

Rosedale Development Transportation Impact Study

18-24 Rosedale Drive

September 2018

Submitted by:
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TABLE OF CONTENTS

1.	Introduction	1
2.	Existing Conditions.....	2
2.1	Study Area	2
2.2	Roadways	2
2.3	Active Transportation (AT)	5
2.4	Vehicle Traffic	5
2.5	Transit	6
2.6	Truck Routes.....	6
3.	Future Conditions.....	7
3.1	Context.....	7
3.1.1	Analysis Time Horizon	7
3.1.2	Background Traffic.....	7
3.1.3	Analysis Period	7
3.2	The Development.....	7
3.3	Trip Generation	8
3.4	Trip Distribution and Assignment	8
4.	Analysis.....	9
4.1	Transportation Modelling.....	9
4.1.1	AM Peak Hour – 2017 Existing Conditions	9
4.1.2	AM Peak Hour – 2022 Development Conditions.....	12
4.1.3	PM Peak Hour – 2017 Existing Conditions	12
4.1.4	PM Peak Hour – 2022 Development Conditions.....	15
5.	Conclusions	16

APPENDICIES

Appendix A:	Site Statistics
Appendix B:	Traffic Counts
Appendix C:	Trip Generation
Appendix D:	Synchro Output

1. INTRODUCTION

This Transportation Impact Study follows HRM's Guidelines for the Preparation of Transportation Impact Studies, 8th Edition and general Traffic and Transportation Engineering principles for such studies. It is intended to address the transportation impacts that may be expected on the road and active transportation networks resulting from the:

- Construction of a new 202-unit residential development as described below.

HRM: Transportation Impact Studies are prepared to ensure developments are consistent with the objectives and policies of the Municipal Planning Strategies / Municipal Development Plans and the Regional Plan

Table 1-1:
Project Summary

Proposed Development	Rosedale Development, 18-24 Rosedale Drive
Owner	Rosedale Investments Ltd.
Location	Between Wyse and Windmill Road just west of the Macdonald Bridge, Dartmouth, N.S.
Building	202 Residential Apartment Units 4,200 ft ² Retail Space Amenity Space
Parking	184 Interior



Figure 1-1:
Building Rendering

2. EXISTING CONDITIONS

2.1 Study Area

The study area is located between Rosedale Drive and Hester Street approximately a half kilometer from the Macdonald Bridge. Elmwood Avenue is located to the west of the development and Jamison is to the east forming the core roadways that service the development area. The development area is surrounded by residential properties with a strip of commercial properties located along Wyse Road northeast of Rosedale Drive. Vehicle access to the property is expected to include one driveway to Rosedale Drive and a second driveway to Hester Street.

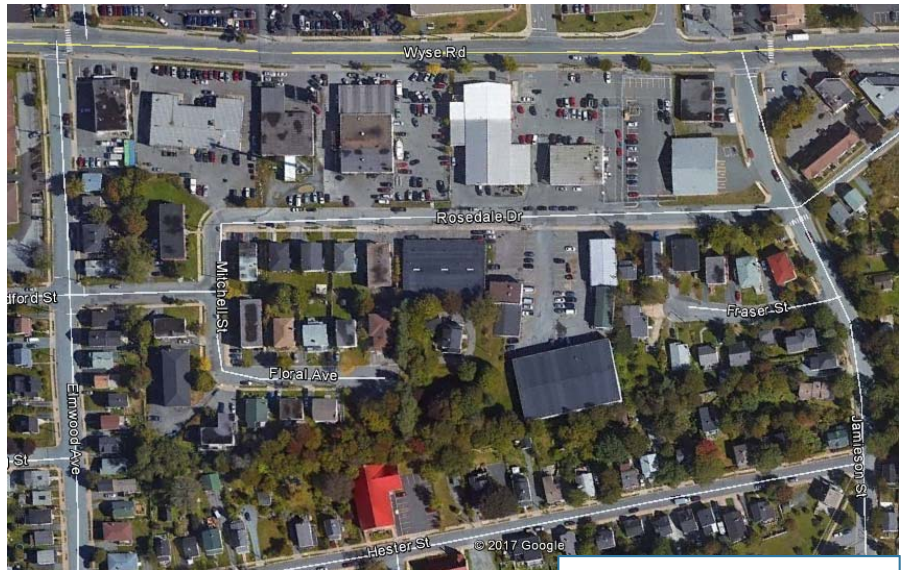
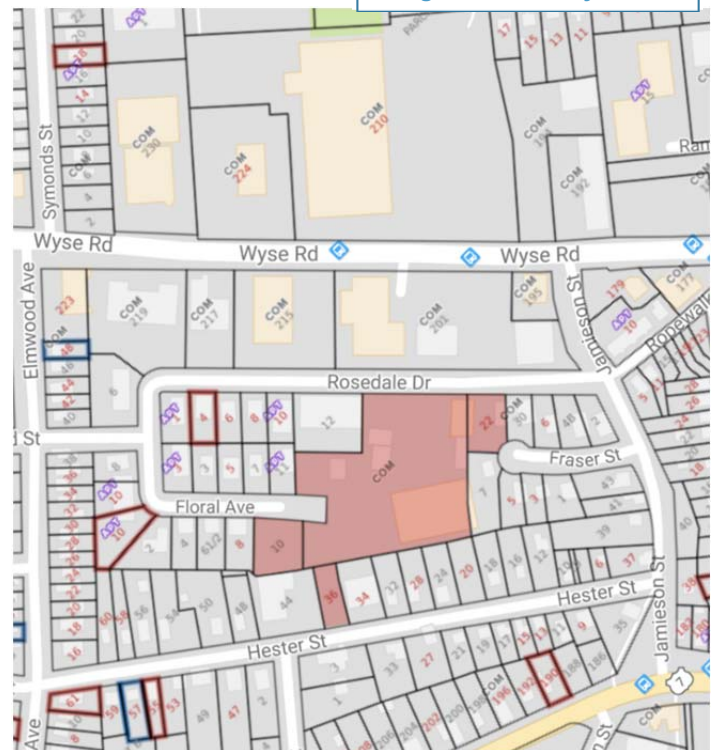









Figure 2-1: Study Area

2.2 Roadways

The following sections provide a brief summary of each of the key roadways in the study area that are relevant to this study.



Wyse Road	<p>An undivided two-lane collector roadway northwest of Boland Road with some auxiliary left turn lanes at select intersections. The roadway widens southeast of Boland providing a direct connection to the Macdonald Bridge. Parking is not permitted along the road and there are numerous driveways present primarily to commercial properties that line the road. Sidewalks (separated by boulevards in most areas) are present along both sides of the road and midblock pedestrian crossings are present at several locations near the study area.</p> 
Windmill Road	<p>A two-lane undivided roadway with wide curb lanes and turning lanes at some intersection. Curbside parking is permitted only in isolated areas and there are many driveways to both residential and commercial properties. Sidewalks are present on both sides of the road and typically separated by a grassed boulevard. There are a variety of mid-block crosswalks available in the vicinity of the development.</p> 
Rosedale Drive	<p>An undivided two-lane roadway that provides access to properties along the road as well as the rear of the buildings along Wyse Road. The area is primarily commercial / industrial with a variety of driveways to businesses and their associated parking and loading areas. There is a sidewalk along the southwest side of the street only placed directly on the back of curb which is obstructed by power poles in some locations. There are a few residential properties (apartments and single family units) located near the northwest end of the street.</p> 

Mitchell Street, Floral Avenue	<p>These two streets are short, local residential roads and include single, duplex and multi unit buildings. Parking is permitted along the curbside and sidewalk is present along one side of the roadway.</p> 
Hester Street	<p>A local 2-lane residential roadway running between Jamison and Stairs St., just north of Elmwood Ave. Parking is permitted along the west side of the street and there are numerous driveways to predominantly single-family houses. Sidewalks are present on both sides of the road with the northeast side being separated by a grassed median and the southwest side being directly on the back of curb.</p> 
Elmwood Avenue	<p>A two-lane undivided residential roadway connecting Wyse to Windmill Road. Parking is permitted along both sides of the roadway and sidewalks are present on both sides of the road (separated by a grassed median). There are numerous driveways to predominantly single-family units.</p> 
Jamison Street	<p>A two-lane undivided residential roadway connecting Wyse to Windmill Road. Parking is permitted on the north side of the road only and there are numerous driveways to mostly single-family units. There is sidewalk present on the north side of the road only for the majority of the street though there is some sidewalk on the south side for a short section near Windmill Road. There is also a small parklet in the northwest corner of the Windmill/Jamison intersection where the sidewalk separates from Jamison and connects to a crosswalk over Windmill Road.</p> 

2.3 Active Transportation (AT)

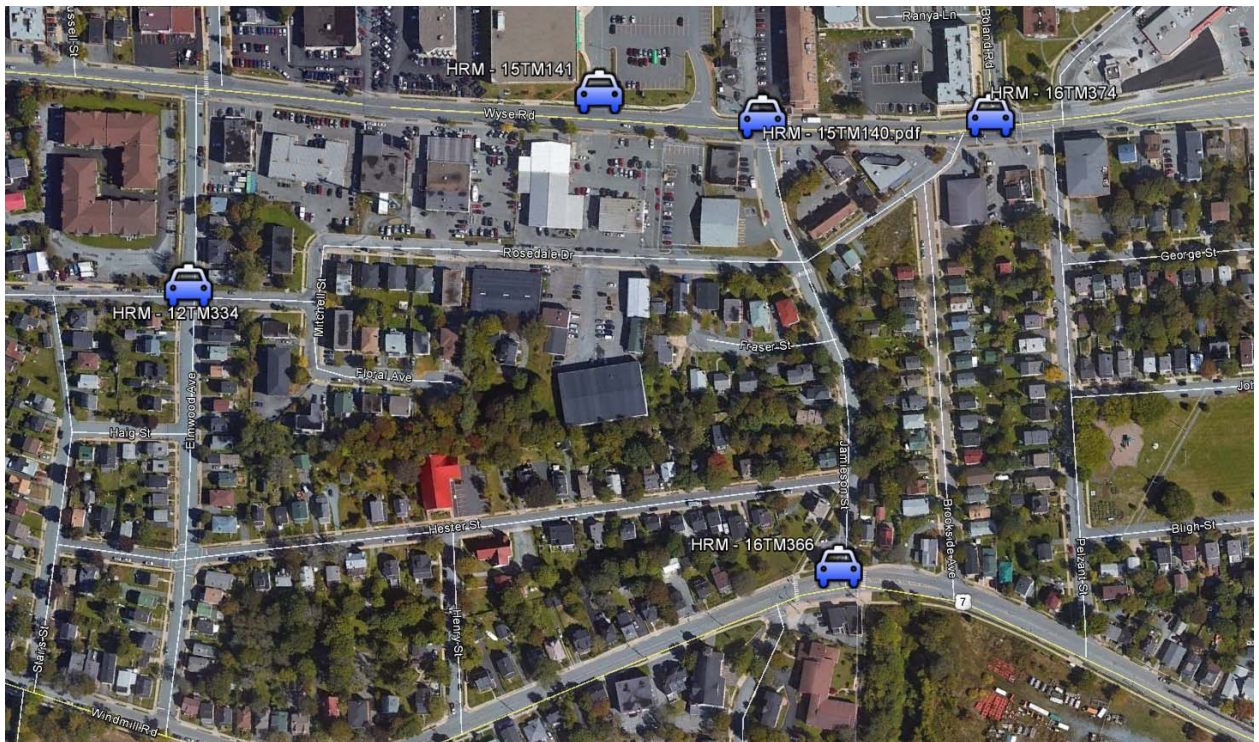
The downtown areas of both Dartmouth and Peninsular Halifax have high documented cyclist and pedestrian activity, though volumes on the Dartmouth side tend to be slightly lower than found in Halifax. There is also a high level of pedestrian and cyclist activity associated with the Macdonald Bridge, particularly during weekday peak hour commuter periods.

The streets surrounding the proposed development all have sidewalks which provide connectivity to the surrounding areas including more prominent corridors along Wyse and Windmill Road including access to the Macdonald Bridge. AT connections can be made directly to sidewalks located on near sides of Rosedale Drive and Hester Street and as previously noted, there are several pedestrian crosswalk located in the vicinity of the development.

2.4 Vehicle Traffic

Recent and historical traffic counts (intersection turning movement and road section counts) were provided by HRM for all available locations in the study area as shown in the figure below. The counts were adjusted to 2017 volumes and used to build a baseline network traffic model for the study area. All relevant traffic counts are provided in Appendix B of this report.

Figure 2-2: Traffic Counts



2.5 Transit

The proposed development (identified by the red star in the figure to the right) is located in close proximity to many transit facilities including 4 bus routes on Wyse Road and 1 route on Windmill Road. The development is located about 700 meters from the Bridge Transit Terminal near the Dartmouth Sportsplex and about 1.5 kilometers from the Alderney Gate Ferry Terminal.



Figure 2-3: Transit Routes

2.6 Truck Routes

Halifax's By-Law T-400 *Respecting the Establishment of Truck Routes for Certain Trucking Motor Vehicles within the HRM* identifies Wyse and Windmill Roads as **Day Time** truck routes (blue line) between the hours of 7 AM and 9 PM. The nearest **Full Time** truck routes (green line) are located on Albro Road connecting to Windmill Road and Victoria Road north of Albro Road. These routes provide adequate access to the new development, though we expect that delivery requirements will be infrequent to this site.



Figure 2-4: Truck Routes

3. FUTURE CONDITIONS

3.1 Context

3.1.1 Analysis Time Horizon

Based on recommended HRM guidelines, the base year for this study has been established as 2017 and addresses a 5-year time horizon (2022) which will include background traffic growth, new traffic related to the South Park development and any other significant transportation impacts during that period.

3.1.2 Background Traffic

Average annual background traffic growth rates used for traffic impact studies throughout HRM have typically been in the 0.5 – 1% range. Recent transportation work for the Dartmouth Cove Transportation Analysis used a 0.5% background traffic growth rate based on recommendations from HRM. For this study, we have used a 1% background traffic growth rate over the 5-year horizon to 2022 to remain conservative in our assumptions.

3.1.3 Analysis Period

This area of Halifax is highly commuter oriented therefore, the weekday AM and PM peak hours are considered to be the critical periods for the analysis.

3.2 The Development

Future traffic related to the development is impacted by two primary dynamics:

- 1) The removal of traffic related to the existing buildings in the development area; and,
- 2) The addition of new residential and retail traffic related to the new development.

The existing buildings in the area of the new development are not expected to generate any significant traffic. Therefore, this study has not assumed any reduction in traffic due to the removal of the existing buildings. This helps ensure our analysis remains conservative in nature.

3.3 Trip Generation

The addition of new traffic related to the development is summarized in the table below and a more detailed summary of the trip generation rates and background calculations are provided in Appendix C of this report.

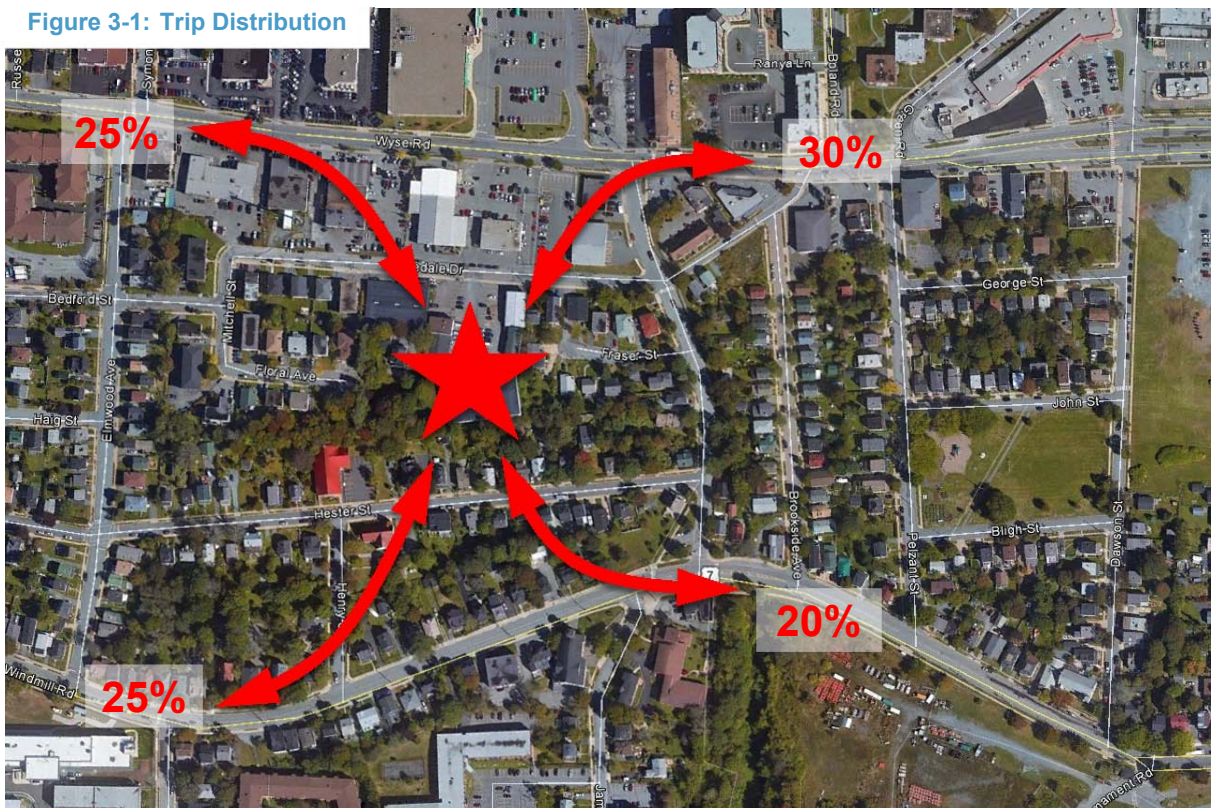
Table 3-1: Trip Generation Table

	ITE Land Use Type	AM Peak			PM Peak		
		Enter	Exit	Total	Enter	Exit	Total
Apartments (207 Units)	ITE 202	21	84	105	86	46	132
Misc. Retail (4,200 ft ²)	ITE 826	8	7	15	5	6	11
<i>Internal Capture Trips</i>		-1	-1	-2	-3	-3	-6
TOTAL		28	90	118	88	49	137

3.4 Trip Distribution and Assignment

It is assumed that traffic will distribute itself through the network in a similar manner to the existing peak traffic in the area. While there is some shift in the nature of traffic to and from the new buildings (commercial to residential), there are no specific incentives for traffic to alter current travel patterns. Current traffic distribution patterns are shown in Figure 3.1.

Figure 3-1: Trip Distribution



4. ANALYSIS

4.1 Transportation Modelling

A microscopic traffic model was prepared using the Synchro/SimTraffic platform for the AM and PM peak hours of analysis. Detailed output for each of the scenarios is provided in Appendix D of the report. The analysis includes the following models for each peak:

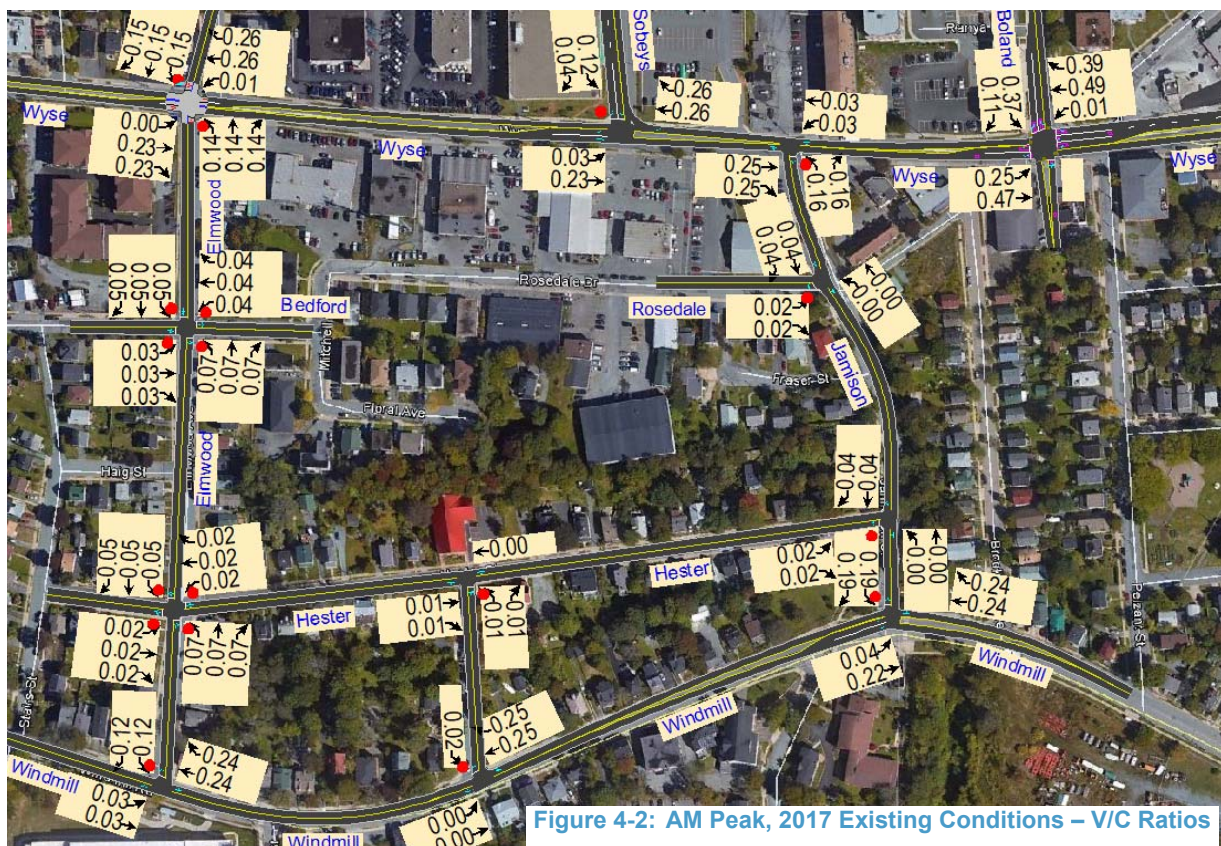
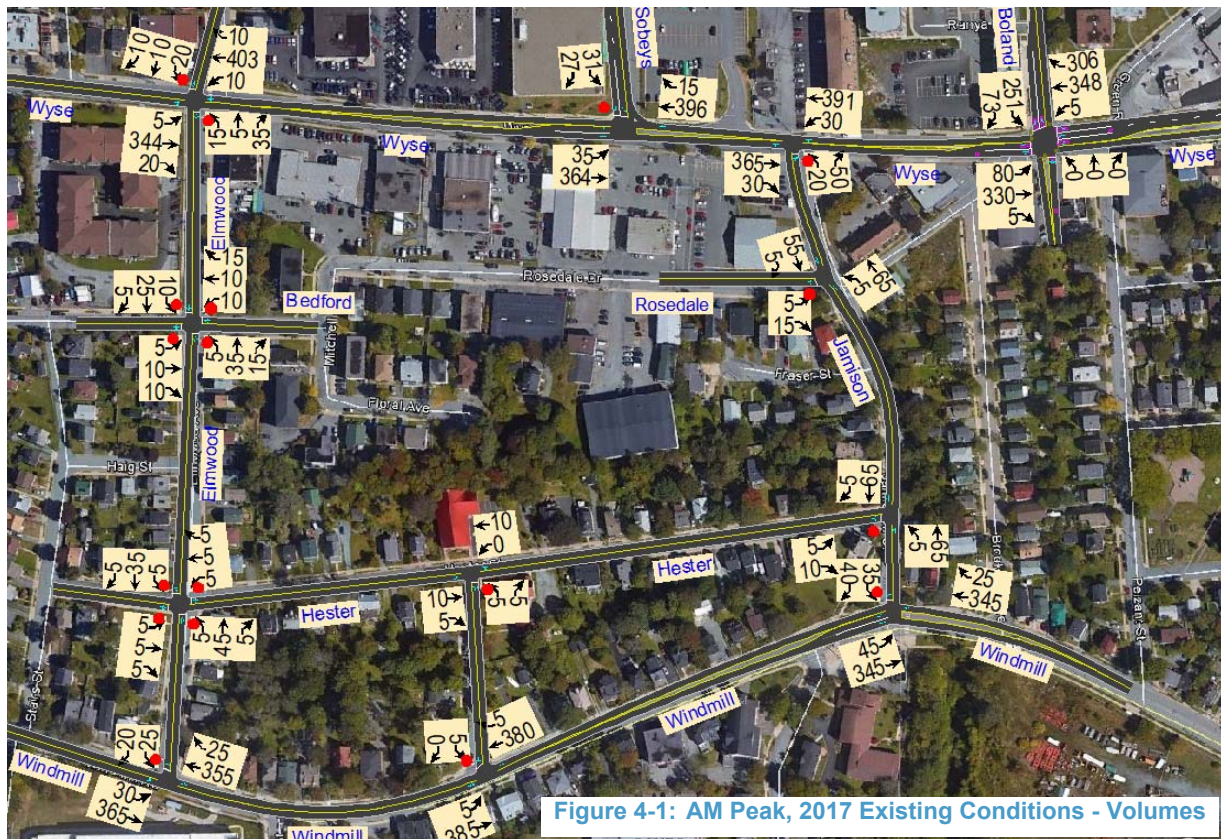
- 2017 Existing Conditions;
- 2022 with Development Traffic (including the addition of background traffic).

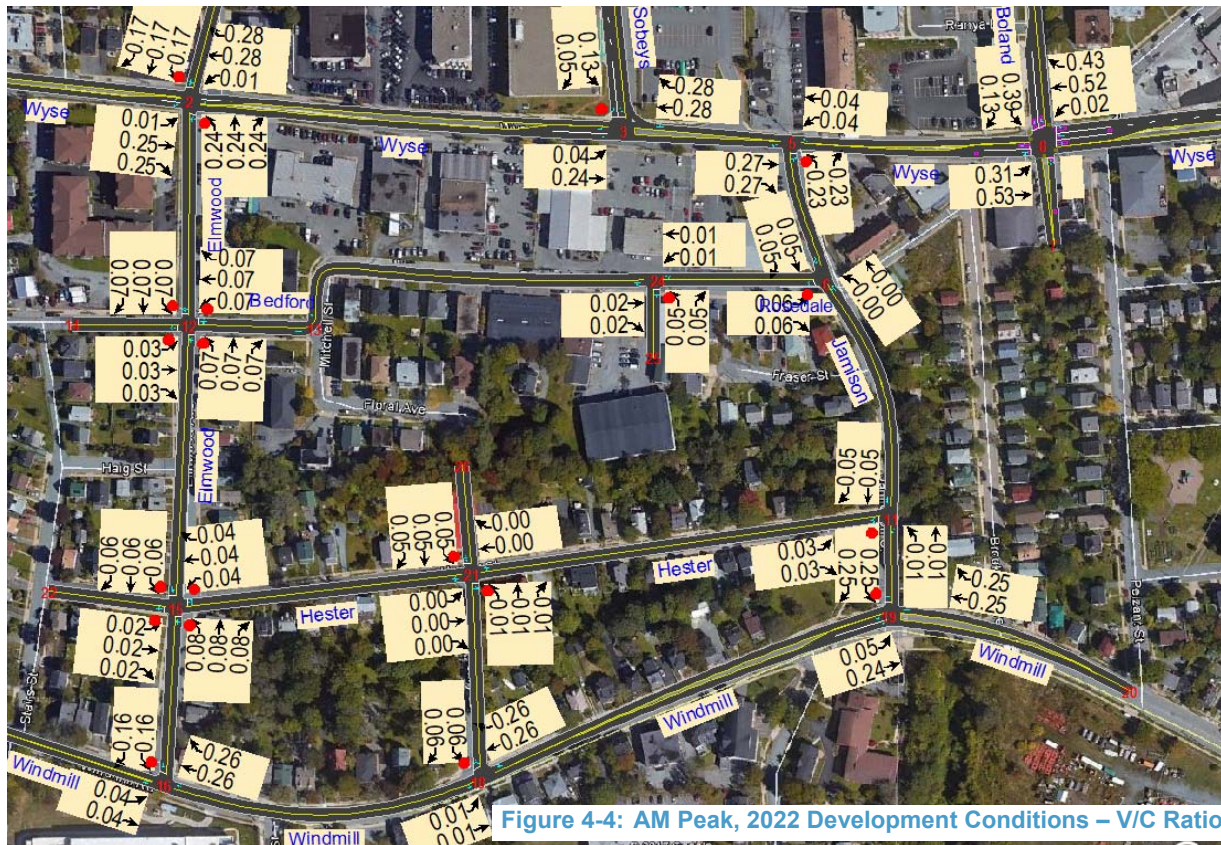
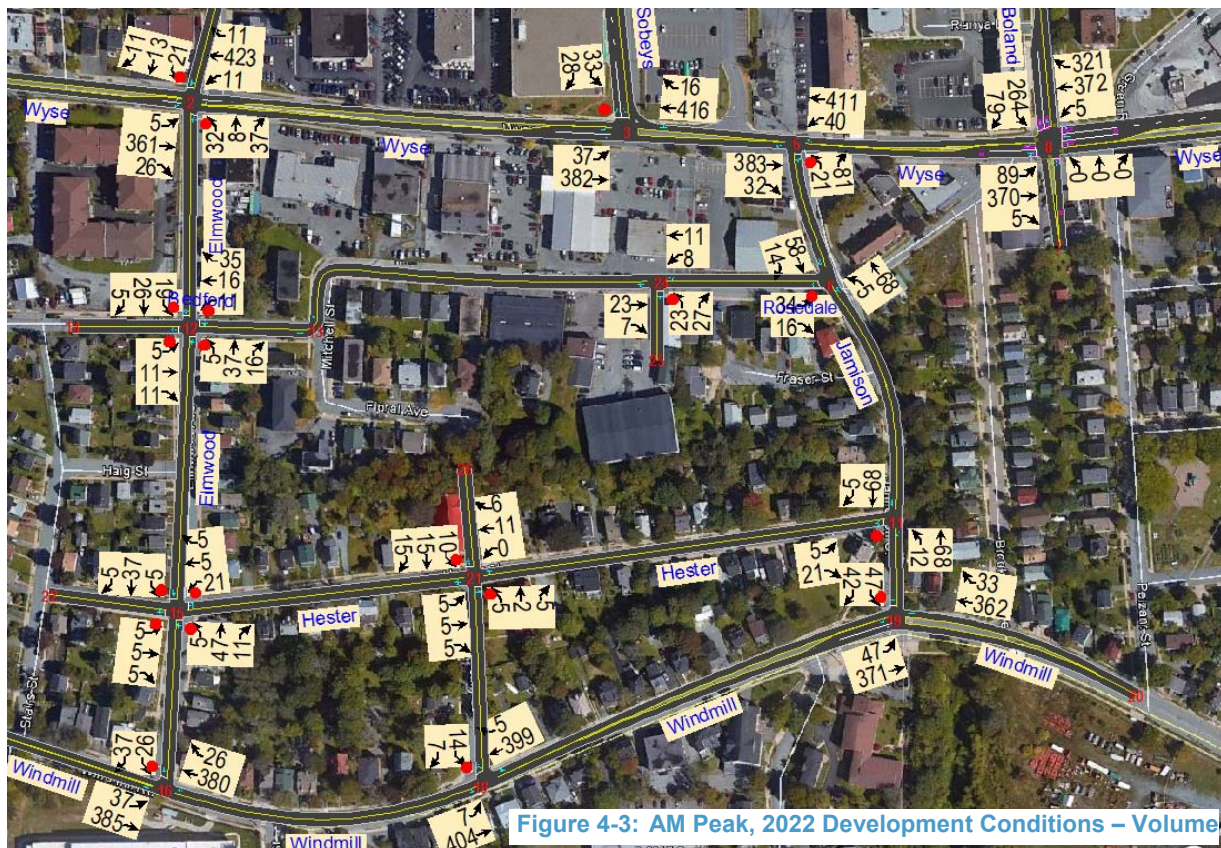
The figures contained in the following sections show the traffic volumes and the volume to capacity (v/c) ratios at each of the key intersections in the study area. They represent the critical performance measures each intersection, though additional information on queues and delays are provided in the discussion included with the figures as well as in the detailed reports of the analysis results contained in Appendix D of this report.

As the volumes throughout the network are well below capacity and the overall volumes generated by the development are relatively low, there is little benefit in presenting the background only traffic scenario as the results would be very similar to today's operations. For this reason, we have only present the existing and future development conditions for each scenario.

4.1.1 AM Peak Hour – 2017 Existing Conditions

Figure 4-1 and Figure 4-2 on the following page show the volumes and associated volume to capacity (V/C) ratios for each intersection surrounding the proposed development. As can be seen in the V/C ratio figure, all intersections operate at 0.26 capacity (26%) or less, with the exception of the Wyse Road intersection at Boland Street. At this intersection, the through movements on Wyse Road operate closer to 0.50 capacity with movements on Boland at just under 0.40. Average intersection delays for all movements are shown as less than 20 seconds and there are no notable queues at any intersections as indicated by the Synchro results included in Appendix D of this report. It is noted that in some situations, the southwest left turn from Boland to Wyse Road can occasionally see longer queues though they general clear relatively quickly. It is also noted that under special circumstances, queues from the Macdonald Bridge may queue far enough to impact the Boland Road intersection. Future conditions with the development in place are shown in Figure 4-3 and Figure 4-4.





4.1.2 AM Peak Hour – 2022 Development Conditions

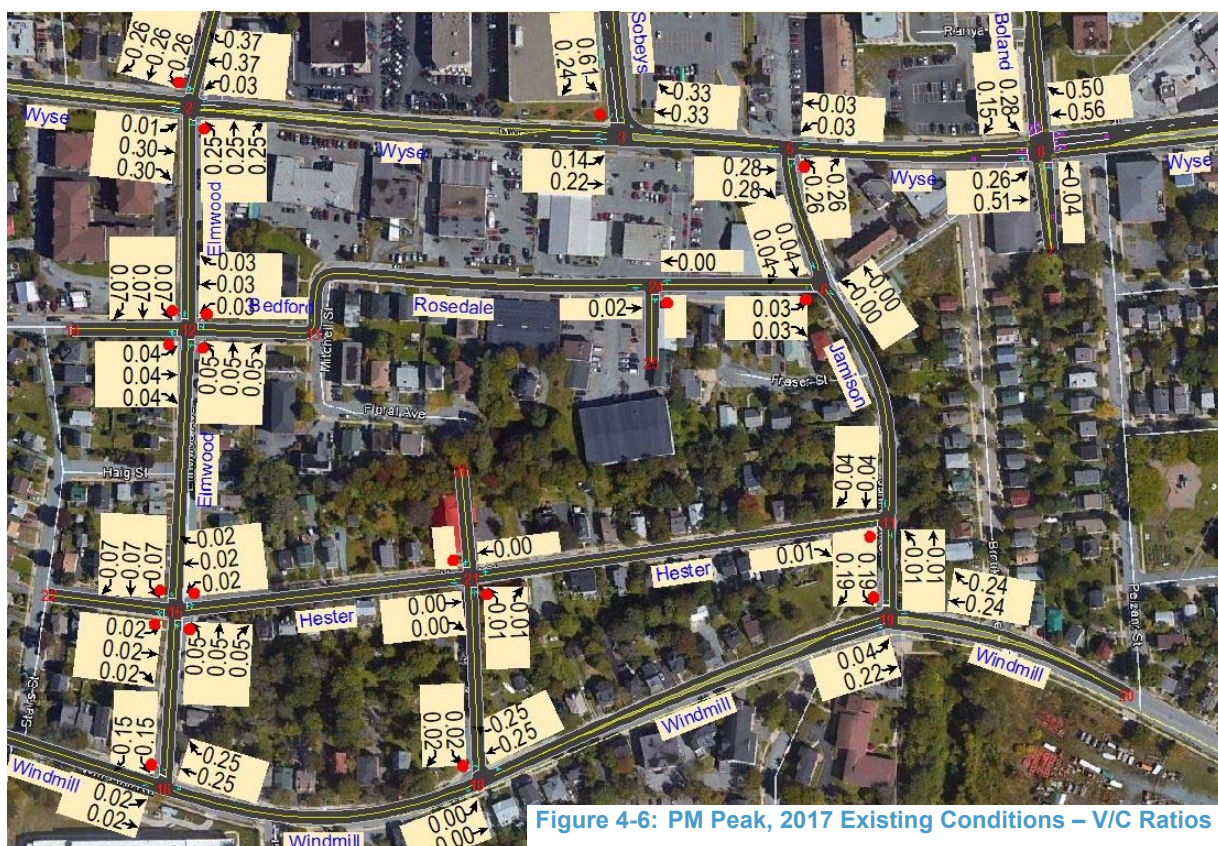
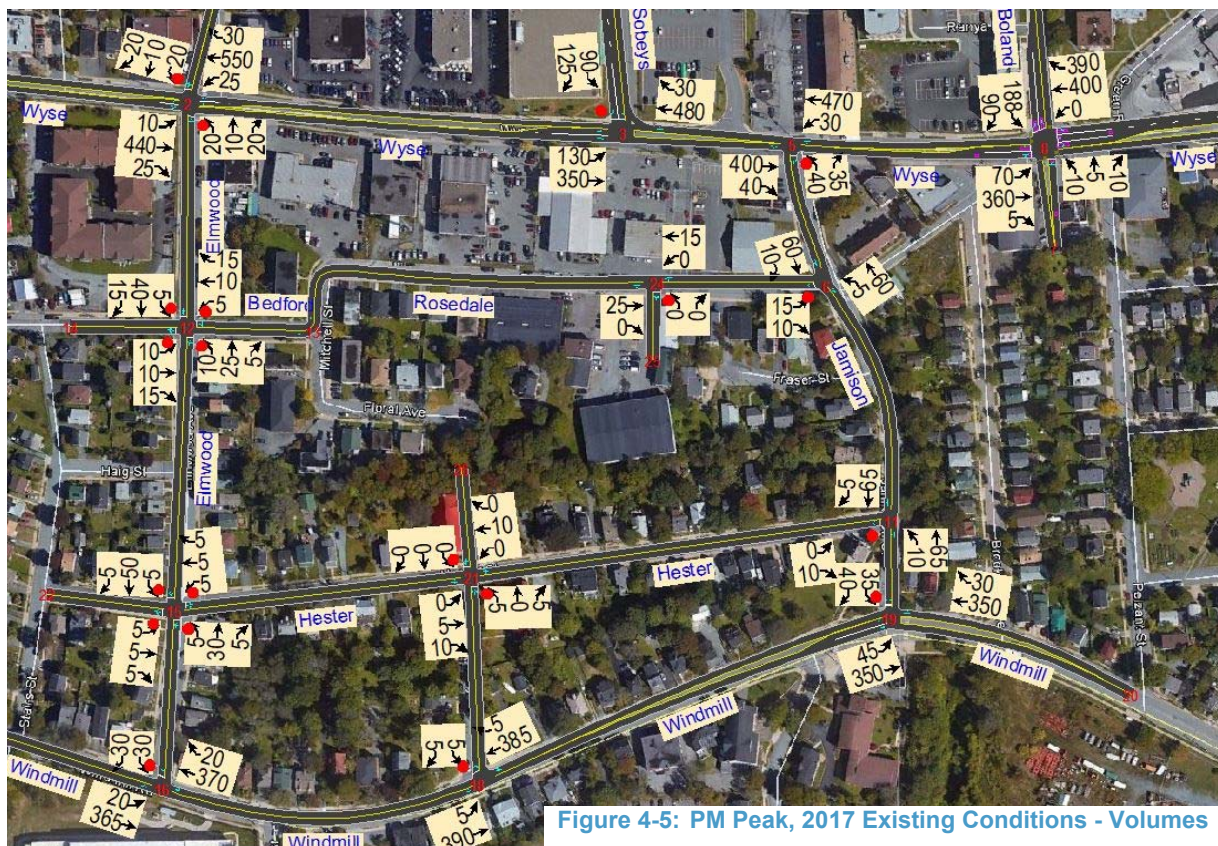
Figure 4-3 and Figure 4-4 on the previous page show the volumes and V/C ratios for 2022 future scenario which includes the 1% annual average growth of background traffic plus the new trips generated by the proposed development. Traffic was assigned to the road network based on the trip distribution assumptions made in Section 3.4 of this study.

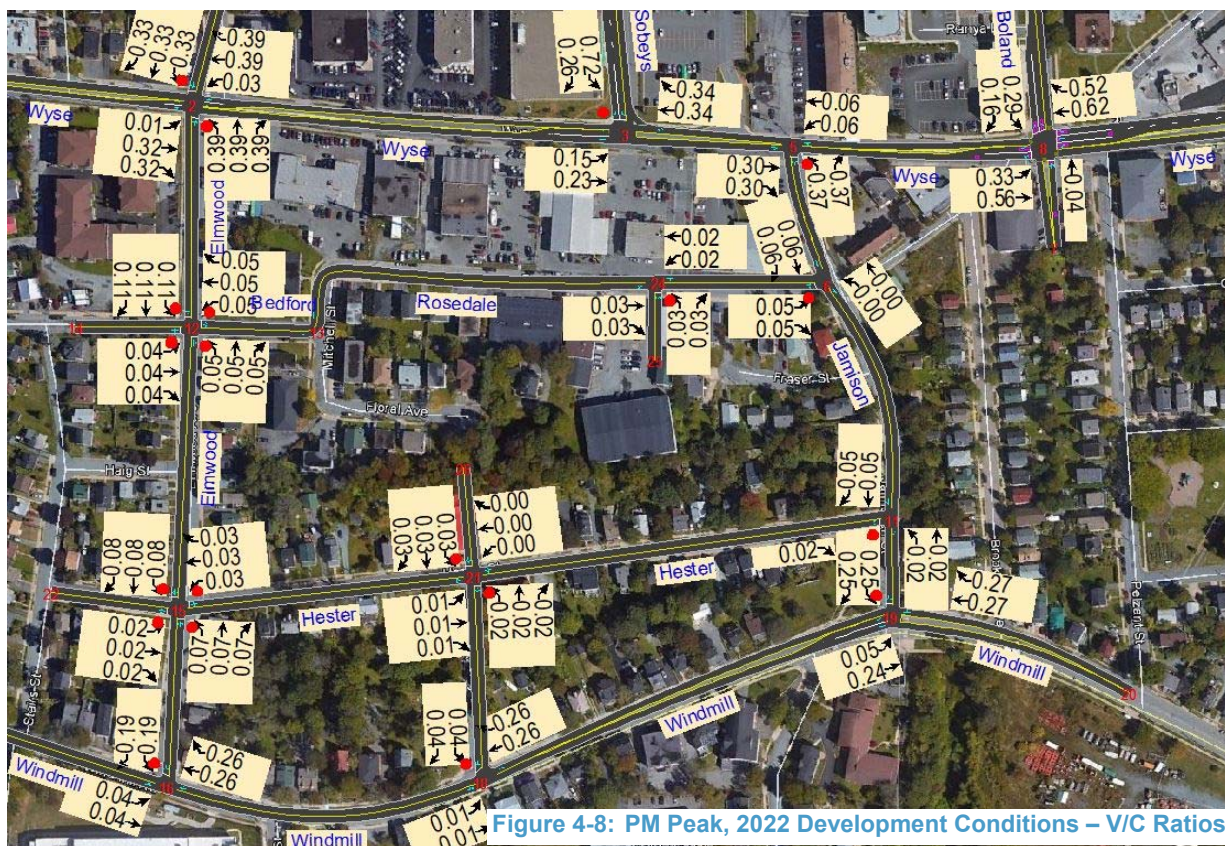
As the figures show, there is very little change to the network volumes or V/C ratios based on the addition of the development traffic. Capacity utilization, delays and queue lengths only increase by a few percentage points throughout the study area, and there are no areas that cause concern or warrant any upgrades based on the new traffic volumes.

4.1.3 PM Peak Hour – 2017 Existing Conditions

Figure 4-5 and Figure 4-6 on the following page show the existing volumes and associated volume to capacity (V/C) ratios for each intersection surrounding the proposed development during the existing PM peak hour. Volumes on the main corridors are typically slightly higher than during the AM peak hour, though similar to the AM peak, there is significant excess capacity at all intersections. As can be seen in the V/C ratio figure, all intersections operate at 0.37 capacity (37%) or less, except for the Wyse Road intersection at Boland Street where the highest movements operated between 50 and 60% capacity.

Average intersection delays for all movements are shown as less than 30 seconds and there are no notable queues at any intersections as indicated by the Synchro results included in Appendix D of this report. Future conditions with the development in place are shown in Figure 4-7 and Figure 4-8.





4.1.4 PM Peak Hour – 2022 Development Conditions

Figure 4-7 and Figure 4-8 on the previous page show the volumes and V/C ratios for 2022 future PM peak scenario which includes the 1% annual average growth of background traffic plus the new trips generated by the proposed development. Similar to the AM peak, traffic was assigned to the road network based on the trip distribution assumptions made in Section 3.4 of this study.

As the figures show, there is very little change to the network volumes or V/C ratios based on the addition of the development traffic. Capacity utilization, delays and queue lengths only increase by a few percentage points throughout the study area, and there are no areas that cause concern or warrant any upgrades based on the new traffic volumes.

5. CONCLUSIONS

This report has analyzed the transportation related impacts of the proposed Rosedale Development on the roads and intersections surrounding the development. All the intersections surrounding the development operated with excess capacity available to accommodate new traffic related to the development. This excess capacity combined with a limited amount of additional new traffic related to the development results in little change in the overall network operations between existing conditions and the 5-year analysis horizon with the development in place.

The PM peak hours have slightly higher traffic volumes than the AM peaks, but neither peak period highlights any challenges created by the proposed development. Intersection delays and queue lengths remain acceptable at all intersections throughout the study area. Pedestrian traffic can easily access the existing sidewalk network adjacent to, and surrounding the development and there are no gaps in the network to impede pedestrian traffic. Convenient access to the Macdonald Bridge and to the nearby bus and ferry terminals means that non-vehicular traffic has a variety of options available for travel throughout HRM.

It is our opinion that the proposed development can be well integrated into the existing Rosedale area with no requirements for road or sidewalk improvements to accommodate the new traffic on the network. We trust that this report satisfies the Halifax requirements for the preparation of Transportation Impact Studies. Should there be any questions or comments regarding the content of the study, please do not hesitate to contact the undersigned.

Sincerely,
Originally Signed

Roger N. Boychuk, P.Eng.
Director of Engineering

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APPENDIX A

Site Statistics

BUILDING A

LEVEL	TOTAL NUMBER OF UNITS	COMM./AMENITY UNITS	GFA
GROUND	15	1	21,550
SECOND FLOOR	21	0	22,895
THIRD FLOOR	21	0	22,969
FOURTH FLOOR	17	0	18,490
FIFTH FLOOR	5	1	7,276
SIXTH FLOOR	6	0	7,515
SEVENTH FLOOR	6	0	7,515
EIGHTH FLOOR	6	0	7,515
NINTH FLOOR	6	0	7,515
TENTH FLOOR	0	0	0
ELEVENTH FLOOR	0	0	0
TOTAL	103	2	123,240
PARKING	78		
COMMERCIAL	1		2,000

BUILDING B

LEVEL	TOTAL NUMBER OF UNITS	COMM./AMENITY UNITS	GFA
GROUND	6	1	9,519
SECOND FLOOR	12	0	15,885
THIRD FLOOR	15	0	17,015
FOURTH FLOOR	15	0	16,467
FIFTH FLOOR	10	0	11,846
SIXTH FLOOR	6	1	8,010
SEVENTH FLOOR	7	0	8,010
EIGHTH FLOOR	7	0	8,010
NINTH FLOOR	7	0	8,010
TENTH FLOOR	7	0	8,088
ELEVENTH FLOOR	7	0	8,088
TOTAL	99	2	118,948
PARKING	106		
COMMERCIAL	1	0	1,500



EKISTICS PLANNING & DESIGN

KEY PLAN

05	RE-ISSUE FOR DA APP	2018.09.28
04	ISSUE FOR DA APP	2018.01.17
03	ISSUE FOR REVIEW	2017.12.05
02	ISSUE FOR REVIEW	2017.11.16
01	ISSUE FOR REVIEW	2017.11.08

REVISIONS

DATE

PROJECT

18-24 ROSEDALE DRIVE

DEVELOPMENT AGREEMENT
PLANNING APPLICATION

CLIENT

ROSEDALE INVESTMENTS LTD.

SCALE	DATE	
DRAWN BY	CHECKED	REVIEWED

APPROVED
CC

SEAL

NOT FOR
CONSTRUCTION

DRAWING

YIELD

DRAWING NO.

A-105

APPENDIX B

Traffic Counts



1

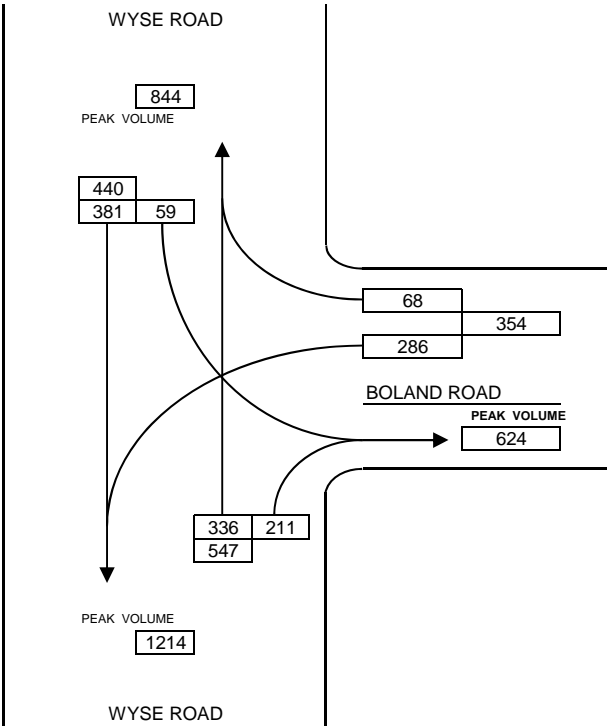
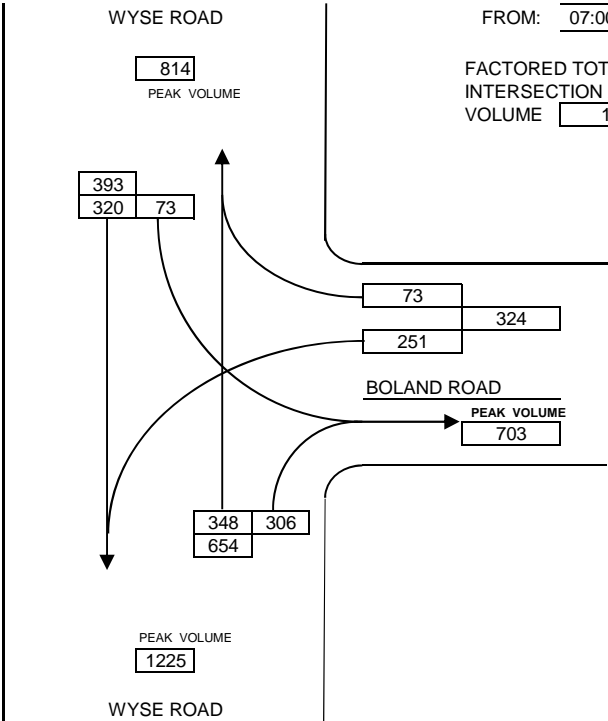
1341

VEHICULAR GRAPHIC SUMMARY SHEET
BOLAND ROAD AT WYSE ROAD

INTERSECTION :

DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 07:00:00 AM TO 08:00:00 AM

FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1371



DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 08:00:00 AM TO 09:00:00 AM

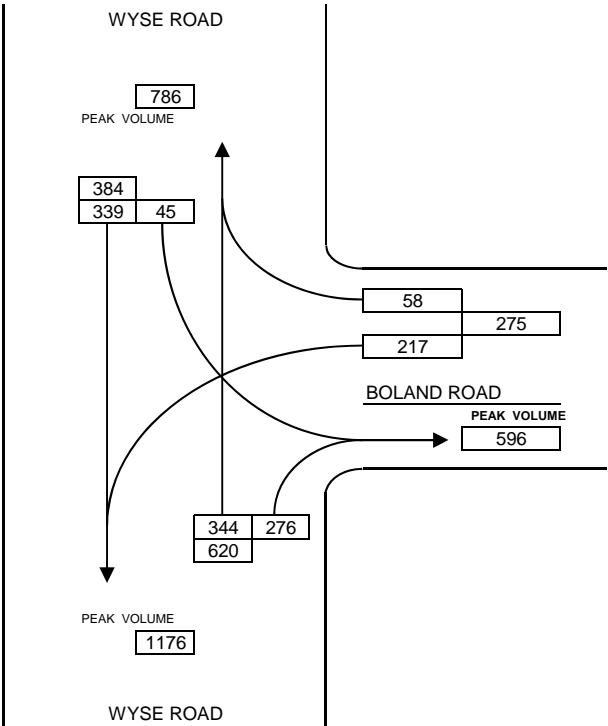
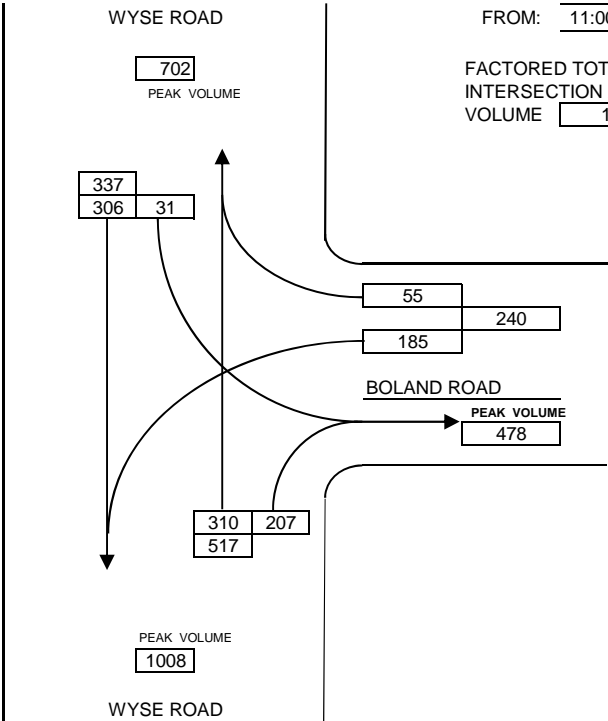
FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1341

VEHICULAR GRAPHIC SUMMARY SHEET
BOLAND ROAD AT WYSE ROAD

INTERSECTION :

DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 11:00:00 AM TO 12:00:00 PM

FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1094



DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 12:00:00 PM TO 01:00:00 PM

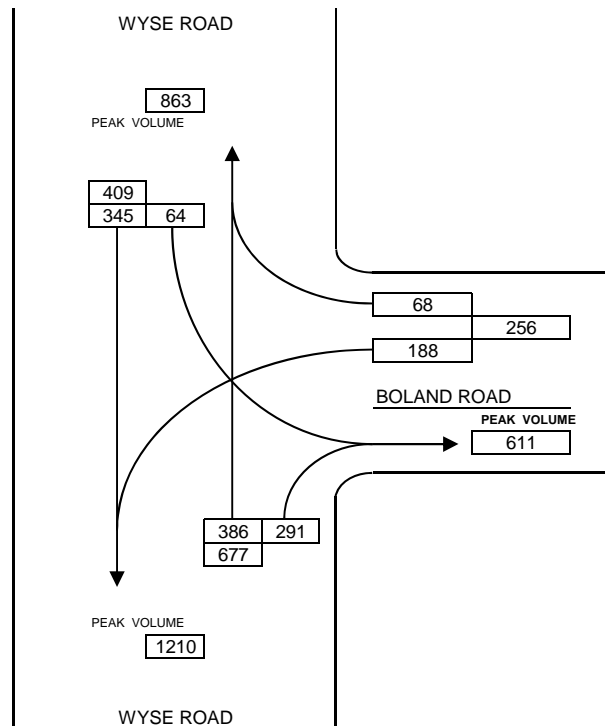
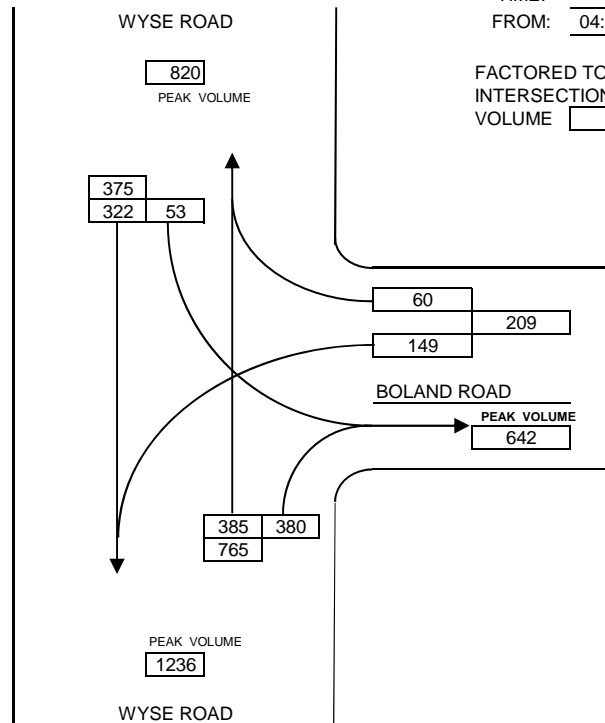
FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1279

VEHICULAR GRAPHIC SUMMARY SHEET
BOLAND ROAD AT WYSE ROAD

INTERSECTION :

DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 04:00:00 PM TO 05:00:00 PM

FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1349



DATE: SEPT 7 2016
TIME: 1 HOUR
FROM: 05:00:00 PM TO 06:00:00 PM

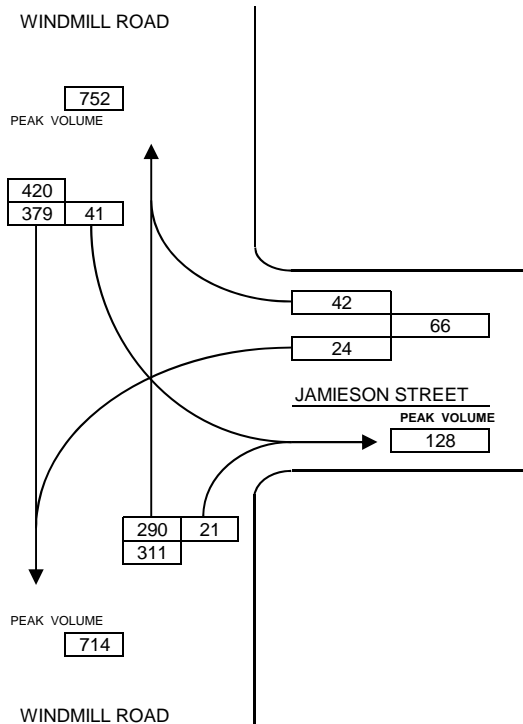
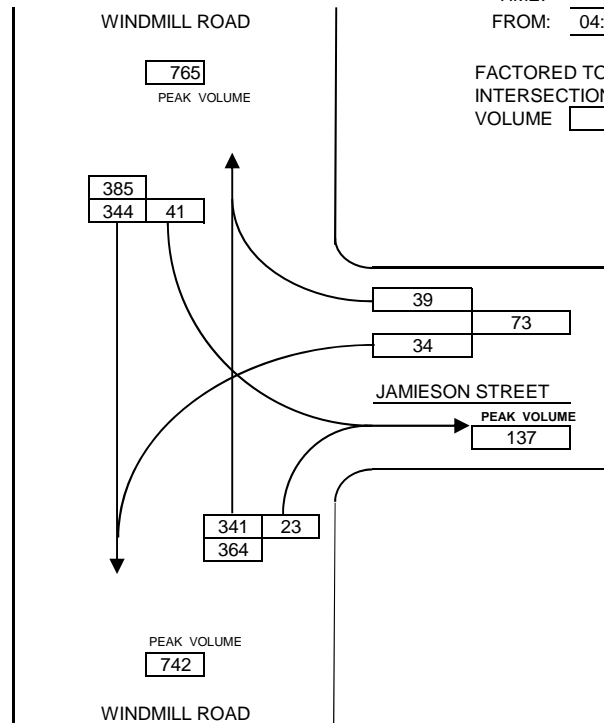
FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 1342

INTERSECTION :

VEHICULAR GRAPHIC SUMMARY SHEET
JAMIESON STREET AT WINDMILL ROAD

DATE: SEPT 18 2016
TIME: 1 HOUR
FROM: 04:00:00 PM TO 05:00:00 PM

FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 797



DATE: SEPT 1 2016
TIME: 1 HOUR
FROM: 05:00:00 PM TO 06:00:00 PM

























FACTORED TOTAL
INTERSECTION APPROACH
VOLUME 773

HALIFAX REGIONAL MUNICIPALITY
 TRAFFIC MANAGEMENT
 TRAFFIC AND RIGHT OF WAY
 PO Box 1749 ,Halifax
 Nova Scotia, B3J 3A5

Civic Address: 249
 Serial Number: 06975
 Region: EASTERN
 AAWT: 5172

Surveyed by: TV

Station ID: SOUTHBOUND
 Site Code: 2016CLS076
 Station ID: SOUTHBOUND
 WILLMILL ROAD
 BETWEEN STARS AND HOWE
 Latitude: 0' 0.0000 Undefined

Start Time	Mon 07/04/16	Tue 07/05/16	Wed 07/06/16	Thu 07/07/16	Fri 07/08/16	Week Day Average	Sat 07/09/16	Sun 07/10/16	Week Average
12:00 AM	*	*	*	61	55	58	95	83	74 
01:00	*	*	*	34	29	32	50	66	45 
02:00	*	*	*	17	23	20	43	59	36 
03:00	*	*	*	23	13	18	22	33	23 
04:00	*	*	*	24	25	24	36	30	29 
05:00	*	*	*	45	42	44	45	33	41 
06:00	*	*	*	166	145	156	84	45	110 
07:00	*	*	*	294	245	270	144	68	188 
08:00	*	*	*	366	322	344	222	115	256 
09:00	*	*	*	270	265	268	225	165	231 
10:00	*	*	*	285	300	292	310	190	271 
11:00	*	*	275	293	335	301	340	232	295 
12:00 PM	*	*	367	356	316	346	378	279	339 
01:00	*	*	316	359	316	330	354	313	332 
02:00	*	*	297	311	323	310	313	288	306 
03:00	*	*	342	345	358	348	347	254	329 
04:00	*	*	392	401	442	412	306	243	357 
05:00	*	*	440	435	385	420	314	244	364 
06:00	*	*	281	255	264	267	272	226	260 
07:00	*	*	259	251	241	250	262	197	242 
08:00	*	*	233	196	243	224	262	202	227 
09:00	*	*	226	193	221	213	228	152	204 
10:00	*	*	148	145	158	150	161	157	154 
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






















	Daily
Date	Total
07/06/16	5312
07/07/16	5225
07/08/16	5172
07/09/16	4952
07/10/16	3815
Average	4895

HALIFAX REGIONAL MUNICIPALITY
 TRAFFIC MANAGEMENT
 TRAFFIC AND RIGHT OF WAY
 PO Box 1749 ,Halifax
 Nova Scotia, B3J 3A5

Civic Address: 249
 Serial Number: 06975
 Region: EASTERN
 AAWT: 5172

Surveyed by: TV

Station ID: SOUTHBOUND
 Site Code: 2016CLS076
 Station ID: SOUTHBOUND
 WILLMILL ROAD
 BETWEEN STARS AND HOWE
 Latitude: 0' 0.0000 Undefined

Start Time	Mon 07/11/16	Tue 07/12/16	Wed 07/13/16	Thu 07/14/16	Fri 07/15/16	Week Day Average	Sat 07/16/16	Sun 07/17/16	Week Average
12:00 AM	64	72	117	93	146	98	186	212	127 
01:00	26	36	76	54	61	51	110	110	68 
02:00	17	22	37	31	53	32	83	100	49 
03:00	28	25	45	39	36	35	56	60	41 
04:00	25	22	24	44	34	30	53	73	39 
05:00	59	62	54	85	75	67	68	86	70 
06:00	209	252	261	234	199	231	119	64	191 
07:00	487	463	470	459	382	452	192	115	367 
08:00	514	582	670	532	459	551	271	161	456 
09:00	334	496	418	435	366	410	368	279	385 
10:00	364	456	452	424	402	420	485	345	418 
11:00	358	490	500	477	435	452	474	378	445 
12:00 PM	509	625	502	570	511	543	563	453	533 
01:00	494	572	537	539	481	525	461	473	508 
02:00	483	575	531	499	511	520	436	429	495 
03:00	549	508	550	474	482	513	494	508	509 
04:00	698	710	649	602	581	648	463	455	594 
05:00	650	624	588	620	502	597	408	423	545 
06:00	425	469	446	425	385	430	458	363	424 
07:00	377	507	445	453	380	432	412	331	415 
08:00	341	312	347	422	402	365	349	300	353 
09:00	373	387	330	383	378	370	387	169	344 
10:00	235	250	231	255	297	254	310	116	242 
11:00	99	151	199	225	217	178	240	86	174 
Total	7718	8668	8479	8374	7775	8204	7446	6089	7792


















	Daily
Date	Total
07/11/16	7718
07/12/16	8668
07/13/16	8479
07/14/16	8374
07/15/16	7775
07/16/16	7446
07/17/16	6089

HALIFAX REGIONAL MUNICIPALITY
 TRAFFIC MANAGEMENT
 TRAFFIC AND RIGHT OF WAY
 PO Box 1749 ,Halifax
 Nova Scotia, B3J 3A5

Civic Address: 249
 Serial Number: 06975
 Region: EASTERN
 AAWT: 5172

Surveyed by: TV

Station ID: SOUTHBOUND
 Site Code: 2016CLS076
 Station ID: SOUTHBOUND
 WILLMILL ROAD
 BETWEEN STARS AND HOWE
 Latitude: 0' 0.0000 Undefined

Start Time	Mon 07/18/16	Tue 07/19/16	Wed 07/20/16	Thu 07/21/16	Fri 07/22/16	Week Day Average	Sat 07/23/16	Sun 07/24/16	Week Average
12:00 AM	44	0	*	*	*	22	*	*	22 
01:00	21	0	*	*	*	10	*	*	10 
02:00	13	0	*	*	*	6	*	*	6 
03:00	12	0	*	*	*	6	*	*	6 
04:00	23	0	*	*	*	12	*	*	12 
05:00	45	0	*	*	*	22	*	*	22 
06:00	133	0	*	*	*	66	*	*	66 
07:00	298	0	*	*	*	149	*	*	149 
08:00	351	0	*	*	*	176	*	*	176 
09:00	255	0	*	*	*	128	*	*	128 
10:00	235	10	*	*	*	122	*	*	122 
11:00	290	*	*	*	*	290	*	*	290 
12:00 PM	301	*	*	*	*	301	*	*	301 
01:00	219	*	*	*	*	219	*	*	219 
02:00	1	*	*	*	*	1	*	*	1 
03:00	1	*	*	*	*	1	*	*	1 
04:00	0	*	*	*	*	0	*	*	0
05:00	1	*	*	*	*	1	*	*	1 
06:00	0	*	*	*	*	0	*	*	0
07:00	0	*	*	*	*	0	*	*	0
08:00	0	*	*	*	*	0	*	*	0
09:00	0	*	*	*	*	0	*	*	0
10:00	0	*	*	*	*	0	*	*	0
11:00	0	*	*	*	*	0	*	*	0
Total	2243	10	0	0	0	1532	0	0	1532
Daily									
Date	Total								
07/18/16	2243								
07/19/16	4527								
Average	3385								
Grand Total	9961	8678	12147	13599	12947	14932	12398	9904	14153

MANUAL TRAFFIC COUNTS

























INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

WEATHER
RECORDER

OVERCAST
MIO

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

STREET: TIME: 15 MIN INTERVALS		SOBEYS NORTH DRIVEWAY						WYSE ROAD			WYSE ROAD			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
7:00:00 AM	7:15:00 AM	0		2				2	98			42	0	144
7:15:00 AM	7:30:00 AM	4		4				3	74			49	1	135
7:30:00 AM	7:45:00 AM	2		3				8	87			55	0	155
7:45:00 AM	8:00:00 AM	4		5				8	76			56	0	149

TOTAL	10	0	14				21	335			202	1	583
PEAK		24						356			203		
15 MIN PEAK		36						400			224		
PEAK HOUR FACTOR		0.67						0.89			0.91		
TWO WAY TOTALS		46						572			548		FACTOR
													1.03
													600

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

TIME: 15 MIN INTERVALS		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
8:00:00 AM	8:15:00 AM	6		5				10	101			53	0	175
8:15:00 AM	8:30:00 AM	11		7				8	92			57	1	176
8:30:00 AM	8:45:00 AM	9		6				8	84			52	1	160
8:45:00 AM	9:00:00 AM	5		8				6	76			51	1	147

TOTAL	31	0	26				32	353			213	3	658
PEAK		57						385			216		
15 MIN PEAK		72						444			232		
PEAK HOUR FACTOR		0.79						0.87			0.93		
TWO WAY TOTALS		92						624			600		FACTOR
													1.03
													678

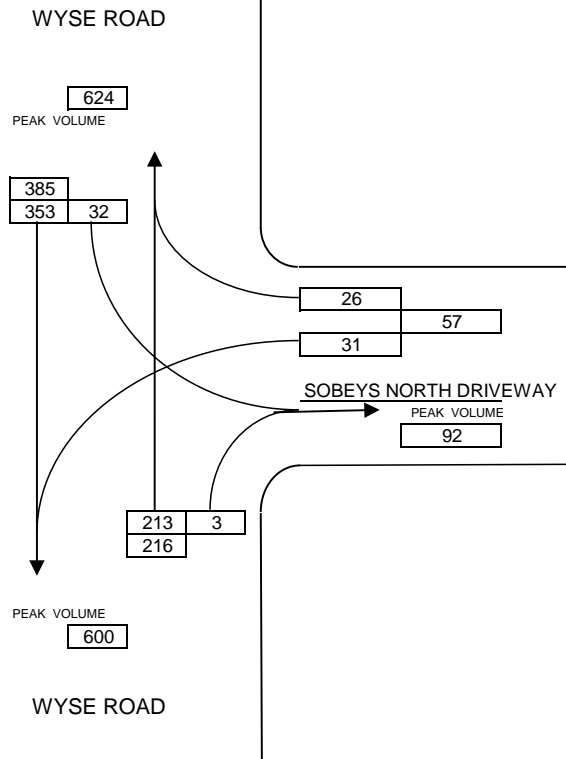
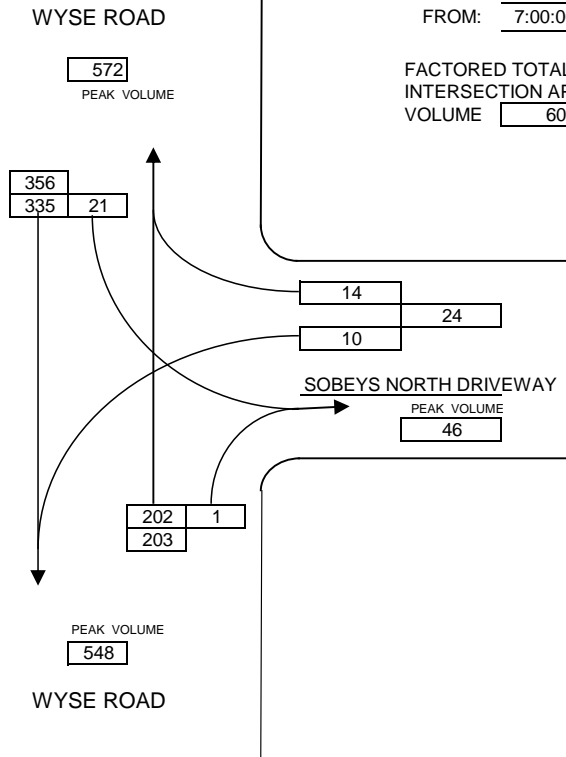
VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 7:00:00 AM TO 8:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 600



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 8:00:00 AM TO 9:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 678

MANUAL TRAFFIC COUNTS

INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

WEATHER
RECORDER

OVERCAST
MIO

DAY	DATE	MONTH	YEAR
TUESDAY	21	JULY	2015

STREET: TIME: 15 MIN INTERVALS		SOBEYS NORTH DRIVEWAY						WYSE ROAD			WYSE ROAD			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
9:00:00 AM	9:15:00 AM	4		5				5	85			48	0	147
9:15:00 AM	9:30:00 AM	5		6				9	61			61	4	146
9:30:00 AM	9:45:00 AM	5		6				9	79			56	0	155
9:45:00 AM	10:00:00 AM	5		9				7	58			51	0	130

TOTAL	19	0	26				30	283			216	4	578
PEAK		45						313			220		
15 MIN PEAK		56						360			260		
PEAK HOUR FACTOR		0.8						0.87			0.85		
TWO WAY TOTALS		79						555			522		FACTOR
													1.03
													595

DAY	DATE	MONTH	YEAR
TUESDAY	21	JULY	2015

TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
15 MIN INTERVALS														
10:00:00 AM	10:15:00 AM	9		7				7	74			56	2	155
10:15:00 AM	10:30:00 AM	8		13				14	73			59	0	167
10:30:00 AM	10:45:00 AM	12		17				11	65			66	1	172
10:45:00 AM	11:00:00 AM	8		16				9	58			71	2	164

TOTAL	37	0	53				41	270			252	5	658
PEAK		90						311			257		
15 MIN PEAK		116						348			292		
PEAK HOUR FACTOR		0.78						0.89			0.88		
TWO WAY TOTALS		136						616			564		FACTOR
													1.03
													678

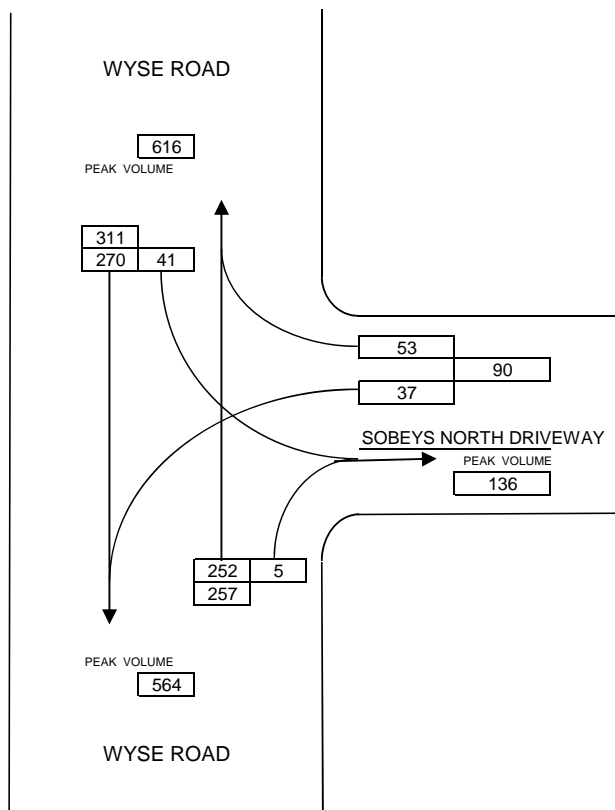
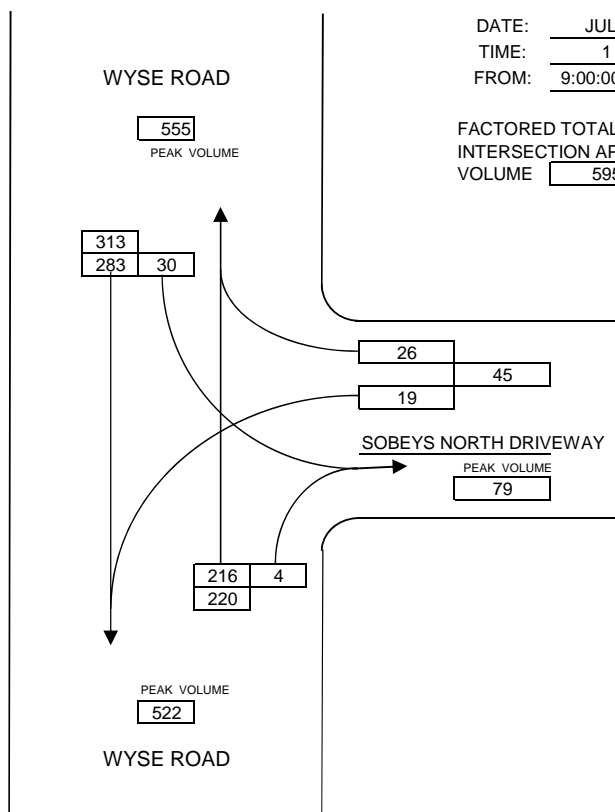
VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 9:00:00 AM TO 10:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 595



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 10:00:00 AM TO 11:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 678

MANUAL TRAFFIC COUNTS

INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

WEATHER
RECORDER

OVERCAST
MIO

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

STREET: TIME: 15 MIN INTERVALS		SOBEYS NORTH DRIVEWAY						WYSE ROAD			WYSE ROAD			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
11:00:00 AM	11:15:00 AM	8		10				12	52			68	3	153
11:15:00 AM	11:30:00 AM	13		11				10	68			68	4	174
11:30:00 AM	11:45:00 AM	12		19				21	64			55	3	174
11:45:00 AM	12:00:00 PM	13		21				22	76			70	3	205

TOTAL	46	0	61				65	260			261	13	706
PEAK		107						325			274		
15 MIN PEAK		136						392			292		
PEAK HOUR FACTOR		0.79						0.83			0.94		
TWO WAY TOTALS		185						647			580		FACTOR
													1.03
													727

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

TIME: 15 MIN INTERVALS		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
12:00:00 PM	12:15:00 PM	14		24				22	83			76	5	224
12:15:00 PM	12:30:00 PM	13		20				28	82			99	4	246
12:30:00 PM	12:45:00 PM	20		31				23	91			67	5	237
12:45:00 PM	1:00:00 PM	13		27				15	82			82	5	224

TOTAL	60	0	102				88	338			324	19	931
PEAK		162						426			343		
15 MIN PEAK		204						456			412		
PEAK HOUR FACTOR		0.79						0.93			0.83		
TWO WAY TOTALS		269						852			741		FACTOR
													1.03
													959

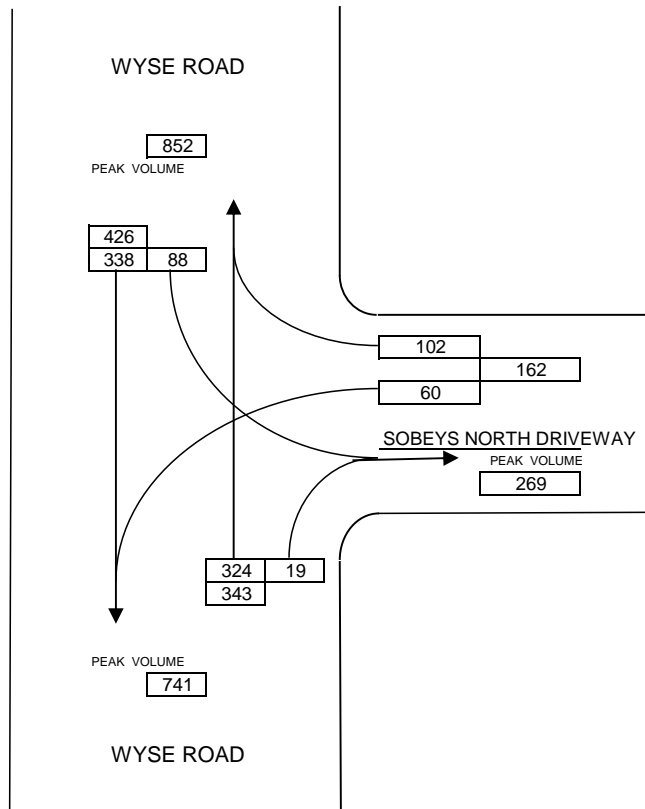
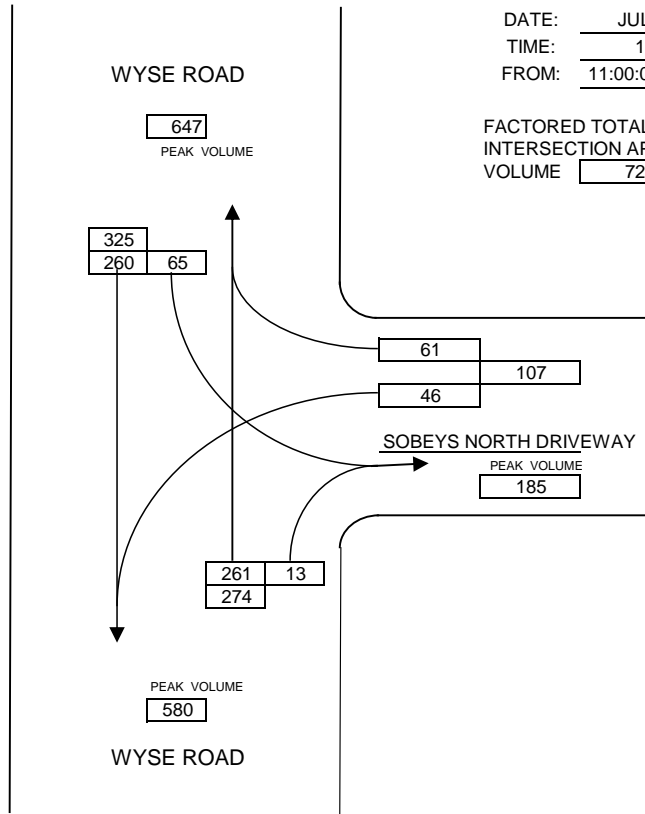
VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 11:00:00 AM TO 12:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 727



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 12:00:00 PM TO 1:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 959

MANUAL TRAFFIC COUNTS

INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

WEATHER
RECORDER

OVERCAST
MIO

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

STREET:

SOBEYS NORTH DRIVEWAY

WYSE ROAD

WYSE ROAD

TIME:

FROM THE EAST

FROM THE WEST

FROM THE NORTH

FROM THE SOUTH

TOTAL

15 MIN INTERVALS

		L	S	R	L	S	R	L	S	R	L	S	R	
1:00:00 PM	1:15:00 PM	15		22				23	86			89	4	239
1:15:00 PM	1:30:00 PM	17		28				23	78			66	5	217
1:30:00 PM	1:45:00 PM	23		12				17	65			95	2	214
1:45:00 PM	2:00:00 PM	15		15				13	74			87	1	205

TOTAL

70	0	77				76	303			337	12	875
----	---	----	--	--	--	----	-----	--	--	-----	----	-----

PEAK

	147						379			349		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

15 MIN PEAK

	180						436			388		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

PEAK HOUR FACTOR

	0.82						0.87			0.9		
--	------	--	--	--	--	--	------	--	--	-----	--	--

TWO WAY TOTALS

	235						793			722		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

FACTOR

1.03

901

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

TIME:

FROM THE EAST

FROM THE WEST

FROM THE NORTH

FROM THE SOUTH

TOTAL

15 MIN INTERVALS

		L	S	R	L	S	R	L	S	R	L	S	R	
2:00:00 PM	2:15:00 PM	11		25				19	59			86	1	201
2:15:00 PM	2:30:00 PM	13		20				26	75			83	8	225
2:30:00 PM	2:45:00 PM	18		27				14	70			82	8	219
2:45:00 PM	3:00:00 PM	18		22				24	77			85	1	227

TOTAL

60	0	94				83	281			336	18	872
----	---	----	--	--	--	----	-----	--	--	-----	----	-----

PEAK

	154						364			354		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

15 MIN PEAK

	180						404			364		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

PEAK HOUR FACTOR

	0.86						0.9			0.97		
--	------	--	--	--	--	--	-----	--	--	------	--	--

TWO WAY TOTALS

	255						794			695		
--	-----	--	--	--	--	--	-----	--	--	-----	--	--

FACTOR

1.03

898

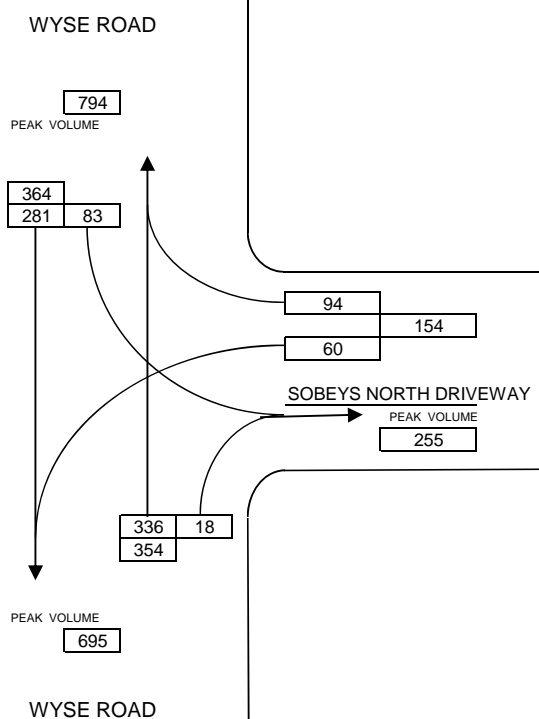
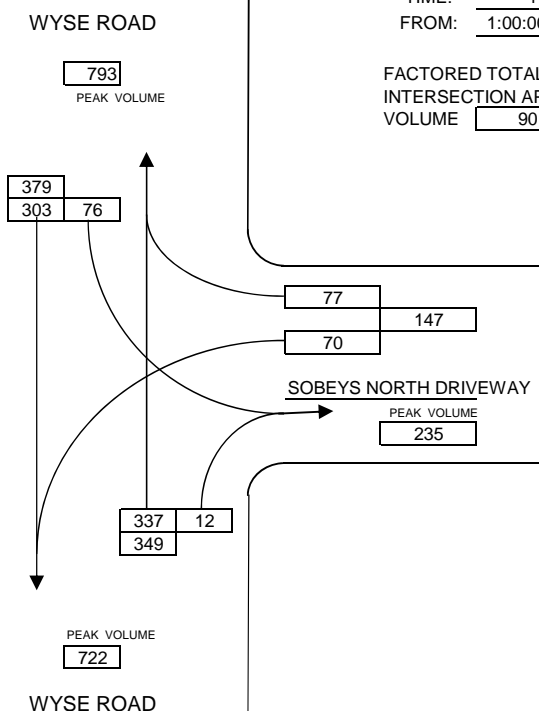
VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 1:00:00 PM TO 2:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 901



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 2:00:00 PM TO 3:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 898

MANUAL TRAFFIC COUNTS

INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

WEATHER
RECORDER

OVERCAST
MIO

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

STREET:		SOBEYS NORTH DRIVEWAY						WYSE ROAD			WYSE ROAD			TOTAL
TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
3:00:00 PM	3:15:00 PM	11		22				26	77			94	4	234
3:15:00 PM	3:30:00 PM	19		27				24	69			75	4	218
3:30:00 PM	3:45:00 PM	27		19				25	77			85	5	238
3:45:00 PM	4:00:00 PM	25		23				23	84			104	5	264

TOTAL	82	0	91				98	307			358	18	954
PEAK		173						405			376		
15 MIN PEAK		192						428			436		
PEAK HOUR FACTOR		0.9						0.95			0.86		
TWO WAY TOTALS		289						854			765		FACTOR
													1.03
													983

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
6:00:00 PM	6:15:00 PM	23		32				22	46			87	4	214
6:15:00 PM	6:30:00 PM	21		22				15	81			74	1	214
6:30:00 PM	6:45:00 PM	27		16				20	84			75	4	226
6:45:00 PM	7:00:00 PM	18		18				16	62			113	3	230

TOTAL	89	0	88				73	273			349	12	884
PEAK		177						346			361		
15 MIN PEAK		220						416			464		
PEAK HOUR FACTOR		0.8						0.83			0.78		
TWO WAY TOTALS		262						783			723		FACTOR
													1.03
													911

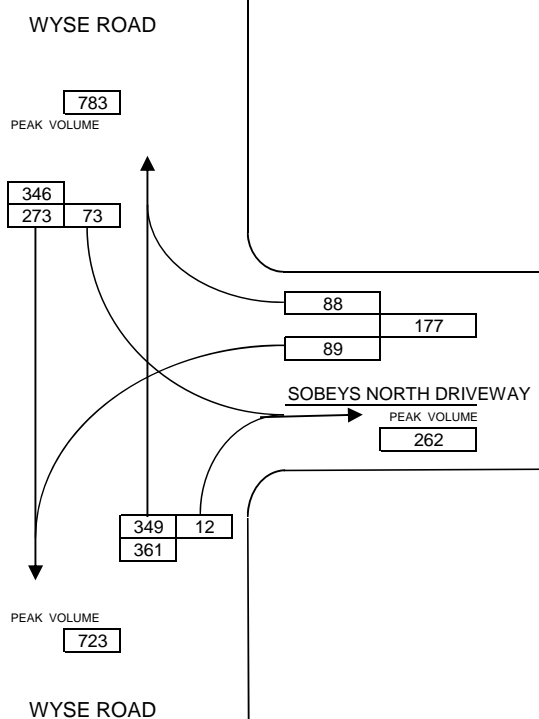
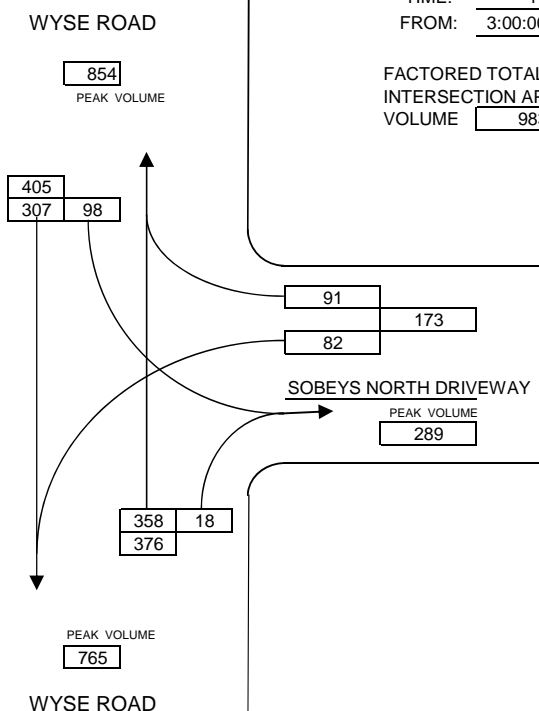
VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 3:00:00 PM TO 4:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 983



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 6:00:00 PM TO 7:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 911

MANUAL TRAFFIC COUNTS

INTERSECTION:

WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

WEATHER
RECORDER

OVERCAST
MIO

STREET:		SOBEYS NORTH DRIVEWAY						WYSE ROAD			WYSE ROAD			TOTAL
TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
4:00:00 PM	4:15:00 PM	17	<div></div>	25	<div></div>	<div></div>	<div></div>	31	74	<div></div>	<div></div>	109	3	259
4:15:00 PM	4:30:00 PM	24	<div></div>	29	<div></div>	<div></div>	<div></div>	19	67	<div></div>	<div></div>	79	4	222
4:30:00 PM	4:45:00 PM	22	<div></div>	34	<div></div>	<div></div>	<div></div>	40	93	<div></div>	<div></div>	111	3	303
4:45:00 PM	5:00:00 PM	21	<div></div>	30	<div></div>	<div></div>	<div></div>	29	84	<div></div>	<div></div>	99	3	266

TOTAL	84	0	118				119	318			398	13	1050
PEAK		202						437			411		
15 MIN PEAK		224						532			456		
PEAK HOUR FACTOR		0.9						0.82			0.9		
TWO WAY TOTALS		334						953			813		FACTOR
													1.03
													1082

DAY DATE MONTH YEAR
TUESDAY 21 JULY 2015

TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
5:00:00 PM	5:15:00 PM	21		30				45	99			83	3	281
5:15:00 PM	5:30:00 PM	28		33				29	96			96	4	286
5:30:00 PM	5:45:00 PM	34		29				26	72			74	6	241
5:45:00 PM	6:00:00 PM	18		27				34	54			75	1	209

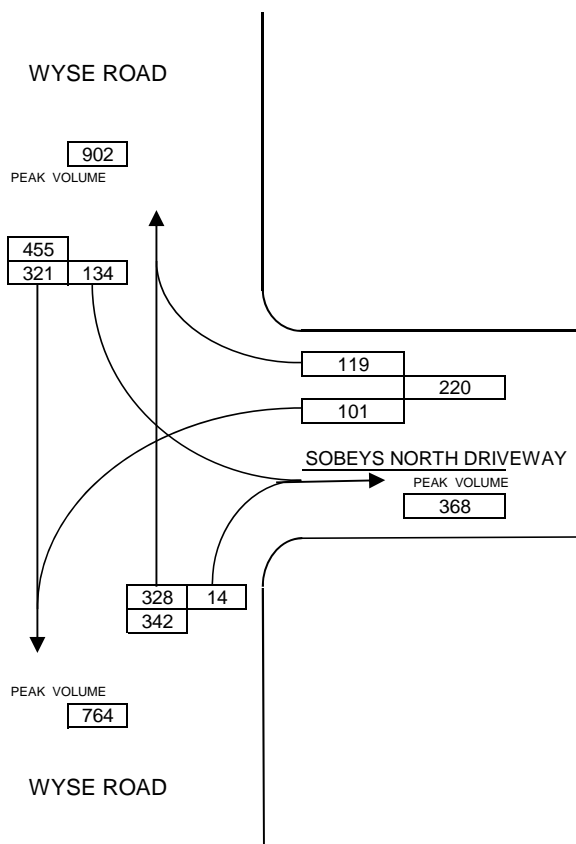
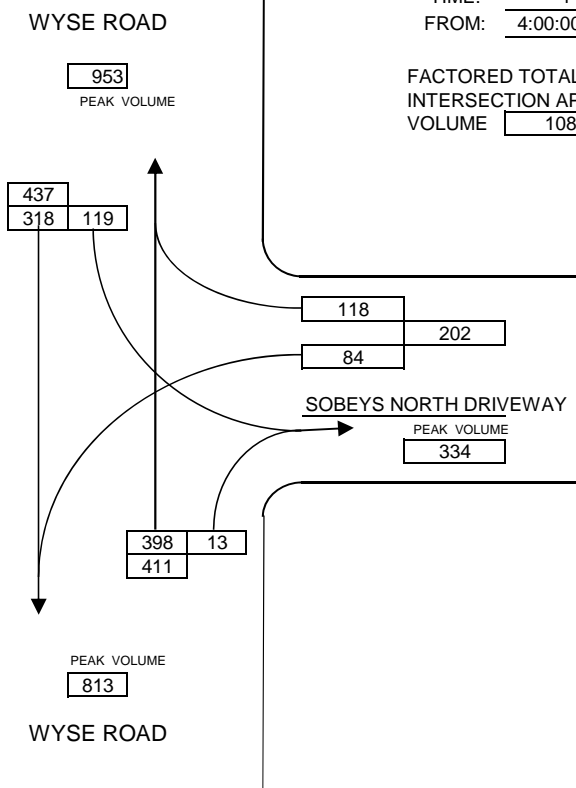
TOTAL	101	0	119				134	321			328	14	1017
PEAK		220						455			342		
15 MIN PEAK		252						576			400		
PEAK HOUR FACTOR		0.87						0.79			0.86		
TWO WAY TOTALS		368						902			764		FACTOR
													1.03
													1048

VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION : WYSE ROAD AT SOBEYS NORTH DRIVEWAY CIVIC 210 WYSE ROAD

DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 4:00:00 PM TO 5:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 1082



DATE: JULY 21 2015
 TIME: 1 HOUR
 FROM: 5:00:00 PM TO 6:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 1048

MANUAL TRAFFIC COUNTS

INTERSECTION:

JAMIESON STREET AT WYSE ROAD

WEATHER
RECORDER

SUNNY
MIO

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

STREET: TIME: 15 MIN INTERVALS					JAMIESON STREET			WYSE ROAD			WYSE ROAD			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
7:00:00 AM	7:15:00 AM				0		6		90	3	5	58		162
7:15:00 AM	7:30:00 AM				0		9		71	0	9	38		127
7:30:00 AM	7:45:00 AM				1		9		77	2	8	69		166
7:45:00 AM	8:00:00 AM				1		11		85	2	9	61		169

TOTAL	0	0	0	2		35		323	7	31	226		624
PEAK		0			37			330			257		
15 MIN PEAK		0			48			372			308		
PEAK HOUR FACTOR		0			0.77			0.89			0.83		
TWO WAY TOTALS		0			75			558			615		FACTOR
													1
													624

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

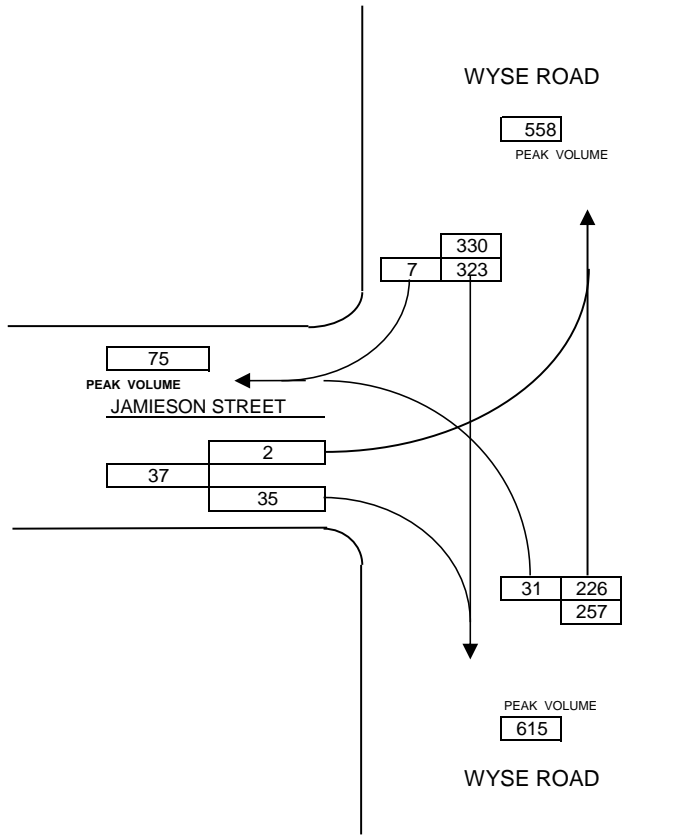
TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
8:00:00 AM	8:15:00 AM				4		10		83	3	4	68		172
8:15:00 AM	8:30:00 AM				3		15		88	1	7	59		173
8:30:00 AM	8:45:00 AM				7		9		87	4	2	60		169
8:45:00 AM	9:00:00 AM				2		10		97	4	6	72		191

TOTAL				16		44		355	12	19	259		705
PEAK					60			367			278		
15 MIN PEAK					72			404			312		
PEAK HOUR FACTOR					0.83			0.91			0.89		
TWO WAY TOTALS					91			642			677		FACTOR
													1
													705

VEHICULAR GRAPHIC SUMMARY SHEET

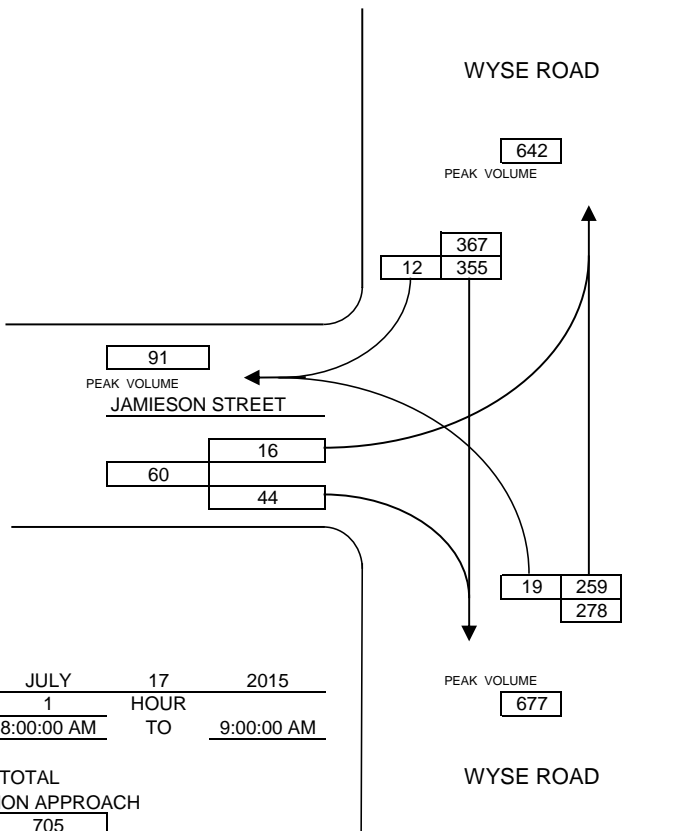
INTERSECTION :

JAMIESON STREET AT WYSE ROAD



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 7:00:00 AM TO 8:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 624



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 8:00:00 AM TO 9:00:00 AM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 705

MANUAL TRAFFIC COUNTS

INTERSECTION:

JAMIESON STREET AT WYSE ROAD

WEATHER
RECORDER

SUNNY
MIO

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

STREET: TIME: 15 MIN INTERVALS					JAMIESON STREET			WYSE ROAD			WYSE ROAD			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
11:00:00 AM	11:15:00 AM	<div></div>	<div></div>	<div></div>	8	<div></div>	8	<div></div>	77	6	7	84	<div></div>	190
11:15:00 AM	11:30:00 AM	<div></div>	<div></div>	<div></div>	2	<div></div>	7	<div></div>	104	7	4	93	<div></div>	217
11:30:00 AM	11:45:00 AM	<div></div>	<div></div>	<div></div>	6	<div></div>	14	<div></div>	77	5	5	71	<div></div>	178
11:45:00 AM	12:00:00 PM	<div></div>	<div></div>	<div></div>	6	<div></div>	8	<div></div>	90	11	6	102	<div></div>	223

TOTAL	0	0	0	22		37		348	29	22	350		808
PEAK		0			59			377			372		
15 MIN PEAK		0			80			444			432		
PEAK HOUR FACTOR		0			0.74			0.85			0.86		
TWO WAY TOTALS		0			110			749			757		FACTOR
													1
													808

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

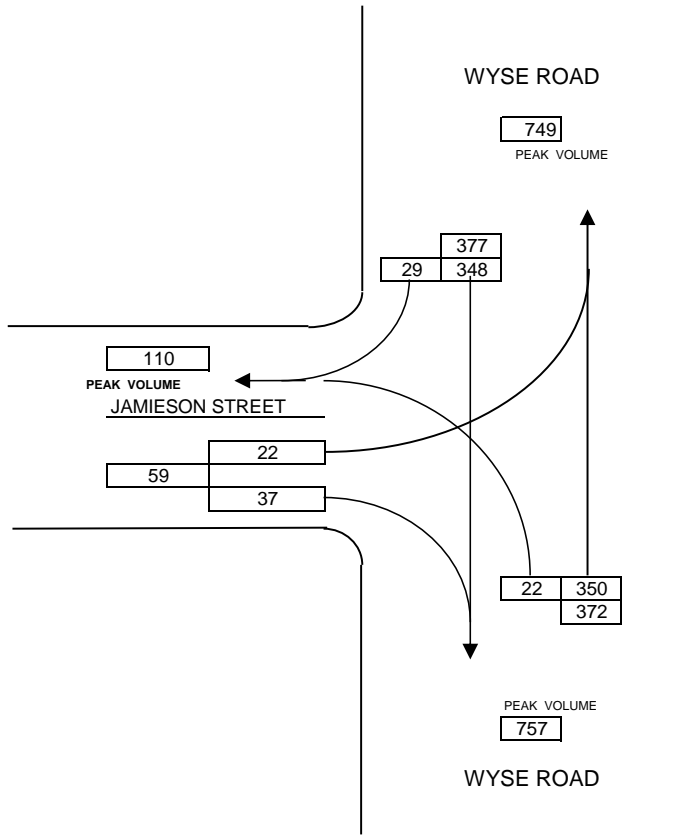
TIME: 15 MIN INTERVALS		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
12:00:00 PM	12:15:00 PM				3		8		88	3	11	95		208
12:15:00 PM	12:30:00 PM				6		9		83	4	9	110		221
12:30:00 PM	12:45:00 PM				6		9		90	9	6	112		232
12:45:00 PM	1:00:00 PM				7		9		107	8	11	99		241

TOTAL				22		35		368	24	37	416		902
PEAK					57			392			453		
15 MIN PEAK					64			460			476		
PEAK HOUR FACTOR					0.89			0.85			0.95		
TWO WAY TOTALS					118			830			856		FACTOR
													1
													902

VEHICULAR GRAPHIC SUMMARY SHEET

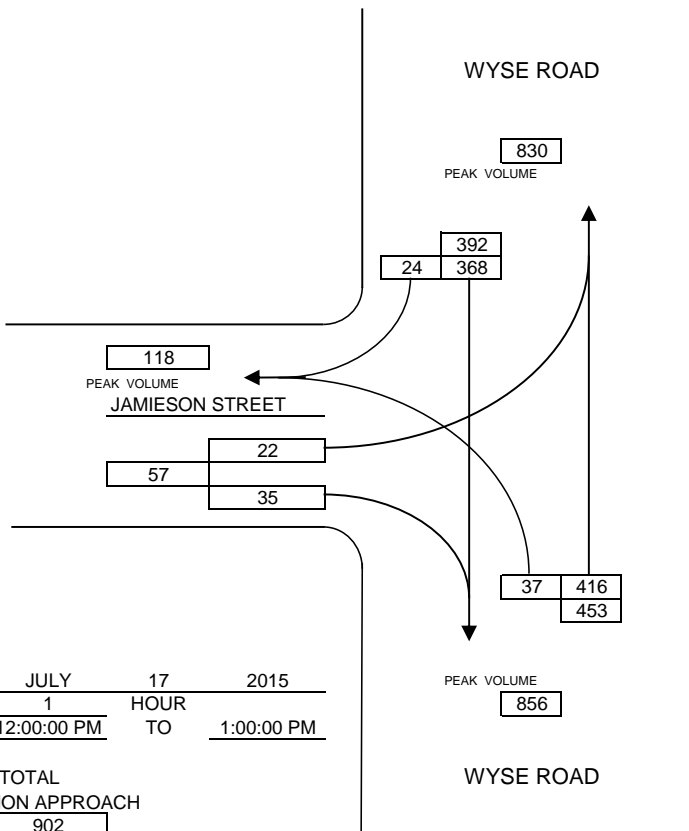
INTERSECTION :

JAMIESON STREET AT WYSE ROAD



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 11:00:00 AM TO 12:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 808



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 12:00:00 PM TO 1:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 902

MANUAL TRAFFIC COUNTS

INTERSECTION:

JAMIESON STREET AT WYSE ROAD

WEATHER
RECORDER

SUNNY
MIO

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

STREET: TIME: 15 MIN INTERVALS		FROM THE EAST			JAMIESON STREET FROM THE WEST			WYSE ROAD FROM THE NORTH			WYSE ROAD FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
4:00:00 PM	4:15:00 PM				6		9		102	10	9	106		242
4:15:00 PM	4:30:00 PM				10		9		114	7	5	111		256
4:30:00 PM	4:45:00 PM				8		8		106	12	4	131		269
4:45:00 PM	5:00:00 PM				11		6		98	11	12	118		256

TOTAL	0	0	0	35		32		420	40	30	466		1023
PEAK		0			67			460			496		
15 MIN PEAK		0			76			484			540		
PEAK HOUR FACTOR		0			0.88			0.95			0.92		
TWO WAY TOTALS		0			137			961			948		FACTOR
													1
													1023

DAY DATE MONTH YEAR
FRIDAY 17 JULY 2015

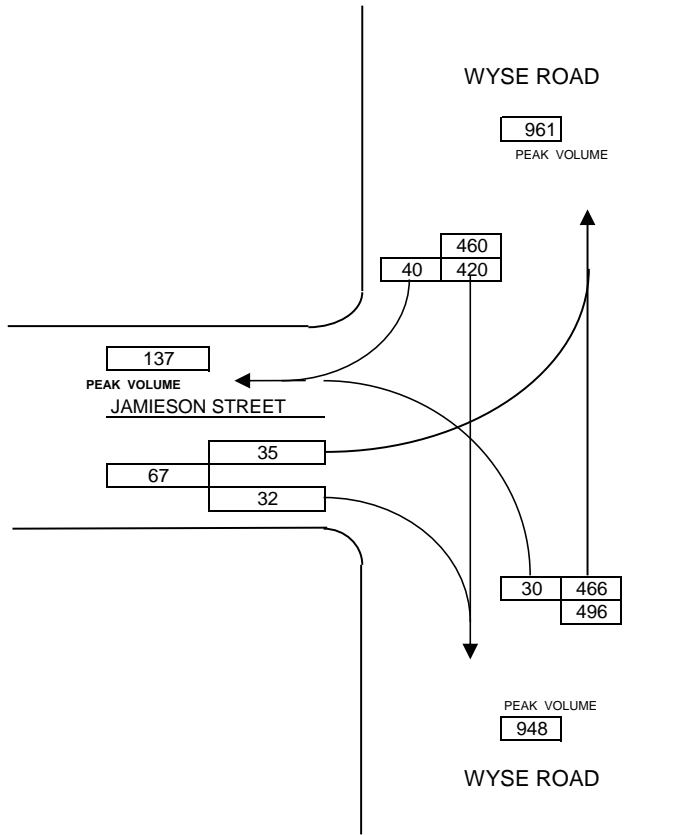
TIME: 15 MIN INTERVALS		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
5:00:00 PM	5:15:00 PM				7		5		112	4	11	124		263
5:15:00 PM	5:30:00 PM				10		16		94	19	10	138		287
5:30:00 PM	5:45:00 PM				5		7		94	11	7	97		221
5:45:00 PM	6:00:00 PM				7		14		108	4	7	84		224

TOTAL				29		42		408	38	35	443		995
PEAK					71			446			478		
15 MIN PEAK					104			464			592		
PEAK HOUR FACTOR					0.68			0.96			0.81		
TWO WAY TOTALS					144			918			928		FACTOR
													1
													995

VEHICULAR GRAPHIC SUMMARY SHEET

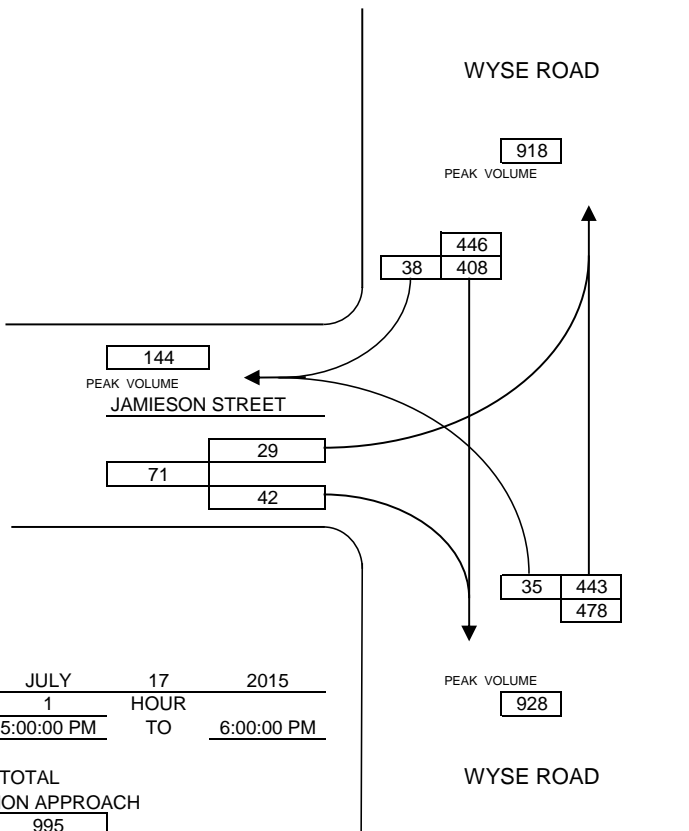
INTERSECTION :

JAMIESON STREET AT WYSE ROAD



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 4:00:00 PM TO 5:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 1023



DATE: JULY 17 2015
 TIME: 1 HOUR
 FROM: 5:00:00 PM TO 6:00:00 PM

FACTORED TOTAL
 INTERSECTION APPROACH
 VOLUME 995

MANUAL TRAFFIC COUNTS

INTERSECTION:				BEDFORD STREET AT ELMWOOD STREET							WEATHER		CLEAR	
											RECORDER		ES	
DAY	DATE	MONTH	YEAR											
WED.	21	NOV.	2012											

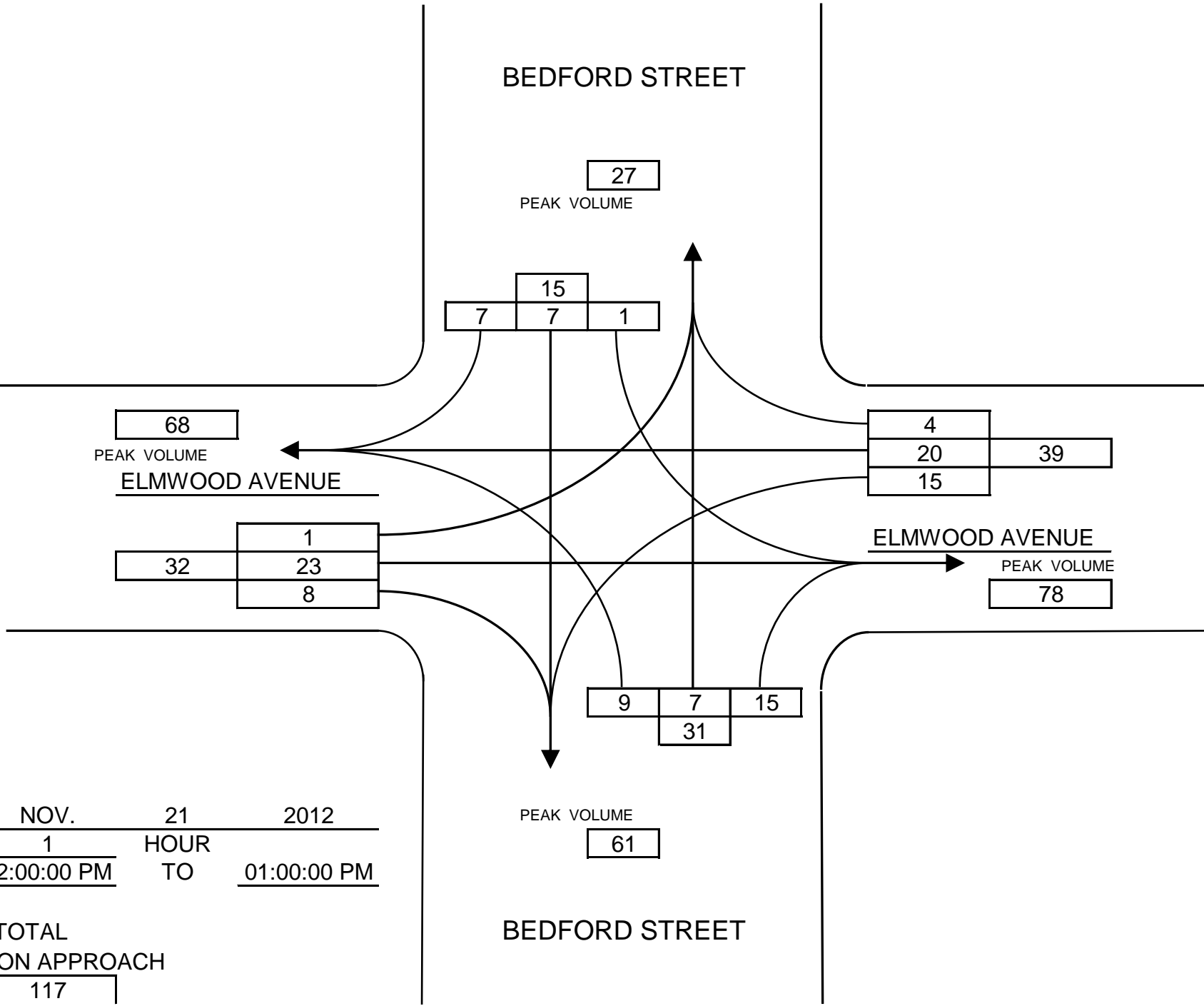
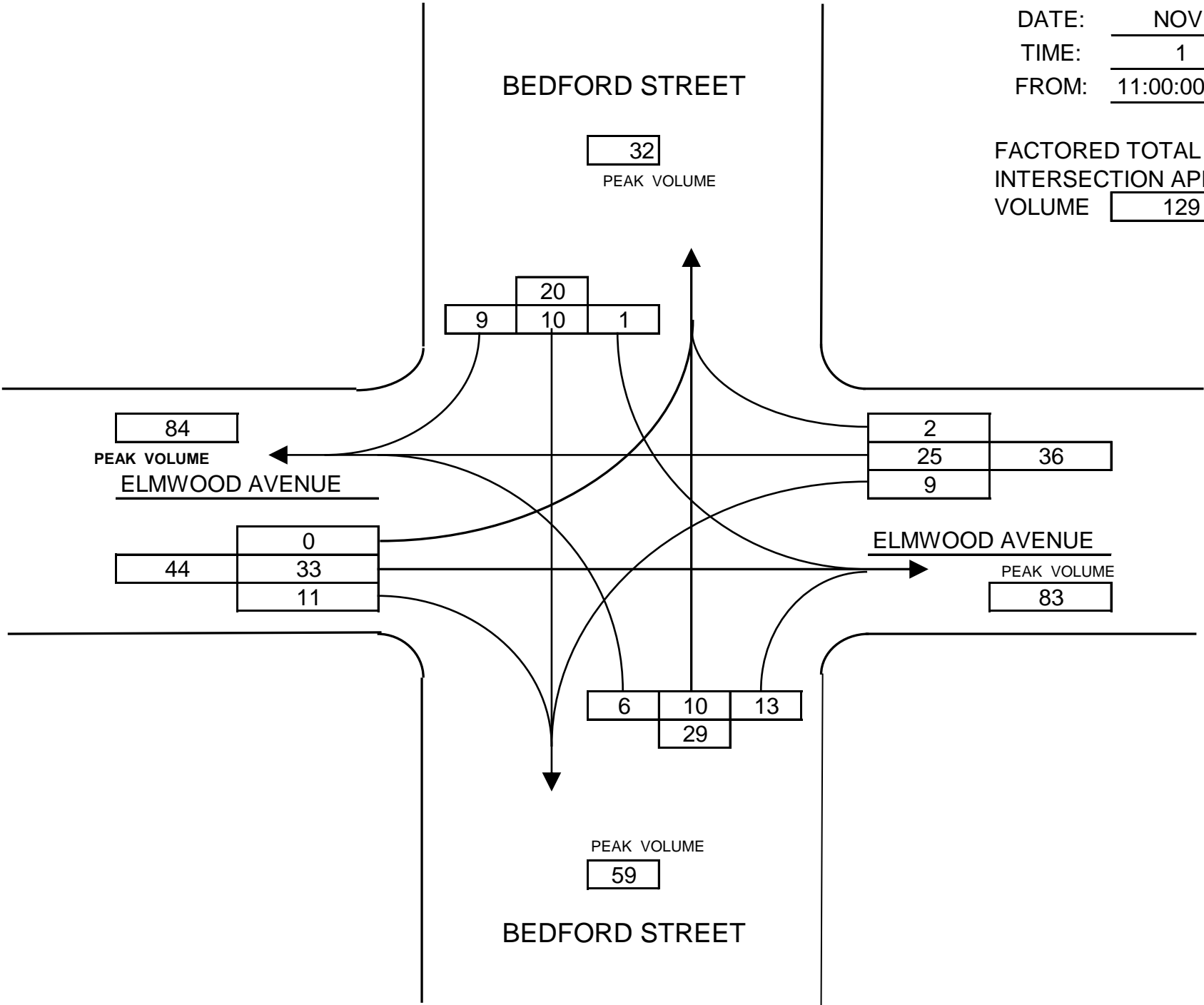
STREET: TIME: 15 MIN INTERVALS		ELMWOOD AVENUE			ELMWOOD AVENUE			BEDFORD STREET			BEDFORD STREET			TOTAL
		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			
		L	S	R	L	S	R	L	S	R	L	S	R	
11:00:00 AM	11:15:00 AM	2	5	0	0	5	1	0	2	0	1	0	5	21
11:15:00 AM	11:30:00 AM	2	3	0	0	10	5	1	4	5	1	5	2	38
11:30:00 AM	11:45:00 AM	1	10	2	0	9	3	0	1	3	3	2	5	39
11:45:00 AM	12:00:00 PM	4	7	0	0	9	2	0	3	1	1	3	1	31
TOTAL		9	25	2	0	33	11	1	10	9	6	10	13	129
PEAK		36			44			20			29			PEAK HR FACTOR
15 MIN PEAK		52			60			40			40			
PEAK HOUR FACTOR		0.69			0.73			0.5			0.73			
TWO WAY TOTALS		83			84			32			59			
														1
														129

DAY	DATE	MONTH	YEAR
WED.	21	NOV.	2012

TIME:		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
15 MIN INTERVALS		L	S	R	L	S	R	L	S	R	L	S	R	
12:00:00 PM	12:15:00 PM	0	4	1	0	8	3	0	2	2	3	2	4	29
12:15:00 PM	12:30:00 PM	8	4	1	0	6	0	1	1	2	2	2	3	30
12:30:00 PM	12:45:00 PM	5	3	2	1	4	2	0	0	2	2	3	3	27
12:45:00 PM	01:00:00 PM	2	9	0	0	5	3	0	4	1	2	0	5	31
TOTAL		15	20	4	1	23	8	1	7	7	9	7	15	117
PEAK		39			32			15			31			PEAK HR FACTOR
15 MIN PEAK		52			44			20			36			
PEAK HOUR FACTOR		0.75			0.73			0.75			0.86			
TWO WAY TOTALS		78			68			27			61			
														1
														117

VEHICULAR GRAPHIC SUMMARY SHEET
BEDFORD STREET AT ELMWOOD STREET

INTERSECTION : _____





APPENDIX C

Trip Generation

Trip Generation Summary

Alternative: Alternative 1

Phase:

Open Date: 12/6/2017

Project: New Project

Analysis Date: 12/6/2017

ITE	Land Use	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic				Weekday PM Peak Hour of Adjacent Street Traffic			
		*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
220	Apartments		689	689	1378		21	84	105		86	46	132
	207 Dwelling Units												
826	Retail		93	93	186	✓	8	7	15		5	6	11
	4.2 Gross Leasable Area 1000 SF												
Unadjusted Volume			782	782	1564		29	91	120		91	52	143
Internal Capture Trips			0	0	0		1	1	2		3	3	6
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			782	782	1564		28	90	118		88	49	137

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 2 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 4 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

TRIP GENERATION 2014, TRAFFICWARE, LLC




















P. 1

APPENDIX D

Synchro Output

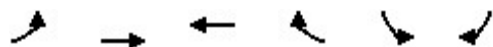
2: Elmwood & Wyse
Rosedale Development






Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	344	5	10	403	10	15	5	35	20	10	10
Future Volume (Veh/h)	5	344	5	10	403	10	15	5	35	20	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	374	5	11	438	11	16	5	38	22	11	11
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	449			379			863	858	376	890	854	444
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			379			863	858	376	890	854	444
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			94	98	94	91	96	98
cM capacity (veh/h)	1111			1179			259	291	670	243	292	614
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	5	379	11	449	59	44						
Volume Left	5	0	11	0	16	22						
Volume Right	0	5	0	11	38	11						
cSH	1111	1700	1179	1700	435	301						
Volume to Capacity	0.00	0.22	0.01	0.26	0.14	0.15						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	3.5	3.8						
Control Delay (s)	8.3	0.0	8.1	0.0	14.6	19.0						
Lane LOS	A		A		B	C						
Approach Delay (s)	0.1		0.2		14.6	19.0						
Approach LOS					B	C						
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			32.5%		ICU Level of Service		A					
Analysis Period (min)			15									

3: Wyse & Sobeys Rosedale Development

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	364	396	15	31	27
Future Volume (Veh/h)	35	364	396	15	31	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	396	430	16	34	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			229			
pX, platoon unblocked	0.90				0.90	0.90
vC, conflicting volume	430				910	438
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315				846	324
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				88	96
cM capacity (veh/h)	1124				290	648
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	38	396	446	34	29	
Volume Left	38	0	0	34	0	
Volume Right	0	0	16	0	29	
cSH	1124	1700	1700	290	648	
Volume to Capacity	0.03	0.23	0.26	0.12	0.04	
Queue Length 95th (m)	0.8	0.0	0.0	3.0	1.1	
Control Delay (s)	8.3	0.0	0.0	19.1	10.8	
Lane LOS	A			C	B	
Approach Delay (s)	0.7		0.0	15.3		
Approach LOS				C		
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			38.4%	ICU Level of Service		A
Analysis Period (min)			15			





















5: Jamison & Wyse
Rosedale Development

Existing Conditions
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	365	30	30	391	20	50
Future Volume (Veh/h)	365	30	30	391	20	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)	397	33	33	425	22	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)				137		
pX, platoon unblocked					0.85	
vC, conflicting volume			430		904	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			430		802	414
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		92	92
cM capacity (veh/h)			1129		293	639
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	430	458	76			
Volume Left	0	33	22			
Volume Right	33	0	54			
cSH	1700	1129	476			
Volume to Capacity	0.25	0.03	0.16			
Queue Length 95th (m)	0.0	0.7	4.3			
Control Delay (s)	0.0	0.9	14.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.9	14.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			56.2%	ICU Level of Service		B
Analysis Period (min)			15			

8: Wyse & Boland
Rosedale Development




Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	330	5	5	348	306	0	0	0	251	0	73
Future Volume (vph)	80	330	5	5	348	306	0	0	0	251	0	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5				4.5		4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.91				1.00		0.91
Flpb, ped/bikes	0.96	1.00		0.96	1.00	1.00				1.00		1.00
Frt	1.00	1.00		1.00	1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00				0.95		1.00
Satd. Flow (prot)	1723	1877		1721	1883	1460				1789		1460
Flt Permitted	0.45	1.00		0.47	1.00	1.00				0.95		1.00
Satd. Flow (perm)	815	1877		842	1883	1460				1789		1460
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)	87	359	5	5	378	333	0	0	0	273	0	79
RTOR Reduction (vph)	0	1	0	0	0	196	0	0	0	0	0	47
Lane Group Flow (vph)	87	363	0	5	378	137	0	0	0	273	0	32
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Turn Type	Perm	NA		Perm	NA	Perm				Prot		Perm
Protected Phases		4			8			2!		6!		
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	20.5	20.5		20.5	20.5	20.5				20.5		20.5
Effective Green, g (s)	20.5	20.5		20.5	20.5	20.5				20.5		20.5
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41				0.41		0.41
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5				4.5		4.5
Lane Grp Cap (vph)	334	769		345	772	598				733		598
v/s Ratio Prot		0.19			c0.20					c0.15		
v/s Ratio Perm	0.11			0.01		0.09						0.02
v/c Ratio	0.26	0.47		0.01	0.49	0.23				0.37		0.05
Uniform Delay, d1	9.7	10.8		8.8	10.9	9.6				10.3		8.9
Progression Factor	1.00	1.00		1.00	1.00	1.00				1.00		1.00
Incremental Delay, d2	1.9	2.1		0.1	2.2	0.9				1.4		0.2
Delay (s)	11.6	12.9		8.8	13.1	10.5				11.7		9.1
Level of Service	B	B		A	B	B				B		A
Approach Delay (s)		12.6			11.9			0.0			11.1	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.9				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			54.2%				ICU Level of Service			A		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

16: Windmill & Elmwood
Rosedale Development

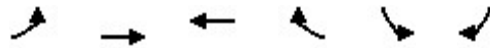
Existing Conditions
AM Peak Hour







Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	365	355	25	25	35
Future Volume (Veh/h)	30	365	355	25	25	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	397	386	27	27	38
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	413				862	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	413				862	400
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				91	94
cM capacity (veh/h)	1146				316	650
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	430	413	65			
Volume Left	33	0	27			
Volume Right	0	27	38			
cSH	1146	1700	452			
Volume to Capacity	0.03	0.24	0.14			
Queue Length 95th (m)	0.7	0.0	3.8			
Control Delay (s)	0.9	0.0	14.3			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	14.3			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			54.2%	ICU Level of Service		A
Analysis Period (min)			15			

19: Windmill & Jamison
Rosedale Development

Existing Conditions
AM Peak Hour





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	345	345	25	35	40
Future Volume (Veh/h)	45	345	345	25	35	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	375	375	27	38	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	402				862	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	402				862	388
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				88	93
cM capacity (veh/h)	1157				312	660
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	49	375	402	81		
Volume Left	49	0	0	38		
Volume Right	0	0	27	43		
cSH	1157	1700	1700	433		
Volume to Capacity	0.04	0.22	0.24	0.19		
Queue Length 95th (m)	1.0	0.0	0.0	5.2		
Control Delay (s)	8.3	0.0	0.0	15.2		
Lane LOS	A			C		
Approach Delay (s)	1.0		0.0	15.2		
Approach LOS				C		
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			37.4%		ICU Level of Service	A
Analysis Period (min)			15			

2: Elmwood & Wyse
Rosedale Development

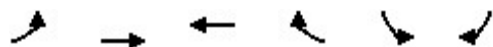
Future Development Conditions






AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	344	25	10	403	10	30	8	35	20	12	10
Future Volume (Veh/h)	5	344	25	10	403	10	30	8	35	20	12	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	6	393	29	11	460	11	34	9	40	23	14	11
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	471			422			920	912	408	937	922	466
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			422			920	912	408	937	922	466
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			85	97	94	90	95	98
cM capacity (veh/h)	1091			1137			234	269	644	221	266	597
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	6	422	11	471	83	48						
Volume Left	6	0	11	0	34	23						
Volume Right	0	29	0	11	40	11						
cSH	1091	1700	1137	1700	345	274						
Volume to Capacity	0.01	0.25	0.01	0.28	0.24	0.17						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	7.0	4.7						
Control Delay (s)	8.3	0.0	8.2	0.0	18.7	20.9						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		18.7	20.9						
Approach LOS					C	C						
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			34.9%		ICU Level of Service		A					
Analysis Period (min)			15									

3: Wyse & Sobeys Rosedale Development

Future Development Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	364	396	15	31	27
Future Volume (Veh/h)	35	364	396	15	31	27
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)	40	415	452	17	35	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			229			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	452				956	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320				887	330
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				87	95
cM capacity (veh/h)	1101				269	632
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	40	415	469	35	31	
Volume Left	40	0	0	35	0	
Volume Right	0	0	17	0	31	
cSH	1101	1700	1700	269	632	
Volume to Capacity	0.04	0.24	0.28	0.13	0.05	
Queue Length 95th (m)	0.9	0.0	0.0	3.4	1.2	
Control Delay (s)	8.4	0.0	0.0	20.4	11.0	
Lane LOS	A			C	B	
Approach Delay (s)	0.7		0.0	16.0		
Approach LOS				C		
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			39.5%		ICU Level of Service	
Analysis Period (min)			15		A	

5: Jamison & Wyse
Rosedale Development





















Future Development Conditions
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	365	30	38	391	20	77
Future Volume (Veh/h)	365	30	38	391	20	77
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)	417	34	43	446	23	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)				137		
pX, platoon unblocked					0.84	
vC, conflicting volume			451		966	434
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			451		862	434
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		91	86
cM capacity (veh/h)			1109		262	622
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	451	489	111			
Volume Left	0	43	23			
Volume Right	34	0	88			
cSH	1700	1109	484			
Volume to Capacity	0.27	0.04	0.23			
Queue Length 95th (m)	0.0	0.9	6.7			
Control Delay (s)	0.0	1.1	14.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.1	14.6			
Approach LOS			B			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			62.0%	ICU Level of Service		B
Analysis Period (min)			15			

8: Wyse & Boland
Rosedale Development

Future Development Conditions

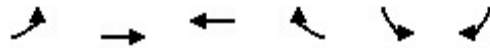
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	352	5	5	354	306	0	0	0	251	0	75
Future Volume (vph)	85	352	5	5	354	306	0	0	0	251	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5				4.5		4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00				1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.91				1.00		0.91
Flpb, ped/bikes	0.96	1.00		0.97	1.00	1.00				1.00		1.00
Frt	1.00	1.00		1.00	1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00				0.95		1.00
Satd. Flow (prot)	1726	1877		1727	1883	1460				1789		1460
Flt Permitted	0.42	1.00		0.42	1.00	1.00				0.95		1.00
Satd. Flow (perm)	765	1877		758	1883	1460				1789		1460
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
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	97	402	6	6	404	349	0	0	0	286	0	86
RTOR Reduction (vph)	0	1	0	0	0	206	0	0	0	0	0	51
Lane Group Flow (vph)	97	407	0	6	404	143	0	0	0	286	0	35
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Turn Type	Perm	NA		Perm	NA	Perm				Prot		Perm
Protected Phases		4			8			2!		6!		
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	20.5	20.5		20.5	20.5	20.5				20.5		20.5
Effective Green, g (s)	20.5	20.5		20.5	20.5	20.5				20.5		20.5
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41				0.41		0.41
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5				4.5		4.5
Lane Grp Cap (vph)	313	769		310	772	598				733		598
v/s Ratio Prot		c0.22			0.21					c0.16		
v/s Ratio Perm	0.13			0.01		0.10						0.02
v/c Ratio	0.31	0.53		0.02	0.52	0.24				0.39		0.06
Uniform Delay, d1	10.0	11.1		8.8	11.1	9.6				10.4		8.9
Progression Factor	1.00	1.00		1.00	1.00	1.00				1.00		1.00
Incremental Delay, d2	2.6	2.6		0.1	2.5	0.9				1.6		0.2
Delay (s)	12.5	13.7		8.9	13.6	10.6				11.9		9.1
Level of Service	B	B		A	B	B				B		A
Approach Delay (s)		13.5			12.2			0.0			11.3	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.4				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			56.6%				ICU Level of Service			B		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

16: Windmill & Elmwood
Rosedale Development

Future Development Conditions

AM Peak Hour







Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	367	362	25	25	35
Future Volume (Veh/h)	35	367	362	25	25	35
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)	40	419	413	29	29	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	442				926	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	442				926	428
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				90	94
cM capacity (veh/h)	1118				287	627
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	459	442	69			
Volume Left	40	0	29			
Volume Right	0	29	40			
cSH	1118	1700	419			
Volume to Capacity	0.04	0.26	0.16			
Queue Length 95th (m)	0.8	0.0	4.4			
Control Delay (s)	1.1	0.0	15.3			
Lane LOS	A		C			
Approach Delay (s)	1.1	0.0	15.3			
Approach LOS			C			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			57.6%	ICU Level of Service		B
Analysis Period (min)			15			

19: Windmill & Jamison
Rosedale Development



















Future Development Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	353	345	31	45	40
Future Volume (Veh/h)	45	353	345	31	45	40
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)	51	403	394	35	51	46
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	429				916	412
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	429				916	412
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				82	93
cM capacity (veh/h)	1130				289	640
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	51	403	429	97		
Volume Left	51	0	0	51		
Volume Right	0	0	35	46		
cSH	1130	1700	1700	390		
Volume to Capacity	0.05	0.24	0.25	0.25		
Queue Length 95th (m)	1.1	0.0	0.0	7.3		
Control Delay (s)	8.3	0.0	0.0	17.3		
Lane LOS	A			C		
Approach Delay (s)	0.9		0.0	17.3		
Approach LOS				C		
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			39.6%		ICU Level of Service	A
Analysis Period (min)			15			

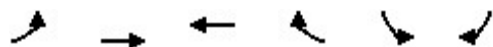
2: Elmwood & Wyse
Rosedale Development






Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	440	25	25	550	30	20	10	20	20	10	20
Future Volume (Veh/h)	10	440	25	25	550	30	20	10	20	20	10	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	478	27	27	598	33	22	11	22	22	11	22
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	631			505			1193	1198	492	1196	1196	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	631			505			1193	1198	492	1196	1196	614
tC, single (s)	4.1			4.1			7.1	*5.5	6.2	7.1	*6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			85	96	96	85	94	96
cM capacity (veh/h)	951			1060			145	251	577	147	181	491
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	11	505	27	631	55	55						
Volume Left	11	0	27	0	22	22						
Volume Right	0	27	0	33	22	22						
cSH	951	1700	1060	1700	235	216						
Volume to Capacity	0.01	0.30	0.03	0.37	0.23	0.26						
Queue Length 95th (m)	0.3	0.0	0.6	0.0	6.7	7.4						
Control Delay (s)	8.8	0.0	8.5	0.0	24.9	27.3						
Lane LOS	A		A		C	D						
Approach Delay (s)	0.2		0.3		24.9	27.3						
Approach LOS					C	D						
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			41.1%		ICU Level of Service		A					
Analysis Period (min)			15									
* User Entered Value												

3: Wyse & Sobeys Rosedale Development

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	350	480	30	90	125
Future Volume (Veh/h)	130	350	480	30	90	125
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)	141	380	522	33	98	136
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)			229			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	522				1200	538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355				1149	374
tC, single (s)	4.1				*5.0	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				61	76
cM capacity (veh/h)	1028				254	574
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	141	380	555	98	136	
Volume Left	141	0	0	98	0	
Volume Right	0	0	33	0	136	
cSH	1028	1700	1700	254	574	
Volume to Capacity	0.14	0.22	0.33	0.39	0.24	
Queue Length 95th (m)	3.6	0.0	0.0	13.1	7.0	
Control Delay (s)	9.1	0.0	0.0	27.8	13.2	
Lane LOS	A			D	B	
Approach Delay (s)	2.5		0.0	19.3		
Approach LOS				C		
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			49.3%	ICU Level of Service		A
Analysis Period (min)			15			

* User Entered Value





















5: Jamison & Wyse
Rosedale Development

Existing Conditions
PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	400	40	30	470	40	35
Future Volume (Veh/h)	400	40	30	470	40	35
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)	435	43	33	511	43	38
Pedestrians				19	19	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.1	1.1	
Percent Blockage				2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				137		
pX, platoon unblocked					0.82	
vC, conflicting volume			497		1052	494
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			497		952	494
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		81	93
cM capacity (veh/h)			1048		224	555
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	478	544	81			
Volume Left	0	33	43			
Volume Right	43	0	38			
cSH	1700	1048	311			
Volume to Capacity	0.28	0.03	0.26			
Queue Length 95th (m)	0.0	0.7	7.8			
Control Delay (s)	0.0	0.9	20.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.9	20.6			
Approach LOS			C			
Intersection Summary						
Average Delay		1.9				
Intersection Capacity Utilization		65.0%	ICU Level of Service	C		
Analysis Period (min)		15				

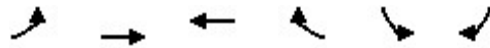
8: Wyse & Boland
Rosedale Development

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	360	5	0	400	390	10	5	10	188	0	90
Future Volume (vph)	70	360	5	0	400	390	10	5	10	188	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5		4.5		4.5		4.5
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.91		0.96		1.00		0.91
Flpb, ped/bikes	0.97	1.00			1.00	1.00		0.97		1.00		1.00
Frt	1.00	1.00			1.00	0.85		0.94		1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95		1.00
Satd. Flow (prot)	1731	1878			1883	1460		1634		1789		1460
Flt Permitted	0.39	1.00			1.00	1.00		0.98		0.95		1.00
Satd. Flow (perm)	707	1878			1883	1460		1634		1789		1460
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	391	5	0	435	424	11	5	11	204	0	98
RTOR Reduction (vph)	0	1	0	0	0	250	0	6	0	0	0	58
Lane Group Flow (vph)	76	395	0	0	435	174	0	21	0	204	0	40
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot		Perm
Protected Phases		4			8			2!		6!		
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	20.5	20.5			20.5	20.5		20.5		20.5		20.5
Effective Green, g (s)	20.5	20.5			20.5	20.5		20.5		20.5		20.5
Actuated g/C Ratio	0.41	0.41			0.41	0.41		0.41		0.41		0.41
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5		4.5		4.5
Lane Grp Cap (vph)	289	769			772	598		669		733		598
v/s Ratio Prot		0.21			c0.23					c0.11		
v/s Ratio Perm	0.11					0.12		0.01				0.03
v/c Ratio	0.26	0.51			0.56	0.29		0.03		0.28		0.07
Uniform Delay, d1	9.8	11.0			11.3	9.9		8.8		9.8		8.9
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00		1.00
Incremental Delay, d2	2.2	2.4			3.0	1.2		0.1		0.9		0.2
Delay (s)	12.0	13.5			14.3	11.1		8.9		10.8		9.2
Level of Service	B	B			B	B		A		B		A
Approach Delay (s)		13.2			12.7			8.9			10.2	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			62.3%				ICU Level of Service			B		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

16: Windmill & Elmwood
Rosedale Development

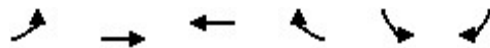
Existing Conditions
PM Peak Hour







Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	365	370	20	30	30
Future Volume (Veh/h)	20	365	370	20	30	30
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	397	402	22	33	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	424				854	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424				854	413
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	95
cM capacity (veh/h)	1135				323	639
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	419	424	66			
Volume Left	22	0	33			
Volume Right	0	22	33			
cSH	1135	1700	429			
Volume to Capacity	0.02	0.25	0.15			
Queue Length 95th (m)	0.5	0.0	4.1			
Control Delay (s)	0.6	0.0	14.9			
Lane LOS	A		B			
Approach Delay (s)	0.6	0.0	14.9			
Approach LOS			B			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization		45.7%		ICU Level of Service		A
Analysis Period (min)		15				

19: Windmill & Jamison
Rosedale Development

Existing Conditions
PM Peak Hour





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	350	350	30	35	40
Future Volume (Veh/h)	45	350	350	30	35	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	380	380	33	38	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	413				874	396
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	413				874	396
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				88	93
cM capacity (veh/h)	1146				306	653
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	49	380	413	81		
Volume Left	49	0	0	38		
Volume Right	0	0	33	43		
cSH	1146	1700	1700	427		
Volume to Capacity	0.04	0.22	0.24	0.19		
Queue Length 95th (m)	1.0	0.0	0.0	5.3		
Control Delay (s)	8.3	0.0	0.0	15.4		
Lane LOS	A			C		
Approach Delay (s)	0.9		0.0	15.4		
Approach LOS				C		
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			38.0%	ICU Level of Service		A
Analysis Period (min)			15			

2: Elmwood & Wyse
Rosedale Development

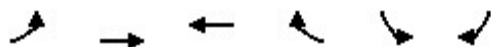
Future Development Conditions






PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	441	43	25	550	30	28	12	20	20	14	20
Future Volume (Veh/h)	10	441	43	25	550	30	28	12	20	20	14	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	503	49	29	628	34	32	14	23	23	16	23
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	662			552			1266	1270	528	1258	1277	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			552			1266	1270	528	1258	1277	645
tC, single (s)	4.1			4.1			7.1	*5.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			74	94	96	82	90	95
cM capacity (veh/h)	927			1018			124	231	551	131	160	472
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	11	552	29	662	69	62						
Volume Left	11	0	29	0	32	23						
Volume Right	0	49	0	34	23	23						
cSH	927	1700	1018	1700	192	191						
Volume to Capacity	0.01	0.32	0.03	0.39	0.36	0.32						
Queue Length 95th (m)	0.3	0.0	0.7	0.0	11.7	10.1						
Control Delay (s)	8.9	0.0	8.6	0.0	34.0	32.6						
Lane LOS	A		A		D	D						
Approach Delay (s)	0.2		0.4		34.0	32.6						
Approach LOS					D	D						
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			44.1%	ICU Level of Service				A				
Analysis Period (min)			15									
* User Entered Value												

3: Wyse & Sobeys Rosedale Development

Future Development Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	350	481	30	90	125
Future Volume (Veh/h)	130	350	481	30	90	125
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)	148	399	549	34	103	143
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			229			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	549				1261	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362				1214	383
tC, single (s)	4.1				*5.0	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	85				55	74
cM capacity (veh/h)	1000				231	556
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	148	399	583	103	143	
Volume Left	148	0	0	103	0	
Volume Right	0	0	34	0	143	
cSH	1000	1700	1700	231	556	
Volume to Capacity	0.15	0.23	0.34	0.45	0.26	
Queue Length 95th (m)	3.9	0.0	0.0	16.2	7.7	
Control Delay (s)	9.2	0.0	0.0	32.7	13.7	
Lane LOS	A			D	B	
Approach Delay (s)	2.5		0.0	21.6		
Approach LOS				C		
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			51.3%	ICU Level of Service		A
Analysis Period (min)			15			

* User Entered Value





















5: Jamison & Wyse
Rosedale Development

Future Development Conditions
PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	400	41	56	470	41	50
Future Volume (Veh/h)	400	41	56	470	41	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)	457	47	64	536	47	57
Pedestrians				19	19	
Lane Width (m)				3.7	3.7	
Walking Speed (m/s)				1.1	1.1	
Percent Blockage				2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				137		
pX, platoon unblocked					0.79	
vC, conflicting volume			523		1164	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			523		1072	518
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		73	89
cM capacity (veh/h)			1025		177	538
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	504	600	104			
Volume Left	0	64	47			
Volume Right	47	0	57			
cSH	1700	1025	280			
Volume to Capacity	0.30	0.06	0.37			
Queue Length 95th (m)	0.0	1.5	12.6			
Control Delay (s)	0.0	1.6	25.3			
Lane LOS		A	D			
Approach Delay (s)	0.0	1.6	25.3			
Approach LOS			D			
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization			73.9%	ICU Level of Service		D
Analysis Period (min)			15			

8: Wyse & Boland
Rosedale Development

Future Development Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	372	5	0	421	390	10	5	10	188	0	95
Future Volume (vph)	73	372	5	0	421	390	10	5	10	188	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5		4.5		4.5		4.5
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.91		0.97		1.00		0.91
Flpb, ped/bikes	0.97	1.00			1.00	1.00		0.97		1.00		1.00
Frt	1.00	1.00			1.00	0.85		0.95		1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95		1.00
Satd. Flow (prot)	1737	1877			1883	1460		1643		1789		1460
Flt Permitted	0.34	1.00			1.00	1.00		0.98		0.95		1.00
Satd. Flow (perm)	622	1877			1883	1460		1643		1789		1460
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
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	83	425	6	0	480	445	11	6	11	215	0	108
RTOR Reduction (vph)	0	1	0	0	0	263	0	6	0	0	0	64
Lane Group Flow (vph)	83	430	0	0	480	182	0	22	0	215	0	44
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot		Perm
Protected Phases		4			8			2!		6!		
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)	20.5	20.5			20.5	20.5		20.5		20.5		20.5
Effective Green, g (s)	20.5	20.5			20.5	20.5		20.5		20.5		20.5
Actuated g/C Ratio	0.41	0.41			0.41	0.41		0.41		0.41		0.41
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5		4.5		4.5
Lane Grp Cap (vph)	255	769			772	598		673		733		598
v/s Ratio Prot		0.23			c0.25					c0.12		
v/s Ratio Perm	0.13					0.12		0.01				0.03
v/c Ratio	0.33	0.56			0.62	0.31		0.03		0.29		0.07
Uniform Delay, d1	10.0	11.3			11.7	9.9		8.8		9.9		9.0
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00		1.00
Incremental Delay, d2	3.4	2.9			3.8	1.3		0.1		1.0		0.2
Delay (s)	13.4	14.2			15.4	11.3		8.9		10.9		9.2
Level of Service	B	B			B	B		A		B		A
Approach Delay (s)		14.1			13.4			8.9			10.3	
Approach LOS		B			B			A			B	

Intersection Summary

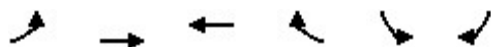
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

16: Windmill & Elmwood
Rosedale Development











Future Development Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	369	373	20	30	39
Future Volume (Veh/h)	38	369	373	20	30	39
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	421	426	23	34	45
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	449				944	438
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	449				944	438
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				88	93
cM capacity (veh/h)	1111				280	619
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	464	449	79			
Volume Left	43	0	34			
Volume Right	0	23	45			
cSH	1111	1700	407			
Volume to Capacity	0.04	0.26	0.19			
Queue Length 95th (m)	0.9	0.0	5.4			
Control Delay (s)	1.2	0.0	16.0			
Lane LOS	A		C			
Approach Delay (s)	1.2	0.0	16.0			
Approach LOS			C			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		58.7%		ICU Level of Service		B
Analysis Period (min)		15				

19: Windmill & Jamison
Rosedale Development

Future Development Conditions
PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	352	353	45	43	40
Future Volume (Veh/h)	45	352	353	45	43	40
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)	51	402	403	51	49	46
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	454				932	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454				932	428
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				83	93
cM capacity (veh/h)	1107				282	626
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	51	402	454	95		
Volume Left	51	0	0	49		
Volume Right	0	0	51	46		
cSH	1107	1700	1700	384		
Volume to Capacity	0.05	0.24	0.27	0.25		
Queue Length 95th (m)	1.1	0.0	0.0	7.3		
Control Delay (s)	8.4	0.0	0.0	17.4		
Lane LOS	A			C		
Approach Delay (s)	0.9		0.0	17.4		
Approach LOS				C		
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			40.8%	ICU Level of Service		A
Analysis Period (min)			15			

