

# 400 Sackville Drive

Sackville, Nova Scotia

Transportation Impact Study

May 2023

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# 01 Introduction and Existing Conditions

# 1.1 Context and Study Area

This study was prepared to determine the impact of two new multi-unit residential developments located south of Sackville Drive between Pine Drive and Oakdale Drive, east of the Sackville River. These buildings will be constructed on a site that is currently zoned for residential use. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant.

Building 1 is located east of the site (bottom building in the image below) and is expected to contain about 110 units with a 11-storey structure. Building 2 is located west of the site (top building in the image below) and is expected to contain about 90 units with a 11-storey structure. The development is expected to include two levels of underground parking with a total of about 260 parking spaces. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant.

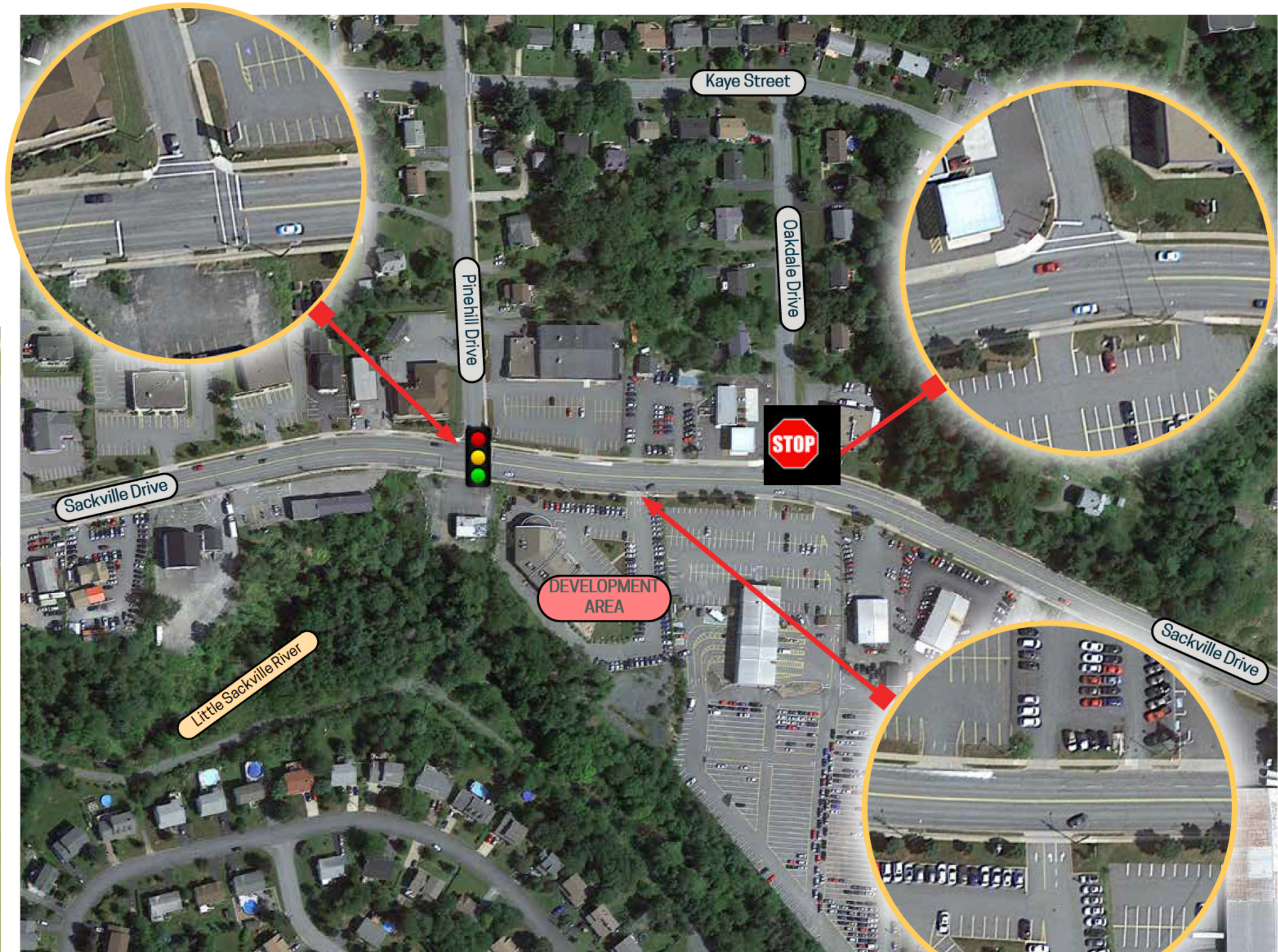
Development access is provided by a single access point located east of the site. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant.

# 1.2 Roadways and Intersections

Sackville Drive is a two-way road with a posted speed limit of 50 km/h. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant.

The development is located about 90 metres east of the intersection of Sackville Drive and Pine Drive. The site is bounded to the west by Sackville Drive and to the east by Pine Drive. The site is approximately 150 metres long and 100 metres wide. The site is currently zoned for residential use and is currently vacant.





Kaye Street

Oakdale Drive

Pinehill Drive

Sackville Drive

Little Sackville River

DEVELOPMENT AREA



Sackville Drive



# 1.4 Existing and Historical Traffic Volumes

Recent data on traffic counts were obtained from HRMA and supplemented by a 2022 traffic count at the intersection of Sackville Drive and Pine Road. Traffic counts were performed using the Mavis auto-attended traffic counter. The counter is a dual-lane counter of ground-level vehicle cycles and pedestrian crossings. Reevaluated traffic count data is included in Appendix A of this report.

## Background Traffic Growth

When calculating the expected traffic growth on our road networks, it is evident that we see reduced traffic activity on our roads at the moment. As a result of the COVID-19 pandemic, the current traffic patterns on the roads of Nova Scotia are significantly lower than they were before the pandemic. It is expected that traffic activity will increase as the economy recovers and more people begin to travel.

In order to be a conservative estimate, the study assumes a 2% annual growth rate for the period of 20 years. This is based on the historical average annual growth rate of 2%.

## Peak Hours

Sackville Drive has a volume of traffic during weekdays and weekends. The peak volume of traffic is during the weekday AM and PM peak hours. The study assumes that the peak volume of traffic is during the weekday AM and PM peak hours.

## Time Horizons

The study is based on the development of the 5-year period of the forecast. The study is based on the development of the 5-year period of the forecast. The study is based on the development of the 5-year period of the forecast.

1. 2023 base conditions (existing conditions)
2. 2033 conditions with background traffic growth on the network
3. 2033 conditions with background traffic growth and development traffic added to the network



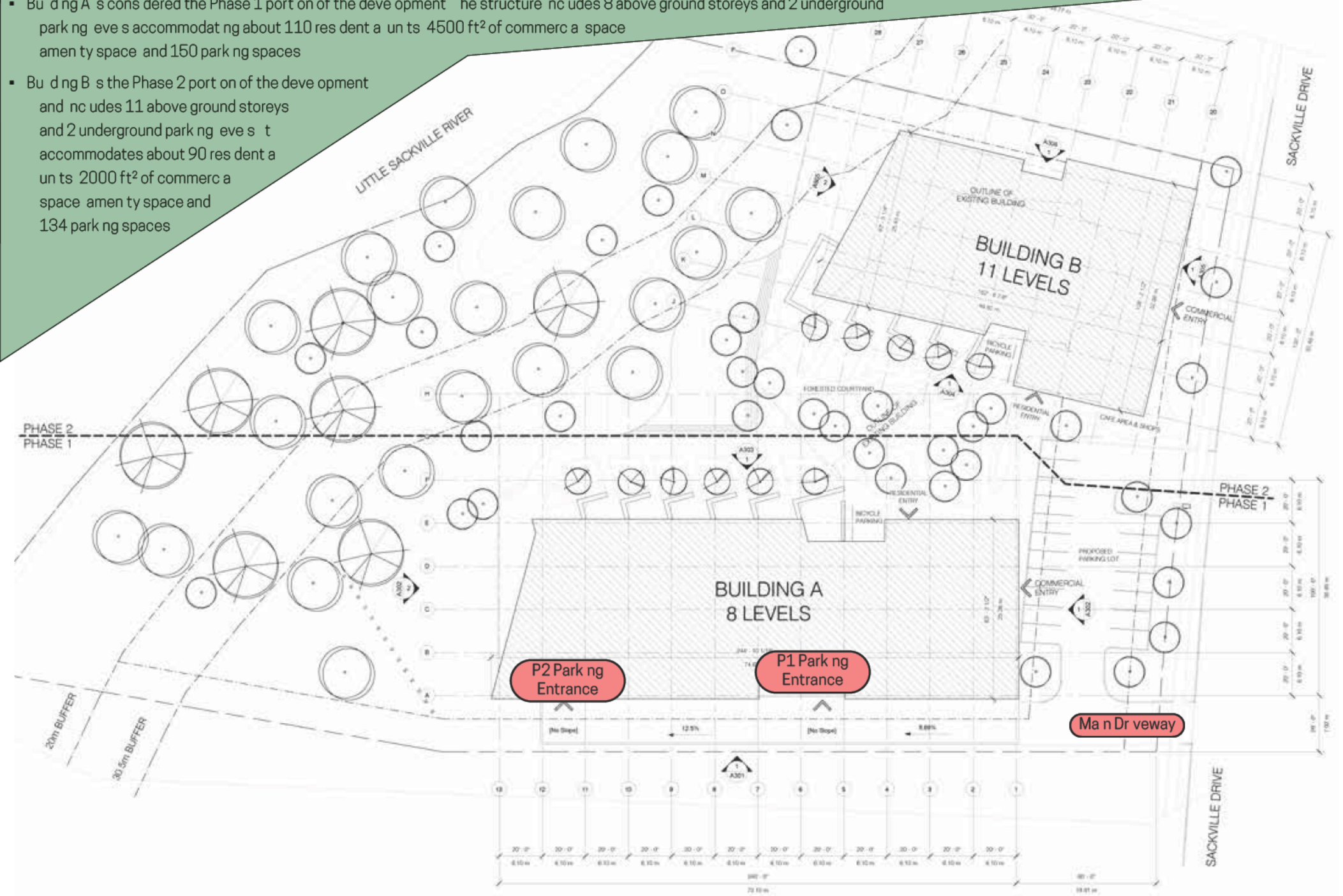
# 02 Proposed Development



# 400 SACKVILLE DRIVE DEVELOPMENT

The overall development includes two buildings over top of two levels of connected underground parking. Both levels of the underground parking are accessed from the driveway along the east (bottom) side of the site with the level 1 entrance located about halfway along the east side of the building and the level 2 access located near the rear south end of the building.

- Building A is considered the Phase 1 portion of the development. The structure includes 8 above ground storeys and 2 underground parking levels accommodating about 110 residential units, 4500 ft<sup>2</sup> of commercial space, amenity space and 150 parking spaces.
- Building B is the Phase 2 portion of the development and includes 11 above ground storeys and 2 underground parking levels that accommodates about 90 residential units, 2000 ft<sup>2</sup> of commercial space, amenity space and 134 parking spaces.



## 2.1 Trip Generation, Distribution and Assignment

### Trips Generated by the Development

The trip generation rates by the development were based on guidance provided for the Institute of Transportation Engineers (ITE) Trip Generation Guide (10th Edition). The table below shows the estimated trip generation rates by the development based on a total of 200 residential units.

The table below also includes the trip generation rates for the existing commercial development at the site. The results show that the total average two-way traffic is about 13 vehicles per day during the AM peak and 9 vehicles per day during the PM peak. The results also suggest that the existing commercial development is located between the residential development and the existing commercial development. The proposed development is located east of the existing commercial development. The proposed development is located east of the existing commercial development. The proposed development is located east of the existing commercial development.

Land Use	Trip Code	# Units	Variable	AM Peak			PM Peak		
				Enter	Exit	TOTAL	Enter	Exit	TOTAL
<b>NEW RESIDENTIAL DEVELOPMENT</b>									
Middle Residential Building (Residential with Ground Floor Commercial)	231	110	ns	9	24	33	28	12	40
Middle Residential Building (Residential with Ground Floor Commercial)	231	90	ns	8	19	27	22	10	32
<b>NEW DEVELOPMENT TRIPS</b>				<b>17</b>	<b>43</b>	<b>60</b>	<b>50</b>	<b>22</b>	<b>72</b>
<b>EXISTING COMMERCIAL DEVELOPMENT</b>									
Mixed Commercial Plaza	Various	11	1000 <sup>2</sup>	27	20	47	30	33	59
<b>EXISTING TRIPS</b>				<b>27</b>	<b>20</b>	<b>47</b>	<b>30</b>	<b>33</b>	<b>63</b>
<b>NET DIFFERENCE IN TRIPS TO SITE</b>				<b>-10</b>	<b>+23</b>	<b>+13</b>	<b>+20</b>	<b>-11</b>	<b>+9</b>

### Transit and Active Transportation Impacts

Active transportation and transit considerations should be addressed before the development is given the go-ahead. Sackville Drive is expected to also be used as a key route for active transportation and transit. The proposed development is located east of the existing commercial development. The proposed development is located east of the existing commercial development. The proposed development is located east of the existing commercial development.

### Trip Distribution and Assignment

The assigned traffic distribution to Sackville Drive is based on the existing traffic patterns. The study area is located east of the existing commercial development. The proposed development is located east of the existing commercial development. The proposed development is located east of the existing commercial development.



# 03 Transportation Analysis

### 3.1 Transportation Modeling

A detailed traffic model was prepared using the Synchro/S Traffic (v10) platform for the weekday AM and PM peak hours of a typical weekday. The model was used to generate traffic flow data and capacity utilization for the study area. The model was used to generate traffic flow data and capacity utilization for the study area. The model was used to generate traffic flow data and capacity utilization for the study area.

- Sackville Drive at Develon Drive
- Sackville Drive at Pinehill Drive
- Sackville Drive at Oakdale Drive

As the model was run, the following data was generated for the study area. The data was used to generate traffic flow data and capacity utilization for the study area. The data was used to generate traffic flow data and capacity utilization for the study area.

The following table provides a summary of the key performance indicators (KPIs) for the study area. The KPIs are presented in the following table.

- Volume (peak vehicle per hour)
- Vehicle Delay (average seconds per vehicle)
- Volume to Capacity (V/C) Ratio (V/C < 1.0 = 100% capacity utilization)
- Level of Service (LOS) (A to F)
- Queueing (95% queue length in feet)

A volume of peak traffic flow was calculated for each of the study area. The data was used to generate traffic flow data and capacity utilization for the study area. The data was used to generate traffic flow data and capacity utilization for the study area.



### 3.2 Sackville Drive / Development Access



Results show for the 2023 Base case a 0 (g g ted ye ow) ep ese tco d to swt te exst gd veway p ese t T etab es be ow do ot cude exst gtu ove e ts tot ed veway fo t epu poses of co pa g co d to sbefo ea daft e ew deveop e t sco stucted T e 2033 esutswt t ee t e deveop e t pace (g g ted gee) cude te secto ove e ts to a dfo t e ew deveop e t d veway puste add to of back ou dt affic g ow t o Sackv e D ve

#### AM Peak Hour

Results show the g est vou est oug t e te secto a e t e f e e flow gt oug ove e ts t e eastbou dd ecto towa ds Ha fax wt sg ty owe vou es t ewestbou dd ecto Duetot e 4- a e coss secto t atpovdes fo two fu a es of t ave eac d ecto capacity ut zato bot d ecto s sve y ow wt t e vou eto capacity (V/C) ato e a gu de 0.30 (30% of t eo et ca capacity) fo a ove e ts

Future for the 2023 base etot e 2033 fu bu d-out sce a ot e ut zato cease s a at about 5%. T s ted use of capacity a ows fo ove e ts to a dfo t e deveop e t to occu wt a deaya d v tua y o queu go t ed veway ext o o Sackv e D ve tse f esut g fo ve cestu g efto g t to t e deveop e t

#### PM Peak Hour

Over a vou esae ge du gt e PM peak a dt e pedo a tvou eso Sackv e D ve a e t ewestbou d (outbou d) d ecto Ove a esutsaes a tot e AM peak wt capacity ut zato peak gat about 42% fo t ewestbou d ove e t w ed veway ove e ts a e ss t a t e AM peak as oeve cesae e te g t e deveop e t t a eav g du gt e PM peak A 95% queue e gt saewe esst a o eve ceo ave age t oug outt e peak pe od

AM PEAK		Sackville EB		Sackville WB		Driveway NB	
		Thru	Right	Left	Thru	Left	Right
2023 Base ne	Vo veh/hr	545	0	0	400	0	0
	V/C Ratio	0.23	0.12	0.00	0.17	0.00	
	Delay sec/veh	0.0	0.0	0.0	0.0	0.0	
	LOS	A	A	A	A	A	
	95% Q m	0.0	0.0	0.0	0.0	0.0	
2033 Fu Deveopment	Vo veh/hr	664	10	12	488	23	29
	V/C Ratio	0.28	0.15	0.01	0.21	0.11	
	Delay sec/veh	0.0	0.0	0.7	0.0	13.1	
	LOS	A	A	A	A	B	
	95% Q m	0.0	0.0	0.3	0.0	2.9	

PM PEAK		Sackville EB		Sackville WB		Driveway SB	
		Thru	Right	Left	Thru	Left	Right
2023 Base ne	Vo veh/hr	575	0	0	805	0	0
	V/C Ratio	0.25	0.12	0.00	0.34	0.00	
	Delay sec/veh	0.0	0.0	0.0	0.0	0.0	
	LOS	A	A	A	A	A	
	95% Q m	0.0	0.0	0.0	0.0	0.0	
2033 Fu Deveopment	Vo veh/hr	701	28	34	981	12	15
	V/C Ratio	0.30	0.17	0.04	0.42	0.10	
	Delay sec/veh	0.0	0.0	1.2	0.0	18.5	
	LOS	A	A	A	A	C	
	95% Q m	0.0	0.0	0.9	0.0	2.5	

### 3.3 Sackville Drive / Pinehill Drive

Sackville Drive is a two-lane road located about 900 metres west of the development site. The road is a two-lane road with a centre turn lane. The road is currently a two-lane road with a centre turn lane. The road is currently a two-lane road with a centre turn lane. The road is currently a two-lane road with a centre turn lane.



AM Peak Hour		Sackville - EB			Sackville - WB			Driveway - NB			Pinehill - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Base line	Vo veh/hr	55	480	10	5	360	35	5	5	5	60	5	85
	V/C Ratio	0.47			0.32			0.02			0.24		
	Delays/veh	11.5			9.5			7.2			5.6		
	LOS	B			A			A			A		
	95% Qm	27.3			18.4			2.8			11.5		
2033Fu Development	Vo veh/hr	67	594	12	6	460	49	6	6	6	74	6	104
	V/C Ratio	0.60			0.41			0.03			0.29		
	Delays/veh	13.2			10.3			7.2			5.8		
	LOS	B			B			A			A		
	95% Qm	35.5			24.0			3.4			13.5		

AM Peak Hour		Sackville - EB			Sackville - WB			Driveway - NB			Pinehill - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Base line	Vo veh/hr	130	520	10	5	750	50	5	5	5	50	5	110
	V/C Ratio	0.57			0.69			0.03			0.32		
	Delays/veh	10.1			25.7			12.6			8.0		
	LOS	B			C			B			A		
	95% Qm	31.0			73.3			4.1			16.6		
2033Fu Development	Vo veh/hr	158	658	12	6	925	65	6	6	6	65	6	134
	V/C Ratio	0.77			0.85			0.04			0.39		
	Delays/veh	14.9			30.4			12.3			8.7		
	LOS	B			C			B			A		
	95% Qm	40.7			94.0			5.0			20.1		

#### AM Peak Hour

The results show capacity utilization of the 2033 critical Sackville over the site at 60% and 41% for eastbound and westbound over the site respectively. The over the site show total delays of under 15 seconds on average and 95% queue lengths of about 3-4 vehicles. A reassessment of performance is needed to be very good during both peak periods of traffic.

#### PM Peak Hour

A reassessment for the PM peak hour is a total of AM peak hour. The over the site capacity utilization of the site is a delay of 12 vehicles. Results are acceptable for the peak periods of operation. The impact of the development traffic is compensated for by the impact of background traffic.

### 3.4 Sackville Drive / Oakdale Drive



Oakdale Drive is located about 70 feet east of the development driveway. The east side of the intersection is a residential street with a speed limit of 30 mph. The west side of the intersection is a residential street with a speed limit of 30 mph. The intersection is a T-intersection with Sackville Drive on the east side and Oakdale Drive on the west side. The intersection is currently a stop sign at Sackville Drive.

The two driveway approaches to the intersection are on the east side of the intersection. The west side of the intersection is a residential street with a speed limit of 30 mph. The intersection is currently a stop sign at Sackville Drive. The intersection is currently a stop sign at Sackville Drive.

#### AM Peak Hour

The AM peak sees very low volume from the development driveway. The volume is very good for a residential street. The volume is very good for a residential street. The volume is very good for a residential street.

#### PM Peak Hour

The volume from the development driveway is very low. The volume is very low. The volume is very low. The volume is very low. The volume is very low.

AM PEAK		Sackville EB		Sackville WB		Oakdale SB	
		Left	Thru	Thru	Right	Left	Right
2023 Base line	Vo veh/hr	5	540	390	5	20	10
	V/C Ratio	0.00	0.23	0.17	0.09	0.07	
	Delay sec/veh	0.2	0.0	0.0	0.0	1.29	
	LOS	A	A	A	A	B	
	95% Qm	0.1	0.0	0.0	0.0	1.6	
2033 Fu Development	Vo veh/hr	6	688	488	6	24	12
	V/C Ratio	0.01	0.29	0.21	0.11	0.09	
	Delay sec/veh	0.3	0.0	0.0	0.0	1.46	
	LOS	A	A	A	A	B	
	95% Qm	0.2	0.0	0.0	0.0	2.3	

PM PEAK		Sackville EB		Sackville WB		Oakdale SB	
		Left	Thru	Thru	Right	Left	Right
2023 Base line	Vo veh/hr	5	570	795	5	20	10
	V/C Ratio	0.01	0.24	0.34	0.17	0.10	
	Delay sec/veh	0.3	0.0	0.0	0.0	1.72	
	LOS	A	A	A	A	C	
	95% Qm	0.1	0.0	0.0	0.0	2.5	
2033 Fu Development	Vo veh/hr	6	709	1003	6	24	12
	V/C Ratio	0.01	0.30	0.43	0.22	0.12	
	Delay sec/veh	0.4	0.0	0.0	0.0	1.71	
	LOS	A	A	A	A	C	
	95% Qm	0.2	0.0	0.0	0.0	3.0	

# 04 Conclusions and Recommendations







# APPENDIX A

## Appendix A: TRAFFIC COUNTS

Sackville and Pinehill - TMC

Thu Aug 11, 2022

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 984340, Location: 44.764367, -63.676849

Provided by: Trans4m Development Group

59 Craighburn Drive,

Dartmouth, NS, B2X 3E6, CA

Leg Direction	Sackville EB Eastbound						Sackville WB Westbound						Driveway NB Northbound						Pinehill SB Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022 08 11 7 00AM	5	96	0	0	101	0	0	34	1	0	35	0	0	0	0	0	0	0	10	0	11	0	21	1	157
7 15AM	9	90	0	0	99	0	1	55	2	0	58	3	0	0	0	0	0	3	12	0	16	0	28	1	185
7 30AM	8	105	0	0	113	0	1	77	3	0	81	1	0	0	1	0	1	1	15	0	21	0	36	1	231
7 45AM	5	84	0	0	89	1	1	68	2	0	71	3	0	0	1	0	1	2	13	0	14	0	27	1	188
Hourly Total	27	375	0	0	402	1	3	234	8	0	245	7	0	0	2	0	2	6	50	0	62	0	112	4	761
8 00AM	7	96	2	0	105	0	1	72	6	0	79	1	1	0	0	0	1	0	13	0	19	0	32	1	217
8 15AM	10	112	1	0	123	0	0	102	6	0	108	0	0	0	1	0	1	0	17	0	15	0	32	3	264
8 30AM	20	98	0	0	118	0	1	75	11	0	87	2	0	0	0	0	0	2	9	2	20	0	31	2	236
8 45AM	17	90	3	0	110	0	2	103	9	0	114	0	2	0	2	0	4	0	5	1	28	1	35	0	263
Hourly Total	54	396	6	0	456	0	4	352	32	0	388	3	3	0	3	0	6	2	44	3	82	1	130	6	980
Tota	81	771	6	0	858	1	7	586	40	0	633	10	3	0	5	0	8	8	94	3	144	1	242	10	1741
% Approach	9.4%	89.9%	0.7%	0%			1.1%	92.6%	6.3%	0%			37.5%	0%	62.5%	0%			38.8%	1.2%	59.5%	0.4%			
% Total	4.7%	44.3%	0.3%	0%	49.3%		0.4%	33.7%	2.3%	0%	36.4%		0.2%	0%	0.3%	0%	0.5%		5.4%	0.2%	8.3%	0.1%	13.9%		
Lights	80	743	5	0	828		7	561	38	0	606		3	0	4	0	7		92	3	143	1	239		1680
% Lights	98.8%	96.4%	83.3%	0%	96.5%		100%	95.7%	95.0%	0%	95.7%		100%	0%	80.0%	0%	87.5%		97.9%	100%	99.3%	100%	98.8%		96.5%
Articulated Trucks	0	2	0	0	2		0	2	0	0	2		0	0	0	0	0		0	0	0	0	0		4
% Articulated Trucks	0%	0.3%	0%	0%	0.2%		0%	0.3%	0%	0%	0.3%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0.2%
Buses and Single Unit Trucks	1	26	1	0	28		0	23	2	0	25		0	0	1	0	1		2	0	1	0	3		57
% Buses and Single Unit Trucks	1.2%	3.4%	16.7%	0%	3.3%		0%	3.9%	5.0%	0%	3.9%		0%	0%	20.0%	0%	12.5%		2.1%	0%	0.7%	0%	1.2%		3.3%
Bicycles on Road	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
% Bicycles on Road	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%
Pedestrians					1						10						8						10		
% Pedestrians					100%						100%						100%						100%		

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Sackville and Pinehill - TMC

Provided by: Trans4m Development Group

Thu Aug 11, 2022

59 Craighburn Drive,

AM Peak (8 AM - 9 AM) - Overall Peak Hour

Dartmouth, NS, B2X 3E6, CA

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 984340, Location: 44.764367, -63.676849

Leg Direction	Sackville EB Eastbound						Sackville WB Westbound						Driveway NB Northbound						Pinehill SB Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022 08 11																									
8 00AM	7	96	2	0	105	0	1	72	6	0	79	1	1	0	0	0	1	0	13	0	19	0	32	1	217
8 15AM	10	112	1	0	123	0	0	102	6	0	108	0	0	0	1	0	1	0	17	0	15	0	32	3	264
8 30AM	20	98	0	0	118	0	1	75	11	0	87	2	0	0	0	0	0	2	9	2	20	0	31	2	236
8 45AM	17	90	3	0	110	0	2	103	9	0	114	0	2	0	2	0	4	0	5	1	28	1	35	0	263
<b>Tota</b>	<b>54</b>	<b>396</b>	<b>6</b>	<b>0</b>	<b>456</b>	<b>0</b>	<b>4</b>	<b>352</b>	<b>32</b>	<b>0</b>	<b>388</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>44</b>	<b>3</b>	<b>82</b>	<b>1</b>	<b>130</b>	<b>6</b>	<b>980</b>
<b>% Approach</b>	11 8%	86 8%	1 3%	0%			1 0%	90 7%	8 2%	0%			50 0%	0%	50 0%	0%			33 8%	2 3%	63 1%	0 8%			
<b>% Tota</b>	5 5%	40 4%	0 6%	0%	46 5%		0 4%	35 9%	3 3%	0%	39 6%		0 3%	0%	0 3%	0%	0 6%		4 5%	0 3%	8 4%	0 1%	13 3%		
<b>PHF</b>	0 675	0 884	0 500		0 927		0 500	0 854	0 727		0 851		0 375	0 375	0 375		0 375		0 647	0 375	0 732	0 250	0 929		0 928
<b>Lights</b>	53	381	5	0	439		4	337	30	0	371		3	0	2	0	5		42	3	82	1	128		943
<b>% Lights</b>	98 1%	96 2%	83 3%	0%	96 3%		100%	95 7%	93 8%	0%	95 6%		100%	0%	66 7%	0%	83 3%		95 5%	100%	100%	100%	98 5%		96 2%
<b>Articu ated Trucks</b>	0	1	0	0	1		0	1	0	0	1		0	0	0	0	0		0	0	0	0	0		2
<b>% Articu ated Trucks</b>	0%	0 3%	0%	0%	0 2%		0%	0 3%	0%	0%	0 3%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0 2%
<b>Buses and Sing e Unit Trucks</b>	1	14	1	0	16		0	14	2	0	16		0	0	1	0	1		2	0	0	0	2		35
<b>% Buses and Sing e Unit Trucks</b>	1 9%	3 5%	16 7%	0%	3 5%		0%	4 0%	6 3%	0%	4 1%		0%	0%	33 3%	0%	16 7%		4 5%	0%	0%	0%	1 5%		3 6%
<b>Bicyc es on Road</b>	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
<b>% Bicyc es on Road</b>	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%
<b>Pedestrians</b>	0						3						2						6						
<b>% Pedestrians</b>							100%						100%						100%						

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Sackville and Pinehill - TMC**

Thu Aug 11, 2022

AM Peak (8 AM - 9 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

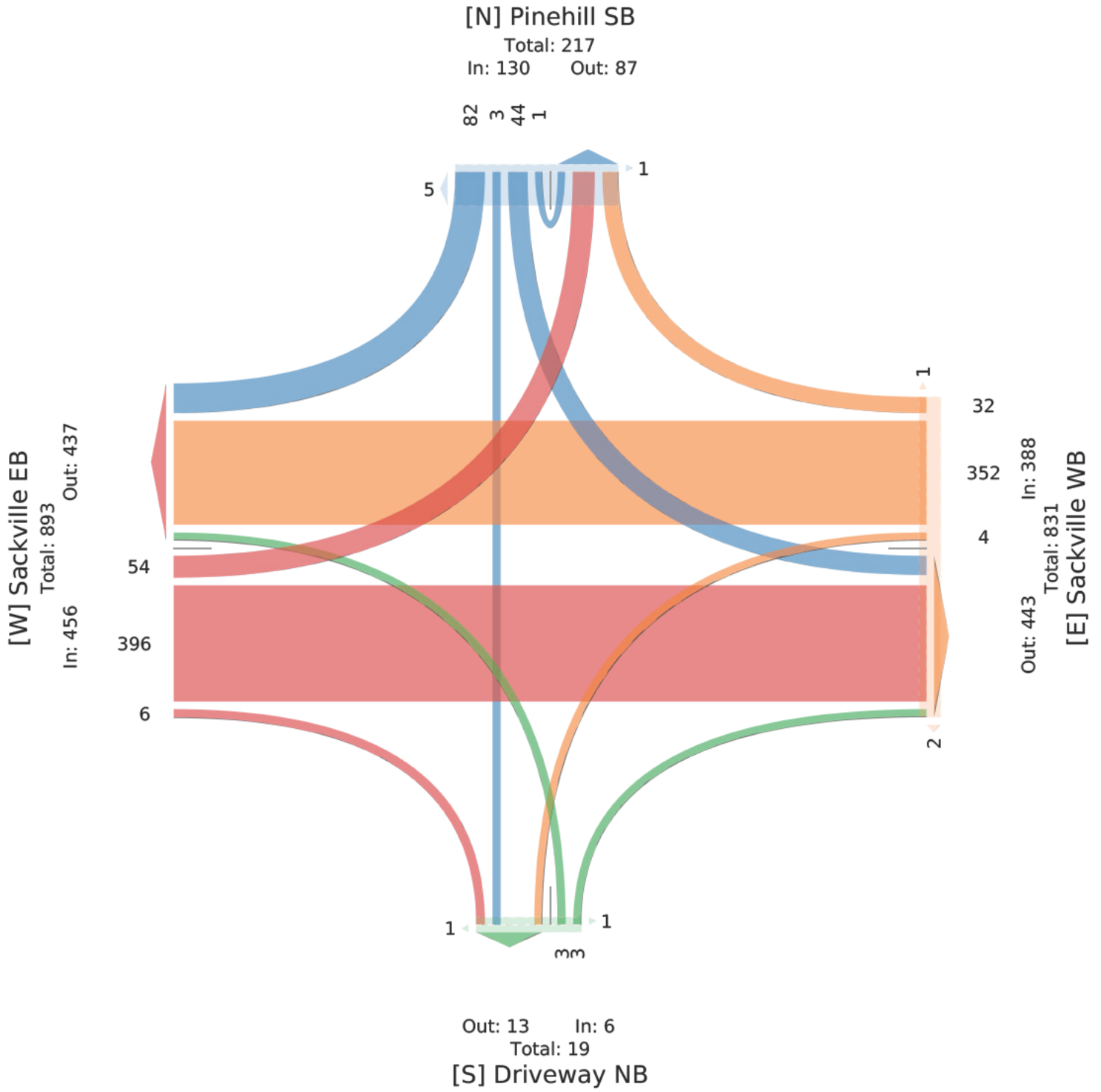
All Movements

ID: 984340, Location: 44.764367, -63.676849

Provided by: Trans4m Development Group

59 Craighburn Drive,

Dartmouth, NS, B2X 3E6, CA



Sackville and Pinehill PM - TMC

Wed Aug 10, 2022

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 984341, Location: 44.764367, -63.676849

Provided by: Trans4m Development Group

59 Craighburn Drive,

Dartmouth, NS, B2X 3E6, CA

Leg Direction	Sackville EB Eastbound						Sackville WB Westbound						Driveway NB Northbound						Pinehill SB Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022 08 10																									
4 00PM	34	135	0	0	169	0	1	164	20	0	185	1	0	0	1	0	1	0	13	0	31	0	44	1	399
4 15PM	27	110	0	0	137	0	0	174	7	0	181	3	0	1	0	0	1	2	14	0	32	0	46	1	365
4 30PM	28	118	1	0	147	0	3	173	13	0	189	1	3	0	2	0	5	1	5	0	21	0	26	0	367
4 45PM	33	116	3	0	152	0	2	196	5	0	203	0	1	2	1	0	4	2	7	2	28	0	37	2	396
Hourly Total	122	479	4	0	605	0	6	707	45	0	758	5	4	3	4	0	11	5	39	2	112	0	153	4	1527
5 00PM	34	156	1	0	191	1	0	207	15	0	222	2	0	0	2	0	2	2	11	0	25	0	36	3	451
5 15PM	35	127	3	0	165	0	0	171	13	0	184	0	0	0	2	0	2	1	21	1	31	0	53	0	404
5 30PM	28	131	0	0	159	0	0	148	11	0	159	1	0	0	1	0	1	3	10	0	33	0	43	3	362
5 45PM	20	130	0	0	150	0	0	118	10	0	128	0	0	1	1	0	2	0	11	0	30	0	41	0	321
Hourly Total	117	544	4	0	665	1	0	644	49	0	693	3	0	1	6	0	7	6	53	1	119	0	173	6	1538
Tota	239	1023	8	0	1270	1	6	1351	94	0	1451	8	4	4	10	0	18	11	92	3	231	0	326	10	3065
% Approach	18.8%	80.6%	0.6%	0%			0.4%	93.1%	6.5%	0%			22.2%	22.2%	55.6%	0%			28.2%	0.9%	70.9%	0%			
% Total	7.8%	33.4%	0.3%	0%	41.4%		0.2%	44.1%	3.1%	0%	47.3%		0.1%	0.1%	0.3%	0%	0.6%		3.0%	0.1%	7.5%	0%	10.6%		
Lights	237	1006	8	0	1251		6	1327	93	0	1426		4	4	10	0	18		91	3	231	0	325		3020
% Lights	99.2%	98.3%	100%	0%	98.5%		100%	98.2%	98.9%	0%	98.3%		100%	100%	100%	0%	100%		98.9%	100%	100%	0%	99.7%		98.5%
Articulated Trucks	0	0	0	0	0		0	1	0	0	1		0	0	0	0	0		0	0	0	0	0		1
% Articulated Trucks	0%	0%	0%	0%	0%		0%	0.1%	0%	0%	0.1%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%
Buses and Single Unit Trucks	2	14	0	0	16		0	22	1	0	23		0	0	0	0	0		1	0	0	0	1		40
% Buses and Single Unit Trucks	0.8%	1.4%	0%	0%	1.3%		0%	1.6%	1.1%	0%	1.6%		0%	0%	0%	0%	0%		1.1%	0%	0%	0%	0.3%		1.3%
Bicycles on Road	0	3	0	0	3		0	1	0	0	1		0	0	0	0	0		0	0	0	0	0		4
% Bicycles on Road	0%	0.3%	0%	0%	0.2%		0%	0.1%	0%	0%	0.1%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0.1%
Pedestrians	1						8						11						10						
% Pedestrians	100%						100%						100%						100%						

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Sackville and Pinehill PM - TMC

Provided by: Trans4m Development Group

Wed Aug 10, 2022

59 Craighburn Drive,

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

Dartmouth, NS, B2X 3E6, CA

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

All Movements

ID: 984341, Location: 44.764367, -63.676849

Leg Direction	Sackville EB Eastbound						Sackville WB Westbound						Driveway NB Northbound						Pinehill SB Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022 08 10 4 30PM	28	118	1	0	147	0	3	173	13	0	189	1	3	0	2	0	5	1	5	0	21	0	26	0	367
4 45PM	33	116	3	0	152	0	2	196	5	0	203	0	1	2	1	0	4	2	7	2	28	0	37	2	396
5 00PM	34	156	1	0	191	1	0	207	15	0	222	2	0	0	2	0	2	2	11	0	25	0	36	3	451
5 15PM	35	127	3	0	165	0	0	171	13	0	184	0	0	0	2	0	2	1	21	1	31	0	53	0	404
<b>Tota</b>	<b>130</b>	<b>517</b>	<b>8</b>	<b>0</b>	<b>655</b>	<b>1</b>	<b>5</b>	<b>747</b>	<b>46</b>	<b>0</b>	<b>798</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>0</b>	<b>13</b>	<b>6</b>	<b>44</b>	<b>3</b>	<b>105</b>	<b>0</b>	<b>152</b>	<b>5</b>	<b>1618</b>
% Approach	19 8%	78 9%	1 2%	0%			0 6%	93 6%	5 8%	0%			30 8%	15 4%	53 8%	0%			28 9%	2 0%	69 1%	0%			
% Tota	8 0%	32 0%	0 5%	0%	40 5%		0 3%	46 2%	2 8%	0%	49 3%		0 2%	0 1%	0 4%	0%	0 8%		2 7%	0 2%	6 5%	0%	9 4%		
PHF	0 929	0 827	0 667		0 856		0 417	0 902	0 767		0 899		0 333	0 250	0 875		0 650		0 524	0 375	0 847		0 717		0 896
Lights	129	509	8	0	646		5	732	45	0	782		4	2	7	0	13		44	3	105	0	152		1593
% Lights	99 2%	98 5%	100%	0%	98 6%		100%	98 0%	97 8%	0%	98 0%		100%	100%	100%	0%	100%		100%	100%	100%	0%	100%		98 5%
Articulated Trucks	0	0	0	0	0		0	1	0	0	1		0	0	0	0	0		0	0	0	0	0		1
% Articulated Trucks	0%	0%	0%	0%	0%		0%	0 1%	0%	0%	0 1%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0 1%
Buses and Single Unit Trucks	1	7	0	0	8		0	14	1	0	15		0	0	0	0	0		0	0	0	0	0		23
% Buses and Single Unit Trucks	0 8%	1 4%	0%	0%	1 2%		0%	1 9%	2 2%	0%	1 9%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		1 4%
Bicycles on Road	0	1	0	0	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		1
% Bicycles on Road	0%	0 2%	0%	0%	0 2%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0 1%
Pedestrians						1						3						6						5	
% Pedestrians						100%						100%						100%						100%	

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Sackville and Pinehill PM - TMC**

Wed Aug 10, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Road)

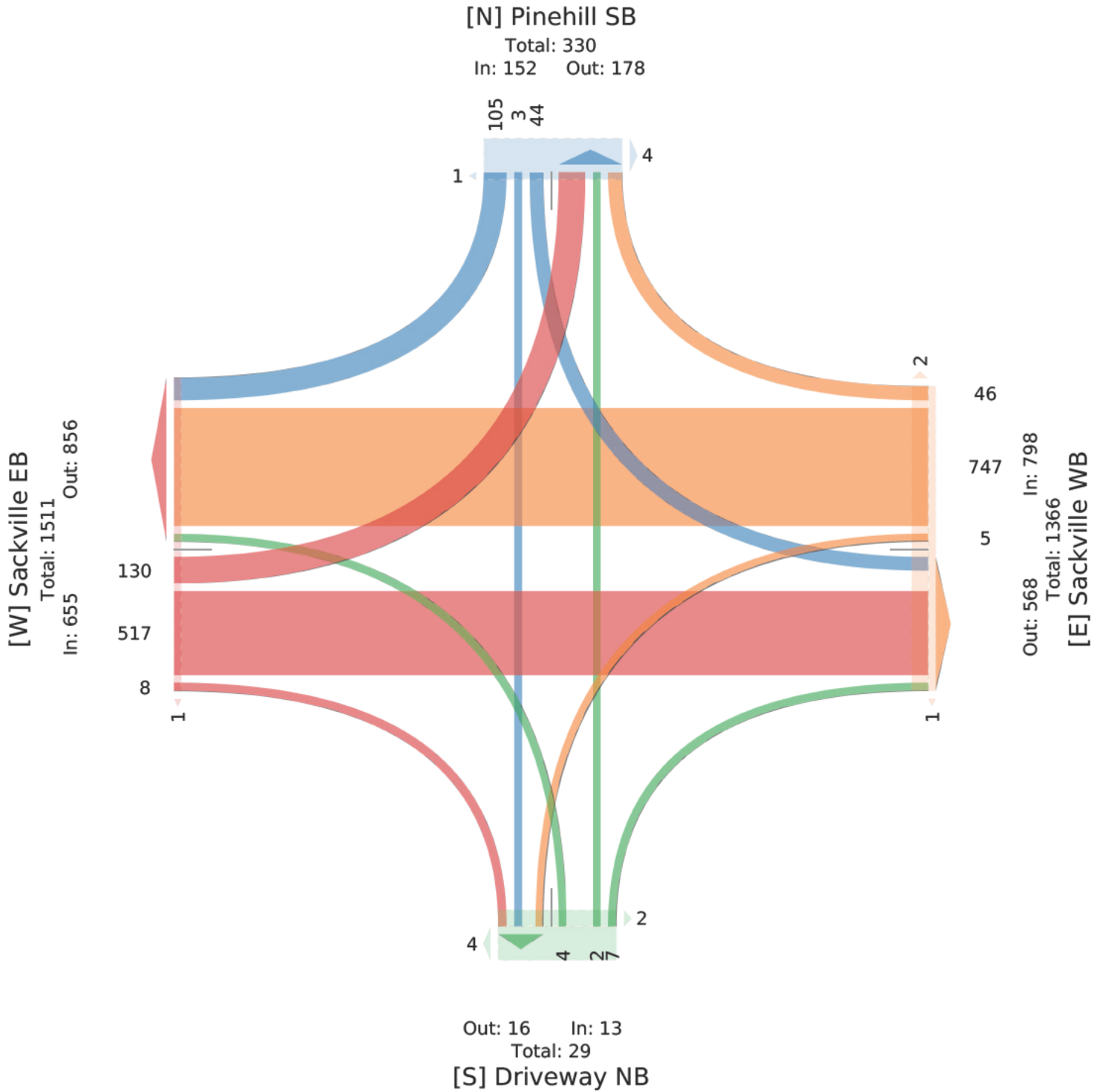
All Movements

ID: 984341, Location: 44.764367, -63.676849

Provided by: Trans4m Development Group

59 Craighburn Drive,

Dartmouth, NS, B2X 3E6, CA





# MANUAL TRAFFIC COUNTS

INTERSECTION: PINEHILL DRIVE AT SACKVILLE DRIVE

WEATHER: RAINY  
 RECORDER: AA

DAY: WEDNESDAY    DATE: 20    MONTH: SEPT    YEAR: 2017

TIME: 15 MIN INTERVALS		PINEHILL DRIVE			FACTORY 21 CAR REPAIR			SACKVILLE DRIVE			SACKVILLE DRIVE			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			
07:00:00 AM	07:15:00 AM	4	0	9	0	0	0	0	53	4	0	36	3	109
07:15:00 AM	07:30:00 AM	5	0	7	0	0	0	0	42	7	0	48	0	109
07:30:00 AM	07:45:00 AM	4	0	9	0	0	0	0	61	2	2	38	1	117
07:45:00 AM	08:00:00 AM	5	0	17	0	0	0	0	49	8	0	44	4	127

TOTAL	18	0	42	0	0	0	0	205	21	2	166	8	462
PEAK	60			0			226			176			
15 MIN PEAK	88			0			252			192			
PEAK HOUR FACTOR	0.68			0			0.9			0.92			
TWO WAY TOTALS	68			23			434			399			FACTOR
													1
													462

DAY: WEDNESDAY    DATE: 20    MONTH: SEPT    YEAR: 2017

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	
08:00:00 AM	08:15:00 AM	8	0	23	0	0	0	1	78	6	0	54	3	173
08:15:00 AM	08:30:00 AM	11	0	19	0	0	0	0	73	11	1	57	5	177
08:30:00 AM	08:45:00 AM	7	0	18	1	0	0	0	97	6	0	49	8	186
08:45:00 AM	09:00:00 AM	9	0	22	0	0	0	0	101	7	0	71	3	213

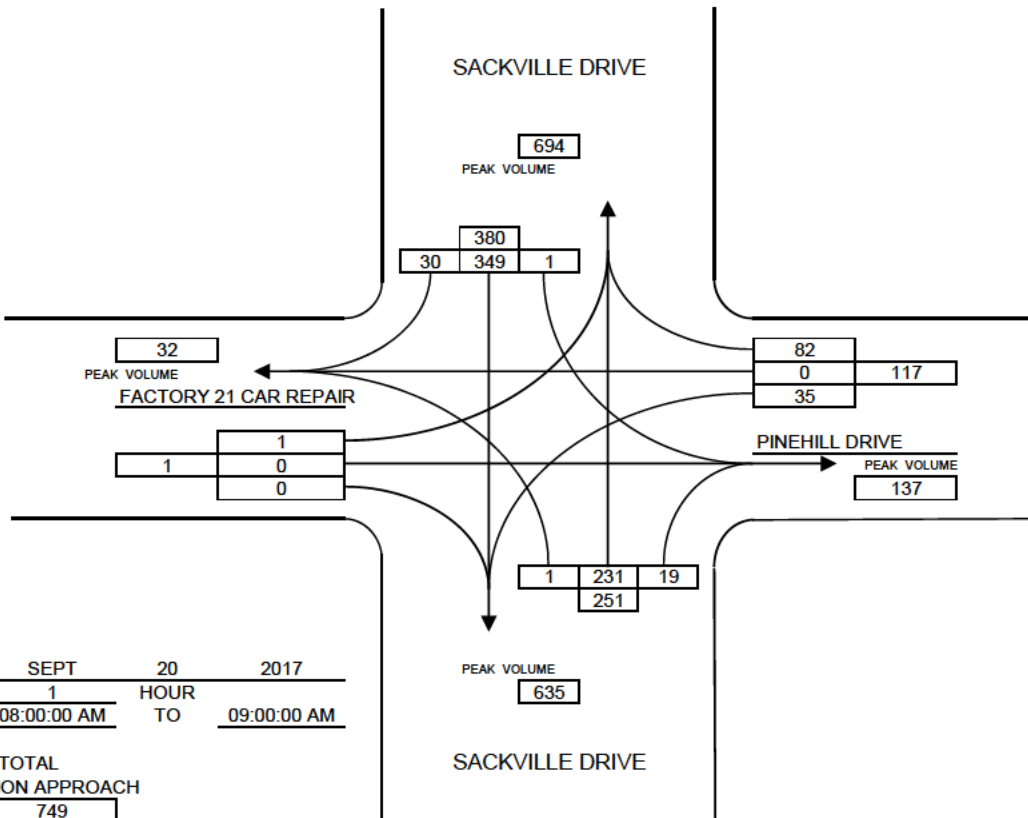
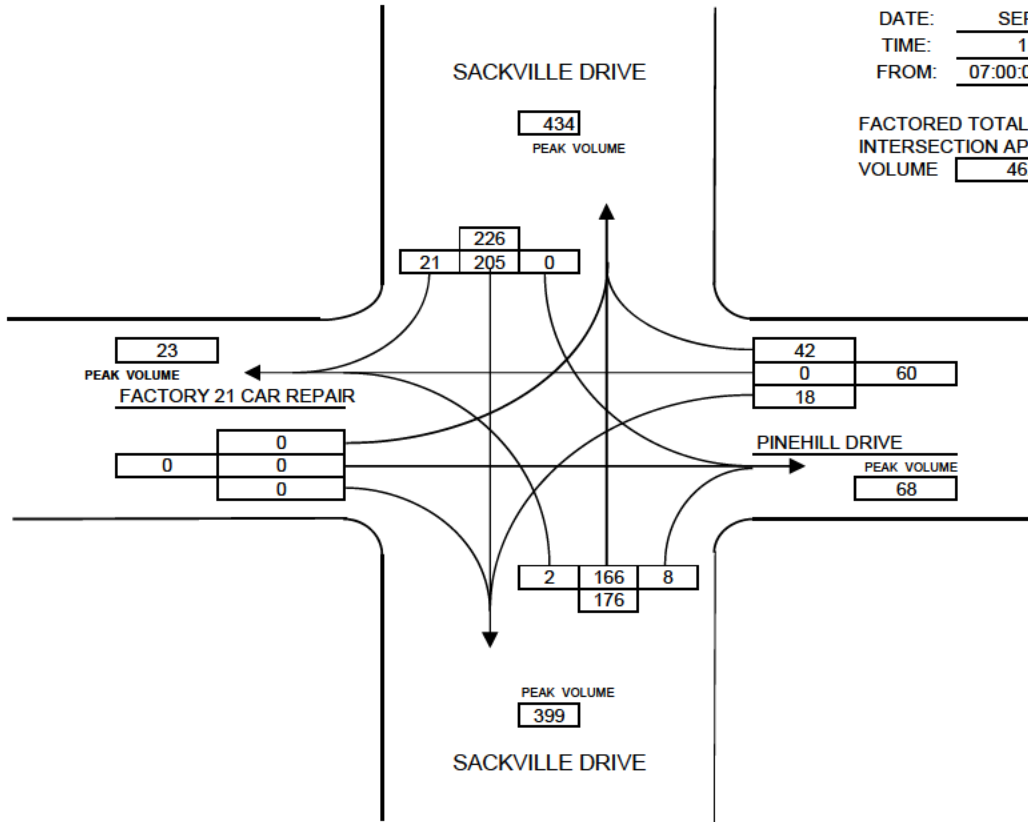
TOTAL	35	0	82	1	0	0	1	349	30	1	231	19	749
PEAK	117			1			380			251			
15 MIN PEAK	124			4			432			296			
PEAK HOUR FACTOR	0.94			0.25			0.88			0.85			
TWO WAY TOTALS	137			32			694			635			FACTOR
													1
													749

**VEHICULAR GRAPHIC SUMMARY SHEET**  
**PINEHILL DRIVE AT SACKVILLE DRIVE**

INTERSECTION :

DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 07:00:00 AM TO 08:00:00 AM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 462



DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 08:00:00 AM TO 09:00:00 AM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 749

## MANUAL TRAFFIC COUNTS

INTERSECTION: PINEHILL DRIVE AT SACKVILLE DRIVE

WEATHER RAINY  
 RECORDER AA

DAY DATE MONTH YEAR  
WEDNESDAY 20 SEPT 2017

TIME: 15 MIN INTERVALS		PINEHILL DRIVE			FACTORY 21 CAR REPAIR			SACKVILLE DRIVE			SACKVILLE DRIVE			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			
04:00:00 PM	04:15:00 PM	8	0	21	0	0	0	16	116	0	0	157	11	329
04:15:00 PM	04:30:00 PM	6	0	25	1	0	0	19	128	0	0	148	8	335
04:30:00 PM	04:45:00 PM	7	0	24	0	0	0	22	134	0	0	114	6	307
04:45:00 PM	05:00:00 PM	11	0	22	0	0	0	30	121	0	0	134	9	327

TOTAL	32	0	92	1	0	0	87	499	0	0	553	34	1298
PEAK	124			1			586			587			
15 MIN PEAK	132			4			624			672			
PEAK HOUR FACTOR	0.94			0.25			0.94			0.87			
TWO WAY TOTALS	245			1			1232			1118			FACTOR
													1
													1298

DAY DATE MONTH YEAR  
WEDNESDAY 20 SEPT 2017

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	
05:00:00 PM	05:15:00 PM	9	0	22	1	0	1	25	112	0	0	136	7	313
05:15:00 PM	05:30:00 PM	10	0	28	2	0	0	16	106	0	0	115	6	283
05:30:00 PM	05:45:00 PM	7	0	21	0	0	0	30	123	0	0	101	7	289
05:45:00 PM	06:00:00 PM	9	0	19	0	0	0	16	90	0	0	96	5	235

TOTAL	35	0	90	3	0	1	87	431	0	0	448	25	1120
PEAK	125			4			518			473			
15 MIN PEAK	152			8			612			572			
PEAK HOUR FACTOR	0.82			0.5			0.85			0.83			
TWO WAY TOTALS	237			4			1059			940			FACTOR
													1
													1120

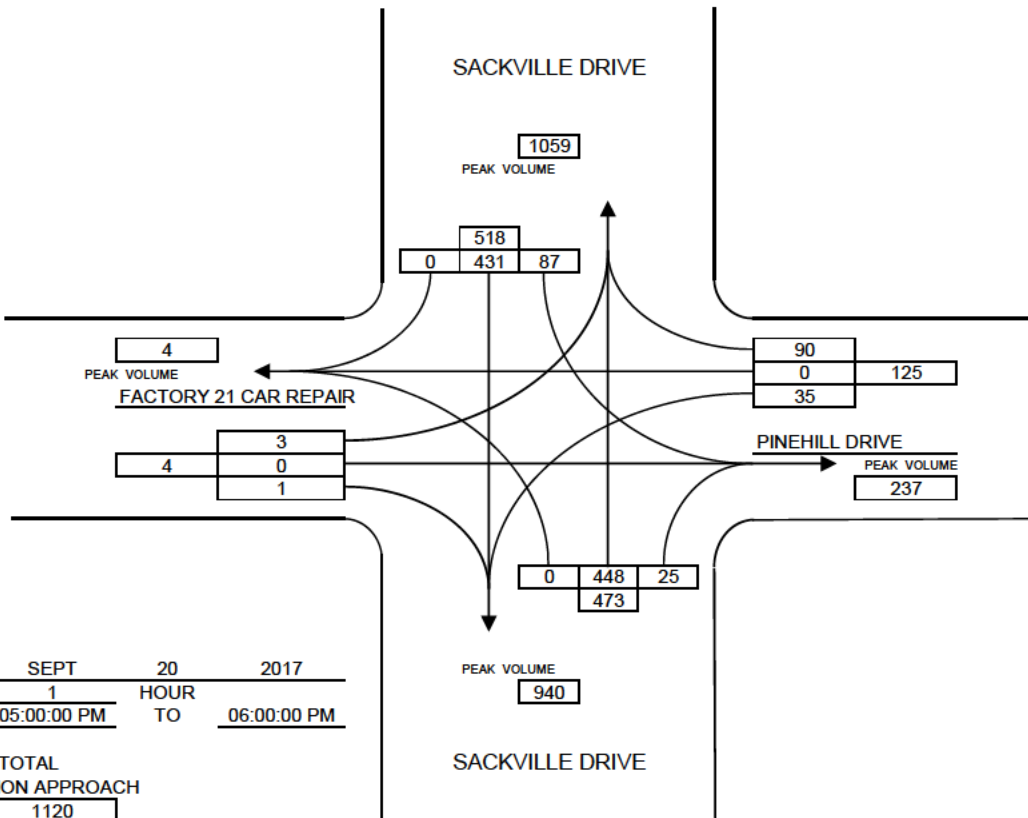
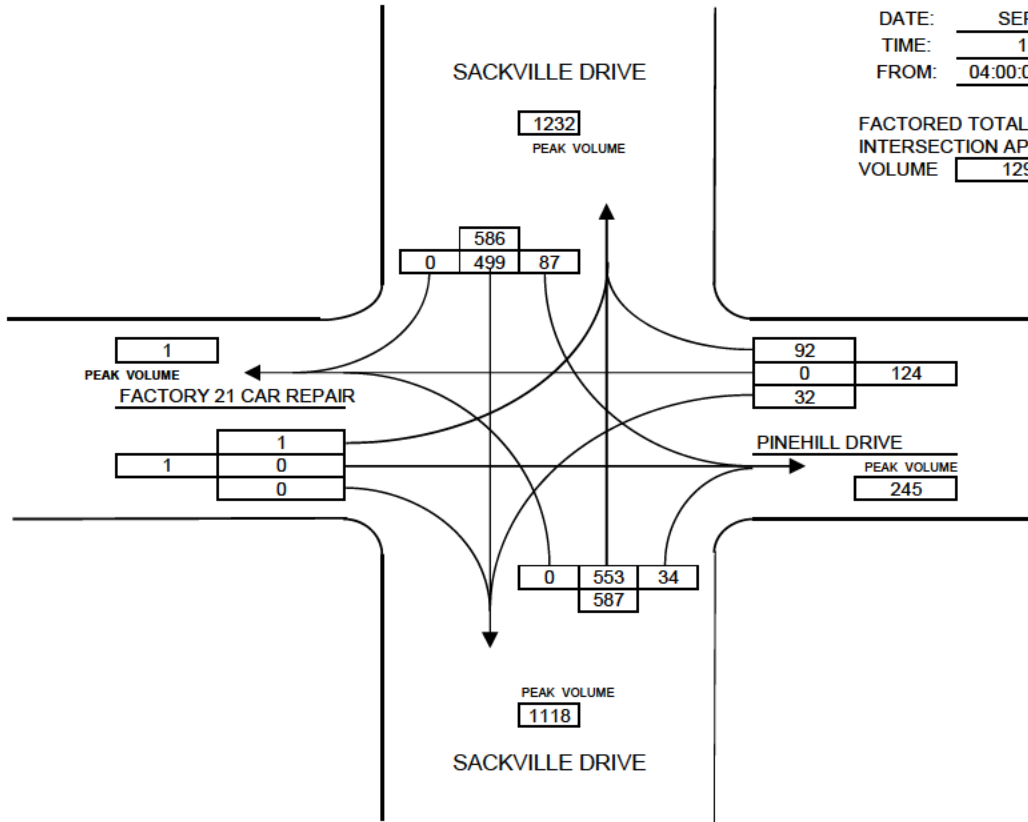
# VEHICULAR GRAPHIC SUMMARY SHEET

## PINEHILL DRIVE AT SACKVILLE DRIVE

INTERSECTION :

DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 04:00:00 PM TO 05:00:00 PM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 1298



DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 05:00:00 PM TO 06:00:00 PM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 1120



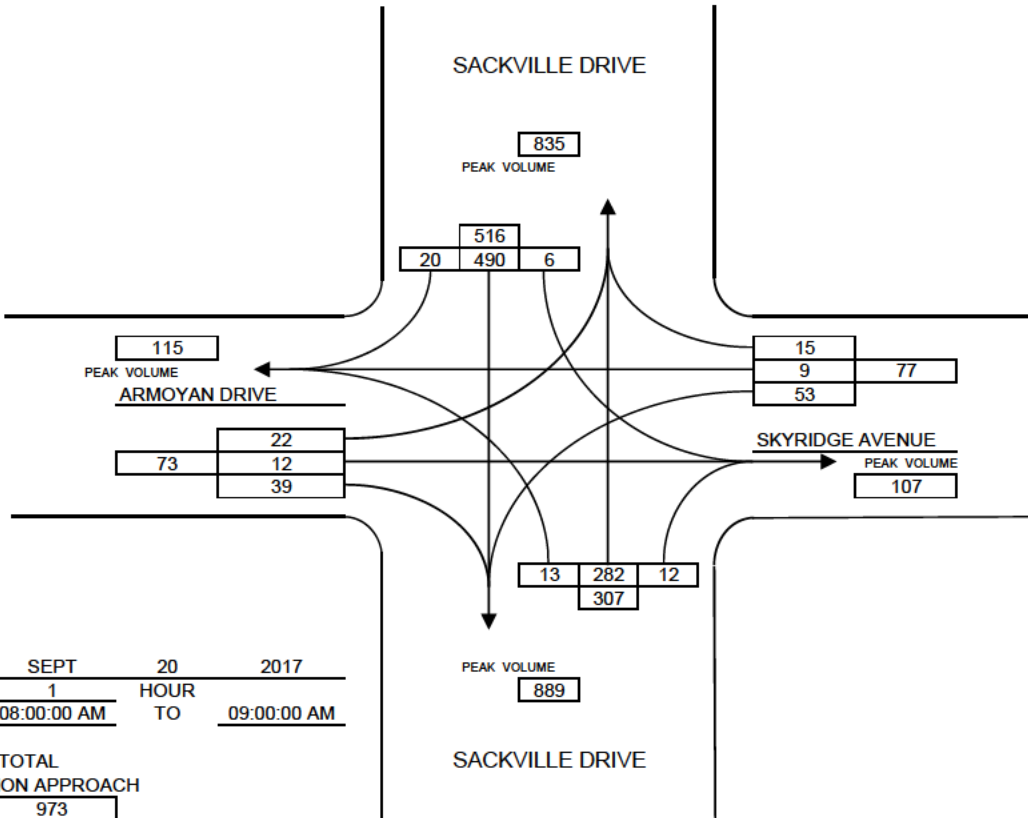
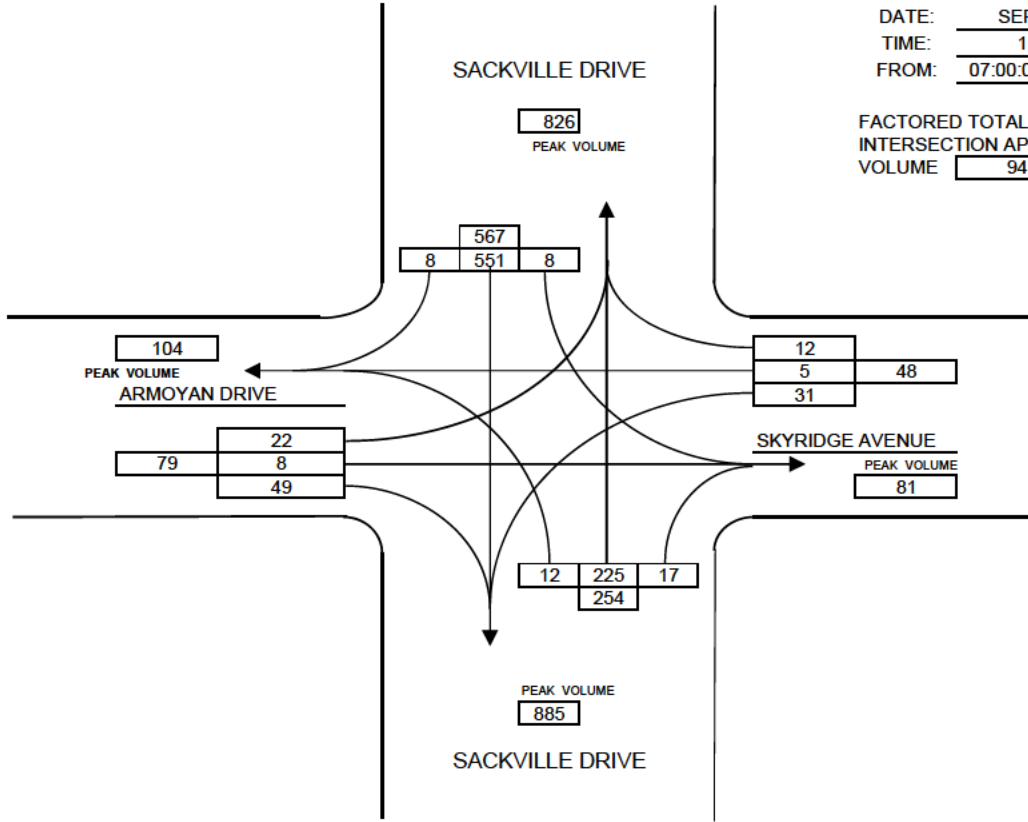
# VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

ARMOYAN DRIVE AT SACKVILLE DRIVE AND SKYRIDGE AVENUE

DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 07:00:00 AM TO 08:00:00 AM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 948



DATE: SEPT 20 2017  
 TIME: 1 HOUR  
 FROM: 08:00:00 AM TO 09:00:00 AM

FACTORED TOTAL INTERSECTION APPROACH VOLUME 973

## MANUAL TRAFFIC COUNTS

INTERSECTION: ARMOYAN DRIVE AT SACKVILLE DRIVE AND SKYRIDGE AVENUE

WEATHER CLOUDY  
 RECORDER SS

DAY DATE MONTH YEAR  
WEDNESDAY 20 SEPT 2017

TIME: 15 MIN INTERVALS		SKYRIDGE AVENUE			ARMOYAN DRIVE			SACKVILLE DRIVE			SACKVILLE DRIVE			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	
04:00:00 PM	04:15:00 PM	7	3	2	5	0	10	3	134	4	11	183	4	366
04:15:00 PM	04:30:00 PM	8	4	3	8	3	2	2	120	5	10	188	7	360
04:30:00 PM	04:45:00 PM	3	1	9	1	2	11	2	145	12	9	166	14	375
04:45:00 PM	05:00:00 PM	8	4	8	6	1	1	1	132	1	8	98	13	281

TOTAL	26	12	22	20	6	24	8	531	22	38	635	38	1382
PEAK	60			50			561			711			
15 MIN PEAK	80			60			636			820			
PEAK HOUR FACTOR	0.75			0.83			0.88			0.87			
TWO WAY TOTALS	112			122			1238			1292			FACTOR
													1
													1382

DAY DATE MONTH YEAR  
WEDNESDAY 20 SEPT 2017

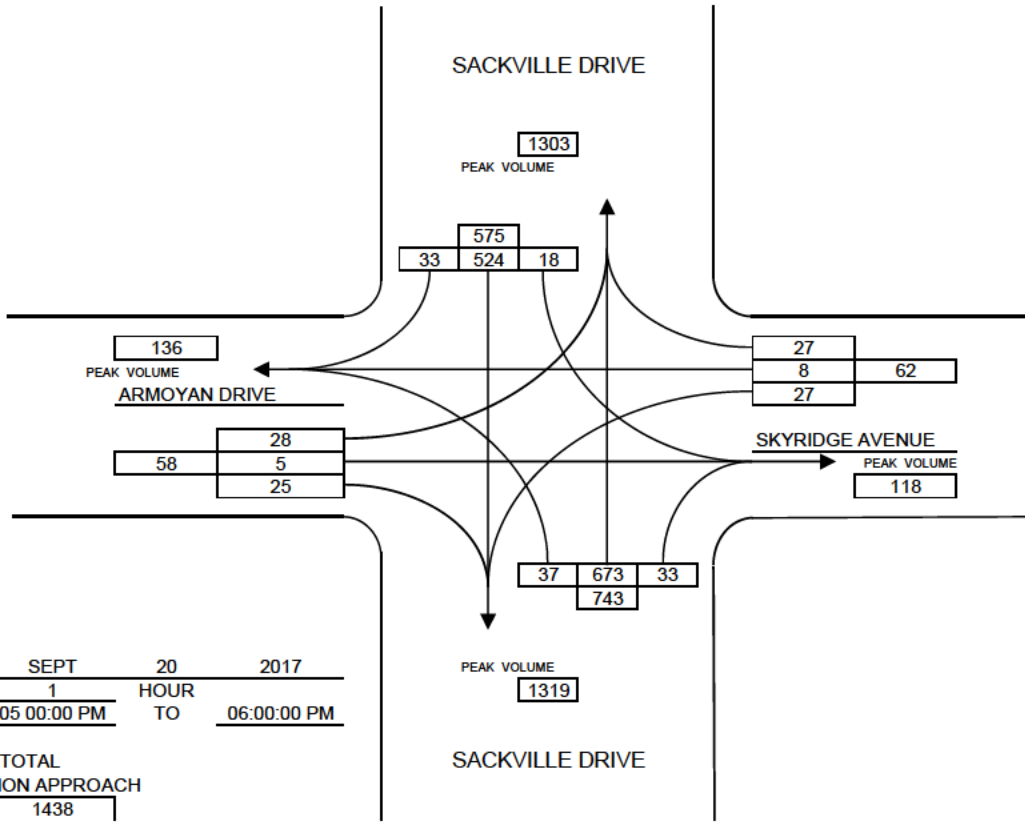
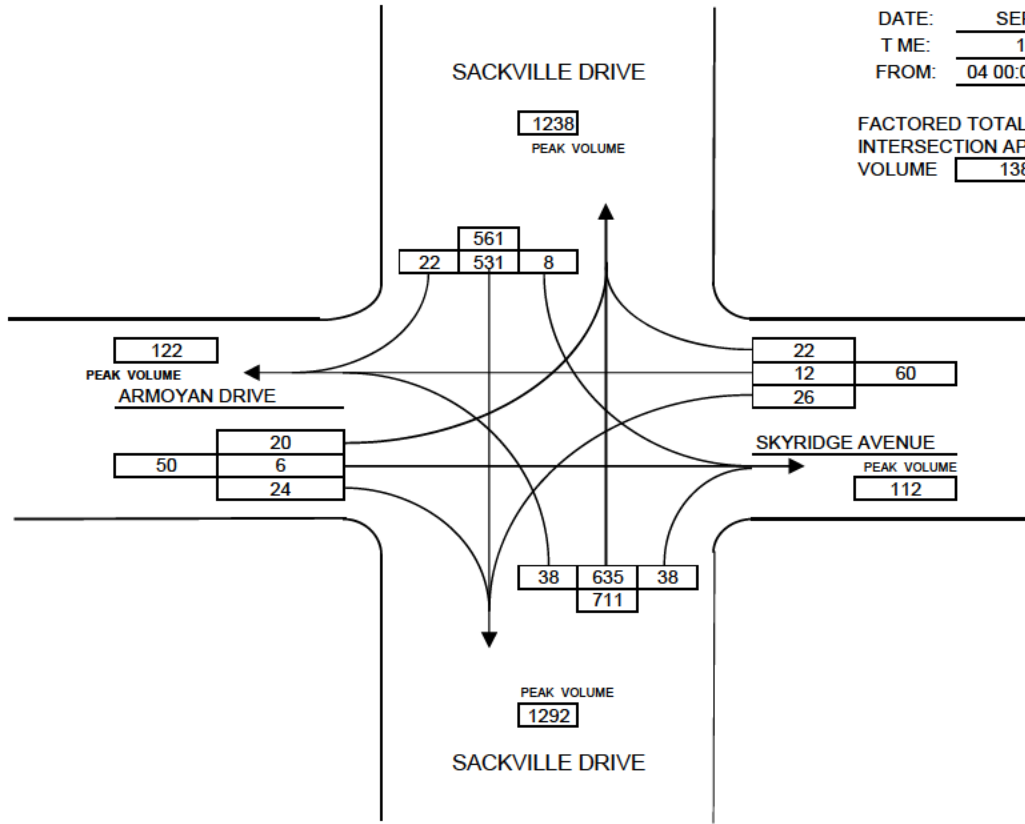
TIME: 15 MIN INTERVALS		FROM THE EAST			FROM THE WEST			FROM THE NORTH			FROM THE SOUTH			TOTAL
		L	S	R	L	S	R	L	S	R	L	S	R	
05:00:00 PM	05:15:00 PM	9	3	12	8	2	8	5	135	8	10	166	9	375
05:15:00 PM	05:30:00 PM	7	2	5	9	0	7	6	139	8	7	183	11	384
05:30:00 PM	05:45:00 PM	7	3	3	7	2	5	3	128	11	7	165	6	347
05:45:00 PM	06:00:00 PM	4	0	7	4	1	5	4	122	6	13	159	7	332

TOTAL	27	8	27	28	5	25	18	524	33	37	673	33	1438
PEAK	62			58			575			743			
15 MIN PEAK	96			72			612			804			
PEAK HOUR FACTOR	0.65			0.81			0.94			0.92			
TWO WAY TOTALS	118			136			1303			1319			FACTOR
													1
													1438

# VEHICULAR GRAPHIC SUMMARY SHEET

INTERSECTION :

ARMOYAN DRIVE AT SACKVILLE DRIVE AND SKYRIDGE AVENUE





# APPENDIX B

## Appendix B: TRIP GENERATION

## Trip Generation Summary

Alternative: Alternative 1

Phase:

Open Date: 5/3/2023

Project: 400 Sackville Drive

Analysis Date: 5/3/2023

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
231	MID-RISE-COMM 2 90 Dwelling Units		155	155	310		8	19	27		22	10	32
231	MID-RISE-COMM 1 110 Dwelling Units		189	189	378		9	24	33		28	12	40
Unadjusted Volume			344	344	688		17	43	60		50	22	72
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			344	344	688		17	43	60		50	22	72

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

\* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

**TRIP GENERATION 10, TRAFFICWARE, LLC**

## Trip Generation Summary

Alternative: Alternative 1

Phase: Existing Development

Project: 400 Sackville Drive

Open Date: 5/3/2023

Analysis Date: 5/3/2023

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
565	DAYCARE		72	71	143		17	16	33		16	17	33
	3    1000 Sq. Ft. GFA												
820	CENTERSHOPPING 1		57	56	113		2	1	3		5	6	11
	3    1000 Sq. Ft. GLA												
841	SALESAUTO-USED 1		68	67	135		8	3	11		9	10	19
	5    1000 Sq. Ft. GFA												
Unadjusted Volume			197	194	391		27	20	47		30	33	63
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		2	2	4
Volume Added to Adjacent Streets			197	194	391		27	20	47		28	31	59

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

\* - Custom rate used for selected time period.

# APPENDIX C

## Appendix C: TRIP ASSIGNMENT

**Development: 400 Sackville**

**Driveway: 1      Driveway**

Origin #	Route	To		From	
		Distribution %	Trips	Distribution %	Trips
1	Driveway to Sackville West	40.00	7	40.00	17
2	Driveway to Sackville East	50.00	9	50.00	22
3	Driveway to Pinehill North	5.00	1	5.00	2
4	Driveway to Skyridge North	5.00	1	5.00	2

**Development: 400 Sackville Drive**

**Driveway: 1      Driveway 400**

Origin #	Route	To		From	
		Distribution %	Trips	Distribution %	Trips
1	Driveway 400 to Sackville West	40.00	20	40.00	9
2	Driveway 400 to Sackville East	50.00	25	50.00	11
3	Driveway 400 to Pinehill North	5.00	3	5.00	1
4	Driveway 400 to Skyridge North	5.00	3	5.00	1

# APPENDIX D

Appendix D: SYNCHRO REPORTS

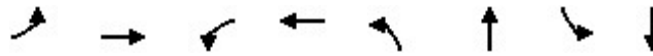


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (veh/h)	5	540	390	5	20	10
Future Volume (Veh/h)	5	540	390	5	20	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	587	424	5	22	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		160	393			
pX, platoon unblocked					0.94	
vC, conflicting volume	429				730	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	429				587	214
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	99
cM capacity (veh/h)	1127				413	790
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	201	391	283	146	33	
Volume Left	5	0	0	0	22	
Volume Right	0	0	0	5	11	
cSH	1127	1700	1700	1700	491	
Volume to Capacity	0.00	0.23	0.17	0.09	0.07	
Queue Length 95th (m)	0.1	0.0	0.0	0.0	1.6	
Control Delay (s)	0.2	0.0	0.0	0.0	12.9	
Lane LOS	A				B	
Approach Delay (s)	0.1		0.0		12.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			28.4%		ICU Level of Service	A
Analysis Period (min)			15			



400 Sackville Drive Development  
2023 Baseline

5: Sackville & Pinehill  
Timing Plan: AM Peak Hour



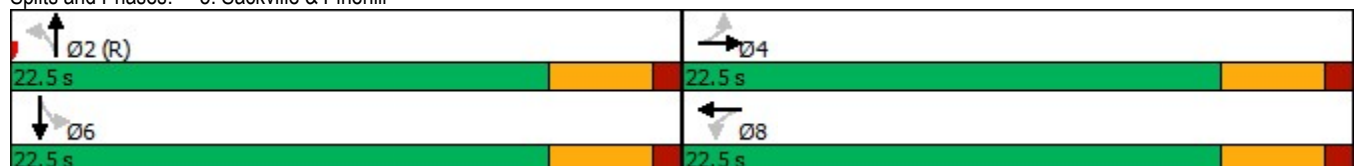
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔		↔
Traffic Volume (vph)	55	480	5	360	5	5	60	5
Future Volume (vph)	55	480	5	360	5	5	60	5
Lane Group Flow (vph)	0	593	0	434	0	15	0	162
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Act Effct Green (s)		18.0		18.0		18.0		18.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.47		0.32		0.02		0.24
Control Delay		11.5		9.5		7.2		5.6
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		11.5		9.5		7.2		5.6
LOS		B		A		A		A
Approach Delay		11.5		9.5		7.2		5.6
Approach LOS		B		A		A		A
Queue Length 50th (m)		16.8		10.8		0.5		3.3
Queue Length 95th (m)		27.3		18.4		2.8		11.5
Internal Link Dist (m)		155.6		64.1		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1250		1357		673		676
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.47		0.32		0.02		0.24

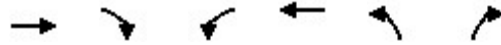
Intersection Summary

Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 45  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.47  
 Intersection Signal Delay: 9.9  
 Intersection Capacity Utilization 50.1%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 5: Sackville & Pinehill





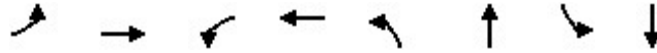
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	545	0	0	400	0	0
Future Volume (Veh/h)	545	0	0	400	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	592	0	0	435	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	88					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			592		810	296
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			344		584	18
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1098		401	958
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	395	197	145	290	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1098	1700	1700	
Volume to Capacity	0.23	0.12	0.00	0.17	0.00	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.4%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (veh/h)	5	540	390	5	20	10
Future Volume (Veh/h)	6	658	475	6	24	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	715	516	7	26	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		160	393			
pX, platoon unblocked					0.90	
vC, conflicting volume	523				891	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	523				647	262
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	1040				359	737
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	245	477	344	179	39	
Volume Left	7	0	0	0	26	
Volume Right	0	0	0	7	13	
cSH	1040	1700	1700	1700	433	
Volume to Capacity	0.01	0.28	0.20	0.11	0.09	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	2.2	
Control Delay (s)	0.3	0.0	0.0	0.0	14.1	
Lane LOS	A				B	
Approach Delay (s)	0.1		0.0		14.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			28.4%		ICU Level of Service	A
Analysis Period (min)			15			

400 Sackville Drive Development  
2033 Background Only

5: Sackville & Pinehill  
Timing Plan: AM Peak Hour

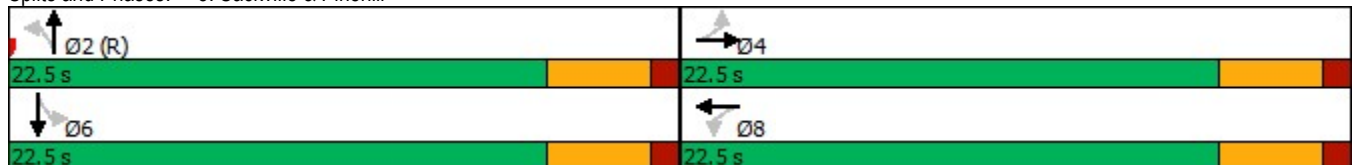


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔↔		↔↔		↔↔		↔↔
Traffic Volume (vph)	55	480	5	360	5	5	60	5
Future Volume (vph)	67	585	6	439	6	6	73	6
Lane Group Flow (vph)	0	722	0	531	0	21	0	199
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Act Effct Green (s)		18.0		18.0		18.0		18.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.59		0.39		0.03		0.29
Control Delay		13.0		10.2		7.2		5.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		13.0		10.2		7.2		5.8
LOS		B		B		A		A
Approach Delay		13.0		10.2		7.2		5.8
Approach LOS		B		B		A		A
Queue Length 50th (m)		21.9		13.8		0.6		4.1
Queue Length 95th (m)		34.8		22.8		3.4		13.4
Internal Link Dist (m)		155.6		64.1		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1220		1351		667		683
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.59		0.39		0.03		0.29

Intersection Summary

Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 45  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 10.9  
 Intersection Capacity Utilization 50.1%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 5: Sackville & Pinehill





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	545	0	0	400	0	0
Future Volume (Veh/h)	664	0	0	488	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	722	0	0	530	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	88					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			722		987	361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			380		685	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1021		332	943
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	481	241	177	353	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1021	1700	1700	
Volume to Capacity	0.28	0.14	0.00	0.21	0.11	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			18.4%	ICU Level of Service		A
Analysis Period (min)	15					

400 Sackville Drive Development  
2033 Background and Development

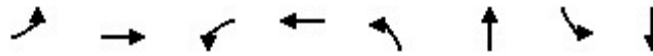
4: Sackville & Oakdale  
Timing Plan: AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (veh/h)	5	540	390	5	20	10
Future Volume (Veh/h)	6	688	488	6	24	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	748	530	7	26	13
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		160	393			
pX, platoon unblocked					0.90	
vC, conflicting volume	537			922	268	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537			681	268	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	99			92	98	
cM capacity (veh/h)	1027			342	730	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>SB 1</b>	
Volume Total	256	499	353	184	39	
Volume Left	7	0	0	0	26	
Volume Right	0	0	0	7	13	
cSH	1027	1700	1700	1700	415	
Volume to Capacity	0.01	0.29	0.21	0.11	0.09	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	2.3	
Control Delay (s)	0.3	0.0	0.0	0.0	14.6	
Lane LOS	A				B	
Approach Delay (s)	0.1	0.0			14.6	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			28.4%	ICU Level of Service	A	
Analysis Period (min)			15			

400 Sackville Drive Development  
2033 Background and Development

5: Sackville & Pinehill  
Timing Plan: AM Peak Hour

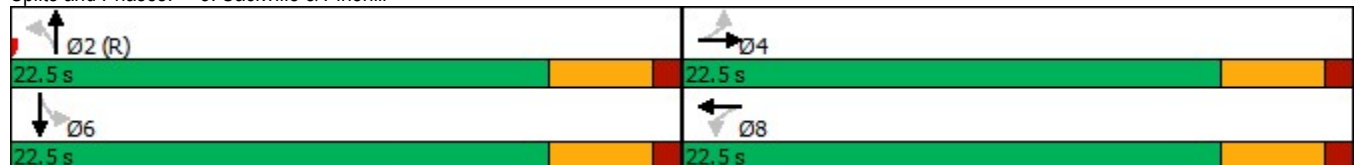


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔↔		↔↔		↔↔		↔↔
Traffic Volume (vph)	55	480	5	360	5	5	60	5
Future Volume (vph)	67	594	6	460	6	6	74	6
Lane Group Flow (vph)	0	732	0	556	0	21	0	200
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Act Effct Green (s)		18.0		18.0		18.0		18.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.60		0.41		0.03		0.29
Control Delay		13.2		10.3		7.2		5.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		13.2		10.3		7.2		5.8
LOS		B		B		A		A
Approach Delay		13.2		10.3		7.2		5.8
Approach LOS		B		B		A		A
Queue Length 50th (m)		22.3		14.6		0.6		4.1
Queue Length 95th (m)		35.5		24.0		3.4		13.5
Internal Link Dist (m)		155.6		64.1		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1216		1351		667		683
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.60		0.41		0.03		0.29

Intersection Summary

Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 45  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.60  
 Intersection Signal Delay: 11.1  
 Intersection Capacity Utilization 50.1%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 5: Sackville & Pinehill



400 Sackville Drive Development  
2033 Background and Development

16: Sackville  
Timing Plan: AM Peak Hour

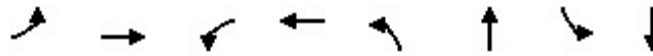


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	545	0	0	400	0	0
Future Volume (Veh/h)	664	10	12	488	23	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	722	11	13	530	25	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	88					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			733		1018	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			383		713	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	97
cM capacity (veh/h)			1015		313	939
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	481	252	190	353	57	
Volume Left	0	0	13	0	25	
Volume Right	0	11	0	0	32	
cSH	1700	1700	1015	1700	501	
Volume to Capacity	0.28	0.15	0.01	0.21	0.11	
Queue Length 95th (m)	0.0	0.0	0.3	0.0	2.9	
Control Delay (s)	0.0	0.0	0.7	0.0	13.1	
Lane LOS			A		B	
Approach Delay (s)	0.0		0.2		13.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			18.4%	ICU Level of Service	A	
Analysis Period (min)	15					





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (veh/h)	5	570	795	5	20	10
Future Volume (Veh/h)	5	570	795	5	20	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	620	864	5	22	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)		160	393			
pX, platoon unblocked	0.95				0.97	0.95
vC, conflicting volume	869				1186	434
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	767				913	312
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	98
cM capacity (veh/h)	804				262	653
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	212	413	576	293	33	
Volume Left	5	0	0	0	22	
Volume Right	0	0	0	5	11	
cSH	804	1700	1700	1700	328	
Volume to Capacity	0.01	0.24	0.34	0.17	0.10	
Queue Length 95th (m)	0.1	0.0	0.0	0.0	2.5	
Control Delay (s)	0.3	0.0	0.0	0.0	17.2	
Lane LOS	A				C	
Approach Delay (s)	0.1		0.0		17.2	
Approach LOS					C	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

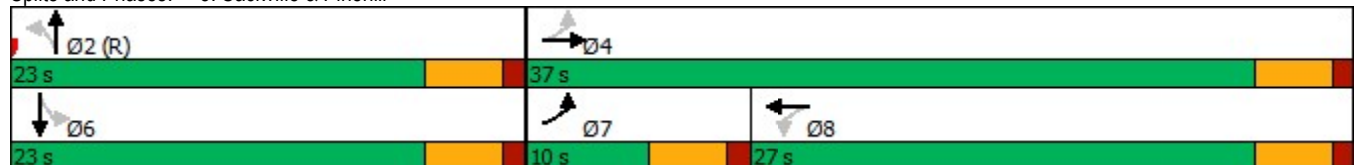


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕↕		↕↕		↕↕		↕↕
Traffic Volume (vph)	130	520	5	750	5	5	50	5
Future Volume (vph)	130	520	5	750	5	5	50	5
Lane Group Flow (vph)	0	717	0	874	0	15	0	179
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	10.0	37.0	27.0	27.0	23.0	23.0	23.0	23.0
Total Split (%)	16.7%	61.7%	45.0%	45.0%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Act Effct Green (s)		32.5		22.5		18.5		18.5
Actuated g/C Ratio		0.54		0.38		0.31		0.31
v/c Ratio		0.57		0.69		0.03		0.32
Control Delay		10.1		25.7		12.6		8.0
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		10.1		25.7		12.6		8.0
LOS		B		C		B		A
Approach Delay		10.1		25.7		12.6		8.0
Approach LOS		B		C		B		A
Queue Length 50th (m)		21.3		54.4		0.8		4.6
Queue Length 95th (m)		31.0		73.3		4.1		16.6
Internal Link Dist (m)		155.6		64.9		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1266		1273		517		566
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.57		0.69		0.03		0.32

Intersection Summary

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 17.5  
 Intersection Capacity Utilization 64.6%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 5: Sackville & Pinehill





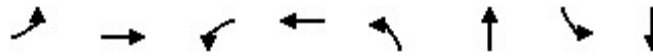
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	575	0	0	805	0	0
Future Volume (Veh/h)	575	0	0	805	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	625	0	0	875	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	89					
pX, platoon unblocked			0.92		0.92	0.92
vC, conflicting volume			625		1062	312
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			406		884	65
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1052		261	902
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	417	208	292	583	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1052	1700	1700	
Volume to Capacity	0.25	0.12	0.00	0.34	0.00	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			25.6%	ICU Level of Service	A	
Analysis Period (min)	15					



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (veh/h)	5	570	795	5	20	10
Future Volume (Veh/h)	6	695	969	6	24	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	755	1053	7	26	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		160	393			
pX, platoon unblocked	0.87				0.92	0.87
vC, conflicting volume	1060				1448	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	780				847	174
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				91	98
cM capacity (veh/h)	728				275	734
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	259	503	702	358	39	
Volume Left	7	0	0	0	26	
Volume Right	0	0	0	7	13	
cSH	728	1700	1700	1700	347	
Volume to Capacity	0.01	0.30	0.41	0.21	0.11	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	2.9	
Control Delay (s)	0.4	0.0	0.0	0.0	16.7	
Lane LOS	A				C	
Approach Delay (s)	0.1		0.0		16.7	
Approach LOS					C	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

400 Sackville Drive Development  
2033 Background Only

5: Sackville & Pinehill  
Timing Plan: PM Peak Hour

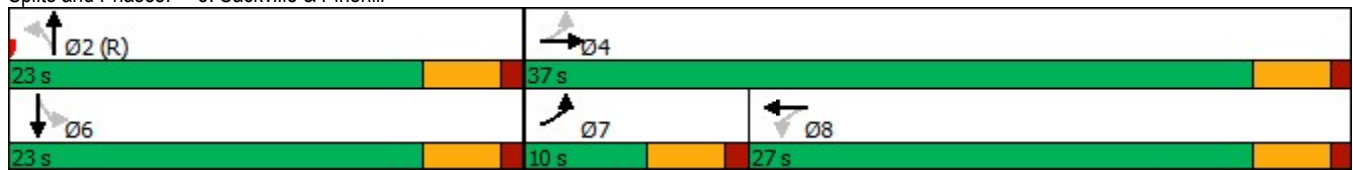


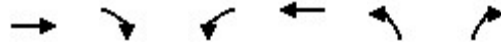
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕↕		↕↕		↕↕		↕↕
Traffic Volume (vph)	130	520	5	750	5	5	50	5
Future Volume (vph)	158	634	6	914	6	6	61	6
Lane Group Flow (vph)	0	874	0	1066	0	21	0	219
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	10.0	37.0	27.0	27.0	23.0	23.0	23.0	23.0
Total Split (%)	16.7%	61.7%	45.0%	45.0%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Act Effct Green (s)		32.5		22.5		18.5		18.5
Actuated g/C Ratio		0.54		0.38		0.31		0.31
v/c Ratio		0.75		0.84		0.04		0.38
Control Delay		13.9		30.1		12.3		8.4
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		13.9		30.1		12.3		8.4
LOS		B		C		B		A
Approach Delay		13.9		30.1		12.3		8.4
Approach LOS		B		C		B		A
Queue Length 50th (m)		27.5		69.3		1.1		5.7
Queue Length 95th (m)		39.3		#91.9		5.0		19.4
Internal Link Dist (m)		155.6		64.9		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1172		1270		511		580
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.75		0.84		0.04		0.38

Intersection Summary

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 21.2  
 Intersection Capacity Utilization 64.6%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Sackville & Pinehill





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	575	0	0	805	0	0
Future Volume (Veh/h)	701	0	0	981	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	762	0	0	1066	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	89					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			762		1295	381
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			455		1061	22
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			969		192	923
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	508	254	355	711	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	969	1700	1700	
Volume to Capacity	0.30	0.15	0.00	0.42	0.10	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			25.6%	ICU Level of Service		A
Analysis Period (min)	15					

400 Sackville Drive Development  
2032 Background and Development

4: Sackville & Oakdale  
Timing Plan: PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Traffic Volume (veh/h)	5	570	795	5	20	10
Future Volume (Veh/h)	6	709	1003	6	24	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	771	1090	7	26	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		160	393			
pX, platoon unblocked	0.86				0.91	0.86
vC, conflicting volume	1097				1493	548
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781				863	142
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				90	98
cM capacity (veh/h)	714				264	755
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	264	514	727	370	39	
Volume Left	7	0	0	0	26	
Volume Right	0	0	0	7	13	
cSH	714	1700	1700	1700	337	
Volume to Capacity	0.01	0.30	0.43	0.22	0.12	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	3.0	
Control Delay (s)	0.4	0.0	0.0	0.0	17.1	
Lane LOS	A				C	
Approach Delay (s)	0.1		0.0		17.1	
Approach LOS					C	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

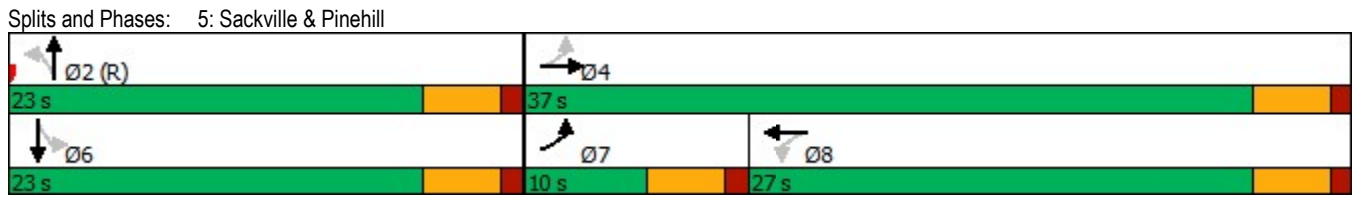
400 Sackville Drive Development  
2032 Background and Development

5: Sackville & Pinehill  
Timing Plan: PM Peak Hour

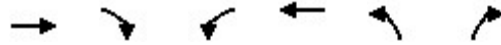


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕↕		↕↕		↕↕		↕↕
Traffic Volume (vph)	130	520	5	750	5	5	50	5
Future Volume (vph)	158	658	6	925	6	6	65	6
Lane Group Flow (vph)	0	900	0	1079	0	21	0	224
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	10.0	37.0	27.0	27.0	23.0	23.0	23.0	23.0
Total Split (%)	16.7%	61.7%	45.0%	45.0%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Act Effct Green (s)		32.5		22.5		18.5		18.5
Actuated g/C Ratio		0.54		0.38		0.31		0.31
v/c Ratio		0.77		0.85		0.04		0.39
Control Delay		14.9		30.4		12.3		8.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		14.9		30.4		12.3		8.7
LOS		B		C		B		A
Approach Delay		14.9		30.4		12.3		8.7
Approach LOS		B		C		B		A
Queue Length 50th (m)		28.7		70.0		1.1		6.2
Queue Length 95th (m)		40.7		#94.0		5.0		20.1
Internal Link Dist (m)		155.6		64.9		19.2		120.4
Turn Bay Length (m)								
Base Capacity (vph)		1171		1270		510		578
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.77		0.85		0.04		0.39

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 21.7  
 Intersection Capacity Utilization 64.6%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	575	0	0	805	0	0
Future Volume (Veh/h)	701	28	34	981	12	15
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)	762	30	37	1066	13	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	89					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			792		1384	396
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			468		1147	14
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		92	98
cM capacity (veh/h)			950		161	926
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	508	284	392	711	29	
Volume Left	0	0	37	0	13	
Volume Right	0	30	0	0	16	
cSH	1700	1700	950	1700	296	
Volume to Capacity	0.30	0.17	0.04	0.42	0.10	
Queue Length 95th (m)	0.0	0.0	0.9	0.0	2.5	
Control Delay (s)	0.0	0.0	1.2	0.0	18.5	
Lane LOS			A			C
Approach Delay (s)	0.0		0.4			18.5
Approach LOS						C
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			25.6%	ICU Level of Service	A	
Analysis Period (min)	15					