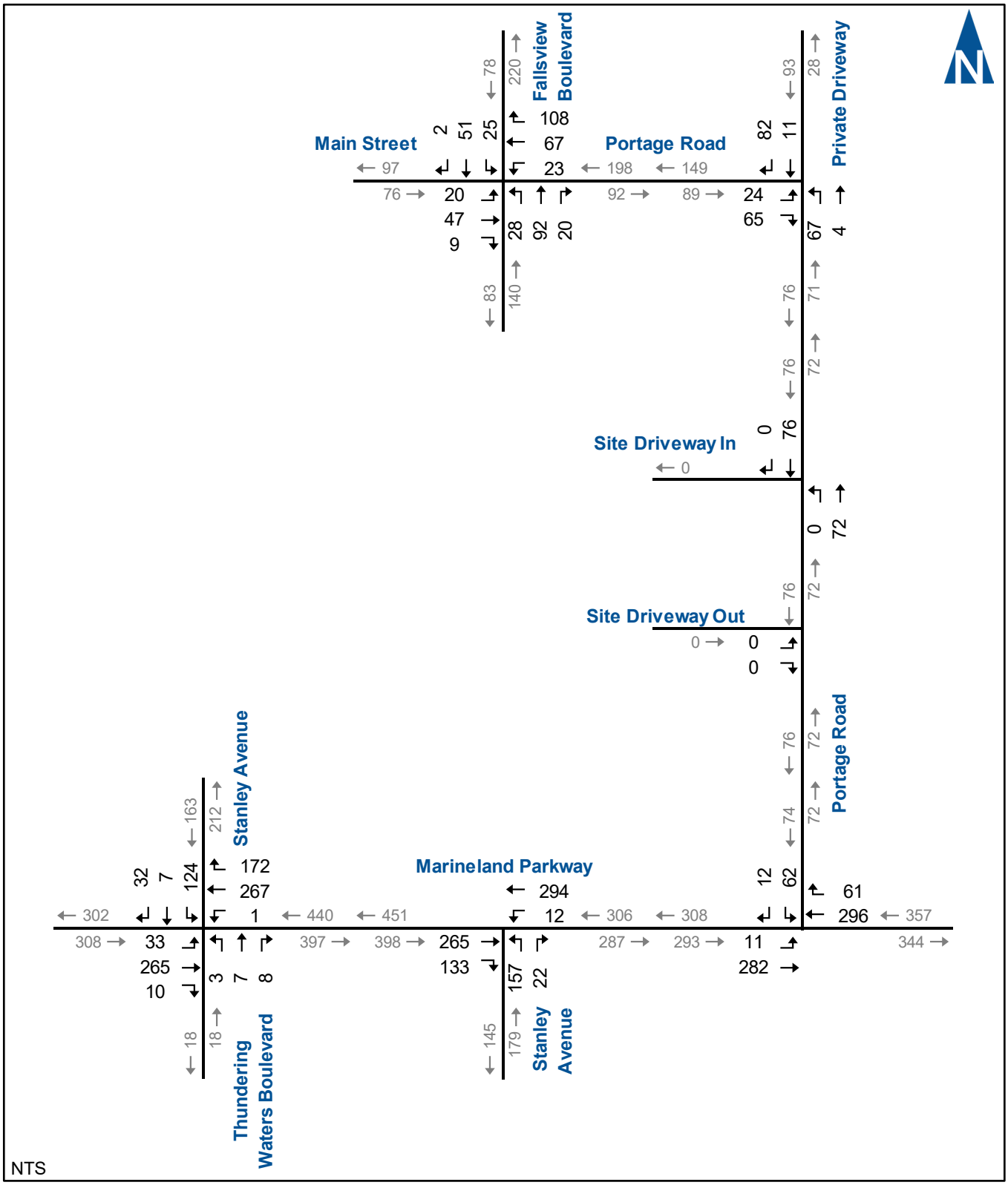
Figure 2.4

2.5 Existing Traffic Volumes

Turning movement counts were collected at the study area intersections by Paradigm in July 2022 and are representative of tourist season conditions. Weekday turning movement counts were collected on Thursday, 07 July 2022, while weekend counts were collected on Saturday, 09 July 2022.

Figure 2.6A-C illustrates the existing AM, PM, and Saturday peak hour traffic volumes at the study area intersections. **Appendix B** contains the existing count data and signal timings. Signal timings for the Portage Road intersections with Fallsview Boulevard and Portage Road/Private Driveway (Casino Driveway) were observed in the field.



Existing Traffic Volumes – AM Peak Hour

Lot 175 Portage Road
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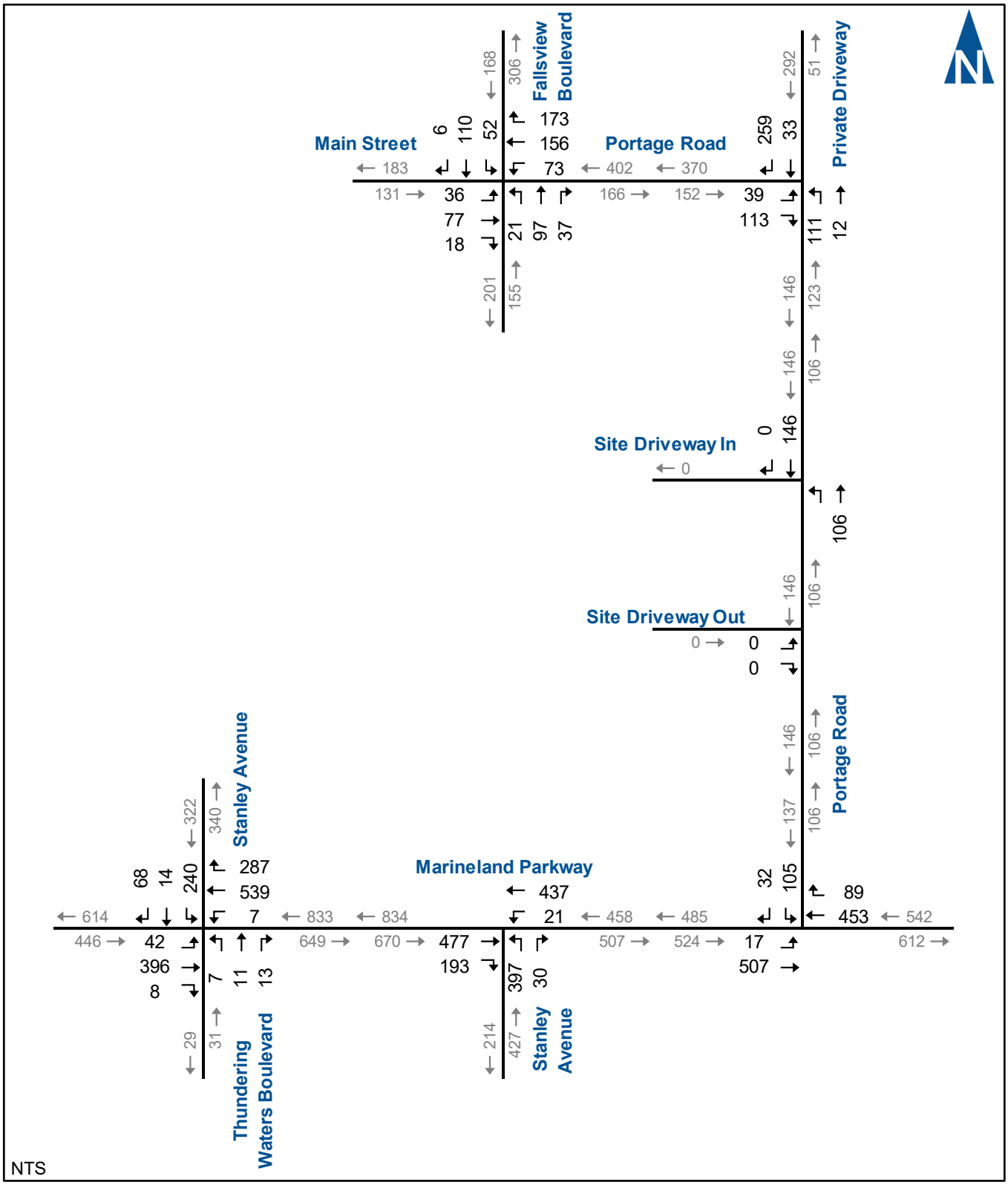
Figure 2.6A



Existing Traffic Volumes – PM Peak Hour

Lot 175 Portage Road
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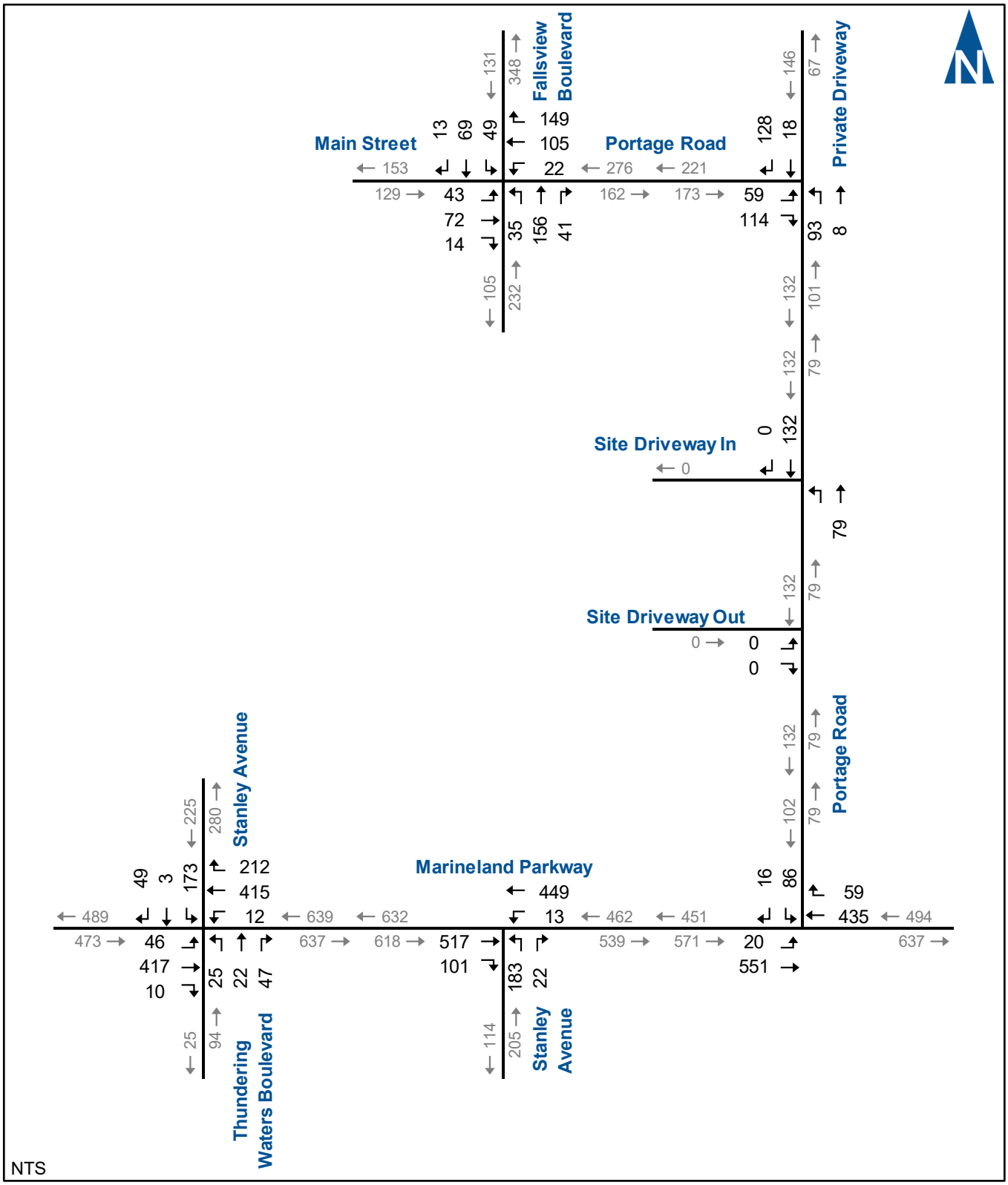
Figure 2.6B



Existing Traffic Volumes – Saturday Peak Hour

Lot 175 Portage Road
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Figure 2.6C

2.6 Existing Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 11 and HCM 2000 procedures. The intersection analysis considered the following measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity ratio for each intersection; and
- 95th percentile queue length (metres).

Under the Region's[4] TIS Guidelines and the City's[5] TIS Guidelines the following elements are to be included in the Synchro analysis:

- Saturation flow rate of 1750 vphpl;
- Total lost time of 4 seconds; and
- Peak Hour Factor (PHF) of 0.92.

Under the Region's[6] TIS Guidelines, the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Overall intersection operations, through movements, or shared through/turning movements increased to 0.85 v/c or above.

[4] Niagara Region, Guidelines for Transportation Impact Studies, May 2012
[5] City of Niagara Falls, Guidelines for the Preparation of Transportation Impact Studies and Site Plan Review, November 2011
[6] Niagara Region, Guidelines for Transportation Impact Studies, May 2012

- Volume to capacity ratios for exclusive left-turn movements increased to 0.90 v/c or above; or
- Volume to capacity ratios for exclusive right-turn movements increased to 0.85 v/c or above; or
- Queues for an individual movement are projected to exceed turning lane storage.

- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements meets or exceeds LOS “D;” or
  - Queues for an individual movement are projected to exceed turning lane storage.

Table 2.1A-C summarizes the base year operational conditions.

The northbound left-turn movement at the intersection of Portage Road at Portage Road/Private Driveway (Casino Driveway) is forecast to operate with queue lengths exceeding the available storage in the PM and Saturday peak periods.

Appendix C contains the detailed Synchro reports.

TABLE 2.1A: EXISTING TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	**D**	C	C	C	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	34	35	>	**35**	33	30	29	**30**	6	6	>	**6**	5	4	>	**4**	**20**
			V/C	0.14	0.26	>		0.18	0.22	0.09		0.06	0.12	>		0.05	0.05	>		**0.15**
			95th	11	20	>		10	21	13		7	19	>		5	8	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	40	-	>		30	-	-		13	-	>		45	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	**B**					B	B		**B**		B	B	**B**	**B**
			Delay	19		19	**19**					19	17		**19**		18	18	**18**	**19**
			V/C	0.10		0.05						0.16	0.01				0.06	0.04		**0.11**
			95th	8		9						17	2				9	8		
			Storage	40		-						20	-				-	-		
			Avail.	32		-						4	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					B	A	>	**B**	**A**
			Delay	<	1	>	**0**	<	0	0	**0**					14	10	>	**13**	**2**
			V/C	<	0.12	>		<	0.09	0.04						0.14	0.02	>		
			95th	<	0	>		<	0	0						4	0	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		B	B	**B**	<	C		**C**	A		A	**A**					**B**
			Delay		20	18	**19**	<	20		**20**	4		4	**4**					**17**
			V/C		0.39	0.10		<	0.42			0.09		0.02						**0.18**
			95th		25	12		<	27			7		2						
			Storage		-	75		<	-			180		65						
			Avail.		-	63		<	-			173		63						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	C	C	C	**C**	C	C	C	**C**	D	D	>	**D**	D	D	>	**D**	**C**
			Delay	27	26	23	**26**	30	31	30	**31**	37	38	>	**38**	44	38	>	**42**	**31**
			V/C	0.11	0.22	0.01		0.00	0.25	0.14		0.01	0.03	>		0.35	0.04	>		**0.22**
			95th	13	38	0		2	44	18		3	8	>		51	12	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	47	-	30		18	-	47		37	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 2.1B: EXISTING TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	**D**	C	C	C	**C**	A	A	>	**A**	A	A	>	**A**	**C**
			Delay	35	36	>	**35**	31	28	26	**28**	9	10	>	**10**	7	6	>	**6**	**22**
			V/C	0.26	0.40	>		0.39	0.40	0.15		0.05	0.17	>		0.12	0.11	>		**0.25**
			95th	16	31	>		22	43	15		7	24	>		9	17	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	34	-	>		18	-	-		13	-	>		41	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	**B**					C	C		**C**		C	C	**C**	**C**
			Delay	17		16	**16**					33	29		**33**		31	30	**31**	**27**
			V/C	0.15		0.09						0.33	0.04				0.24	0.13		**0.22**
			95th	12		10						36	7				25	17		
			Storage	40		-						20	-				-	-		
			Avail.	28		-						-16	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					C	B	>	**C**	**A**
			Delay	<	1	>	**0**	<	0	0	**0**					20	10	>	**18**	**2**
			V/C	<	0.22	>		<	0.14	0.06						0.33	0.05	>		
			95th	<	0	>		<	0	0						11	1	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**B**	<	C		**C**	A		A	**A**					**B**
			Delay		21	18	**20**	<	20		**20**	7		6	**7**					**16**
			V/C		0.56	0.15		<	0.52			0.24		0.03						**0.34**
			95th		43	13		<	39			23		4						
			Storage		-	75		<	-			180		65						
			Avail.		-	62		<	-			157		62						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	C	C	C	**C**	C	D	C	**D**	D	D	>	**D**	D	D	>	**D**	**D**
			Delay	28	28	23	**28**	32	38	33	**36**	37	38	>	**38**	53	38	>	**49**	**36**
			V/C	0.21	0.33	0.01		0.03	0.54	0.23		0.02	0.04	>		0.66	0.09	>		**0.43**
			95th	16	56	0		6	92	23		6	10	>		96	17	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	44	-	30		14	-	42		34	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 2.1C: EXISTING TRAFFIC OPERATIONS – SATURDAY PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	C	>	**C**	C	B	B	**B**	B	C	>	**C**	B	B	>	**B**	**C**
			Delay	27	27	>	**27**	20	19	20	**20**	19	21	>	**21**	15	13	>	**14**	**20**
			V/C	0.15	0.18	>		0.06	0.16	0.15		0.13	0.34	>		0.15	0.10	>		**0.26**
			95th	16	25	>		8	26	13		12	48	>		12	16	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	34	-	>		32	-	-		8	-	>		38	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	**B**					C	C		**C**		C	C	**C**	**C**
			Delay	20		17	**18**					28	25		**28**		26	25	**26**	**23**
			V/C	0.24		0.09						0.26	0.02				0.10	0.06		**0.21**
			95th	17		11						28	5				15	11		
			Storage	40		-						20	-				-	-		
			Avail.	23		-						-8	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					C	A	>	**C**	**A**
			Delay	<	1	>	**0**	<	0	0	**0**					19	10	>	**17**	**2**
			V/C	<	0.23	>		<	0.14	0.04						0.26	0.02	>		
			95th	<	1	>		<	0	0						8	1	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**C**	<	B		**B**	A		A	**A**					**B**
			Delay		21	17	**20**	<	20		**20**	6		6	**6**					**18**
			V/C		0.58	0.08		<	0.52			0.11		0.02						**0.27**
			95th		46	10		<	40			12		3						
			Storage		-	75		<	-			180		65						
			Avail.		-	65		<	-			169		62						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	C	C	C	**C**	C	D	C	**C**	D	D	>	**D**	D	D	>	**D**	**C**
			Delay	28	28	23	**28**	32	35	32	**34**	38	38	>	**38**	46	38	>	**44**	**34**
			V/C	0.19	0.34	0.01		0.05	0.42	0.16		0.06	0.09	>		0.47	0.04	>		**0.34**
			95th	17	59	0		8	69	19		14	18	>		68	12	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	43	-	30		12	-	46		26	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

3 Development Concept

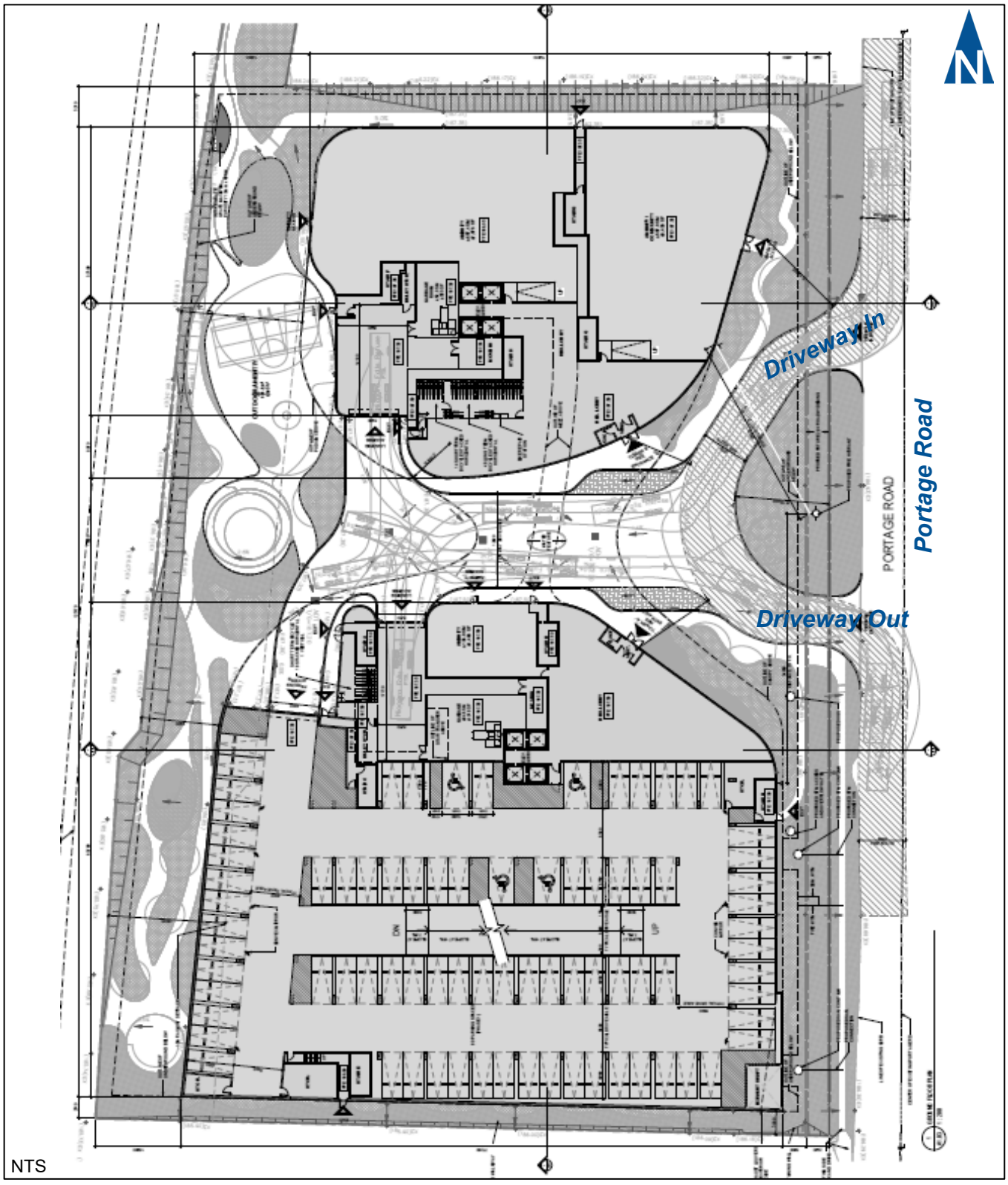
3.1 Description

The development concept includes two high-rise towers with a podium building containing approximately 623 units. **Figure 3.1** illustrates the site concept plan.

Tower A is 35 storeys with 367 units and Tower B is 25 storeys with 256 units. Build-out is expected to occur in one phase by Year 2027. A total parking supply of 779 spaces (1.25 spaces per unit) is proposed within a multilevel parking structure.

Vehicle access is proposed by a one-way driveway looped to Portage Road. The driveway loop is located approximately 250 metres north of Marineland Parkway. It is recommended that signage and pavement markings be provided on the driveway approaches to identify the one-way travel directions.

Pick-up/drop-off areas are proposed along the one-way driveway loop near the main entrances.



paradigm TRANSPORTATION SOLUTIONS LIMITED

Site Concept Plan

Lot 175 Portage Road
220026

Figure 3.1

3.2 Vehicle Circulation

Heavy vehicle and site circulation have been assessed using AutoTURN swept path analysis software. Five design vehicles were used in the analysis:

- NCHRP Report 659 Pumper Fire Truck
- Niagara Falls Refuse Collection Vehicle;
- Transportation Association of Canada (TAC) Heavy Single Unit (HSU) ;
- TAC Medium Signal Unit (MSU);
- TAC Light Signal Unit (LSU); and
- TAC Passenger Car (P).

Appendix D contains the AutoTURN swept path analysis. No conflicts with the proposed on-site geometry is noted.

3.3 Transportation Demand Management

The site plan includes Transportation Demand Management (TDM) measures to help improve transportation efficiency (reduced congestion), encourage use of alternative modes, reduce reliance on single occupant vehicles, and encourage a change in behaviour.

Table 3.1 summarizes the proposed TDM measures for the site.

TABLE 3.1: PROPOSED TDM MEASURES

Category	TDM Measures
Cycling	▶ Short-term bicycle parking for visitors (33 spaces or 0.05 spaces per unit); ▶ Secured indoor bicycle parking for occupants (331 spaces or 0.53 spaces per unit); and ▶ Bicycle repair station(s) in long-term bicycle parking areas.
Walking	▶ Walkways from municipal sidewalk network to building entrances; ▶ On-site pedestrian amenities (e.g., benches, landscaping, lighting); and ▶ Weather protection at the proposed one-way drop-off loop.
Transit	▶ Provision of transit information on-site.
Parking	▶ Reduced parking supply compared to zoning requirements. ▶ Unbundling parking costs from residential unit costs; and ▶ Limiting the purchase of parking to a maximum of 1.00 space per unit.
Wayfinding and Travel Planning	▶ Travel planning resources for residents and employees (e.g., individualized marketing, trip planning tools, active transportation maps, information resources); and ▶ Wayfinding signage.
Education, Promotions, or Incentives	▶ Contributing to a strong TDM brand.

3.4 Site Traffic Forecast

The Institute of Transportation Engineers (ITE) Trip Generation Manual[7] was used to estimate the peak hour vehicular traffic generated by the proposed development. Land use code 222 (Multifamily Housing (High-Rise) – Not Close to Rail) was used to estimate the site's trip generation.

Vehicles will enter the site via the northern driveway while vehicles will depart the site via the southern driveway.

Table 3.2 summarizes the estimated trip generation.

The subject site is estimated to generate approximately 156 AM peak hour trips, 185 PM peak hour trips and 217 Saturday peak hour trips.

TABLE 3.2: ESTIMATED TRIP GENERATION

Analysis Period | Multifamily Housing (High-Rise) - Not Close to Rail Transit (222)	In	Out	Total
AM Peak Hour | T = 0.22(X) + 18.85	53	103	**156**
PM Peak Hour | T = 0.26(X) + 23.12	104	81	**185**
Saturday Peak Hour | T = 0.30(X) + 30.34	124	93	**217**

[7] Trip Generation Manual 11th Edition Institute of Transportation Engineers, Washington DC, September 2021

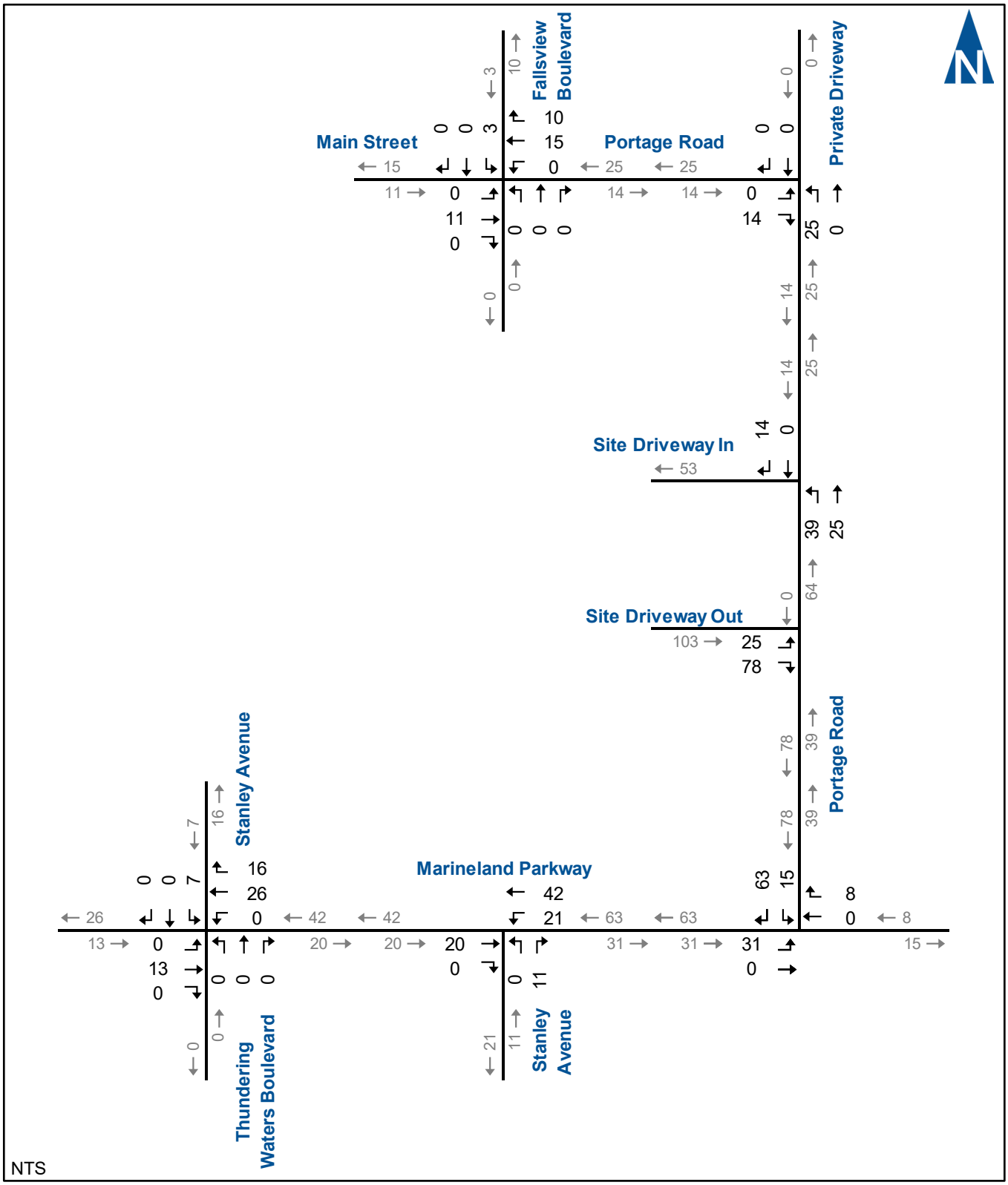
Table 3.3 summarizes the estimated trip assignment. The distribution was developed using Transportation Tomorrow Survey[8] (TTS) data for the zone within the immediate area of the subject site. As limited trip information is available a single distribution pattern is estimated. **Appendix E** contains the TTS survey data.

Figure 3.2A-C illustrates the site generated traffic.

TABLE 3.3: ESTIMATED TRIP ASSIGNMENT

Origin/Destination	Peak Hour	
	Inbound	Outbound
North via Fallsview Boulevard	5%	10%
West via Main Street	20%	15%
South via Stanley Avenue	20%	20%
South via Portage Road	15%	15%
West via Marineland Parkway	25%	25%
North via Stanley Avenue	15%	15%
Total	**100%**	**100%**

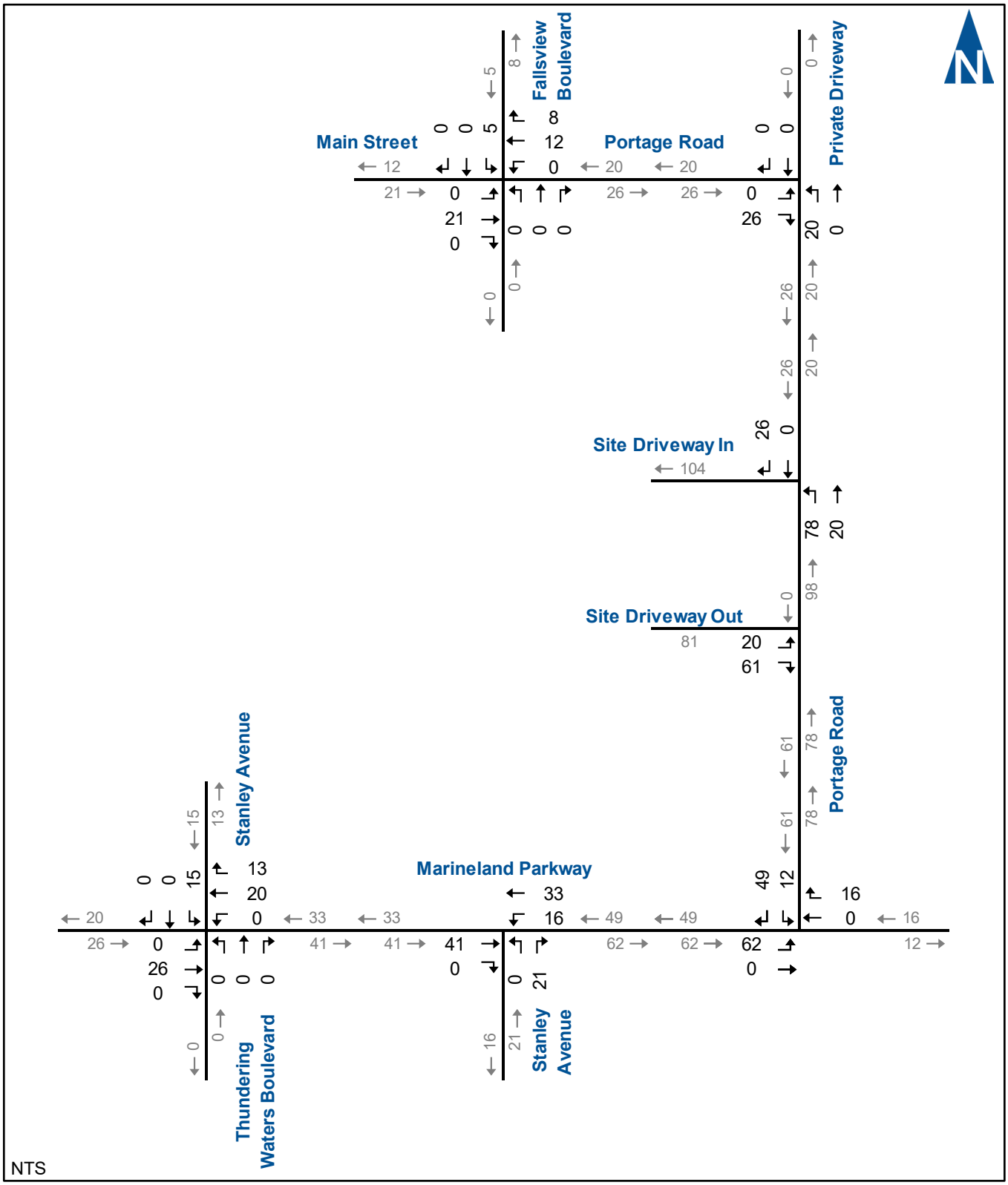
[8] *Transportation Tomorrow Survey 2016*, University of Toronto Data Management Group. Zones 5154,5153,5126,5123,5118,5113,5136,5237



Site Generated Traffic – AM Peak Hour

Lot 175 Portage Road
220026

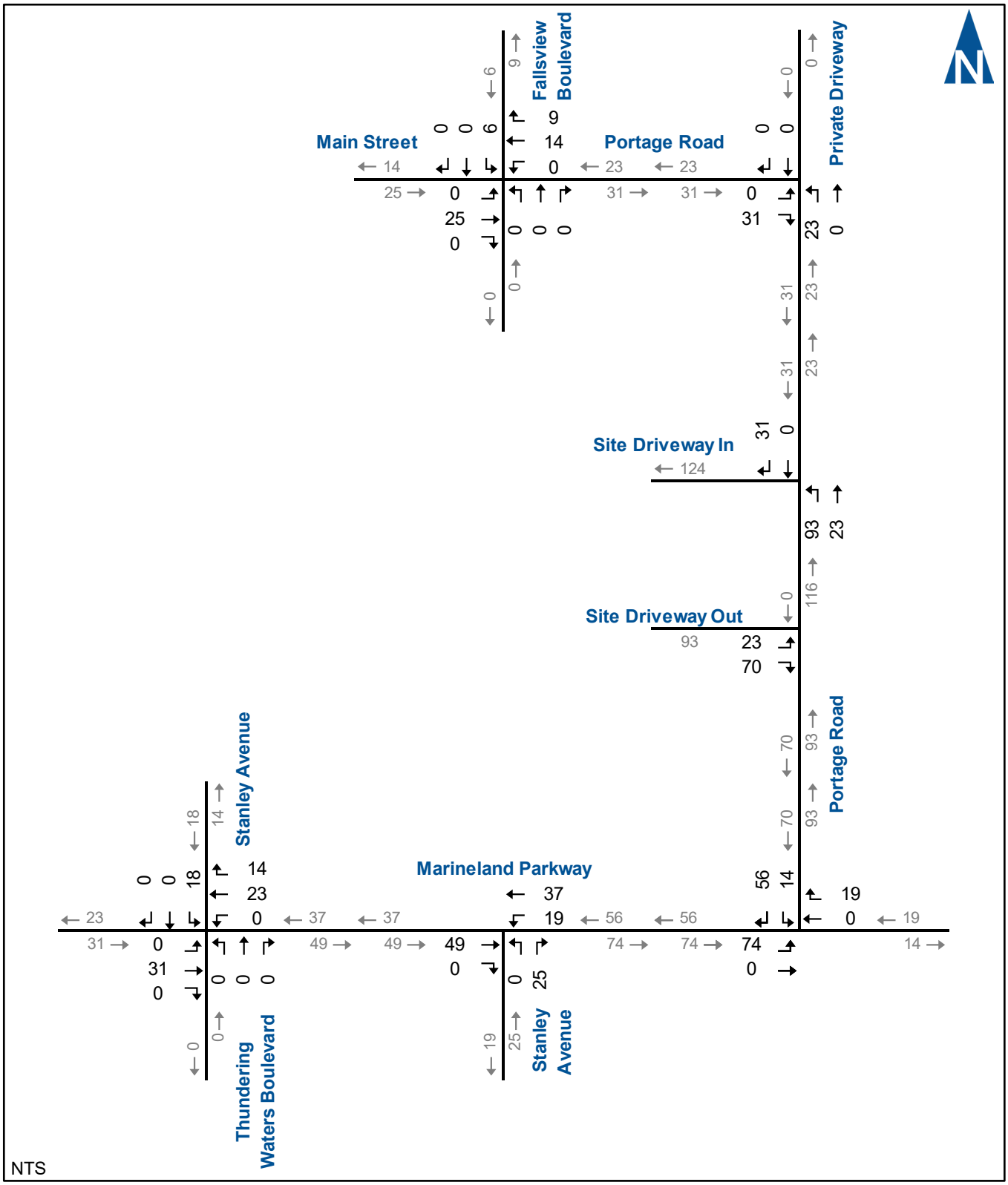
Figure 3.2A



Site Generated Traffic – PM Peak Hour

Lot 175 Portage Road
220026

Figure 3.2B



Site Generated Traffic – Saturday Peak Hour

Lot 175 Portage Road
220026

Figure 3.2C

4 Future Conditions

4.1 Traffic Forecast

A five-year horizon (Year 2027) following the date the study was commissioned (Year 2022) has been assessed. The likely future traffic volumes near the subject site are estimated to consist of increased non-site traffic (generalized background traffic growth) and traffic generated by the build-out of nearby developments.

A generalized growth rate of 2% per annum was identified by the Region during pre-study consultations. **Table 4.1** summarizes the nearby developments identified by City staff. **Appendix F** contains the detailed traffic forecast for the nearby developments.

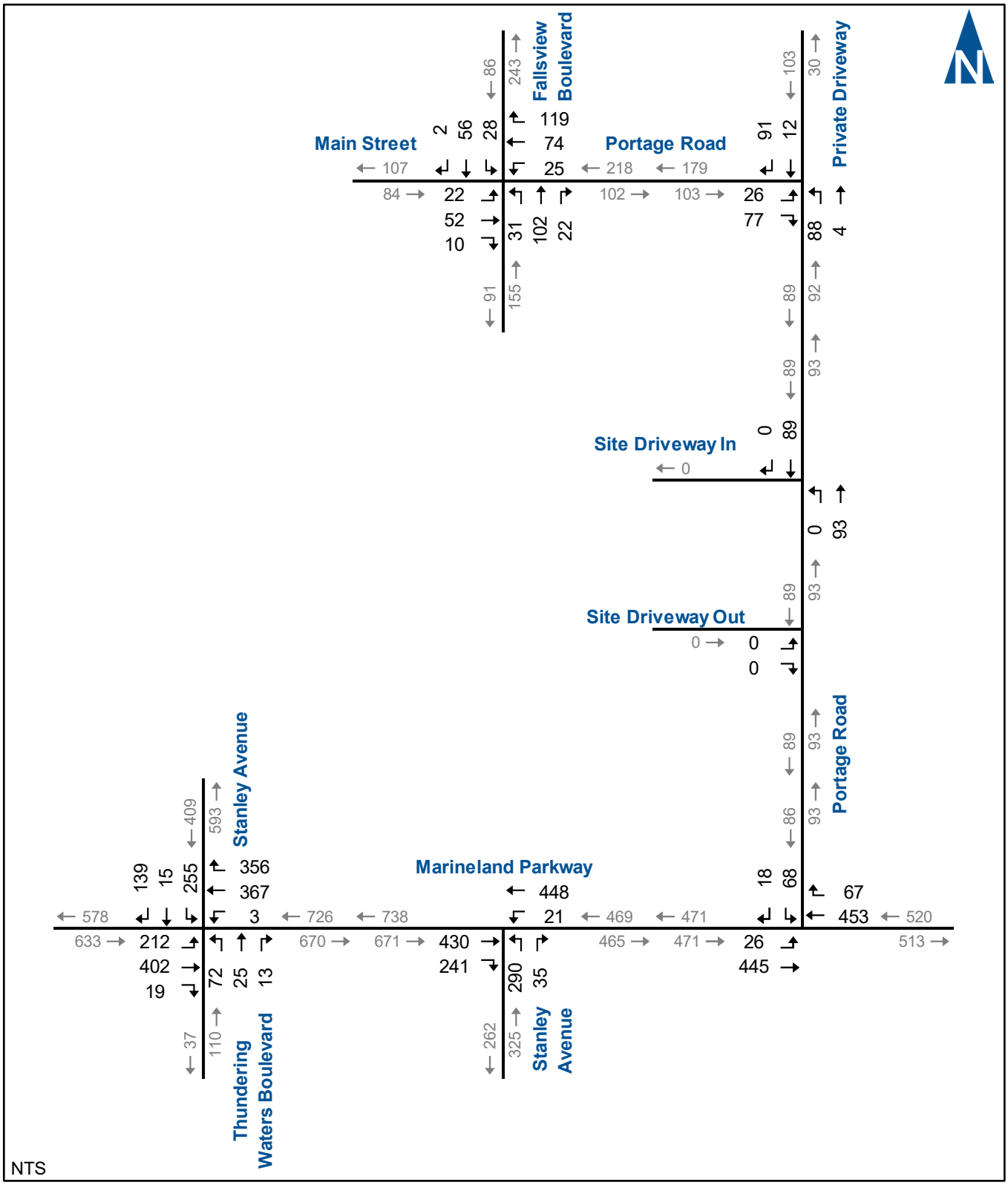
TABLE 4.1: BACKGROUND DEVELOPMENTS

Development	Land Uses
Riverfront Community Secondary Plan[9]	312 Townhouse units; 238 continuing care units; 450 hotel units; 26,012 m^2 of retail; and 567 single family homes.
Nina's Court[10]	125 high-rise units; and 43 townhouse units.
5500 Marineland Parkway[11]	292 townhouse units
6880 Stanley Avenue[12]	1,027 residential units; 508 hotel units; 1,620 m^2 of hotel assembly space; 13,202 m^2 of retail; and 3,051 m^2 of restaurant.
Niagara Village Community[13]	243 single family homes; 39 low-rise units; 828 mid-rise units; 32 senior adult units; and 930 m^2 of retail.

[9] Riverfront Community Transportation Assessment, April 2018
[10] Nina's Court on Marineland, TIS, Paradigm, May 2017
[11] 5500 Marineland Parkway, TIS
[12] Proposed Loretto Hotel & Residential Development, TIS & PS, Trans-Plan, June 2021
[13] Niagara Village Transportation Study, Burnside, TIS, March 2020

Figure 4.1A-C illustrates the forecast background traffic volumes. The background traffic volumes include the background developments and generalized growth in traffic.

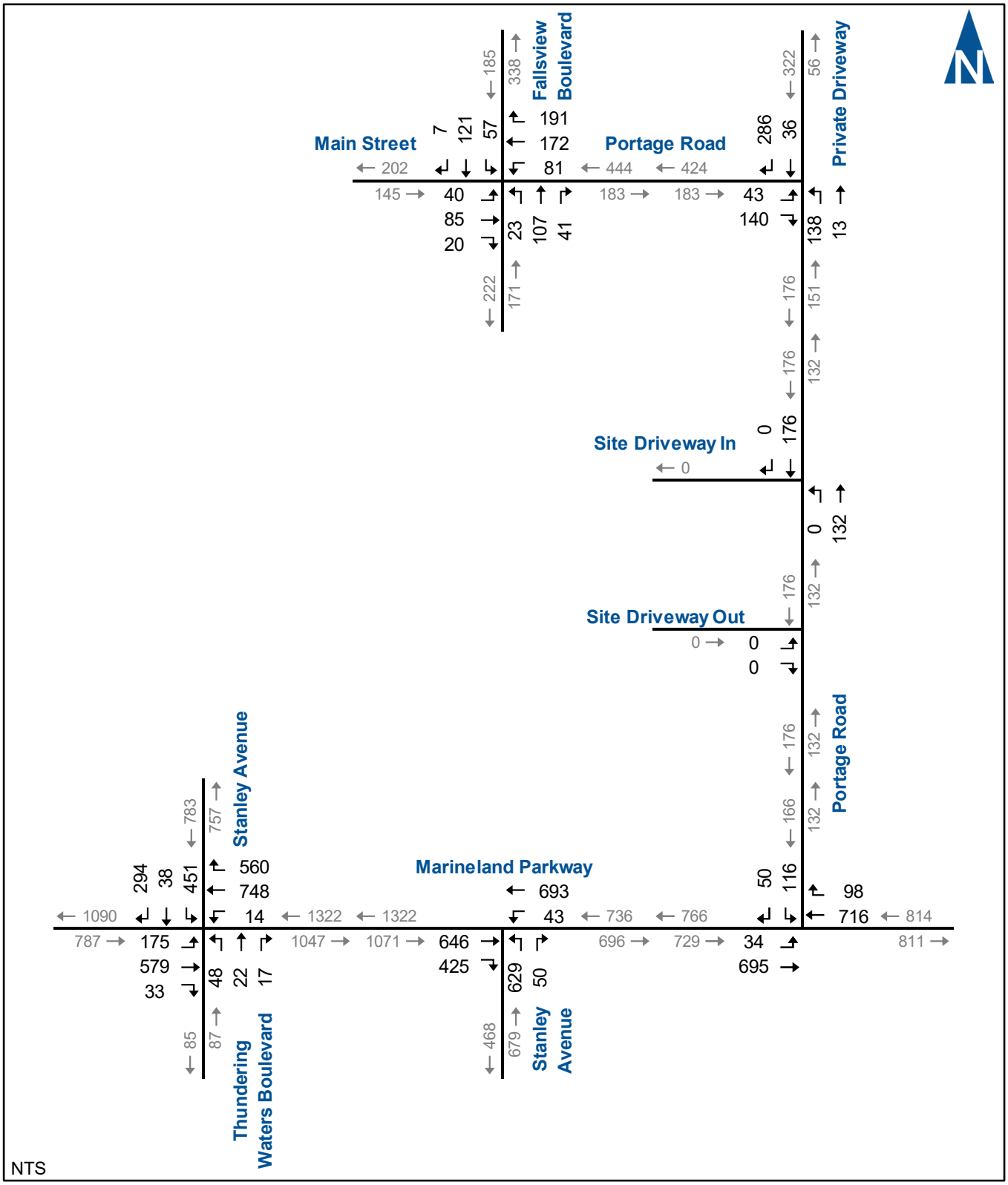
Figure 4.2A-C illustrates the forecast total traffic volumes. The total traffic volumes include the background traffic and site generated traffic.



Background Traffic Volume – AM Peak Hour

Lot 175 Portage Road
220026

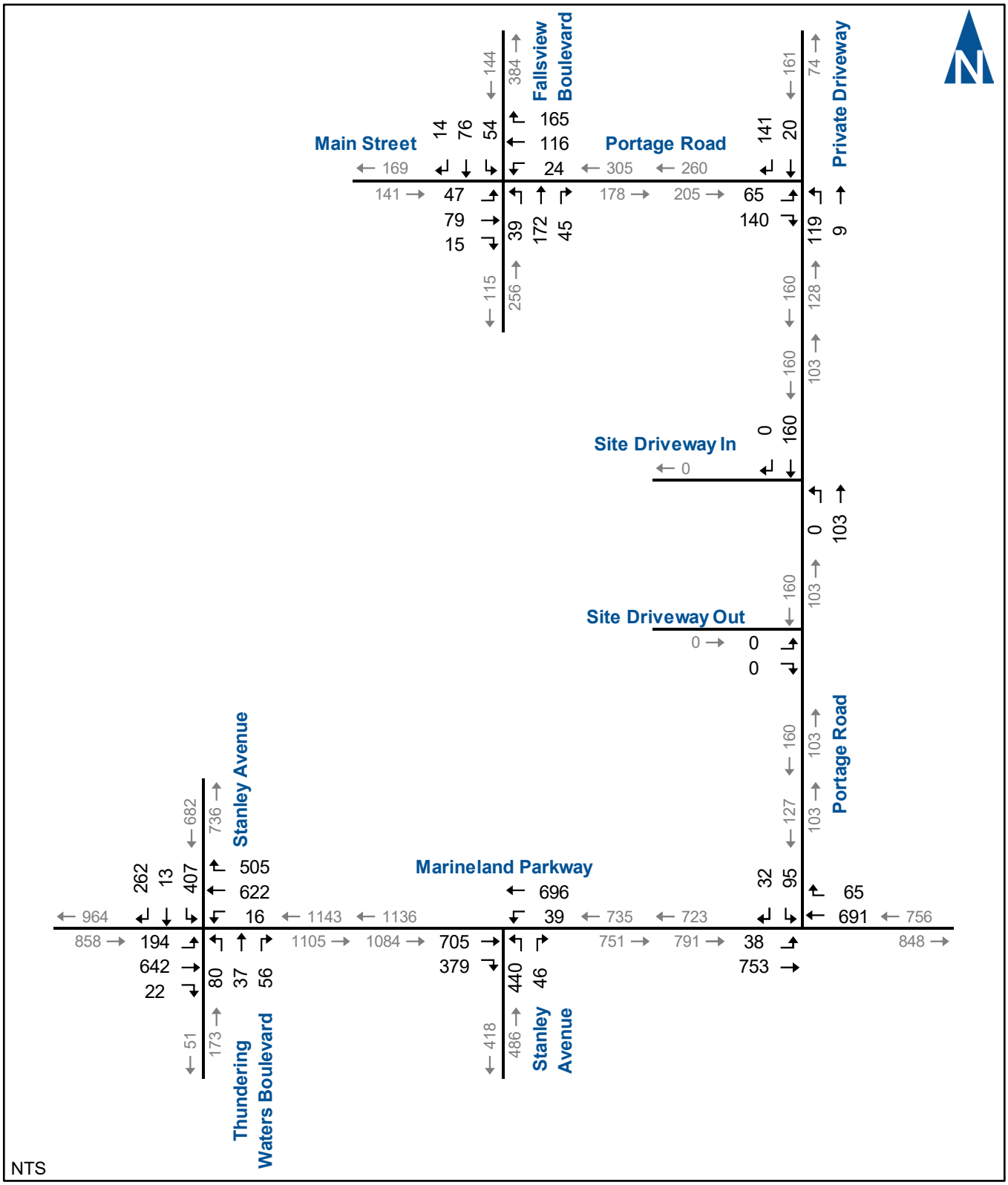
Figure 4.1A



Background Traffic Volume – PM Peak Hour

Lot 175 Portage Road
220026

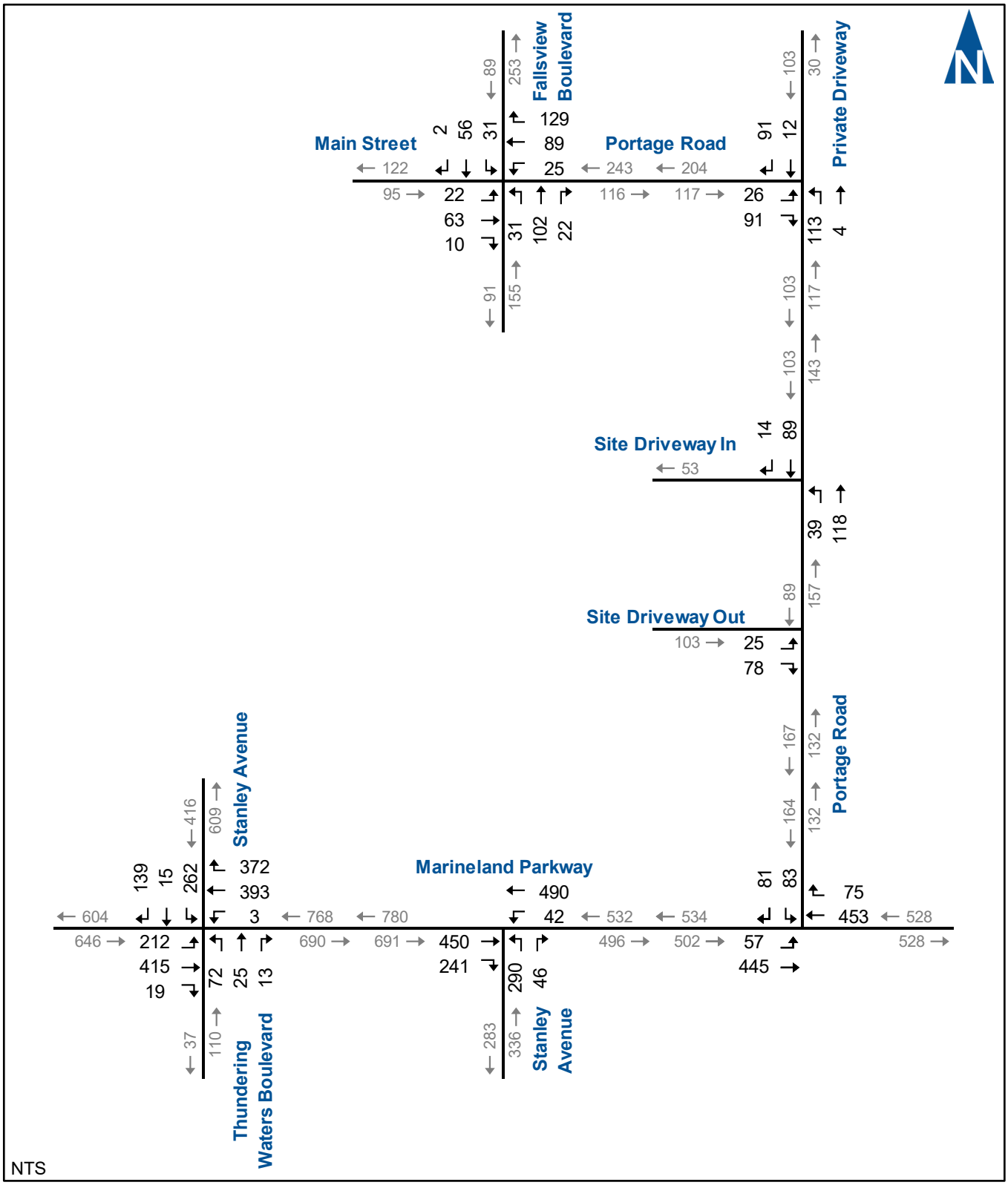
Figure 4.1B



Background Traffic Volume – Saturday Peak Hour

Lot 175 Portage Road
220026

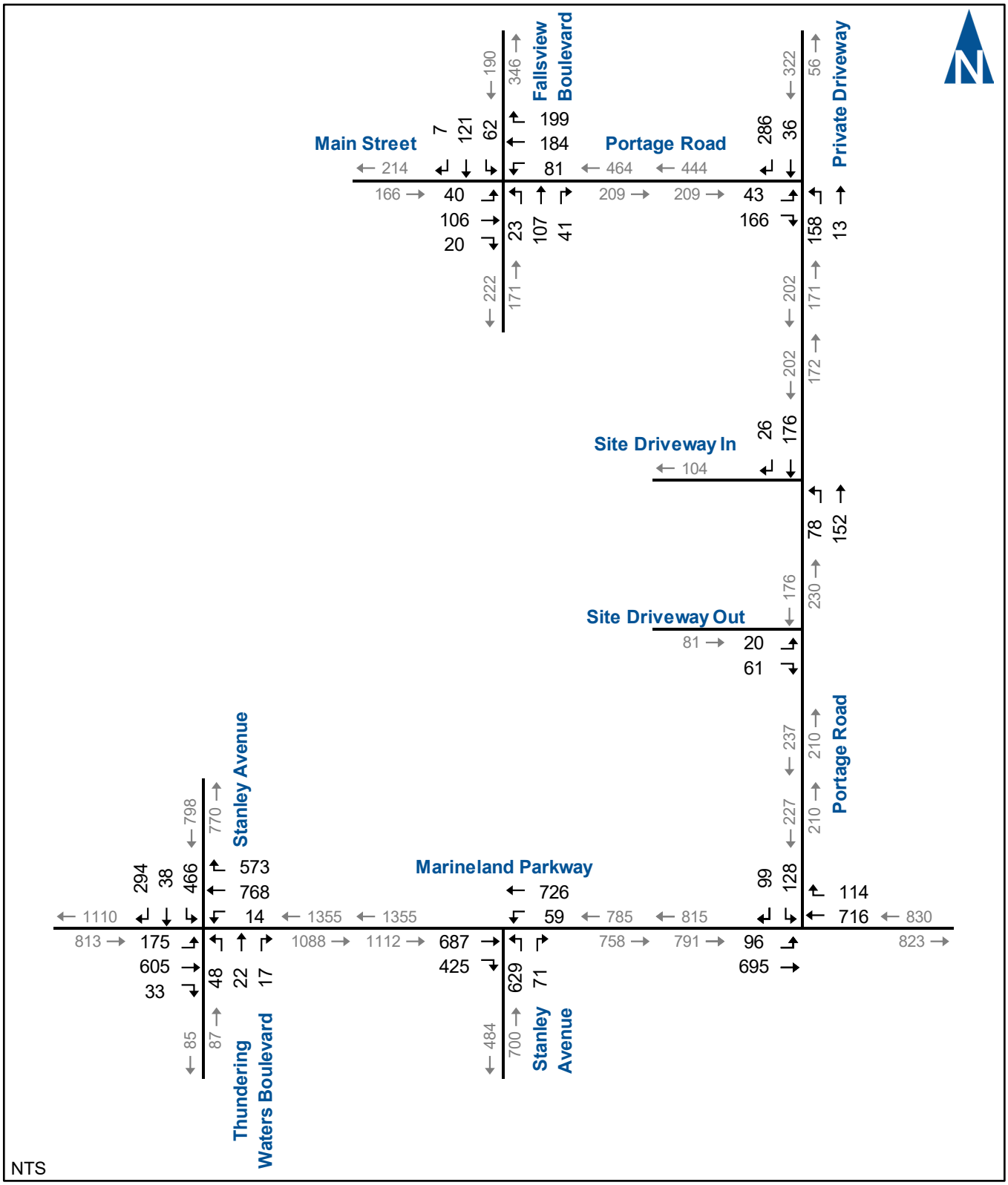
Figure 4.1C



Total Traffic Volume – AM Peak Hour

Lot 175 Portage Road
220026

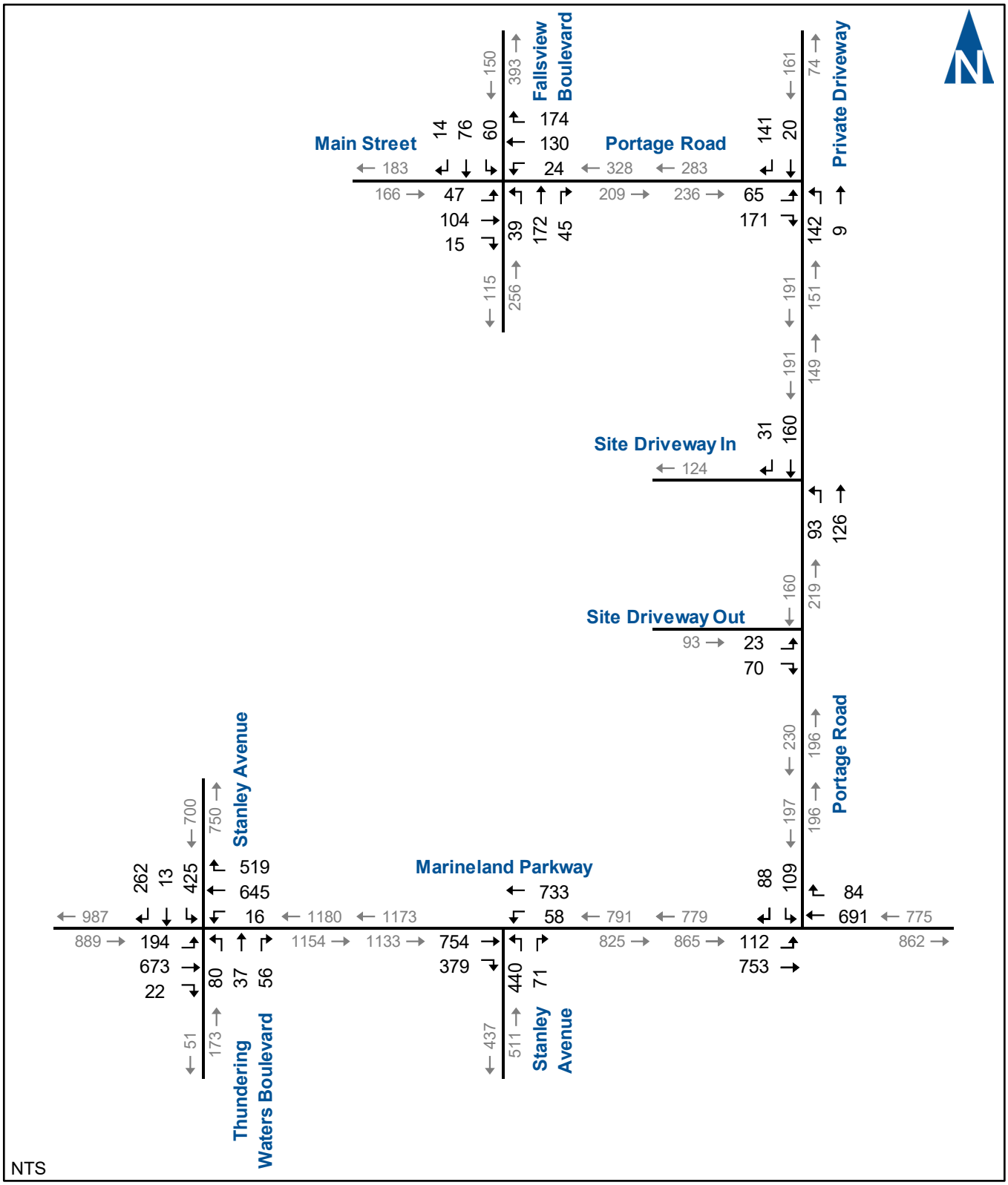
Figure 4.2A



Total Traffic Volume – PM Peak Hour

Lot 175 Portage Road
220026

Figure 4.2B



Total Traffic Volume – Saturday Peak Hour

Lot 175 Portage Road
220026

Figure 4.2C

4.2 Background Traffic Operations

The study area intersection operations analyses for the background traffic forecast followed the same methodology used for existing conditions. Signal timings were optimized. **Table 4.2A-C** summarizes the level of service conditions for the forecast background traffic volumes and the following critical movements are noted:

- Portage Road at Portage Road/Private Driveway (Casino Driveway)
  - Northbound left-turn – AM, PM, and Saturday peak hour, 95th percentile queue length is forecast to exceed the available storage.
- Marineland Parkway and Stanley Avenue/Thundering Waters Boulevard
  - Eastbound left-turn – PM and Saturday peak hour, LOS F with a v/c approaching 1.00. The 95th percentile queue length is forecast to exceed the available storage during the AM, PM, and Saturday peak hour.
  - Westbound through – PM peak hour, LOS E with a v/c ratio greater than 0.85.
  - Southbound left-turn – PM and Saturday peak hour, LOS F with a v/c ratio greater than 1.00.

Appendix G contains the detailed Synchro reports.

The above noted capacity deficiencies are forecast to occur under background conditions. These deficiencies are not related nor are a result of the development of the subject site. The road authorities should continue to monitor and adjust traffic control signal timings to reflect changes in real world traffic volumes.

TABLE 4.2A: BACKGROUND TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	**D**	C	C	C	**C**	A	A	>	**A**	A	A	>	**A**	**B**
			Delay	35	35	>	**35**	33	30	29	**30**	6	6	>	**6**	5	4	>	**4**	**20**
			V/C	0.15	0.29	>		0.19	0.24	0.10		0.07	0.14	>		0.06	0.05	>		**0.17**
			95th	11	22	>		10	23	13		8	21	>		5	9	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	39	-	>		30	-	-		12	-	>		45	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	**B**					B	B		**B**		B	B	**B**	**B**
			Delay	19		19	**19**					20	17		**20**		18	18	**18**	**19**
			V/C	0.11		0.06						0.21	0.01				0.07	0.04		**0.14**
			95th	9		9						21	2				10	8		
			Storage	40		-						20	-				-	-		
			Avail.	31		-						-1	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					C	B	>	**C**	**A**
			Delay	<	1	>	**1**	<	0	0	**0**					20	10	>	**18**	**2**
			V/C	<	0.19	>		<	0.14	0.04						0.23	0.03	>		
			95th	<	1	>		<	0	0						7	1	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**B**	<	C		**C**	A		A	**A**					**B**
			Delay		20	18	**20**	<	21		**21**	6		5	**6**					**17**
			V/C		0.53	0.18		<	0.55			0.18		0.03						**0.29**
			95th		39	15		<	40			16		4						
			Storage		-	75		<	-			180		65						
			Avail.		-	60		<	-			164		61						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	D	C	C	**C**	D	D	D	**D**	D	D	>	**D**	E	D	>	**D**	**D**
			Delay	46	28	24	**34**	36	39	38	**39**	40	38	>	**39**	56	39	>	**50**	**39**
			V/C	0.77	0.34	0.01		0.01	0.42	0.29		0.19	0.07	>		0.72	0.14	>		**0.58**
			95th	69	57	0		3	62	27		31	15	>		103	22	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-9	-	30		17	-	38		9	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.2B: BACKGROUND TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	D	C	C	C	C	A	B	>	B	A	A	>	A	C
			Delay	35	36	>	35	31	29	26	28	9	11	>	10	7	6	>	7	22
			V/C	0.28	0.42	>		0.43	0.43	0.16		0.06	0.20	>		0.13	0.13	>		0.28
			95th	17	34	>		25	47	16		7	27	>		10	19	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	33	-	>		16	-	-		13	-	>		40	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	B					C	C		C		C	C	C	C
			Delay	18		16	17					35	29		34		31	30	31	28
			V/C	0.17		0.11						0.41	0.04				0.26	0.14		0.26
			95th	13		11						44	7				27	18		
			Storage	40		-						20	-				-	-		
			Avail.	27		-						-24	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	A	<	A	A	A					E	B	>	E	A
			Delay	<	2	>	1	<	0	0	0					49	12	>	38	4
			V/C	<	0.30	>		<	0.23	0.06						0.63	0.09	>		
			95th	<	1	>		<	0	0						29	2	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	B	<	C		C	B		A	B					B
			Delay		20	18	19	<	22		21	11		8	10					18
			V/C		0.62	0.33		<	0.67			0.42		0.04						0.52
			95th		59	17		<	64			49		6						
			Storage		-	75		<	-			180		65						
			Avail.		-	58		<	-			131		60						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	F	C	C	D	D	E	D	D	D	D	>	D	F	D	>	F	E
			Delay	96	30	24	45	37	55	44	50	39	38	>	38	177	43	>	120	67
			V/C	0.99	0.48	0.02		0.08	0.87	0.53		0.12	0.07	>		1.24	0.34	>		0.80
			95th	85	84	0		9	141	59		23	15	>		235	41	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-25	-	30		11	-	6		17	-	>		-	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.2C: BACKGROUND TRAFFIC OPERATIONS – SATURDAY PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	C	>	**C**	C	B	B	**B**	B	C	>	**C**	B	B	>	**B**	**C**
			Delay	27	27	>	**27**	21	20	20	**20**	19	22	>	**21**	15	13	>	**14**	**20**
			V/C	0.17	0.20	>		0.06	0.18	0.16		0.14	0.37	>		0.17	0.11	>		**0.29**
			95th	17	28	>		8	29	13		13	53	>		13	17	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	33	-	>		32	-	-		7	-	>		37	-	>		
	Portage Road & Private Driveway	TCS	LOS	C		B	**B**					C	C		**C**		C	C	**C**	**C**
			Delay	20		17	**18**					29	25		**29**		26	25	**26**	**23**
			V/C	0.27		0.11						0.33	0.02				0.11	0.06		**0.25**
			95th	19		12						34	5				16	12		
			Storage	40		-						20	-				-	-		
			Avail.	21		-						-14	-				-	-		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					E	B	>	**D**	**A**
			Delay	<	2	>	**1**	<	0	0	**0**					38	11	>	**31**	**3**
			V/C	<	0.32	>		<	0.22	0.04						0.49	0.06	>		
			95th	<	1	>		<	0	0						20	1	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**B**	<	C		**C**	A		A	**A**					**B**
			Delay		21	17	**20**	<	21		**21**	10		8	**10**					**18**
			V/C		0.65	0.29		<	0.66			0.28		0.03						**0.43**
			95th		65	16		<	65			32		5						
			Storage		-	75		<	-			180		65						
			Avail.		-	59		<	-			148		60						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	F	C	C	**D**	D	D	D	**D**	D	D	>	**D**	F	D	>	**F**	**D**
			Delay	87	31	24	**44**	38	46	40	**44**	40	39	>	**39**	123	41	>	**90**	**54**
			V/C	0.97	0.52	0.02		0.10	0.71	0.39		0.21	0.15	>		1.10	0.24	>		**0.78**
			95th	82	94	0		10	110	34		34	25	>		204	28	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-22	-	30		10	-	32		6	-	>		-	-	>		

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TCS - Traffic Control Signal
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LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

4.3 Total Traffic Operations

The study area intersection operations analyse for the total traffic forecast followed the same methodology used for background conditions. Signal timings were optimized.

Table 4.3A-C summarizes the level of service conditions for the forecast total traffic volumes.

The noted critical movements forecast to occur under the background traffic conditions are expected to continue to occur with the addition of site generated traffic.

Site generated traffic results in one new critical movement at the study area intersections.

During the PM peak hour, the westbound left-turn movement at the intersection of Marineland Parkway and Stanley Avenue Boulevard is forecast to operated at a LOS C with a v/c ratio greater than 0.85.

The site driveway approach to Portage Road is forecast to operate with low levels of delay. Delays are forecast to be in the LOS A to B range with queue lengths of less than 7 metres (one vehicle).

Appendix H contains the detailed Synchro reports.

The road authorities should continue to monitor and adjust traffic control signal timings to reflect changes in real world traffic volumes.

TABLE 4.3A: TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	**C**	C	C	C	**C**	A	A	>	**A**	A	A	>	**A**	**C**
			Delay	34	35	>	**35**	32	30	29	**30**	7	7	>	**7**	5	4	>	**5**	**21**
			V/C	0.15	0.33	>		0.18	0.28	0.11		0.07	0.14	>		0.06	0.06	>		**0.18**
			95th	11	25	>		10	27	14		8	22	>		6	9	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	39	-	>		30	-	-		12	-	>		44	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	**B**					C	B		**C**		B	B	**B**	**B**
			Delay	19		19	**19**					20	17		**20**		18	18	**18**	**19**
			V/C	0.11		0.07						0.27	0.01				0.07	0.04		**0.16**
			95th	9		10						25	2				10	8		
			Storage	40		-						20	-				-	-		
			Avail.	31		-						-5	-				-	-		
	Site Driveway Driveway In	TWSC	LOS									<	A		**A**		A	>	**A**	**A**
			Delay									<	2		**2**		0	>	**0**	**1**
			V/C									<	0.03				0.07	>		
			95th									<	1				0	>		
	Site Driveway Driveway Out	TWSC	LOS			A	**A**					<	A		**A**		A	>	**A**	**A**
			Delay			10	**10**					<	0		**0**		0	>	**0**	**3**
			V/C			0.12						<	0.08				0.06	>		
			95th			3						<	0				0	>		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					C	B	>	**C**	**A**
			Delay	<	3	>	**1**	<	0	0	**0**					23	11	>	**17**	**3**
			V/C	<	0.19	>		<	0.14	0.05						0.31	0.12	>		
			95th	<	2	>		<	0	0						10	3	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**B**	<	C		**C**	A		A	**A**					**B**
			Delay		20	18	**19**	<	21		**21**	6		6	**6**					**17**
			V/C		0.54	0.18		<	0.58			0.18		0.04						**0.31**
			95th		40	15		<	44			17		4						
			Storage		-	75		<	-			180		65						
			Avail.		-	61		<	-			163		61						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	D	C	C	**C**	D	D	D	**D**	D	D	>	**D**	E	D	>	**D**	**D**
			Delay	49	28	24	**35**	36	40	38	**39**	40	38	>	**39**	58	39	>	**51**	**40**
			V/C	0.80	0.35	0.01		0.01	0.45	0.30		0.19	0.07	>		0.74	0.14	>		**0.60**
			95th	73	59	0		3	67	28		31	15	>		107	22	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-13	-	30		17	-	37		9	-	>		-	-	>		

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LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.3B: TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	D	>	D	C	C	C	C	A	B	>	B	A	A	>	A	C
			Delay	34	36	>	35	30	28	26	28	10	11	>	11	8	7	>	7	22
			V/C	0.26	0.48	>		0.43	0.44	0.17		0.06	0.20	>		0.15	0.13	>		0.29
			95th	17	40	>		24	50	16		8	28	>		11	20	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	33	-	>		16	-	-		13	-	>		39	-	>		
	Portage Road & Private Driveway	TCS	LOS	B		B	B					D	C		D		C	C	C	C
			Delay	18		16	17					36	29		35		31	30	31	28
			V/C	0.17		0.13						0.46	0.04				0.26	0.14		0.28
			95th	13		12						49	7				27	18		
			Storage	40		-						20	-				-	-		
			Avail.	27		-						-29	-				-	-		
	Site Driveway Driveway In	TWSC	LOS									<	A		A		A	>	A	A
			Delay									<	3		3		0	>	0	2
			V/C									<	0.06				0.13	>		
			95th									<	2				0	>		
	Site Driveway Driveway Out	TWSC	LOS	<		B	B					<	A		A		A	>	A	A
			Delay	<		10	10					<	0		0		0	>	0	2
			V/C	<		0.1						<	0.11				0.00	>		
			95th	<		3						<	0				0	>		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	A	<	A	A	A					F	B	>	F	A
			Delay	<	4	>	2	<	0	0	0					112	13	>	68	9
			V/C	<	0.30	>		<	0.23	0.07						0.92	0.18	>		
			95th	<	3	>		<	0	0						52	5	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	B	<	C		C	B		A	B					B
			Delay		21	18	20	<	22		22	11		8	11					18
			V/C		0.64	0.33		<	0.69			0.42		0.06						0.53
			95th		63	17		<	68			49		7						
			Storage		-	75		<	-			180		65						
			Avail.		-	58		<	-			131		58						
	Marineland Parkway & Stanley Avenue/Thunder ing Waters Boulevard	TCS	LOS	F	C	C	D	D	E	D	D	D	D	>	D	F	D	>	F	E
			Delay	96	31	24	44	37	57	46	52	39	38	>	38	195	43	>	132	70
			V/C	0.99	0.50	0.02		0.08	0.89	0.57		0.12	0.07	>		1.28	0.34	>		0.81
			95th	85	89	0		9	152	68		23	15	>		246	41	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-25	-	30		11	-	-3		17	-	>		-	-	>		

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95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.3C: TOTAL TRAFFIC OPERATIONS – SATURDAY PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	Fallsview Boulevard & Main Street/Portage Road	TCS	LOS	C	C	>	**C**	C	B	B	**B**	B	C	>	**C**	B	B	>	**B**	**C**
			Delay	27	28	>	**28**	21	20	20	**20**	19	22	>	**21**	15	13	>	**14**	**21**
			V/C	0.17	0.26	>		0.07	0.20	0.17		0.14	0.38	>		0.18	0.11	>		**0.32**
			95th	17	35	>		8	32	14		13	53	>		14	17	>		
			Storage	50	-	>		40	-	-		20	-	>		50	-	>		
			Avail.	33	-	>		32	-	-		7	-	>		36	-	>		
	Portage Road & Private Driveway	TCS	LOS	C		B	**B**					C	C		**C**		C	C	**C**	**C**
			Delay	20		18	**18**					30	25		**30**		26	25	**26**	**24**
			V/C	0.27		0.14						0.39	0.02				0.11	0.06		**0.27**
			95th	19		13						40	5				16	12		
			Storage	40		-						20	-				-	-		
			Avail.	21		-						-20	-				-	-		
	Site Driveway Driveway In	TWSC	LOS									<	A		**A**		A	>	**A**	**A**
			Delay									<	4		**4**		0	>	**0**	**2**
			V/C									<	0.07				0.12	>		
			95th									<	2				0	>		
	Site Driveway Driveway Out	TWSC	LOS	<		B	**B**					<	A		**A**		A	>	**A**	**A**
			Delay	<		10	**10**					<	0		**0**		0	>	**0**	**2**
			V/C	<		0.13						<	0.13				0.10	>		
			95th	<		4						<	0				0	>		
	Marineland Parkway & Portage Road	TWSC	LOS	<	A	>	**A**	<	A	A	**A**					F	B	>	**F**	**A**
			Delay	<	4	>	**2**	<	0	0	**0**					89	12	>	**55**	**7**
			V/C	<	0.32	>		<	0.22	0.05						0.80	0.15	>		
			95th	<	4	>		<	0	0						41	4	>		
	Marineland Parkway & Stanley Avenue	TCS	LOS		C	B	**B**	<	C		**C**	B		A	**B**					**B**
			Delay		21	17	**20**	<	21		**22**	10		9	**10**					**18**
			V/C		0.68	0.29		<	0.68			0.28		0.05						**0.45**
			95th		71	16		<	69			32		7						
			Storage		-	75		<	-			180		65						
			Avail.		-	59		<	-			148		59						
	Marineland Parkway & Stanley Avenue/Thundering Waters Boulevard	TCS	LOS	F	C	C	**D**	D	D	D	**D**	D	D	>	**D**	F	D	>	**F**	**E**
			Delay	98	32	24	**46**	38	47	41	**44**	40	39	>	**39**	140	41	>	**101**	**58**
			V/C	1.00	0.55	0.02		0.10	0.74	0.40		0.21	0.15	>		1.15	0.24	>		**0.80**
			95th	87	100	0		10	115	34		34	25	>		216	28	>		
			Storage	60	-	30		20	-	65		40	-	>		-	-	>		
			Avail.	-27	-	30		10	-	31		6	-	>		-	-	>		

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LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

5 Remedial Measures

5.1 Left-Turn Lane Warrants

The Ministry of Transportation's Design Supplement to the TAC Guide[14] provides guidance on the assessment of and/or need for auxiliary left-turn lanes at intersections.

Appendix I contains the left-turn lane warrant nomographs for the site driveway to Portage Road.

Based on the warrant analysis a northbound left-turn lane is not warranted at the site driveway intersection with Portage Road. No changes to the existing lane configuration at the site driveway are required.

5.2 Traffic Control

The existing form of traffic control at the study area intersections is adequate. The site driveway approach to Portage Road is expected to operate with low levels of delay.

The road authorities should continue to monitor and adjust traffic control signal timings to reflect changes in real world traffic volumes.

[14] Transportation Association of Canada, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads – Appendix 9A*, Ministry of Transportation of Ontario, 2017.

6 Parking Review

6.1 Proposed Parking Supply

The site's parking demand is proposed to be accommodated on site. The site statistics indicate a vehicle parking supply of 779 spaces (1.25 spaces per unit).

The parking supply is reduced when compared to the City's Zoning By-law 79-200 requirements to complement the intensification plans for the Tourist Commercial area.

6.2 Zoning Requirements

City of Niagara Falls Zoning By-law 79-200 parking requirements apply to the entire city, including the low-density suburban areas and the denser urbanized environments such as the Tourist Commercial area.

The Zoning By-Law prescribes a parking rate of 1.40 spaces per unit for apartment units. **Table 6.1** summarizes the site's zoning requirements for parking.

The parking requirement for the development concept is 872 residential spaces. Overall, the site's parking supply is considered deficient by 97 spaces when compared to Zoning By-law.

TABLE 6.1: ZONING PARKING BY-LAW REQUIREMENTS

Land Use	Units	Rate	Parking Spaces
Dwelling containing 3 or more dwelling units save and except an on street townhouse dwelling	623	1.40 spaces per unit	872

*Zoning By-Law 79-200

6.3 Policy Framework

The Growth Plan for the Greater Golden Horseshoe (Ministry of Infrastructure, 2020)[15], Provincial Policy Statement (MMAH, 2020)[16], and Niagara Falls Official Plan[17] all directly call for a shift away from

[15] A Place to Grow, Growth Plan for the Greater Golden Horseshoe, 2020.
[16] Provincial Policy Statement, 2020
[17] Official Plan for the City of Niagara Falls, 2019

automobile travel and towards more sustainable forms of transportation, including transit, and active transportation:

- The Growth Plan states: “Population and employment growth will be accommodated by reducing dependence on the automobile through the development of mixed-use, transit-supportive, pedestrian-friendly urban environments” (Section 4.2.10);
- The Provincial Policy Statement (PPS) states that land-use patterns should “minimize the length and number of vehicle trips, and support current and future use of transit and active transportation” (Section 1.6.7.4);
- Niagara Falls Official Plan (OP) states: “To ensure that adequate off-street parking is provided for all development, consideration may be given to the elimination of parking requirements for non-accommodation uses (Section 4.5.2.3).

Traditionally, transportation networks focused on increasing the road network’s capacity to accommodate more vehicles. As outlined in Niagara Region’s Transportation Master Plan (TMP), the transportation system needs to look at a “balanced needs” approach that encourages alternative modes of transportation.

The City of Niagara Falls OP identifies that an integrated and multi-modal transportation system will be achieved. Decision-making will be prioritized to shift more trips away from the private car and more sustainable transportation options, such as walking, biking, transit, and car-sharing.

The intent is to reprioritize mobility to balance the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services, and amenities closer encourages non-automobile modes of travel, providing more choice to Niagara Falls residents.

6.3.1 Climate Change

Municipalities have been identified by the Government of Canada as critical partners in the fight against climate change, as they influence 50% of Canada’s greenhouse gas (GHG) emissions. Land use planning is one of the most effective processes for local adaptation to climate change. Existing tools available, such as official plans, zoning by-laws, and development permits, can help minimize climate change risk to the community.

Climate change and air pollution must be addressed to achieve a sustainable community and human and ecosystem health. Climate

change and air pollution impacts are caused primarily by burning fossil fuels, resulting in the emission of greenhouse gases and air pollutants. These impacts can be reduced through sustainable and efficient land use and transportation policies that reduce air and greenhouse gas emissions.

In Ontario, GHG emissions from the transportation sector in 2016 were 34% higher than in 1990. Most of those emissions are due to passenger vehicles on the road. In Niagara, transportation emissions at the community level in 2006 accounted for 40% of total emissions. Achieving a reduction in automobile dependence and lowering GHG emissions from the transportation sector is a way to mitigate climate change and promote other sustainable travel forms.

6.3.2 Parking and GHG Emissions

While single-occupant vehicle trips are commonly targeted in transport policies, they are only a consequence of the spatial layout and densities of the accompanying land uses. There is merit in targeting the underlying cause of these carbon emissions rather than solely focusing on policies to reduce private vehicle use.

Parking management has an important role to play as an instrument to reduce carbon emissions[18]. In this respect, car parking is the “glue” between these facets of the land use and transport environment. In addition, car parking is a critical factor that can be targeted relatively quickly by planners and their municipality plans.

The transportation sector is currently responsible for 23% of Canada’s GHG emissions[19] and offers tremendous opportunities for significant emissions reduction. Municipalities in Canada are lagging other countries in supporting zero-emission vehicles and other sustainable transportation policies. Cities need to transition towards zero and low-emissions transportation modes, increase cleaner fuels, improve public transit ridership, and encourage denser, mixed-use communities to reduce emissions. A significant encouragement is needed to shift travel modes from single-occupant vehicles towards public transit, auto-share, and active transportation to reduce greenhouse gas emissions related to the transportation sector

[18] Parking as a tool to reduce carbon emissions, McCormick Rankin Cagney Pty Ltd, 2009
[19] Reducing GHG Emissions in Canada’s Transportation Sector, Clean Energy Canada, June 2016.

6.3.3 Societal Changes

A sudden, dramatic shift in travel patterns occurred early in 2020 as society adjusted to the emergence of COVID-19, its declaration as a pandemic and subsequent public health measures to stop its spread.

As a result, recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home. It has made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles may further support a reduction in personal automobile ownership and use. These societal changes will decrease vehicle parking needs with a shift to curbside management.

As businesses have adapted and residents have embraced the convenience of the delivery of everyday items, these changes will remain for the near future, providing further incentive to residents to not requiring a vehicle.

Given the expected changes in automobile ownership brought about by the changes in mobility-related technologies, it is likely that if the change in the parking policy framework is not revised, new residential developments will be left with an oversupply of parking, which could result in redundant space that can not be repurposed in the future.

6.3.4 Affordability

According to the Government of Ontario, housing prices in Ontario almost tripled, far outpacing the income growth. The Government of Ontario has developed a “Housing Affordability Task Force” comprised of industry leaders and experts to produce a report identifying and recommending measures to address the housing supply crisis[20].

One of the main recommendations by the Housing Task Force to increase housing supply and affordability is to reduce and streamline urban design rules to lower the costs of development. The Housing Task Force recommends removing or reducing the parking requirements in cities with over 50,000 people.

Generous parking requirements reduce housing affordability and impose various economic and environmental costs. The Housing Task Force reports that minimum parking requirements add as much as $165,000 to the price of a new housing unit, and parking space demand is falling, with one in three parking stalls going unsold. Based on typical affordable housing development costs, one parking space

[20] Housing Affordability Task Force Report, Government of Ontario, February 2022

per unit increases costs by approximately 12.5%, and two parking spaces can raise prices by 25%.

Residential minimum parking requirements should ensure that a basic, responsible parking level is provided without unduly increasing the development costs.

6.3.5 Parking Reform

Minimum parking requirements have long been a staple of urban planning regulations based on some formulation. These regulations, unfortunately, have been driven by auto-centric engineering models. Over the past seven decades, the built form in Niagara Falls has been evolving significantly. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by autonomous vehicles (AVs) suggest that automobile ownership will likely experience declines.

The City of Niagara Falls growth objective is to create and develop a transit and pedestrian-friendly, sustainable, and livable City through urban design criteria and guidelines. The OP embraces sustainability and creates a vision for complete compact communities served by streets made for walking, cycling, and an attractive transit system. This vision is supported by policies to reduce auto dependence and limit the amount of land occupied by automobile parking. The transportation policies are deliberately interspersed with the land-use policies to emphasize the importance of considering both areas to achieve the overall vision of complete compact communities.

The intent is to reprioritize mobility to balance the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services, and amenities closer encourages non-automobile modes of travel, providing more choice to Niagara Falls residents.

Suppose the city wishes to encourage active transportation and transit-friendly neighbourhoods as outlined in the OP and strategic vision. In that case, the city needs to recognize that minimum parking requirements present a significant barrier to these goals. It must be remembered that parking carries high costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments. Parking should not be viewed as only an amenity required to support our cities and our ability to drive; instead, it must be considered a significant economic investment that carries outcomes that shape our cities and regions.

As outlined in **Section 3.3,** other municipalities recognize this and have reduced parking requirements to reflect this. To reiterate, the City of Niagara Falls requires, on average, 40% more parking to be provided for this development than would be needed for the Town of Oakville (North Oakville), City of Welland and City of Hamilton that have adopted new parking requirements.

6.3.6 Maintain Sales/Leasing Viability

Reducing parking rates is an essential measure in trying to reduce the reliance upon the private automobile and to reduce the unnecessary infrastructure that the development must:

- Build upfront and reflect in both the cost to purchasers and the impact on the environment (the initial carbon footprint of an extensive development is substantial), and,
- Maintain on an ongoing basis for the life cycle of the building (which includes maintenance and repair) as well as the lasting environmental impacts of a larger parking garage.

It is also essential to ensure that the parking supply provided is supportable from a residential sales perspective (that there is a market for the units sold without parking over the long term). A parking rate that contributes to a poor leasing/sales outcome does not produce a viable development for the long-term.

The parking rates proposed been vetted by the applicant's leasing and sales advisors, and from a business perspective, the proposed parking supply is considered viable.

6.4 Parking Demand Forecast

A review of actual parking demands likely to be generated by the proposed development has been considered to assess, independent and separate from a review of the Residential Zoning By-Law requirements.

The "real" demands established for each land use are based upon a review of parking demand technical resources and information collected by Paradigm and others at comparable land uses. The specified demands consider several influencing factors in play, including market demands and the effects of interaction between uses.

A summary discussion relating to each of the significant land use components is provided in the following sections.

6.4.1 Residential Vehicle Ownership

A review of vehicle ownership provided by the 2016 Transportation Tomorrow Survey (TTS) for the City of Niagara Falls suggests that approximately 35 percent of apartments surveyed do not own a vehicle. Vehicle ownership, based on a weighted average, is 0.74 vehicles per unit.

Table 6.2 summarizes the vehicle ownership characteristics.

TABLE 6.2: VEHICLE OWNERSHIP – NIAGARA FALLS (2016 TTS)

Vehicles Per Household					House-holds	Vehicles	Ownership
0	1	2	3	4			
2599	4124	631	25	0	7,379	5,461	0.74
35%	*56%*	*9%*	*0%*	*0%*			

The vehicle ownership evaluation offers some insight into the parking requirements of apartments within the City of Niagara Falls. This review indicates that, despite preconceived notions, not all residents in apartment dwellings own a vehicle.

Table 6.3 summarizes the estimated parking demand based on the vehicle ownership rates. The data does not account for visitor parking demands.

The site's occupant parking demand is forecast to be approximately 461 spaces. Assuming the visitor parking requirement of 0.40 spaces per unit, the site's visitor parking demand is forecast to be 249 spaces. The overall parking demand is estimated to be approximately 710 spaces. With a parking supply of 779 spaces, the site's parking demand is estimated to be less than the proposed supply.

TABLE 6.3: VEHICLE OWNERSHIP – PARKING DEMAND

Land Use	Units	Rate	Parking Spaces
Apartment Units	623	0.74 spaces per unit	461
Parking Demand			**461**

6.4.2 Travel Characteristics

A review of travel characteristics provided by the 2016 Transportation Tomorrow Survey (TTS) for residents living in Niagara Falls confirms that a significant proportion of travel undertaken during the morning and afternoon peak periods is by non-auto means.

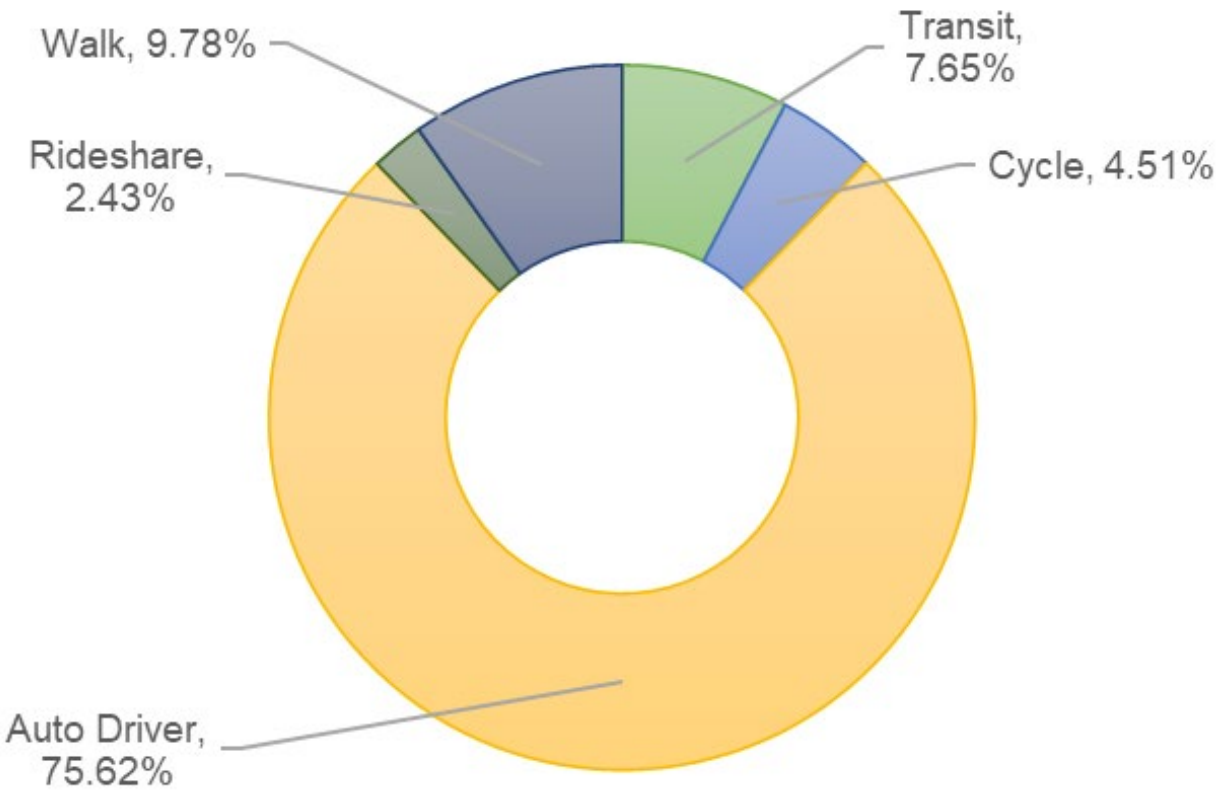
Information provided by the TTS suggests that the proportion of people who choose to drive in the area is, on average, 76%. Based on this data, it is reasonable to assume that only 76% of unit owners would require an automobile for everyday travel. In contrast, the remainder of the trips is fulfilled through transit and active modes.

Figure 6.1 illustrates the 2016 trip characteristics within the City of Niagara Falls for apartment units.

The parking supply proposed will provide a parking resource that will logically be used by building residents who need a car for day-to-day use; indispensable users. Such residents would prioritize purchasing a unit and expect to utilize the on-site parking facilities. The proposed parking supply would accommodate parking of all units in the building, which exceeds the base proportion of building unit occupants who need to drive regularly, approximately 76 percent during the peak periods.

Other unit purchasers who do not need to use a car on an ongoing basis would be satisfied by other available travel modes. They would not need to own a vehicle and not require a parking space.

To provide the City with additional comfort, a warning clause can be implemented into the sale and purchase agreement for the site. A suggested wording for this is “it is the responsibility of the owner to ensure that parking provided on the site is appropriate for their needs. Off-site parking may not be available and cannot be guaranteed in perpetuity.”



TTS 2016

paradigm TRANSPORTATION SOLUTIONS LIMITED

Niagara Falls Travel Characteristics – Apartment Units

Lot 175 Portage Road
220026

Figure 6.1

6.4.3 Residential Proxy Surveys

Paradigm has reviewed a proxy site survey for an existing residential condominium complex located at 15 Towering Heights Boulevard in the City of St. Catharines. The development is a 13-storey, 125-unit building with a total of 183 parking spaces (supply ratio of 1.46 spaces per unit).

Overnight parking surveys were conducted at the proxy site on Thursday, 28 February 2019, and Saturday, 02 March 2019. An overnight period (10 PM to 1 AM) was used to capture the maximum capacity for the parking needs.

Table 6.4 summarizes the parking demand rates observed at the proxy site. **Appendix J** contains the proxy survey data.

TABLE 6.4: PROXY SITE PARKING UTILIZATION

Time Period	Demand (spaces)	Utilization (Percent)	Rate per Unit
Weekday	112	61%	0.90 spaces per unit
Saturday	109	60%	0.87 spaces per unit

The parking survey shows that overnight parking was in the order of 109 to 112 spaces with a utilization rate of approximately 60%. The parking demand is calculated to be 0.90 spaces per unit inclusive of occupants and visitors.

Applying the proxy site peak parking demand rate of 0.90 spaces per unit to the subject site, the forecast parking demand is 561 spaces. With a parking supply of 779 spaces, the site's parking demand is estimated to be less than the proposed supply.

6.4.4 ITE Parking Generation Rates

There are numerous industry associations that are dedicated to the survey and review of parking requirements related to various land uses. These associations, such as the Institute of Transportation Engineers (ITE), collect, review, and publish information related to parking demand, supply, and appropriate design standards.

An accepted industry standard for the determination of potential parking demand is ITE's Parking Generation Manual[21]. ITE provides

[21] Institute of Transportation Engineers. Parking Generation Manual, 5th Edition

data on surveys across the USA and Canada of peak parking demand for different land uses.

ITE Parking Generation is generally regarded as the best source for measured parking demands other than local data collected at similar land uses.

Land use code 222 (Multifamily Housing High-Rise) is used to estimate the site's peak parking generation. **Table 6.5** summarizes the estimated peak parking generation for the subject site.

The site's parking demand is estimated to be between 611-673 spaces inclusive of occupants and visitors. With a supply of 779 spaces proposed, the site's parking demand is estimated to be less than the proposed supply. The site's parking demand is forecast to be contained on-site.

TABLE 6.5 ITE PARKING GENERATION

Land Use:	Multifamily Housing (High Rise) (222)
Independent Variable:	Dwelling Units
Time Period:	Weekday (Monday - Friday)
Setting/Location:	General Urban/Suburban (no nearby rail transit)
Peak Period of Parking Demand:	10:00 p.m. - 5:00 a.m.
Number of Studies:	5
Avg. Num. of Dwelling Units:	399
Average Rate:	0.98
Range of Rates:	0.57 - 1.19
33rd/85th Percentile:	0.78/1.19
95% Confidence Interval:	***
Standard Deviation:	0.27
Coefficient of Variation:	28%
Fitted Curve Equation:	P = 1.25(X) - 105.47
R2:	0.97
Calculated Parking Demand:	**Average Rate: 611 (Total)**
	Fitted Curve: 673 (Total)

6.4.5 Other Jurisdictions

Parking standards are increasingly seen as an instrument of planning policy, and parking ratios are now viewed as having the primary role in determining car use. Parking ratios have existed in most cities since the 1950s and have often been amended incrementally. Consequently, it is not surprising that municipalities are often unable to trace the justification or reasoning behind some of the older parking ratios found in their current Zoning By-laws.

Given that parking standards reflect an “average” condition, they will rarely prescribe the number of parking spaces to match the parking demands of any individual development project exactly. Other municipalities recognize the advantages of parking ratios supporting broader Official Plan objectives. The empirical challenge is understanding how parking demand for a given use may vary. The policy question is where the parking standard or ratio should be set in that range.

The Town of Oakville recently developed a new zoning by-law for lands located north of Dundas Street. The parking rates within this by-law for multiple dwelling units stipulate that a maximum parking rate of 1.25 per unit would be accepted with no prescribed minimum parking requirement. In contrast to generic minimum parking requirements, North Oakville provides maximum limits to restrict the total number of spaces that can be constructed rather than establish a minimum number.

The City of Welland has recently undertaken a comprehensive review of the zoning by-law to ensure that land and growth are appropriately managed and that the zoning regulations are up to date. As part of this work, updated parking requirements were developed, which requires multiple dwellings to provide a parking rate of 1.00 parking space per unit.

The City of Hamilton has a staggered approach for parking requirements for multiple dwellings. The minimum parking required depends on the size of the dwellings and the number of units, with a maximum parking rate of 1.25 spaces per unit.

Attitudes towards automobile ownership and its role in an urban lifestyle are changing in the eyes of both consumers and policymakers, and lower parking regulations reflect this. As parking regulations are an attempt to supply to meet demand, regulations that require a lower supply for future buildings are an indication that future demand is likely to be lower with the rise of sustainable travel modes (transit, cycling, and walking).

Table 6.6 summarizes the parking standard for other jurisdictions. This comparison outlines the new parking rate standards being accepted by municipalities through a comprehensive review of research and best practices.

TABLE 6.6 OTHER JURISDICTIONS PARKING BY-LAWS

Municipality	Land Use	Parking Rate
Town of Oakville (North Oakville)	Multiple Residential	0.00 spaces per unit or maximum of 1.25 spaces per unit
	Visitor	0.20 spaces per unit
City of Welland	Multiple Residential	1.00 spaces per unit
City of Hamilton	Multiple Residential	0.00 spaces per unit or maximum of 1.25 spaces per unit

Using the ratios outlined above, the mandated zoning requirements for the subject site would range form 125 spaces to a maximum of 904 spaces.

6.5 Parking Demand Summary

Using several different methodologies, the site's parking demand is forecast to be in the order of 125 spaces to 710 spaces. **Table 6.7** summarizes these parking rates.

TABLE 6.7 PARKING DEMAND SUMMARY

Methodology	Forecast Parking Demand
TTS – Occupant + Visitor	710 spaces
Proxy Survey	561 spaces
ITE Parking Generation – Average Rate	611 spaces
ITE Parking Generation – Equation	673 spaces
Other Municipalities – Oakville	Minimum 125 spaces Maximum 904 spaces
Other Municipalities – Welland	623 spaces
Other Municipalities – Hamilton	Maximum 778 spaces

Based on best practices and policy objectives, the proposed reduction is further supported through a Transportation Demand Management (TDM) program. The provision of providing reduced parking in support of TMD measures is reflected in the City's Transportation Master Plan [22]:

- Consider TDM in the context of all development reviews
- Establish maximum parking requirements, and parking exceptions, for residential, commercial, industrial, and institutional developments.
- Land use and transportation are fundamentally linked. To successfully promote sustainable transport, transit-oriented development (TOD), transit improvements and intelligent growth initiatives should co-exist to achieve significant results.
- The city should consider any form of parking an integral component of a broader TDM strategy and sustainable urban development initiatives. These initiatives should champion sustainability and showcase the efficient movement of people and goods.

[22] Niagara Falls, Sustainable Transportation Master Plan, October 2011

7 Conclusions & Recommendations

7.1 Conclusions

Transportation Impact Study

The main findings and conclusions of this study are as follows:

- **Base Year Traffic Conditions**: Critical movements are noted at the Portage Road and Private Driveway (Casino Driveway) intersection.
- **Site Trip Generation**: The subject site is forecast to generate approximately 156, 185 and 217 new vehicle trips during the AM, PM, and Saturday peak hours, respectively.
- **Background Traffic Conditions**: Capacity issues are expected to occur at the Portage Road intersection with Private Driveway and at the Marineland Parkway intersection with Stanley Avenue/Thundering Waters.
- **Total Traffic Conditions**: The critical movements forecast to occur under the background traffic conditions are expected to continue to occur with the addition of site generated traffic.

  Site generated traffic results in one new critical movement at the study area intersections.
- During the PM peak hour, the westbound left-turn lane at the intersection of Marineland Parkway and Stanley Avenue Boulevard is forecast to operated at a LOS C with a v/c ratio greater than 0.85.
- **Remedial Measures**: No remedial measures are required to support development of the site.

Parking Justification Study

- **Transportation Demand Management**: The site concept plan includes TDM measures intended to assist in mitigating the site's transportation and parking impacts. TDM measures are aimed at walking, transit, cycling, parking, and education/promotion.
- The site's parking supply consists of 779 parking spaces (1.20 spaces per unit).
- Under the City's Zoning By-law, a total of 872 parking spaces (1.40 spaces per unit) is mandated.

- Planning policy within the City and the Region encourage intensification within Built-up Areas and support reduced parking standards as a means of encouraging intensification;
- Data extracted from the Transportation Tomorrow Survey (TTS) indicate vehicle ownership rates for apartment dwellers is 0.74 vehicles per household. This suggests an occupant parking supply of 461 would be sufficient. With 779 spaces proposed, the forecast demand is less than the proposed supply.
- Proxy site survey data suggests a parking demand rate of 0.90 spaces per unit. The forecast parking demand for the subject site is 561 spaces. With 779 spaces proposed, the forecast demand is less than the proposed supply.

7.2 Recommendations

Based on the findings of this study, it is recommended that:

- The site's TDM program be implemented and monitored over time to help manage the site's transportation and parking impacts.
- It is recommended that signage and pavement markings be provided on the driveway approaches to identify the one-way travel directions.
- The road authorities should continue to monitor and adjust traffic control signal timings to reflect changes in real world traffic volumes.

Appendix A

Pre-Study Consultation

Creighton Chartier

From: John Grubich <jgrubich@niagarafalls.ca>
Sent: May 16, 2022 11:29 AM
To: Creighton Chartier
Cc: Scott Catton; Mathew Bilodeau; Julie Hannah; 'Dunsmore, Susan'
Subject: RE: [EXTERNAL]-Lot 175 Portage Road - Transportation Impact and Parking Study (220026)
Attachments: Marina Homes Trips.pdf

Creighton;

Following up on my e-mail from last week, there are five (5) developments affecting the study area.

1. Riverfront Community Secondary Plan – Paradigm prepared the TIS
2. South side of Marineland Parkway, opposite Ailanthus Avenue (Nina's Court) - Paradigm prepared the TIS
3. 5500 Marineland Parkway, South side, opposite Stanley Avenue North (Marina Homes) - applicant has submitted their application and is close to a public meeting; TIS trip numbers attached for 292 townhouse units
4. 6880 Stanley Avenue (Loretto Fallsview Redevelopment) - applicant has submitted their application, TIS can be found in https://niagarafalls.ca/city-hall/planning/current-planning-applications.aspx
5. Niagara Village Community (applicant has submitted their application, TIS can be found in https://niagarafalls.ca/city-hall/planning/current-planning-applications.aspx

Thanks,

John Grubich, C.E.T. | Traffic Planning Supervisor | Municipal Works - Transportation Services | City of Niagara Falls
8208 Heartland Forest Road | Niagara Falls, ON L2H 0L7 | (905) 356-7521 ext 5214 | Fax 905-356-5576 | jgrubich@niagarafalls.ca

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From: John Grubich
Sent: Thursday, May 12, 2022 1:26 PM
To: 'Creighton Chartier' <cchartier@ptsl.com>
Cc: Scott Catton <scatton@ptsl.com>; Mathew Bilodeau <mbilodeau@niagarafalls.ca>; Julie Hannah <jhannah@niagarafalls.ca>; Dunsmore, Susan <Susan.Dunsmore@niagararegion.ca>
Subject: RE: [EXTERNAL]-Lot 175 Portage Road - Transportation Impact and Parking Study (220026)

Creighton;

Thank you for forwarding the work plan and an updated site plan for this proposed development. I'll provide comments on behalf of the City Transportation.

As the site is located in the City's Fallsview Tourist District, the City would like to also have the weekend peak period assessed, and for both the weekday and weekend base data to be collected in the summer (July/August) to account for the summer tourist season traffic. Please expand the study area to include Portage/Casino and Portage/Fallsview for trips to/from the north.

I will compile a list of approved developments affecting the study intersections to include in background conditions and forward it on next week.

For parking, the City's Zoning By-law requires 1.4 parking spaces per unit. You will need to justify that a lower rate is appropriate for the site. There are no other high rise apartments in the City's tourist core that is comparable for study to acquire a site-specific residential parking rate for this area. In the absence of suitable proxy sites, the work plan you identified to justify the parking rate will suffice. From Staff's perspective, we will likely recommend that the 1.4 parking space per unit rate be applied given that there is no transit service on this section of Portage Road and that stopping is prohibited with a tow away zone on both sides of Portage Road between Marineland Parkway and Fallsview Boulevard with no public parking lots nearby. There is no reasonable alternative nearby for spillover parking.

I trust this information is satisfactory to start your study.

John Grubich, C.E.T. | Traffic Planning Supervisor | Municipal Works - Transportation Services | City of Niagara Falls
8208 Heartland Forest Road | Niagara Falls, ON L2H 0L7 | (905) 356-7521 ext 5214 | Fax 905-356-5576 | jgrubich@niagarafalls.ca

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From: Creighton Chartier <cchartier@ptsl.com>
Sent: Tuesday, May 10, 2022 12:35 PM
To: Dunsmore, Susan <Susan.Dunsmore@niagararegion.ca>; John Grubich <jgrubich@niagarafalls.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: [EXTERNAL]-Lot 175 Portage Road - Transportation Impact and Parking Study (220026)

Hi All,

Paradigm Transportations Solutions Limited has been retained to prepare a Traffic Impact and Parking Study for the proposed development of Part of Lot 175 in the City of Niagara Falls. The site is located on the west side of Portage Road between McLeod Road and Marineland Parkway.

The development concept includes two high-rise buildings containing approximately 600 units. The preliminary concept plan is attached for reference. Vehicle access is proposed by two driveways to Portage Road. Preliminary trip estimates for the site suggest a trip generation of 151 AM peak hour trips and 179 PM peak hour trips.

Proposed Terms of Reference – Traffic Impact and Parking Study

Study Area:

- Portage Road at Marineland Parkway
- Marineland Parkway at Stanley Avenue
- Marineland Parkway at Stanley Avenue/Thundering Waters Boulevard; and
- The proposed site driveways to Portage Road.

Analysis Periods

- Weekday AM peak hour; and
- Weekday PM peak hour

Analysis

- Synchro 11
- HCM 2000

Background Traffic

- Generalized growth rate 2% per annum, if not otherwise advised.
- Traffic generated by any in stream developments in the area.
    - **Input from City/Region required.**

Site Traffic Estimates

- ITE Trip Generation Data 11th Edition – Land Use Code Multifamily Housing (High-Rise) (222) – Not Close To Rail
    - Weekday AM – 51 inbound, 100 outbound = 151 total trips
    - Weekday PM – 100 inbound, 79 outbound = 179 total trips
- No modal split reductions.
- Site Traffic Distribution - Existing travel patterns and/or TTS data

Existing Data

- New turning movement counts will be collected.
- Existing signal timing plans to be obtained.

Parking

- Estimate the parking demand generated by the proposed development and establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions.

Circulation Review

- AutoTURN analysis for the site's loading zone(s).

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Thank you,

Creighton Chartier
Transportation Consultant

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x504
e: cchartier@ptsl.com
w: www.ptsl.com

Creighton Chartier

From: Dunsmore, Susan <Susan.Dunsmore@niagararegion.ca>
Sent: May 19, 2022 3:20 PM
To: Creighton Chartier
Cc: Scott Catton; John Grubich
Subject: RE: Lot 175 Portage Road - Transportation Impact and Parking Study (220026)

Hello Creighton,

Our Regional transportation planning staff has reviewed the scope and provided the comments noted below in green. If you require Regional traffic data please request the data thru the Regional website using the following link: https://www.niagararegion.ca/living/roads/permits/traffic-data-requests.aspx.

If you have any questions or concerns please contact me at your convenience.

Thank you

Susan M. Dunsmore, P. Eng.
Manager, Development Engineering
Planning and Development Services

Phone: (905) 980-6000 or 1-800-263-7215 ext 3661
Address: 1815 Sir Isaac Brock Way, Thorold ON, L2V4T7

From: Creighton Chartier <cchartier@ptsl.com>
Sent: Tuesday, May 10, 2022 12:35 PM
To: Dunsmore, Susan <Susan.Dunsmore@niagararegion.ca>; John Grubich <jgrubich@niagarafalls.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: Lot 175 Portage Road - Transportation Impact and Parking Study (220026)

Hi All,

Paradigm Transportations Solutions Limited has been retained to prepare a Traffic Impact and Parking Study for the proposed development of Part of Lot 175 in the City of Niagara Falls. The site is located on the west side of Portage Road between McLeod Road and Marineland Parkway.

The development concept includes two high-rise buildings containing approximately 600 units. The preliminary concept plan is attached for reference. Vehicle access is proposed by two driveways to Portage Road. Preliminary trip estimates for the site suggest a trip generation of 151 AM peak hour trips and 179 PM peak hour trips.

Proposed Terms of Reference – Traffic Impact and Parking Study

Study Area: Accepted

- Portage Road at Marineland Parkway
- Marineland Parkway at Stanley Avenue
- Marineland Parkway at Stanley Avenue/Thundering Waters Boulevard; and
- The proposed site driveways to Portage Road.

Analysis Periods

- Weekday AM peak hour; and
- Weekday PM peak hour
- Given the tourism-related traffic along Stanley Avenue, the TIS should consider the weekend midday peak hour within the analysis. Either suitable conversion rates to be employed or four-hour turning movement counts to be collected on a typical weekend during the midday peak period within the tourism season.

Analysis

- Synchro 11
- HCM 2000

Background Traffic

- Generalized growth rate 2% per annum, if not otherwise advised. Accepted
- Traffic generated by any in stream developments in the area.
    - **Input from City/Region required.**

Site Traffic Estimates Accepted

- ITE Trip Generation Data 11th Edition – Land Use Code Multifamily Housing (High-Rise) (222) – Not Close To Rail
    - Weekday AM – 51 inbound, 100 outbound = 151 total trips
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- No modal split reductions.
- Site Traffic Distribution - Existing travel patterns and/or TTS data

Existing Data Accepted

- New turning movement counts will be collected.
- Existing signal timing plans to be obtained.

Parking

- Estimate the parking demand generated by the proposed development and establish the number of on-site parking spaces that should be provided, recognizing site constraints and local conditions.

Circulation Review

- AutoTURN analysis for the site's loading zone(s).

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Horizon Years :

- Existing (2022)
- 5 years from date of study

- Please provide anticipated build-out time frame. If the development is being phased, the TIS to include an estimated timeframe for the build-out of the various phases and analyze the study area at each phase.

- For any necessary road improvements on Regional roads/intersections, as per the Region's TIS Guidelines (2012) all geometric improvements should be shown on a functional design plan identifying lane arrangements and intersection improvements for each horizon year.
- The Consultant to follow Niagara Region Guidelines for TIS (2012) for traffic analysis software settings, intersections capacity thresholds and other requirements.
- A section on Transportation Demand Management should be included, discussing ways to encourage sustainable travel modes.

Please let us know your comments on the study.

Thank you,

Creighton Chartier
Transportation Consultant

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x504
e: cchartier@ptsl.com
w: www.ptsl.com

Appendix B

Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Marineland Parkway - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Data

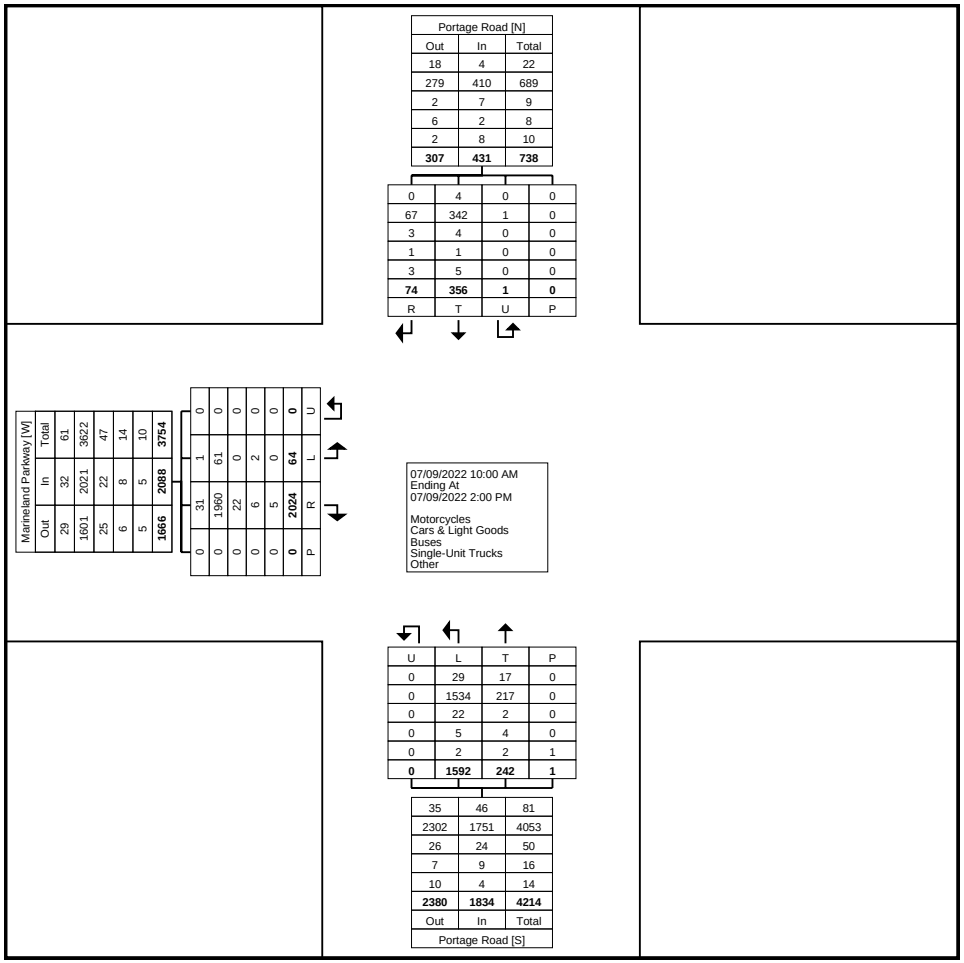
Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
10:00 AM	4	112	0	0	116	90	8	0	0	98	17	6	0	0	23	237
10:15 AM	5	97	0	0	102	86	10	0	0	96	29	3	0	0	32	230
10:30 AM	3	120	0	0	123	84	13	0	1	97	20	1	0	0	21	241
10:45 AM	5	122	0	0	127	78	11	0	0	89	29	4	0	0	33	249
Hourly Total	17	451	0	0	468	338	42	0	1	380	95	14	0	0	109	957
11:00 AM	4	139	0	0	143	94	28	0	0	122	25	7	0	0	32	297
11:15 AM	3	136	0	0	139	92	14	0	0	106	26	9	0	0	35	280
11:30 AM	2	121	0	0	123	108	26	0	0	134	25	4	1	0	30	287
11:45 AM	2	115	0	0	117	91	20	0	0	111	20	3	0	0	23	251
Hourly Total	11	511	0	0	522	385	88	0	0	473	96	23	1	0	120	1115
12:00 PM	5	127	0	0	132	99	18	0	0	117	35	4	0	0	39	288
12:15 PM	2	134	0	0	136	113	11	0	0	124	11	2	0	0	13	273
12:30 PM	5	145	0	0	150	94	11	0	0	105	18	4	0	0	22	277
12:45 PM	8	145	0	0	153	129	19	0	0	148	22	6	0	0	28	329
Hourly Total	20	551	0	0	571	435	59	0	0	494	86	16	0	0	102	1167
1:00 PM	1	118	0	0	119	94	15	0	0	109	23	7	0	0	30	258
1:15 PM	3	130	0	0	133	112	12	0	0	124	14	5	0	0	19	276
1:30 PM	5	128	0	0	133	107	7	0	0	114	20	3	0	0	23	270
1:45 PM	7	135	0	0	142	121	19	0	0	140	22	6	0	0	28	310
Hourly Total	16	511	0	0	527	434	53	0	0	487	79	21	0	0	100	1114
Grand Total	64	2024	0	0	2088	1592	242	0	1	1834	356	74	1	0	431	4353
Approach %	3.1	96.9	0.0	-	-	86.8	13.2	0.0	-	-	82.6	17.2	0.2	-	-	-
Total %	1.5	46.5	0.0	-	48.0	36.6	5.6	0.0	-	42.1	8.2	1.7	0.0	-	9.9	-
Motorcycles	1	31	0	-	32	29	17	0	-	46	4	0	0	-	4	82
% Motorcycles	1.6	1.5	-	-	1.5	1.8	7.0	-	-	2.5	1.1	0.0	0.0	-	0.9	1.9
Cars & Light Goods	61	1960	0	-	2021	1534	217	0	-	1751	342	67	1	-	410	4182
% Cars & Light Goods	95.3	96.8	-	-	96.8	96.4	89.7	-	-	95.5	96.1	90.5	100.0	-	95.1	96.1
Buses	0	22	0	-	22	22	2	0	-	24	4	3	0	-	7	53
% Buses	0.0	1.1	-	-	1.1	1.4	0.8	-	-	1.3	1.1	4.1	0.0	-	1.6	1.2
Single-Unit Trucks	2	6	0	-	8	5	4	0	-	9	1	1	0	-	2	19
% Single-Unit Trucks	3.1	0.3	-	-	0.4	0.3	1.7	-	-	0.5	0.3	1.4	0.0	-	0.5	0.4
Articulated Trucks	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Articulated Trucks	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	0	3	0	-	3	1	2	0	-	3	5	3	0	-	8	14
% Bicycles on Road	0.0	0.1	-	-	0.1	0.1	0.8	-	-	0.2	1.4	4.1	0.0	-	1.9	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Marineland Parkway - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Marineland Parkway - Saturday
Site Code: 220026
Start Date: 07/09/2022

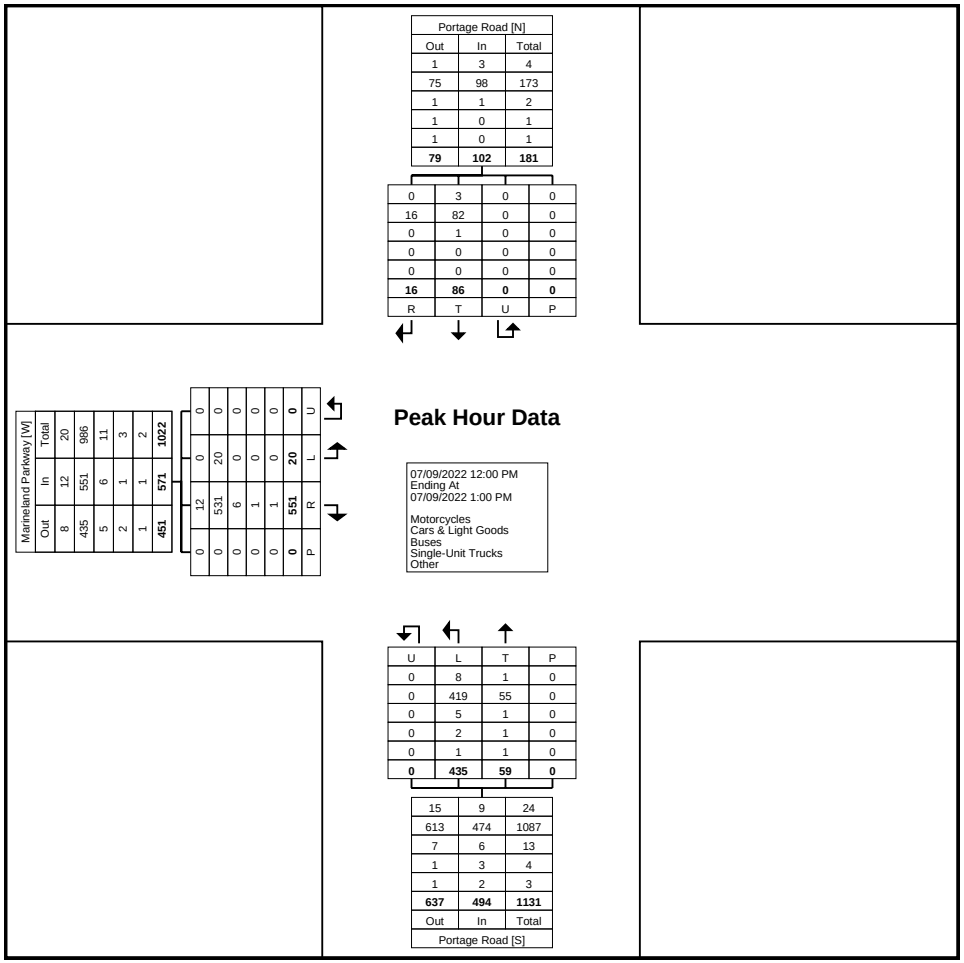
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	5	127	0	0	132	99	18	0	0	117	35	4	0	0	39	288
12:15 PM	2	134	0	0	136	113	11	0	0	124	11	2	0	0	13	273
12:30 PM	5	145	0	0	150	94	11	0	0	105	18	4	0	0	22	277
12:45 PM	8	145	0	0	153	129	19	0	0	148	22	6	0	0	28	329
Total	20	551	0	0	571	435	59	0	0	494	86	16	0	0	102	1167
Approach %	3.5	96.5	0.0	-	-	88.1	11.9	0.0	-	-	84.3	15.7	0.0	-	-	-
Total %	1.7	47.2	0.0	-	48.9	37.3	5.1	0.0	-	42.3	7.4	1.4	0.0	-	8.7	-
PHF	0.625	0.950	0.000	-	0.933	0.843	0.776	0.000	-	0.834	0.614	0.667	0.000	-	0.654	0.887
Motorcycles	0	12	0	-	12	8	1	0	-	9	3	0	0	-	3	24
% Motorcycles	0.0	2.2	-	-	2.1	1.8	1.7	-	-	1.8	3.5	0.0	-	-	2.9	2.1
Cars & Light Goods	20	531	0	-	551	419	55	0	-	474	82	16	0	-	98	1123
% Cars & Light Goods	100.0	96.4	-	-	96.5	96.3	93.2	-	-	96.0	95.3	100.0	-	-	96.1	96.2
Buses	0	6	0	-	6	5	1	0	-	6	1	0	0	-	1	13
% Buses	0.0	1.1	-	-	1.1	1.1	1.7	-	-	1.2	1.2	0.0	-	-	1.0	1.1
Single-Unit Trucks	0	1	0	-	1	2	1	0	-	3	0	0	0	-	0	4
% Single-Unit Trucks	0.0	0.2	-	-	0.2	0.5	1.7	-	-	0.6	0.0	0.0	-	-	0.0	0.3
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	-	0	1	1	0	-	2	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	-	-	0.0	0.2	1.7	-	-	0.4	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Marineland Parkway - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Data

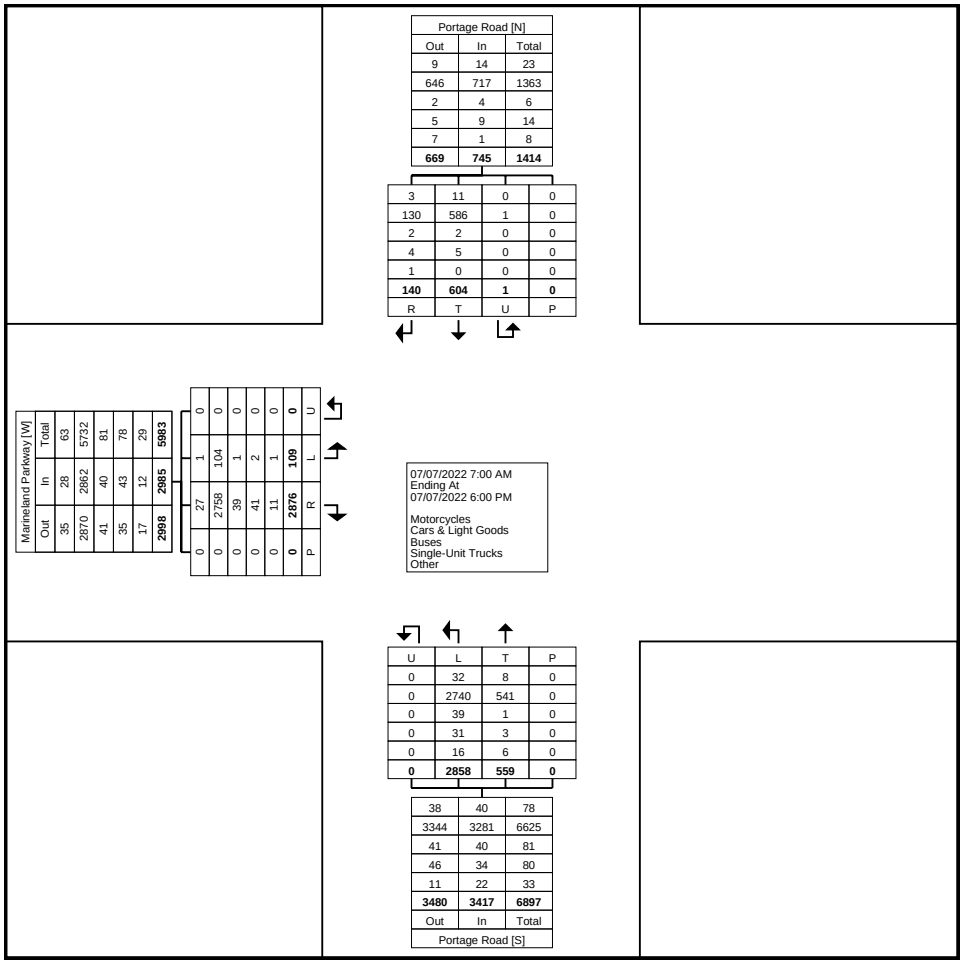
Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	3	33	0	0	36	51	9	0	0	60	6	1	0	0	7	103
7:15 AM	1	34	0	0	35	42	12	0	0	54	6	3	0	0	9	98
7:30 AM	1	35	0	0	36	56	13	0	0	69	7	2	0	0	9	114
7:45 AM	4	48	0	0	52	67	18	0	0	85	4	3	0	0	7	144
Hourly Total	9	150	0	0	159	216	52	0	0	268	23	9	0	0	32	459
8:00 AM	2	45	0	0	47	75	17	0	0	92	3	5	0	0	8	147
8:15 AM	3	51	0	0	54	68	13	0	0	81	6	2	0	0	8	143
8:30 AM	1	74	0	0	75	85	21	0	0	106	19	1	0	0	20	201
8:45 AM	2	75	0	0	77	72	12	0	0	84	13	0	0	0	13	174
Hourly Total	8	245	0	0	253	300	63	0	0	363	41	8	0	0	49	665
9:00 AM	3	57	0	0	60	67	15	0	0	82	9	0	0	0	9	151
9:15 AM	6	72	0	0	78	77	19	0	0	96	16	1	0	0	17	191
9:30 AM	2	69	0	0	71	70	12	0	0	82	13	4	0	0	17	170
9:45 AM	0	84	0	0	84	82	15	0	0	97	24	7	0	0	31	212
Hourly Total	11	282	0	0	293	296	61	0	0	357	62	12	0	0	74	724
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	6	109	0	0	115	101	7	0	0	108	25	5	0	0	30	253
11:15 AM	4	96	0	0	100	88	17	0	0	105	26	4	0	0	30	235
11:30 AM	3	101	0	0	104	113	21	0	0	134	25	8	0	0	33	271
11:45 AM	4	91	0	0	95	100	25	0	0	125	23	7	0	0	30	250
Hourly Total	17	397	0	0	414	402	70	0	0	472	99	24	0	0	123	1009
12:00 PM	4	122	0	0	126	112	17	0	0	129	20	3	0	0	23	278
12:15 PM	3	96	0	0	99	95	15	0	0	110	18	3	0	0	21	230
12:30 PM	2	87	0	0	89	85	11	0	0	96	19	3	0	0	22	207
12:45 PM	9	94	0	0	103	99	26	0	0	125	19	5	0	0	24	252
Hourly Total	18	399	0	0	417	391	69	0	0	460	76	14	0	0	90	967
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	3	104	0	0	107	114	5	0	0	119	24	3	0	0	27	253
3:15 PM	1	127	0	0	128	88	14	0	0	102	34	5	0	0	39	269
3:30 PM	4	108	0	0	112	115	26	0	0	141	26	5	0	0	31	284
3:45 PM	0	103	0	0	103	84	26	0	0	110	24	3	0	0	27	240
Hourly Total	8	442	0	0	450	401	71	0	0	472	108	16	0	0	124	1046
4:00 PM	6	104	0	0	110	117	22	0	0	139	24	5	0	0	29	278
4:15 PM	4	105	0	0	109	98	17	0	0	115	28	9	0	0	37	261
4:30 PM	5	128	0	0	133	100	23	0	0	123	21	5	1	0	27	283
4:45 PM	10	129	0	0	139	105	22	0	0	127	23	8	0	0	31	297

Hourly Total	25	466	0	0	491	420	84	0	0	504	96	27	1	0	124	1119
5:00 PM	1	112	0	0	113	137	17	0	0	154	21	12	0	0	33	300
5:15 PM	3	134	0	0	137	98	33	0	0	131	34	4	0	0	38	306
5:30 PM	3	132	0	0	135	113	17	0	0	130	27	8	0	0	35	300
5:45 PM	6	117	0	0	123	84	22	0	0	106	17	6	0	0	23	252
Hourly Total	13	495	0	0	508	432	89	0	0	521	99	30	0	0	129	1158
Grand Total	109	2876	0	0	2985	2858	559	0	0	3417	604	140	1	0	745	7147
Approach %	3.7	96.3	0.0	-	-	83.6	16.4	0.0	-	-	81.1	18.8	0.1	-	-	-
Total %	1.5	40.2	0.0	-	41.8	40.0	7.8	0.0	-	47.8	8.5	2.0	0.0	-	10.4	-
Motorcycles	1	27	0	-	28	32	8	0	-	40	11	3	0	-	14	82
% Motorcycles	0.9	0.9	-	-	0.9	1.1	1.4	-	-	1.2	1.8	2.1	0.0	-	1.9	1.1
Cars & Light Goods	104	2758	0	-	2862	2740	541	0	-	3281	586	130	1	-	717	6860
% Cars & Light Goods	95.4	95.9	-	-	95.9	95.9	96.8	-	-	96.0	97.0	92.9	100.0	-	96.2	96.0
Buses	1	39	0	-	40	39	1	0	-	40	2	2	0	-	4	84
% Buses	0.9	1.4	-	-	1.3	1.4	0.2	-	-	1.2	0.3	1.4	0.0	-	0.5	1.2
Single-Unit Trucks	2	41	0	-	43	31	3	0	-	34	5	4	0	-	9	86
% Single-Unit Trucks	1.8	1.4	-	-	1.4	1.1	0.5	-	-	1.0	0.8	2.9	0.0	-	1.2	1.2
Articulated Trucks	0	7	0	-	7	8	1	0	-	9	0	0	0	-	0	16
% Articulated Trucks	0.0	0.2	-	-	0.2	0.3	0.2	-	-	0.3	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	1	4	0	-	5	8	5	0	-	13	0	1	0	-	1	19
% Bicycles on Road	0.9	0.1	-	-	0.2	0.3	0.9	-	-	0.4	0.0	0.7	0.0	-	0.1	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022

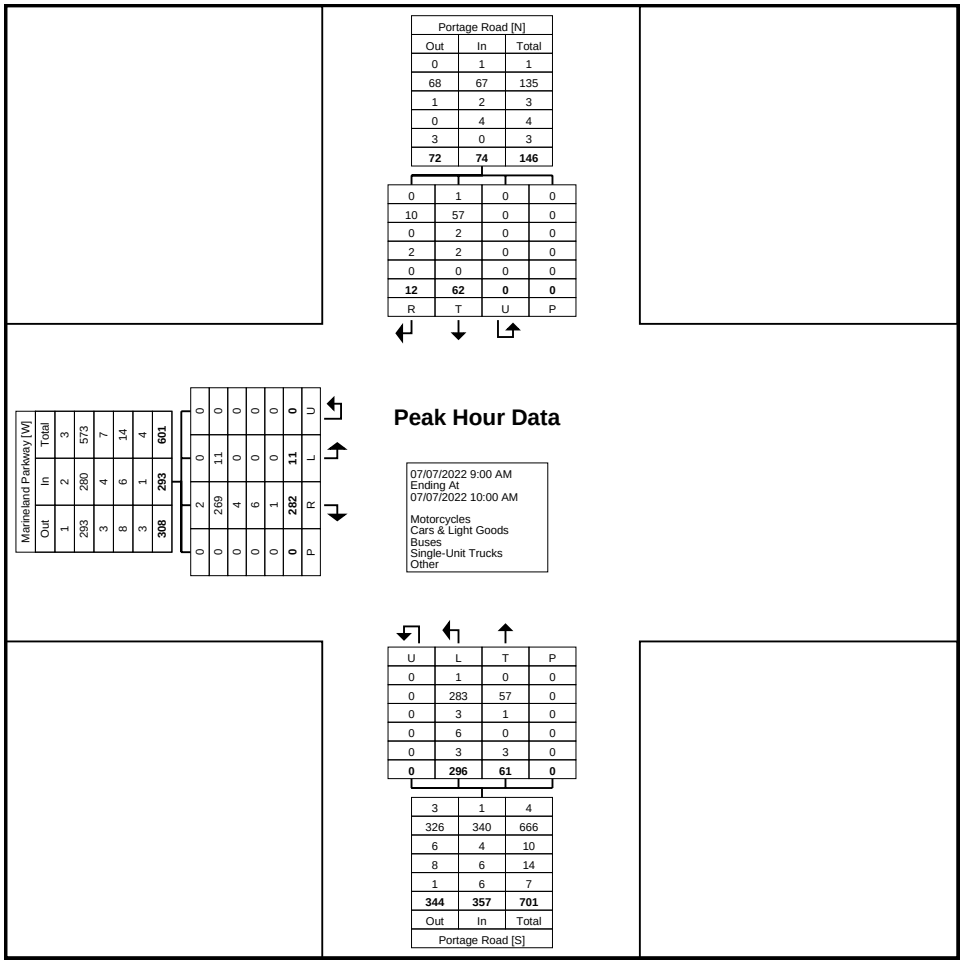
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	3	57	0	0	60	67	15	0	0	82	9	0	0	0	9	151
9:15 AM	6	72	0	0	78	77	19	0	0	96	16	1	0	0	17	191
9:30 AM	2	69	0	0	71	70	12	0	0	82	13	4	0	0	17	170
9:45 AM	0	84	0	0	84	82	15	0	0	97	24	7	0	0	31	212
Total	11	282	0	0	293	296	61	0	0	357	62	12	0	0	74	724
Approach %	3.8	96.2	0.0	-	-	82.9	17.1	0.0	-	-	83.8	16.2	0.0	-	-	-
Total %	1.5	39.0	0.0	-	40.5	40.9	8.4	0.0	-	49.3	8.6	1.7	0.0	-	10.2	-
PHF	0.458	0.839	0.000	-	0.872	0.902	0.803	0.000	-	0.920	0.646	0.429	0.000	-	0.597	0.854
Motorcycles	0	2	0	-	2	1	0	0	-	1	1	0	0	-	1	4
% Motorcycles	0.0	0.7	-	-	0.7	0.3	0.0	-	-	0.3	1.6	0.0	-	-	1.4	0.6
Cars & Light Goods	11	269	0	-	280	283	57	0	-	340	57	10	0	-	67	687
% Cars & Light Goods	100.0	95.4	-	-	95.6	95.6	93.4	-	-	95.2	91.9	83.3	-	-	90.5	94.9
Buses	0	4	0	-	4	3	1	0	-	4	2	0	0	-	2	10
% Buses	0.0	1.4	-	-	1.4	1.0	1.6	-	-	1.1	3.2	0.0	-	-	2.7	1.4
Single-Unit Trucks	0	6	0	-	6	6	0	0	-	6	2	2	0	-	4	16
% Single-Unit Trucks	0.0	2.1	-	-	2.0	2.0	0.0	-	-	1.7	3.2	16.7	-	-	5.4	2.2
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	-	-	0.0	0.7	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	1	3	0	-	4	0	0	0	-	0	5
% Bicycles on Road	0.0	0.4	-	-	0.3	0.3	4.9	-	-	1.1	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022

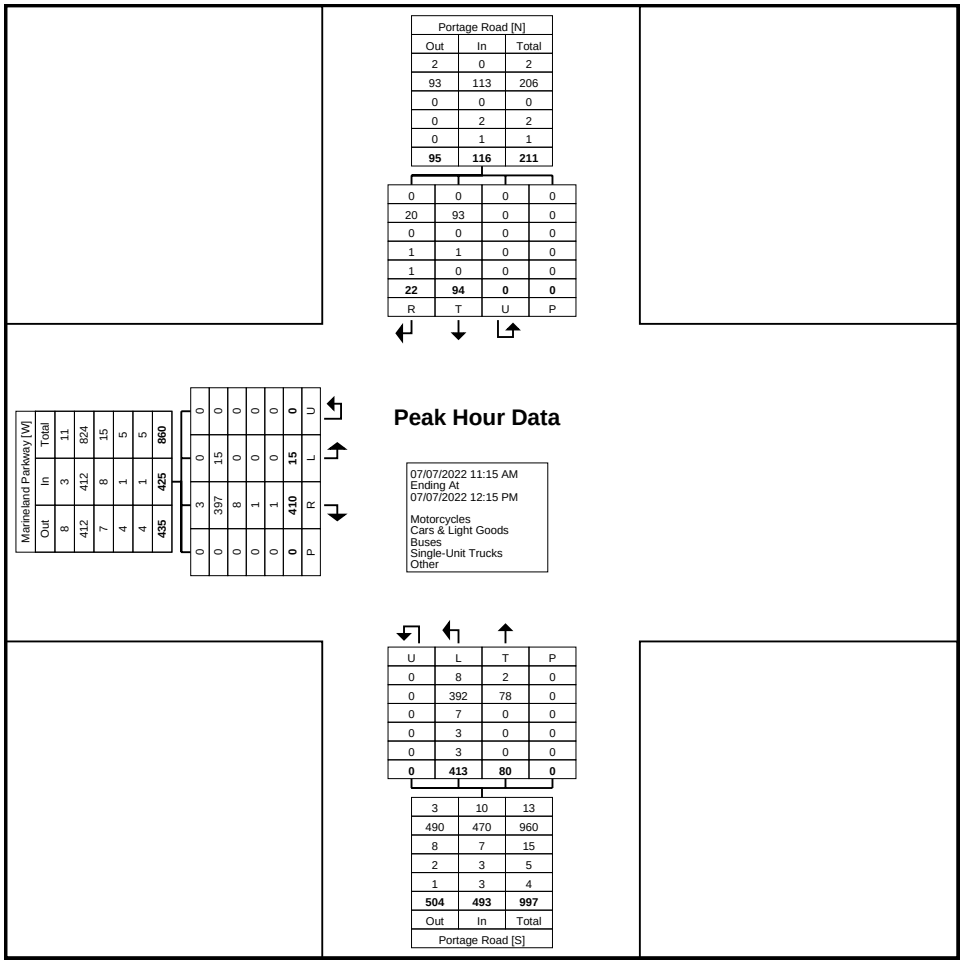
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:15 AM	4	96	0	0	100	88	17	0	0	105	26	4	0	0	30	235
11:30 AM	3	101	0	0	104	113	21	0	0	134	25	8	0	0	33	271
11:45 AM	4	91	0	0	95	100	25	0	0	125	23	7	0	0	30	250
12:00 PM	4	122	0	0	126	112	17	0	0	129	20	3	0	0	23	278
Total	15	410	0	0	425	413	80	0	0	493	94	22	0	0	116	1034
Approach %	3.5	96.5	0.0	-	-	83.8	16.2	0.0	-	-	81.0	19.0	0.0	-	-	-
Total %	1.5	39.7	0.0	-	41.1	39.9	7.7	0.0	-	47.7	9.1	2.1	0.0	-	11.2	-
PHF	0.938	0.840	0.000	-	0.843	0.914	0.800	0.000	-	0.920	0.904	0.688	0.000	-	0.879	0.930
Motorcycles	0	3	0	-	3	8	2	0	-	10	0	0	0	-	0	13
% Motorcycles	0.0	0.7	-	-	0.7	1.9	2.5	-	-	2.0	0.0	0.0	-	-	0.0	1.3
Cars & Light Goods	15	397	0	-	412	392	78	0	-	470	93	20	0	-	113	995
% Cars & Light Goods	100.0	96.8	-	-	96.9	94.9	97.5	-	-	95.3	98.9	90.9	-	-	97.4	96.2
Buses	0	8	0	-	8	7	0	0	-	7	0	0	0	-	0	15
% Buses	0.0	2.0	-	-	1.9	1.7	0.0	-	-	1.4	0.0	0.0	-	-	0.0	1.5
Single-Unit Trucks	0	1	0	-	1	3	0	0	-	3	1	1	0	-	2	6
% Single-Unit Trucks	0.0	0.2	-	-	0.2	0.7	0.0	-	-	0.6	1.1	4.5	-	-	1.7	0.6
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	1	0	-	1	2	0	0	-	2	0	1	0	-	1	4
% Bicycles on Road	0.0	0.2	-	-	0.2	0.5	0.0	-	-	0.4	0.0	4.5	-	-	0.9	0.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022

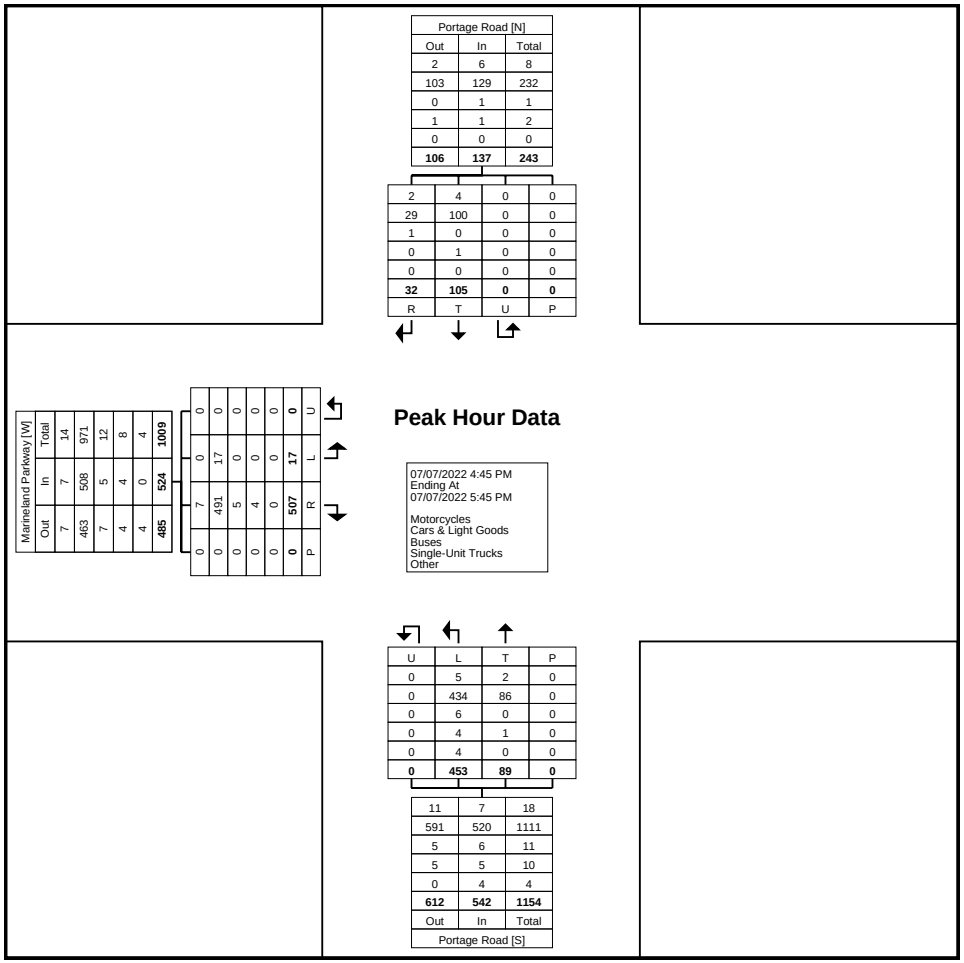
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Marineland Parkway Eastbound					Portage Road Northbound					Portage Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	10	129	0	0	139	105	22	0	0	127	23	8	0	0	31	297
5:00 PM	1	112	0	0	113	137	17	0	0	154	21	12	0	0	33	300
5:15 PM	3	134	0	0	137	98	33	0	0	131	34	4	0	0	38	306
5:30 PM	3	132	0	0	135	113	17	0	0	130	27	8	0	0	35	300
Total	17	507	0	0	524	453	89	0	0	542	105	32	0	0	137	1203
Approach %	3.2	96.8	0.0	-	-	83.6	16.4	0.0	-	-	76.6	23.4	0.0	-	-	-
Total %	1.4	42.1	0.0	-	43.6	37.7	7.4	0.0	-	45.1	8.7	2.7	0.0	-	11.4	-
PHF	0.425	0.946	0.000	-	0.942	0.827	0.674	0.000	-	0.880	0.772	0.667	0.000	-	0.901	0.983
Motorcycles	0	7	0	-	7	5	2	0	-	7	4	2	0	-	6	20
% Motorcycles	0.0	1.4	-	-	1.3	1.1	2.2	-	-	1.3	3.8	6.3	-	-	4.4	1.7
Cars & Light Goods	17	491	0	-	508	434	86	0	-	520	100	29	0	-	129	1157
% Cars & Light Goods	100.0	96.8	-	-	96.9	95.8	96.6	-	-	95.9	95.2	90.6	-	-	94.2	96.2
Buses	0	5	0	-	5	6	0	0	-	6	0	1	0	-	1	12
% Buses	0.0	1.0	-	-	1.0	1.3	0.0	-	-	1.1	0.0	3.1	-	-	0.7	1.0
Single-Unit Trucks	0	4	0	-	4	4	1	0	-	5	1	0	0	-	1	10
% Single-Unit Trucks	0.0	0.8	-	-	0.8	0.9	1.1	-	-	0.9	1.0	0.0	-	-	0.7	0.8
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	-	-	0.0	0.4	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	-	-	0.0	0.4	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Portage Road- Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Data

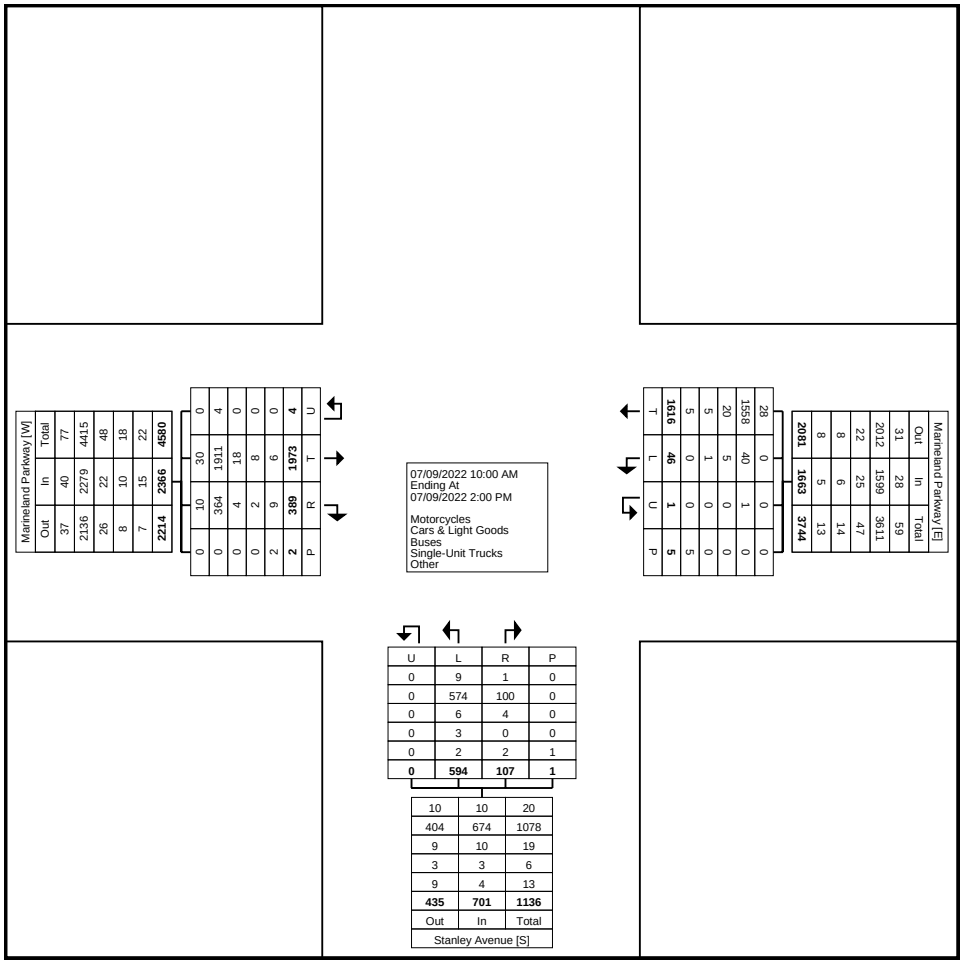
Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
10:00 AM	103	23	0	1	126	3	95	0	0	98	32	4	0	0	36	260
10:15 AM	94	24	0	0	118	0	84	0	0	84	34	8	0	0	42	244
10:30 AM	117	30	0	0	147	3	81	0	2	84	34	8	0	1	42	273
10:45 AM	120	26	0	0	146	4	84	0	0	88	32	4	0	0	36	270
Hourly Total	434	103	0	1	537	10	344	0	2	354	132	24	0	1	156	1047
11:00 AM	140	28	1	0	169	9	85	0	0	94	22	9	0	0	31	294
11:15 AM	127	30	0	0	157	1	100	0	0	101	33	6	0	0	39	297
11:30 AM	119	25	1	0	145	2	107	0	0	109	37	6	0	0	43	297
11:45 AM	113	16	0	0	129	1	99	1	1	101	35	6	0	0	41	271
Hourly Total	499	99	2	0	600	13	391	1	1	405	127	27	0	0	154	1159
12:00 PM	120	22	0	1	142	5	93	0	0	98	46	8	0	0	54	294
12:15 PM	134	17	0	0	151	3	112	0	0	115	32	7	0	0	39	305
12:30 PM	139	24	2	0	165	1	100	0	1	101	26	8	0	0	34	300
12:45 PM	143	23	0	0	166	2	129	0	0	131	38	7	0	0	45	342
Hourly Total	536	86	2	1	624	11	434	0	1	445	142	30	0	0	172	1241
1:00 PM	119	29	0	0	148	4	98	0	0	102	52	3	0	0	55	305
1:15 PM	125	18	0	0	143	4	111	0	0	115	39	2	0	0	41	299
1:30 PM	130	31	0	0	161	3	111	0	1	114	54	10	0	0	64	339
1:45 PM	130	23	0	0	153	1	127	0	0	128	48	11	0	0	59	340
Hourly Total	504	101	0	0	605	12	447	0	1	459	193	26	0	0	219	1283
Grand Total	1973	389	4	2	2366	46	1616	1	5	1663	594	107	0	1	701	4730
Approach %	83.4	16.4	0.2	-	-	2.8	97.2	0.1	-	-	84.7	15.3	0.0	-	-	-
Total %	41.7	8.2	0.1	-	50.0	1.0	34.2	0.0	-	35.2	12.6	2.3	0.0	-	14.8	-
Motorcycles	30	10	0	-	40	0	28	0	-	28	9	1	0	-	10	78
% Motorcycles	1.5	2.6	0.0	-	1.7	0.0	1.7	0.0	-	1.7	1.5	0.9	-	-	1.4	1.6
Cars & Light Goods	1911	364	4	-	2279	40	1558	1	-	1599	574	100	0	-	674	4552
% Cars & Light Goods	96.9	93.6	100.0	-	96.3	87.0	96.4	100.0	-	96.2	96.6	93.5	-	-	96.1	96.2
Buses	18	4	0	-	22	5	20	0	-	25	6	4	0	-	10	57
% Buses	0.9	1.0	0.0	-	0.9	10.9	1.2	0.0	-	1.5	1.0	3.7	-	-	1.4	1.2
Single-Unit Trucks	8	2	0	-	10	1	5	0	-	6	3	0	0	-	3	19
% Single-Unit Trucks	0.4	0.5	0.0	-	0.4	2.2	0.3	0.0	-	0.4	0.5	0.0	-	-	0.4	0.4
Articulated Trucks	3	1	0	-	4	0	1	0	-	1	0	0	0	-	0	5
% Articulated Trucks	0.2	0.3	0.0	-	0.2	0.0	0.1	0.0	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	3	8	0	-	11	0	4	0	-	4	2	2	0	-	4	19
% Bicycles on Road	0.2	2.1	0.0	-	0.5	0.0	0.2	0.0	-	0.2	0.3	1.9	-	-	0.6	0.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	3	-	-	-	-	1	-	-

% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	60.0	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	40.0	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Saturday
Site Code: 220026
Start Date: 07/09/2022

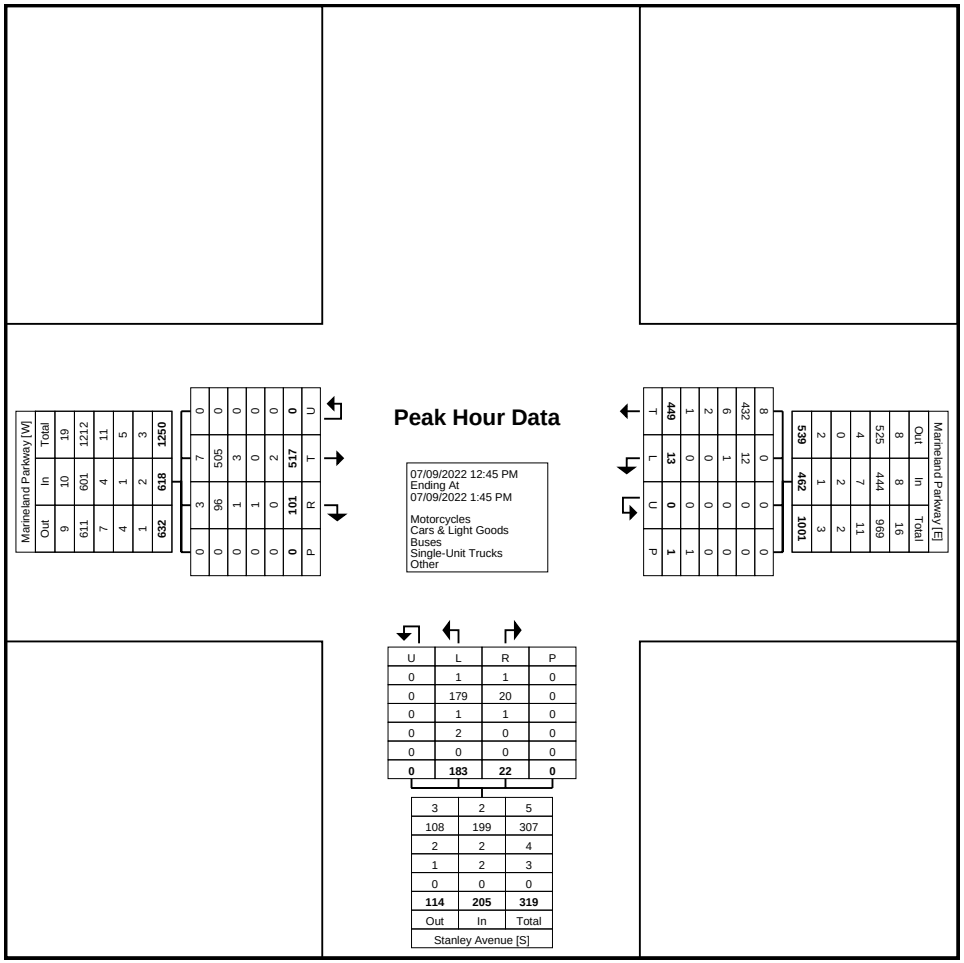
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
12:45 PM	143	23	0	0	166	2	129	0	0	131	38	7	0	0	45	342
1:00 PM	119	29	0	0	148	4	98	0	0	102	52	3	0	0	55	305
1:15 PM	125	18	0	0	143	4	111	0	0	115	39	2	0	0	41	299
1:30 PM	130	31	0	0	161	3	111	0	1	114	54	10	0	0	64	339
Total	517	101	0	0	618	13	449	0	1	462	183	22	0	0	205	1285
Approach %	83.7	16.3	0.0	-	-	2.8	97.2	0.0	-	-	89.3	10.7	0.0	-	-	-
Total %	40.2	7.9	0.0	-	48.1	1.0	34.9	0.0	-	36.0	14.2	1.7	0.0	-	16.0	-
PHF	0.904	0.815	0.000	-	0.931	0.813	0.870	0.000	-	0.882	0.847	0.550	0.000	-	0.801	0.939
Motorcycles	7	3	0	-	10	0	8	0	-	8	1	1	0	-	2	20
% Motorcycles	1.4	3.0	-	-	1.6	0.0	1.8	-	-	1.7	0.5	4.5	-	-	1.0	1.6
Cars & Light Goods	505	96	0	-	601	12	432	0	-	444	179	20	0	-	199	1244
% Cars & Light Goods	97.7	95.0	-	-	97.2	92.3	96.2	-	-	96.1	97.8	90.9	-	-	97.1	96.8
Buses	3	1	0	-	4	1	6	0	-	7	1	1	0	-	2	13
% Buses	0.6	1.0	-	-	0.6	7.7	1.3	-	-	1.5	0.5	4.5	-	-	1.0	1.0
Single-Unit Trucks	0	1	0	-	1	0	2	0	-	2	2	0	0	-	2	5
% Single-Unit Trucks	0.0	1.0	-	-	0.2	0.0	0.4	-	-	0.4	1.1	0.0	-	-	1.0	0.4
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	1	0	0	-	1	0	1	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.2	0.0	-	-	0.2	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Data

Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	31	49	0	0	80	3	49	0	1	52	39	4	0	0	43	175
7:15 AM	32	47	0	0	79	2	45	0	0	47	35	4	0	0	39	165
7:30 AM	38	46	0	0	84	2	58	0	0	60	32	2	0	0	34	178
7:45 AM	47	78	0	0	125	3	65	0	0	68	40	5	0	0	45	238
Hourly Total	148	220	0	0	368	10	217	0	1	227	146	15	0	0	161	756
8:00 AM	45	35	0	0	80	6	71	0	0	77	26	1	0	0	27	184
8:15 AM	52	41	0	0	93	2	71	0	0	73	32	5	0	0	37	203
8:30 AM	72	30	0	0	102	3	82	0	0	85	44	3	0	0	47	234
8:45 AM	68	39	0	0	107	6	73	0	0	79	41	9	0	0	50	236
Hourly Total	237	145	0	0	382	17	297	0	0	314	143	18	0	0	161	857
9:00 AM	53	29	0	0	82	2	61	0	0	63	28	4	0	0	32	177
9:15 AM	72	35	0	0	107	1	78	0	0	79	44	6	0	0	50	236
9:30 AM	68	30	0	0	98	2	68	0	0	70	43	4	0	0	47	215
9:45 AM	85	28	0	0	113	8	85	0	2	93	38	5	0	0	43	249
Hourly Total	278	122	0	0	400	13	292	0	2	305	153	19	0	0	172	877
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	98	30	0	0	128	8	93	0	0	101	48	11	0	0	59	288
11:15 AM	95	45	0	0	140	2	89	0	1	91	45	6	0	0	51	282
11:30 AM	99	38	0	0	137	3	118	0	0	121	46	5	0	0	51	309
11:45 AM	83	38	0	0	121	4	101	0	1	105	49	14	0	0	63	289
Hourly Total	375	151	0	0	526	17	401	0	2	418	188	36	0	0	224	1168
12:00 PM	114	31	0	0	145	4	113	0	0	117	71	8	0	0	79	341
12:15 PM	96	44	0	0	140	5	88	0	2	93	47	8	0	0	55	288
12:30 PM	88	49	0	0	137	5	85	0	0	90	48	4	0	0	52	279
12:45 PM	83	56	1	0	140	7	93	0	4	100	37	12	0	0	49	289
Hourly Total	381	180	1	0	562	21	379	0	6	400	203	32	0	0	235	1197
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	106	40	1	0	147	4	109	0	0	113	82	5	0	0	87	347
3:15 PM	115	48	0	0	163	6	90	0	1	96	62	8	0	0	70	329
3:30 PM	108	48	0	0	156	8	112	0	6	120	128	7	0	0	135	411
3:45 PM	95	35	0	0	130	2	84	0	1	86	81	7	0	1	88	304
Hourly Total	424	171	1	0	596	20	395	0	8	415	353	27	0	1	380	1391
4:00 PM	106	57	0	0	163	5	126	0	0	131	121	5	0	0	126	420
4:15 PM	117	42	0	0	159	8	98	0	0	106	78	6	0	0	84	349
4:30 PM	123	55	0	0	178	1	105	0	0	106	125	10	0	0	135	419
4:45 PM	131	39	1	0	171	7	108	0	0	115	73	9	0	0	82	368

Hourly Total	477	193	1	0	671	21	437	0	0	458	397	30	0	0	427	1556
5:00 PM	106	29	0	0	135	9	132	0	1	141	110	6	0	0	116	392
5:15 PM	133	36	0	0	169	6	104	0	2	110	81	7	0	0	88	367
5:30 PM	120	34	0	0	154	5	113	0	0	118	66	9	0	0	75	347
5:45 PM	117	17	0	0	134	5	89	0	0	94	43	9	0	0	52	280
Hourly Total	476	116	0	0	592	25	438	0	3	463	300	31	0	0	331	1386
Grand Total	2796	1298	3	0	4097	144	2856	0	22	3000	1883	208	0	1	2091	9188
Approach %	68.2	31.7	0.1	-	-	4.8	95.2	0.0	-	-	90.1	9.9	0.0	-	-	-
Total %	30.4	14.1	0.0	-	44.6	1.6	31.1	0.0	-	32.7	20.5	2.3	0.0	-	22.8	-
Motorcycles	24	6	0	-	30	2	32	0	-	34	16	2	0	-	18	82
% Motorcycles	0.9	0.5	0.0	-	0.7	1.4	1.1	-	-	1.1	0.8	1.0	-	-	0.9	0.9
Cars & Light Goods	2693	1192	3	-	3888	113	2755	0	-	2868	1757	186	0	-	1943	8699
% Cars & Light Goods	96.3	91.8	100.0	-	94.9	78.5	96.5	-	-	95.6	93.3	89.4	-	-	92.9	94.7
Buses	32	10	0	-	42	13	29	0	-	42	13	10	0	-	23	107
% Buses	1.1	0.8	0.0	-	1.0	9.0	1.0	-	-	1.4	0.7	4.8	-	-	1.1	1.2
Single-Unit Trucks	37	65	0	-	102	11	22	0	-	33	66	5	0	-	71	206
% Single-Unit Trucks	1.3	5.0	0.0	-	2.5	7.6	0.8	-	-	1.1	3.5	2.4	-	-	3.4	2.2
Articulated Trucks	7	23	0	-	30	0	9	0	-	9	27	0	0	-	27	66
% Articulated Trucks	0.3	1.8	0.0	-	0.7	0.0	0.3	-	-	0.3	1.4	0.0	-	-	1.3	0.7
Bicycles on Road	3	2	0	-	5	5	9	0	-	14	4	5	0	-	9	28
% Bicycles on Road	0.1	0.2	0.0	-	0.1	3.5	0.3	-	-	0.5	0.2	2.4	-	-	0.4	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	18	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	81.8	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	18.2	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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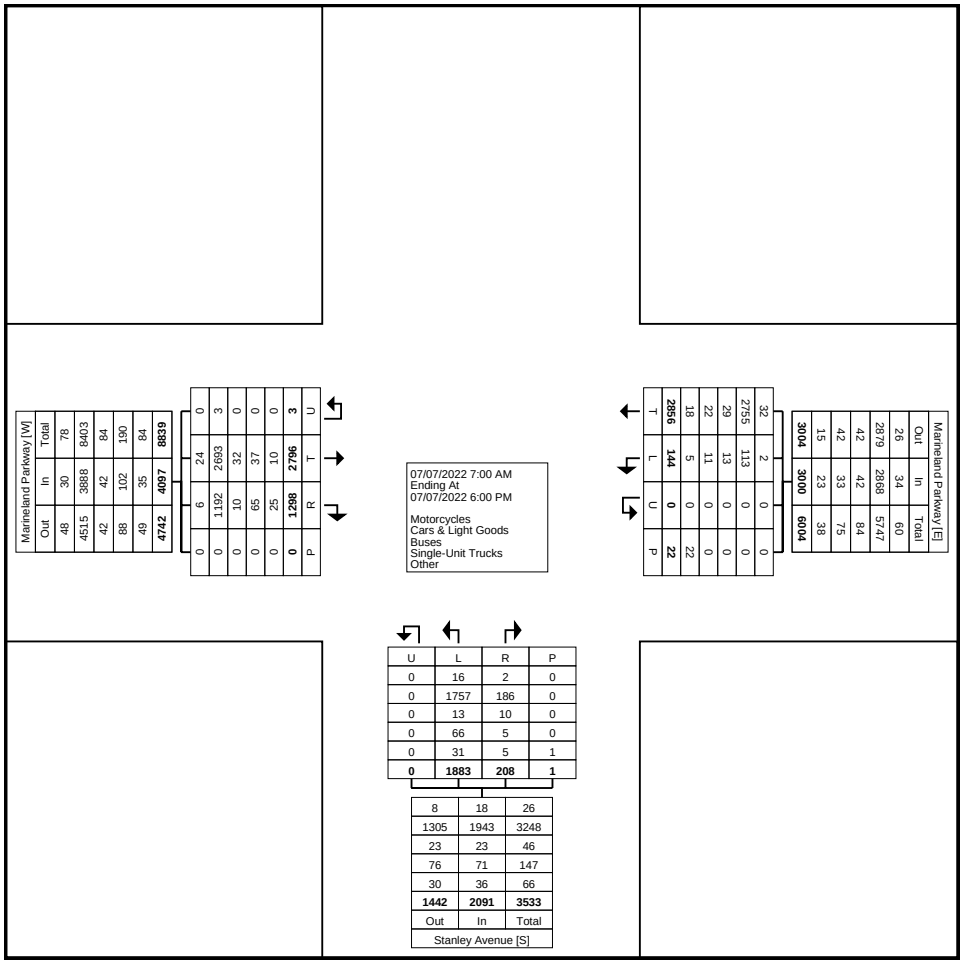
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022



Marineland Parkway [W]	U	T	R	P
Total	8839	2796	1298	0
In	4097	2693	1192	0
Out	4742	103	106	0
78	0	24	6	0
30	3	2693	1192	0
3888	0	32	10	0
4515	0	47	65	0
8403	0	10	25	0
84	3	2796	1298	0
42	0	32	10	0
42	0	47	65	0
88	0	10	25	0
190	0	2796	1298	0
102	0	32	10	0
88	0	47	65	0
49	0	10	25	0
84	0	3	6	0
35	0	0	0	0
4742	0	0	0	0
4097	3	24	6	0

Marineland Parkway [E]	T	L	U	P
Total	6004	3000	0	22
In	3004	3000	0	22
Out	0	0	0	0
26	0	0	0	0
34	0	0	0	0
60	0	0	0	0
2879	2856	144	0	22
2868	2856	144	0	22
5747	5712	288	0	44
42	42	0	0	0
42	42	0	0	0
84	84	0	0	0
15	15	0	0	0
23	18	5	0	0
33	22	11	0	0
75	29	13	0	0
38	2755	113	0	0
3004	32	2	0	0
3000	2856	144	0	22
6004	2887	146	0	22

U	L	R	P
0	16	2	0
0	1757	186	0
0	13	10	0
0	66	5	0
0	31	5	1
0	**1883**	**208**	**1**

8	18	26
1305	1943	3248
23	23	46
76	71	147
30	36	66
1442	**2091**	**3533**
Out	In	Total
Stanley Avenue [S]		

Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022

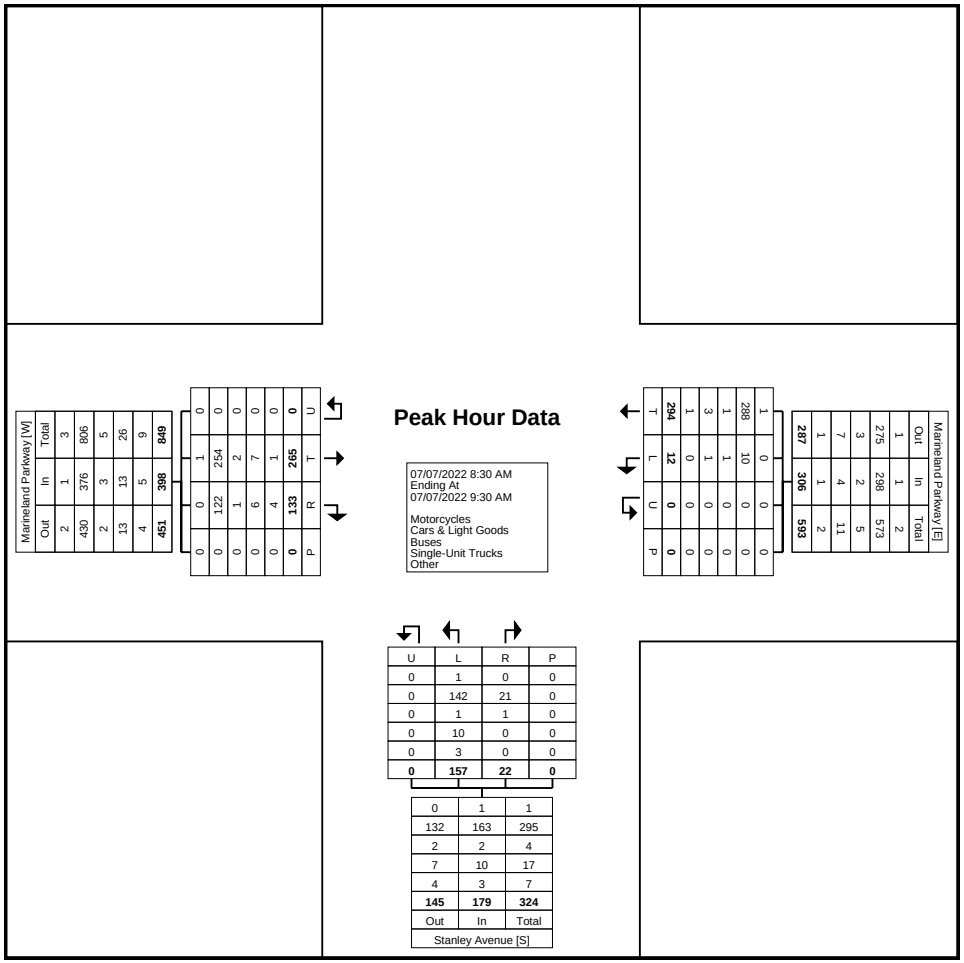
Turning Movement Peak Hour Data (8:30 AM)

Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:30 AM	72	30	0	0	102	3	82	0	0	85	44	3	0	0	47	234
8:45 AM	68	39	0	0	107	6	73	0	0	79	41	9	0	0	50	236
9:00 AM	53	29	0	0	82	2	61	0	0	63	28	4	0	0	32	177
9:15 AM	72	35	0	0	107	1	78	0	0	79	44	6	0	0	50	236
Total	265	133	0	0	398	12	294	0	0	306	157	22	0	0	179	883
Approach %	66.6	33.4	0.0	-	-	3.9	96.1	0.0	-	-	87.7	12.3	0.0	-	-	-
Total %	30.0	15.1	0.0	-	45.1	1.4	33.3	0.0	-	34.7	17.8	2.5	0.0	-	20.3	-
PHF	0.920	0.853	0.000	-	0.930	0.500	0.896	0.000	-	0.900	0.892	0.611	0.000	-	0.895	0.935
Motorcycles	1	0	0	-	1	0	1	0	-	1	1	0	0	-	1	3
% Motorcycles	0.4	0.0	-	-	0.3	0.0	0.3	-	-	0.3	0.6	0.0	-	-	0.6	0.3
Cars & Light Goods	254	122	0	-	376	10	288	0	-	298	142	21	0	-	163	837
% Cars & Light Goods	95.8	91.7	-	-	94.5	83.3	98.0	-	-	97.4	90.4	95.5	-	-	91.1	94.8
Buses	2	1	0	-	3	1	1	0	-	2	1	1	0	-	2	7
% Buses	0.8	0.8	-	-	0.8	8.3	0.3	-	-	0.7	0.6	4.5	-	-	1.1	0.8
Single-Unit Trucks	7	6	0	-	13	1	3	0	-	4	10	0	0	-	10	27
% Single-Unit Trucks	2.6	4.5	-	-	3.3	8.3	1.0	-	-	1.3	6.4	0.0	-	-	5.6	3.1
Articulated Trucks	0	3	0	-	3	0	1	0	-	1	2	0	0	-	2	6
% Articulated Trucks	0.0	2.3	-	-	0.8	0.0	0.3	-	-	0.3	1.3	0.0	-	-	1.1	0.7
Bicycles on Road	1	1	0	-	2	0	0	0	-	0	1	0	0	-	1	3
% Bicycles on Road	0.4	0.8	-	-	0.5	0.0	0.0	-	-	0.0	0.6	0.0	-	-	0.6	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (8:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022

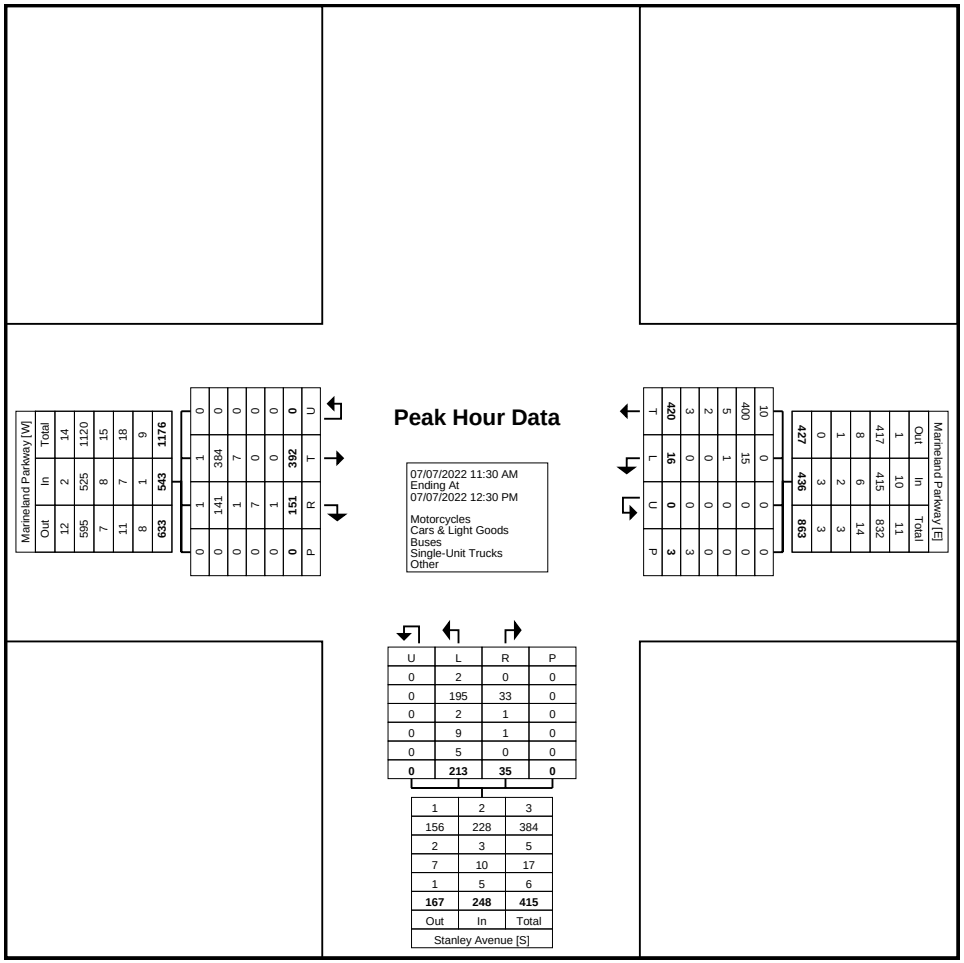
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:30 AM	99	38	0	0	137	3	118	0	0	121	46	5	0	0	51	309
11:45 AM	83	38	0	0	121	4	101	0	1	105	49	14	0	0	63	289
12:00 PM	114	31	0	0	145	4	113	0	0	117	71	8	0	0	79	341
12:15 PM	96	44	0	0	140	5	88	0	2	93	47	8	0	0	55	288
Total	392	151	0	0	543	16	420	0	3	436	213	35	0	0	248	1227
Approach %	72.2	27.8	0.0	-	-	3.7	96.3	0.0	-	-	85.9	14.1	0.0	-	-	-
Total %	31.9	12.3	0.0	-	44.3	1.3	34.2	0.0	-	35.5	17.4	2.9	0.0	-	20.2	-
PHF	0.860	0.858	0.000	-	0.936	0.800	0.890	0.000	-	0.901	0.750	0.625	0.000	-	0.785	0.900
Motorcycles	1	1	0	-	2	0	10	0	-	10	2	0	0	-	2	14
% Motorcycles	0.3	0.7	-	-	0.4	0.0	2.4	-	-	2.3	0.9	0.0	-	-	0.8	1.1
Cars & Light Goods	384	141	0	-	525	15	400	0	-	415	195	33	0	-	228	1168
% Cars & Light Goods	98.0	93.4	-	-	96.7	93.8	95.2	-	-	95.2	91.5	94.3	-	-	91.9	95.2
Buses	7	1	0	-	8	1	5	0	-	6	2	1	0	-	3	17
% Buses	1.8	0.7	-	-	1.5	6.3	1.2	-	-	1.4	0.9	2.9	-	-	1.2	1.4
Single-Unit Trucks	0	7	0	-	7	0	2	0	-	2	9	1	0	-	10	19
% Single-Unit Trucks	0.0	4.6	-	-	1.3	0.0	0.5	-	-	0.5	4.2	2.9	-	-	4.0	1.5
Articulated Trucks	0	1	0	-	1	0	1	0	-	1	4	0	0	-	4	6
% Articulated Trucks	0.0	0.7	-	-	0.2	0.0	0.2	-	-	0.2	1.9	0.0	-	-	1.6	0.5
Bicycles on Road	0	0	0	-	0	0	2	0	-	2	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.5	-	-	0.5	0.5	0.0	-	-	0.4	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022



Marineland Parkway [W]							
Total	14	1120	15	18	9	**1176**	
In	2	525	8	7	1	**543**	
Out	12	595	7	11	8	**633**	

U	L	T	R	P
0	0	0	0	0
1	384	7	0	0
1	141	1	7	0
0	0	0	0	0
0	**392**	0	1	**0**
U	T	R	P	

T	L	U	P
420	**16**	**0**	**3**
3	0	0	3
2	0	0	0
5	1	0	0
400	15	0	0
10	0	0	0

427	0	1	1
436	3	2	10
863	3	3	11
8	6	14	
417	415	832	
1	10	11	
Out	In	Total	

U	L	R	P
0	2	0	0
0	195	33	0
0	2	1	0
0	9	1	0
0	5	0	0
0	**213**	**35**	**0**

1	2	3
156	228	384
2	3	5
7	10	17
1	5	6
167	**248**	**415**
Out	In	Total

Turning Movement Peak Hour Data Plot (11:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022

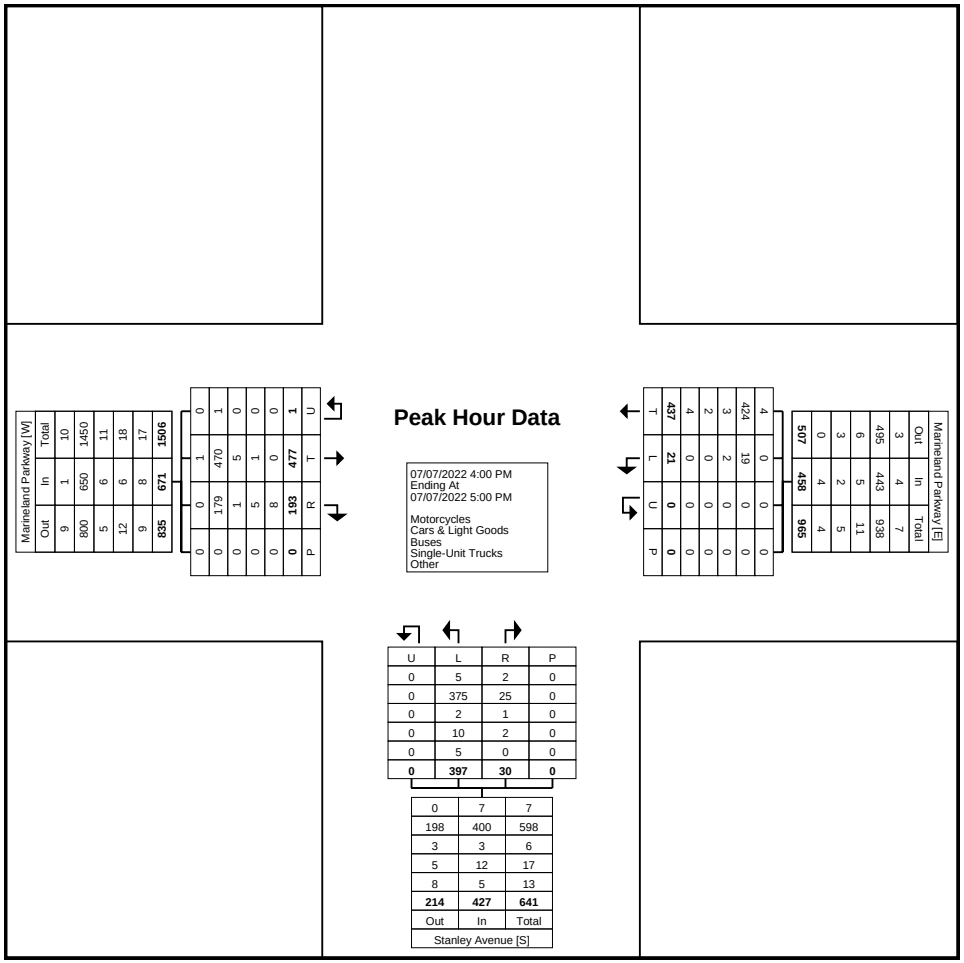
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Marineland Parkway Eastbound					Marineland Parkway Westbound					Stanley Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	106	57	0	0	163	5	126	0	0	131	121	5	0	0	126	420
4:15 PM	117	42	0	0	159	8	98	0	0	106	78	6	0	0	84	349
4:30 PM	123	55	0	0	178	1	105	0	0	106	125	10	0	0	135	419
4:45 PM	131	39	1	0	171	7	108	0	0	115	73	9	0	0	82	368
Total	477	193	1	0	671	21	437	0	0	458	397	30	0	0	427	1556
Approach %	71.1	28.8	0.1	-	-	4.6	95.4	0.0	-	-	93.0	7.0	0.0	-	-	-
Total %	30.7	12.4	0.1	-	43.1	1.3	28.1	0.0	-	29.4	25.5	1.9	0.0	-	27.4	-
PHF	0.910	0.846	0.250	-	0.942	0.656	0.867	0.000	-	0.874	0.794	0.750	0.000	-	0.791	0.926
Motorcycles	1	0	0	-	1	0	4	0	-	4	5	2	0	-	7	12
% Motorcycles	0.2	0.0	0.0	-	0.1	0.0	0.9	-	-	0.9	1.3	6.7	-	-	1.6	0.8
Cars & Light Goods	470	179	1	-	650	19	424	0	-	443	375	25	0	-	400	1493
% Cars & Light Goods	98.5	92.7	100.0	-	96.9	90.5	97.0	-	-	96.7	94.5	83.3	-	-	93.7	96.0
Buses	5	1	0	-	6	2	3	0	-	5	2	1	0	-	3	14
% Buses	1.0	0.5	0.0	-	0.9	9.5	0.7	-	-	1.1	0.5	3.3	-	-	0.7	0.9
Single-Unit Trucks	1	5	0	-	6	0	2	0	-	2	10	2	0	-	12	20
% Single-Unit Trucks	0.2	2.6	0.0	-	0.9	0.0	0.5	-	-	0.4	2.5	6.7	-	-	2.8	1.3
Articulated Trucks	0	8	0	-	8	0	3	0	-	3	4	0	0	-	4	15
% Articulated Trucks	0.0	4.1	0.0	-	1.2	0.0	0.7	-	-	0.7	1.0	0.0	-	-	0.9	1.0
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.2	-	-	0.2	0.3	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Stanley Avenue - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Waters Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Data

Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
10:00 AM	7	85	1	0	0	93	0	94	34	0	0	128	0	1	1	0	0	2	40	3	5	0	0	48	271
10:15 AM	7	79	0	0	0	86	4	92	24	0	0	120	2	5	2	0	1	9	37	2	4	0	0	43	258
10:30 AM	18	104	0	0	1	122	0	68	48	0	0	116	0	1	3	0	1	4	47	1	7	0	1	55	297
10:45 AM	9	97	0	0	2	106	3	74	36	0	0	113	4	3	1	0	0	8	44	3	9	0	1	56	283
Hourly Total	41	365	1	0	3	407	7	328	142	0	0	477	6	10	7	0	2	23	168	9	25	0	2	202	1109
11:00 AM	5	118	1	0	0	124	1	82	29	0	0	112	1	3	3	0	0	7	52	3	10	0	0	65	308
11:15 AM	12	105	3	0	2	120	1	89	42	0	0	132	1	6	2	0	0	9	41	6	9	0	0	56	317
11:30 AM	11	95	2	0	2	108	1	103	43	0	0	147	2	1	6	0	0	9	47	3	10	0	0	60	324
11:45 AM	15	91	3	0	0	109	0	93	37	0	0	130	2	3	2	0	0	7	34	1	10	0	1	45	291
Hourly Total	43	409	9	0	4	461	3	367	151	0	0	521	6	13	13	0	0	32	174	13	39	0	1	226	1240
12:00 PM	11	93	2	0	0	106	1	99	42	0	0	142	4	2	4	0	0	10	48	3	16	0	0	67	325
12:15 PM	9	106	2	0	2	117	3	103	40	0	0	146	5	4	1	0	0	10	46	3	6	1	0	56	329
12:30 PM	14	121	1	0	1	136	2	90	31	0	0	123	1	1	2	0	0	4	44	3	13	0	0	60	323
12:45 PM	10	109	0	0	1	119	4	112	53	0	0	169	0	5	1	0	0	6	53	3	11	0	0	67	361
Hourly Total	44	429	5	0	4	478	10	404	166	0	0	580	10	12	8	0	0	30	191	12	46	1	0	250	1338
1:00 PM	9	96	5	0	0	110	1	100	52	0	0	153	4	0	1	0	0	5	49	0	11	1	0	61	329
1:15 PM	13	96	1	0	2	110	3	95	51	0	0	149	1	2	1	0	0	4	47	1	10	1	0	59	322
1:30 PM	9	113	2	0	3	124	4	100	58	0	0	162	1	3	5	0	0	9	36	1	11	2	0	50	345
1:45 PM	15	112	2	1	0	130	4	120	51	0	0	175	1	3	0	0	0	4	41	1	17	0	0	59	368
Hourly Total	46	417	10	1	5	474	12	415	212	0	0	639	7	8	7	0	0	22	173	3	49	4	0	229	1364
Grand Total	174	1620	25	1	16	1820	32	1514	671	0	0	2217	29	43	35	0	2	107	706	37	159	5	3	907	5051
Approach %	9.6	89.0	1.4	0.1	-	-	1.4	68.3	30.3	0.0	-	-	27.1	40.2	32.7	0.0	-	-	77.8	4.1	17.5	0.6	-	-	-
Total %	3.4	32.1	0.5	0.0	-	36.0	0.6	30.0	13.3	0.0	-	43.9	0.6	0.9	0.7	0.0	-	2.1	14.0	0.7	3.1	0.1	-	18.0	-
Motorcycles	1	27	1	0	-	29	0	25	14	0	-	39	0	0	1	0	-	1	10	0	2	0	-	12	81
% Motorcycles	0.6	1.7	4.0	0.0	-	1.6	0.0	1.7	2.1	-	-	1.8	0.0	0.0	2.9	-	-	0.9	1.4	0.0	1.3	0.0	-	1.3	1.6
Cars & Light Goods	172	1576	24	1	-	1773	31	1477	630	0	-	2138	29	38	31	0	-	98	671	36	153	5	-	865	4874
% Cars & Light Goods	98.9	97.3	96.0	100.0	-	97.4	96.9	97.6	93.9	-	-	96.4	100.0	88.4	88.6	-	-	91.6	95.0	97.3	96.2	100.0	-	95.4	96.5
Buses	1	3	0	0	-	4	0	7	19	0	-	26	0	0	0	0	-	0	19	0	4	0	-	23	53
% Buses	0.6	0.2	0.0	0.0	-	0.2	0.0	0.5	2.8	-	-	1.2	0.0	0.0	0.0	-	-	0.0	2.7	0.0	2.5	0.0	-	2.5	1.0
Single-Unit Trucks	0	7	0	0	-	7	0	4	4	0	-	8	0	0	1	0	-	1	2	1	0	0	-	3	19
% Single-Unit Trucks	0.0	0.4	0.0	0.0	-	0.4	0.0	0.3	0.6	-	-	0.4	0.0	0.0	2.9	-	-	0.9	0.3	2.7	0.0	0.0	-	0.3	0.4
Articulated Trucks	0	2	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1

Bicycles on Road	0	5	0	0	-	5	1	0	4	0	-	5	0	5	2	0	-	7	4	0	0	0	-	4	21
% Bicycles on Road	0.0	0.3	0.0	0.0	-	0.3	3.1	0.0	0.6	-	-	0.2	0.0	11.6	5.7	-	-	6.5	0.6	0.0	0.0	0.0	-	0.4	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	66.7	-	-
Pedestrians	-	-	-	-	16	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	33.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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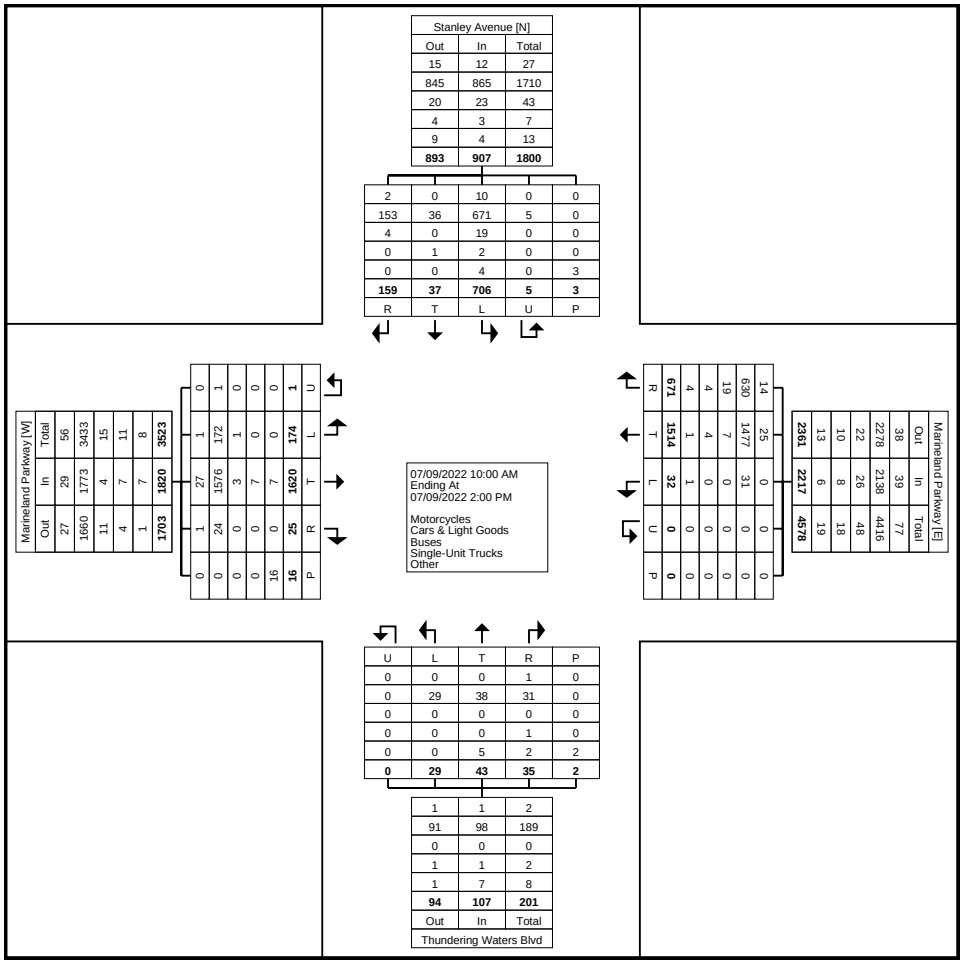
Count Name: Marineland Parkway & Thundering Waters Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Waters Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022

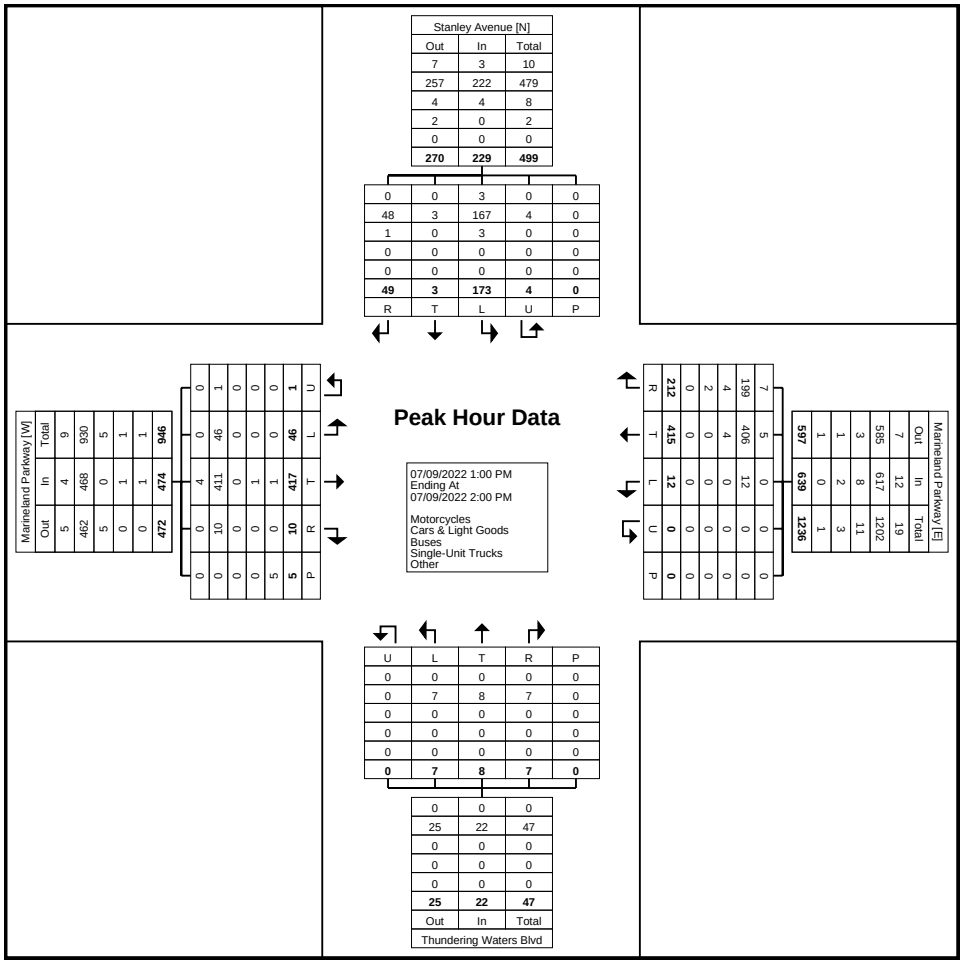
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
1:00 PM	9	96	5	0	0	110	1	100	52	0	0	153	4	0	1	0	0	5	49	0	11	1	0	61	329
1:15 PM	13	96	1	0	2	110	3	95	51	0	0	149	1	2	1	0	0	4	47	1	10	1	0	59	322
1:30 PM	9	113	2	0	3	124	4	100	58	0	0	162	1	3	5	0	0	9	36	1	11	2	0	50	345
1:45 PM	15	112	2	1	0	130	4	120	51	0	0	175	1	3	0	0	0	4	41	1	17	0	0	59	368
Total	46	417	10	1	5	474	12	415	212	0	0	639	7	8	7	0	0	22	173	3	49	4	0	229	1364
Approach %	9.7	88.0	2.1	0.2	-	-	1.9	64.9	33.2	0.0	-	-	31.8	36.4	31.8	0.0	-	-	75.5	1.3	21.4	1.7	-	-	-
Total %	3.4	30.6	0.7	0.1	-	34.8	0.9	30.4	15.5	0.0	-	46.8	0.5	0.6	0.5	0.0	-	1.6	12.7	0.2	3.6	0.3	-	16.8	-
PHF	0.767	0.923	0.500	0.250	-	0.912	0.750	0.865	0.914	0.000	-	0.913	0.438	0.667	0.350	0.000	-	0.611	0.883	0.750	0.721	0.500	-	0.939	0.927
Motorcycles	0	4	0	0	-	4	0	5	7	0	-	12	0	0	0	0	-	0	3	0	0	0	-	3	19
% Motorcycles	0.0	1.0	0.0	0.0	-	0.8	0.0	1.2	3.3	-	-	1.9	0.0	0.0	0.0	-	-	0.0	1.7	0.0	0.0	0.0	-	1.3	1.4
Cars & Light Goods	46	411	10	1	-	468	12	406	199	0	-	617	7	8	7	0	-	22	167	3	48	4	-	222	1329
% Cars & Light Goods	100.0	98.6	100.0	100.0	-	98.7	100.0	97.8	93.9	-	-	96.6	100.0	100.0	100.0	-	-	100.0	96.5	100.0	98.0	100.0	-	96.9	97.4
Buses	0	0	0	0	-	0	0	4	4	0	-	8	0	0	0	0	-	0	3	0	1	0	-	4	12
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	1.0	1.9	-	-	1.3	0.0	0.0	0.0	-	-	0.0	1.7	0.0	2.0	0.0	-	1.7	0.9
Single-Unit Trucks	0	1	0	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Single-Unit Trucks	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.9	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Waters Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Data

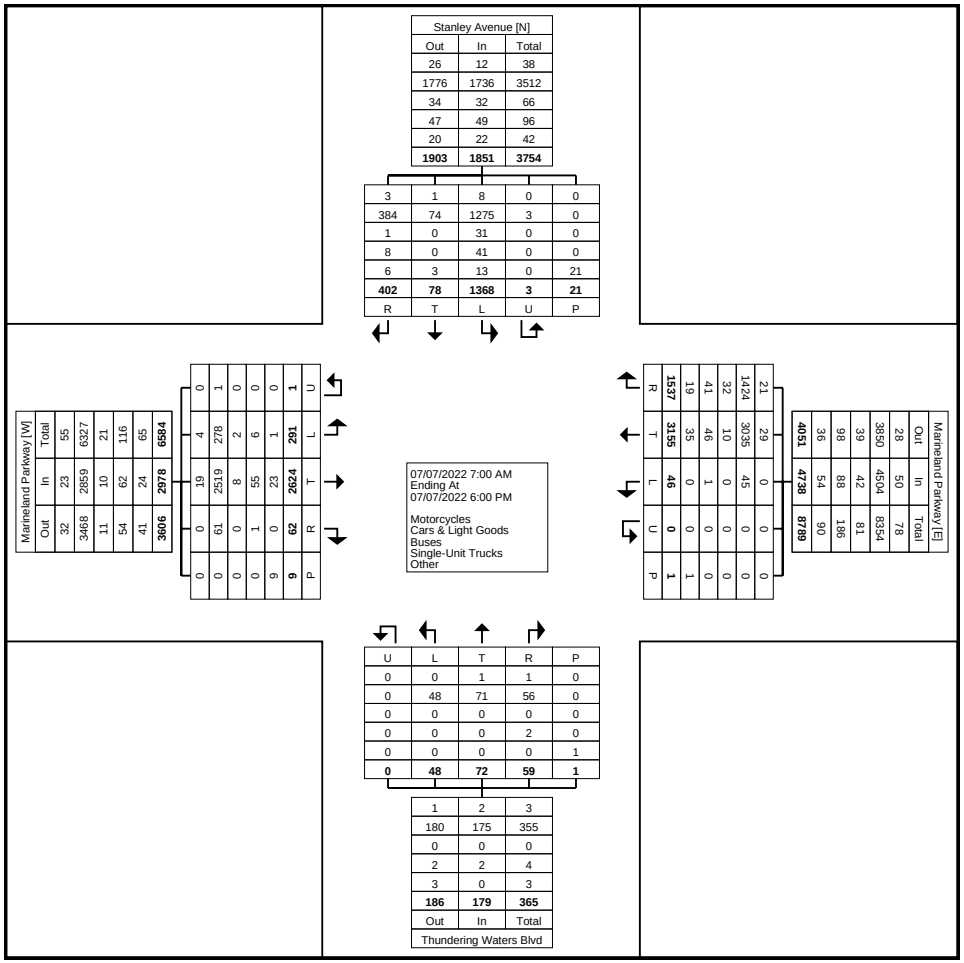
Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	56	0	0	0	60	0	50	38	0	0	88	0	0	1	0	0	1	24	2	4	0	1	30	179
7:15 AM	6	58	2	0	0	66	0	51	29	0	0	80	0	1	0	0	0	1	22	0	7	0	0	29	176
7:30 AM	5	47	1	0	1	53	1	58	31	0	0	90	0	2	0	0	0	2	35	0	6	0	0	41	186
7:45 AM	9	82	0	0	1	91	0	69	37	0	0	106	0	1	0	0	0	1	41	2	6	1	0	50	248
Hourly Total	24	243	3	0	2	270	1	228	135	0	0	364	0	4	1	0	0	5	122	4	23	1	1	150	789
8:00 AM	6	57	0	0	1	63	1	63	32	0	0	96	1	1	0	0	0	2	22	0	10	0	0	32	193
8:15 AM	10	71	0	0	0	81	1	68	32	0	0	101	1	1	0	0	0	2	24	1	8	0	0	33	217
8:30 AM	14	64	2	0	1	80	1	76	47	0	0	124	1	1	1	0	0	3	37	0	4	0	1	41	248
8:45 AM	8	76	4	0	0	88	2	76	35	0	0	113	2	1	4	0	0	7	24	5	13	0	0	42	250
Hourly Total	38	268	6	0	2	312	5	283	146	0	0	434	5	4	5	0	0	14	107	6	35	0	1	148	908
9:00 AM	6	50	3	0	0	59	3	46	38	0	0	87	0	3	3	0	0	6	29	1	9	0	0	39	191
9:15 AM	5	75	1	0	0	81	1	69	52	0	0	122	0	2	0	0	0	2	34	1	6	0	0	41	246
9:30 AM	7	59	1	0	1	67	1	70	36	0	0	107	0	6	3	0	0	9	35	1	8	0	1	44	227
9:45 AM	7	65	1	0	0	73	2	90	33	0	0	125	0	7	3	0	0	10	45	7	7	0	1	59	267
Hourly Total	25	249	6	0	1	280	7	275	159	0	0	441	0	18	9	0	0	27	143	10	30	0	2	183	931
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	4	72	3	0	0	79	0	95	44	0	0	139	4	5	0	0	0	9	52	3	10	0	0	65	292
11:15 AM	8	88	2	0	0	98	4	94	38	0	0	136	2	3	7	0	0	12	46	2	17	0	0	65	311
11:30 AM	10	88	2	0	1	100	1	115	41	0	0	157	0	5	2	0	0	7	42	4	16	1	1	63	327
11:45 AM	13	76	1	1	0	91	1	106	46	0	0	153	1	0	3	0	0	4	46	1	13	1	0	61	309
Hourly Total	35	324	8	1	1	368	6	410	169	0	0	585	7	13	12	0	0	32	186	10	56	2	1	254	1239
12:00 PM	8	106	2	0	0	116	2	132	46	0	0	180	1	1	0	0	0	2	42	2	19	0	0	63	361
12:15 PM	6	93	1	0	0	100	1	93	42	0	0	136	2	3	1	0	0	6	40	4	14	0	1	58	300
12:30 PM	4	90	4	0	0	98	1	95	38	0	0	134	0	1	1	0	0	2	48	0	16	0	0	64	298
12:45 PM	11	94	2	0	0	107	2	95	39	0	1	136	2	4	2	0	0	8	43	1	13	0	5	57	308
Hourly Total	29	383	9	0	0	421	6	415	165	0	1	586	5	9	4	0	0	18	173	7	62	0	6	242	1267
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	15	92	4	0	0	111	1	145	58	0	0	204	1	3	1	0	0	5	46	1	15	0	0	62	382
3:15 PM	13	114	6	0	0	133	3	99	45	0	0	147	2	2	1	0	0	5	56	8	12	0	1	76	361
3:30 PM	14	86	2	0	0	102	5	166	70	0	0	241	4	3	3	0	0	10	54	3	22	0	6	79	432
3:45 PM	14	81	2	0	0	97	0	106	59	0	0	165	2	2	0	0	0	4	40	7	16	0	0	63	329
Hourly Total	56	373	14	0	0	443	9	516	232	0	0	757	9	10	5	0	0	24	196	19	65	0	7	280	1504
4:00 PM	10	85	3	0	0	98	1	166	74	0	0	241	2	1	2	0	0	5	70	2	20	0	0	92	436
4:15 PM	9	98	3	0	0	110	2	116	64	0	0	182	1	0	2	0	0	3	54	2	15	0	0	71	366
4:30 PM	14	103	5	0	0	122	0	147	83	0	0	230	1	6	7	0	0	14	66	4	14	0	0	84	450

4:45 PM	13	104	0	0	0	117	0	109	63	0	0	172	1	1	3	0	0	5	62	3	14	0	1	79	373
Hourly Total	46	390	11	0	0	447	3	538	284	0	0	825	5	8	14	0	0	27	252	11	63	0	1	326	1625
5:00 PM	9	87	2	0	2	98	5	170	72	0	0	247	2	1	1	0	1	4	53	1	21	0	0	75	424
5:15 PM	6	102	1	0	1	109	2	113	69	0	0	184	3	3	2	0	0	8	59	6	19	0	1	84	385
5:30 PM	9	112	1	0	0	122	0	119	62	0	0	181	7	1	4	0	0	12	49	3	17	0	1	69	384
5:45 PM	14	93	1	0	0	108	2	88	44	0	0	134	5	1	2	0	0	8	28	1	11	0	0	40	290
Hourly Total	38	394	5	0	3	437	9	490	247	0	0	746	17	6	9	0	1	32	189	11	68	0	2	268	1483
Grand Total	291	2624	62	1	9	2978	46	3155	1537	0	1	4738	48	72	59	0	1	179	1368	78	402	3	21	1851	9746
Approach %	9.8	88.1	2.1	0.0	-	-	1.0	66.6	32.4	0.0	-	-	26.8	40.2	33.0	0.0	-	-	73.9	4.2	21.7	0.2	-	-	-
Total %	3.0	26.9	0.6	0.0	-	30.6	0.5	32.4	15.8	0.0	-	48.6	0.5	0.7	0.6	0.0	-	1.8	14.0	0.8	4.1	0.0	-	19.0	-
Motorcycles	4	19	0	0	-	23	0	29	21	0	-	50	0	1	1	0	-	2	8	1	3	0	-	12	87
% Motorcycles	1.4	0.7	0.0	0.0	-	0.8	0.0	0.9	1.4	-	-	1.1	0.0	1.4	1.7	-	-	1.1	0.6	1.3	0.7	0.0	-	0.6	0.9
Cars & Light Goods	278	2519	61	1	-	2859	45	3035	1424	0	-	4504	48	71	56	0	-	175	1275	74	384	3	-	1736	9274
% Cars & Light Goods	95.5	96.0	98.4	100.0	-	96.0	97.8	96.2	92.6	-	-	95.1	100.0	98.6	94.9	-	-	97.8	93.2	94.9	95.5	100.0	-	93.8	95.2
Buses	2	8	0	0	-	10	0	10	32	0	-	42	0	0	0	0	-	0	31	0	1	0	-	32	84
% Buses	0.7	0.3	0.0	0.0	-	0.3	0.0	0.3	2.1	-	-	0.9	0.0	0.0	0.0	-	-	0.0	2.3	0.0	0.2	0.0	-	1.7	0.9
Single-Unit Trucks	6	55	1	0	-	62	1	46	41	0	-	88	0	0	2	0	-	2	41	0	8	0	-	49	201
% Single-Unit Trucks	2.1	2.1	1.6	0.0	-	2.1	2.2	1.5	2.7	-	-	1.9	0.0	0.0	3.4	-	-	1.1	3.0	0.0	2.0	0.0	-	2.6	2.1
Articulated Trucks	1	21	0	0	-	22	0	29	9	0	-	38	0	0	0	0	-	0	10	1	3	0	-	14	74
% Articulated Trucks	0.3	0.8	0.0	0.0	-	0.7	0.0	0.9	0.6	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.7	1.3	0.7	0.0	-	0.8	0.8
Bicycles on Road	0	2	0	0	-	2	0	6	10	0	-	16	0	0	0	0	-	0	3	2	3	0	-	8	26
% Bicycles on Road	0.0	0.1	0.0	0.0	-	0.1	0.0	0.2	0.7	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.2	2.6	0.7	0.0	-	0.4	0.3
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	16	-	-
% Bicycles on Crosswalk	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	76.2	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	23.8	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Peak Hour Data (8:30 AM)

Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:30 AM	14	64	2	0	1	80	1	76	47	0	0	124	1	1	1	0	0	3	37	0	4	0	1	41	248
8:45 AM	8	76	4	0	0	88	2	76	35	0	0	113	2	1	4	0	0	7	24	5	13	0	0	42	250
9:00 AM	6	50	3	0	0	59	3	46	38	0	0	87	0	3	3	0	0	6	29	1	9	0	0	39	191
9:15 AM	5	75	1	0	0	81	1	69	52	0	0	122	0	2	0	0	0	2	34	1	6	0	0	41	246
Total	33	265	10	0	1	308	7	267	172	0	0	446	3	7	8	0	0	18	124	7	32	0	1	163	935
Approach %	10.7	86.0	3.2	0.0	-	-	1.6	59.9	38.6	0.0	-	-	16.7	38.9	44.4	0.0	-	-	76.1	4.3	19.6	0.0	-	-	-
Total %	3.5	28.3	1.1	0.0	-	32.9	0.7	28.6	18.4	0.0	-	47.7	0.3	0.7	0.9	0.0	-	1.9	13.3	0.7	3.4	0.0	-	17.4	-
PHF	0.589	0.872	0.625	0.000	-	0.875	0.583	0.878	0.827	0.000	-	0.899	0.375	0.583	0.500	0.000	-	0.643	0.838	0.350	0.615	0.000	-	0.970	0.935
Motorcycles	0	1	0	0	-	1	0	1	1	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Motorcycles	0.0	0.4	0.0	-	-	0.3	0.0	0.4	0.6	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	31	255	10	0	-	296	7	263	154	0	-	424	3	7	8	0	-	18	113	7	32	0	-	152	890
% Cars & Light Goods	93.9	96.2	100.0	-	-	96.1	100.0	98.5	89.5	-	-	95.1	100.0	100.0	100.0	-	-	100.0	91.1	100.0	100.0	-	-	93.3	95.2
Buses	0	1	0	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	2	0	0	0	-	2	5
% Buses	0.0	0.4	0.0	-	-	0.3	0.0	0.0	1.2	-	-	0.4	0.0	0.0	0.0	-	-	0.0	1.6	0.0	0.0	-	-	1.2	0.5
Single-Unit Trucks	2	5	0	0	-	7	0	2	12	0	-	14	0	0	0	0	-	0	8	0	0	0	-	8	29
% Single-Unit Trucks	6.1	1.9	0.0	-	-	2.3	0.0	0.7	7.0	-	-	3.1	0.0	0.0	0.0	-	-	0.0	6.5	0.0	0.0	-	-	4.9	3.1
Articulated Trucks	0	3	0	0	-	3	0	1	2	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	6
% Articulated Trucks	0.0	1.1	0.0	-	-	1.0	0.0	0.4	1.2	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.6	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.8	0.0	0.0	-	-	0.6	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
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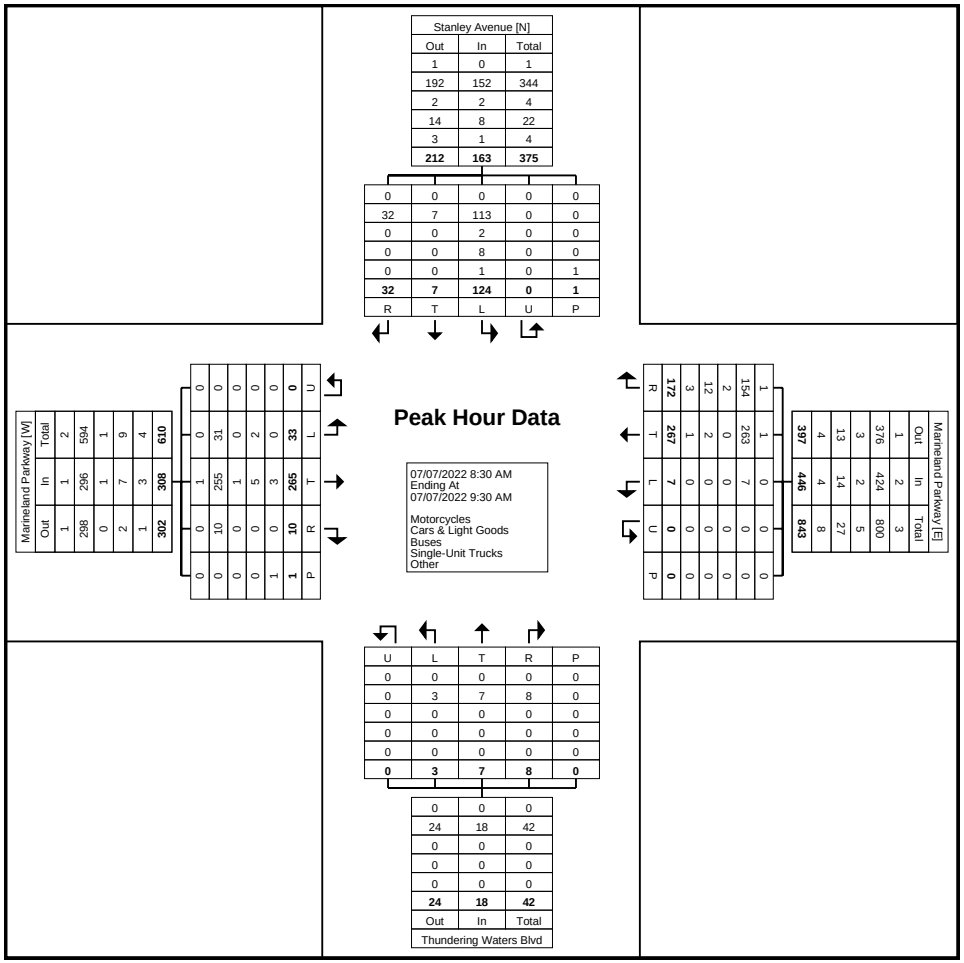
Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (8:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

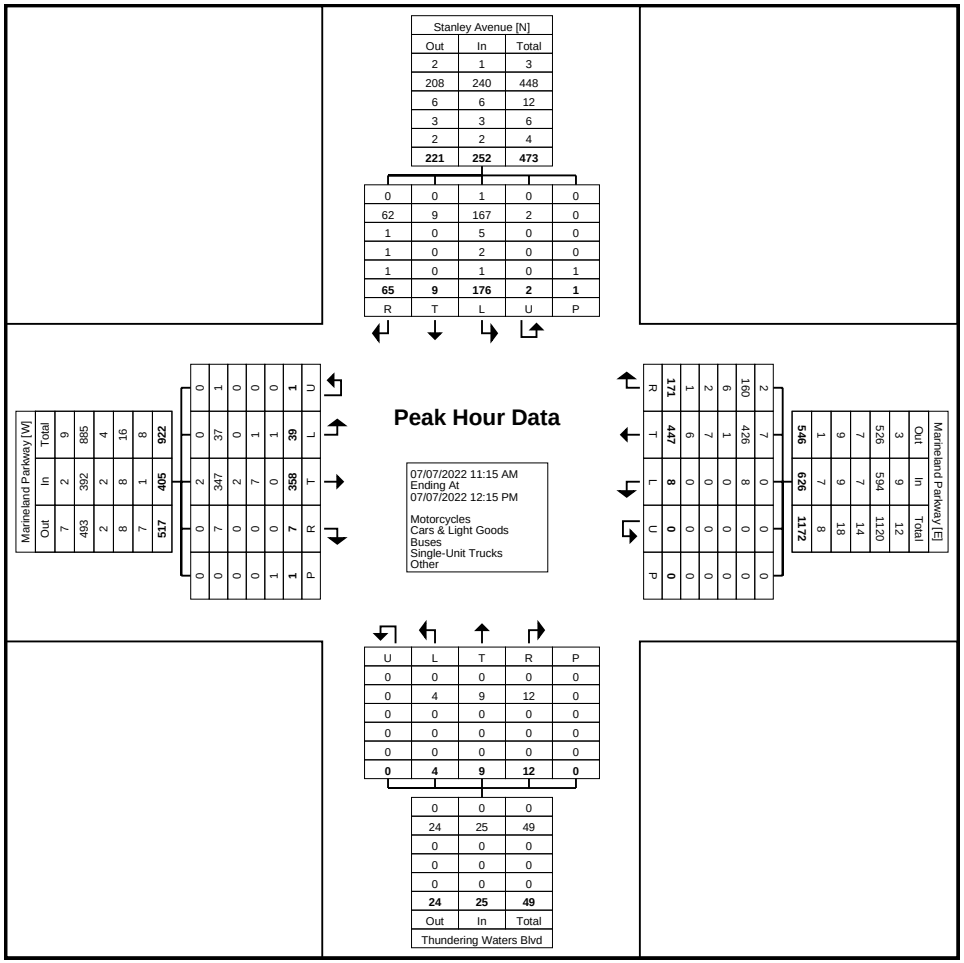
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:15 AM	8	88	2	0	0	98	4	94	38	0	0	136	2	3	7	0	0	12	46	2	17	0	0	65	311
11:30 AM	10	88	2	0	1	100	1	115	41	0	0	157	0	5	2	0	0	7	42	4	16	1	1	63	327
11:45 AM	13	76	1	1	0	91	1	106	46	0	0	153	1	0	3	0	0	4	46	1	13	1	0	61	309
12:00 PM	8	106	2	0	0	116	2	132	46	0	0	180	1	1	0	0	0	2	42	2	19	0	0	63	361
Total	39	358	7	1	1	405	8	447	171	0	0	626	4	9	12	0	0	25	176	9	65	2	1	252	1308
Approach %	9.6	88.4	1.7	0.2	-	-	1.3	71.4	27.3	0.0	-	-	16.0	36.0	48.0	0.0	-	-	69.8	3.6	25.8	0.8	-	-	-
Total %	3.0	27.4	0.5	0.1	-	31.0	0.6	34.2	13.1	0.0	-	47.9	0.3	0.7	0.9	0.0	-	1.9	13.5	0.7	5.0	0.2	-	19.3	-
PHF	0.750	0.844	0.875	0.250	-	0.873	0.500	0.847	0.929	0.000	-	0.869	0.500	0.450	0.429	0.000	-	0.521	0.957	0.563	0.855	0.500	-	0.969	0.906
Motorcycles	0	2	0	0	-	2	0	7	2	0	-	9	0	0	0	0	-	0	1	0	0	0	-	1	12
% Motorcycles	0.0	0.6	0.0	0.0	-	0.5	0.0	1.6	1.2	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	0.0	-	0.4	0.9
Cars & Light Goods	37	347	7	1	-	392	8	426	160	0	-	594	4	9	12	0	-	25	167	9	62	2	-	240	1251
% Cars & Light Goods	94.9	96.9	100.0	100.0	-	96.8	100.0	95.3	93.6	-	-	94.9	100.0	100.0	100.0	-	-	100.0	94.9	100.0	95.4	100.0	-	95.2	95.6
Buses	0	2	0	0	-	2	0	1	6	0	-	7	0	0	0	0	-	0	5	0	1	0	-	6	15
% Buses	0.0	0.6	0.0	0.0	-	0.5	0.0	0.2	3.5	-	-	1.1	0.0	0.0	0.0	-	-	0.0	2.8	0.0	1.5	0.0	-	2.4	1.1
Single-Unit Trucks	1	7	0	0	-	8	0	7	2	0	-	9	0	0	0	0	-	0	2	0	1	0	-	3	20
% Single-Unit Trucks	2.6	2.0	0.0	0.0	-	2.0	0.0	1.6	1.2	-	-	1.4	0.0	0.0	0.0	-	-	0.0	1.1	0.0	1.5	0.0	-	1.2	1.5
Articulated Trucks	1	0	0	0	-	1	0	4	0	0	-	4	0	0	0	0	-	0	1	0	1	0	-	2	7
% Articulated Trucks	2.6	0.0	0.0	0.0	-	0.2	0.0	0.9	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.6	0.0	1.5	0.0	-	0.8	0.5
Bicycles on Road	0	0	0	0	-	0	0	2	1	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.6	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

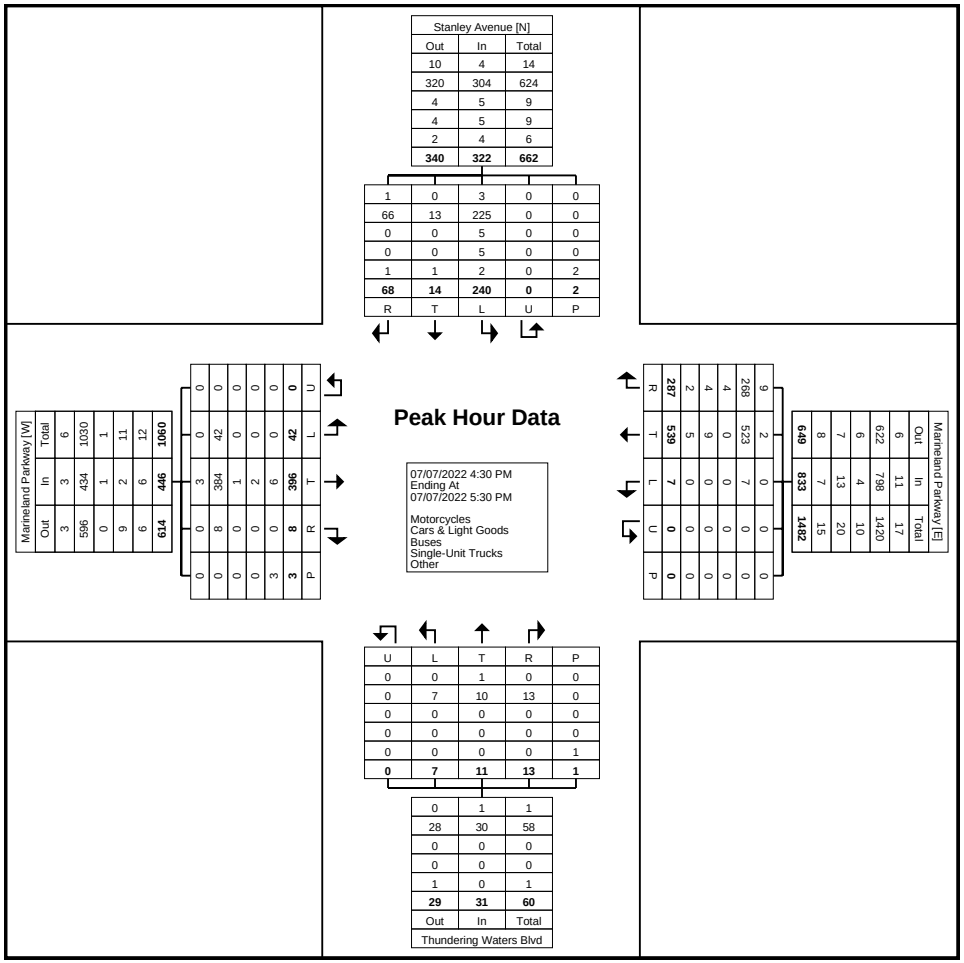
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Marineland Parkway Eastbound						Marineland Parkway Westbound						Thundering Waters Blvd Northbound						Stanley Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	14	103	5	0	0	122	0	147	83	0	0	230	1	6	7	0	0	14	66	4	14	0	0	84	450
4:45 PM	13	104	0	0	0	117	0	109	63	0	0	172	1	1	3	0	0	5	62	3	14	0	1	79	373
5:00 PM	9	87	2	0	2	98	5	170	72	0	0	247	2	1	1	0	1	4	53	1	21	0	0	75	424
5:15 PM	6	102	1	0	1	109	2	113	69	0	0	184	3	3	2	0	0	8	59	6	19	0	1	84	385
Total	42	396	8	0	3	446	7	539	287	0	0	833	7	11	13	0	1	31	240	14	68	0	2	322	1632
Approach %	9.4	88.8	1.8	0.0	-	-	0.8	64.7	34.5	0.0	-	-	22.6	35.5	41.9	0.0	-	-	74.5	4.3	21.1	0.0	-	-	-
Total %	2.6	24.3	0.5	0.0	-	27.3	0.4	33.0	17.6	0.0	-	51.0	0.4	0.7	0.8	0.0	-	1.9	14.7	0.9	4.2	0.0	-	19.7	-
PHF	0.750	0.952	0.400	0.000	-	0.914	0.350	0.793	0.864	0.000	-	0.843	0.583	0.458	0.464	0.000	-	0.554	0.909	0.583	0.810	0.000	-	0.958	0.907
Motorcycles	0	3	0	0	-	3	0	2	9	0	-	11	0	1	0	0	-	1	3	0	1	0	-	4	19
% Motorcycles	0.0	0.8	0.0	-	-	0.7	0.0	0.4	3.1	-	-	1.3	0.0	9.1	0.0	-	-	3.2	1.3	0.0	1.5	-	-	1.2	1.2
Cars & Light Goods	42	384	8	0	-	434	7	523	268	0	-	798	7	10	13	0	-	30	225	13	66	0	-	304	1566
% Cars & Light Goods	100.0	97.0	100.0	-	-	97.3	100.0	97.0	93.4	-	-	95.8	100.0	90.9	100.0	-	-	96.8	93.8	92.9	97.1	-	-	94.4	96.0
Buses	0	1	0	0	-	1	0	0	4	0	-	4	0	0	0	0	-	0	5	0	0	0	-	5	10
% Buses	0.0	0.3	0.0	-	-	0.2	0.0	0.0	1.4	-	-	0.5	0.0	0.0	0.0	-	-	0.0	2.1	0.0	0.0	-	-	1.6	0.6
Single-Unit Trucks	0	2	0	0	-	2	0	9	4	0	-	13	0	0	0	0	-	0	5	0	0	0	-	5	20
% Single-Unit Trucks	0.0	0.5	0.0	-	-	0.4	0.0	1.7	1.4	-	-	1.6	0.0	0.0	0.0	-	-	0.0	2.1	0.0	0.0	-	-	1.6	1.2
Articulated Trucks	0	6	0	0	-	6	0	3	0	0	-	3	0	0	0	0	-	0	1	0	0	0	-	1	10
% Articulated Trucks	0.0	1.5	0.0	-	-	1.3	0.0	0.6	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.0	-	-	0.3	0.6
Bicycles on Road	0	0	0	0	-	0	0	2	2	0	-	4	0	0	0	0	-	0	1	1	1	0	-	3	7
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.7	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.4	7.1	1.5	-	-	0.9	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Marineland Parkway & Thundering Water Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Data

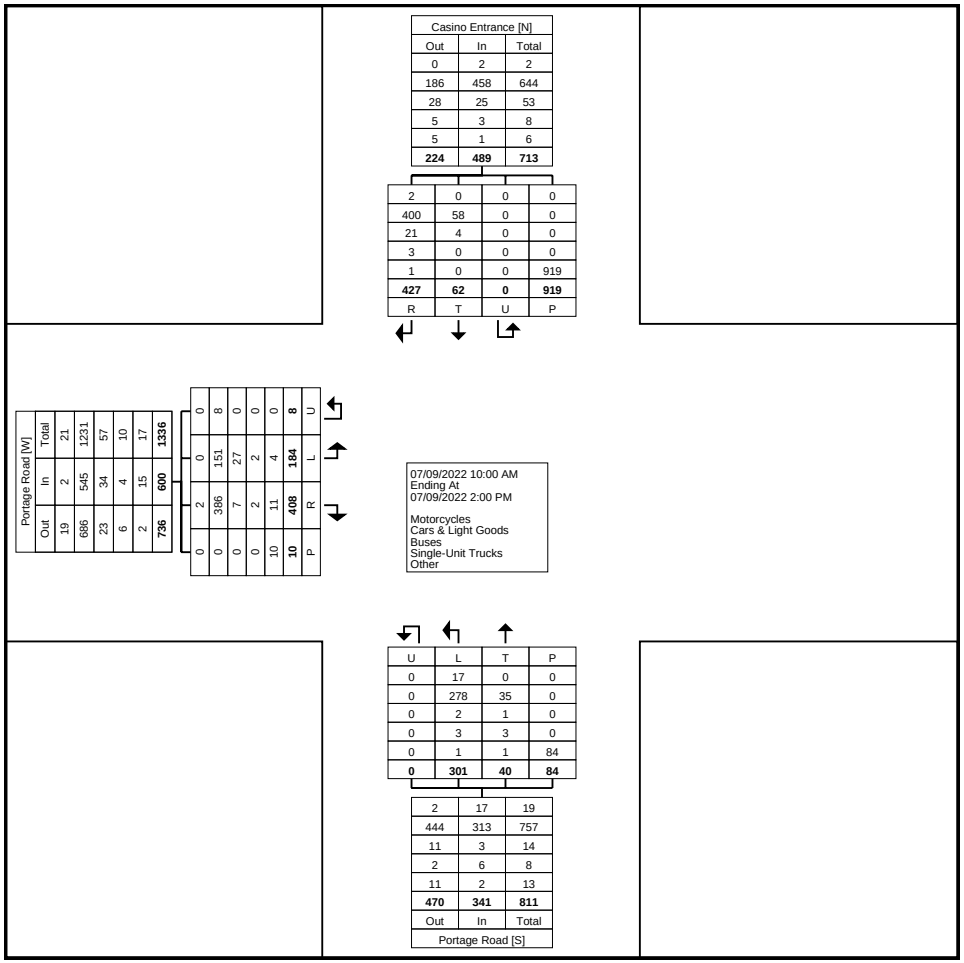
Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	7	27	1	0	35	12	1	0	0	13	4	28	0	55	32	80
10:15 AM	7	29	1	0	37	15	0	0	1	15	4	21	0	75	25	77
10:30 AM	12	21	1	3	34	17	4	0	11	21	6	23	0	76	29	84
10:45 AM	7	30	1	0	38	21	3	0	4	24	4	31	0	42	35	97
Hourly Total	33	107	4	3	144	65	8	0	16	73	18	103	0	248	121	338
11:00 AM	7	34	0	0	41	32	3	0	11	35	1	27	0	50	28	104
11:15 AM	19	31	0	3	50	18	1	0	14	19	3	31	0	45	34	103
11:30 AM	14	29	0	0	43	24	3	0	3	27	3	33	0	68	36	106
11:45 AM	11	20	0	0	31	26	1	0	2	27	6	32	0	93	38	96
Hourly Total	51	114	0	3	165	100	8	0	30	108	13	123	0	256	136	409
12:00 PM	15	34	0	0	49	25	3	0	1	28	6	32	0	50	38	115
12:15 PM	11	12	1	0	24	15	0	0	13	15	2	21	0	29	23	62
12:30 PM	15	20	0	0	35	12	3	0	7	15	2	28	0	48	30	80
12:45 PM	8	34	0	0	42	21	6	0	2	27	3	30	0	50	33	102
Hourly Total	49	100	1	0	150	73	12	0	23	85	13	111	0	177	124	359
1:00 PM	10	28	2	0	40	19	1	0	2	20	3	18	0	56	21	81
1:15 PM	15	13	0	0	28	13	5	0	3	18	6	26	0	85	32	78
1:30 PM	13	20	0	2	33	12	3	0	6	15	7	23	0	52	30	78
1:45 PM	13	26	1	2	40	19	3	0	4	22	2	23	0	45	25	87
Hourly Total	51	87	3	4	141	63	12	0	15	75	18	90	0	238	108	324
Grand Total	184	408	8	10	600	301	40	0	84	341	62	427	0	919	489	1430
Approach %	30.7	68.0	1.3	-	-	88.3	11.7	0.0	-	-	12.7	87.3	0.0	-	-	-
Total %	12.9	28.5	0.6	-	42.0	21.0	2.8	0.0	-	23.8	4.3	29.9	0.0	-	34.2	-
Motorcycles	0	2	0	-	2	17	0	0	-	17	0	2	0	-	2	21
% Motorcycles	0.0	0.5	0.0	-	0.3	5.6	0.0	-	-	5.0	0.0	0.5	-	-	0.4	1.5
Cars & Light Goods	151	386	8	-	545	278	35	0	-	313	58	400	0	-	458	1316
% Cars & Light Goods	82.1	94.6	100.0	-	90.8	92.4	87.5	-	-	91.8	93.5	93.7	-	-	93.7	92.0
Buses	27	7	0	-	34	2	1	0	-	3	4	21	0	-	25	62
% Buses	14.7	1.7	0.0	-	5.7	0.7	2.5	-	-	0.9	6.5	4.9	-	-	5.1	4.3
Single-Unit Trucks	2	2	0	-	4	3	3	0	-	6	0	3	0	-	3	13
% Single-Unit Trucks	1.1	0.5	0.0	-	0.7	1.0	7.5	-	-	1.8	0.0	0.7	-	-	0.6	0.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	4	11	0	-	15	1	1	0	-	2	0	1	0	-	1	18
% Bicycles on Road	2.2	2.7	0.0	-	2.5	0.3	2.5	-	-	0.6	0.0	0.2	-	-	0.2	1.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	2	-	-

% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	1.2	-	-	-	-	0.2	-	-
Pedestrians	-	-	-	10	-	-	-	-	83	-	-	-	-	917	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	98.8	-	-	-	-	99.8	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Peak Hour Data (11:15 AM)

Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:15 AM	19	31	0	3	50	18	1	0	14	19	3	31	0	45	34	103
11:30 AM	14	29	0	0	43	24	3	0	3	27	3	33	0	68	36	106
11:45 AM	11	20	0	0	31	26	1	0	2	27	6	32	0	93	38	96
12:00 PM	15	34	0	0	49	25	3	0	1	28	6	32	0	50	38	115
Total	59	114	0	3	173	93	8	0	20	101	18	128	0	256	146	420
Approach %	34.1	65.9	0.0	-	-	92.1	7.9	0.0	-	-	12.3	87.7	0.0	-	-	-
Total %	14.0	27.1	0.0	-	41.2	22.1	1.9	0.0	-	24.0	4.3	30.5	0.0	-	34.8	-
PHF	0.776	0.838	0.000	-	0.865	0.894	0.667	0.000	-	0.902	0.750	0.970	0.000	-	0.961	0.913
Motorcycles	0	1	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Motorcycles	0.0	0.9	-	-	0.6	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.7	0.5
Cars & Light Goods	50	109	0	-	159	93	8	0	-	101	18	118	0	-	136	396
% Cars & Light Goods	84.7	95.6	-	-	91.9	100.0	100.0	-	-	100.0	100.0	92.2	-	-	93.2	94.3
Buses	7	2	0	-	9	0	0	0	-	0	0	7	0	-	7	16
% Buses	11.9	1.8	-	-	5.2	0.0	0.0	-	-	0.0	0.0	5.5	-	-	4.8	3.8
Single-Unit Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Single-Unit Trucks	1.7	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.0	1.6	-	-	1.4	0.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	1	2	0	-	3	0	0	0	-	0	0	0	0	-	0	3
% Bicycles on Road	1.7	1.8	-	-	1.7	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.4	-	-
Pedestrians	-	-	-	3	-	-	-	-	20	-	-	-	-	255	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	99.6	-	-

Paradigm Transportation Solutions Limited
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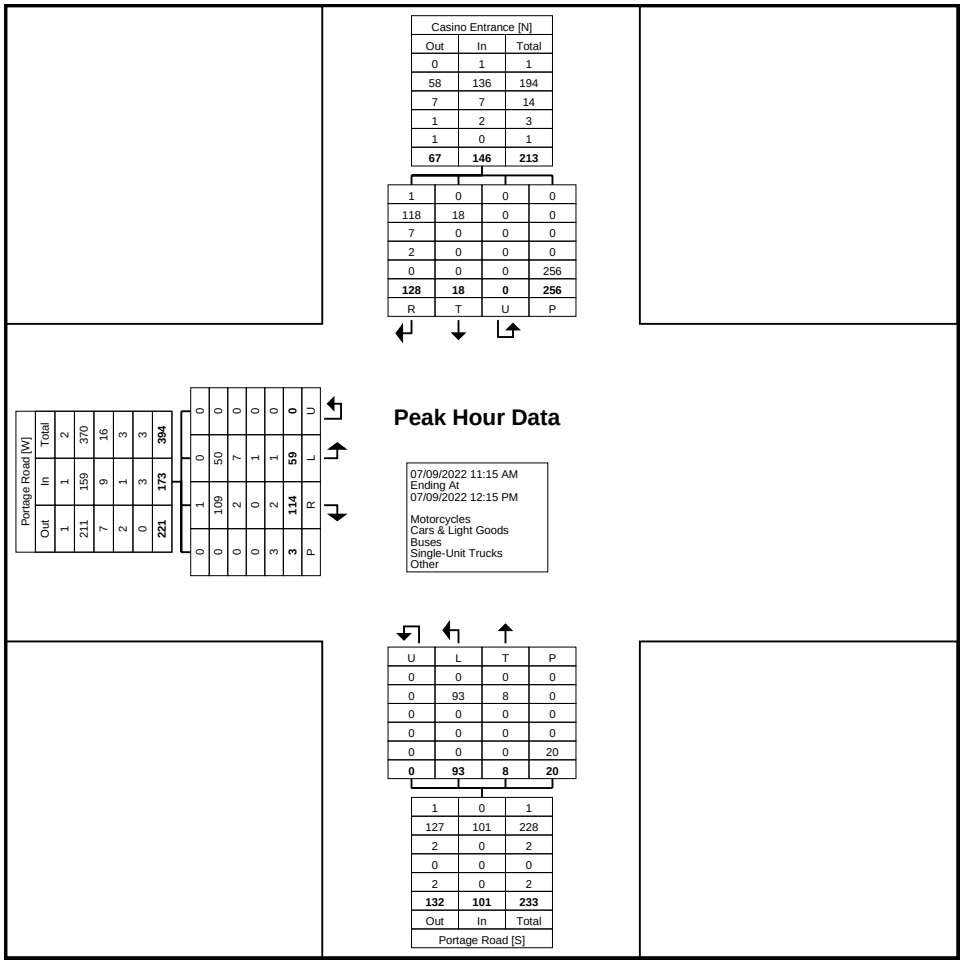
Start Date: 07/09/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

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Count Name: Portage Road & Casino Entrance-Weekday
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Start Date: 07/07/2022

Turning Movement Data

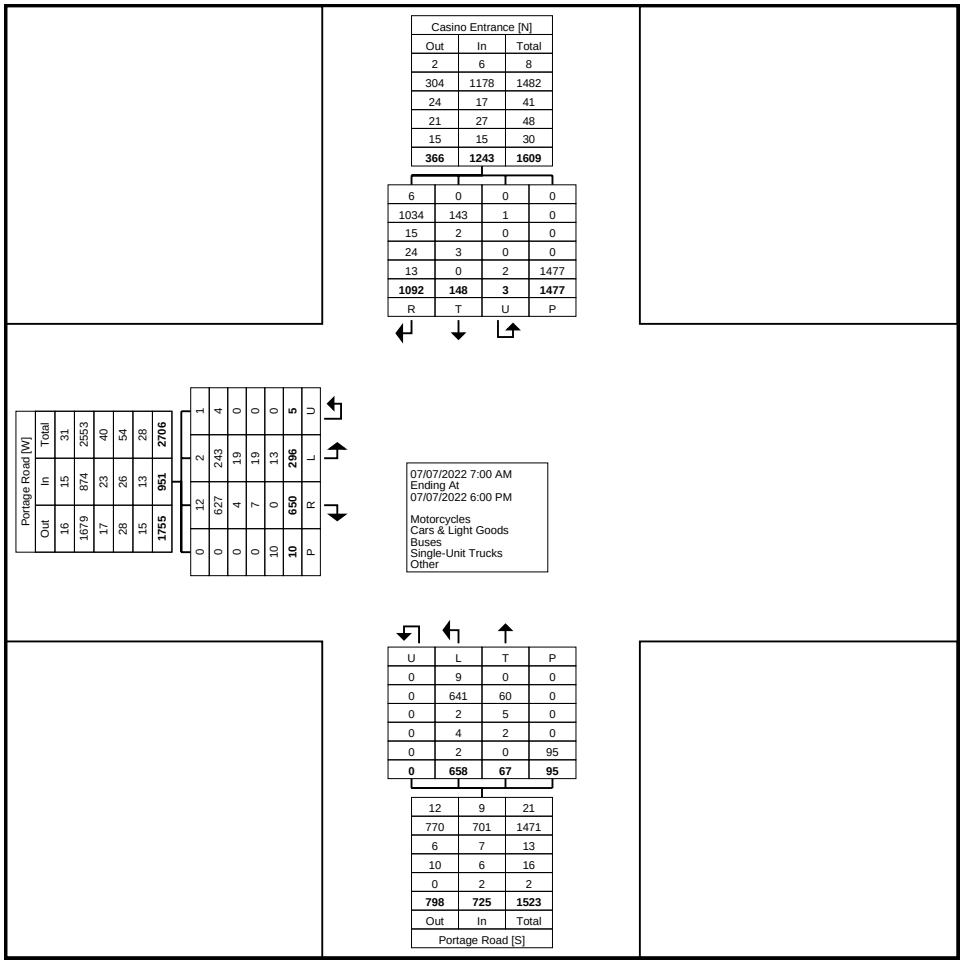
Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	6	8	0	0	14	6	2	0	0	8	0	8	0	9	8	30
7:15 AM	5	3	0	0	8	16	0	0	1	16	3	17	0	8	20	44
7:30 AM	7	8	0	0	15	10	1	0	0	11	2	15	0	5	17	43
7:45 AM	6	6	0	0	12	20	0	0	1	20	3	12	0	7	15	47
Hourly Total	24	25	0	0	49	52	3	0	2	55	8	52	0	29	60	164
8:00 AM	12	4	0	0	16	20	2	0	2	22	2	14	0	8	16	54
8:15 AM	6	10	0	0	16	17	2	0	2	19	4	24	0	6	28	63
8:30 AM	12	17	1	1	30	20	1	0	2	21	3	15	0	11	18	69
8:45 AM	5	13	0	0	18	16	1	0	0	17	1	13	0	28	14	49
Hourly Total	35	44	1	1	80	73	6	0	6	79	10	66	0	53	76	235
9:00 AM	4	7	0	2	11	12	1	0	0	13	2	21	0	29	23	47
9:15 AM	6	18	1	0	25	25	2	0	0	27	1	20	0	33	21	73
9:30 AM	8	15	0	0	23	17	1	0	0	18	6	16	0	49	22	63
9:45 AM	6	25	1	0	32	15	0	0	2	15	2	25	0	32	27	74
Hourly Total	24	65	2	2	91	69	4	0	2	73	11	82	0	143	93	257
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	10	27	0	0	37	12	1	0	0	13	3	36	0	64	39	89
11:15 AM	13	31	0	0	44	20	3	0	10	23	4	41	0	71	45	112
11:30 AM	17	25	0	0	42	29	2	0	2	31	7	32	0	60	39	112
11:45 AM	22	27	1	0	50	28	0	0	11	28	5	30	0	69	35	113
Hourly Total	62	110	1	0	173	89	6	0	23	95	19	139	0	264	158	426
12:00 PM	12	21	0	0	33	17	9	0	6	26	4	40	0	81	44	103
12:15 PM	7	27	0	0	34	20	1	0	5	21	2	29	2	44	33	88
12:30 PM	6	23	0	0	29	19	1	0	1	20	3	21	0	51	24	73
12:45 PM	5	20	0	0	25	30	2	0	0	32	0	35	0	47	35	92
Hourly Total	30	91	0	0	121	86	13	0	12	99	9	125	2	223	136	356
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	10	27	0	0	37	8	2	0	0	10	3	45	0	37	48	95
3:15 PM	12	29	0	0	41	13	1	0	2	14	8	47	0	60	55	110
3:30 PM	12	25	0	0	37	26	2	0	0	28	10	61	0	68	71	136
3:45 PM	10	21	0	0	31	31	4	0	5	35	10	38	0	47	48	114
Hourly Total	44	102	0	0	146	78	9	0	7	87	31	191	0	212	222	455
4:00 PM	9	25	0	6	34	30	2	0	4	32	7	47	0	86	54	120
4:15 PM	6	27	0	0	33	19	1	0	18	20	12	44	0	56	56	109
4:30 PM	13	29	0	0	42	25	2	0	3	27	4	52	0	79	56	125
4:45 PM	7	21	0	0	28	29	9	0	0	38	9	78	1	61	88	154

Hourly Total	35	102	0	6	137	103	14	0	25	117	32	221	1	282	254	508
5:00 PM	11	33	0	0	44	21	2	0	2	23	10	69	0	86	79	146
5:15 PM	6	35	0	1	41	35	2	0	9	37	4	61	0	81	65	143
5:30 PM	15	24	0	0	39	26	3	0	7	29	10	51	0	49	61	129
5:45 PM	10	19	1	0	30	26	5	0	0	31	4	35	0	55	39	100
Hourly Total	42	111	1	1	154	108	12	0	18	120	28	216	0	271	244	518
Grand Total	296	650	5	10	951	658	67	0	95	725	148	1092	3	1477	1243	2919
Approach %	31.1	68.3	0.5	-	-	90.8	9.2	0.0	-	-	11.9	87.9	0.2	-	-	-
Total %	10.1	22.3	0.2	-	32.6	22.5	2.3	0.0	-	24.8	5.1	37.4	0.1	-	42.6	-
Motorcycles	2	12	1	-	15	9	0	0	-	9	0	6	0	-	6	30
% Motorcycles	0.7	1.8	20.0	-	1.6	1.4	0.0	-	-	1.2	0.0	0.5	0.0	-	0.5	1.0
Cars & Light Goods	243	627	4	-	874	641	60	0	-	701	143	1034	1	-	1178	2753
% Cars & Light Goods	82.1	96.5	80.0	-	91.9	97.4	89.6	-	-	96.7	96.6	94.7	33.3	-	94.8	94.3
Buses	19	4	0	-	23	2	5	0	-	7	2	15	0	-	17	47
% Buses	6.4	0.6	0.0	-	2.4	0.3	7.5	-	-	1.0	1.4	1.4	0.0	-	1.4	1.6
Single-Unit Trucks	19	7	0	-	26	4	2	0	-	6	3	24	0	-	27	59
% Single-Unit Trucks	6.4	1.1	0.0	-	2.7	0.6	3.0	-	-	0.8	2.0	2.2	0.0	-	2.2	2.0
Articulated Trucks	3	0	0	-	3	1	0	0	-	1	0	4	0	-	4	8
% Articulated Trucks	1.0	0.0	0.0	-	0.3	0.2	0.0	-	-	0.1	0.0	0.4	0.0	-	0.3	0.3
Bicycles on Road	10	0	0	-	10	1	0	0	-	1	0	9	2	-	11	22
% Bicycles on Road	3.4	0.0	0.0	-	1.1	0.2	0.0	-	-	0.1	0.0	0.8	66.7	-	0.9	0.8
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	10.0	-	-	-	-	0.0	-	-	-	-	0.3	-	-
Pedestrians	-	-	-	9	-	-	-	-	95	-	-	-	-	1472	-	-
% Pedestrians	-	-	-	90.0	-	-	-	-	100.0	-	-	-	-	99.7	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022

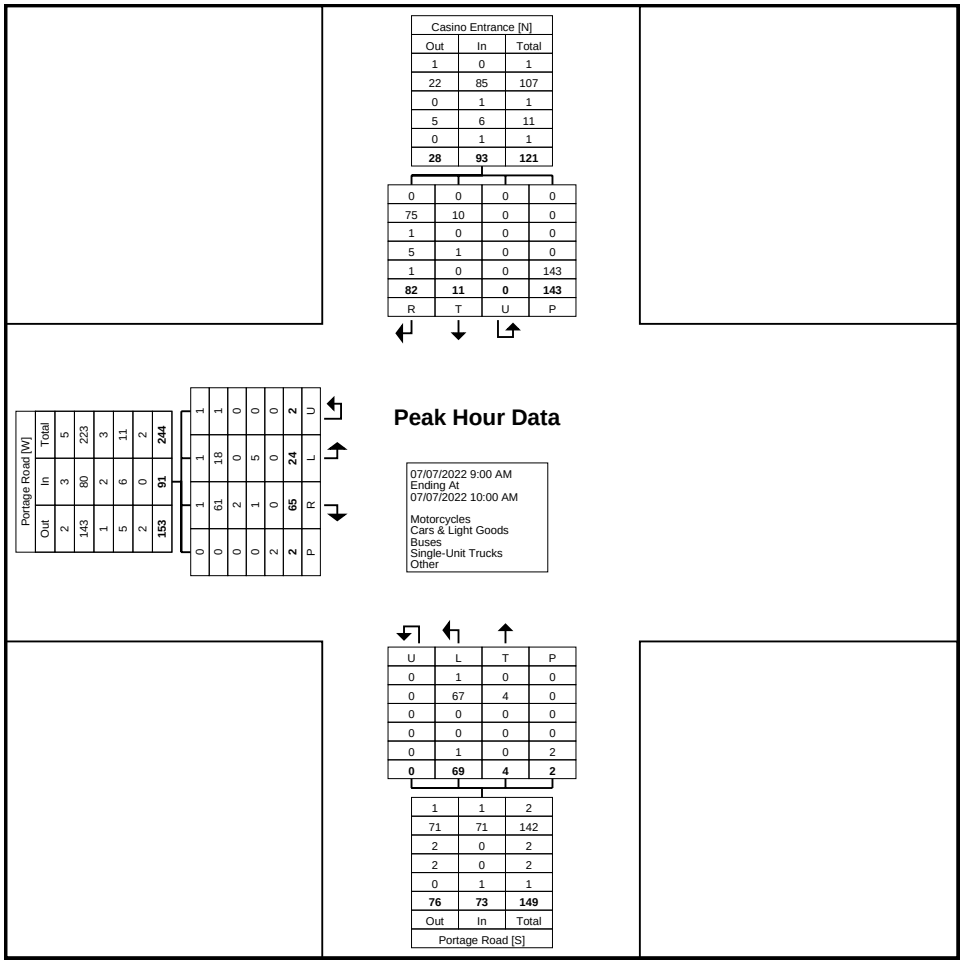
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	4	7	0	2	11	12	1	0	0	13	2	21	0	29	23	47
9:15 AM	6	18	1	0	25	25	2	0	0	27	1	20	0	33	21	73
9:30 AM	8	15	0	0	23	17	1	0	0	18	6	16	0	49	22	63
9:45 AM	6	25	1	0	32	15	0	0	2	15	2	25	0	32	27	74
Total	24	65	2	2	91	69	4	0	2	73	11	82	0	143	93	257
Approach %	26.4	71.4	2.2	-	-	94.5	5.5	0.0	-	-	11.8	88.2	0.0	-	-	-
Total %	9.3	25.3	0.8	-	35.4	26.8	1.6	0.0	-	28.4	4.3	31.9	0.0	-	36.2	-
PHF	0.750	0.650	0.500	-	0.711	0.690	0.500	0.000	-	0.676	0.458	0.820	0.000	-	0.861	0.868
Motorcycles	1	1	1	-	3	1	0	0	-	1	0	0	0	-	0	4
% Motorcycles	4.2	1.5	50.0	-	3.3	1.4	0.0	-	-	1.4	0.0	0.0	-	-	0.0	1.6
Cars & Light Goods	18	61	1	-	80	67	4	0	-	71	10	75	0	-	85	236
% Cars & Light Goods	75.0	93.8	50.0	-	87.9	97.1	100.0	-	-	97.3	90.9	91.5	-	-	91.4	91.8
Buses	0	2	0	-	2	0	0	0	-	0	0	1	0	-	1	3
% Buses	0.0	3.1	0.0	-	2.2	0.0	0.0	-	-	0.0	0.0	1.2	-	-	1.1	1.2
Single-Unit Trucks	5	1	0	-	6	0	0	0	-	0	1	5	0	-	6	12
% Single-Unit Trucks	20.8	1.5	0.0	-	6.6	0.0	0.0	-	-	0.0	9.1	6.1	-	-	6.5	4.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	1.2	-	-	1.1	0.4
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	1.4	0.0	-	-	1.4	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	2	-	-	-	-	143	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022

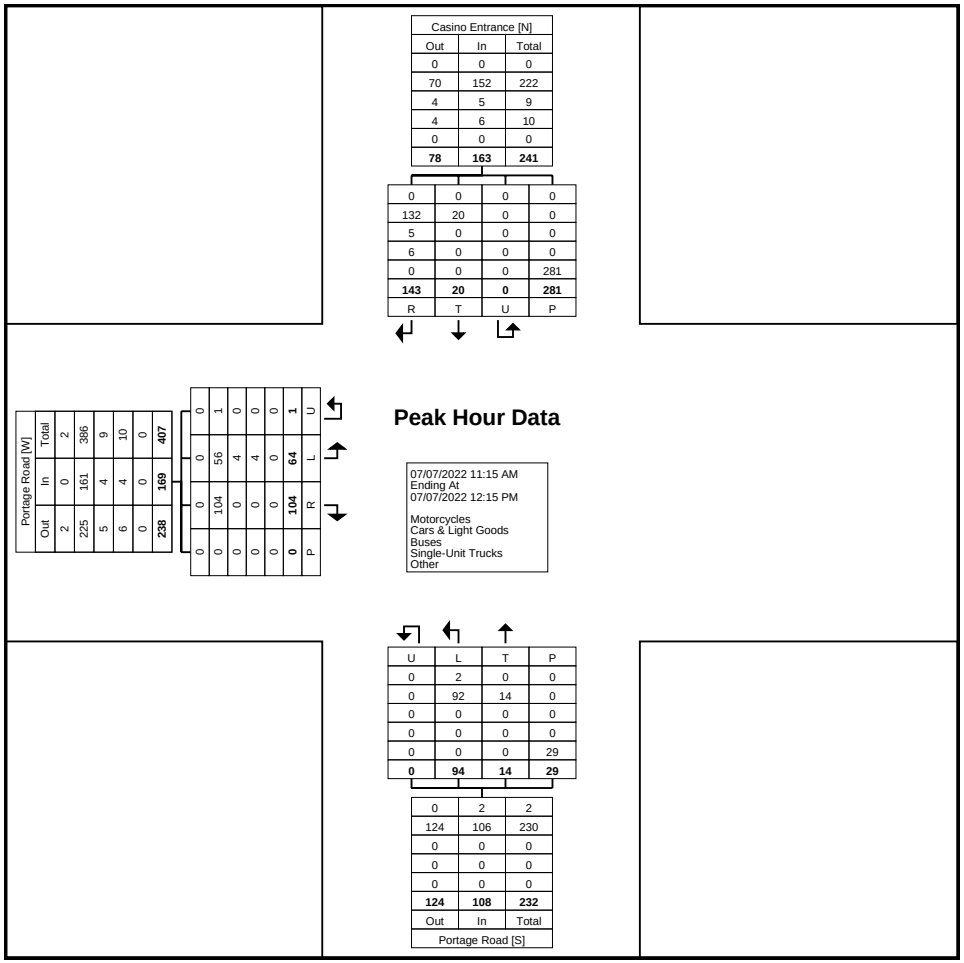
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:15 AM	13	31	0	0	44	20	3	0	10	23	4	41	0	71	45	112
11:30 AM	17	25	0	0	42	29	2	0	2	31	7	32	0	60	39	112
11:45 AM	22	27	1	0	50	28	0	0	11	28	5	30	0	69	35	113
12:00 PM	12	21	0	0	33	17	9	0	6	26	4	40	0	81	44	103
Total	64	104	1	0	169	94	14	0	29	108	20	143	0	281	163	440
Approach %	37.9	61.5	0.6	-	-	87.0	13.0	0.0	-	-	12.3	87.7	0.0	-	-	-
Total %	14.5	23.6	0.2	-	38.4	21.4	3.2	0.0	-	24.5	4.5	32.5	0.0	-	37.0	-
PHF	0.727	0.839	0.250	-	0.845	0.810	0.389	0.000	-	0.871	0.714	0.872	0.000	-	0.906	0.973
Motorcycles	0	0	0	-	0	2	0	0	-	2	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	-	0.0	2.1	0.0	-	-	1.9	0.0	0.0	-	-	0.0	0.5
Cars & Light Goods	56	104	1	-	161	92	14	0	-	106	20	132	0	-	152	419
% Cars & Light Goods	87.5	100.0	100.0	-	95.3	97.9	100.0	-	-	98.1	100.0	92.3	-	-	93.3	95.2
Buses	4	0	0	-	4	0	0	0	-	0	0	5	0	-	5	9
% Buses	6.3	0.0	0.0	-	2.4	0.0	0.0	-	-	0.0	0.0	3.5	-	-	3.1	2.0
Single-Unit Trucks	4	0	0	-	4	0	0	0	-	0	0	6	0	-	6	10
% Single-Unit Trucks	6.3	0.0	0.0	-	2.4	0.0	0.0	-	-	0.0	0.0	4.2	-	-	3.7	2.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	29	-	-	-	-	281	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022

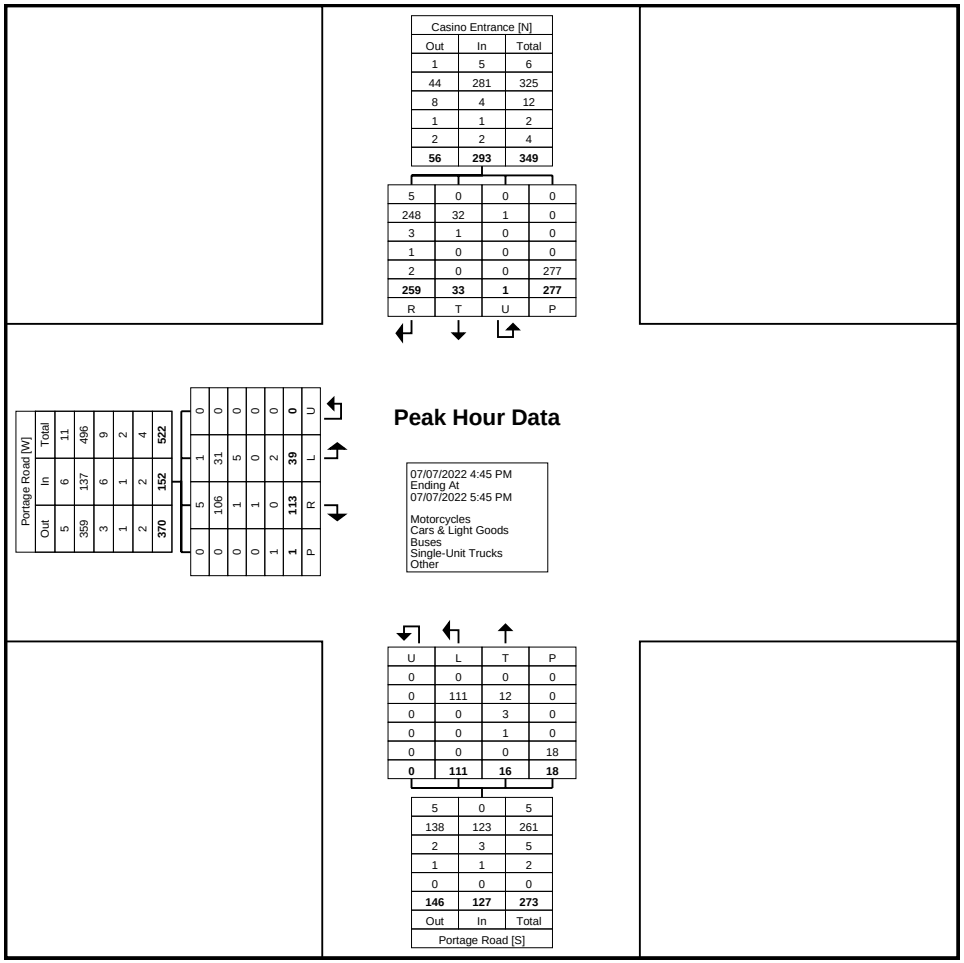
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Portage Road Eastbound					Portage Road Northbound					Casino Entrance Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	7	21	0	0	28	29	9	0	0	38	9	78	1	61	88	154
5:00 PM	11	33	0	0	44	21	2	0	2	23	10	69	0	86	79	146
5:15 PM	6	35	0	1	41	35	2	0	9	37	4	61	0	81	65	143
5:30 PM	15	24	0	0	39	26	3	0	7	29	10	51	0	49	61	129
Total	39	113	0	1	152	111	16	0	18	127	33	259	1	277	293	572
Approach %	25.7	74.3	0.0	-	-	87.4	12.6	0.0	-	-	11.3	88.4	0.3	-	-	-
Total %	6.8	19.8	0.0	-	26.6	19.4	2.8	0.0	-	22.2	5.8	45.3	0.2	-	51.2	-
PHF	0.650	0.807	0.000	-	0.864	0.793	0.444	0.000	-	0.836	0.825	0.830	0.250	-	0.832	0.929
Motorcycles	1	5	0	-	6	0	0	0	-	0	0	5	0	-	5	11
% Motorcycles	2.6	4.4	-	-	3.9	0.0	0.0	-	-	0.0	0.0	1.9	0.0	-	1.7	1.9
Cars & Light Goods	31	106	0	-	137	111	12	0	-	123	32	248	1	-	281	541
% Cars & Light Goods	79.5	93.8	-	-	90.1	100.0	75.0	-	-	96.9	97.0	95.8	100.0	-	95.9	94.6
Buses	5	1	0	-	6	0	3	0	-	3	1	3	0	-	4	13
% Buses	12.8	0.9	-	-	3.9	0.0	18.8	-	-	2.4	3.0	1.2	0.0	-	1.4	2.3
Single-Unit Trucks	0	1	0	-	1	0	1	0	-	1	0	1	0	-	1	3
% Single-Unit Trucks	0.0	0.9	-	-	0.7	0.0	6.3	-	-	0.8	0.0	0.4	0.0	-	0.3	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	2	0	0	-	2	0	0	0	-	0	0	2	0	-	2	4
% Bicycles on Road	5.1	0.0	-	-	1.3	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	0.7	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.7	-	-
Pedestrians	-	-	-	1	-	-	-	-	18	-	-	-	-	275	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	99.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Casino Entrance-Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022

Turning Movement Data

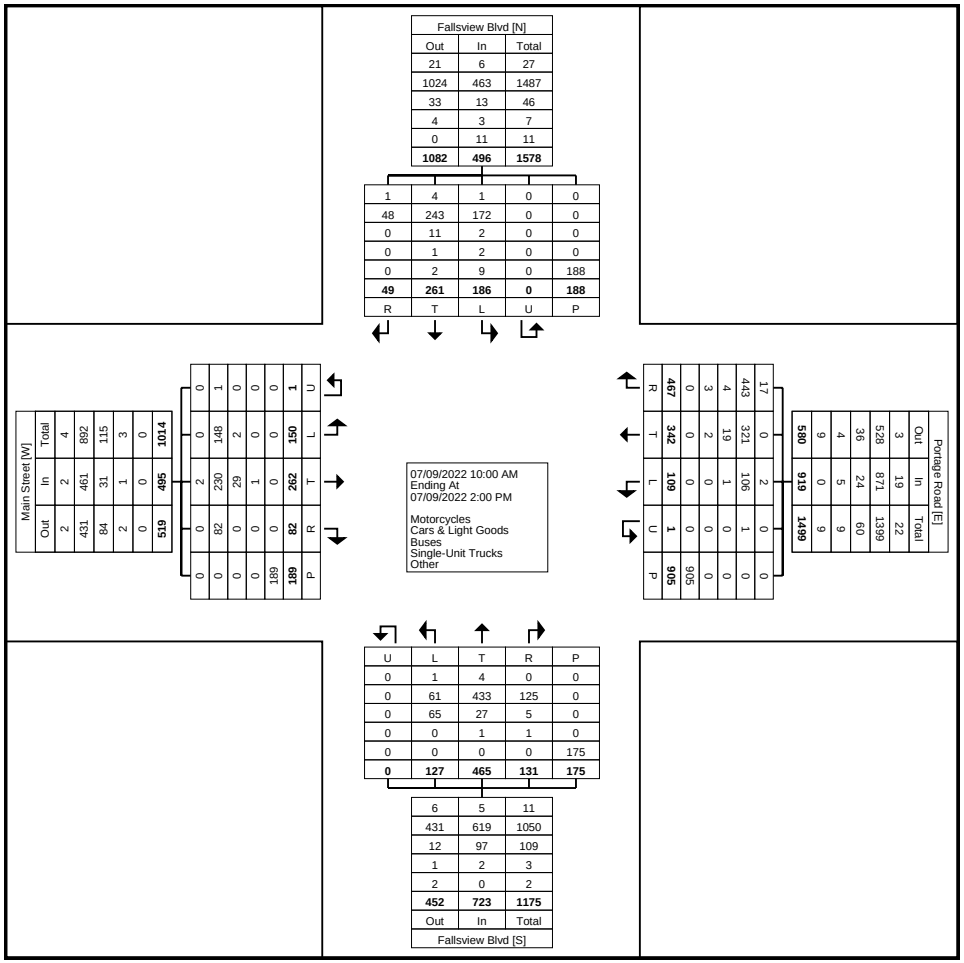
Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	4	12	6	0	11	22	9	20	24	0	77	53	11	19	1	0	18	31	17	19	2	0	15	38	144
10:15 AM	6	16	3	0	26	25	6	18	22	0	89	46	11	20	9	0	20	40	11	14	3	0	13	28	139
10:30 AM	9	8	5	0	16	22	8	23	25	1	66	57	9	22	12	0	13	43	16	10	3	0	10	29	151
10:45 AM	16	16	5	0	9	37	7	26	30	0	83	63	6	46	8	0	12	60	14	16	2	0	23	32	192
Hourly Total	35	52	19	0	62	106	30	87	101	1	315	219	37	107	30	0	63	174	58	59	10	0	61	127	626
11:00 AM	3	17	2	0	7	22	5	27	51	0	58	83	13	33	12	0	11	58	8	26	2	0	10	36	199
11:15 AM	11	20	2	0	8	33	5	24	37	0	60	66	6	40	8	0	10	54	16	15	5	0	9	36	189
11:30 AM	13	19	5	0	11	37	5	28	31	0	55	64	10	37	13	0	12	60	11	12	4	0	18	27	188
11:45 AM	10	12	6	0	24	28	7	25	38	0	61	70	10	33	10	0	15	53	12	11	2	0	27	25	176
Hourly Total	37	68	15	0	50	120	22	104	157	0	234	283	39	143	43	0	48	225	47	64	13	0	64	124	752
12:00 PM	11	20	7	0	11	38	12	19	36	0	55	67	6	23	8	0	1	37	17	23	6	0	21	46	188
12:15 PM	8	11	6	1	10	26	5	19	30	0	35	54	8	34	9	0	2	51	6	16	2	0	4	24	155
12:30 PM	12	19	3	0	8	34	5	22	20	0	33	47	8	25	8	0	18	41	10	17	0	0	1	27	149
12:45 PM	6	25	7	0	10	38	5	24	32	0	27	61	7	22	4	0	4	33	8	15	0	0	4	23	155
Hourly Total	37	75	23	1	39	136	27	84	118	0	150	229	29	104	29	0	25	162	41	71	8	0	30	120	647
1:00 PM	9	17	10	0	10	36	8	19	26	0	60	53	4	30	7	0	8	41	15	9	6	0	13	30	160
1:15 PM	13	11	6	0	7	30	10	19	18	0	62	47	8	22	8	0	14	38	7	17	3	0	13	27	142
1:30 PM	10	20	5	0	4	35	6	16	21	0	46	43	7	30	6	0	5	43	7	25	3	0	3	35	156
1:45 PM	9	19	4	0	17	32	6	13	26	0	38	45	3	29	8	0	12	40	11	16	6	0	4	33	150
Hourly Total	41	67	25	0	38	133	30	67	91	0	206	188	22	111	29	0	39	162	40	67	18	0	33	125	608
Grand Total	150	262	82	1	189	495	109	342	467	1	905	919	127	465	131	0	175	723	186	261	49	0	188	496	2633
Approach %	30.3	52.9	16.6	0.2	-	-	11.9	37.2	50.8	0.1	-	-	17.6	64.3	18.1	0.0	-	-	37.5	52.6	9.9	0.0	-	-	-
Total %	5.7	10.0	3.1	0.0	-	18.8	4.1	13.0	17.7	0.0	-	34.9	4.8	17.7	5.0	0.0	-	27.5	7.1	9.9	1.9	0.0	-	18.8	-
Motorcycles	0	2	0	0	-	2	2	0	17	0	-	19	1	4	0	0	-	5	1	4	1	0	-	6	32
% Motorcycles	0.0	0.8	0.0	0.0	-	0.4	1.8	0.0	3.6	0.0	-	2.1	0.8	0.9	0.0	-	-	0.7	0.5	1.5	2.0	-	-	1.2	1.2
Cars & Light Goods	148	230	82	1	-	461	106	321	443	1	-	871	61	433	125	0	-	619	172	243	48	0	-	463	2414
% Cars & Light Goods	98.7	87.8	100.0	100.0	-	93.1	97.2	93.9	94.9	100.0	-	94.8	48.0	93.1	95.4	-	-	85.6	92.5	93.1	98.0	-	-	93.3	91.7
Buses	2	29	0	0	-	31	1	19	4	0	-	24	65	27	5	0	-	97	2	11	0	0	-	13	165
% Buses	1.3	11.1	0.0	0.0	-	6.3	0.9	5.6	0.9	0.0	-	2.6	51.2	5.8	3.8	-	-	13.4	1.1	4.2	0.0	-	-	2.6	6.3
Single-Unit Trucks	0	1	0	0	-	1	0	2	3	0	-	5	0	1	1	0	-	2	2	1	0	0	-	3	11
% Single-Unit Trucks	0.0	0.4	0.0	0.0	-	0.2	0.0	0.6	0.6	0.0	-	0.5	0.0	0.2	0.8	-	-	0.3	1.1	0.4	0.0	-	-	0.6	0.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0

Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	9	2	0	0	-	11	11
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	4.8	0.8	0.0	-	-	2.2	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.8	-	-	-	-	-	0.0	-	-	-	-	-	0.5	-	-
Pedestrians	-	-	-	-	189	-	-	-	-	-	898	-	-	-	-	-	175	-	-	-	-	-	187	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	99.2	-	-	-	-	-	100.0	-	-	-	-	-	99.5	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022

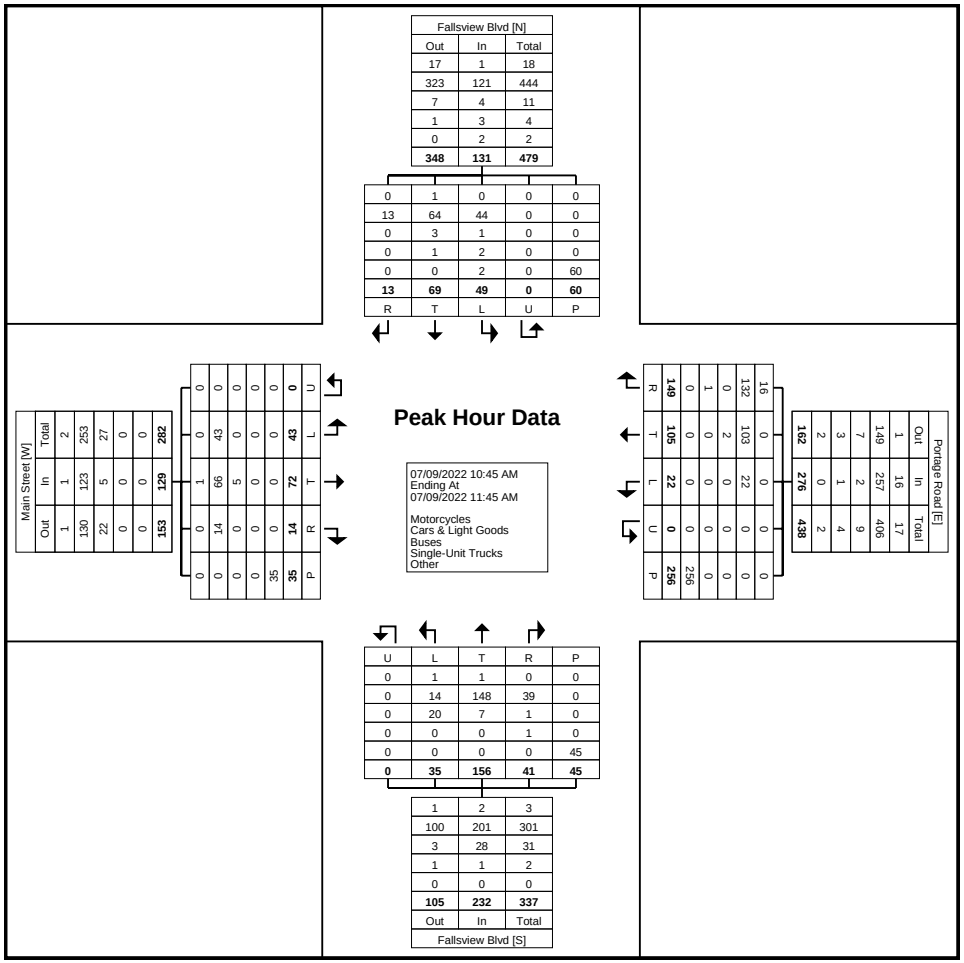
Turning Movement Peak Hour Data (10:45 AM)

Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:45 AM	16	16	5	0	9	37	7	26	30	0	83	63	6	46	8	0	12	60	14	16	2	0	23	32	192
11:00 AM	3	17	2	0	7	22	5	27	51	0	58	83	13	33	12	0	11	58	8	26	2	0	10	36	199
11:15 AM	11	20	2	0	8	33	5	24	37	0	60	66	6	40	8	0	10	54	16	15	5	0	9	36	189
11:30 AM	13	19	5	0	11	37	5	28	31	0	55	64	10	37	13	0	12	60	11	12	4	0	18	27	188
Total	43	72	14	0	35	129	22	105	149	0	256	276	35	156	41	0	45	232	49	69	13	0	60	131	768
Approach %	33.3	55.8	10.9	0.0	-	-	8.0	38.0	54.0	0.0	-	-	15.1	67.2	17.7	0.0	-	-	37.4	52.7	9.9	0.0	-	-	-
Total %	5.6	9.4	1.8	0.0	-	16.8	2.9	13.7	19.4	0.0	-	35.9	4.6	20.3	5.3	0.0	-	30.2	6.4	9.0	1.7	0.0	-	17.1	-
PHF	0.672	0.900	0.700	0.000	-	0.872	0.786	0.938	0.730	0.000	-	0.831	0.673	0.848	0.788	0.000	-	0.967	0.766	0.663	0.650	0.000	-	0.910	0.965
Motorcycles	0	1	0	0	-	1	0	0	16	0	-	16	1	1	0	0	-	2	0	1	0	0	-	1	20
% Motorcycles	0.0	1.4	0.0	-	-	0.8	0.0	0.0	10.7	-	-	5.8	2.9	0.6	0.0	-	-	0.9	0.0	1.4	0.0	-	-	0.8	2.6
Cars & Light Goods	43	66	14	0	-	123	22	103	132	0	-	257	14	148	39	0	-	201	44	64	13	0	-	121	702
% Cars & Light Goods	100.0	91.7	100.0	-	-	95.3	100.0	98.1	88.6	-	-	93.1	40.0	94.9	95.1	-	-	86.6	89.8	92.8	100.0	-	-	92.4	91.4
Buses	0	5	0	0	-	5	0	2	0	0	-	2	20	7	1	0	-	28	1	3	0	0	-	4	39
% Buses	0.0	6.9	0.0	-	-	3.9	0.0	1.9	0.0	-	-	0.7	57.1	4.5	2.4	-	-	12.1	2.0	4.3	0.0	-	-	3.1	5.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	2	1	0	0	-	3	5
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	-	-	0.4	0.0	0.0	2.4	-	-	0.4	4.1	1.4	0.0	-	-	2.3	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2	0	0	0	-	2	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	4.1	0.0	0.0	-	-	1.5	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.4	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	35	-	-	-	-	-	255	-	-	-	-	-	45	-	-	-	-	-	60	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	99.6	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Saturday
Site Code: 220026
Start Date: 07/09/2022



Turning Movement Peak Hour Data Plot (10:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Data

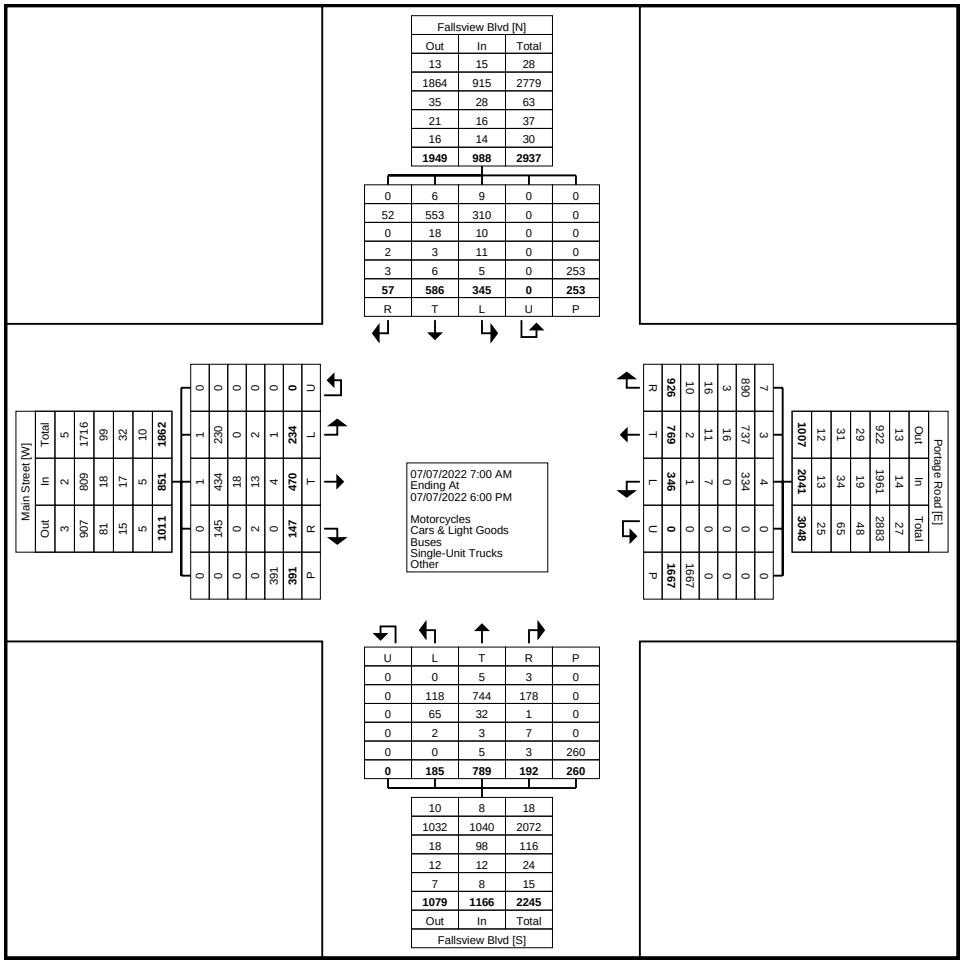
Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	2	8	1	0	1	11	2	7	4	0	18	13	1	10	1	0	1	12	3	5	1	0	2	9	45
7:15 AM	1	7	1	0	12	9	6	15	13	0	10	34	0	12	2	0	6	14	2	3	1	0	1	6	63
7:30 AM	2	11	3	0	7	16	6	15	8	0	25	29	5	14	4	0	12	23	4	10	1	0	3	15	83
7:45 AM	5	6	3	0	3	14	2	14	18	0	24	34	1	10	2	0	5	13	6	5	1	0	2	12	73
Hourly Total	10	32	8	0	23	50	16	51	43	0	77	110	7	46	9	0	24	62	15	23	4	0	8	42	264
8:00 AM	4	8	3	0	11	15	4	12	22	0	30	38	2	18	4	0	0	24	6	8	0	0	3	14	91
8:15 AM	6	10	4	0	15	20	1	23	23	0	33	47	4	20	4	0	5	28	6	11	0	0	5	17	112
8:30 AM	4	17	0	0	20	21	6	23	18	0	35	47	5	16	4	0	3	25	12	7	1	0	6	20	113
8:45 AM	5	9	2	0	21	16	0	8	24	0	46	32	3	22	2	0	19	27	8	15	5	0	13	28	103
Hourly Total	19	44	9	0	67	72	11	66	87	0	144	164	14	76	14	0	27	104	32	41	6	0	27	79	419
9:00 AM	3	6	3	0	20	12	4	11	24	0	65	39	4	11	5	0	0	20	3	8	2	0	14	13	84
9:15 AM	5	19	3	0	14	27	4	19	35	0	61	58	6	22	3	0	9	31	4	8	0	0	12	12	128
9:30 AM	4	10	2	0	12	16	3	20	26	0	76	49	11	31	8	0	7	50	9	19	0	0	10	28	143
9:45 AM	8	12	1	0	8	21	12	17	23	0	60	52	7	28	4	0	10	39	9	16	0	0	13	25	137
Hourly Total	20	47	9	0	54	76	23	67	108	0	262	198	28	92	20	0	26	140	25	51	2	0	49	78	492
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	8	17	6	0	2	31	4	15	38	0	74	57	5	44	4	0	2	53	14	15	2	0	7	31	172
11:15 AM	12	20	6	0	9	38	14	36	33	0	95	83	7	35	8	0	7	50	14	28	2	0	9	44	215
11:30 AM	6	21	6	0	13	33	6	32	36	0	49	74	11	32	11	0	0	54	10	26	6	0	6	42	203
11:45 AM	9	26	3	0	19	38	12	18	38	0	57	68	10	25	10	0	8	45	10	23	2	0	20	35	186
Hourly Total	35	84	21	0	43	140	36	101	145	0	275	282	33	136	33	0	17	202	48	92	12	0	42	152	776
12:00 PM	6	19	6	0	7	31	13	24	29	0	56	66	7	23	8	0	4	38	12	20	1	0	4	33	168
12:15 PM	12	14	5	0	7	31	15	21	28	0	60	64	8	36	7	0	10	51	15	19	2	0	9	36	182
12:30 PM	9	12	7	0	3	28	9	19	18	0	49	46	8	28	6	0	2	42	14	18	0	0	5	32	148
12:45 PM	6	7	5	0	9	18	18	18	44	0	63	80	5	31	7	0	10	43	13	17	1	0	2	31	172
Hourly Total	33	52	23	0	26	108	55	82	119	0	228	256	28	118	28	0	26	174	54	74	4	0	20	132	670
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	9	17	10	0	9	36	14	25	20	0	51	59	9	28	9	0	5	46	17	17	5	0	4	39	180
3:15 PM	6	23	10	0	4	39	16	30	22	0	59	68	2	30	5	0	7	37	16	32	0	0	3	48	192
3:30 PM	8	15	7	0	7	30	21	32	42	0	69	95	7	28	4	0	3	39	17	22	1	0	6	40	204
3:45 PM	20	17	6	0	3	43	19	30	34	0	73	83	7	24	4	0	29	35	10	29	3	0	5	42	203
Hourly Total	43	72	33	0	23	148	70	117	118	0	252	305	25	110	22	0	44	157	60	100	9	0	18	169	779
4:00 PM	9	13	5	0	9	27	23	33	35	0	60	91	6	30	11	0	14	47	15	21	3	0	5	39	204
4:15 PM	7	17	6	0	16	30	14	29	29	0	29	72	5	25	6	0	7	36	15	24	6	0	16	45	183
4:30 PM	9	16	6	0	25	31	15	36	35	0	42	86	10	34	9	0	4	53	14	26	4	0	21	44	214

4:45 PM	9	8	2	0	19	19	21	44	53	0	55	118	5	27	10	0	24	42	14	27	2	0	10	43	222
Hourly Total	34	54	19	0	69	107	73	142	152	0	186	367	26	116	36	0	49	178	58	98	15	0	52	171	823
5:00 PM	7	23	2	0	12	32	22	32	41	0	49	95	4	24	9	0	14	37	12	23	2	0	8	37	201
5:15 PM	8	26	6	0	33	40	13	45	40	0	64	98	8	17	5	0	10	30	17	28	2	0	14	47	215
5:30 PM	12	20	8	0	17	40	17	35	39	0	68	91	4	29	13	0	8	46	9	32	0	0	11	41	218
5:45 PM	13	16	9	0	24	38	10	31	34	0	62	75	8	25	3	0	15	36	15	24	1	0	4	40	189
Hourly Total	40	85	25	0	86	150	62	143	154	0	243	359	24	95	30	0	47	149	53	107	5	0	37	165	823
Grand Total	234	470	147	0	391	851	346	769	926	0	1667	2041	185	789	192	0	260	1166	345	586	57	0	253	988	5046
Approach %	27.5	55.2	17.3	0.0	-	-	17.0	37.7	45.4	0.0	-	-	15.9	67.7	16.5	0.0	-	-	34.9	59.3	5.8	0.0	-	-	-
Total %	4.6	9.3	2.9	0.0	-	16.9	6.9	15.2	18.4	0.0	-	40.4	3.7	15.6	3.8	0.0	-	23.1	6.8	11.6	1.1	0.0	-	19.6	-
Motorcycles	1	1	0	0	-	2	4	3	7	0	-	14	0	5	3	0	-	8	9	6	0	0	-	15	39
% Motorcycles	0.4	0.2	0.0	-	-	0.2	1.2	0.4	0.8	-	-	0.7	0.0	0.6	1.6	-	-	0.7	2.6	1.0	0.0	-	-	1.5	0.8
Cars & Light Goods	230	434	145	0	-	809	334	737	890	0	-	1961	118	744	178	0	-	1040	310	553	52	0	-	915	4725
% Cars & Light Goods	98.3	92.3	98.6	-	-	95.1	96.5	95.8	96.1	-	-	96.1	63.8	94.3	92.7	-	-	89.2	89.9	94.4	91.2	-	-	92.6	93.6
Buses	0	18	0	0	-	18	0	16	3	0	-	19	65	32	1	0	-	98	10	18	0	0	-	28	163
% Buses	0.0	3.8	0.0	-	-	2.1	0.0	2.1	0.3	-	-	0.9	35.1	4.1	0.5	-	-	8.4	2.9	3.1	0.0	-	-	2.8	3.2
Single-Unit Trucks	2	13	2	0	-	17	7	11	16	0	-	34	2	3	7	0	-	12	11	3	2	0	-	16	79
% Single-Unit Trucks	0.9	2.8	1.4	-	-	2.0	2.0	1.4	1.7	-	-	1.7	1.1	0.4	3.6	-	-	1.0	3.2	0.5	3.5	-	-	1.6	1.6
Articulated Trucks	0	2	0	0	-	2	1	1	3	0	-	5	0	0	1	0	-	1	2	3	1	0	-	6	14
% Articulated Trucks	0.0	0.4	0.0	-	-	0.2	0.3	0.1	0.3	-	-	0.2	0.0	0.0	0.5	-	-	0.1	0.6	0.5	1.8	-	-	0.6	0.3
Bicycles on Road	1	2	0	0	-	3	0	1	7	0	-	8	0	5	2	0	-	7	3	3	2	0	-	8	26
% Bicycles on Road	0.4	0.4	0.0	-	-	0.4	0.0	0.1	0.8	-	-	0.4	0.0	0.6	1.0	-	-	0.6	0.9	0.5	3.5	-	-	0.8	0.5
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	1.3	-	-	-	-	-	0.3	-	-	-	-	-	0.0	-	-	-	-	-	1.2	-	-
Pedestrians	-	-	-	-	386	-	-	-	-	-	1662	-	-	-	-	-	260	-	-	-	-	-	250	-	-
% Pedestrians	-	-	-	-	98.7	-	-	-	-	-	99.7	-	-	-	-	-	100.0	-	-	-	-	-	98.8	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Peak Hour Data (9:00 AM)

Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
9:00 AM	3	6	3	0	20	12	4	11	24	0	65	39	4	11	5	0	0	20	3	8	2	0	14	13	84
9:15 AM	5	19	3	0	14	27	4	19	35	0	61	58	6	22	3	0	9	31	4	8	0	0	12	12	128
9:30 AM	4	10	2	0	12	16	3	20	26	0	76	49	11	31	8	0	7	50	9	19	0	0	10	28	143
9:45 AM	8	12	1	0	8	21	12	17	23	0	60	52	7	28	4	0	10	39	9	16	0	0	13	25	137
Total	20	47	9	0	54	76	23	67	108	0	262	198	28	92	20	0	26	140	25	51	2	0	49	78	492
Approach %	26.3	61.8	11.8	0.0	-	-	11.6	33.8	54.5	0.0	-	-	20.0	65.7	14.3	0.0	-	-	32.1	65.4	2.6	0.0	-	-	-
Total %	4.1	9.6	1.8	0.0	-	15.4	4.7	13.6	22.0	0.0	-	40.2	5.7	18.7	4.1	0.0	-	28.5	5.1	10.4	0.4	0.0	-	15.9	-
PHF	0.625	0.618	0.750	0.000	-	0.704	0.479	0.838	0.771	0.000	-	0.853	0.636	0.742	0.625	0.000	-	0.700	0.694	0.671	0.250	0.000	-	0.696	0.860
Motorcycles	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	1	0	0	0	-	1	3
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.9	-	-	0.5	0.0	0.0	5.0	-	-	0.7	4.0	0.0	0.0	-	-	1.3	0.6
Cars & Light Goods	20	43	9	0	-	72	22	64	101	0	-	187	16	87	18	0	-	121	21	48	1	0	-	70	450
% Cars & Light Goods	100.0	91.5	100.0	-	-	94.7	95.7	95.5	93.5	-	-	94.4	57.1	94.6	90.0	-	-	86.4	84.0	94.1	50.0	-	-	89.7	91.5
Buses	0	1	0	0	-	1	0	1	0	0	-	1	12	3	1	0	-	16	0	2	0	0	-	2	20
% Buses	0.0	2.1	0.0	-	-	1.3	0.0	1.5	0.0	-	-	0.5	42.9	3.3	5.0	-	-	11.4	0.0	3.9	0.0	-	-	2.6	4.1
Single-Unit Trucks	0	3	0	0	-	3	1	2	3	0	-	6	0	0	0	0	-	0	3	0	1	0	-	4	13
% Single-Unit Trucks	0.0	6.4	0.0	-	-	3.9	4.3	3.0	2.8	-	-	3.0	0.0	0.0	0.0	-	-	0.0	12.0	0.0	50.0	-	-	5.1	2.6
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.9	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	2.0	0.0	-	-	1.3	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	2	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.9	-	-	1.0	0.0	2.2	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.4	-	-	-	-	-	0.0	-	-	-	-	-	2.0	-	-
Pedestrians	-	-	-	-	54	-	-	-	-	-	261	-	-	-	-	-	26	-	-	-	-	-	48	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	99.6	-	-	-	-	-	100.0	-	-	-	-	-	98.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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519-896-3163 cbowness@ptsl.com

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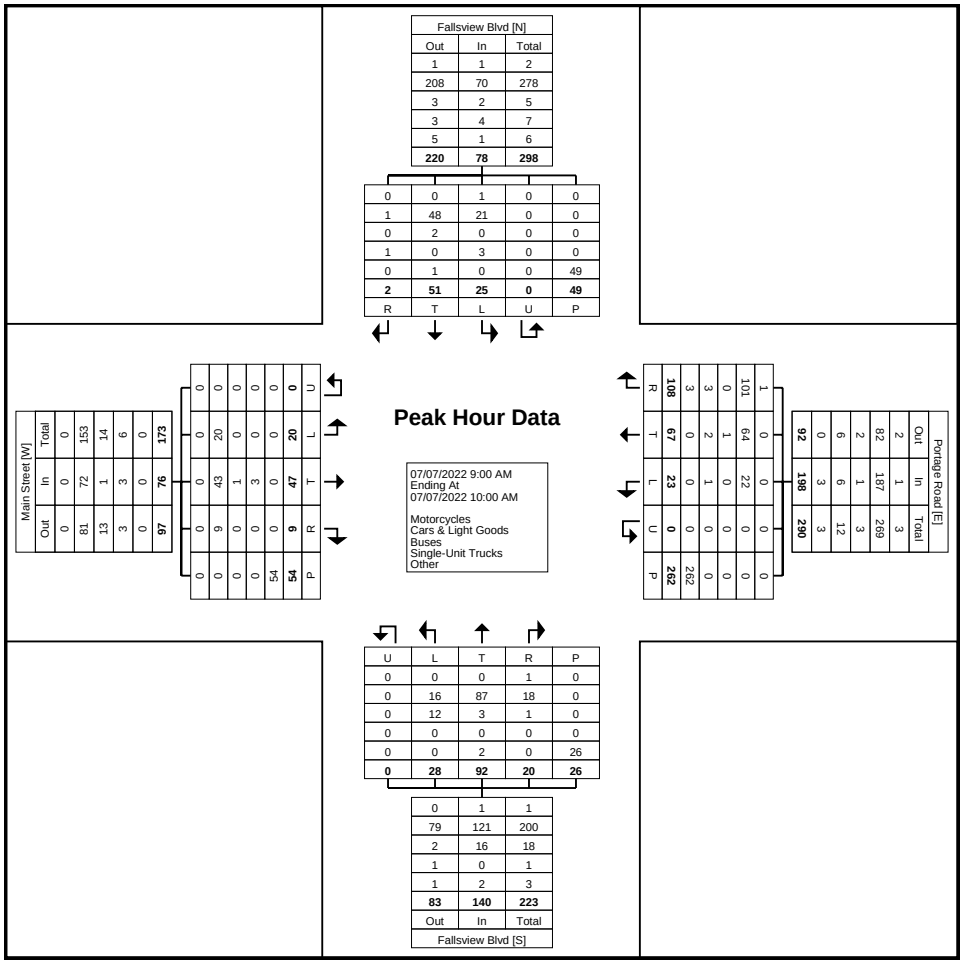
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00 AM	8	17	6	0	2	31	4	15	38	0	74	57	5	44	4	0	2	53	14	15	2	0	7	31	172
11:15 AM	12	20	6	0	9	38	14	36	33	0	95	83	7	35	8	0	7	50	14	28	2	0	9	44	215
11:30 AM	6	21	6	0	13	33	6	32	36	0	49	74	11	32	11	0	0	54	10	26	6	0	6	42	203
11:45 AM	9	26	3	0	19	38	12	18	38	0	57	68	10	25	10	0	8	45	10	23	2	0	20	35	186
Total	35	84	21	0	43	140	36	101	145	0	275	282	33	136	33	0	17	202	48	92	12	0	42	152	776
Approach %	25.0	60.0	15.0	0.0	-	-	12.8	35.8	51.4	0.0	-	-	16.3	67.3	16.3	0.0	-	-	31.6	60.5	7.9	0.0	-	-	-
Total %	4.5	10.8	2.7	0.0	-	18.0	4.6	13.0	18.7	0.0	-	36.3	4.3	17.5	4.3	0.0	-	26.0	6.2	11.9	1.5	0.0	-	19.6	-
PHF	0.729	0.808	0.875	0.000	-	0.921	0.643	0.701	0.954	0.000	-	0.849	0.750	0.773	0.750	0.000	-	0.935	0.857	0.821	0.500	0.000	-	0.864	0.902
Motorcycles	1	0	0	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	1	2	0	0	-	3	5
% Motorcycles	2.9	0.0	0.0	-	-	0.7	2.8	0.0	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	2.1	2.2	0.0	-	-	2.0	0.6
Cars & Light Goods	34	76	20	0	-	130	35	93	143	0	-	271	22	130	32	0	-	184	46	87	11	0	-	144	729
% Cars & Light Goods	97.1	90.5	95.2	-	-	92.9	97.2	92.1	98.6	-	-	96.1	66.7	95.6	97.0	-	-	91.1	95.8	94.6	91.7	-	-	94.7	93.9
Buses	0	5	0	0	-	5	0	4	1	0	-	5	11	4	0	0	-	15	0	3	0	0	-	3	28
% Buses	0.0	6.0	0.0	-	-	3.6	0.0	4.0	0.7	-	-	1.8	33.3	2.9	0.0	-	-	7.4	0.0	3.3	0.0	-	-	2.0	3.6
Single-Unit Trucks	0	3	1	0	-	4	0	4	1	0	-	5	0	1	1	0	-	2	1	0	0	0	-	1	12
% Single-Unit Trucks	0.0	3.6	4.8	-	-	2.9	0.0	4.0	0.7	-	-	1.8	0.0	0.7	3.0	-	-	1.0	2.1	0.0	0.0	-	-	0.7	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	8.3	-	-	0.7	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	2.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	42	-	-	-	-	-	275	-	-	-	-	-	17	-	-	-	-	-	42	-	-
% Pedestrians	-	-	-	-	97.7	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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519-896-3163 cbowness@ptsl.com

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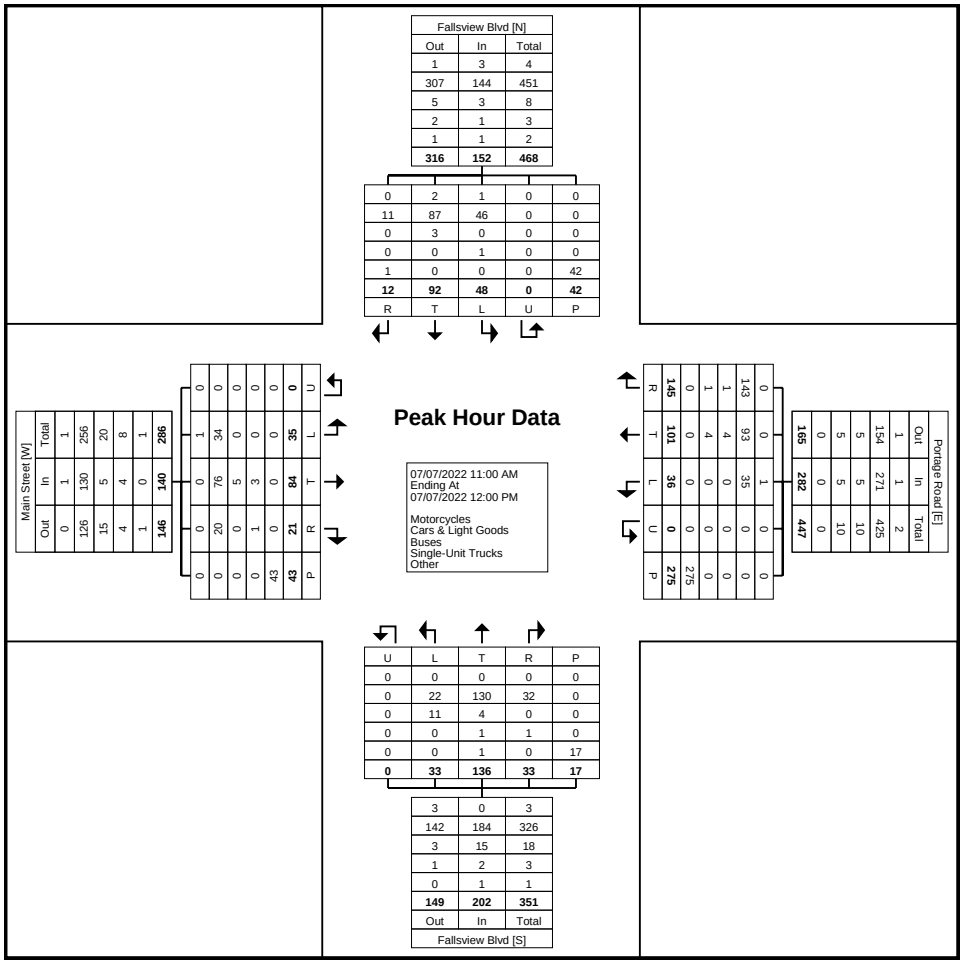
Site Code: 220026
Start Date: 07/07/2022



Turning Movement Peak Hour Data Plot (11:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Portage Road & Fallsview Blvd - Weekday
Site Code: 220026
Start Date: 07/07/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Main Street Eastbound						Portage Road Westbound						Fallsview Blvd Northbound						Fallsview Blvd Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	9	8	2	0	19	19	21	44	53	0	55	118	5	27	10	0	24	42	14	27	2	0	10	43	222
5:00 PM	7	23	2	0	12	32	22	32	41	0	49	95	4	24	9	0	14	37	12	23	2	0	8	37	201
5:15 PM	8	26	6	0	33	40	13	45	40	0	64	98	8	17	5	0	10	30	17	28	2	0	14	47	215
5:30 PM	12	20	8	0	17	40	17	35	39	0	68	91	4	29	13	0	8	46	9	32	0	0	11	41	218
Total	36	77	18	0	81	131	73	156	173	0	236	402	21	97	37	0	56	155	52	110	6	0	43	168	856
Approach %	27.5	58.8	13.7	0.0	-	-	18.2	38.8	43.0	0.0	-	-	13.5	62.6	23.9	0.0	-	-	31.0	65.5	3.6	0.0	-	-	-
Total %	4.2	9.0	2.1	0.0	-	15.3	8.5	18.2	20.2	0.0	-	47.0	2.5	11.3	4.3	0.0	-	18.1	6.1	12.9	0.7	0.0	-	19.6	-
PHF	0.750	0.740	0.563	0.000	-	0.819	0.830	0.867	0.816	0.000	-	0.852	0.656	0.836	0.712	0.000	-	0.842	0.765	0.859	0.750	0.000	-	0.894	0.964
Motorcycles	0	0	0	0	-	0	3	1	1	0	-	5	0	0	1	0	-	1	4	0	0	0	-	4	10
% Motorcycles	0.0	0.0	0.0	-	-	0.0	4.1	0.6	0.6	-	-	1.2	0.0	0.0	2.7	-	-	0.6	7.7	0.0	0.0	-	-	2.4	1.2
Cars & Light Goods	35	73	18	0	-	126	70	152	170	0	-	392	15	91	36	0	-	142	45	107	6	0	-	158	818
% Cars & Light Goods	97.2	94.8	100.0	-	-	96.2	95.9	97.4	98.3	-	-	97.5	71.4	93.8	97.3	-	-	91.6	86.5	97.3	100.0	-	-	94.0	95.6
Buses	0	4	0	0	-	4	0	3	0	0	-	3	6	6	0	0	-	12	2	3	0	0	-	5	24
% Buses	0.0	5.2	0.0	-	-	3.1	0.0	1.9	0.0	-	-	0.7	28.6	6.2	0.0	-	-	7.7	3.8	2.7	0.0	-	-	3.0	2.8
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.9	0.0	0.0	-	-	0.6	0.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	1	0	0	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	2.8	0.0	0.0	-	-	0.8	0.0	0.0	1.2	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.4	-	-	-	-	-	0.0	-	-	-	-	-	2.3	-	-
Pedestrians	-	-	-	-	81	-	-	-	-	-	235	-	-	-	-	-	56	-	-	-	-	-	42	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	99.6	-	-	-	-	-	100.0	-	-	-	-	-	97.7	-	-

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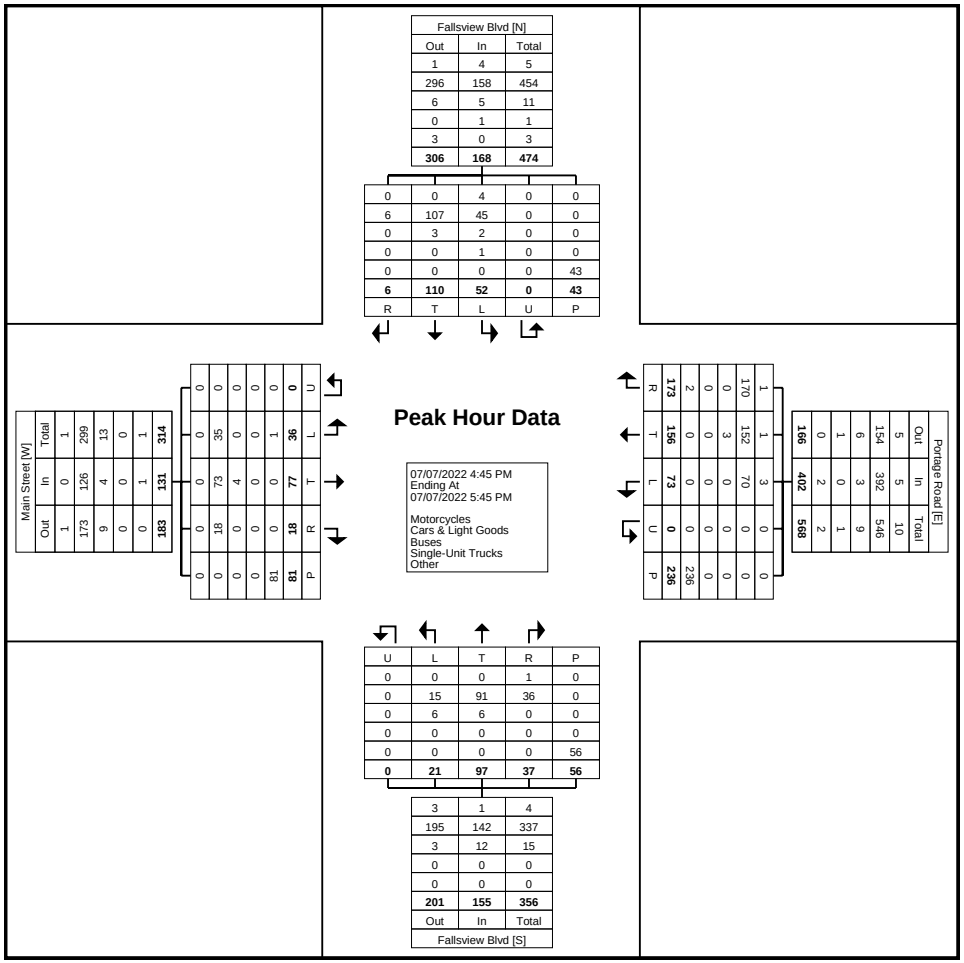


Turning Movement Peak Hour Data Plot (4:45 PM)

Signal Code: 49E102

Intersection: RR49(Marineland Pkwy) & RR102(Stanley Ave. E.)

Municipality: niagarafalls

Owner: Region

Last Modified: 2018-05-15 1:05:14 PM

Timing Parameters	EBD & WBD THRU MARINELAND PKWY	NBD THRU STANLEY AVE.	n/a	n/a	n/a	n/a
Min Green	10	8	0	0	0	0
Walk	0	12	0	0	0	0
Ped Clearance	0	20	0	0	0	0
Vehicle Ext.	2.9	2.8	0	0	0	0
Max Green	35	30	0	0	0	0
Yellow	4.5	4.1	0	0	0	0
All Red	3	2.4	0	0	0	0

		Offset
Minimum Cycle	32	0
Pedestrian Cycle	38.5	
Maximum Cycle	79	0
Operation	FA	

Installed On:	2010-10-19
Count Date:	2015-09-09

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

Signal Code: 49W102

Intersection: RR49 (Marineland Pkwy) & RR102 (Stanley Ave. W.)

Municipality: niagarafalls

Owner: Region

Last Modified: 2020-06-11 2:55:35 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:	2009-08-06
Count Date:	2013-07-24

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

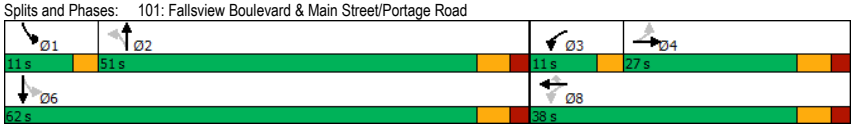
Appendix C

Base Year Operations

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	47	23	67	108	28	92	25	51
Future Volume (vph)	20	47	23	67	108	28	92	25	51
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	11.7	11.7	15.7	15.7	15.7	57.5	57.5	61.2	61.2
Actuated g/C Ratio	0.14	0.14	0.18	0.18	0.18	0.68	0.68	0.72	0.72
v/c Ratio	0.14	0.28	0.13	0.24	0.35	0.06	0.12	0.05	0.05
Control Delay	34.8	32.4	27.3	29.1	8.4	8.8	7.2	5.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	32.4	27.3	29.1	8.4	8.8	7.2	5.3	4.9
LOS	C	C	C	C	A	A	A	A	A
Approach Delay		33.1		17.6			7.5		5.1
Approach LOS		C		B			A		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 84.9			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 44.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	61	25	73	117	30	122	27	57
v/c Ratio	0.14	0.28	0.13	0.24	0.35	0.06	0.12	0.05	0.05
Control Delay	34.8	32.4	27.3	29.1	8.4	8.8	7.2	5.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	32.4	27.3	29.1	8.4	8.8	7.2	5.3	4.9
Queue Length 50th (m)	3.0	7.2	3.4	10.2	0.0	0.9	3.4	0.8	1.7
Queue Length 95th (m)	10.5	20.4	9.6	21.2	12.8	7.2	18.8	4.7	7.9
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	316	428	206	671	584	514	985	523	1160
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.14	0.12	0.11	0.20	0.06	0.12	0.05	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	47	9	23	67	108	28	92	20	25	51	2
Future Volume (vph)	20	47	9	23	67	108	28	92	20	25	51	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.92	1.00	0.90		1.00	0.99	
Flpb, ped/bikes	0.94	1.00		0.96	1.00	1.00	0.88	1.00		0.76	1.00	
Frt	1.00	0.98		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)	1566	1552		1528	1667	1287	1020	1452		1187	1610	
Flt Permitted	0.71	1.00		0.48	1.00	1.00	0.72	1.00		0.63	1.00	
Satd. Flow (perm)	1170	1552		779	1667	1287	773	1452		790	1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	51	10	25	73	117	30	100	22	27	55	2
RTOR Reduction (vph)	0	8	0	0	0	94	0	5	0	0	1	0
Lane Group Flow (vph)	22	53	0	25	73	23	30	117	0	27	56	0
Confl. Peds. (#/hr)	26		48	48		26	54		261	261		54
Heavy Vehicles (%)	0%	9%	0%	4%	5%	6%	43%	5%	10%	6%	6%	50%
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)	9.3	9.3		15.2	15.2	15.2	55.1	55.1		60.6	60.6	
Effective Green, g (s)	11.7	11.7		14.2	17.6	17.6	57.5	57.5		59.6	63.0	
Actuated g/C Ratio	0.13	0.13		0.16	0.20	0.20	0.65	0.65		0.67	0.71	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	204		140	331	255	501	942		538	1144	
v/s Ratio Prot		0.03		0.00	c0.04			c0.08		0.00	c0.04	
v/s Ratio Perm	0.02			0.02		0.02	0.04			0.03		
v/c Ratio	0.14	0.26		0.18	0.22	0.09	0.06	0.12		0.05	0.05	
Uniform Delay, d1	34.0	34.6		31.8	29.8	29.0	5.7	5.9		4.9	3.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		0.6	0.3	0.2	0.2	0.3		0.0	0.1	
Delay (s)	34.4	35.2		32.5	30.1	29.1	5.9	6.2		5.0	3.9	
Level of Service	C	D		C	C	C	A	A		A	A	
Approach Delay (s)		35.0			29.8			6.1			4.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	24	65	67	4	11	82
Future Volume (vph)	24	65	67	4	11	82
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	22.0	22.0	23.0	23.0	15.0	15.0
Total Split (%)	36.7%	36.7%	38.3%	38.3%	25.0%	25.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
v/c Ratio	0.10	0.17	0.16	0.01	0.13	0.13
Control Delay	19.8	6.6	19.4	17.5	9.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	6.6	19.4	17.5	9.7	7.3
LOS	B	A	B	B	A	A
Approach Delay	10.2			19.3	8.5	
Approach LOS	B			B	A	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 67.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.17			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 33.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	26	71	73	4	51	50
v/c Ratio	0.10	0.17	0.16	0.01	0.13	0.13
Control Delay	19.8	6.6	19.4	17.5	9.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	6.6	19.4	17.5	9.7	7.3
Queue Length 50th (m)	2.6	0.0	7.2	0.4	1.2	0.0
Queue Length 95th (m)	8.1	8.6	16.5	2.4	9.0	7.6
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	262	421	454	493	388	381
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	0.17	0.16	0.01	0.13	0.13

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	24	65	67	4	11	82
Future Volume (vph)	24	65	67	4	11	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.70	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.89	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	929	1369	1614	1750	1335	1278
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	929	1369	1614	1750	1335	1278
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	71	73	4	12	89
RTOR Reduction (vph)	0	52	0	0	28	36
Lane Group Flow (vph)	26	19	73	4	23	14
Confl. Peds. (#/hr)	143	2	2			2
Heavy Vehicles (%)	25%	6%	3%	0%	9%	9%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	16.0	16.0	16.8	16.8	16.0	16.0
Effective Green, g (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	369	454	493	360	345
v/s Ratio Prot			c0.05	0.00	c0.02	
v/s Ratio Perm	c0.03	0.01				0.01
v/c Ratio	0.10	0.05	0.16	0.01	0.06	0.04
Uniform Delay, d1	18.5	18.2	18.2	17.4	18.3	18.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	0.8	0.0	0.1	0.0
Delay (s)	19.3	18.5	19.0	17.4	18.3	18.2
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.7			18.9	18.3	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.11		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	33.3%	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	0	0	72	76	0
Future Volume (Veh/h)	0	0	0	72	76	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	78	83	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	161	83	83			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	161	83	83			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	830	976	1514			

Direction, Lane #	NB 1	SB 1
Volume Total	78	83
Volume Left	0	0
Volume Right	0	0
cSH	1514	1700
Volume to Capacity	0.00	0.05
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	14.3%	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	72	76	0
Future Volume (Veh/h)	0	0	0	72	76	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	78	83	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	161	83	83			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	161	83	83			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	830	976	1514			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	78	83
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.04	0.05	0.05
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	282	296	61	62	12
Future Volume (Veh/h)	11	282	296	61	62	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	307	322	66	67	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked						
vC, conflicting volume	322				500	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322				500	161
tC, single (s)	4.1				7.0	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.5
p0 queue free %	99				86	98
cM capacity (veh/h)	1249				481	810

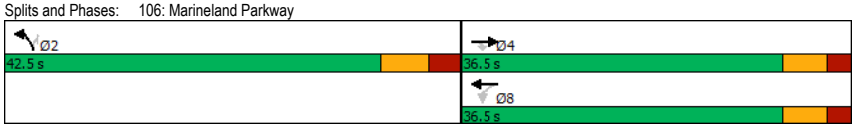
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	114	205	161	161	66	67	13
Volume Left	12	0	0	0	0	67	0
Volume Right	0	0	0	0	66	0	13
cSH	1249	1700	1700	1700	1700	481	810
Volume to Capacity	0.01	0.12	0.09	0.09	0.04	0.14	0.02
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	3.8	0.4
Control Delay (s)	0.9	0.0	0.0	0.0	0.0	13.7	9.5
Lane LOS	A					B	A
Approach Delay (s)	0.3		0.0			13.0	
Approach LOS						B	

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	265	133	12	294	157	22
Future Volume (vph)	265	133	12	294	157	22
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	14.1	14.1	11.6	14.1	38.5	38.5
Actuated g/C Ratio	0.23	0.23	0.19	0.23	0.64	0.64
v/c Ratio	0.39	0.33	0.08	0.42	0.09	0.03
Control Delay	21.2	6.2	21.1	21.6	4.7	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	6.2	21.1	21.6	4.7	2.3
LOS	C	A	C	C	A	A
Approach Delay	16.2			21.6	4.4	
Approach LOS	B			C	A	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 60.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 24.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	288	145	13	320	171	24
v/c Ratio	0.39	0.33	0.08	0.42	0.09	0.03
Control Delay	21.2	6.2	21.1	21.6	4.7	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	6.2	21.1	21.6	4.7	2.3
Queue Length 50th (m)	15.0	0.0	1.3	16.8	3.2	0.0
Queue Length 95th (m)	24.6	11.8	5.3	27.1	7.3	2.4
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1715	842	416	1749	1864	909
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	0.17	0.03	0.18	0.09	0.03

Intersection Summary

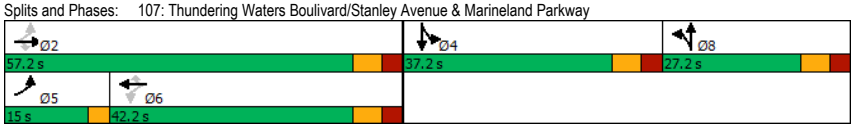
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	265	133	12	294	157	22
Future Volume (vph)	265	133	12	294	157	22
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3197	1444	1421	3260	2932	1417
Flt Permitted	1.00	1.00	0.56	1.00	0.95	1.00
Satd. Flow (perm)	3197	1444	840	3260	2932	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	145	13	320	171	24
RTOR Reduction (vph)	0	111	0	0	0	9
Lane Group Flow (vph)	288	34	13	320	171	15
Heavy Vehicles (%)	4%	3%	17%	2%	10%	5%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	11.6	11.6	11.6	11.6	35.0	35.0
Effective Green, g (s)	14.1	14.1	11.6	14.1	38.5	38.5
Actuated g/C Ratio	0.23	0.23	0.19	0.23	0.64	0.64
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	743	335	160	758	1862	900
v/s Ratio Prot	0.09			c0.10	c0.06	
v/s Ratio Perm		0.02	0.02			0.01
v/c Ratio	0.39	0.10	0.08	0.42	0.09	0.02
Uniform Delay, d1	19.6	18.3	20.1	19.8	4.3	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.2	0.4	0.1	0.0
Delay (s)	19.9	18.4	20.3	20.2	4.4	4.1
Level of Service	B	B	C	C	A	A
Approach Delay (s)	19.4			20.2	4.3	
Approach LOS	B			C	A	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.18			
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	24.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	33	265	10	1	267	172	3	7	124	7
Future Volume (vph)	33	265	10	1	267	172	3	7	124	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	43.2	46.4	46.4	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.33	0.35	0.35	0.25	0.25	0.25	0.25
v/c Ratio	0.10	0.22	0.02	0.00	0.25	0.32	0.01	0.04	0.35	0.11
Control Delay	24.8	26.2	0.0	33.0	32.2	6.0	37.0	24.8	43.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	26.2	0.0	33.0	32.2	6.0	37.0	24.8	43.5	15.6
LOS	C	C	A	C	C	A	D	C	D	B
Approach Delay		25.2			22.0			26.6		36.8
Approach LOS		C			C			C		D

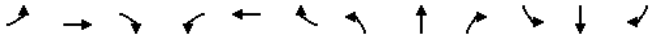
Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	288	11	1	290	187	3	17	135	43
v/c Ratio	0.10	0.22	0.02	0.00	0.25	0.32	0.01	0.04	0.35	0.11
Control Delay	24.8	26.2	0.0	33.0	32.2	6.0	37.0	24.8	43.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	26.2	0.0	33.0	32.2	6.0	37.0	24.8	43.5	15.6
Queue Length 50th (m)	5.9	26.7	0.0	0.2	30.7	0.0	0.6	1.7	30.4	1.7
Queue Length 95th (m)	13.4	37.7	0.0	1.8	44.4	17.8	3.3	8.0	50.5	11.5
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	382	1292	662	330	1148	593	419	413	384	409
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.22	0.02	0.00	0.25	0.32	0.01	0.04	0.35	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	265	10	1	267	172	3	7	8	124	7	32
Future Volume (vph)	33	265	10	1	267	172	3	7	8	124	7	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	3197	1488	1662	3260	1340	1662	1611		1525	1520	
Flt Permitted	0.47	1.00	1.00	0.58	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	784	3197	1488	1007	3260	1340	1662	1611		1525	1520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	288	11	1	290	187	3	8	9	135	8	35
RTOR Reduction (vph)	0	0	6	0	0	122	0	7	0	0	26	0
Lane Group Flow (vph)	36	288	5	1	290	65	3	10	0	135	17	0
Confl. Peds. (#/hr)	1						1					1
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	0%	0%	0%	9%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	51.2	51.2	51.2	43.2	43.2	43.2	30.0	30.0		30.0	30.0	
Effective Green, g (s)	50.2	54.4	54.4	43.2	46.4	46.4	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.38	0.41	0.41	0.33	0.35	0.35	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	319	1309	609	327	1139	468	415	402		381	380	
v/s Ratio Prot	0.00	c0.09			c0.09		0.00	c0.01		c0.09	0.01	
v/s Ratio Perm	0.04		0.00	0.00		0.05						
v/c Ratio	0.11	0.22	0.01	0.00	0.25	0.14	0.01	0.03		0.35	0.04	
Uniform Delay, d1	26.5	25.4	23.2	30.3	30.9	29.5	37.4	37.6		41.0	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.0	0.0	0.5	0.6	0.0	0.1		2.6	0.2	
Delay (s)	26.7	25.8	23.2	30.3	31.4	30.2	37.4	37.7		43.6	38.0	
Level of Service	C	C	C	C	C	C	D	D		D	D	
Approach Delay (s)		25.8			30.9			37.7			42.2	
Approach LOS		C			C			D			D	

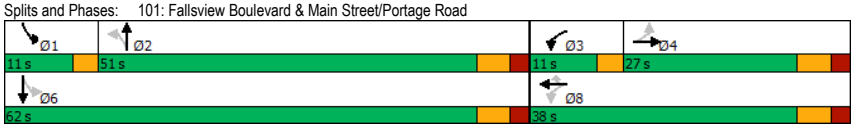
Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	132.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	36	77	73	156	173	21	97	52	110
Future Volume (vph)	36	77	73	156	173	21	97	52	110
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	13.5	13.5	21.9	21.9	21.9	50.5	50.5	58.3	58.3
Actuated g/C Ratio	0.15	0.15	0.25	0.25	0.25	0.57	0.57	0.66	0.66
v/c Ratio	0.25	0.42	0.33	0.40	0.41	0.05	0.18	0.13	0.12
Control Delay	38.2	36.2	29.2	30.1	6.9	12.0	10.4	7.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	36.2	29.2	30.1	6.9	12.0	10.4	7.4	6.7
LOS	D	D	C	C	A	B	B	A	A
Approach Delay		36.8		20.0			10.6		6.9
Approach LOS		D		B			B		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 88.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 55.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	104	79	170	188	23	145	57	127
v/c Ratio	0.25	0.42	0.33	0.40	0.41	0.05	0.18	0.13	0.12
Control Delay	38.2	36.2	29.2	30.1	6.9	12.0	10.4	7.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	36.2	29.2	30.1	6.9	12.0	10.4	7.4	6.7
Queue Length 50th (m)	6.4	15.6	11.1	25.2	0.0	1.9	10.4	3.4	7.6
Queue Length 95th (m)	16.0	31.1	22.4	43.2	15.4	6.6	23.8	9.0	16.7
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	262	421	243	657	603	425	787	455	1102
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.25	0.33	0.26	0.31	0.05	0.18	0.13	0.12

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	77	18	73	156	173	21	97	37	52	110	6
Future Volume (vph)	36	77	18	73	156	173	21	97	37	52	110	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.88	1.00	0.85		1.00	0.99	
Flpb, ped/bikes	0.92	1.00		0.95	1.00	1.00	0.83	1.00		0.78	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)	1481	1584		1526	1699	1280	1071	1363		1134	1667	
Flt Permitted	0.65	1.00		0.46	1.00	1.00	0.68	1.00		0.61	1.00	
Satd. Flow (perm)	1013	1584		741	1699	1280	762	1363		731	1667	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	84	20	79	170	188	23	105	40	57	120	7
RTOR Reduction (vph)	0	9	0	0	0	141	0	11	0	0	2	0
Lane Group Flow (vph)	39	95	0	79	170	47	23	134	0	57	125	0
Confl. Peds. (#/hr)	42		56	56		42	81		235	235		81
Heavy Vehicles (%)	3%	5%	0%	4%	3%	2%	29%	6%	3%	14%	3%	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)	11.1	11.1		20.2	20.2	20.2	48.1	48.1		56.6	56.6	
Effective Green, g (s)	13.5	13.5		19.2	22.6	22.6	50.5	50.5		55.6	59.0	
Actuated g/C Ratio	0.15	0.15		0.21	0.25	0.25	0.56	0.56		0.62	0.66	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	238		203	428	322	429	768		473	1097	
v/s Ratio Prot		0.06		0.02	c0.10			c0.10		0.01	c0.08	
v/s Ratio Perm	0.04			0.06		0.04	0.03			0.07		
v/c Ratio	0.26	0.40		0.39	0.40	0.15	0.05	0.17		0.12	0.11	
Uniform Delay, d1	33.6	34.4		29.3	27.8	26.0	8.8	9.5		6.9	5.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.1		1.2	0.6	0.2	0.2	0.5		0.1	0.2	
Delay (s)	34.5	35.5		30.5	28.4	26.2	9.0	10.0		7.0	5.9	
Level of Service	C	D		C	C	C	A	A		A	A	
Approach Delay (s)		35.2			27.9			9.8			6.2	
Approach LOS		D			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.25			
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	55.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	113	111	12	33	259
Future Volume (vph)	39	113	111	12	33	259
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	45.0	45.0	25.0	25.0	30.0	30.0
Total Split (%)	45.0%	45.0%	25.0%	25.0%	30.0%	30.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
v/c Ratio	0.16	0.18	0.33	0.04	0.45	0.41
Control Delay	18.2	3.8	33.6	29.3	13.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	3.8	33.6	29.3	13.8	9.0
LOS	B	A	C	C	B	A
Approach Delay	7.5			33.2	11.4	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 94.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	42	123	121	13	163	155
v/c Ratio	0.16	0.18	0.33	0.04	0.45	0.41
Control Delay	18.2	3.8	33.6	29.3	13.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	3.8	33.6	29.3	13.8	9.0
Queue Length 50th (m)	4.7	0.0	19.5	2.0	5.8	0.0
Queue Length 95th (m)	12.1	10.0	35.9	7.0	25.3	17.2
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	267	680	370	312	433	440
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	0.18	0.33	0.04	0.38	0.35

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	113	111	12	33	259
Future Volume (vph)	39	113	111	12	33	259
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.46	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.88	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	627	1403	1662	1400	1239	1191
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	627	1403	1662	1400	1239	1191
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	123	121	13	36	282
RTOR Reduction (vph)	0	69	0	0	100	122
Lane Group Flow (vph)	42	54	121	13	63	33
Confl. Peds. (#/hr)	275					1
Heavy Vehicles (%)	21%	6%	0%	25%	18%	17%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	38.8	38.8	18.8	18.8	18.0	18.0
Effective Green, g (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	610	370	312	265	255
v/s Ratio Prot			c0.07	0.01	c0.05	
v/s Ratio Perm	c0.07	0.04				0.03
v/c Ratio	0.15	0.09	0.33	0.04	0.24	0.13
Uniform Delay, d1	16.1	15.6	30.7	28.7	30.6	29.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.3	2.3	0.3	0.5	0.2
Delay (s)	17.3	15.9	33.0	29.0	31.1	30.1
Level of Service	B	B	C	C	C	C
Approach Delay (s)	16.3			32.6	30.6	
Approach LOS	B			C	C	

Intersection Summary				
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	14.2
Intersection Capacity Utilization	29.3%	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	0	0	106	146	0
Future Volume (Veh/h)	0	0	0	106	146	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	115	159	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	274	159	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	274	159	159			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	716	886	1420			

Direction, Lane #	NB 1	SB 1
Volume Total	115	159
Volume Left	0	0
Volume Right	0	0
cSH	1420	1700
Volume to Capacity	0.00	0.09
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	18.3%	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	106	146	0
Future Volume (Veh/h)	0	0	0	106	146	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	115	159	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	274	159	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	274	159	159			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	716	886	1420			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	115	159
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.11	0.07	0.09
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	507	453	89	105	32
Future Volume (Veh/h)	17	507	453	89	105	32
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)	18	551	492	97	114	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.95	
vC, conflicting volume	492				804	246
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492				694	246
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	98				67	95
cM capacity (veh/h)	1082				347	733

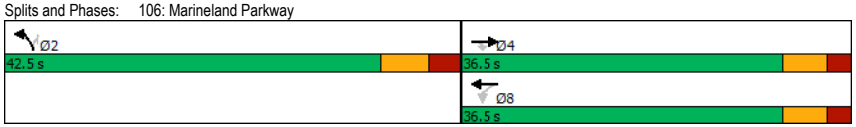
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	202	367	246	246	97	114	35
Volume Left	18	0	0	0	0	114	0
Volume Right	0	0	0	0	97	0	35
cSH	1082	1700	1700	1700	1700	347	733
Volume to Capacity	0.02	0.22	0.14	0.14	0.06	0.33	0.05
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	11.2	1.2
Control Delay (s)	0.9	0.0	0.0	0.0	0.0	20.4	10.2
Lane LOS	A					C	B
Approach Delay (s)	0.3		0.0			18.0	
Approach LOS						C	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	477	193	21	437	397	30
Future Volume (vph)	477	193	21	437	397	30
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	18.5	18.5	16.0	18.5	38.6	38.6
Actuated g/C Ratio	0.28	0.28	0.25	0.28	0.59	0.59
v/c Ratio	0.56	0.39	0.18	0.52	0.24	0.04
Control Delay	22.2	5.2	22.3	21.6	7.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	5.2	22.3	21.6	7.3	3.0
LOS	C	A	C	C	A	A
Approach Delay	17.3			21.6	7.0	
Approach LOS	B			C	A	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 65.1			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	518	210	23	475	432	33
v/c Ratio	0.56	0.39	0.18	0.52	0.24	0.04
Control Delay	22.2	5.2	22.3	21.6	7.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	5.2	22.3	21.6	7.3	3.0
Queue Length 50th (m)	29.1	0.0	2.3	26.4	11.9	0.0
Queue Length 95th (m)	42.7	13.1	7.8	39.0	22.9	3.5
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1632	800	247	1616	1804	767
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	0.32	0.26	0.09	0.29	0.24	0.04

Intersection Summary

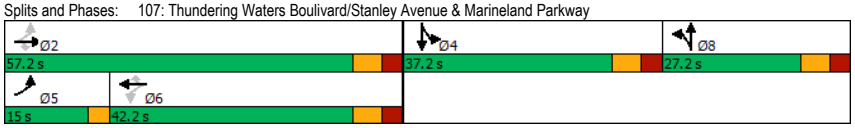
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	477	193	21	437	397	30
Future Volume (vph)	477	193	21	437	397	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1390	1511	3228	3043	1271
Flt Permitted	1.00	1.00	0.34	1.00	0.95	1.00
Satd. Flow (perm)	3260	1390	535	3228	3043	1271
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	518	210	23	475	432	33
RTOR Reduction (vph)	0	150	0	0	0	13
Lane Group Flow (vph)	518	60	23	475	432	20
Heavy Vehicles (%)	2%	7%	10%	3%	6%	17%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	16.0	16.0	16.0	16.0	35.1	35.1
Effective Green, g (s)	18.5	18.5	16.0	18.5	38.6	38.6
Actuated g/C Ratio	0.28	0.28	0.25	0.28	0.59	0.59
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	926	395	131	917	1804	753
v/s Ratio Prot	c0.16			0.15	c0.14	
v/s Ratio Perm		0.04	0.04			0.02
v/c Ratio	0.56	0.15	0.18	0.52	0.24	0.03
Uniform Delay, d1	19.8	17.4	19.4	19.6	6.3	5.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.6	0.5	0.3	0.1
Delay (s)	20.6	17.6	20.0	20.1	6.6	5.5
Level of Service	C	B	B	C	A	A
Approach Delay (s)	19.7			20.1	6.5	
Approach LOS	B			C	A	

Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	37.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	42	396	8	7	539	287	7	11	240	14
Future Volume (vph)	42	396	8	7	539	287	7	11	240	14
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	41.0	44.2	44.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.31	0.34	0.34	0.25	0.25	0.25	0.25
v/c Ratio	0.19	0.33	0.01	0.03	0.54	0.47	0.02	0.07	0.66	0.21
Control Delay	26.0	27.8	0.0	34.4	38.6	6.1	37.3	23.2	53.4	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	27.8	0.0	34.4	38.6	6.1	37.3	23.2	53.4	12.7
LOS	C	C	A	C	D	A	D	C	D	B
Approach Delay		27.2			27.3			26.5		43.0
Approach LOS		C			C			C		D

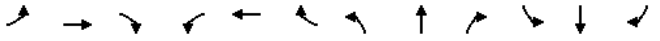
Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 30.4		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	430	9	8	586	312	8	26	261	89
v/c Ratio	0.19	0.33	0.01	0.03	0.54	0.47	0.02	0.07	0.66	0.21
Control Delay	26.0	27.8	0.0	34.4	38.6	6.1	37.3	23.2	53.4	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	27.8	0.0	34.4	38.6	6.1	37.3	23.2	53.4	12.7
Queue Length 50th (m)	7.6	42.0	0.0	1.6	69.6	0.0	1.7	2.5	64.3	3.1
Queue Length 95th (m)	16.0	55.7	0.0	5.9	91.8	23.0	6.1	10.4	96.0	17.1
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	280	1304	648	273	1083	667	419	399	395	423
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	0.01	0.03	0.54	0.47	0.02	0.07	0.66	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	396	8	7	539	287	7	11	13	240	14	68
Future Volume (vph)	42	396	8	7	539	287	7	11	13	240	14	68
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3228	1455	1661	3228	1372	1662	1544		1568	1458	
Flt Permitted	0.25	1.00	1.00	0.50	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	442	3228	1455	877	3228	1372	1662	1544		1568	1458	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	430	9	8	586	312	8	12	14	261	15	74
RTOR Reduction (vph)	0	0	5	0	0	208	0	10	0	0	55	0
Lane Group Flow (vph)	46	430	4	8	586	104	8	16	0	261	34	0
Confl. Peds. (#/hr)	1		1	1		1	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	3%	7%	0%	9%	0%	6%	7%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.6	50.6	50.6	41.0	41.0	41.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.6	53.8	53.8	41.0	44.2	44.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.38	0.41	0.41	0.31	0.33	0.33	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	1313	592	271	1079	458	417	387		393	366	
v/s Ratio Prot	0.01	c0.13			c0.18		0.00	c0.01		c0.17	0.02	
v/s Ratio Perm	0.07		0.00	0.01		0.08						
v/c Ratio	0.21	0.33	0.01	0.03	0.54	0.23	0.02	0.04		0.66	0.09	
Uniform Delay, d1	27.9	26.8	23.3	31.7	35.8	31.7	37.2	37.4		44.5	37.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.7	0.0	0.2	2.0	1.2	0.1	0.2		8.6	0.5	
Delay (s)	28.4	27.5	23.3	32.0	37.8	32.9	37.3	37.6		53.1	38.4	
Level of Service	C	C	C	C	D	C	D	D		D	D	
Approach Delay (s)		27.5			36.0			37.6			49.3	
Approach LOS		C			D			D			D	

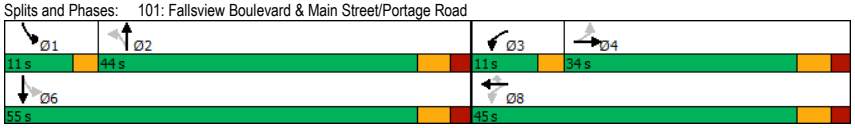
Intersection Summary				
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	132.2	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	71.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	43	72	22	105	149	35	156	49	69
Future Volume (vph)	43	72	22	105	149	35	156	49	69
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	34.0	34.0	11.0	45.0	45.0	44.0	44.0	11.0	55.0
Total Split (%)	34.0%	34.0%	11.0%	45.0%	45.0%	44.0%	44.0%	11.0%	55.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	None	Max
Act Effct Green (s)	30.0	30.0	41.0	41.0	41.0	42.7	42.7	51.0	51.0
Actuated g/C Ratio	0.30	0.30	0.41	0.41	0.41	0.43	0.43	0.51	0.51
v/c Ratio	0.15	0.20	0.05	0.16	0.30	0.13	0.35	0.15	0.11
Control Delay	27.4	24.5	18.1	19.5	4.6	20.5	20.7	13.6	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	24.5	18.1	19.5	4.6	20.5	20.7	13.6	11.1
LOS	C	C	B	B	A	C	C	B	B
Approach Delay		25.5		11.4			20.7		12.1
Approach LOS		C		B			C		B

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	93	24	114	162	38	215	53	89
v/c Ratio	0.15	0.20	0.05	0.16	0.30	0.13	0.35	0.15	0.11
Control Delay	27.4	24.5	18.1	19.5	4.6	20.5	20.7	13.6	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	24.5	18.1	19.5	4.6	20.5	20.7	13.6	11.1
Queue Length 50th (m)	7.0	12.5	2.9	14.4	0.0	4.8	27.5	5.3	7.5
Queue Length 95th (m)	16.4	25.2	8.0	26.2	12.5	12.3	47.6	11.7	15.8
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	308	476	441	703	544	298	619	351	814
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.20	0.05	0.16	0.30	0.13	0.35	0.15	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	72	14	22	105	149	35	156	41	49	69	13
Future Volume (vph)	43	72	14	22	105	149	35	156	41	49	69	13
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.82	1.00	0.88		1.00	0.98	
Flpb, ped/bikes	0.86	1.00		0.94	1.00	1.00	0.91	1.00		0.85	1.00	
Frt	1.00	0.98		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)	1425	1563		1567	1716	1093	949	1428		1281	1584	
Flt Permitted	0.68	1.00		0.61	1.00	1.00	0.70	1.00		0.51	1.00	
Satd. Flow (perm)	1025	1563		999	1716	1093	699	1428		688	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	78	15	24	114	162	38	170	45	53	75	14
RTOR Reduction (vph)	0	7	0	0	0	96	0	9	0	0	7	0
Lane Group Flow (vph)	47	86	0	24	114	66	38	206	0	53	82	0
Confl. Peds. (#/hr)	60		45	45		60	35		255	255		35
Heavy Vehicles (%)	0%	8%	0%	0%	2%	11%	60%	5%	5%	10%	7%	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)	27.6	27.6		38.6	38.6	38.6	40.3	40.3		49.2	49.2	
Effective Green, g (s)	30.0	30.0		37.6	41.0	41.0	42.7	42.7		48.2	51.6	
Actuated g/C Ratio	0.30	0.30		0.37	0.41	0.41	0.42	0.42		0.48	0.51	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	305	466		412	699	445	296	606		358	812	
v/s Ratio Prot		c0.05		0.00	c0.07			c0.14		c0.01	0.05	
v/s Ratio Perm	0.05			0.02		0.06	0.05			0.06		
v/c Ratio	0.15	0.18		0.06	0.16	0.15	0.13	0.34		0.15	0.10	
Uniform Delay, d1	26.0	26.2		20.1	18.9	18.8	17.6	19.5		14.6	12.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.9		0.3	0.5	0.7	0.9	1.5		0.2	0.2	
Delay (s)	27.0	27.1		20.4	19.4	19.5	18.5	21.0		14.8	12.8	
Level of Service	C	C		C	B	B	B	C		B	B	
Approach Delay (s)		27.1			19.5			20.6			13.6	
Approach LOS		C			B			C			B	

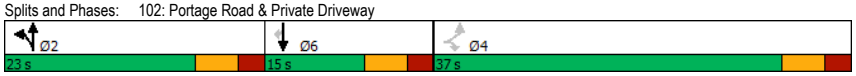
Intersection Summary				
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.26			
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	114	93	8	18	128
Future Volume (vph)	59	114	93	8	18	128
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	37.0	37.0	23.0	23.0	15.0	15.0
Total Split (%)	49.3%	49.3%	30.7%	30.7%	20.0%	20.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
v/c Ratio	0.23	0.21	0.26	0.02	0.21	0.20
Control Delay	20.6	4.4	28.6	25.4	12.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	4.4	28.6	25.4	12.0	8.1
LOS	C	A	C	C	B	A
Approach Delay	9.9			28.4	10.1	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 85.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.26			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	64	124	101	9	81	78
v/c Ratio	0.23	0.21	0.26	0.02	0.21	0.20
Control Delay	20.6	4.4	28.6	25.4	12.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	4.4	28.6	25.4	12.0	8.1
Queue Length 50th (m)	7.3	0.0	14.2	1.2	2.8	0.0
Queue Length 95th (m)	17.0	10.6	27.7	5.0	14.6	11.2
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	275	595	393	413	384	388
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.21	0.26	0.02	0.21	0.20

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	114	93	8	18	128
Future Volume (vph)	59	114	93	8	18	128
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.93	1.00	1.00	0.99	0.98
Flpb, ped/bikes	0.48	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.89	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	692	1335	1662	1750	1429	1390
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	692	1335	1662	1750	1429	1390
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	124	101	9	20	139
RTOR Reduction (vph)	0	76	0	0	47	60
Lane Group Flow (vph)	64	48	101	9	34	18
Confl. Peds. (#/hr)	255	20	20			3
Heavy Vehicles (%)	15%	4%	0%	0%	8%	0%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	30.8	30.8	18.0	18.0	18.0	18.0
Effective Green, g (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	267	515	393	413	338	328
v/s Ratio Prot			c0.06	0.01	c0.02	
v/s Ratio Perm	c0.09	0.04				0.01
v/c Ratio	0.24	0.09	0.26	0.02	0.10	0.06
Uniform Delay, d1	17.7	16.7	26.5	25.0	25.5	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.4	1.6	0.1	0.1	0.1
Delay (s)	19.8	17.0	28.1	25.1	25.6	25.3
Level of Service	B	B	C	C	C	C
Approach Delay (s)	18.0			27.8	25.5	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	36.7%	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	0	0	79	132	0
Future Volume (Veh/h)	0	0	0	79	132	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	86	143	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	229	143	143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	229	143	143			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	759	905	1440			

Direction, Lane #	NB 1	SB 1
Volume Total	86	143
Volume Left	0	0
Volume Right	0	0
cSH	1440	1700
Volume to Capacity	0.00	0.08
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	17.5%	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	79	132	0
Future Volume (Veh/h)	0	0	0	79	132	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	86	143	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	229	143	143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	229	143	143			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	759	905	1440			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	86	143
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.05	0.08
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	17.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	551	435	59	86	16
Future Volume (Veh/h)	20	551	435	59	86	16
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)	22	599	473	64	93	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.93	
vC, conflicting volume	473				816	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473				657	236
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				74	98
cM capacity (veh/h)	1099				357	771

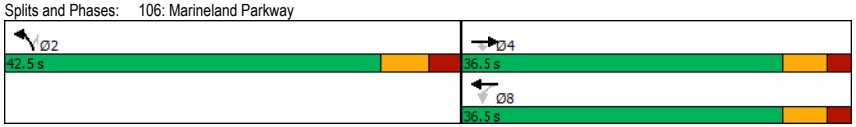
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	222	399	236	236	64	93	17
Volume Left	22	0	0	0	0	93	0
Volume Right	0	0	0	0	64	0	17
cSH	1099	1700	1700	1700	1700	357	771
Volume to Capacity	0.02	0.23	0.14	0.14	0.04	0.26	0.02
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	8.2	0.5
Control Delay (s)	1.0	0.0	0.0	0.0	0.0	18.6	9.8
Lane LOS	A					C	A
Approach Delay (s)	0.4		0.0			17.2	
Approach LOS						C	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	517	101	13	449	183	22
Future Volume (vph)	517	101	13	449	183	22
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	19.5	19.5	17.0	19.5	38.7	38.7
Actuated g/C Ratio	0.29	0.29	0.26	0.29	0.58	0.58
v/c Ratio	0.59	0.22	0.11	0.52	0.11	0.03
Control Delay	22.4	5.1	20.2	21.3	7.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	5.1	20.2	21.3	7.1	3.5
LOS	C	A	C	C	A	A
Approach Delay	19.5			21.3	6.7	
Approach LOS	B			C	A	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 66.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	562	110	14	488	199	24
v/c Ratio	0.59	0.22	0.11	0.52	0.11	0.03
Control Delay	22.4	5.1	20.2	21.3	7.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	5.1	20.2	21.3	7.1	3.5
Queue Length 50th (m)	32.2	0.0	1.4	27.2	5.2	0.0
Queue Length 95th (m)	46.3	9.6	5.5	40.1	11.5	3.1
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1607	754	226	1576	1883	867
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.15	0.06	0.31	0.11	0.03

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	517	101	13	449	183	22
Future Volume (vph)	517	101	13	449	183	22
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1417	1539	3197	3225	1469
Flt Permitted	1.00	1.00	0.31	1.00	0.95	1.00
Satd. Flow (perm)	3260	1417	498	3197	3225	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	562	110	14	488	199	24
RTOR Reduction (vph)	0	78	0	0	0	10
Lane Group Flow (vph)	562	32	14	488	199	14
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	5%	8%	4%	0%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	17.0	17.0	17.0	17.0	35.1	35.1
Effective Green, g (s)	19.5	19.5	17.0	19.5	38.6	38.6
Actuated g/C Ratio	0.30	0.30	0.26	0.30	0.58	0.58
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	961	418	128	943	1883	857
v/s Ratio Prot	c0.17			0.15	c0.06	
v/s Ratio Perm		0.02	0.03			0.01
v/c Ratio	0.58	0.08	0.11	0.52	0.11	0.02
Uniform Delay, d1	19.9	16.8	18.8	19.4	6.1	5.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	0.4	0.5	0.1	0.0
Delay (s)	20.8	16.9	19.1	19.9	6.2	5.8
Level of Service	C	B	B	B	A	A
Approach Delay (s)	20.1			19.8	6.2	
Approach LOS	C			B	A	

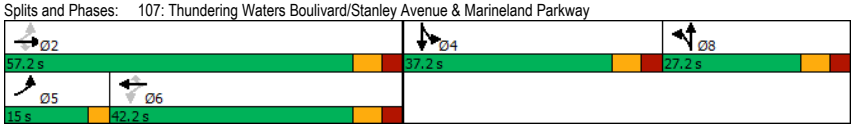
Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	46	417	10	12	415	212	25	22	173	3
Future Volume (vph)	46	417	10	12	415	212	25	22	173	3
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	40.8	44.0	44.0	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.31	0.33	0.33	0.25	0.25	0.25	0.25
v/c Ratio	0.17	0.34	0.02	0.05	0.41	0.37	0.06	0.17	0.47	0.14
Control Delay	25.6	28.0	0.0	35.0	36.2	6.0	38.1	16.6	46.2	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	28.0	0.0	35.0	36.2	6.0	38.1	16.6	46.2	11.5
LOS	C	C	A	C	D	A	D	B	D	B
Approach Delay		27.2			26.1			22.3		38.3
Approach LOS		C			C			C		D

Intersection Summary	
Cycle Length: 121.6	
Actuated Cycle Length: 131.6	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 56.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	453	11	13	451	230	27	75	188	56
v/c Ratio	0.17	0.34	0.02	0.05	0.41	0.37	0.06	0.17	0.47	0.14
Control Delay	25.6	28.0	0.0	35.0	36.2	6.0	38.1	16.6	46.2	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	28.0	0.0	35.0	36.2	6.0	38.1	16.6	46.2	11.5
Queue Length 50th (m)	8.3	44.5	0.0	2.6	51.0	0.0	5.6	5.0	43.8	0.6
Queue Length 95th (m)	17.1	58.6	0.0	8.3	69.4	19.3	13.9	18.2	68.2	11.7
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	330	1330	662	266	1089	622	419	434	403	405
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.34	0.02	0.05	0.41	0.37	0.06	0.17	0.47	0.14

Intersection Summary

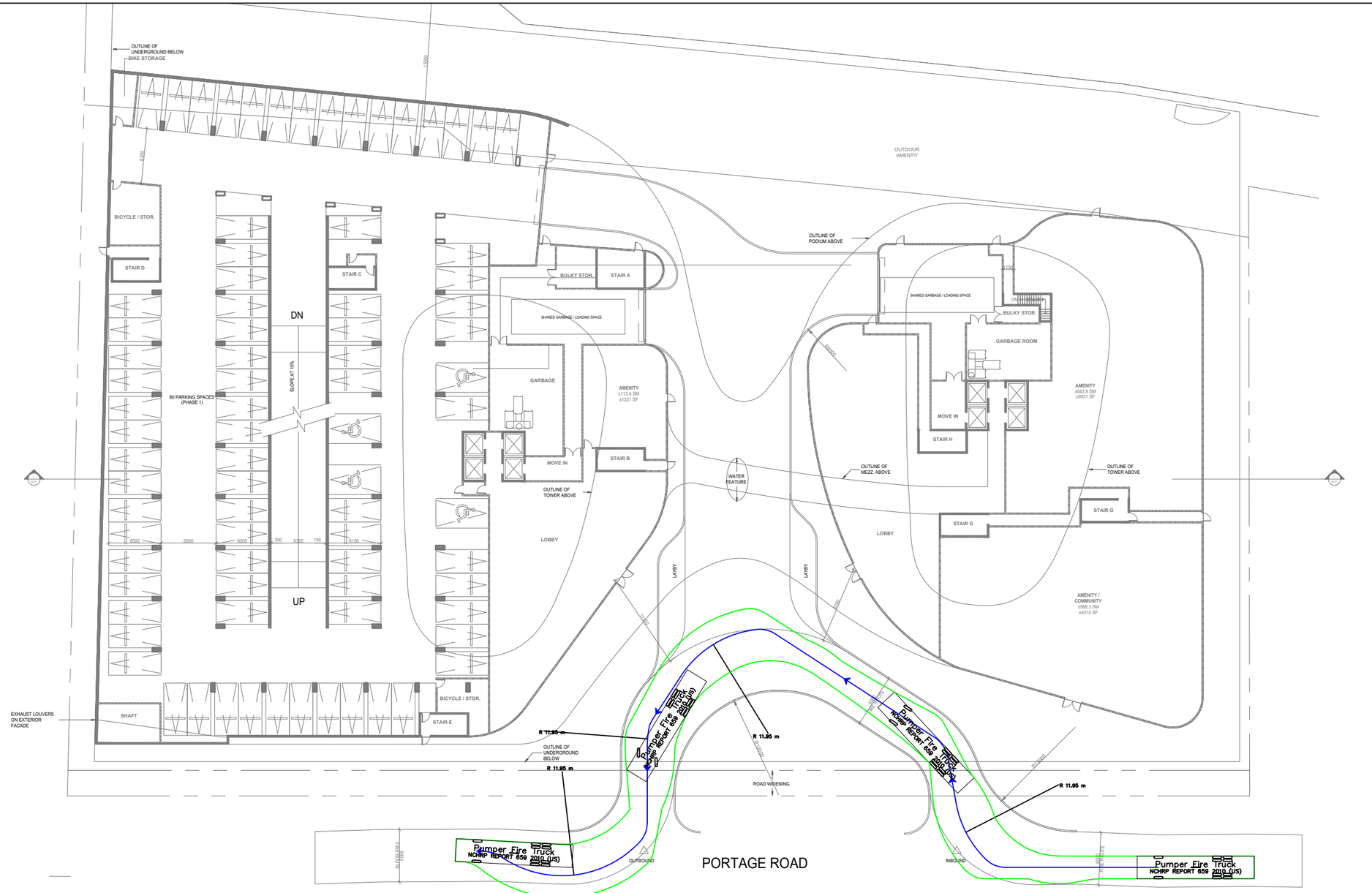
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	417	10	12	415	212	25	22	47	173	3	49
Future Volume (vph)	46	417	10	12	415	212	25	22	47	173	3	49
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3292	1488	1662	3260	1403	1662	1572		1599	1448	
Flt Permitted	0.34	1.00	1.00	0.49	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	597	3292	1488	858	3260	1403	1662	1572		1599	1448	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	453	11	13	451	230	27	24	51	188	3	53
RTOR Reduction (vph)	0	0	7	0	0	153	0	38	0	0	40	0
Lane Group Flow (vph)	50	453	4	13	451	77	27	37	0	188	16	0
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	1%	0%	0%	2%	6%	0%	0%	0%	4%	0%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.6	50.6	50.6	40.8	40.8	40.8	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.6	53.8	53.8	40.8	44.0	44.0	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.38	0.41	0.41	0.31	0.33	0.33	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	270	1339	605	264	1085	466	417	394		401	363	
v/s Ratio Prot	0.01	c0.14			c0.14		0.02	c0.02		c0.12	0.01	
v/s Ratio Perm	0.06		0.00	0.02		0.05						
v/c Ratio	0.19	0.34	0.01	0.05	0.42	0.16	0.06	0.09		0.47	0.04	
Uniform Delay, d1	27.3	27.0	23.3	32.1	34.1	31.1	37.7	38.0		42.0	37.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.7	0.0	0.4	1.2	0.8	0.3	0.5		3.9	0.2	
Delay (s)	27.7	27.6	23.3	32.4	35.3	31.9	38.0	38.4		45.9	37.7	
Level of Service	C	C	C	C	D	C	D	D		D	D	
Approach Delay (s)		27.6			34.1			38.3			44.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	132.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Appendix D

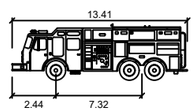
AutoTURN Swept Path Analysis



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



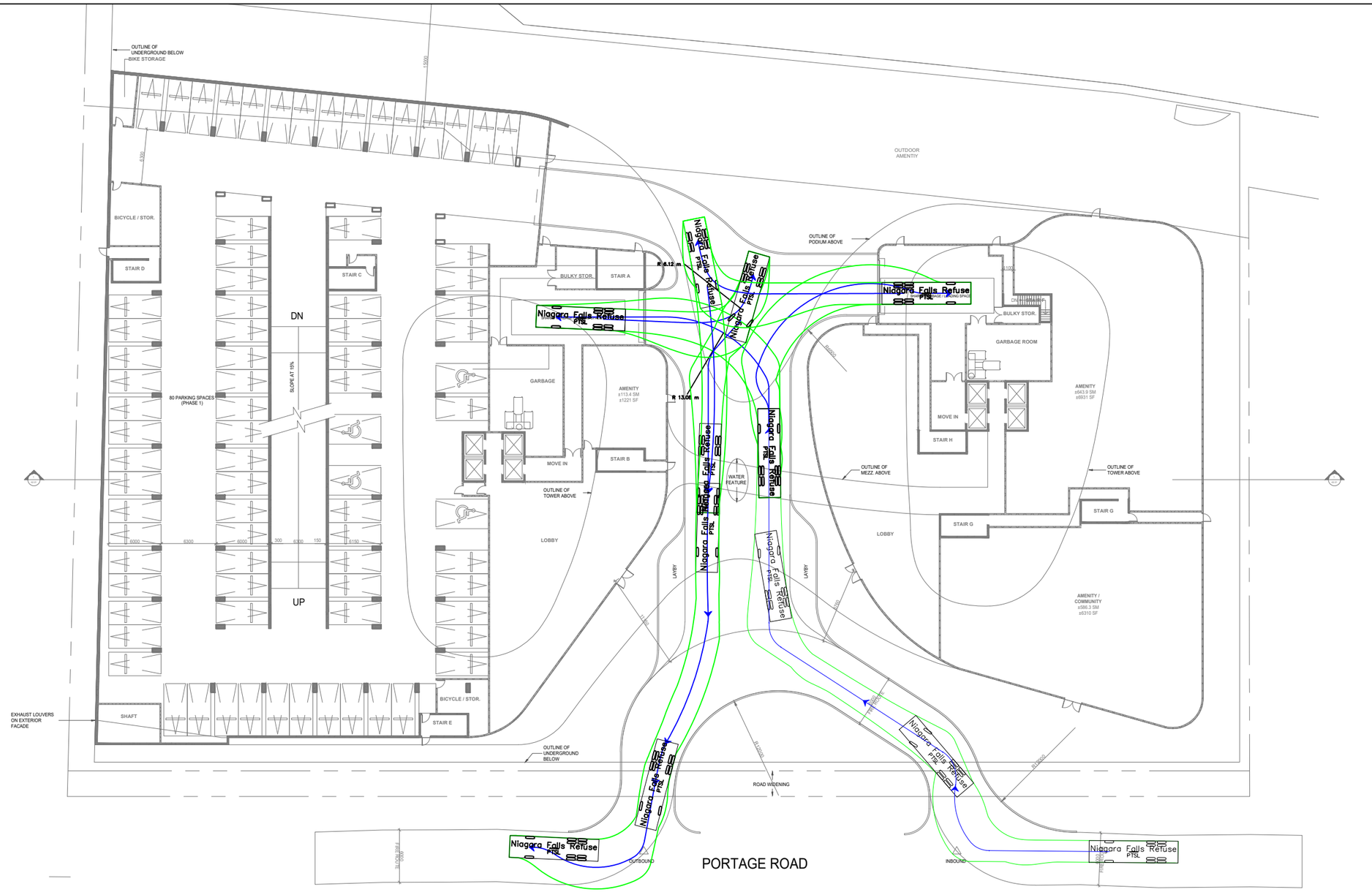
Pumper Fire Truck

	meters
Width	: 2.59
Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

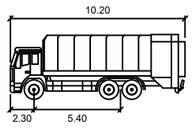
PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 001
DRAWN: SC	DESIGN: SC	CHECK: SC	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



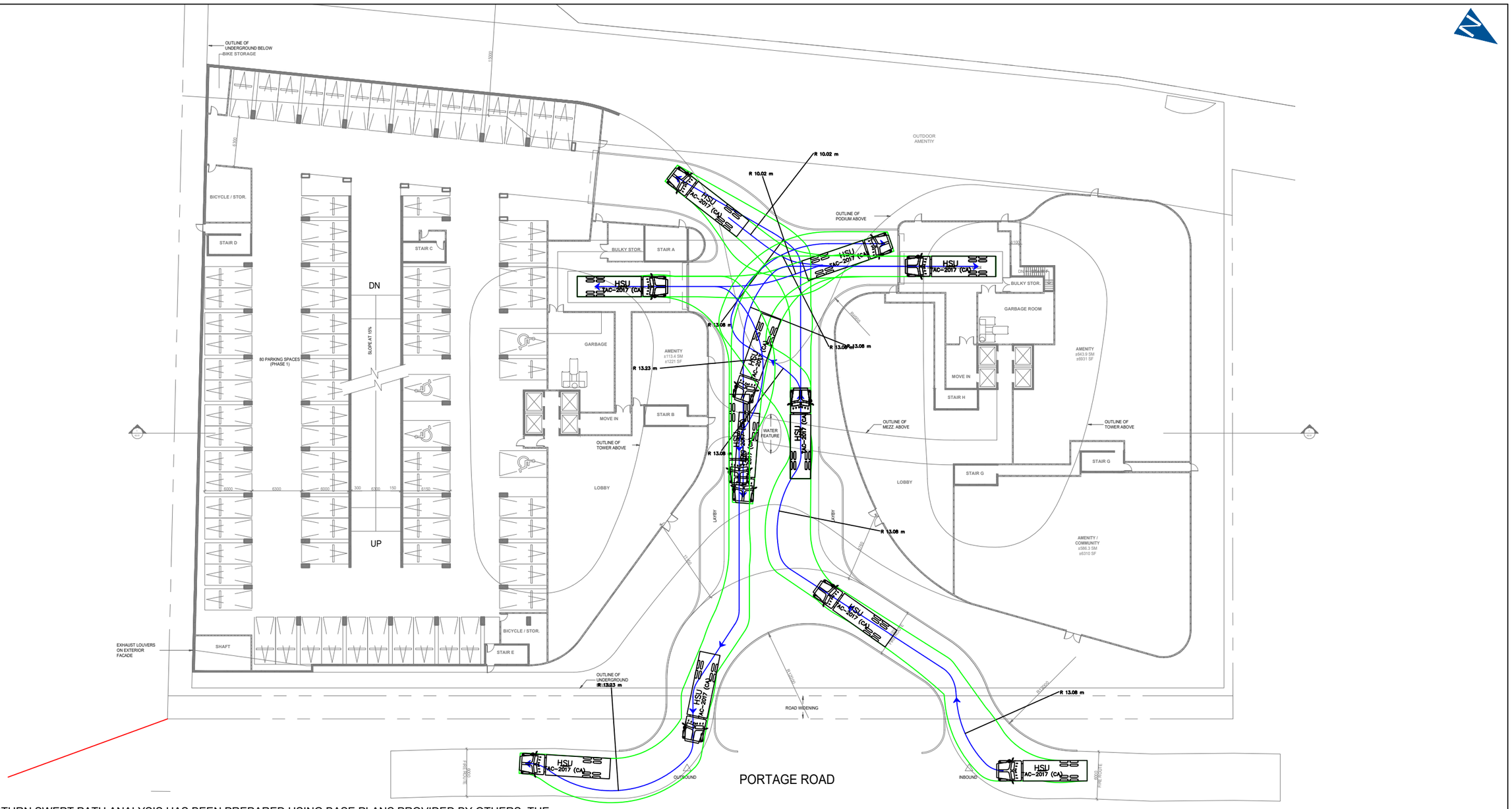
Niagara Falls Refuse

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 41.4

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

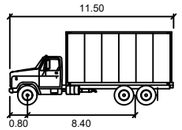
PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 002
DRAWN: SC	DESIGN: SC	CHECK: SC	



THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



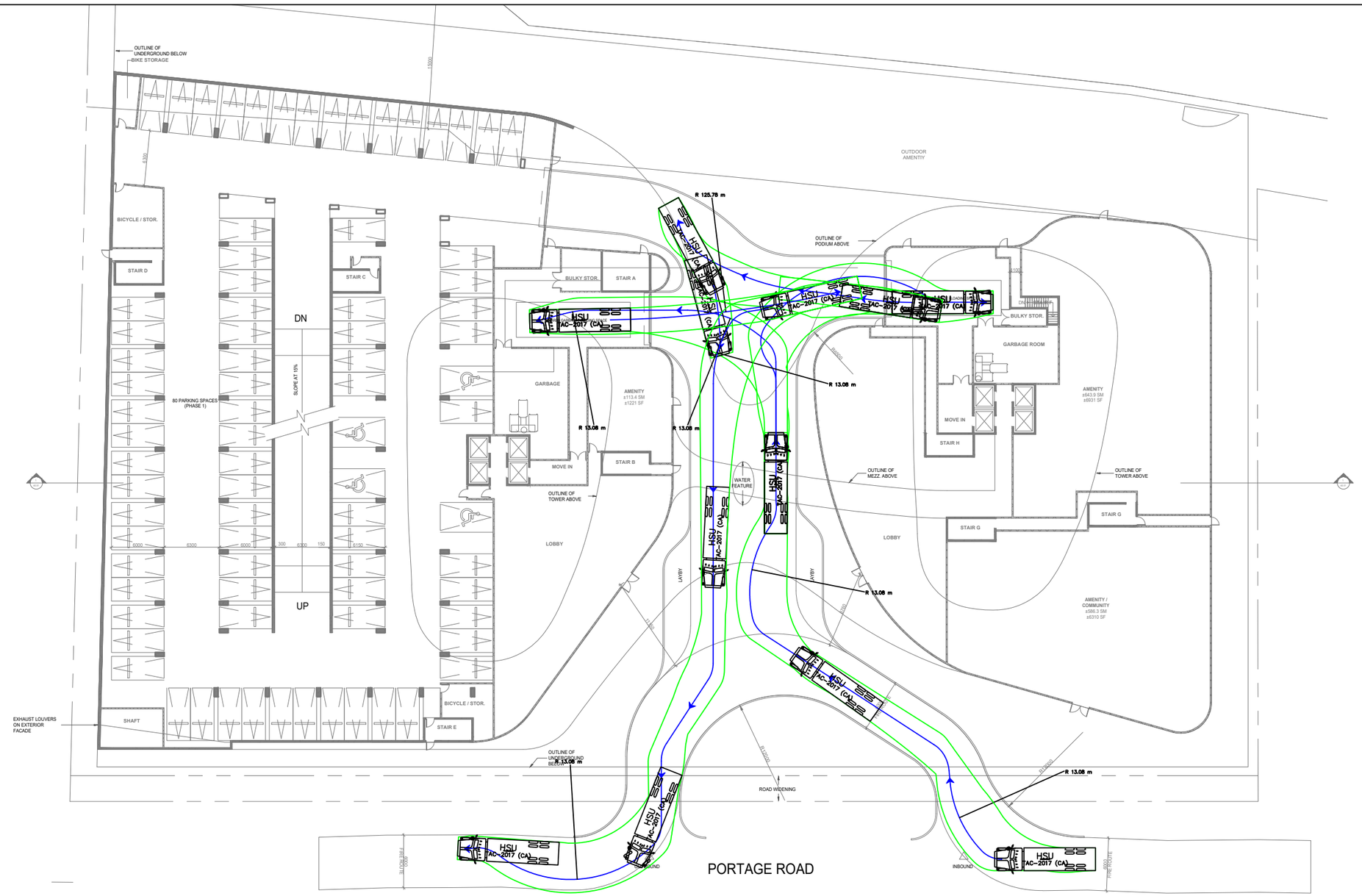
HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 003
DRAWN: SC	DESIGN: SC	CHECK: SC	



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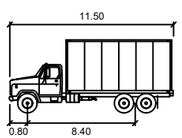
NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



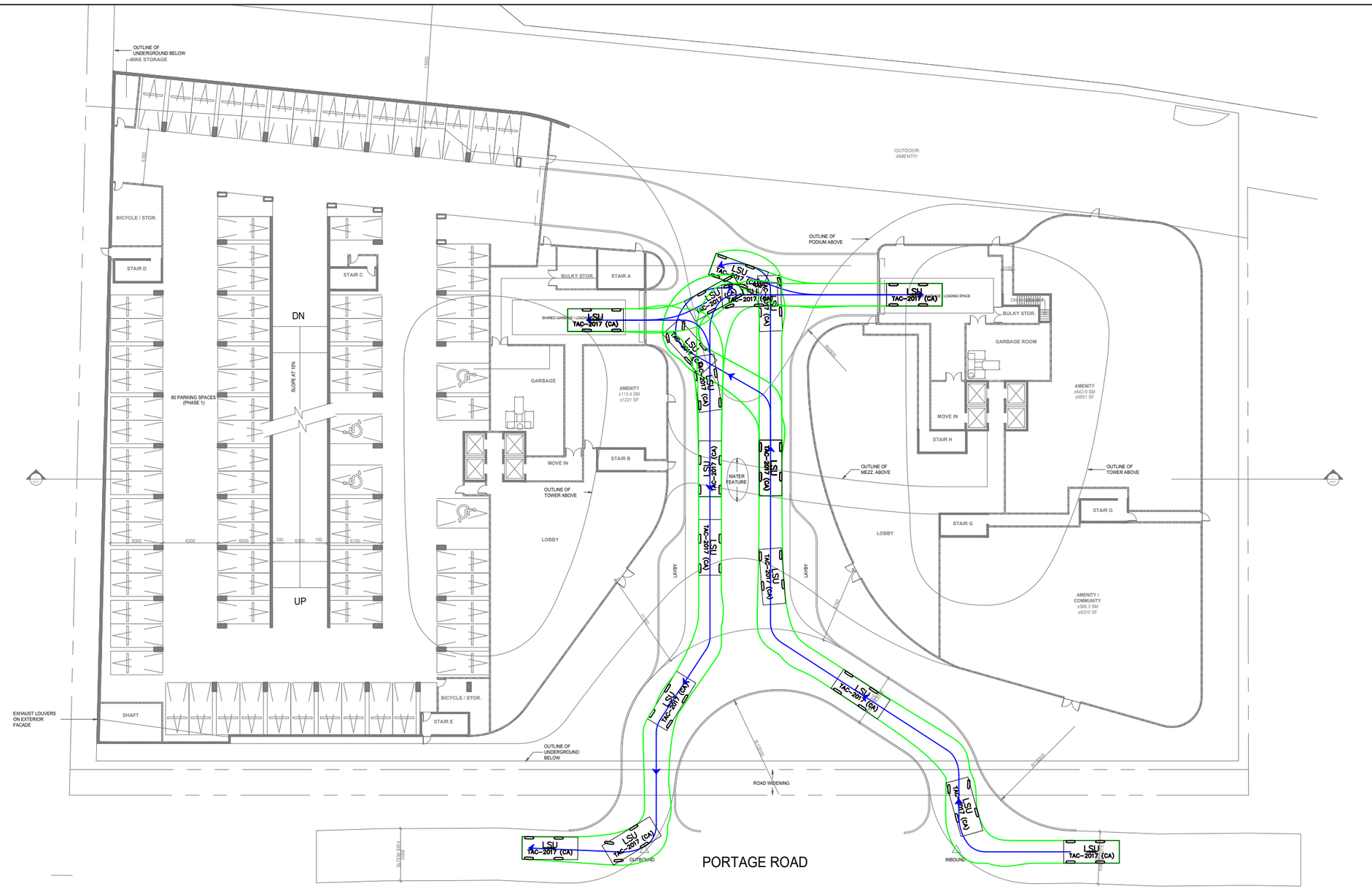
HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 004
DRAWN: SC	DESIGN: SC	CHECK: SC	



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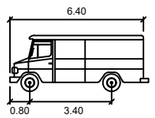
NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



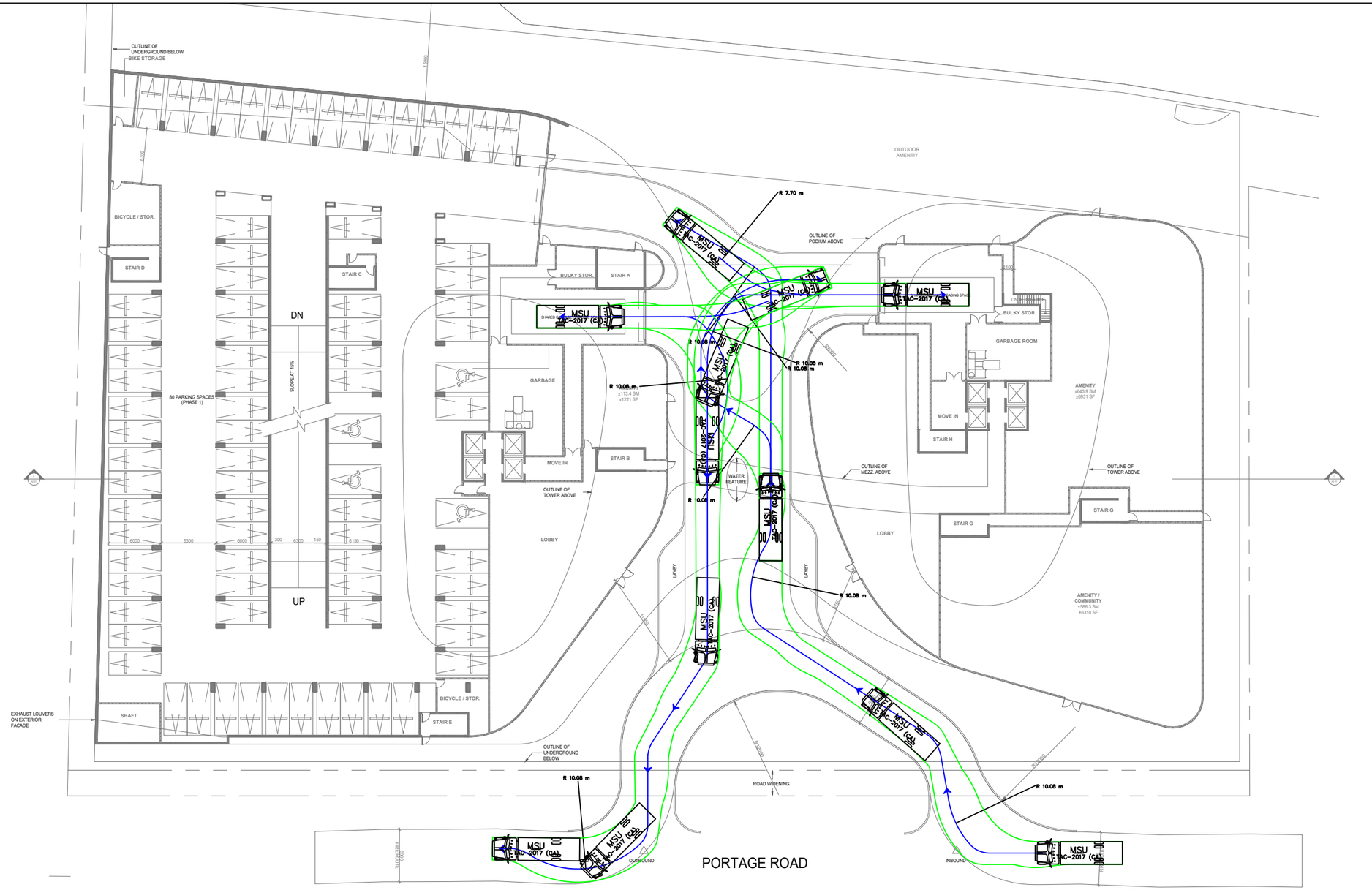
LSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 005
DRAWN: SC	DESIGN: SC	CHECK: SC	



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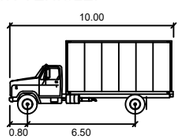
NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



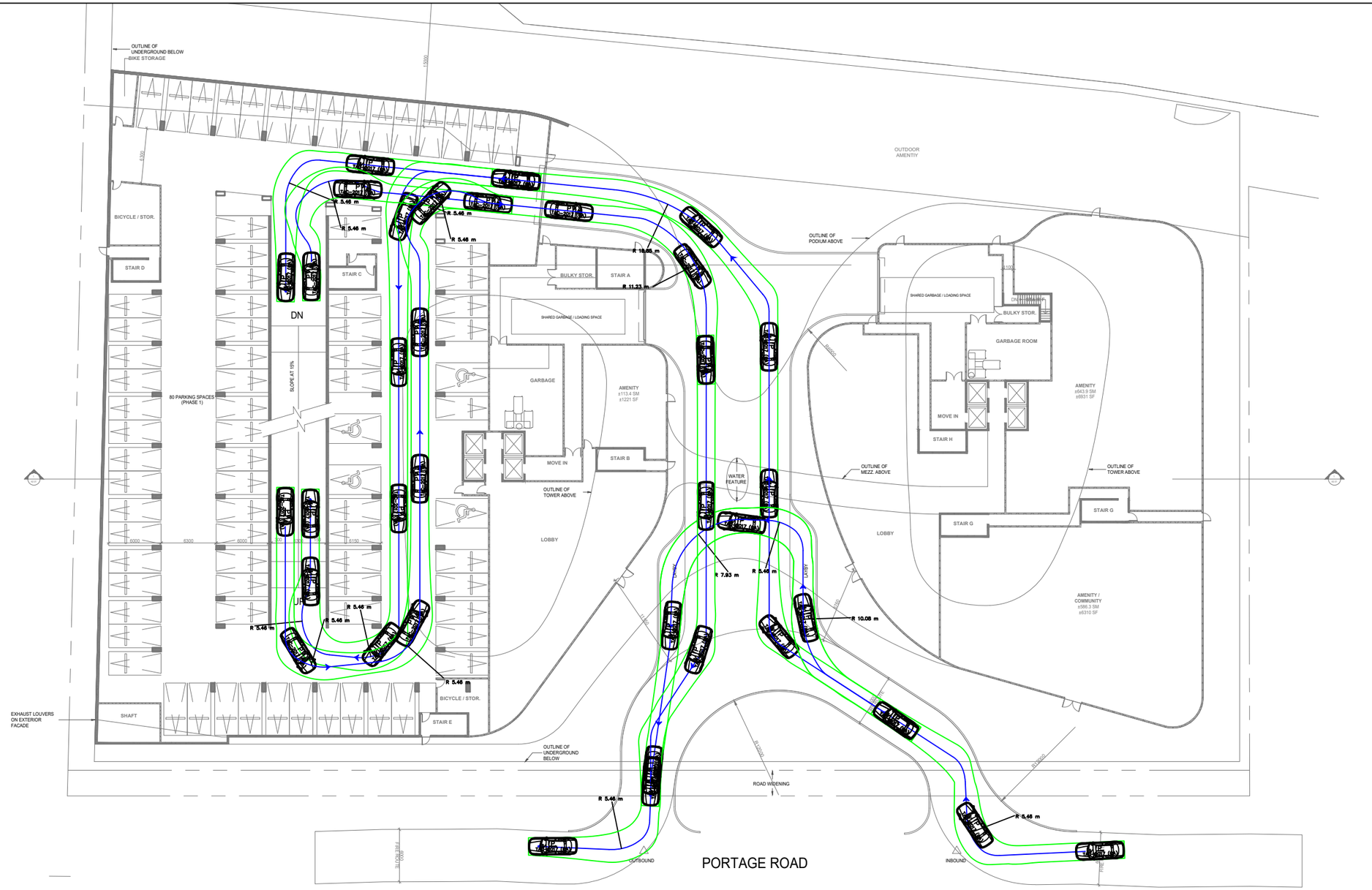
MSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 006
DRAWN: SC	DESIGN: SC	CHECK: SC	



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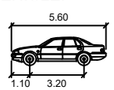
NO.	DATE	INITIAL	REVISION DETAIL
1	2022-05-19	SC	UPDATED SITE PLAN

DESIGN VEHICLE:



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

AUTOTURN ASSESSMENT
LOT 175 PORTAGE ROAD
CITY OF NIAGARA FALLS

paradigm TRANSPORTATION SOLUTIONS LIMITED

PROJECT NO.: 220026	DATE: MAY 2022	SCALE: 1:500	DRAWING NO.: 007
DRAWN: SC	DESIGN: SC	CHECK: SC	

Appendix E

Transportation Tomorrow Study Data

IN

Wed Jun 22 2022 13:06:17 GMT-0400 (Eastern Daylight Time) - Run Time: 3311ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

RowG:
ColG:(6239,6237,6236,6238,6240)
TblG:(0-99)

Filters:
No Filters

Trip 2016
Table:

	,1
21	33
4070	39
6008	35
6012	29
6039	17
6044	124
6046	19
6050	54
6056	78
6064	16
6154	15
6170	20
6187	23
6188	10
6193	18
6194	17
6195	39
6196	53
6199	12
6201	11
6204	9
6212	7
6214	12
6216	31
6217	29
6219	60
6222	6
6223	32
6225	12
6226	57
6230	6
6233	53
6235	196
6243	124
6249	57
6252	101
6256	13
6267	48
6269	46
6275	20
6296	29
6299	10
6301	43
6332	40
6341	78
6342	16

OUT

Wed Jun 22 2022 13:34:14 GMT-0400 (Eastern Daylight Time) - Run Time: 3071ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

RowG:
ColG:(6239,6237,6236,6238,6240)
TblG:(0-99)

Filters:
No Filters

Trip 2016
Table:

	,1
21	33
4070	39
6008	35
6012	29
6039	17
6044	124
6050	40
6052	12
6056	24
6062	54
6064	16
6141	7
6154	21
6170	20
6187	23
6188	10
6193	18
6194	53
6195	39
6196	18
6199	12
6201	11
6203	12
6204	9
6213	18
6214	12
6219	79
6222	6
6223	32
6225	12
6226	31
6228	44
6231	15
6233	53
6235	153
6241	25
6243	124
6249	57
6252	101
6256	13
6259	28
6267	48
6269	18
6270	29
6275	20
6299	10

6343	56
6344	30
6346	9
6364	11

6301	43
6332	40
6340	19
6341	78
6342	16
6343	56
6344	30
6346	9
6348	27
6364	11

Appendix F

Background Developments Traffic Forecast

Figure 14 – Proposed Development Traffic Assignment

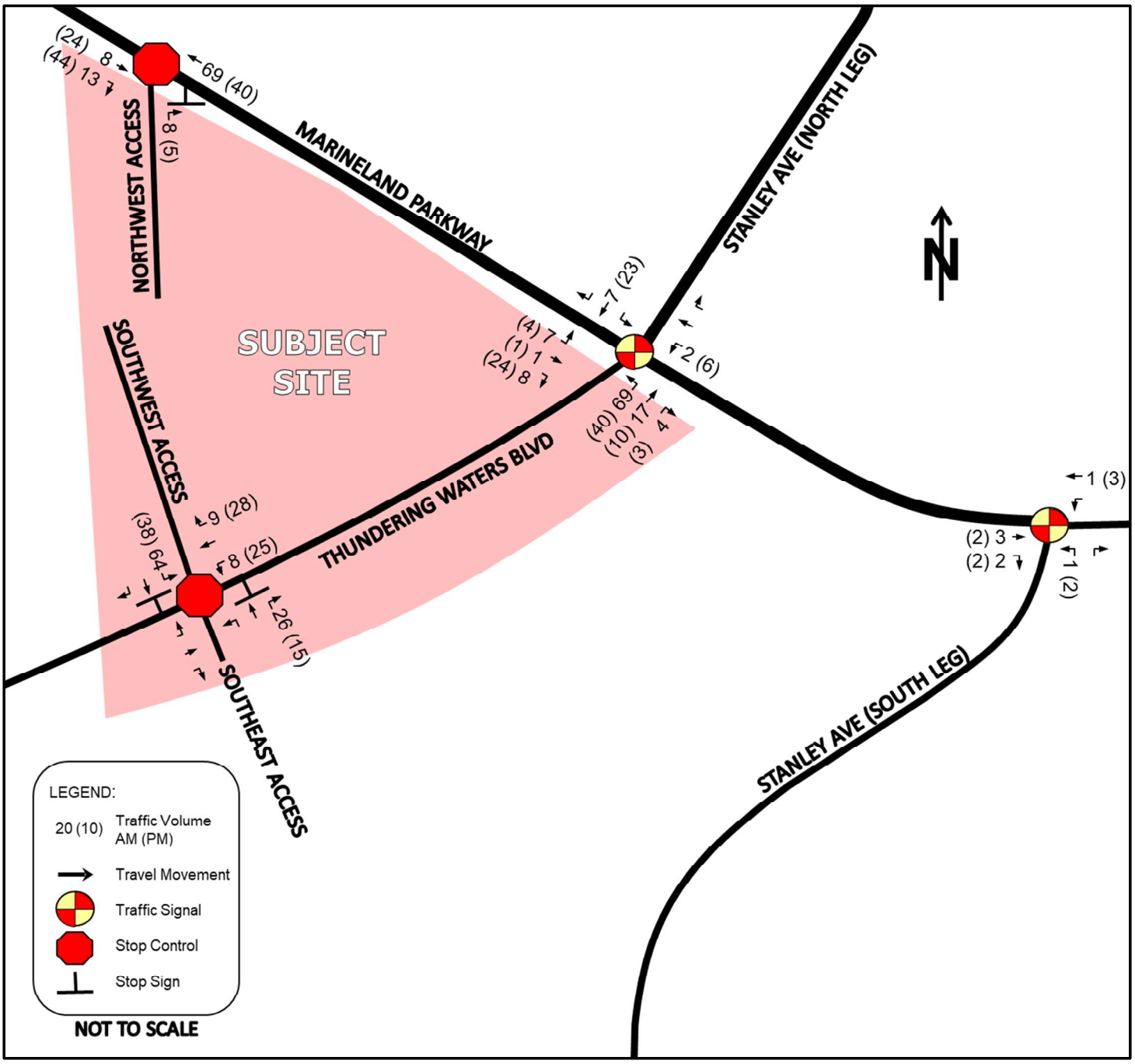


Figure 13: Total Development Trips

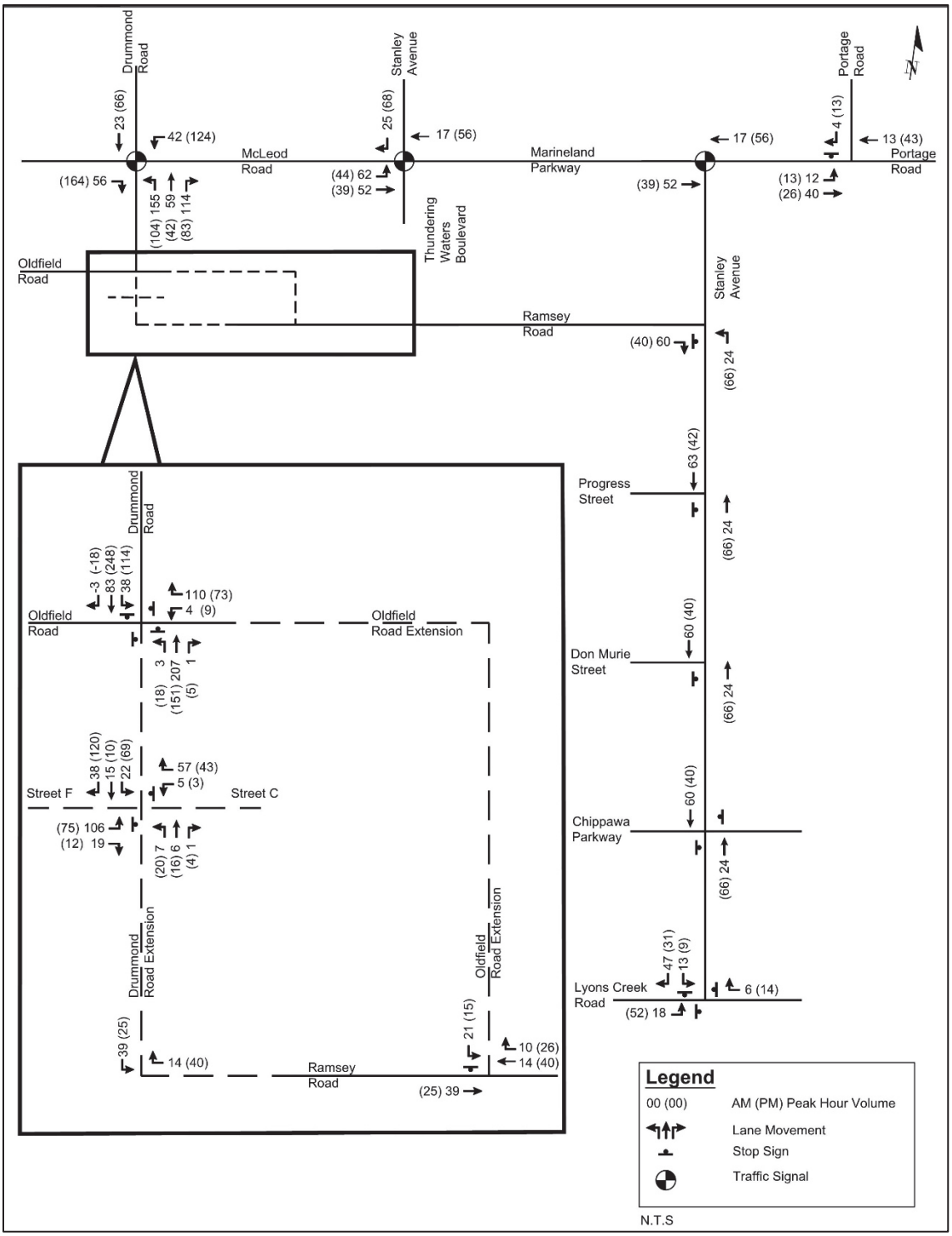
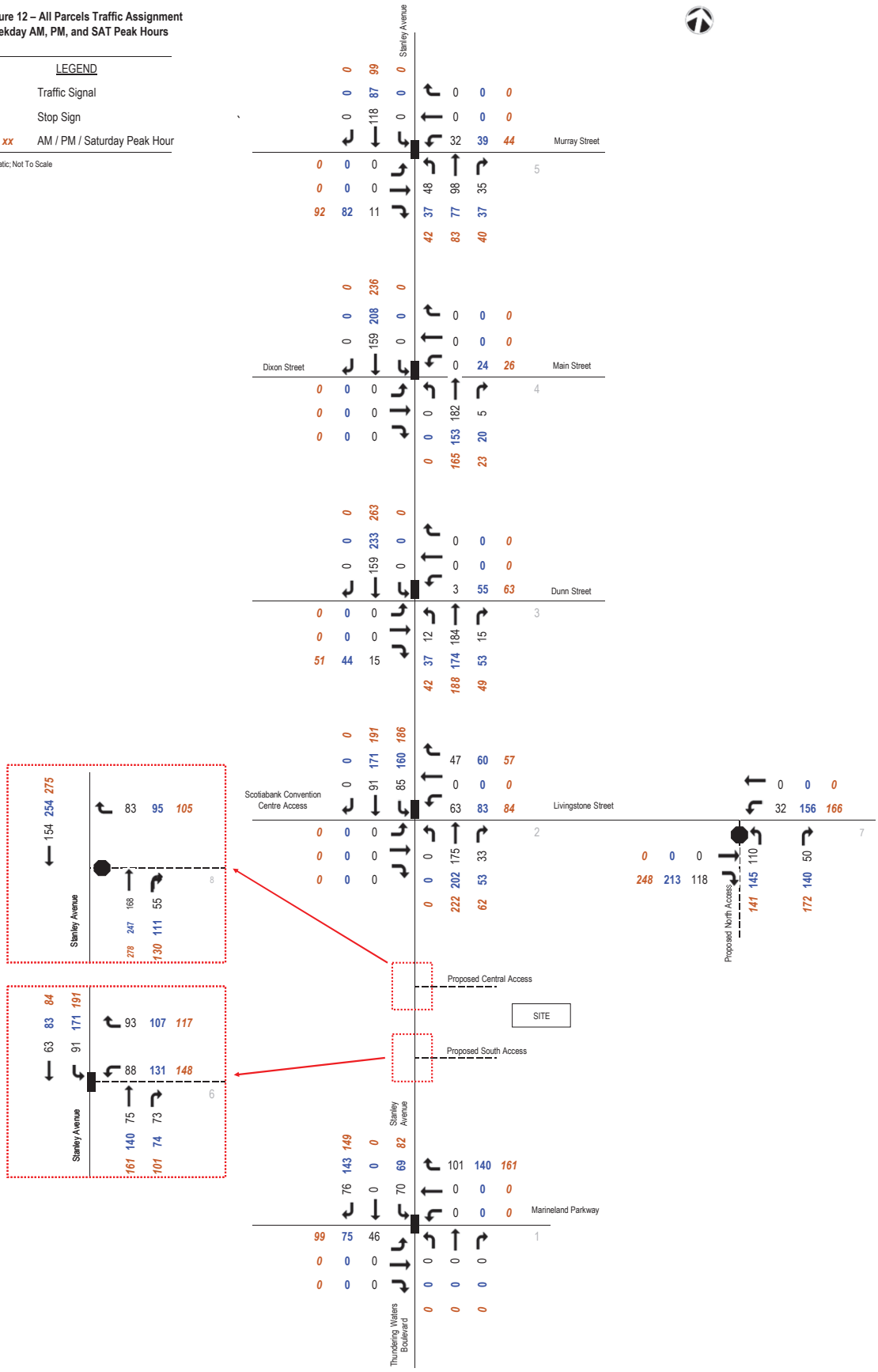


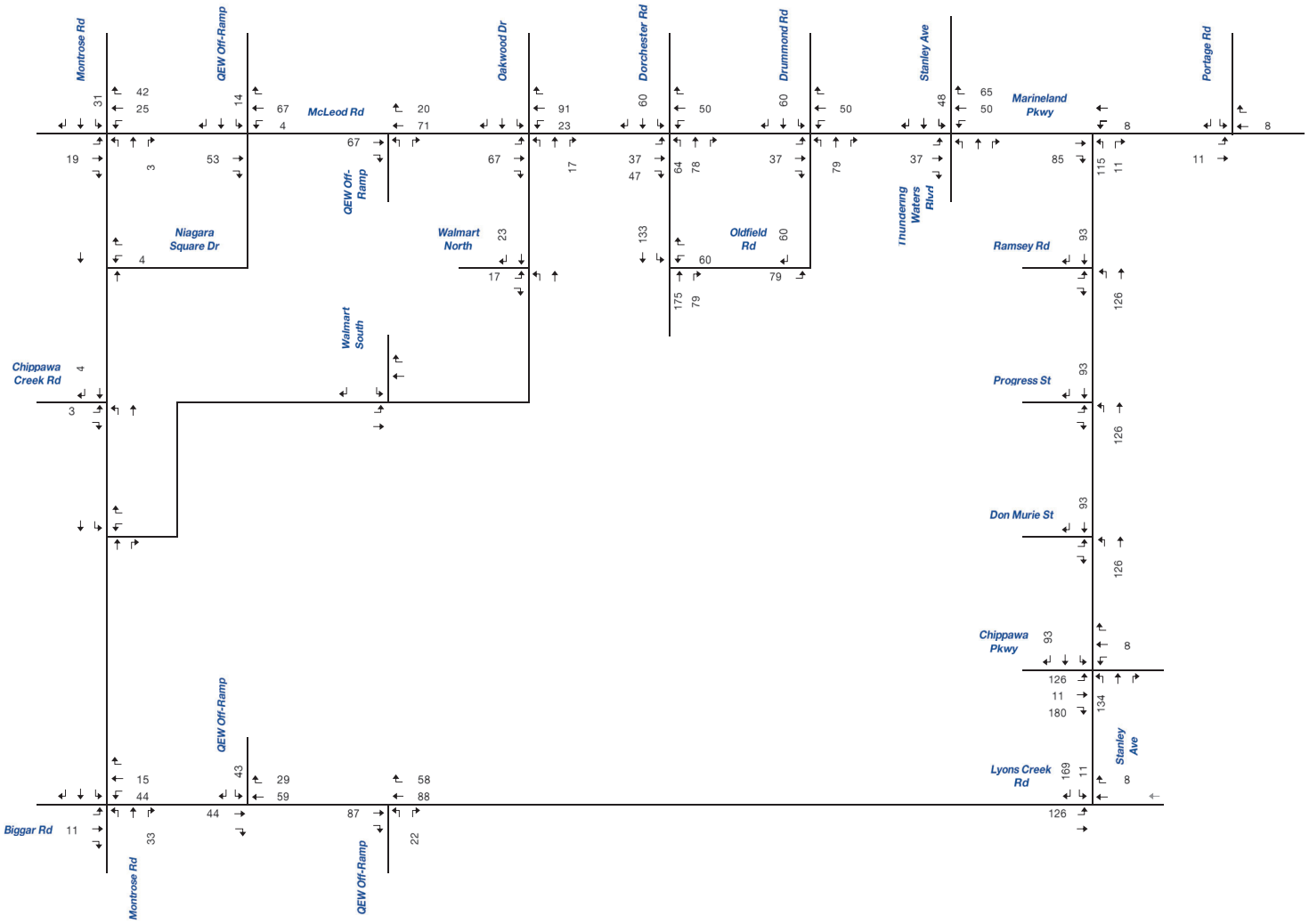
Figure 12 – All Parcels Traffic Assignment
Weekday AM, PM, and SAT Peak Hours

LEGEND

- Traffic Signal
- Stop Sign
- xx xx xx — AM / PM / Saturday Peak Hour

Schematic; Not To Scale

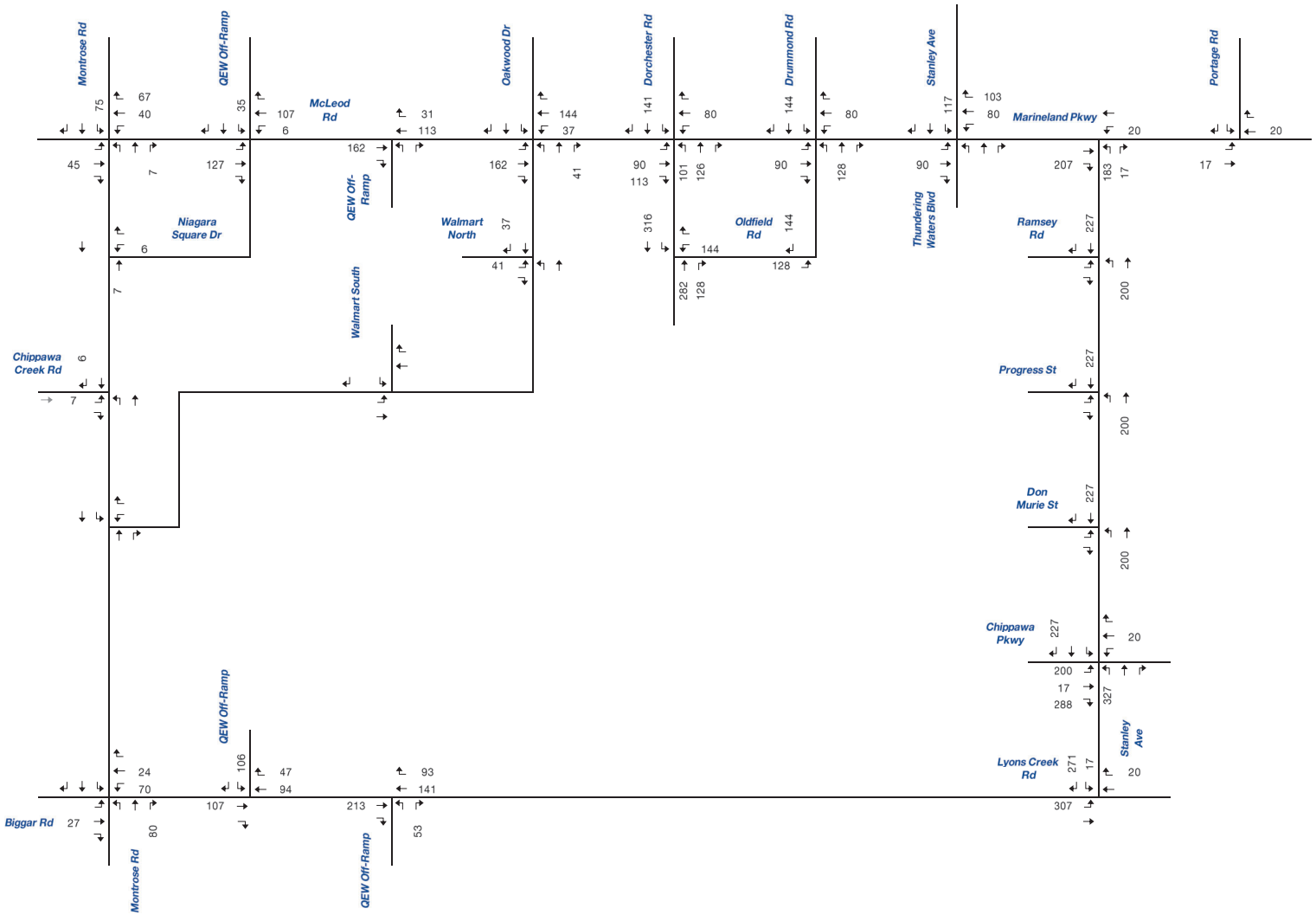




Development Generated Traffic Volumes

AM Peak Hour

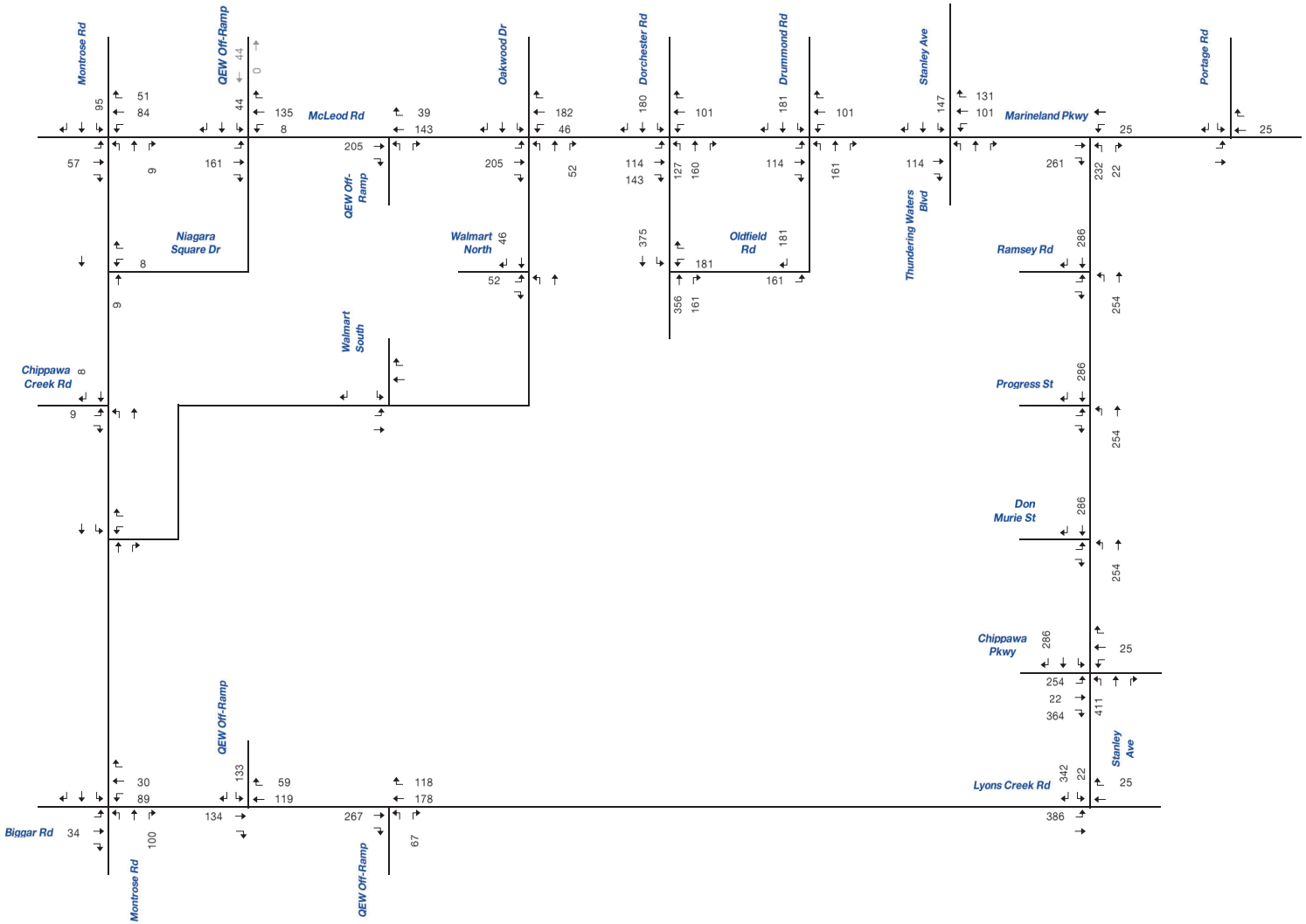
Figure 3.11



Development Generated Traffic Volumes

PM Peak Hour

Figure 3.12

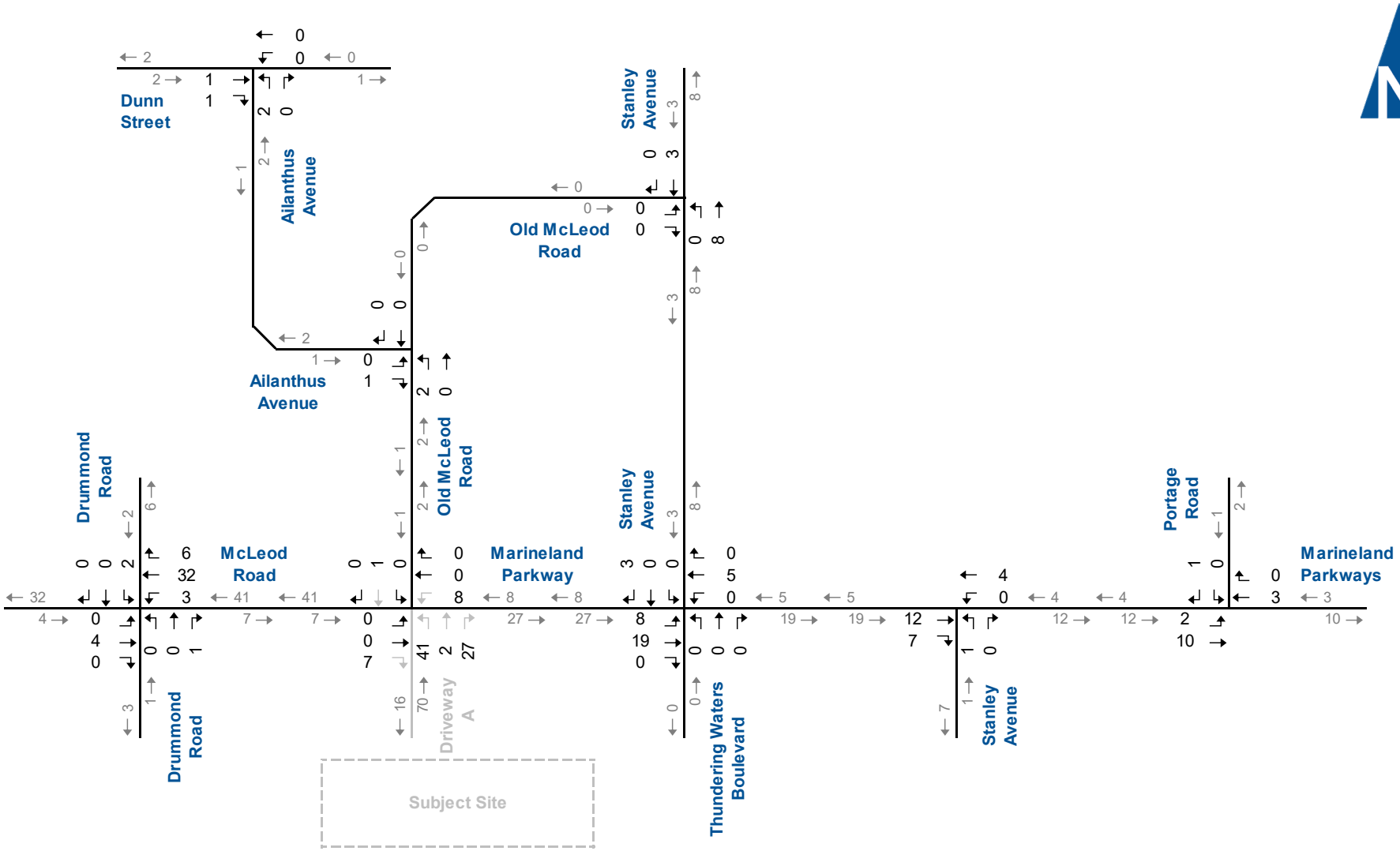


Development Generated Traffic Volumes

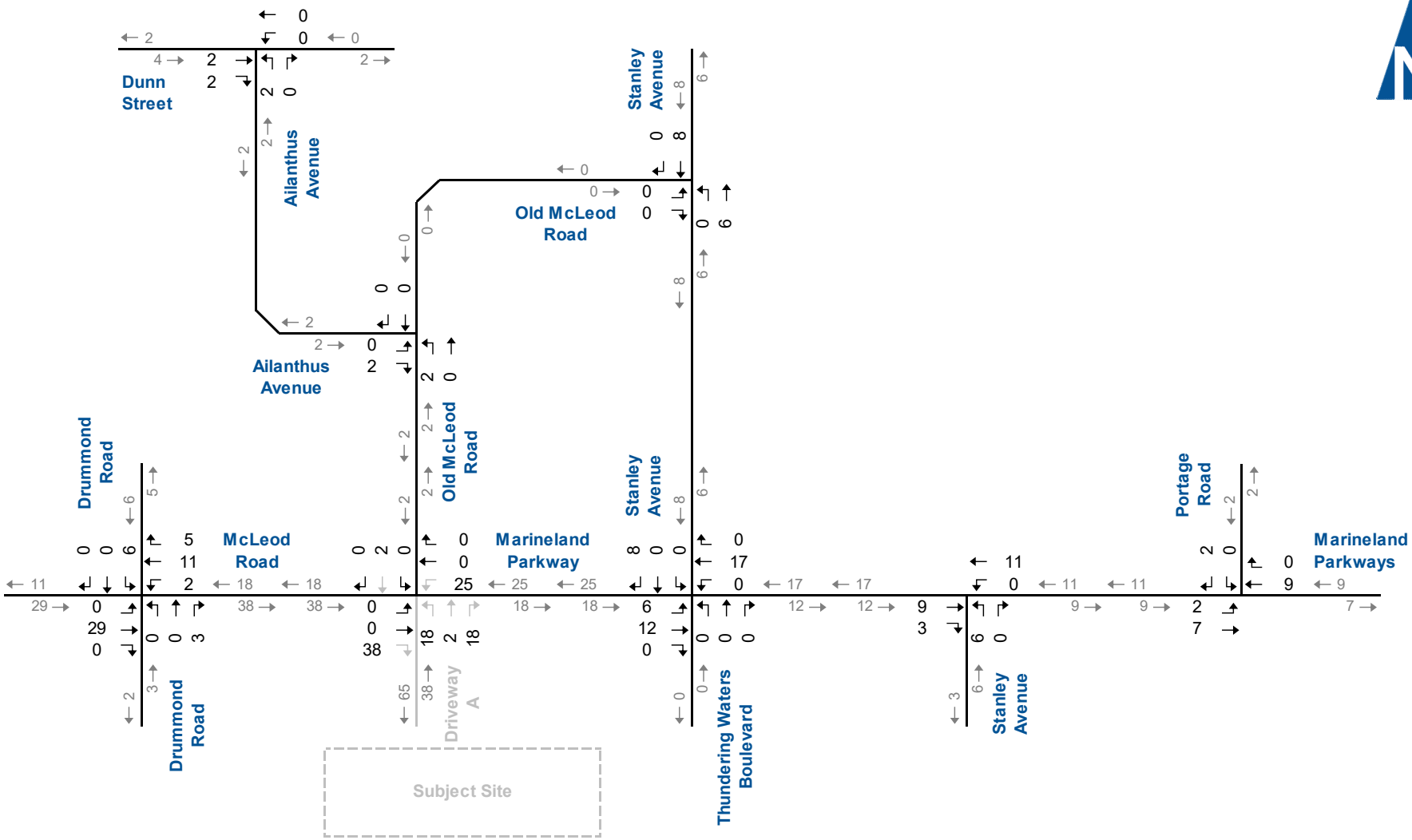
Saturday Peak Hour

Riverfront Community Transportation Assessment
151385

Figure 3.13



Site Generated AM Peak Hour Traffic Volumes



Site Generated PM Peak Hour Traffic Volumes

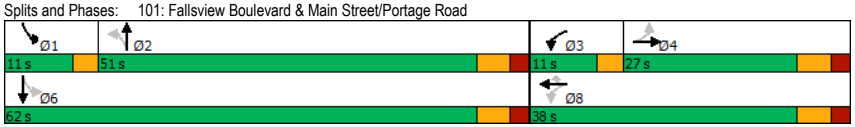
Appendix G

Background Traffic Operations

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	22	52	25	74	119	31	102	28	56
Future Volume (vph)	22	52	25	74	119	31	102	28	56
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	11.9	11.9	16.0	16.0	16.0	57.5	57.5	61.2	61.2
Actuated g/C Ratio	0.14	0.14	0.19	0.19	0.19	0.67	0.67	0.72	0.72
v/c Ratio	0.15	0.30	0.14	0.26	0.38	0.07	0.14	0.06	0.05
Control Delay	34.8	33.0	27.3	29.4	8.3	9.0	7.5	5.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	33.0	27.3	29.4	8.3	9.0	7.5	5.5	5.1
LOS	C	C	C	C	A	A	A	A	A
Approach Delay		33.4		17.6			7.8		5.2
Approach LOS		C		B			A		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 85.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	68	27	80	129	34	135	30	63
v/c Ratio	0.15	0.30	0.14	0.26	0.38	0.07	0.14	0.06	0.05
Control Delay	34.8	33.0	27.3	29.4	8.3	9.0	7.5	5.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	33.0	27.3	29.4	8.3	9.0	7.5	5.5	5.1
Queue Length 50th (m)	3.3	8.2	3.7	11.2	0.0	1.1	3.9	0.9	1.9
Queue Length 95th (m)	11.2	22.2	10.1	22.8	13.2	8.1	21.4	5.0	8.7
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	313	427	208	669	589	510	983	524	1159
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	0.08	0.16	0.13	0.12	0.22	0.07	0.14	0.06	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	52	10	25	74	119	31	102	22	28	56	2
Future Volume (vph)	22	52	10	25	74	119	31	102	22	28	56	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.92	1.00	0.90		1.00	1.00	
Flpb, ped/bikes	0.94	1.00		0.96	1.00	1.00	0.88	1.00		0.76	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1567	1553		1529	1667	1287	1021	1455		1199	1614	
Flt Permitted	0.70	1.00		0.48	1.00	1.00	0.72	1.00		0.62	1.00	
Satd. Flow (perm)	1163	1553		780	1667	1287	769	1455		788	1614	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	57	11	27	80	129	34	111	24	30	61	2
RTOR Reduction (vph)	0	8	0	0	0	103	0	5	0	0	1	0
Lane Group Flow (vph)	24	60	0	27	80	26	34	130	0	30	62	0
Confl. Peds. (#/hr)	26		48	48		26	54		261	261		54
Heavy Vehicles (%)	0%	9%	0%	4%	5%	6%	43%	5%	10%	6%	6%	50%
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)	9.5	9.5		15.4	15.4	15.4	55.1	55.1		60.6	60.6	
Effective Green, g (s)	11.9	11.9		14.4	17.8	17.8	57.5	57.5		59.6	63.0	
Actuated g/C Ratio	0.13	0.13		0.16	0.20	0.20	0.65	0.65		0.67	0.71	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	208		142	334	257	497	942		535	1145	
v/s Ratio Prot		0.04		0.00	c0.05			c0.09		0.00	c0.04	
v/s Ratio Perm	0.02			0.03		0.02	0.04			0.04		
v/c Ratio	0.15	0.29		0.19	0.24	0.10	0.07	0.14		0.06	0.05	
Uniform Delay, d1	34.0	34.6		31.8	29.8	29.0	5.8	6.1		5.0	3.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.8		0.7	0.4	0.2	0.3	0.3		0.0	0.1	
Delay (s)	34.5	35.4		32.5	30.2	29.1	6.0	6.4		5.1	4.0	
Level of Service	C	D		C	C	C	A	A		A	A	
Approach Delay (s)		35.2			29.9			6.3			4.3	
Approach LOS		D			C			A			A	

Intersection Summary				
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.17			
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	45.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	77	88	4	12	91
Future Volume (vph)	26	77	88	4	12	91
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	22.0	22.0	23.0	23.0	15.0	15.0
Total Split (%)	36.7%	36.7%	38.3%	38.3%	25.0%	25.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
v/c Ratio	0.11	0.19	0.21	0.01	0.15	0.14
Control Delay	19.9	6.5	20.0	17.5	9.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.5	20.0	17.5	9.6	7.1
LOS	B	A	C	B	A	A
Approach Delay	9.8			19.9	8.4	
Approach LOS	A			B	A	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 67.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.21			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 33.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	28	84	96	4	57	55
v/c Ratio	0.11	0.19	0.21	0.01	0.15	0.14
Control Delay	19.9	6.5	20.0	17.5	9.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.5	20.0	17.5	9.6	7.1
Queue Length 50th (m)	2.8	0.0	9.6	0.4	1.3	0.0
Queue Length 95th (m)	8.7	9.4	20.7	2.4	9.6	8.1
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	262	431	454	493	392	385
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	0.19	0.21	0.01	0.15	0.14

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	77	88	4	12	91
Future Volume (vph)	26	77	88	4	12	91
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.70	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.88	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	929	1369	1614	1750	1334	1278
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	929	1369	1614	1750	1334	1278
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	84	96	4	13	99
RTOR Reduction (vph)	0	61	0	0	32	40
Lane Group Flow (vph)	28	23	96	4	25	15
Confl. Peds. (#/hr)	143	2	2			2
Heavy Vehicles (%)	25%	6%	3%	0%	9%	9%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	16.0	16.0	16.8	16.8	16.0	16.0
Effective Green, g (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	369	454	493	360	345
v/s Ratio Prot			c0.06	0.00	c0.02	
v/s Ratio Perm	c0.03	0.02				0.01
v/c Ratio	0.11	0.06	0.21	0.01	0.07	0.04
Uniform Delay, d1	18.5	18.3	18.5	17.4	18.3	18.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3	1.1	0.0	0.1	0.1
Delay (s)	19.4	18.6	19.5	17.4	18.4	18.2
Level of Service	B	B	B	B	B	B
Approach Delay (s)	18.8			19.5	18.3	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	33.3%	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	0	0	93	89	0
Future Volume (Veh/h)	0	0	0	93	89	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	101	97	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	198	97	97			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	97	97			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	791	959	1496			

Direction, Lane #	NB 1	SB 1
Volume Total	101	97
Volume Left	0	0
Volume Right	0	0
cSH	1496	1700
Volume to Capacity	0.00	0.06
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.3%	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	93	89	0
Future Volume (Veh/h)	0	0	0	93	89	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	101	97	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	198	97	97			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	97	97			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	791	959	1496			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	101	97
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.04	0.06	0.06
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	445	453	67	68	18
Future Volume (Veh/h)	26	445	453	67	68	18
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)	28	484	492	73	74	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.98	
vC, conflicting volume	492				790	246
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492				744	246
tC, single (s)	4.1				7.0	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.5
p0 queue free %	97				77	97
cM capacity (veh/h)	1082				322	711

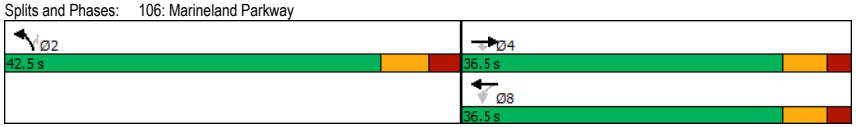
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	189	323	246	246	73	74	20
Volume Left	28	0	0	0	0	74	0
Volume Right	0	0	0	0	73	0	20
cSH	1082	1700	1700	1700	1700	322	711
Volume to Capacity	0.03	0.19	0.14	0.14	0.04	0.23	0.03
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	7.0	0.7
Control Delay (s)	1.4	0.0	0.0	0.0	0.0	19.5	10.2
Lane LOS	A					C	B
Approach Delay (s)	0.5		0.0			17.5	
Approach LOS						C	

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	430	241	21	448	290	35
Future Volume (vph)	430	241	21	448	290	35
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	17.7	17.7	15.1	17.7	38.6	38.6
Actuated g/C Ratio	0.28	0.28	0.23	0.28	0.60	0.60
v/c Ratio	0.53	0.45	0.17	0.54	0.18	0.04
Control Delay	22.0	5.3	22.4	22.1	6.7	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	5.3	22.4	22.1	6.7	2.8
LOS	C	A	C	C	A	A
Approach Delay	16.0			22.2	6.2	
Approach LOS	B			C	A	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 64.3			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 34.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	467	262	23	487	315	38
v/c Ratio	0.53	0.45	0.17	0.54	0.18	0.04
Control Delay	22.0	5.3	22.4	22.1	6.7	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	5.3	22.4	22.1	6.7	2.8
Queue Length 50th (m)	25.9	0.0	2.3	27.1	8.0	0.0
Queue Length 95th (m)	38.6	14.6	7.9	40.2	16.3	3.6
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1621	861	262	1653	1761	866
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	0.29	0.30	0.09	0.29	0.18	0.04

Intersection Summary

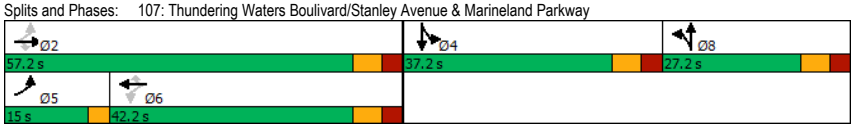
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	430	241	21	448	290	35
Future Volume (vph)	430	241	21	448	290	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3197	1444	1421	3260	2932	1417
Flt Permitted	1.00	1.00	0.38	1.00	0.95	1.00
Satd. Flow (perm)	3197	1444	562	3260	2932	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	467	262	23	487	315	38
RTOR Reduction (vph)	0	190	0	0	0	15
Lane Group Flow (vph)	467	72	23	487	315	23
Heavy Vehicles (%)	4%	3%	17%	2%	10%	5%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	15.1	15.1	15.1	15.1	35.1	35.1
Effective Green, g (s)	17.6	17.6	15.1	17.6	38.6	38.6
Actuated g/C Ratio	0.27	0.27	0.24	0.27	0.60	0.60
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	876	395	132	893	1762	851
v/s Ratio Prot	0.15			c0.15	c0.11	
v/s Ratio Perm		0.05	0.04			0.02
v/c Ratio	0.53	0.18	0.17	0.55	0.18	0.03
Uniform Delay, d1	19.8	17.8	19.6	19.9	5.7	5.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.2	0.6	0.7	0.2	0.1
Delay (s)	20.4	18.0	20.2	20.6	5.9	5.2
Level of Service	C	B	C	C	A	A
Approach Delay (s)	19.6			20.6	5.9	
Approach LOS	B			C	A	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	212	402	19	3	367	356	72	25	255	15
Future Volume (vph)	212	402	19	3	367	356	72	25	255	15
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.73	0.34	0.03	0.01	0.42	0.58	0.19	0.10	0.72	0.34
Control Delay	43.8	28.0	0.1	36.0	39.5	7.3	40.1	28.1	57.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	28.0	0.1	36.0	39.5	7.3	40.1	28.1	57.0	9.9
LOS	D	C	A	D	D	A	D	C	E	A
Approach Delay		32.4			23.7			36.0		39.3
Approach LOS		C			C			D		D

Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	437	21	3	399	387	78	41	277	167
v/c Ratio	0.73	0.34	0.03	0.01	0.42	0.58	0.19	0.10	0.72	0.34
Control Delay	43.8	28.0	0.1	36.0	39.5	7.3	40.1	28.1	57.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	28.0	0.1	36.0	39.5	7.3	40.1	28.1	57.0	9.9
Queue Length 50th (m)	43.4	42.8	0.0	0.6	46.5	0.0	16.8	5.6	69.5	3.3
Queue Length 95th (m)	#68.5	56.8	0.0	3.3	62.3	26.9	31.2	15.4	103.2	22.0
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	315	1292	662	231	946	663	419	429	384	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.34	0.03	0.01	0.42	0.58	0.19	0.10	0.72	0.34

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	402	19	3	367	356	72	25	13	255	15	139
Future Volume (vph)	212	402	19	3	367	356	72	25	13	255	15	139
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	3197	1488	1662	3260	1340	1662	1660		1525	1494	
Flt Permitted	0.35	1.00	1.00	0.50	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	576	3197	1488	872	3260	1340	1662	1660		1525	1494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	437	21	3	399	387	78	27	14	277	16	151
RTOR Reduction (vph)	0	0	13	0	0	275	0	10	0	0	113	0
Lane Group Flow (vph)	230	437	8	3	399	112	78	31	0	277	54	0
Confl. Peds. (#/hr)	1						1					1
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	0%	0%	0%	9%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	297	1292	601	231	946	388	419	418		384	376	
v/s Ratio Prot	c0.06	0.14			0.12		c0.05	0.02		c0.18	0.04	
v/s Ratio Perm	c0.22		0.01	0.00		0.08						
v/c Ratio	0.77	0.34	0.01	0.01	0.42	0.29	0.19	0.07		0.72	0.14	
Uniform Delay, d1	33.8	27.1	23.5	35.6	37.8	36.2	38.6	37.5		45.0	38.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	0.7	0.0	0.1	1.4	1.9	1.0	0.3		11.1	0.8	
Delay (s)	45.7	27.8	23.5	35.7	39.1	38.1	39.6	37.8		56.1	39.0	
Level of Service	D	C	C	D	D	D	D	D		E	D	
Approach Delay (s)		33.6			38.6			39.0			49.7	
Approach LOS		C			D			D			D	

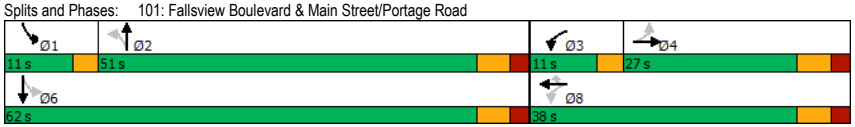
Intersection Summary				
HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	40	85	81	172	191	23	107	57	121
Future Volume (vph)	40	85	81	172	191	23	107	57	121
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	14.1	14.1	22.6	22.6	22.6	50.4	50.4	58.3	58.3
Actuated g/C Ratio	0.16	0.16	0.25	0.25	0.25	0.57	0.57	0.66	0.66
v/c Ratio	0.27	0.44	0.37	0.43	0.44	0.06	0.21	0.14	0.13
Control Delay	38.5	36.8	29.8	30.5	6.8	12.4	11.0	7.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	36.8	29.8	30.5	6.8	12.4	11.0	7.7	7.1
LOS	D	D	C	C	A	B	B	A	A
Approach Delay		37.3		20.2			11.2		7.3
Approach LOS		D		C			B		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 89			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	114	88	187	208	25	161	62	140
v/c Ratio	0.27	0.44	0.37	0.43	0.44	0.06	0.21	0.14	0.13
Control Delay	38.5	36.8	29.8	30.5	6.8	12.4	11.0	7.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	36.8	29.8	30.5	6.8	12.4	11.0	7.7	7.1
Queue Length 50th (m)	7.1	17.4	12.4	28.0	0.0	2.1	12.2	3.8	8.7
Queue Length 95th (m)	17.2	34.0	24.5	47.2	16.1	7.1	27.1	9.8	18.7
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	257	418	242	652	612	418	778	455	1091
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.27	0.36	0.29	0.34	0.06	0.21	0.14	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	85	20	81	172	191	23	107	41	57	121	7
Future Volume (vph)	40	85	20	81	172	191	23	107	41	57	121	7
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.88	1.00	0.85		1.00	0.99	
Flpb, ped/bikes	0.92	1.00		0.96	1.00	1.00	0.83	1.00		0.79	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)	1483	1584		1530	1699	1279	1073	1359		1145	1666	
Flt Permitted	0.64	1.00		0.44	1.00	1.00	0.67	1.00		0.60	1.00	
Satd. Flow (perm)	999	1584		715	1699	1279	754	1359		728	1666	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	92	22	88	187	208	25	116	45	62	132	8
RTOR Reduction (vph)	0	9	0	0	0	154	0	11	0	0	2	0
Lane Group Flow (vph)	43	105	0	88	187	54	25	150	0	62	138	0
Confl. Peds. (#/hr)	42		56	56		42	81		235	235		81
Heavy Vehicles (%)	3%	5%	0%	4%	3%	2%	29%	6%	3%	14%	3%	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)	11.7	11.7		20.9	20.9	20.9	48.0	48.0		56.6	56.6	
Effective Green, g (s)	14.1	14.1		19.9	23.3	23.3	50.4	50.4		55.6	59.0	
Actuated g/C Ratio	0.16	0.16		0.22	0.26	0.26	0.56	0.56		0.62	0.65	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	247		204	438	330	420	758		469	1088	
v/s Ratio Prot		0.07		0.02	c0.11			c0.11		0.01	c0.08	
v/s Ratio Perm	0.04			0.07		0.04	0.03			0.07		
v/c Ratio	0.28	0.42		0.43	0.43	0.16	0.06	0.20		0.13	0.13	
Uniform Delay, d1	33.6	34.4		29.3	27.9	25.9	9.1	9.9		7.1	5.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.2		1.5	0.7	0.2	0.3	0.6		0.1	0.2	
Delay (s)	34.6	35.6		30.7	28.6	26.2	9.4	10.5		7.3	6.2	
Level of Service	C	D		C	C	C	A	B		A	A	
Approach Delay (s)		35.3			27.9			10.3			6.5	
Approach LOS		D			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.28			
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	55.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	140	138	13	36	286
Future Volume (vph)	43	140	138	13	36	286
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	45.0	45.0	25.0	25.0	30.0	30.0
Total Split (%)	45.0%	45.0%	25.0%	25.0%	30.0%	30.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
v/c Ratio	0.18	0.22	0.41	0.04	0.48	0.44
Control Delay	18.5	3.6	35.2	29.4	13.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	3.6	35.2	29.4	13.9	9.0
LOS	B	A	D	C	B	A
Approach Delay	7.2			34.7	11.5	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 94.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 37.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	152	150	14	179	171
v/c Ratio	0.18	0.22	0.41	0.04	0.48	0.44
Control Delay	18.5	3.6	35.2	29.4	13.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	3.6	35.2	29.4	13.9	9.0
Queue Length 50th (m)	5.3	0.0	24.6	2.1	6.4	0.0
Queue Length 95th (m)	13.3	10.9	43.6	7.3	27.1	18.2
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	267	696	370	312	443	452
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.22	0.41	0.04	0.40	0.38

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	140	138	13	36	286
Future Volume (vph)	43	140	138	13	36	286
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.46	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.88	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	627	1403	1662	1400	1239	1191
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	627	1403	1662	1400	1239	1191
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	152	150	14	39	311
RTOR Reduction (vph)	0	86	0	0	110	134
Lane Group Flow (vph)	47	66	150	14	69	37
Confl. Peds. (#/hr)	275					1
Heavy Vehicles (%)	21%	6%	0%	25%	18%	17%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	38.8	38.8	18.8	18.8	18.0	18.0
Effective Green, g (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	610	370	312	265	255
v/s Ratio Prot			c0.09	0.01	c0.06	
v/s Ratio Perm	c0.08	0.05				0.03
v/c Ratio	0.17	0.11	0.41	0.04	0.26	0.14
Uniform Delay, d1	16.2	15.8	31.3	28.7	30.8	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.4	3.3	0.3	0.5	0.3
Delay (s)	17.6	16.1	34.5	29.0	31.3	30.3
Level of Service	B	B	C	C	C	C
Approach Delay (s)	16.5			34.1	30.8	
Approach LOS	B			C	C	

Intersection Summary				
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	14.2
Intersection Capacity Utilization	37.5%	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	0	0	132	176	0
Future Volume (Veh/h)	0	0	0	132	176	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	143	191	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	334	191	191			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	191	191			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	661	851	1383			

Direction, Lane #	NB 1	SB 1
Volume Total	143	191
Volume Left	0	0
Volume Right	0	0
cSH	1383	1700
Volume to Capacity	0.00	0.11
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	132	176	0
Future Volume (Veh/h)	0	0	0	132	176	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	143	191	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	334	191	191			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	191	191			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	661	851	1383			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	143	191
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.11	0.08	0.11
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	695	716	98	116	50
Future Volume (Veh/h)	34	695	716	98	116	50
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)	37	755	778	107	126	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.87	
vC, conflicting volume	778				1230	389
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778				976	389
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	96				38	91
cM capacity (veh/h)	848				204	590

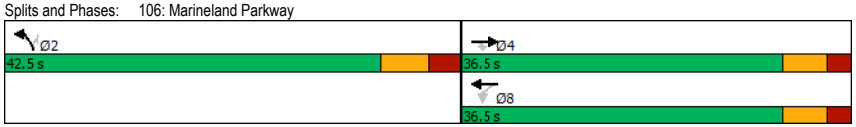
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	289	503	389	389	107	126	54
Volume Left	37	0	0	0	0	126	0
Volume Right	0	0	0	0	107	0	54
cSH	848	1700	1700	1700	1700	204	590
Volume to Capacity	0.04	0.30	0.23	0.23	0.06	0.62	0.09
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	28.5	2.4
Control Delay (s)	1.6	0.0	0.0	0.0	0.0	47.8	11.7
Lane LOS	A					E	B
Approach Delay (s)	0.6		0.0			36.9	
Approach LOS						E	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	646	425	43	693	629	50
Future Volume (vph)	646	425	43	693	629	50
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	25.0	25.0	22.4	25.0	38.7	38.7
Actuated g/C Ratio	0.35	0.35	0.31	0.35	0.54	0.54
v/c Ratio	0.62	0.59	0.39	0.67	0.42	0.08
Control Delay	21.7	5.2	28.9	22.9	11.7	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	5.2	28.9	22.9	11.7	3.6
LOS	C	A	C	C	B	A
Approach Delay	15.2			23.2	11.1	
Approach LOS	B			C	B	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 71.7			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 59.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	702	462	47	753	684	54
v/c Ratio	0.62	0.59	0.39	0.67	0.42	0.08
Control Delay	21.7	5.2	28.9	22.9	11.7	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	5.2	28.9	22.9	11.7	3.6
Queue Length 50th (m)	42.4	0.0	5.1	46.5	27.3	0.0
Queue Length 95th (m)	58.5	17.3	14.8	63.9	48.6	5.5
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1485	884	164	1470	1642	710
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.52	0.29	0.51	0.42	0.08

Intersection Summary

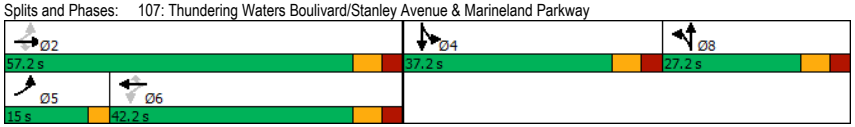
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	646	425	43	693	629	50
Future Volume (vph)	646	425	43	693	629	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1390	1511	3228	3043	1271
Flt Permitted	1.00	1.00	0.25	1.00	0.95	1.00
Satd. Flow (perm)	3260	1390	392	3228	3043	1271
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	702	462	47	753	684	54
RTOR Reduction (vph)	0	301	0	0	0	25
Lane Group Flow (vph)	702	161	47	753	684	29
Heavy Vehicles (%)	2%	7%	10%	3%	6%	17%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	22.4	22.4	22.4	22.4	35.2	35.2
Effective Green, g (s)	24.9	24.9	22.4	24.9	38.7	38.7
Actuated g/C Ratio	0.35	0.35	0.31	0.35	0.54	0.54
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1133	483	122	1122	1644	686
v/s Ratio Prot	0.22			c0.23	c0.22	
v/s Ratio Perm		0.12	0.12			0.02
v/c Ratio	0.62	0.33	0.39	0.67	0.42	0.04
Uniform Delay, d1	19.4	17.2	19.2	19.9	9.8	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.4	2.0	1.6	0.8	0.1
Delay (s)	20.4	17.6	21.2	21.5	10.5	7.9
Level of Service	C	B	C	C	B	A
Approach Delay (s)	19.3			21.4	10.3	
Approach LOS	B			C	B	

Intersection Summary				
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	175	579	33	14	748	560	48	22	451	38
Future Volume (vph)	175	579	33	14	748	560	48	22	451	38
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.96	0.48	0.06	0.08	0.87	0.77	0.12	0.10	1.24	0.60
Control Delay	86.9	30.6	0.2	37.8	55.4	12.2	39.1	25.5	169.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.9	30.6	0.2	37.8	55.4	12.2	39.1	25.5	169.4	11.5
LOS	F	C	A	D	E	B	D	C	F	B
Approach Delay		41.8			36.9			33.0		102.4
Approach LOS		D			D			C		F

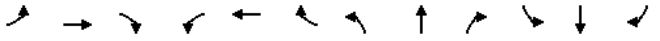
Intersection Summary		
Cycle Length: 121.6		
Actuated Cycle Length: 131.6		
Natural Cycle: 135		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 1.24		
Intersection Signal Delay: 55.3	Intersection LOS: E	
Intersection Capacity Utilization 84.3%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	629	36	15	813	609	52	42	490	361
v/c Ratio	0.96	0.48	0.06	0.08	0.87	0.77	0.12	0.10	1.24	0.60
Control Delay	86.9	30.6	0.2	37.8	55.4	12.2	39.1	25.5	169.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.9	30.6	0.2	37.8	55.4	12.2	39.1	25.5	169.4	11.5
Queue Length 50th (m)	35.1	66.1	0.0	3.1	111.1	9.9	11.0	5.0	~165.8	9.1
Queue Length 95th (m)	#85.0	84.3	0.0	9.2	#141.2	59.4	22.6	15.1	#235.0	40.7
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	197	1304	648	192	937	795	419	406	395	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.48	0.06	0.08	0.87	0.77	0.12	0.10	1.24	0.60

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	579	33	14	748	560	48	22	17	451	38	294
Future Volume (vph)	175	579	33	14	748	560	48	22	17	451	38	294
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3228	1455	1661	3228	1372	1662	1557		1568	1446	
Flt Permitted	0.11	1.00	1.00	0.41	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	184	3228	1455	723	3228	1372	1662	1557		1568	1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	629	36	15	813	609	52	24	18	490	41	320
RTOR Reduction (vph)	0	0	21	0	0	397	0	13	0	0	238	0
Lane Group Flow (vph)	190	629	15	15	813	212	52	29	0	490	123	0
Confl. Peds. (#/hr)	1		1	1		1	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	3%	7%	0%	9%	0%	6%	7%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	1304	588	192	937	398	419	392		395	364	
v/s Ratio Prot	c0.08	0.19			0.25		c0.03	0.02		c0.31	0.09	
v/s Ratio Perm	c0.29		0.01	0.02		0.15						
v/c Ratio	0.99	0.48	0.02	0.08	0.87	0.53	0.12	0.07		1.24	0.34	
Uniform Delay, d1	34.3	29.0	23.6	36.2	44.3	39.2	38.0	37.5		49.2	40.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	61.3	1.3	0.1	0.8	10.7	5.0	0.6	0.4		128.1	2.5	
Delay (s)	95.6	30.3	23.7	37.0	55.0	44.2	38.6	37.8		177.3	42.7	
Level of Service	F	C	C	D	D	D	D	D		F	D	
Approach Delay (s)		44.5			50.2			38.3			120.2	
Approach LOS		D			D			D			F	

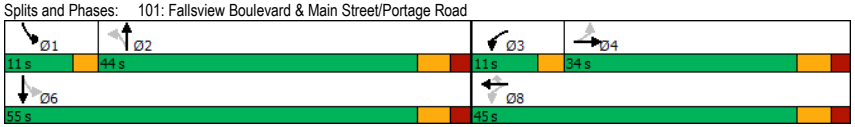
Intersection Summary				
HCM 2000 Control Delay	66.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	84.3%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	47	79	24	116	165	39	172	54	76
Future Volume (vph)	47	79	24	116	165	39	172	54	76
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	34.0	34.0	11.0	45.0	45.0	44.0	44.0	11.0	55.0
Total Split (%)	34.0%	34.0%	11.0%	45.0%	45.0%	44.0%	44.0%	11.0%	55.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	None	Max
Act Effct Green (s)	30.0	30.0	41.0	41.0	41.0	42.6	42.6	51.0	51.0
Actuated g/C Ratio	0.30	0.30	0.41	0.41	0.41	0.43	0.43	0.51	0.51
v/c Ratio	0.17	0.21	0.06	0.18	0.32	0.14	0.38	0.17	0.12
Control Delay	27.7	25.0	18.2	19.7	4.7	20.8	21.5	13.9	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	25.0	18.2	19.7	4.7	20.8	21.5	13.9	11.5
LOS	C	C	B	B	A	C	C	B	B
Approach Delay		25.9		11.4			21.4		12.4
Approach LOS		C		B			C		B

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	51	102	26	126	179	42	236	59	98
v/c Ratio	0.17	0.21	0.06	0.18	0.32	0.14	0.38	0.17	0.12
Control Delay	27.7	25.0	18.2	19.7	4.7	20.8	21.5	13.9	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	25.0	18.2	19.7	4.7	20.8	21.5	13.9	11.5
Queue Length 50th (m)	7.7	13.9	3.1	16.0	0.0	5.3	31.0	5.9	8.6
Queue Length 95th (m)	17.4	27.6	8.4	28.7	13.1	13.2	52.6	12.7	17.4
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	305	476	436	703	554	296	618	347	815
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.21	0.06	0.18	0.32	0.14	0.38	0.17	0.12

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	79	15	24	116	165	39	172	45	54	76	14
Future Volume (vph)	47	79	15	24	116	165	39	172	45	54	76	14
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.82	1.00	0.89		1.00	0.98	
Flpb, ped/bikes	0.86	1.00		0.94	1.00	1.00	0.91	1.00		0.86	1.00	
Frt	1.00	0.98		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)	1429	1565		1571	1716	1093	950	1430		1305	1586	
Flt Permitted	0.68	1.00		0.60	1.00	1.00	0.69	1.00		0.49	1.00	
Satd. Flow (perm)	1017	1565		984	1716	1093	694	1430		670	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	86	16	26	126	179	42	187	49	59	83	15
RTOR Reduction (vph)	0	7	0	0	0	106	0	9	0	0	6	0
Lane Group Flow (vph)	51	95	0	26	126	73	42	227	0	59	92	0
Confl. Peds. (#/hr)	60		45	45		60	35		255	255		35
Heavy Vehicles (%)	0%	8%	0%	0%	2%	11%	60%	5%	5%	10%	7%	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)	27.6	27.6		38.6	38.6	38.6	40.2	40.2		49.2	49.2	
Effective Green, g (s)	30.0	30.0		37.6	41.0	41.0	42.6	42.6		48.2	51.6	
Actuated g/C Ratio	0.30	0.30		0.37	0.41	0.41	0.42	0.42		0.48	0.51	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	303	466		408	699	445	293	605		352	813	
v/s Ratio Prot		c0.06		0.00	c0.07			c0.16		c0.01	0.06	
v/s Ratio Perm	0.05			0.02		0.07	0.06			0.07		
v/c Ratio	0.17	0.20		0.06	0.18	0.16	0.14	0.37		0.17	0.11	
Uniform Delay, d1	26.1	26.4		20.2	19.1	18.9	17.8	19.9		14.7	12.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.0		0.3	0.6	0.8	1.0	1.8		0.2	0.3	
Delay (s)	27.3	27.4		20.5	19.6	19.7	18.8	21.6		14.9	12.9	
Level of Service	C	C		C	B	B	B	C		B	B	
Approach Delay (s)		27.3			19.7			21.2			13.7	
Approach LOS		C			B			C			B	

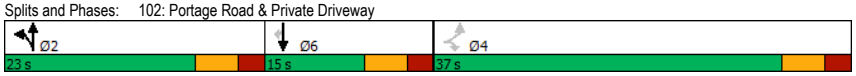
Intersection Summary				
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	47.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	65	140	119	9	20	141
Future Volume (vph)	65	140	119	9	20	141
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	37.0	37.0	23.0	23.0	15.0	15.0
Total Split (%)	49.3%	49.3%	30.7%	30.7%	20.0%	20.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
v/c Ratio	0.26	0.25	0.33	0.02	0.23	0.22
Control Delay	21.1	4.3	29.8	25.3	11.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	4.3	29.8	25.3	11.9	7.9
LOS	C	A	C	C	B	A
Approach Delay	9.6			29.5	9.9	
Approach LOS	A			C	A	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 85.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	71	152	129	10	89	86
v/c Ratio	0.26	0.25	0.33	0.02	0.23	0.22
Control Delay	21.1	4.3	29.8	25.3	11.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	4.3	29.8	25.3	11.9	7.9
Queue Length 50th (m)	8.1	0.0	18.4	1.3	3.0	0.0
Queue Length 95th (m)	18.8	11.6	34.3	5.4	15.5	11.8
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	275	612	393	413	389	394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.25	0.33	0.02	0.23	0.22

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	65	140	119	9	20	141
Future Volume (vph)	65	140	119	9	20	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.93	1.00	1.00	0.99	0.98
Flpb, ped/bikes	0.48	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.89	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	692	1335	1662	1750	1429	1390
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	692	1335	1662	1750	1429	1390
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	152	129	10	22	153
RTOR Reduction (vph)	0	93	0	0	51	66
Lane Group Flow (vph)	71	59	129	10	38	20
Confl. Peds. (#/hr)	255	20	20			3
Heavy Vehicles (%)	15%	4%	0%	0%	8%	0%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	30.8	30.8	18.0	18.0	18.0	18.0
Effective Green, g (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	267	515	393	413	338	328
v/s Ratio Prot			c0.08	0.01	c0.03	
v/s Ratio Perm	c0.10	0.04				0.01
v/c Ratio	0.27	0.11	0.33	0.02	0.11	0.06
Uniform Delay, d1	17.9	16.8	27.0	25.0	25.6	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.4	2.2	0.1	0.1	0.1
Delay (s)	20.3	17.3	29.2	25.1	25.7	25.3
Level of Service	C	B	C	C	C	C
Approach Delay (s)	18.2			28.9	25.5	
Approach LOS	B			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	36.7%	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	0	0	103	160	0
Future Volume (Veh/h)	0	0	0	103	160	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	112	174	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	286	174	174			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	174	174			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	704	869	1403			

Direction, Lane #	NB 1	SB 1
Volume Total	112	174
Volume Left	0	0
Volume Right	0	0
cSH	1403	1700
Volume to Capacity	0.00	0.10
Queue Length 95th (m)	0.0	0.0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	19.1%	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	103	160	0
Future Volume (Veh/h)	0	0	0	103	160	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	112	174	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	286	174	174			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	174	174			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	704	869	1403			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	112	174
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.07	0.10
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	19.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	753	691	65	95	32
Future Volume (Veh/h)	38	753	691	65	95	32
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)	41	818	751	71	103	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.85	
vC, conflicting volume	751				1242	376
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	751				929	376
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				51	94
cM capacity (veh/h)	868				211	628

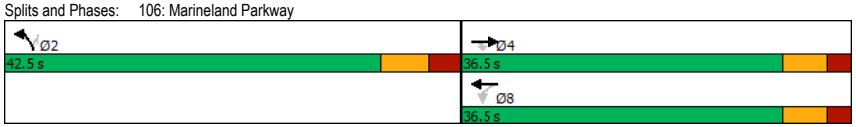
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	314	545	376	376	71	103	35
Volume Left	41	0	0	0	0	103	0
Volume Right	0	0	0	0	71	0	35
cSH	868	1700	1700	1700	1700	211	628
Volume to Capacity	0.05	0.32	0.22	0.22	0.04	0.49	0.06
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	19.4	1.4
Control Delay (s)	1.7	0.0	0.0	0.0	0.0	37.3	11.1
Lane LOS	A					E	B
Approach Delay (s)	0.6		0.0			30.6	
Approach LOS						D	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	705	379	39	696	440	46
Future Volume (vph)	705	379	39	696	440	46
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	26.2	26.2	23.7	26.2	38.7	38.7
Actuated g/C Ratio	0.36	0.36	0.33	0.36	0.53	0.53
v/c Ratio	0.65	0.53	0.37	0.66	0.28	0.06
Control Delay	22.3	4.6	28.7	22.5	10.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	4.6	28.7	22.5	10.8	3.7
LOS	C	A	C	C	B	A
Approach Delay	16.1			22.8	10.1	
Approach LOS	B			C	B	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 72.9			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 68.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	766	412	42	757	478	50
v/c Ratio	0.65	0.53	0.37	0.66	0.28	0.06
Control Delay	22.3	4.6	28.7	22.5	10.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	4.6	28.7	22.5	10.8	3.7
Queue Length 50th (m)	47.4	0.0	4.6	47.0	18.5	0.0
Queue Length 95th (m)	65.0	16.4	13.9	64.7	32.1	5.3
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1460	862	145	1432	1711	803
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	0.52	0.48	0.29	0.53	0.28	0.06

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	705	379	39	696	440	46
Future Volume (vph)	705	379	39	696	440	46
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1417	1539	3197	3225	1469
Flt Permitted	1.00	1.00	0.22	1.00	0.95	1.00
Satd. Flow (perm)	3260	1417	351	3197	3225	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	766	412	42	757	478	50
RTOR Reduction (vph)	0	264	0	0	0	23
Lane Group Flow (vph)	766	148	42	757	478	27
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	5%	8%	4%	0%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	23.7	23.7	23.7	23.7	35.2	35.2
Effective Green, g (s)	26.2	26.2	23.7	26.2	38.7	38.7
Actuated g/C Ratio	0.36	0.36	0.33	0.36	0.53	0.53
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1171	509	114	1148	1712	779
v/s Ratio Prot	0.23			c0.24	c0.15	
v/s Ratio Perm		0.10	0.12			0.02
v/c Ratio	0.65	0.29	0.37	0.66	0.28	0.03
Uniform Delay, d1	19.6	16.7	18.9	19.6	9.4	8.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.3	2.0	1.4	0.4	0.1
Delay (s)	20.9	17.0	20.9	21.0	9.8	8.3
Level of Service	C	B	C	C	A	A
Approach Delay (s)	19.5			21.0	9.7	
Approach LOS	B			C	A	

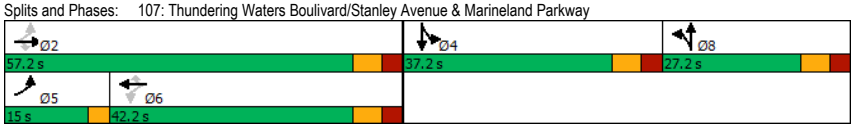
Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	194	642	22	16	622	505	80	37	407	13
Future Volume (vph)	194	642	22	16	622	505	80	37	407	13
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.93	0.52	0.04	0.10	0.71	0.69	0.21	0.23	1.10	0.52
Control Delay	75.3	31.4	0.1	38.4	46.8	8.0	40.5	20.2	119.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	31.4	0.1	38.4	46.8	8.0	40.5	20.2	119.2	8.8
LOS	E	C	A	D	D	A	D	C	F	A
Approach Delay		40.5			29.6			29.6		74.6
Approach LOS		D			C			C		E

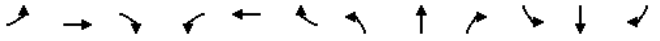
Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	698	24	17	676	549	87	101	442	299
v/c Ratio	0.93	0.52	0.04	0.10	0.71	0.69	0.21	0.23	1.10	0.52
Control Delay	75.3	31.4	0.1	38.4	46.8	8.0	40.5	20.2	119.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	31.4	0.1	38.4	46.8	8.0	40.5	20.2	119.2	8.8
Queue Length 50th (m)	38.9	75.0	0.0	3.5	87.2	0.0	18.9	9.5	~136.3	2.9
Queue Length 95th (m)	#82.2	94.4	0.0	10.2	110.1	33.5	33.9	24.9	#203.9	28.4
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	226	1330	662	173	946	796	419	443	403	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.52	0.04	0.10	0.71	0.69	0.21	0.23	1.10	0.52

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	642	22	16	622	505	80	37	56	407	13	262
Future Volume (vph)	194	642	22	16	622	505	80	37	56	407	13	262
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3292	1488	1662	3260	1403	1662	1591		1599	1446	
Flt Permitted	0.16	1.00	1.00	0.37	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	272	3292	1488	655	3260	1403	1662	1591		1599	1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	698	24	17	676	549	87	40	61	442	14	285
RTOR Reduction (vph)	0	0	14	0	0	390	0	42	0	0	213	0
Lane Group Flow (vph)	211	698	10	17	676	159	87	59	0	442	86	0
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	1%	0%	0%	2%	6%	0%	0%	0%	4%	0%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	1330	601	174	946	407	419	401		403	364	
v/s Ratio Prot	c0.08	0.21			0.21		c0.05	0.04		c0.28	0.06	
v/s Ratio Perm	c0.28		0.01	0.03		0.11						
v/c Ratio	0.97	0.52	0.02	0.10	0.71	0.39	0.21	0.15		1.10	0.24	
Uniform Delay, d1	34.4	29.6	23.5	36.4	41.8	37.4	38.8	38.2		49.2	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	52.9	1.5	0.0	1.1	4.6	2.8	1.1	0.8		73.5	1.5	
Delay (s)	87.3	31.1	23.6	37.5	46.4	40.2	39.9	39.0		122.7	40.6	
Level of Service	F	C	C	D	D	D	D	D		F	D	
Approach Delay (s)		43.6			43.6			39.4			89.6	
Approach LOS		D			D			D			F	

Intersection Summary				
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

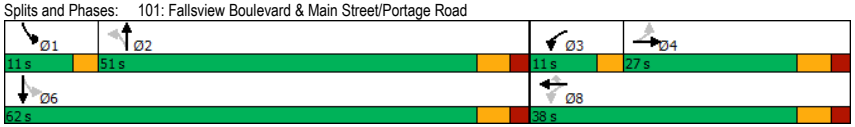
Appendix H

Total Traffic Operations

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	22	63	25	89	129	31	102	31	56
Future Volume (vph)	22	63	25	89	129	31	102	31	56
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	12.5	12.5	16.5	16.5	16.5	55.5	55.5	61.2	61.2
Actuated g/C Ratio	0.15	0.15	0.19	0.19	0.19	0.65	0.65	0.71	0.71
v/c Ratio	0.14	0.34	0.14	0.30	0.39	0.07	0.14	0.07	0.05
Control Delay	34.4	33.7	27.0	30.1	8.0	10.0	8.3	5.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	33.7	27.0	30.1	8.0	10.0	8.3	5.7	5.3
LOS	C	C	C	C	A	A	A	A	A
Approach Delay		33.9		18.1			8.7		5.5
Approach LOS		C		B			A		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 85.8			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	79	27	97	140	34	135	34	63
v/c Ratio	0.14	0.34	0.14	0.30	0.39	0.07	0.14	0.07	0.05
Control Delay	34.4	33.7	27.0	30.1	8.0	10.0	8.3	5.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	33.7	27.0	30.1	8.0	10.0	8.3	5.7	5.3
Queue Length 50th (m)	3.3	9.9	3.7	13.7	0.0	1.8	6.8	1.1	2.0
Queue Length 95th (m)	11.2	25.3	10.1	26.6	13.7	8.3	21.9	5.8	8.9
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	306	425	212	664	592	488	942	519	1150
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	0.08	0.19	0.13	0.15	0.24	0.07	0.14	0.07	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	63	10	25	89	129	31	102	22	31	56	2
Future Volume (vph)	22	63	10	25	89	129	31	102	22	31	56	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.92	1.00	0.90		1.00	1.00	
Flpb, ped/bikes	0.94	1.00		0.96	1.00	1.00	0.88	1.00		0.77	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1569	1560		1529	1667	1287	1021	1455		1200	1614	
Flt Permitted	0.69	1.00		0.49	1.00	1.00	0.72	1.00		0.62	1.00	
Satd. Flow (perm)	1147	1560		789	1667	1287	769	1455		787	1614	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	68	11	27	97	140	34	111	24	34	61	2
RTOR Reduction (vph)	0	7	0	0	0	111	0	6	0	0	1	0
Lane Group Flow (vph)	24	72	0	27	97	29	34	129	0	34	62	0
Confl. Peds. (#/hr)	26		48	48		26	54		261	261		54
Heavy Vehicles (%)	0%	9%	0%	4%	5%	6%	43%	5%	10%	6%	6%	50%
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)	10.1	10.1		16.0	16.0	16.0	53.1	53.1		60.0	60.0	
Effective Green, g (s)	12.5	12.5		15.0	18.4	18.4	55.5	55.5		59.0	62.4	
Actuated g/C Ratio	0.14	0.14		0.17	0.21	0.21	0.63	0.63		0.66	0.70	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	219		149	345	266	480	909		536	1134	
v/s Ratio Prot		0.05		0.00	c0.06			c0.09		c0.00	0.04	
v/s Ratio Perm	0.02			0.03		0.02	0.04			0.04		
v/c Ratio	0.15	0.33		0.18	0.28	0.11	0.07	0.14		0.06	0.06	
Uniform Delay, d1	33.5	34.4		31.3	29.6	28.6	6.5	6.9		5.2	4.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.9		0.6	0.4	0.2	0.3	0.3		0.1	0.1	
Delay (s)	33.9	35.3		31.9	30.1	28.7	6.8	7.2		5.3	4.2	
Level of Service	C	D		C	C	C	A	A		A	A	
Approach Delay (s)		34.9			29.6			7.1			4.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	91	113	4	12	91
Future Volume (vph)	26	91	113	4	12	91
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	22.0	22.0	23.0	23.0	15.0	15.0
Total Split (%)	36.7%	36.7%	38.3%	38.3%	25.0%	25.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
v/c Ratio	0.11	0.22	0.27	0.01	0.15	0.14
Control Delay	19.9	6.2	20.8	17.5	9.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.2	20.8	17.5	9.6	7.1
LOS	B	A	C	B	A	A
Approach Delay	9.2			20.7	8.4	
Approach LOS	A			C	A	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 67.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.27			
Intersection Signal Delay: 13.0		Intersection LOS: B	
Intersection Capacity Utilization 33.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	28	99	123	4	57	55
v/c Ratio	0.11	0.22	0.27	0.01	0.15	0.14
Control Delay	19.9	6.2	20.8	17.5	9.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.2	20.8	17.5	9.6	7.1
Queue Length 50th (m)	2.8	0.0	12.5	0.4	1.3	0.0
Queue Length 95th (m)	8.7	10.2	25.3	2.4	9.6	8.1
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	262	442	454	493	392	385
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	0.22	0.27	0.01	0.15	0.14

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	91	113	4	12	91
Future Volume (vph)	26	91	113	4	12	91
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.98	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.70	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.88	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	929	1369	1614	1750	1334	1278
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	929	1369	1614	1750	1334	1278
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	99	123	4	13	99
RTOR Reduction (vph)	0	72	0	0	32	40
Lane Group Flow (vph)	28	27	123	4	25	15
Confl. Peds. (#/hr)	143	2	2			2
Heavy Vehicles (%)	25%	6%	3%	0%	9%	9%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	16.0	16.0	16.8	16.8	16.0	16.0
Effective Green, g (s)	18.2	18.2	19.0	19.0	18.2	18.2
Actuated g/C Ratio	0.27	0.27	0.28	0.28	0.27	0.27
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	369	454	493	360	345
v/s Ratio Prot			c0.08	0.00	c0.02	
v/s Ratio Perm	c0.03	0.02				0.01
v/c Ratio	0.11	0.07	0.27	0.01	0.07	0.04
Uniform Delay, d1	18.5	18.3	18.8	17.4	18.3	18.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.4	1.5	0.0	0.1	0.1
Delay (s)	19.4	18.7	20.3	17.4	18.4	18.2
Level of Service	B	B	C	B	B	B
Approach Delay (s)	18.9			20.2	18.3	
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	0.16		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	33.5%	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	0	39	118	89	14
Future Volume (Veh/h)	0	0	39	118	89	14
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	42	128	97	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	316	104	112			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	316	104	112			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	97			
cM capacity (veh/h)	657	950	1478			

Direction, Lane #	NB 1	SB 1
Volume Total	170	112
Volume Left	42	0
Volume Right	0	15
cSH	1478	1700
Volume to Capacity	0.03	0.07
Queue Length 95th (m)	0.7	0.0
Control Delay (s)	2.0	0.0
Lane LOS	A	
Approach Delay (s)	2.0	0.0
Approach LOS		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	19.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	78	0	132	89	0
Future Volume (Veh/h)	25	78	0	132	89	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)	27	85	0	143	97	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	240	97	97			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	240	97	97			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	91	100			
cM capacity (veh/h)	748	959	1496			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	112	143	97
Volume Left	27	0	0
Volume Right	85	0	0
cSH	898	1700	1700
Volume to Capacity	0.12	0.08	0.06
Queue Length 95th (m)	3.4	0.0	0.0
Control Delay (s)	9.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.6	0.0	0.0
Approach LOS	A		

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	20.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	445	453	75	83	81
Future Volume (Veh/h)	57	445	453	75	83	81
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)	62	484	492	82	90	88
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.97	
vC, conflicting volume	492				858	246
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492				789	246
tC, single (s)	4.1				7.0	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.5
p0 queue free %	94				69	88
cM capacity (veh/h)	1082				288	711

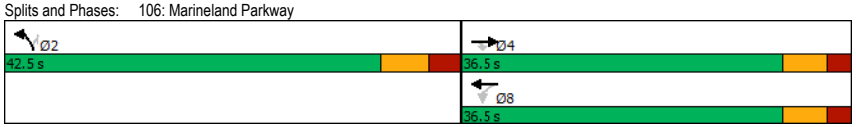
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	223	323	246	246	82	90	88
Volume Left	62	0	0	0	0	90	0
Volume Right	0	0	0	0	82	0	88
cSH	1082	1700	1700	1700	1700	288	711
Volume to Capacity	0.06	0.19	0.14	0.14	0.05	0.31	0.12
Queue Length 95th (m)	1.5	0.0	0.0	0.0	0.0	10.3	3.4
Control Delay (s)	2.8	0.0	0.0	0.0	0.0	23.0	10.8
Lane LOS	A					C	B
Approach Delay (s)	1.1		0.0			17.0	
Approach LOS						C	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	450	241	42	490	290	46
Future Volume (vph)	450	241	42	490	290	46
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	18.5	18.5	16.0	18.5	38.6	38.6
Actuated g/C Ratio	0.28	0.28	0.25	0.28	0.59	0.59
v/c Ratio	0.54	0.44	0.35	0.58	0.18	0.06
Control Delay	21.9	5.1	27.9	22.5	7.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	5.1	27.9	22.5	7.0	2.6
LOS	C	A	C	C	A	A
Approach Delay	16.1			22.9	6.4	
Approach LOS	B			C	A	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 65.1			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	489	262	46	533	315	50
v/c Ratio	0.54	0.44	0.35	0.58	0.18	0.06
Control Delay	21.9	5.1	27.9	22.5	7.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	5.1	27.9	22.5	7.0	2.6
Queue Length 50th (m)	27.3	0.0	4.8	30.1	8.1	0.0
Queue Length 95th (m)	40.4	14.5	13.7	44.1	16.7	4.3
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1600	853	249	1632	1739	860
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	0.31	0.31	0.18	0.33	0.18	0.06

Intersection Summary

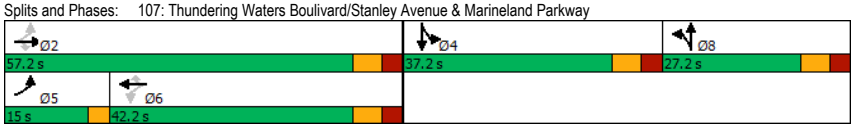
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	450	241	42	490	290	46
Future Volume (vph)	450	241	42	490	290	46
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3197	1444	1421	3260	2932	1417
Flt Permitted	1.00	1.00	0.36	1.00	0.95	1.00
Satd. Flow (perm)	3197	1444	541	3260	2932	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	262	46	533	315	50
RTOR Reduction (vph)	0	188	0	0	0	20
Lane Group Flow (vph)	489	74	46	533	315	30
Heavy Vehicles (%)	4%	3%	17%	2%	10%	5%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	16.0	16.0	16.0	16.0	35.1	35.1
Effective Green, g (s)	18.5	18.5	16.0	18.5	38.6	38.6
Actuated g/C Ratio	0.28	0.28	0.25	0.28	0.59	0.59
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	908	410	132	926	1738	840
v/s Ratio Prot	0.15			c0.16	c0.11	
v/s Ratio Perm		0.05	0.08			0.02
v/c Ratio	0.54	0.18	0.35	0.58	0.18	0.04
Uniform Delay, d1	19.7	17.6	20.3	19.9	6.0	5.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.2	1.6	0.9	0.2	0.1
Delay (s)	20.3	17.8	21.8	20.8	6.3	5.6
Level of Service	C	B	C	C	A	A
Approach Delay (s)	19.4			20.9	6.2	
Approach LOS	B			C	A	

Intersection Summary				
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	212	415	19	3	393	372	72	25	262	15
Future Volume (vph)	212	415	19	3	393	372	72	25	262	15
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.76	0.35	0.03	0.01	0.45	0.60	0.19	0.10	0.74	0.34
Control Delay	46.2	28.2	0.1	36.0	40.0	7.4	40.1	28.1	58.3	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	28.2	0.1	36.0	40.0	7.4	40.1	28.1	58.3	9.9
LOS	D	C	A	D	D	A	D	C	E	A
Approach Delay		33.2			24.2			36.0		40.4
Approach LOS		C			C			D		D

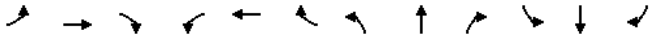
Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 31.4		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	230	451	21	3	427	404	78	41	285	167
v/c Ratio	0.76	0.35	0.03	0.01	0.45	0.60	0.19	0.10	0.74	0.34
Control Delay	46.2	28.2	0.1	36.0	40.0	7.4	40.1	28.1	58.3	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	28.2	0.1	36.0	40.0	7.4	40.1	28.1	58.3	9.9
Queue Length 50th (m)	43.4	44.4	0.0	0.6	50.2	0.0	16.8	5.6	72.0	3.3
Queue Length 95th (m)	#72.5	58.8	0.0	3.3	66.8	27.6	31.2	15.4	#107.4	22.0
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	304	1292	662	228	946	675	419	429	384	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.35	0.03	0.01	0.45	0.60	0.19	0.10	0.74	0.34

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	415	19	3	393	372	72	25	13	262	15	139
Future Volume (vph)	212	415	19	3	393	372	72	25	13	262	15	139
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	3197	1488	1662	3260	1340	1662	1660		1525	1494	
Flt Permitted	0.33	1.00	1.00	0.49	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	539	3197	1488	860	3260	1340	1662	1660		1525	1494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	451	21	3	427	404	78	27	14	285	16	151
RTOR Reduction (vph)	0	0	13	0	0	287	0	10	0	0	113	0
Lane Group Flow (vph)	230	451	8	3	427	117	78	31	0	285	54	0
Confl. Peds. (#/hr)	1						1					1
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	0%	0%	0%	9%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	1292	601	228	946	388	419	418		384	376	
v/s Ratio Prot	c0.07	0.14			0.13		c0.05	0.02		c0.19	0.04	
v/s Ratio Perm	c0.23		0.01	0.00		0.09						
v/c Ratio	0.80	0.35	0.01	0.01	0.45	0.30	0.19	0.07		0.74	0.14	
Uniform Delay, d1	34.2	27.2	23.5	35.6	38.1	36.3	38.6	37.5		45.3	38.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.0	0.7	0.0	0.1	1.6	2.0	1.0	0.3		12.2	0.8	
Delay (s)	49.2	27.9	23.5	35.7	39.7	38.3	39.6	37.8		57.5	39.0	
Level of Service	D	C	C	D	D	D	D	D		E	D	
Approach Delay (s)		34.8			39.0			39.0			50.6	
Approach LOS		C			D			D			D	

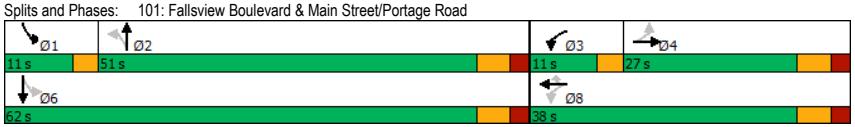
Intersection Summary				
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	69.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	40	106	81	184	199	23	107	62	121
Future Volume (vph)	40	106	81	184	199	23	107	62	121
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	27.0	27.0	11.0	38.0	38.0	51.0	51.0	11.0	62.0
Total Split (%)	27.0%	27.0%	11.0%	38.0%	38.0%	51.0%	51.0%	11.0%	62.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)	15.5	15.5	24.0	24.0	24.0	50.4	50.4	58.4	58.4
Actuated g/C Ratio	0.17	0.17	0.27	0.27	0.27	0.56	0.56	0.65	0.65
v/c Ratio	0.26	0.49	0.38	0.44	0.44	0.06	0.21	0.15	0.13
Control Delay	37.2	38.4	29.5	30.3	6.6	13.3	11.7	8.4	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	38.4	29.5	30.3	6.6	13.3	11.7	8.4	7.6
LOS	D	D	C	C	A	B	B	A	A
Approach Delay		38.2		20.0			11.9		7.9
Approach LOS		D		B			B		A

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 90.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	137	88	200	216	25	161	67	140
v/c Ratio	0.26	0.49	0.38	0.44	0.44	0.06	0.21	0.15	0.13
Control Delay	37.2	38.4	29.5	30.3	6.6	13.3	11.7	8.4	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	38.4	29.5	30.3	6.6	13.3	11.7	8.4	7.6
Queue Length 50th (m)	7.1	22.0	12.4	30.2	0.0	2.2	12.7	4.4	9.2
Queue Length 95th (m)	17.0	40.4	24.4	50.0	16.3	7.5	28.3	11.1	19.8
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	250	414	239	642	611	411	765	448	1075
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.33	0.37	0.31	0.35	0.06	0.21	0.15	0.13

Intersection Summary

HCM Signalized Intersection Capacity Analysis
101: Fallsview Boulevard & Main Street/Portage Road

PM Total
(220026) Lot 175 Portage Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	106	20	81	184	199	23	107	41	62	121	7
Future Volume (vph)	40	106	20	81	184	199	23	107	41	62	121	7
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.88	1.00	0.85		1.00	0.99	
Flpb, ped/bikes	0.92	1.00		0.96	1.00	1.00	0.83	1.00		0.79	1.00	
Frt	1.00	0.98		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)	1483	1597		1540	1699	1276	1070	1358		1146	1666	
Flt Permitted	0.63	1.00		0.41	1.00	1.00	0.67	1.00		0.60	1.00	
Satd. Flow (perm)	987	1597		662	1699	1276	752	1358		727	1666	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	115	22	88	200	216	25	116	45	67	132	8
RTOR Reduction (vph)	0	7	0	0	0	158	0	12	0	0	2	0
Lane Group Flow (vph)	43	130	0	88	200	58	25	149	0	67	138	0
Confl. Peds. (#/hr)	42		56	56		42	81		235	235		81
Heavy Vehicles (%)	3%	5%	0%	4%	3%	2%	29%	6%	3%	14%	3%	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)	13.1	13.1		22.3	22.3	22.3	47.9	47.9		56.6	56.6	
Effective Green, g (s)	15.5	15.5		21.3	24.7	24.7	50.3	50.3		55.6	59.0	
Actuated g/C Ratio	0.17	0.17		0.23	0.27	0.27	0.55	0.55		0.61	0.64	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	269		203	457	343	412	744		462	1071	
v/s Ratio Prot		0.08		0.02	c0.12			c0.11		c0.01	0.08	
v/s Ratio Perm	0.04			0.08		0.05	0.03			0.08		
v/c Ratio	0.26	0.48		0.43	0.44	0.17	0.06	0.20		0.15	0.13	
Uniform Delay, d1	33.1	34.5		28.9	27.7	25.6	9.7	10.5		7.6	6.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.4		1.5	0.7	0.2	0.3	0.6		0.1	0.2	
Delay (s)	33.9	35.8		30.4	28.4	25.9	9.9	11.1		7.8	6.6	
Level of Service	C	D		C	C	C	A	B		A	A	
Approach Delay (s)		35.4			27.7			11.0			7.0	
Approach LOS		D			C			B			A	

Intersection Summary				
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Timings
102: Portage Road & Private Driveway

PM Total
(220026) Lot 175 Portage Road

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	166	158	13	36	286
Future Volume (vph)	43	166	158	13	36	286
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	45.0	45.0	25.0	25.0	30.0	30.0
Total Split (%)	45.0%	45.0%	25.0%	25.0%	30.0%	30.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
v/c Ratio	0.18	0.25	0.46	0.04	0.48	0.44
Control Delay	18.5	3.5	36.6	29.4	13.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	3.5	36.6	29.4	13.9	9.0
LOS	B	A	D	C	B	A
Approach Delay	6.7			36.0	11.5	
Approach LOS	A			D	B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 94.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	180	172	14	179	171
v/c Ratio	0.18	0.25	0.46	0.04	0.48	0.44
Control Delay	18.5	3.5	36.6	29.4	13.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	3.5	36.6	29.4	13.9	9.0
Queue Length 50th (m)	5.3	0.0	28.7	2.1	6.4	0.0
Queue Length 95th (m)	13.3	11.8	49.2	7.3	27.1	18.2
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	267	712	370	312	443	452
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.25	0.46	0.04	0.40	0.38

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	166	158	13	36	286
Future Volume (vph)	43	166	158	13	36	286
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	0.99
Flpb, ped/bikes	0.46	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.88	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	627	1403	1662	1400	1239	1191
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	627	1403	1662	1400	1239	1191
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	180	172	14	39	311
RTOR Reduction (vph)	0	102	0	0	110	134
Lane Group Flow (vph)	47	78	172	14	69	37
Confl. Peds. (#/hr)	275					1
Heavy Vehicles (%)	21%	6%	0%	25%	18%	17%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	38.8	38.8	18.8	18.8	18.0	18.0
Effective Green, g (s)	41.0	41.0	21.0	21.0	20.2	20.2
Actuated g/C Ratio	0.44	0.44	0.22	0.22	0.21	0.21
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	610	370	312	265	255
v/s Ratio Prot			c0.10	0.01	c0.06	
v/s Ratio Perm	c0.08	0.06				0.03
v/c Ratio	0.17	0.13	0.46	0.04	0.26	0.14
Uniform Delay, d1	16.2	15.9	31.7	28.7	30.8	30.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.4	4.2	0.3	0.5	0.3
Delay (s)	17.6	16.3	35.9	29.0	31.3	30.3
Level of Service	B	B	D	C	C	C
Approach Delay (s)	16.6			35.4	30.8	
Approach LOS	B			D	C	

Intersection Summary				
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	14.2
Intersection Capacity Utilization	38.7%	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	0	78	152	176	26
Future Volume (Veh/h)	0	0	78	152	176	26
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	85	165	191	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	540	205	219			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540	205	219			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	94			
cM capacity (veh/h)	471	836	1350			

Direction, Lane #	NB 1	SB 1
Volume Total	250	219
Volume Left	85	0
Volume Right	0	28
cSH	1350	1700
Volume to Capacity	0.06	0.13
Queue Length 95th (m)	1.6	0.0
Control Delay (s)	3.0	0.0
Lane LOS	A	
Approach Delay (s)	3.0	0.0
Approach LOS		

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	31.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	61	0	210	176	0
Future Volume (Veh/h)	20	61	0	210	176	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)	22	66	0	228	191	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	419	191	191			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	191	191			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	92	100			
cM capacity (veh/h)	591	851	1383			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	88	228	191
Volume Left	22	0	0
Volume Right	66	0	0
cSH	766	1700	1700
Volume to Capacity	0.11	0.13	0.11
Queue Length 95th (m)	3.1	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	96	695	716	114	128	99
Future Volume (Veh/h)	96	695	716	114	128	99
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	104	755	778	124	139	108
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.86	
vC, conflicting volume	778				1364	389
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778				1089	389
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	88				10	82
cM capacity (veh/h)	848				154	590

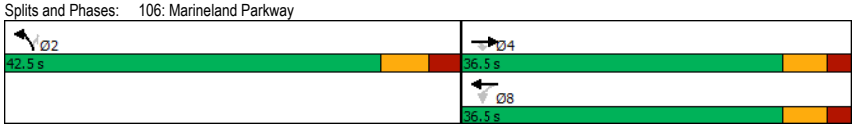
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	356	503	389	389	124	139	108
Volume Left	104	0	0	0	0	139	0
Volume Right	0	0	0	0	124	0	108
cSH	848	1700	1700	1700	1700	154	590
Volume to Capacity	0.12	0.30	0.23	0.23	0.07	0.90	0.18
Queue Length 95th (m)	3.3	0.0	0.0	0.0	0.0	50.7	5.3
Control Delay (s)	3.9	0.0	0.0	0.0	0.0	106.0	12.5
Lane LOS	A					F	B
Approach Delay (s)	1.6		0.0			65.1	
Approach LOS						F	

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	687	425	59	726	629	71
Future Volume (vph)	687	425	59	726	629	71
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	25.8	25.8	23.3	25.8	38.7	38.7
Actuated g/C Ratio	0.36	0.36	0.32	0.36	0.53	0.53
v/c Ratio	0.64	0.58	0.56	0.69	0.42	0.11
Control Delay	22.1	5.0	40.2	23.1	12.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	5.0	40.2	23.1	12.0	3.3
LOS	C	A	D	C	B	A
Approach Delay	15.6			24.4	11.2	
Approach LOS	B			C	B	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 72.5			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.1		Intersection LOS: B	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	747	462	64	789	684	77
v/c Ratio	0.64	0.58	0.56	0.69	0.42	0.11
Control Delay	22.1	5.0	40.2	23.1	12.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	5.0	40.2	23.1	12.0	3.3
Queue Length 50th (m)	45.9	0.0	7.5	49.5	28.6	0.0
Queue Length 95th (m)	63.2	17.3	#22.0	67.7	48.6	6.6
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1468	879	148	1453	1623	713
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	0.51	0.53	0.43	0.54	0.42	0.11

Intersection Summary

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

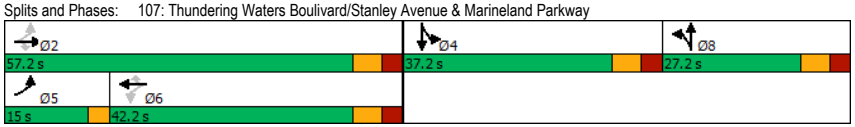
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	687	425	59	726	629	71
Future Volume (vph)	687	425	59	726	629	71
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1390	1511	3228	3043	1271
Flt Permitted	1.00	1.00	0.23	1.00	0.95	1.00
Satd. Flow (perm)	3260	1390	358	3228	3043	1271
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	747	462	64	789	684	77
RTOR Reduction (vph)	0	298	0	0	0	36
Lane Group Flow (vph)	747	164	64	789	684	41
Heavy Vehicles (%)	2%	7%	10%	3%	6%	17%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	23.3	23.3	23.3	23.3	35.2	35.2
Effective Green, g (s)	25.8	25.8	23.3	25.8	38.7	38.7
Actuated g/C Ratio	0.36	0.36	0.32	0.36	0.53	0.53
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1160	494	115	1148	1624	678
v/s Ratio Prot	0.23			c0.24	c0.22	
v/s Ratio Perm		0.12	0.18			0.03
v/c Ratio	0.64	0.33	0.56	0.69	0.42	0.06
Uniform Delay, d1	19.5	17.1	20.3	19.9	10.2	8.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.4	5.7	1.7	0.8	0.2
Delay (s)	20.7	17.5	26.1	21.6	11.0	8.3
Level of Service	C	B	C	C	B	A
Approach Delay (s)	19.5			22.0	10.7	
Approach LOS	B			C	B	

Intersection Summary				
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	175	605	33	14	768	573	48	22	466	38
Future Volume (vph)	175	605	33	14	768	573	48	22	466	38
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.96	0.50	0.06	0.08	0.89	0.78	0.12	0.10	1.28	0.60
Control Delay	86.9	31.0	0.2	37.9	57.6	13.5	39.1	25.5	185.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.9	31.0	0.2	37.9	57.6	13.5	39.1	25.5	185.8	11.5
LOS	F	C	A	D	E	B	D	C	F	B
Approach Delay		41.8			38.7			33.0		113.3
Approach LOS		D			D			C		F

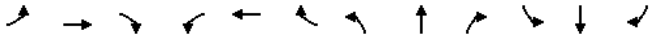
Intersection Summary		
Cycle Length: 121.6		
Actuated Cycle Length: 131.6		
Natural Cycle: 145		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 1.28		
Intersection Signal Delay: 58.9	Intersection LOS: E	
Intersection Capacity Utilization 85.2%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	658	36	15	835	623	52	42	507	361
v/c Ratio	0.96	0.50	0.06	0.08	0.89	0.78	0.12	0.10	1.28	0.60
Control Delay	86.9	31.0	0.2	37.9	57.6	13.5	39.1	25.5	185.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.9	31.0	0.2	37.9	57.6	13.5	39.1	25.5	185.8	11.5
Queue Length 50th (m)	35.1	70.0	0.0	3.1	115.1	13.1	11.0	5.0	~175.4	9.1
Queue Length 95th (m)	#85.0	88.7	0.0	9.2	#151.5	67.7	22.6	15.1	#245.8	40.7
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	197	1304	648	186	937	794	419	406	395	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.50	0.06	0.08	0.89	0.78	0.12	0.10	1.28	0.60

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	605	33	14	768	573	48	22	17	466	38	294
Future Volume (vph)	175	605	33	14	768	573	48	22	17	466	38	294
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3228	1455	1661	3228	1372	1662	1557		1568	1446	
Flt Permitted	0.11	1.00	1.00	0.40	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	184	3228	1455	702	3228	1372	1662	1557		1568	1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	658	36	15	835	623	52	24	18	507	41	320
RTOR Reduction (vph)	0	0	21	0	0	397	0	13	0	0	238	0
Lane Group Flow (vph)	190	658	15	15	835	226	52	29	0	507	123	0
Confl. Peds. (#/hr)	1		1	1		1	3					3
Heavy Vehicles (%)	0%	3%	0%	0%	3%	7%	0%	9%	0%	6%	7%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	1304	588	186	937	398	419	392		395	364	
v/s Ratio Prot	c0.08	0.20			0.26		c0.03	0.02		c0.32	0.09	
v/s Ratio Perm	c0.29		0.01	0.02		0.16						
v/c Ratio	0.99	0.50	0.02	0.08	0.89	0.57	0.12	0.07		1.28	0.34	
Uniform Delay, d1	34.5	29.3	23.6	36.2	44.7	39.7	38.0	37.5		49.2	40.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	61.3	1.4	0.1	0.8	12.5	5.8	0.6	0.4		145.7	2.5	
Delay (s)	95.7	30.7	23.7	37.1	57.2	45.5	38.6	37.8		194.9	42.7	
Level of Service	F	C	C	D	E	D	D	D		F	D	
Approach Delay (s)		44.4			52.1			38.3			131.6	
Approach LOS		D			D			D			F	

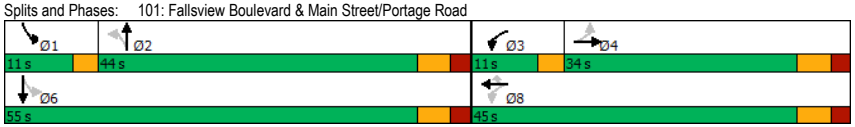
Intersection Summary				
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	85.2%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	47	104	24	130	174	39	172	60	76
Future Volume (vph)	47	104	24	130	174	39	172	60	76
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)	8.0	8.0	3.0	8.0	8.0	8.0	8.0	3.0	8.0
Minimum Split (s)	24.5	24.5	6.0	24.5	24.5	24.4	24.4	6.0	24.5
Total Split (s)	34.0	34.0	11.0	45.0	45.0	44.0	44.0	11.0	55.0
Total Split (%)	34.0%	34.0%	11.0%	45.0%	45.0%	44.0%	44.0%	11.0%	55.0%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	-2.4	-2.4	1.0	-2.4	-2.4	-2.4	-2.4	1.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			Lag	Lag	Lead	
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	None	Max
Act Effct Green (s)	30.0	30.0	41.0	41.0	41.0	42.5	42.5	51.0	51.0
Actuated g/C Ratio	0.30	0.30	0.41	0.41	0.41	0.42	0.42	0.51	0.51
v/c Ratio	0.17	0.27	0.06	0.20	0.34	0.14	0.38	0.19	0.12
Control Delay	27.7	27.1	18.2	20.0	4.7	20.8	21.5	14.1	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	27.1	18.2	20.0	4.7	20.8	21.5	14.1	11.5
LOS	C	C	B	B	A	C	C	B	B
Approach Delay		27.2		11.7			21.4		12.5
Approach LOS		C		B			C		B

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 101: Fallsview Boulevard & Main Street/Portage Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	51	129	26	141	189	42	236	65	98
v/c Ratio	0.17	0.27	0.06	0.20	0.34	0.14	0.38	0.19	0.12
Control Delay	27.7	27.1	18.2	20.0	4.7	20.8	21.5	14.1	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	27.1	18.2	20.0	4.7	20.8	21.5	14.1	11.5
Queue Length 50th (m)	7.7	18.8	3.1	18.1	0.0	5.3	31.2	6.5	8.6
Queue Length 95th (m)	17.4	34.5	8.4	31.6	13.5	13.2	52.6	13.7	17.4
Internal Link Dist (m)		104.0		97.6			53.0		53.6
Turn Bay Length (m)	50.0		40.0			20.0			
Base Capacity (vph)	302	477	416	703	560	295	616	346	815
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.27	0.06	0.20	0.34	0.14	0.38	0.19	0.12

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	104	15	24	130	174	39	172	45	60	76	14
Future Volume (vph)	47	104	15	24	130	174	39	172	45	60	76	14
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.82	1.00	0.89		1.00	0.98	
Flpb, ped/bikes	0.86	1.00		0.95	1.00	1.00	0.91	1.00		0.86	1.00	
Frt	1.00	0.98		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)	1433	1576		1584	1716	1093	950	1430		1306	1586	
Flt Permitted	0.67	1.00		0.55	1.00	1.00	0.69	1.00		0.49	1.00	
Satd. Flow (perm)	1006	1576		924	1716	1093	694	1430		670	1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	113	16	26	141	189	42	187	49	65	83	15
RTOR Reduction (vph)	0	5	0	0	0	112	0	9	0	0	6	0
Lane Group Flow (vph)	51	124	0	26	141	77	42	227	0	65	92	0
Confl. Peds. (#/hr)	60		45	45		60	35		255	255		35
Heavy Vehicles (%)	0%	8%	0%	0%	2%	11%	60%	5%	5%	10%	7%	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)	27.6	27.6		38.6	38.6	38.6	40.1	40.1		49.2	49.2	
Effective Green, g (s)	30.0	30.0		37.6	41.0	41.0	42.5	42.5		48.2	51.6	
Actuated g/C Ratio	0.30	0.30		0.37	0.41	0.41	0.42	0.42		0.48	0.51	
Clearance Time (s)	6.4	6.4		3.0	6.4	6.4	6.4	6.4		3.0	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	300	469		391	699	445	293	604		353	813	
v/s Ratio Prot		c0.08		0.00	c0.08			c0.16		c0.01	0.06	
v/s Ratio Perm	0.05			0.02		0.07	0.06			0.08		
v/c Ratio	0.17	0.26		0.07	0.20	0.17	0.14	0.38		0.18	0.11	
Uniform Delay, d1	26.1	26.9		20.2	19.2	19.0	17.9	19.9		14.8	12.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.4		0.3	0.6	0.8	1.0	1.8		0.3	0.3	
Delay (s)	27.3	28.3		20.5	19.9	19.8	18.9	21.7		15.0	12.9	
Level of Service	C	C		C	B	B	B	C		B	B	
Approach Delay (s)		28.0			19.9			21.3			13.8	
Approach LOS		C			B			C			B	

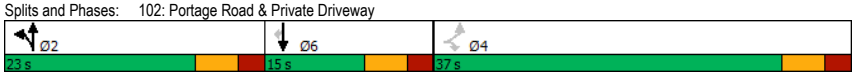
Intersection Summary				
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	56.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	65	171	142	9	20	141
Future Volume (vph)	65	171	142	9	20	141
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	37.0	37.0	23.0	23.0	15.0	15.0
Total Split (%)	49.3%	49.3%	30.7%	30.7%	20.0%	20.0%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Ped	Ped
Act Effct Green (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
v/c Ratio	0.26	0.29	0.39	0.02	0.23	0.22
Control Delay	21.1	4.2	31.0	25.3	11.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	4.2	31.0	25.3	11.9	7.9
LOS	C	A	C	C	B	A
Approach Delay	8.9			30.6	9.9	
Approach LOS	A			C	A	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 85.4			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 36.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Portage Road & Private Driveway



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	71	186	154	10	89	86
v/c Ratio	0.26	0.29	0.39	0.02	0.23	0.22
Control Delay	21.1	4.2	31.0	25.3	11.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	4.2	31.0	25.3	11.9	7.9
Queue Length 50th (m)	8.1	0.0	22.3	1.3	3.0	0.0
Queue Length 95th (m)	18.8	12.7	40.2	5.4	15.5	11.8
Internal Link Dist (m)	97.6			1068.4	55.1	
Turn Bay Length (m)	40.0		20.0			
Base Capacity (vph)	275	633	393	413	389	394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.29	0.39	0.02	0.23	0.22

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	65	171	142	9	20	141
Future Volume (vph)	65	171	142	9	20	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frpb, ped/bikes	1.00	0.93	1.00	1.00	0.99	0.98
Flpb, ped/bikes	0.48	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.89	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	692	1335	1662	1750	1429	1390
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	692	1335	1662	1750	1429	1390
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	186	154	10	22	153
RTOR Reduction (vph)	0	114	0	0	51	66
Lane Group Flow (vph)	71	72	154	10	38	20
Confl. Peds. (#/hr)	255	20	20			3
Heavy Vehicles (%)	15%	4%	0%	0%	8%	0%
Turn Type	Perm	Perm	Split	NA	NA	Perm
Protected Phases			2	2	6	
Permitted Phases	4	4				6
Actuated Green, G (s)	30.8	30.8	18.0	18.0	18.0	18.0
Effective Green, g (s)	33.0	33.0	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.39	0.39	0.24	0.24	0.24	0.24
Clearance Time (s)	6.2	6.2	6.2	6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	267	515	393	413	338	328
v/s Ratio Prot			c0.09	0.01	c0.03	
v/s Ratio Perm	c0.10	0.05				0.01
v/c Ratio	0.27	0.14	0.39	0.02	0.11	0.06
Uniform Delay, d1	17.9	17.0	27.4	25.0	25.6	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.6	2.9	0.1	0.1	0.1
Delay (s)	20.3	17.6	30.4	25.1	25.7	25.3
Level of Service	C	B	C	C	C	C
Approach Delay (s)	18.3			30.0	25.5	
Approach LOS	B			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	14.2
Intersection Capacity Utilization	36.9%	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	0	93	126	160	31
Future Volume (Veh/h)	0	0	93	126	160	31
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	101	137	174	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	530	191	208			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	530	191	208			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	93			
cM capacity (veh/h)	472	851	1363			

Direction, Lane #	NB 1	SB 1
Volume Total	238	208
Volume Left	101	0
Volume Right	0	34
cSH	1363	1700
Volume to Capacity	0.07	0.12
Queue Length 95th (m)	1.9	0.0
Control Delay (s)	3.7	0.0
Lane LOS	A	
Approach Delay (s)	3.7	0.0
Approach LOS		

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	30.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	70	0	196	160	0
Future Volume (Veh/h)	23	70	0	196	160	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)	25	76	0	213	174	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	174	174			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	174	174			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	91	100			
cM capacity (veh/h)	616	869	1403			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	101	213	174
Volume Left	25	0	0
Volume Right	76	0	0
cSH	789	1700	1700
Volume to Capacity	0.13	0.13	0.10
Queue Length 95th (m)	3.5	0.0	0.0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	112	753	691	84	109	88
Future Volume (Veh/h)	112	753	691	84	109	88
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)	122	818	751	91	118	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		367				
pX, platoon unblocked					0.83	
vC, conflicting volume	751				1404	376
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	751				1070	376
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				21	85
cM capacity (veh/h)	868				150	628

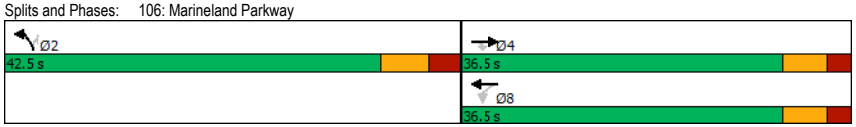
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	395	545	376	376	91	118	96
Volume Left	122	0	0	0	0	118	0
Volume Right	0	0	0	0	91	0	96
cSH	868	1700	1700	1700	1700	150	628
Volume to Capacity	0.14	0.32	0.22	0.22	0.05	0.79	0.15
Queue Length 95th (m)	3.9	0.0	0.0	0.0	0.0	39.6	4.3
Control Delay (s)	4.2	0.0	0.0	0.0	0.0	84.9	11.8
Lane LOS	A					F	B
Approach Delay (s)	1.8		0.0			52.1	
Approach LOS						F	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	754	379	58	733	440	71
Future Volume (vph)	754	379	58	733	440	71
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	8.0	8.0
Minimum Split (s)	24.5	24.5	24.5	24.5	39.5	39.5
Total Split (s)	36.5	36.5	36.5	36.5	42.5	42.5
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.5	4.5
All-Red Time (s)	2.4	2.4	2.4	2.4	3.0	3.0
Lost Time Adjust (s)	-2.5	-2.5	0.0	-2.5	-3.5	-3.5
Total Lost Time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	27.3	27.3	24.8	27.3	38.7	38.7
Actuated g/C Ratio	0.37	0.37	0.34	0.37	0.52	0.52
v/c Ratio	0.68	0.53	0.60	0.68	0.28	0.10
Control Delay	22.8	4.5	46.6	22.7	11.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	4.5	46.6	22.7	11.2	3.3
LOS	C	A	D	C	B	A
Approach Delay	16.6			24.4	10.1	
Approach LOS	B			C	B	

Intersection Summary			
Cycle Length: 79			
Actuated Cycle Length: 74			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 106: Marineland Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	820	412	63	797	478	77
v/c Ratio	0.68	0.53	0.60	0.68	0.28	0.10
Control Delay	22.8	4.5	46.6	22.7	11.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	4.5	46.6	22.7	11.2	3.3
Queue Length 50th (m)	51.9	0.0	7.5	50.3	19.5	0.0
Queue Length 95th (m)	70.7	16.4	#25.5	68.8	32.1	6.5
Internal Link Dist (m)	261.7			343.1	192.8	
Turn Bay Length (m)		75.0	85.0		180.0	65.0
Base Capacity (vph)	1438	855	127	1410	1685	804
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	0.57	0.48	0.50	0.57	0.28	0.10

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	754	379	58	733	440	71
Future Volume (vph)	754	379	58	733	440	71
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	6.5	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3260	1417	1539	3197	3225	1469
Flt Permitted	1.00	1.00	0.19	1.00	0.95	1.00
Satd. Flow (perm)	3260	1417	315	3197	3225	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	820	412	63	797	478	77
RTOR Reduction (vph)	0	260	0	0	0	37
Lane Group Flow (vph)	820	152	63	797	478	40
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	2%	5%	8%	4%	0%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	24.8	24.8	24.8	24.8	35.2	35.2
Effective Green, g (s)	27.3	27.3	24.8	27.3	38.7	38.7
Actuated g/C Ratio	0.37	0.37	0.34	0.37	0.52	0.52
Clearance Time (s)	6.5	6.5	6.5	6.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1202	522	105	1179	1686	768
v/s Ratio Prot	c0.25			0.25	c0.15	
v/s Ratio Perm		0.11	0.20			0.03
v/c Ratio	0.68	0.29	0.60	0.68	0.28	0.05
Uniform Delay, d1	19.7	16.5	20.5	19.6	9.9	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.3	8.9	1.6	0.4	0.1
Delay (s)	21.3	16.8	29.4	21.2	10.3	8.8
Level of Service	C	B	C	C	B	A
Approach Delay (s)	19.8			21.8	10.1	
Approach LOS	B			C	B	

Intersection Summary

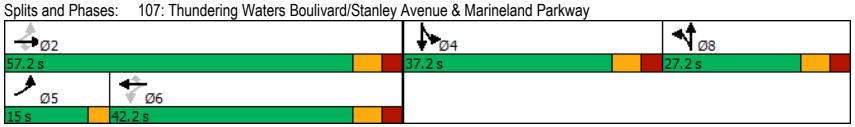
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	194	673	22	16	645	519	80	37	425	13
Future Volume (vph)	194	673	22	16	645	519	80	37	425	13
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA	Split	NA
Protected Phases	5	2			6		8	8	4	4
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	39.2	39.2	39.2	39.2	39.2	37.2	37.2	37.2	37.2
Total Split (s)	15.0	57.2	57.2	42.2	42.2	42.2	27.2	27.2	37.2	37.2
Total Split (%)	12.3%	47.0%	47.0%	34.7%	34.7%	34.7%	22.4%	22.4%	30.6%	30.6%
Yellow Time (s)	3.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	1.0	-3.2	-3.2	0.0	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
Total Lost Time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.2	53.2	53.2	35.0	38.2	38.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.40	0.40	0.40	0.27	0.29	0.29	0.25	0.25	0.25	0.25
v/c Ratio	0.97	0.55	0.04	0.11	0.74	0.70	0.21	0.23	1.15	0.52
Control Delay	83.9	32.0	0.1	38.8	47.9	8.1	40.5	20.2	135.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	32.0	0.1	38.8	47.9	8.1	40.5	20.2	135.2	8.8
LOS	F	C	A	D	D	A	D	C	F	A
Approach Delay		42.5			30.3			29.6		85.5
Approach LOS		D			C			C		F

Intersection Summary			
Cycle Length: 121.6			
Actuated Cycle Length: 131.6			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 47.1		Intersection LOS: D	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 107: Thundering Waters Boulivard/Stanley Avenue & Marineland Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	732	24	17	701	564	87	101	462	299
v/c Ratio	0.97	0.55	0.04	0.11	0.74	0.70	0.21	0.23	1.15	0.52
Control Delay	83.9	32.0	0.1	38.8	47.9	8.1	40.5	20.2	135.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	32.0	0.1	38.8	47.9	8.1	40.5	20.2	135.2	8.8
Queue Length 50th (m)	38.9	79.7	0.0	3.5	91.3	0.0	18.9	9.5	~147.7	2.9
Queue Length 95th (m)	#87.0	100.0	0.0	10.3	115.0	34.0	33.9	24.9	#215.8	28.4
Internal Link Dist (m)		172.4			261.7			159.5		198.1
Turn Bay Length (m)	60.0		30.0	20.0		65.0	40.0			
Base Capacity (vph)	218	1330	662	161	946	807	419	443	403	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.55	0.04	0.11	0.74	0.70	0.21	0.23	1.15	0.52

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	673	22	16	645	519	80	37	56	425	13	262
Future Volume (vph)	194	673	22	16	645	519	80	37	56	425	13	262
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	7.2	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3292	1488	1662	3260	1403	1662	1591		1599	1446	
Flt Permitted	0.14	1.00	1.00	0.35	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	247	3292	1488	610	3260	1403	1662	1591		1599	1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	732	24	17	701	564	87	40	61	462	14	285
RTOR Reduction (vph)	0	0	14	0	0	400	0	42	0	0	213	0
Lane Group Flow (vph)	211	732	10	17	701	164	87	59	0	462	86	0
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	1%	0%	0%	2%	6%	0%	0%	0%	4%	0%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2		2	6		6						
Actuated Green, G (s)	50.0	50.0	50.0	35.0	35.0	35.0	30.0	30.0		30.0	30.0	
Effective Green, g (s)	49.0	53.2	53.2	35.0	38.2	38.2	33.2	33.2		33.2	33.2	
Actuated g/C Ratio	0.37	0.40	0.40	0.27	0.29	0.29	0.25	0.25		0.25	0.25	
Clearance Time (s)	3.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2		7.2	7.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	210	1330	601	162	946	407	419	401		403	364	
v/s Ratio Prot	c0.08	0.22			0.22		c0.05	0.04		c0.29	0.06	
v/s Ratio Perm	c0.29		0.01	0.03		0.12						
v/c Ratio	1.00	0.55	0.02	0.10	0.74	0.40	0.21	0.15		1.15	0.24	
Uniform Delay, d1	34.7	30.0	23.5	36.5	42.2	37.5	38.8	38.2		49.2	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	63.3	1.6	0.0	1.3	5.2	2.9	1.1	0.8		91.2	1.5	
Delay (s)	98.0	31.7	23.6	37.8	47.4	40.5	39.9	39.0		140.4	40.6	
Level of Service	F	C	C	D	D	D	D	D		F	D	
Approach Delay (s)		45.9			44.2			39.4			101.2	
Approach LOS		D			D			D			F	

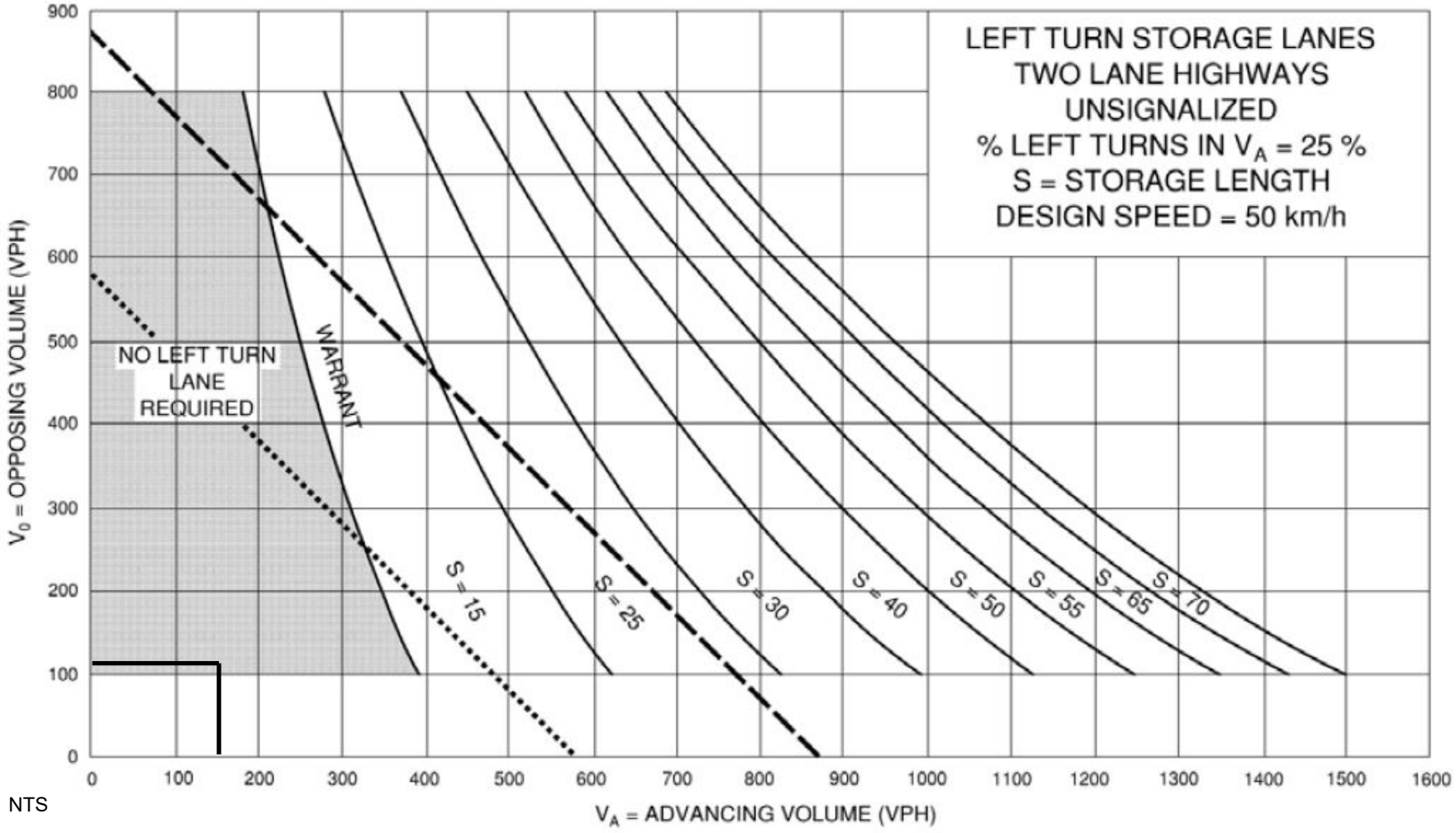
Intersection Summary				
HCM 2000 Control Delay	58.0	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	76.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Appendix I

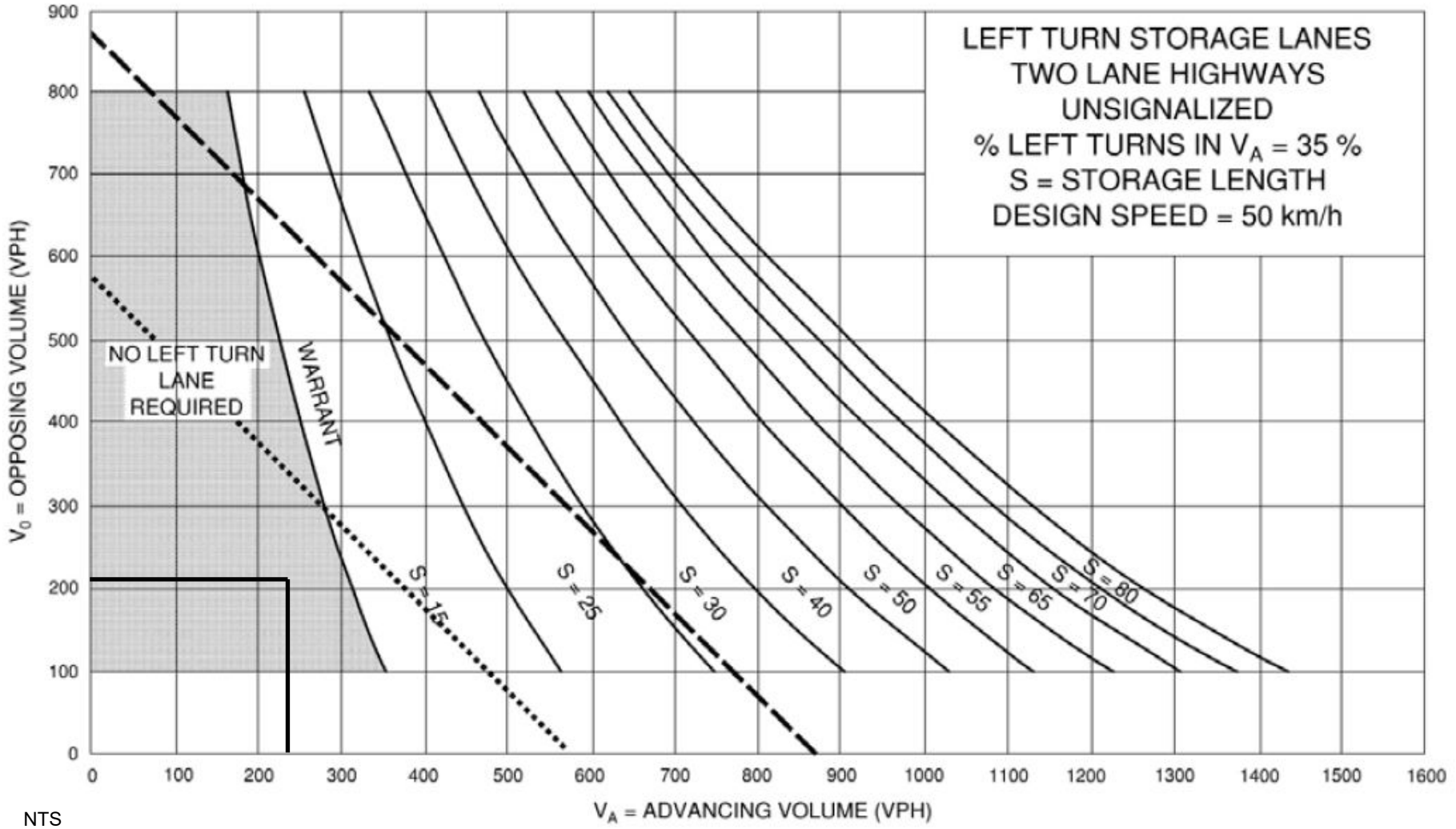
Left-Turn Lane Nomographs

Exhibit 9A-4



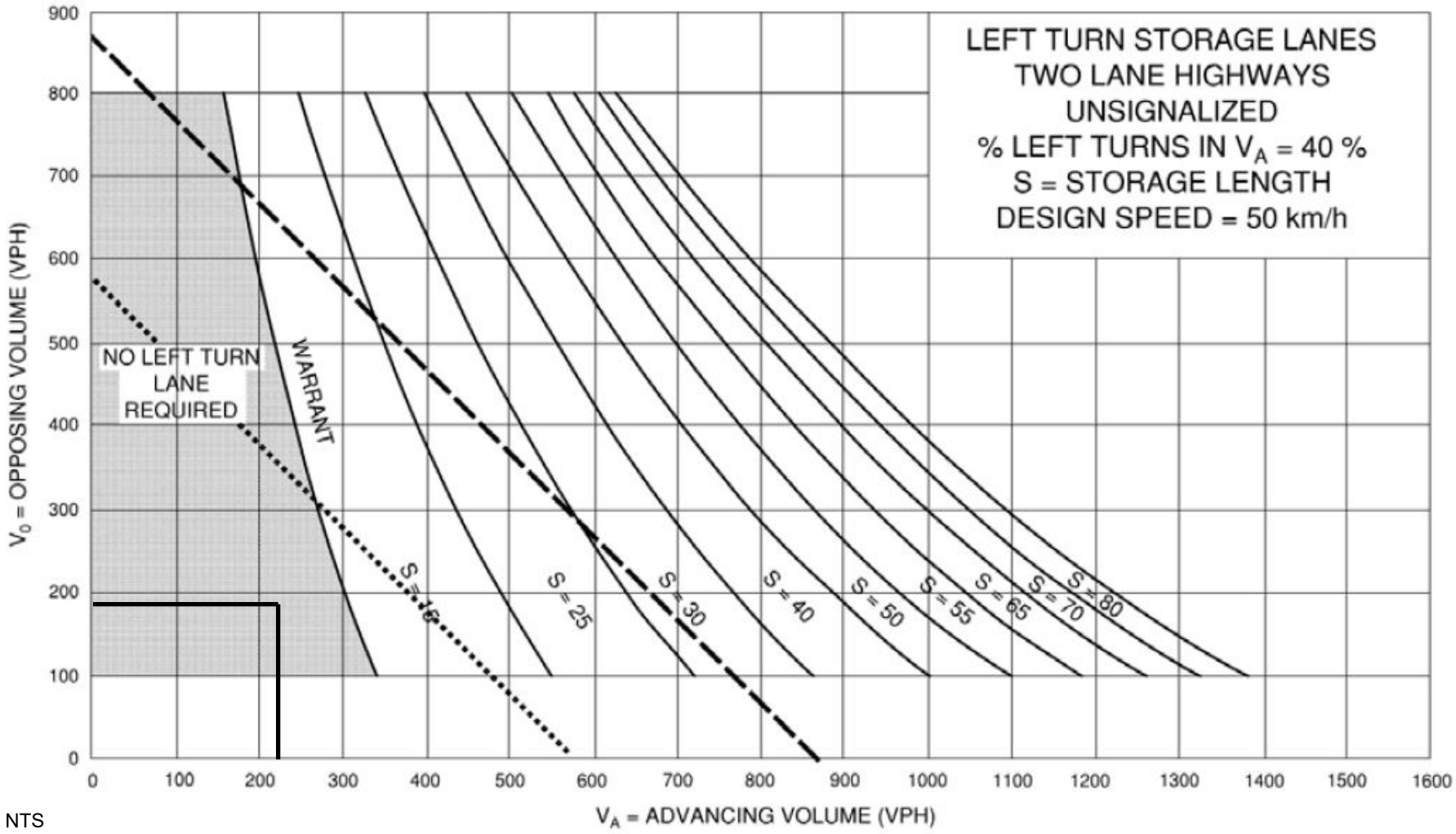
NTS

MTO Left-Turn Lane Warrant Nomograph - Portage Road at Site Access - Northbound Left-Turn - AM Peak Hour (Total Traffic)



NTS

MTO Left-Turn Lane Warrant Nomograph - Portage Road at Site Access - Northbound Left-Turn - PM Peak Hour (Total Traffic)



NTS

MTO Left-Turn Lane Warrant Nomograph - Portage Road at Site Access - Northbound Left-Turn - Saturday Peak Hour (Total Traffic)

Appendix J

Parking Proxy Survey Data

Parking Study

Location:	15 Towering Heights Blvd. St. Catharines	Date:	February 28th - March 1st
Observer:	CK	Time:	22:00 - 01:00
Weather:	Clear		

Vehicles Parked at Start	Inside:	49	Visitor:	6
	Outside:	57	TOTAL:	112

Time	Vehicles at End of Period
22:00 - 22:15	112
22:16 - 22:30	113
22:31 - 22:45	113
22:46 - 23:00	112
23:01 - 23:15	113
23:16 - 23:30	114
23:31 - 23:45	114
23:46 - 00:00	114
00:01 - 00:15	114
00:16 - 00:30	114
00:31 - 00:45	115
00:46 - 01:00	116
MAXIMUM VEHICLES:	116

Parking Study

Location:	15 Towering Heights Blvd. St. Catharines	Date:	March 2nd - 3rd, 2019
Observer:	CK	Time:	22:00 - 01:00
Weather:	Clear		

Vehicles Parked at Start	Inside:	45	Visitor:	8
	Outside:	56	TOTAL:	109

Time	Vehicles at End of Period
22:00 - 22:15	109
22:16 - 22:30	109
22:31 - 22:45	110
22:46 - 23:00	110
23:01 - 23:15	111
23:16 - 23:30	112
23:31 - 23:45	111
23:46 - 00:00	113
00:01 - 00:15	114
00:16 - 00:30	116
00:31 - 00:45	117
00:46 - 01:00	118
MAXIMUM VEHICLES:	118