Final Report

MoveSJ Roundabout Strategy

City of Saint John
Transportation Strategic Plan

Prepared for City of Saint John
by Crandall Engineering
In association with IBI Group
July 16, 2020

MoveSJ Roundabout Strategy

Final Report

Prepared for:

City of Saint John

SAINT JOHN

Prepared by:
Jill DeMerchant, P.Eng.
Adriana Terán, P. Eng.
Peter Allaby, P.Eng.

crandall

Crandall, a Division of Englobe Corp.
564 Prospect Street
Fredericton, NB
E3B 9M3

July 16, 2020
Project No. 1900497

Table of Contents

1 Introduction 3
1.1 Background 3
2 Benefits of Roundabouts 3
2.1 General Benefits of Roundabouts 3
Safety 3
Operation 5
Environment 5
Economic 5
Active Transportation 5
Traffic Calming Circles Verse Roundabouts 5
3 Candidate Locations for Roundabouts 6
3.1 Overview 6
3.2 General Roundabout Design Elements 10
3.3 Operational Evaluation of Candidate Roundabouts 10
Rothesay Road (Route 100) at Ashburn Road 11
Sandy Point Road at Foster Thurston Drive 13
Manawagonish Road at Gault Road 14
Millidge Avenue at Somerset Street 15
Simms Corner: Main Street West at Lancaster Avenue 16
4 Implementation 20
Appendix A
Appendix B

Appendix C

List of Exhibits

Exhibit 2.1: Conflict Point Comparison between Roundabouts and Traditional Intersections 4
Exhibit 3.1: Study Area Intersection Characteristics 7
Exhibit 3.2: Level of Service Criteria for Roundabouts 11
Exhibit 3.3: Rothesay Road/Ashburn Road Single Lane Roundabout 13
Exhibit 3.4: Sandy Point Road/Foster Thurston Drive Single Lane Roundabout 14
Exhibit 3.5: Manawagonish Road/Gault Road Single Lane Roundabout .. 15
Exhibit 3.6: Millidge Ave/Somerset St Roundabout with Single Lane Exits 16
Exhibit 3.7: Simms Corner Roundabout Multi-Lane Roundabout Concept 18
Exhibit 3.8: Terrain Report Roundabout Commentary on Simms Corner . 19

1 Introduction

1.1 Background

A Roundabout Strategy was prepared as part of MoveSJ's Comprehensive System Improvement Plan and to take a more strategic and proactive approach to introducing roundabouts in the City. The Roundabout Strategy includes a review of the benefits of modern roundabouts, identification of candidate locations for roundabouts in Saint John, evaluation of roundabout feasibility at these candidate locations, and a recommended prioritization plan.

Saint John currently has no modern roundabouts installed on its transportation network. On at least four occasions in the last decade (at Simms Corner, at Retail/Ashburn Lake/Rothesay Ave, at Somerset/Churchill, and at Red Head/Grandview) the City explored installing a roundabout when the project was being considered for reconstruction. In each case the roundabout option did not proceed for one reason or another.

Roundabout design considerations have progressed in the last decade since most of these locations were last assessed. This Roundabout Strategy uses updated design guidelines and uses the approach of seeking out good candidates for modern roundabouts in a prioritized plan as opposed to only considering designs concepts ad hoc when an intersection is due for reconstruction. The intent of this strategy is to allow the City to start planning for installation of roundabouts to take advantage of their benefits to the community.

2 Benefits of Roundabouts

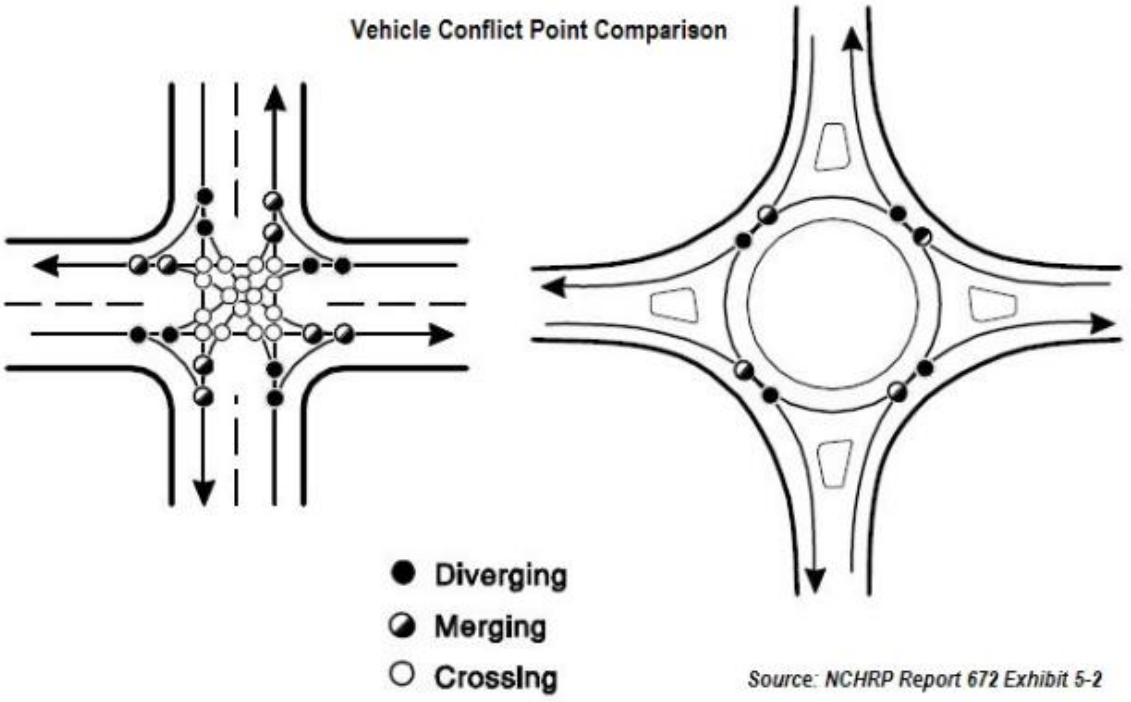
2.1 General Benefits of Roundabouts

Roundabouts provide several benefits over conventional intersections. This type of intersection provides motorists with a safer environment, while also offering operational, environmental and economic benefits. The general benefits of roundabouts are outlined and discussed below.

Safety

Roundabouts offer a safer environment for motorists by reducing the frequency and severity of collisions. When compared to stop-controlled and signalized intersections, roundabouts have significantly fewer conflict points. This is because vehicles travel in the same direction, therefore eliminating right-angle and left-turn conflicts. As illustrated in **Exhibit 2.1**, single lane roundabouts have eight vehicle conflict points compared to the 32 vehicle conflict points of a typical 4-way intersection.

Exhibit 2.1: Conflict Point Comparison between Roundabouts and Traditional Intersections



Additionally, the geometric characteristics of roundabouts promote reduced operating speeds, regardless of time of day or level of congestion. Reductions in entering and circulating speeds allow for improved reaction times for users and lowers the frequency and severity of collisions. Lowered vehicle speed is also beneficial to other road users, such as pedestrians and cyclists. Roundabouts also provide deflection for entering vehicles, which reduces the angle of impact during collisions. This results in significant reductions of serious right-angle and head-on collisions.

Collision modification factors (CMFs) from the AASHTO Highway Safety Manual provide a measure of the safety effectiveness of a particular design treatment or element. The CMF's for converting to roundabouts from stop-controlled and signalized intersections are as follows:

- CMF for Converting Stop-Controlled to Single Lane Roundabout = 0.29 (71% reduction)
- CMF for Converting Signalized to Roundabout = 0.52 (48% reduction).

The above values indicate that single lane roundabouts provide superior safety performance compared to both stop controlled and signalized treatments, resulting in 48%-71% fewer collisions on average. Additionally, there is a further reduction in the frequency of severe collisions given that roundabouts effectively eliminate head-on and right-angle crashes and reduce traffic speeds.

Operation

The low operating speeds at roundabouts result in improved gap acceptance for drivers. This means that a driver entering a roundabout does not require as large of a gap in circulating traffic to enter because the circulating traffic is not moving as fast. Additionally, unlike other types of intersections, roundabouts do not require vehicles to stop unnecessarily when no other vehicles are present. When queues are present, the traffic within these queues typically continues to move, which is usually more bearable for drivers than a stopped queue.

Environment

Roundabouts reduce fuel consumption and emissions by reducing delays and idling times for vehicles. These intersections allow traffic to travel without having to come to unnecessary stops, thus reducing accelerations and decelerations that lead to higher fuel consumption. Additionally, roundabouts are more sustainable than traffic signals as they consume less energy and require minimal maintenance.

Economic

Although upfront costs of roundabouts can be greater than those of traditional intersections, this can be outweighed by long-term cost savings benefits. Roundabouts require minimal maintenance, reduce travel times and reduce collision frequencies and severities, all of which have associated economic and societal benefits. By reducing maintenance requirements, life-cycle costs associated with roundabouts are often less than those associated with conventional intersections.

Active Transportation

Modern roundabout infrastructure designs of vehicle lanes and pedestrian paths improve pedestrian safety when compared to standard intersection designs. Due to their large size they also provide the same if not more capacity for pedestrians than at a standard intersection. Roundabouts are designed to reduce vehicle-pedestrian conflicts and better restrict wrong-way movements by vehicles, a contributor to pedestrian-vehicle accidents. Generally, pedestrian movements are improved by lower vehicle speeds, shorter crossing distances, and greater visibility for both vehicles and pedestrians.

Modern roundabouts have two approaches to cyclist movements, cyclists entering the roundabout like a vehicle, and cyclists exiting the roundabout to the cyclist or pedestrian realm to cross. Vehicles give way to the cyclists in either approach and improved visibility justifies this. Modern roundabouts heighten the attention of drivers who must stay even more vigilant to make a maneuver, to the benefit of cyclists and pedestrians.

Traffic Calming Circles Verse Roundabouts

Roundabouts are typically applied on collector and arterial streets to address traffic safety and capacity. Roundabouts normally have a diameter of 35m to

60m. Traffic calming circles are used to reduce speeds and/or add aesthetics on local streets with low traffic volumes and lower speed limits, typically in residential settings. The intersection diameter varies between 15-30 m and may or may not include a raised curb. Saint John currently has one traffic calming circle with a raised curb at Cedar Wood Drive and Birchdale Crescent. The traffic circle was installed in 2019 to reduce speeds through the Stanley Gardens neighborhood.

3 Candidate Locations for Roundabouts

3.1 Overview

Six candidate locations for a roundabout conversion were identified based on knowledge of the City's transportation network and discussions with City staff. For jurisdictions like Saint John that currently have no modern roundabouts, it is preferred to introduce single lane roundabouts for driver education and public acceptance prior to more complex multi-lane roundabouts. For this reason, emphasis was placed on identifying candidate locations where a single lane roundabout would provide adequate capacity and where minimal property impacts would be required. The six candidate intersections are listed as follows and shown in **Exhibit 3.1**:

1. Ashburn Rd/Rothesay Rd;
2. Woodward Avenue/Boars Head Rd;
3. Manawagonish Rd/Gault Rd;
4. Main St West/Lancaster Ave (Simms Corner);
5. Sandy Point Rd/Foster Thurston Rd
6. Millidge Ave/Somerset St.

The following activities were undertaken as part of the feasibility assessment of candidate locations:

- Background data were reviewed, including available traffic data, as provided in **Appendix A**;
- Potential roundabout options including various entry, exit, and circulating lane configurations were modelled using Junctions 9 software. The functional requirements needed to achieve an acceptable level of service for both the AM and PM peak periods were determined for each roundabout;
- Concept plan drawings were created for the candidate intersections to illustrate the geometric requirements that were identified for each roundabout;

- A microsimulation model was completed using Vissim 8 software to show how traffic would flow at complex roundabouts (where traffic volumes were available); and
- The methodology, analysis results, and recommendations of this traffic study were summarized in this report.

Geometric and traffic control characteristics of the 6 candidate roundabout intersections are described in **Exhibit 3.1**.

Exhibit 3.1: Study Area Intersection Characteristics

Description	Configuration
Ashburn Road/Rothesay Road This is a 3-legged intersection with the stop-control on the minor street, Ashburn Road (eastbound approach). Rothesay Road has one lane in each direction on the northbound and southbound approaches. One shared left/right is provided on the eastbound approach on Ashburn Road. Bike lanes are located on either side of Rothesay Road and sharrows on Ashburn Road. These bike facilities are part of the Great TransCanada Trail. A private driveway is provided on the westbound approach. The speed limit on all approaches is 60 km/h.	
Woodward Avenue/Boars Head Road /Ragged Point Road This intersection consists of 4 legs and is all-way stop-controlled. Two legs have skewed approach angles. All approaches have one shared left/through/right lane. School zones are present on both Ragged Point Road and Woodward Avenue. The speed limit on all approaches is 50 km/h.	

Description	Configuration
Manawagonish Road/Gault Road/Ocean Westway/Route 7 Ramp The intersection consists of 4 legs that are skewed at inconsistent angles and a centre island that functions as a quasi-traffic circle. This intersection contains entrances/exits from Route 7 ramps (north), Gault Road (east), Manawagonish Road (south), and Ocean Westway (west). Traffic control varies on each approach and some movements yield within the circle to approaching traffic. The speed limit on the Gault Road approaches is 50 km/h while the speed limit on the Manawagonish Road, Ocean Westway and Route 7 Ramp approaches is 60 km/h.	
Main Street/ Lancaster Avenue/ Fairville Boulevard/ Bridge Road (Simms Corner) This is a 4-legged intersection with a unique geometric and traffic control configuration. A shared left/through lane and right turn lane are provided on Fairville Boulevard (northbound) which is stop-controlled and one-way only. A dedicated left turn lane and through lane are provided on Main Street W (eastbound) which are free flowing. Lancaster Avenue (westbound) has a stop-controlled through lane and a channelized right turn lane. Bridge Road (southbound) is free flowing with a left turn lane. Railroad tracks cross Main Street W and Fairville Boulevard near the intersection. The speed limit on all approaches is 50 km/h. This intersection serves a high volume of traffic including truck traffic. If the intersection were reconfigured and Fairville Boulevard made 2-way, there would be considerable shift in traffic patterns, particularly for southbound truck traffic destined for the highway.	

Description	Configuration
Sandy Point Road/Foster Thurston Drive This is a 3-legged intersection with the stop-control on the minor street, Sandy Point Road (eastbound). Single lane approaches are provided in all directions. A driveway forms the westbound approach. The speed limit on the Foster Thurston Drive approaches is 60 km/h and the speed limit on the Sandy Point Road approach is 50 km/h. Given the intersection is on a curve, sight distance is limited. The City has reviewed options to improve this intersection in the past, including the possibility of a roundabout.	
Millidge Avenue/Somerset Street This intersection has 3 legs with stop control on Millidge Ave (northbound), the minor street approach. Single lane approaches are provided in all directions. Millidge Ave northbound provides one left turn lane and a channelized right turn lane. The southbound approach provides one shared through/right lane, and Somerset St (eastbound) approach provides one through lane, and a U-turn lane. Bike lanes are provided on both sides of Millidge Ave (southbound) and Somerset St as part of the Campus-Harbour Trail which connects the University/Hospital area with uptown Saint John. Millidge Ave (southbound) and Somerset St have posted speed limits of 60 km/h, while Millidge Ave northbound has a 50 km/h speed limit. Development opportunities are proposed around the intersection that will require connection to the ultimate design.	

After review of the 6 potential roundabout locations, 5 were identified as priority locations for further analysis. These 5 priority locations are:

- Ashburn Road/Rothesay Road;
- Manawagonish Road/Gault Road;
- Sandy Point Road/Foster Thurston Road;
- Main Street W/Lancaster Avenue (Simm's Corner); and
- Millidge Avenue/Somerset Street.

Boars Head Road/Woodward Avenue intersection has lower priority and no apparent operational issues. Boars Head Road at Woodward Avenue

intersection may still benefit from a single lane roundabout to improve the approach alignments and safety conditions for pedestrians coming from the two schools. As a part of this Strategy Report, however, it was not carried forward for analysis.

3.2 General Roundabout Design Elements

The Transportation Association of Canada (TAC) and the National Cooperative Highway Research Program (NCHRP) roundabout guidelines and the UK Geometric Design Guide for Roundabouts were referenced for each roundabout design. The following is a list of general design elements that were applied for each roundabout:

- **Diameter** – An inscribed circle diameter between 35 and 50 m was used for each roundabout.
- **Central Island** – A raised central island with a 3 m wide mountable truck apron was used.
- **Curbing** – Curbing was used on the approaches and for the circulatory roadway.
- **Splitter Islands** – Splitter islands were used at each roundabout approach to delineate the paths of entering and exiting traffic.
- **Entry deflection** – Entry speeds were reduced by providing entry deflection at all approaches, with the intent of minimizing the fastest path to less than 45 km/h at each approach.
- The design vehicle is a WB-20 (tractor with a 53-foot tractor trailer).

Site conditions that are typically considered favourable to the installation of a roundabout include:

- Reasonably balanced traffic volumes on all approaches. In the case of multi-lane roundabouts, it is beneficial to have even traffic distribution amongst each lane;
- Favourable approach grades and good sight distance;
- Opportunities for gateway treatments to indicate a change in roadway environment (rural to suburban) or change in operating characteristics (change in speeds);
- Adequate right-of-way;
- Minimal impacts to driveways or land access.

3.3 Operational Evaluation of Candidate Roundabouts

The candidate roundabouts were evaluated in terms of the site conditions, operational performance, and general assessment of impacts. Concept drawings were prepared for each intersection and are provided in **Appendix B**.

Various entry, exit, and circulating lane configurations were modelled using Junctions 9 software or Vissim 8 at each of the potential roundabout locations. The roundabout LOS was determined based on intersection delay criteria for roundabouts as listed in **Exhibit 3.2**. The objective of the modelling exercise was to determine the functional requirements for each roundabout in order to achieve an acceptable LOS during both the AM and PM peak periods. The LOS analyses were completed for the existing and 20% future traffic growth scenarios.

Exhibit 3.2: Level of Service Criteria for Roundabouts

LOS	LOS Description	Control Delay (seconds per vehicle) for Roundabouts
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good**)	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 50.0

Rothesay Road (Route 100) at Ashburn Road

Rothesay Rd (Route 100) at Ashburn Rd is a 3-legged intersection with a stop-control on the minor street, Ashburn Rd. The intersection is on a flat grade with good sight distance toward the north. In the southbound direction, sight distance is slightly obscured by trees and other landscape elements. Utility poles are located along the east side of Rothesay Road that may require relocation. Bike lanes are located on either side of Rothesay Rd and Ashburn Rd provides shared bike lanes. This intersection and bike facilities are considered part of the Great TransCanada Trail. The bike facilities access to the roundabout will require consideration during the detailed design phase. Access driveways are located within 16m of the intersection on both roads. The eastbound approach

currently experiences high delays during peak hours, particularly in the afternoon period after shifts at the hospital end. Rothesay Rd is a provincially designated roadway (Route 100) and further discussion with NBDTI would be required for future upgrades.

The roundabout capacity analysis results for a 35 m diameter single-lane roundabout at this location (per concept drawing below and in **Appendix B**) are summarized as follows:

	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Rothesay Rd. @ Ashburn - 2019														
2 - Rothesay North	**3.2**	**14.1**	**13.10**	**0.77**	**B**	**10.50**	**B**	0.3	1.1	3.86	0.21	A	7.43	A
3 - Ashburn	**0.3**	**1.2**	**5.71**	**0.22**	**A**			1.9	3.5	9.43	0.66	A		
4 - Rothesay South	**0.2**	**0.5**	**3.60**	**0.18**	**A**			0.9	2.0	6.35	0.49	A		
Rothesay Rd. @ Ashburn - 20%														
2 - Rothesay North	10.3	55.8	36.88	0.93	E	27.26	D	0.3	1.4	4.13	0.25	A	11.73	B
3 - Ashburn	0.4	1.6	7.02	0.30	A			4.0	20.0	16.84	0.81	C		
4 - Rothesay South	0.3	1.2	3.78	0.21	A			1.5	1.7	8.28	0.60	A		

In the AM Peak, the heaviest volume is recorded at the southbound through movement, and in the PM Peak, the heaviest volume is recorded at the eastbound right movement. The results indicate that with 20% future traffic growth the southbound approach (north leg) on Rothesay Rd would operate near capacity at a LOS E. Based on previous experience the results of Junctions 9 tend to be conservative and therefore the actual delay is expected to be lower than shown. **A single lane roundabout is appropriate at this location.** All capacity analysis reports can be found in **Appendix C**. Further refinements to determine bike facility access to the roundabout should be considered during detailed design.

Exhibit 3.3: Rothesay Road/Ashburn Road Single Lane Roundabout

Sandy Point Road at Foster Thurston Drive

Sandy Point Road at Foster Thurston Drive is a 3-legged intersection with a stop-control on the Sandy Point Road eastbound approach. Foster Thurston Drive slopes towards the south and sight distance is obscured by adjacent slopes and tree lines. A utility pole is located in the northwest corner of the intersection. An unmarked access roadway intersects on the east side of the intersection and leads to trail parking.

The roundabout capacity analysis results for a 35 m diameter single-lane roundabout at this location (per concept drawing below and in **Appendix B**) are summarized as follows:

	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Sandy Point @ Foster Thurston - 2019														
2 - Foster Thurston	2.4	7.0	10.42	0.71	B	9.11	A	0.2	1.0	3.79	0.20	A	6.08	A
3 - Sandy Point West	0.2	0.5	5.72	0.13	A			0.0	0.5	3.39	0.05	A		
4 - Sandy Point South	0.1	0.5	3.47	0.11	A			1.4	1.6	7.06	0.58	A		
Sandy Point @ Foster Thurston - 20%														
2 - Foster Thurston	5.2	27.1	19.88	0.85	C	16.63	C	**0.3**	**1.4**	**4.02**	**0.24**	**A**	**8.07**	**A**
3 - Sandy Point West	0.2	0.6	6.95	0.18	A			**0.1**	**0.5**	**3.50**	**0.06**	**A**		
4 - Sandy Point South	0.2	0.5	3.57	0.14	A			**2.2**	**5.8**	**9.79**	**0.69**	**A**		

In the AM Peak, the heaviest volume is recorded at the southbound through movement, and in the PM Peak, the heaviest volume is recorded at the northbound through movement. The results indicate that with 20% future traffic growth all approaches would operate at LOS C or better during peak hours. Therefore, **a single-lane roundabout is appropriate at this location.** All capacity analysis reports can be found in **Appendix C**.

Exhibit 3.4: Sandy Point Road/Foster Thurston Drive Single Lane Roundabout

Manawagonish Road at Gault Road

The Manawagonish Rd at Gault Rd intersection consists of 4 legs that are skewed at inconsistent angles and a center median that functions as a traffic circle. The intersection is raised on a slight grade but has good sight distance in each direction. Traffic circulates around the central island, but entering traffic control is not consistent. Some entries have stop control while other entries have priority where circulating traffic must yield. Utility poles are located on Ocean Westway, Manawagonish Rd, and within the center median that may require relocation. Development access to the south could be accommodated by a direct access into the south side of the roundabout or just to the east of the Manawagonish Rd splitter island. Additionally, the proximity of the intersection to the provincial highway and the Highway 7 Ramp approach places the intersection within NBDTI's Level 1 controlled access area. Further discussion with NBDTI would be required for future upgrades.

The roundabout capacity analysis results for a 40 m diameter single-lane roundabout at this location (per concept drawing below and in **Appendix B**) are summarized as follows:

	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Ocean Westway @ Gault Road - 2019														
1 - Manawagonish Road	0.2	0.5	3.76	0.19	A	3.66	A	0.5	2.0	4.54	0.32	A	4.19	A
2 - Gault Road	0.1	0.5	3.49	0.06	A			0.1	0.5	3.73	0.09	A		
3 - Route 1 Ramps	0.0	0.5	3.37	0.03	A			0.1	0.5	3.40	0.06	A		
4 - Ocean Westway	0.2	0.5	3.66	0.15	A			0.3	1.3	4.04	0.23	A		
Ocean Westway @ Gault Road - 20%														
1 - Manawagonish Road	**0.3**	**1.3**	**3.96**	**0.22**	**A**	**3.83**	**A**	0.6	2.7	5.12	0.39	A	4.61	A
2 - Gault Road	**0.1**	**0.5**	**3.60**	**0.07**	**A**			0.1	0.5	3.96	0.11	A		
3 - Route 1 Ramps	**0.0**	**0.5**	**3.46**	**0.04**	**A**			0.1	0.5	3.51	0.07	A		
4 - Ocean Westway	**0.2**	**0.5**	**3.83**	**0.18**	**A**			0.4	1.5	4.40	0.28	A		

Both peak hours show fairly balanced volumes on each approach at the intersection. The LOS results indicate that **a single-lane roundabout is appropriate at this location.** All capacity analysis reports can be found in **Appendix C**.

Exhibit 3.5: Manawagonish Road/Gault Road Single Lane Roundabout

Millidge Avenue at Somerset Street

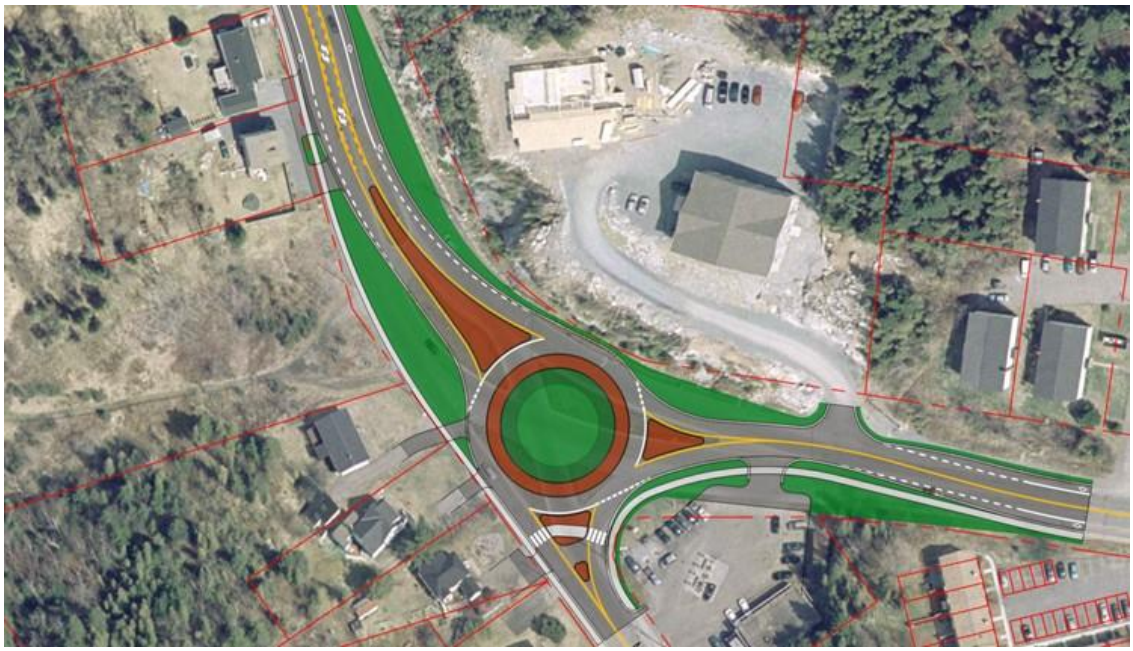
Millidge Ave at Somerset St is a 3-legged intersection with a stop-control on the Millidge Ave northbound approach. The intersection is on a slight grade with acceptable sight distance toward Somerset Street. Utility poles and barricades are located along the east side of Somerset Street that may require relocation. The Campus-Harbour Bike Trail route provides bike lanes on either side of Millidge Ave (southbound) and Somerset Street connecting the University/Hospital area with uptown Saint John. The bike facilities through the roundabout would require consideration during detailed design. Commercial and residential access driveways are located within 20m of the intersection on Millidge Ave and Somerset St. There are three residential driveways with access

directly into circulatory roadway of the roundabout. Future developments are also proposed at the intersection which would require some consideration.

A roundabout at this intersection would address the awkward layout of the existing intersection and roadway approaches. Currently, motorists coming from the south on Millidge Ave (northbound approach) turn east onto Somerset St at a sharp angle making it difficult to see oncoming cyclists in the bike lane. Motorists can also head north onto Millidge Ave and do so by crossing southbound traffic and pausing in the center median before merging into Millidge Ave northbound traffic. Motorists on Somerset Street wanting to turn left onto Millidge Ave southbound, must make a “left” and perform a U-turn towards Millidge Ave. The current configuration is also a challenge for pedestrians and lacks any defined crossing areas. Historically, capacity at the intersection has not been an issue and traffic has been observed to run smoothly however, a roundabout would be rationalized on the basis of safety benefits.

No traffic volumes were available for this intersection, therefore a roundabout capacity analysis was not performed at the intersection. If a roundabout were installed, it is expected to have fairly balanced volumes from each approach at the intersection and perform at an acceptable level of service. **A 45.0 m diameter, single lane roundabout is appropriate at this location**, per concept drawing below and in **Appendix B**.

Exhibit 3.6: Millidge Ave/Somerset St Roundabout with Single Lane Exits



Simms Corner: Main Street West at Lancaster Avenue

Simms Corner is a 4-legged intersection with the stop control in the westbound (Lancaster Ave) and northbound (Fairville Blvd) directions. The intersection slopes down toward the west but has good sight distance. Large utility poles are located within the intersection that may require relocation. Railroad tracks cross

Main St W and Fairville Blvd near the intersection and access driveways are located within 50m of the intersection on Lancaster Ave and Main St W.

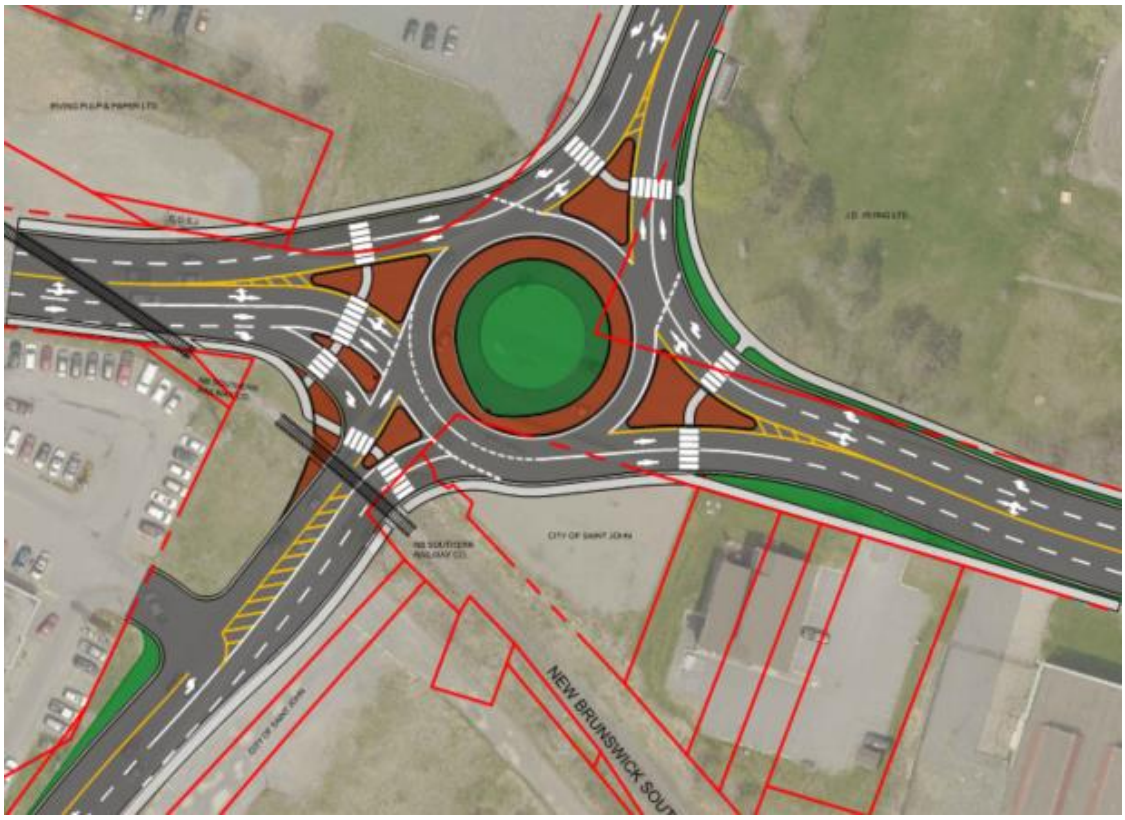
Crandall produced a concept design for this intersection utilizing a 50m inscribed circle diameter and multi-lane entries. The full concept drawing is also provided in **Appendix B**. This design accommodates Long Combination Vehicles for north-south movements through the roundabout (Fairville Blvd to Bridge St). Design vehicle requirements should be confirmed during the detailed design phase as major industrial properties are in close proximity and utilize Simms Corner. Driveways near the intersection should also be considered during detailed design. Turning restrictions may be required at nearby driveways so queueing on the road does not back into the intersection such as westbound vehicles making a left-turn into the fast-food development driveway on the southside of Main St W.

Traffic volumes documented in a report on Simms Corner by Terrain (2007) were used for the level of service analysis. More recent counts were available from 2014, but those were noticeably lower than the 2007 counts and were therefore deemed unreliable. Given that growth in the area has been relatively flat, the 2007 volumes were not growthed up to estimate future traffic volumes. It would be recommended to complete a new count and prepare an optimized lane configuration for the roundabout should the project proceed to a preliminary design phase.

The multi-lane roundabout was modelled using Vissim 8 to determine what lane configurations would be required to accommodate traffic at this location. It was determined that **a 50 m diameter multi-lane roundabout would operate well with two lane entries and exits on each leg, except for Fairville Blvd which would require only one exiting leg.** The results for this configuration are summarized below. The proposed roundabout concept is shown in **Exhibit 3.7**. Further refinements to determine required lane configuration while also respecting truck turning requirements would be completed during preliminary design. The reconfiguration of this intersection is a high priority for the City's implementation plan and driver education should be promoted early on to ensure the success of the roundabout. All capacity analysis reports can be found in **Appendix C**.

	AM Peak					PM Peak				
	Max Queue (m)	**Veh Delay (s)**	**LOS**	**Int. Delay (s)**	**Int. LOS**	**Max Queue (m)**	**Veh Delay (s)**	**LOS**	**Int. Delay (s)**	**Int. LOS**
2007 Terrain Report Volumes										
Main St	112.71	13.56	B	14.33	B	92.81	19.73	C	8.27	A
Fairville Blvd	184.40	32.98	D			65.85	7.37	A		
Lancaster Ave	26.93	4.34	A			21.04	3.16	A		
Bridge Rd	58.95	3.31	A			109.75	4.95	A		

Exhibit 3.7: Simms Corner Roundabout Multi-Lane Roundabout Concept



The 2007 Terrain Report evaluated a number of design options for improving the Simms Corner intersection. One option was the installation of a multilane roundabout. The report provided a list of pros and cons for the roundabout design option with a conclusion that the cons deemed the roundabout an unfeasible option. Since 2007, much practical design knowledge has been gained in the roundabout industry and many roundabouts have been installed in Atlantic Canada with wide success. Some conditions that were once considered inappropriate for a roundabout installation are now considered to be manageable. For these reasons, it is prudent to revisit the option of a multi-lane roundabout at Simms Corner in the context of current conditions and design practice. **Exhibit 3.8** below shows the list of roundabout "cons" from Terrain's 2007 report and responses from the current context. It is our opinion that a roundabout should be considered a viable option for Simms Corner with further study to confirm the most feasible configuration that balances operations, cost, and property impacts.

Exhibit 3.8: Terrain Report Roundabout Commentary on Simms Corner

Terrain 2007 Report Comment	Responses based on Current Concept
There are no roundabouts within the area and are not consistent with local driver expectations.	Over a decade later, roundabouts have become more popular within Atlantic Canada, are a proven safe and efficient intersection option in the right conditions. Although Saint John has not yet installed a roundabout, other cities in New Brunswick have demonstrated that roundabouts can be successfully implemented with driver education campaigns and quickly gain public acceptance.
Roundabouts are typically constructed on flat or rolling terrain with approach grades desirably 3-5%. Presently Lancaster Avenue has a downgrade of 6.5%. Extensive earthwork would be required to flatten approach grades, resulting in cost prohibitive impacts to rail crossings, property access, and underground utilities and services.	Center roundabout medians and entrances/exits should not be constructed on grades greater than 4%, but having steeper grades on the approaches is acceptable, given proper sight lines are maintained and there are minimal grade breaks by introducing vertical curves. Extensive earthwork may not necessary be required given the acceptance of existing approach grades.
Locating a roundabout near an at grade rail crossing is generally discouraged.	Simms Corner is adjacent to the rail crossing regardless of the improvements made. A roundabout should not be excluded for this reason.
A comprehensive traffic study is required to locate a roundabout within the coordinated signal network.	The network of coordinated traffic signals is not extensive, and a roundabout should not be excluded for this reason.
On-street parking to the intersection is not recommended and the presence of the roundabout may impact access to the immediately adjacent land of Tim Hortons/Wendy's.	On-street parking may require relocation but is manageable. Property access may be impacted minimally in the current concept.
A roundabout requires expensive retaining wall replacement along the Simms Brush building.	The Simms Brush building has since been demolished and the site reconstructed as a truck entrance to the Pulp and Paper Mill. The retaining wall has been replaced by a steep rock slope. Although this still is a constraint and earthwork may be required, there may be flexibility in the design to avoid costly impacts.
A roundabout requires extensive property acquisition.	In the current concept, property acquisition does not appear to be overly extensive and a roundabout should not be excluded for this reason.

4 Implementation

Roundabouts provide several benefits over conventional intersections. This type of intersection provides motorists with a safer environment, while also offering operational, environmental and economic benefits. For a community that is introducing its first roundabout, it is good practice that the first roundabout be a single lane roundabout so that drivers can become accustomed to roundabouts in a low complexity environment; however, this does not preclude a multi-lane roundabout from being the priority for implementation. Roundabouts are becoming more and more commonplace throughout New Brunswick with increasing complexity. Therefore, public exposure to roundabouts is much higher than several years ago and with a comprehensive public education campaign, a multi-lane roundabout could be implemented successfully as Saint John's first roundabout.

Based on the level of need, we recommend that installation of the five candidate roundabouts be considered in the following order of priority:

1. **Main Street W at Lancaster Avenue (Simms Corner):** A 50 m diameter multi-lane roundabout with double lanes entering all approaches, and double lane exits (with the exception of Fairville Boulevard which requires only a single exit lane) would operate well at this intersection. The reconfiguration of this intersection has remained a high priority for the City and is critical to the long-term traffic flow in this area and the removal of truck traffic from residential streets. A proper driver education strategy should be promoted early on to ensure the success of the roundabout. Although a 2007 study determined that a roundabout would not be feasible at this location, many of the concerns may now be overcome due to an evolution of roundabout design knowledge and practical experience. It is our opinion that a roundabout should be considered a viable option for Simms Corner with further study, new count data, and preliminary design work to confirm the most feasible configuration that balances operations, cost, and property impacts.
2. **Rothesay Road at Ashburn Road:** A 35 m diameter single lane roundabout is recommended for installation at this intersection. The need to address the intersection configuration is evident due to the capacity and traffic delays under existing conditions. This roundabout will require minor right-of-way acquisition. During design, drainage requirements will need to be reviewed carefully given this area is low lying and prone to flooding.
3. **Sandy Point Road at Foster Thurston Drive:** A 35 m diameter single lane roundabout is recommended at this location. In 2011, a traffic study was performed by the City of Saint John recommending upgrades at this intersection to address operational and safety concerns. A roundabout would provide an effective solution that

would be fairly simple to install with minimal disruption to the existing area.

4. **Manawagonish Road at Gault Road:** A 40m diameter single lane roundabout would be appropriate for installation at this intersection. Although there is no history of significant operational or safety issues at this intersection, the awkward layout of the intersection and irregular traffic control are causes for concern. The proposed roundabout is a standard approach that would correct the configuration of this intersection. This roundabout would require provincial coordination in addition to property acquisition near the intersection. Development access to the south could be accommodated by a direct access into the south side of the roundabout or just to the east of the Manawagonish Road splitter island.
5. **Millidge Avenue at Somerset Street:** A 45 m diameter single lane roundabout would be appropriate at this intersection. Although there is no history of significant operational or safety issues at this intersection, the awkward layout of the intersection and irregular traffic control are causes for concern, particularly for pedestrians and cyclists. The proposed roundabout is a standard approach that would correct the configuration of this intersection. This roundabout appears to fit within the existing right-of-way.

Appendix A
Traffic Volumes

Study Name	Rothesay Road at Ashburn Road
Start Date	Tuesday, December 1, 2015 11:30 AM
End Date	Wednesday, December 2, 2015 11:45 AM
Site Code	

Road Volumes

TMV	Movement												
	Southbound			Southbound To	Northbound			Northbound To	Eastbound			Eastbound To	Grand Total
Interval	R	T	U		T	U	L		R	U	L		
2015-01-12 11:30	14	69	0	83	45	0	13	58	62	0	19	81	222
Lights	14	68	0	82	43	0	13	56	62	0	19	81	219
Other Vehicles	0	1	0	1	2	0	0	2	0	0	0	0	3
2015-01-12 11:45	7	53	0	60	38	0	9	47	40	0	12	52	159
Lights	7	51	0	58	38	0	9	47	40	0	12	52	157
Other Vehicles	0	2	0	2	0	0	0	0	0	0	0	0	2
2015-01-12 12:00	10	57	0	67	49	0	21	70	45	0	13	58	195
Lights	10	56	0	66	49	0	20	69	44	0	12	56	191
Other Vehicles	0	1	0	1	0	0	1	1	1	0	1	2	4
2015-01-12 12:15	11	43	0	54	64	0	18	82	52	0	11	63	199
Lights	11	43	0	54	64	0	18	82	52	0	11	63	199
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 12:30	3	64	0	67	44	0	22	66	48	0	21	69	202
Lights	3	62	0	65	44	0	22	66	48	0	21	69	200
Other Vehicles	0	2	0	2	0	0	0	0	0	0	0	0	2
2015-01-12 12:45	2	71	0	73	52	0	32	84	42	0	14	56	213
Lights	2	70	0	72	49	0	30	79	41	0	13	54	205
Other Vehicles	0	1	0	1	3	0	2	5	1	0	1	2	8
2015-01-12 13:00	11	65	0	76	53	0	25	78	45	0	16	61	215
Lights	11	64	0	75	53	0	25	78	44	0	16	60	213
Other Vehicles	0	1	0	1	0	0	0	0	1	0	0	1	2
2015-01-12 13:15	8	56	0	64	44	0	23	67	33	0	22	55	186
Lights	8	55	0	63	41	0	23	64	33	0	22	55	182
Other Vehicles	0	1	0	1	3	0	0	3	0	0	0	0	4
2015-01-12 13:30	7	57	0	64	54	0	9	63	43	0	17	60	187
Lights	6	54	0	60	52	0	9	61	43	0	17	60	181
Other Vehicles	1	3	0	4	2	0	0	2	0	0	0	0	6
2015-01-12 13:45	5	57	0	62	45	0	24	69	42	0	17	59	190
Lights	5	53	0	58	45	0	24	69	40	0	17	57	184
Other Vehicles	0	4	0	4	0	0	0	0	2	0	0	2	6
2015-01-12 14:00	4	52	0	56	47	0	22	69	50	0	21	71	196
Lights	4	52	0	56	43	0	21	64	50	0	21	71	191
Other Vehicles	0	0	0	0	4	0	1	5	0	0	0	0	5
2015-01-12 14:15	10	57	0	67	43	0	19	62	57	0	17	74	203
Lights	10	52	0	62	41	0	17	58	54	0	17	71	191
Other Vehicles	0	5	0	5	2	0	2	4	3	0	0	3	12
2015-01-12 14:30	7	55	0	62	47	0	16	63	64	0	21	85	210
Lights	5	52	0	57	46	0	16	62	63	0	21	84	203
Other Vehicles	2	3	0	5	1	0	0	1	1	0	0	1	7
2015-01-12 14:45	5	45	0	50	48	0	15	63	64	0	19	83	196
Lights	5	44	0	49	47	0	14	61	63	0	19	82	192
Other Vehicles	0	1	0	1	1	0	1	2	1	0	0	1	4
2015-01-12 15:00	7	51	0	58	60	0	20	80	71	0	21	92	230
Lights	7	51	0	58	54	0	20	74	70	0	21	91	223
Other Vehicles	0	0	0	0	6	0	0	6	1	0	0	1	7
2015-01-12 15:15	6	76	0	82	69	0	29	98	89	0	33	122	302
Lights	6	71	0	77	65	0	28	93	89	0	33	122	292
Other Vehicles	0	5	0	5	4	0	1	5	0	0	0	0	10
2015-01-12 15:30	4	61	0	65	67	0	16	83	98	0	47	145	293
Lights	4	58	0	62	67	0	15	82	98	0	47	145	289
Other Vehicles	0	3	0	3	0	0	1	1	0	0	0	0	4
2015-01-12 15:45	5	38	0	43	75	0	20	95	105	0	36	141	279
Lights	5	38	0	43	73	0	20	93	105	0	36	141	277
Other Vehicles	0	0	0	0	2	0	0	2	0	0	0	0	2
2015-01-12 16:00	10	46	0	56	88	0	11	99	113	0	51	164	319
Lights	10	45	0	55	86	0	11	97	111	0	49	160	312
Other Vehicles	0	1	0	1	2	0	0	2	2	0	2	4	7
2015-01-12 16:15	5	51	0	56	101	0	23	124	121	0	66	187	367
Lights	4	49	0	53	98	0	23	121	119	0	66	185	359
Other Vehicles	1	2	0	3	3	0	0	3	2	0	0	2	8
2015-01-12 16:30	9	52	0	61	93	0	24	117	124	0	37	161	339
Lights	9	50	0	59	93	0	23	116	123	0	37	160	335
Other Vehicles	0	2	0	2	0	0	1	1	1	0	0	1	4
2015-01-12 16:45	9	42	0	51	121	0	26	147	101	0	50	151	349
Lights	9	41	0	50	120	0	25	145	101	0	50	151	346
Other Vehicles	0	1	0	1	1	0	1	2	0	0	0	0	3
2015-01-12 17:00	2	36	0	38	94	0	24	118	112	0	40	152	308
Lights	2	34	0	36	94	0	24	118	111	0	40	151	305
Other Vehicles	0	2	0	2	0	0	0	0	1	0	0	1	3
2015-01-12 17:15	0	52	0	52	133	0	24	157	78	0	50	128	337
Lights	0	51	0	51	131	0	24	155	78	0	50	128	334
Other Vehicles	0	1	0	1	2	0	0	2	0	0	0	0	3

2015-01-12 17:30	4	37	0	41	93	0	11	104	64	0	31	95	240
Lights	4	36	0	40	91	0	11	102	64	0	31	95	237
Other Vehicles	0	1	0	1	2	0	0	2	0	0	0	0	3
2015-01-12 17:45	4	40	0	44	66	0	12	78	52	0	29	81	203
Lights	4	40	0	44	66	0	12	78	52	0	29	81	203
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 18:00	11	33	0	44	66	0	18	84	55	0	13	68	196
Lights	11	32	0	43	66	0	18	84	55	0	13	68	195
Other Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	1
2015-01-12 18:15	4	35	0	39	43	0	6	49	32	0	20	52	140
Lights	4	35	0	39	43	0	6	49	32	0	19	51	139
Other Vehicles	0	0	0	0	0	0	0	0	0	0	1	1	1
2015-01-12 18:30	5	48	0	53	44	0	6	50	31	0	10	41	144
Lights	5	47	0	52	43	0	6	49	31	0	10	41	142
Other Vehicles	0	1	0	1	1	0	0	1	0	0	0	0	2
2015-01-12 18:45	6	40	0	46	40	0	7	47	39	0	14	53	146
Lights	6	40	0	46	40	0	7	47	39	0	14	53	146
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 19:00	6	32	0	38	34	1	7	42	31	0	13	44	124
Lights	6	31	0	37	34	1	7	42	31	0	13	44	123
Other Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	1
2015-01-12 19:15	4	44	0	48	36	0	10	46	29	0	16	45	139
Lights	4	42	0	46	36	0	10	46	29	0	16	45	137
Other Vehicles	0	2	0	2	0	0	0	0	0	0	0	0	2
2015-01-12 19:30	4	35	0	39	35	0	5	40	50	0	16	66	145
Lights	4	35	0	39	35	0	5	40	50	0	16	66	145
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 19:45	1	25	0	26	31	0	5	36	43	0	19	62	124
Lights	1	25	0	26	31	0	5	36	43	0	19	62	124
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 20:00	0	17	0	17	31	0	6	37	33	0	9	42	96
Lights	0	17	0	17	31	0	6	37	33	0	9	42	96
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 20:15	0	10	0	10	32	0	5	37	26	0	14	40	87
Lights	0	10	0	10	32	0	5	37	25	0	14	39	86
Other Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
2015-01-12 20:30	2	16	0	18	19	0	6	25	21	0	9	30	73
Lights	2	16	0	18	19	0	6	25	21	0	9	30	73
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 20:45	2	12	0	14	33	0	1	34	22	0	16	38	86
Lights	2	12	0	14	33	0	1	34	22	0	16	38	86
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 21:00	2	19	0	21	30	0	5	35	15	0	10	25	81
Lights	2	19	0	21	30	0	5	35	15	0	10	25	81
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 21:15	2	20	0	22	30	0	5	35	14	0	12	26	83
Lights	2	20	0	22	30	0	5	35	14	0	12	26	83
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 21:30	1	10	0	11	26	0	5	31	11	0	8	19	61
Lights	1	10	0	11	26	0	5	31	11	0	8	19	61
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 21:45	0	8	0	8	21	0	6	27	9	0	2	11	46
Lights	0	8	0	8	21	0	6	27	9	0	2	11	46
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 22:00	1	4	0	5	18	0	3	21	19	0	11	30	56
Lights	1	4	0	5	18	0	3	21	19	0	11	30	56
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 22:15	1	8	0	9	13	0	0	13	9	0	5	14	36
Lights	1	8	0	9	13	0	0	13	8	0	5	13	35
Other Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
2015-01-12 22:30	0	3	0	3	9	0	0	9	12	0	4	16	28
Lights	0	3	0	3	9	0	0	9	12	0	4	16	28
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 22:45	0	8	0	8	2	0	0	2	13	0	3	16	26
Lights	0	8	0	8	2	0	0	2	13	0	3	16	26
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 23:00	0	4	0	4	8	0	0	8	10	0	1	11	23
Lights	0	4	0	4	8	0	0	8	10	0	1	11	23
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 23:15	0	3	0	3	2	0	0	2	7	0	4	11	16
Lights	0	3	0	3	2	0	0	2	7	0	4	11	16
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 23:30	1	1	0	2	4	0	2	6	16	0	4	20	28
Lights	1	1	0	2	4	0	2	6	16	0	4	20	28
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-12 23:45	0	4	0	4	2	0	0	2	11	0	2	13	19
Lights	0	4	0	4	2	0	0	2	11	0	2	13	19
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13	0	0	0	0	3	0	1	4	10	0	1	11	15
Lights	0	0	0	0	3	0	1	4	10	0	1	11	15
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 0:15	0	1	0	1	5	0	0	5	5	0	1	6	12
Lights	0	1	0	1	5	0	0	5	5	0	1	6	12

Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 0:30	0	1	0	1	5	0	0	5	2	0	2	4	10
Lights	0	1	0	1	5	0	0	5	2	0	2	4	10
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 0:45	0	3	0	3	3	0	0	3	4	0	0	4	10
Lights	0	3	0	3	3	0	0	3	4	0	0	4	10
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 1:00	2	1	0	3	1	0	1	2	0	0	0	0	5
Lights	2	1	0	3	1	0	1	2	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 1:15	0	1	0	1	1	0	1	2	1	0	0	1	4
Lights	0	1	0	1	1	0	1	2	1	0	0	1	4
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 1:30	0	2	0	2	0	0	0	0	1	0	0	1	3
Lights	0	2	0	2	0	0	0	0	1	0	0	1	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 1:45	0	4	0	4	0	0	1	1	1	0	0	1	6
Lights	0	4	0	4	0	0	1	1	1	0	0	1	6
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 2:00	0	0	0	0	3	0	0	3	0	0	0	0	3
Lights	0	0	0	0	3	0	0	3	0	0	0	0	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 2:15	0	0	0	0	2	0	1	3	1	0	2	3	6
Lights	0	0	0	0	2	0	0	2	1	0	2	3	5
Other Vehicles	0	0	0	0	0	0	1	1	0	0	0	0	1
2015-01-13 2:30	0	1	0	1	2	0	0	2	0	0	2	2	5
Lights	0	1	0	1	1	0	0	1	0	0	2	2	4
Other Vehicles	0	0	0	0	1	0	0	1	0	0	0	0	1
2015-01-13 2:45	1	0	0	1	0	0	0	0	3	0	0	3	4
Lights	1	0	0	1	0	0	0	0	2	0	0	2	3
Other Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
2015-01-13 3:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 3:15	1	1	0	2	3	0	1	4	2	0	0	2	8
Lights	1	1	0	2	3	0	1	4	1	0	0	1	7
Other Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
2015-01-13 3:30	0	1	0	1	1	0	1	2	4	0	0	4	7
Lights	0	1	0	1	1	0	1	2	4	0	0	4	7
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 3:45	0	1	0	1	0	0	0	0	0	0	0	0	1
Lights	0	1	0	1	0	0	0	0	0	0	0	0	1
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 4:00	0	0	0	0	0	0	0	0	1	0	0	1	1
Lights	0	0	0	0	0	0	0	0	1	0	0	1	1
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 4:15	0	1	0	1	1	0	0	1	1	0	0	1	3
Lights	0	1	0	1	1	0	0	1	1	0	0	1	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 4:30	0	0	0	0	1	0	0	1	1	0	0	1	2
Lights	0	0	0	0	1	0	0	1	1	0	0	1	2
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 4:45	1	1	0	2	0	0	0	0	3	0	0	3	5
Lights	1	1	0	2	0	0	0	0	2	0	0	2	4
Other Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
2015-01-13 5:00	1	1	0	2	0	0	0	0	1	0	0	1	3
Lights	1	1	0	2	0	0	0	0	1	0	0	1	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 5:15	1	7	0	8	0	0	0	0	0	0	0	0	8
Lights	1	7	0	8	0	0	0	0	0	0	0	0	8
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 5:30	1	22	0	23	2	0	2	4	2	0	0	2	29
Lights	1	22	0	23	2	0	2	4	2	0	0	2	29
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 5:45	2	14	0	16	5	0	2	7	1	0	0	1	24
Lights	2	14	0	16	5	0	1	6	1	0	0	1	23
Other Vehicles	0	0	0	0	0	0	1	1	0	0	0	0	1
2015-01-13 6:00	1	22	0	23	2	0	4	6	2	0	3	5	34
Lights	1	22	0	23	2	0	4	6	2	0	3	5	34
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 6:15	9	23	0	32	6	0	5	11	4	0	1	5	48
Lights	9	23	0	32	5	0	5	10	4	0	1	5	47
Other Vehicles	0	0	0	0	1	0	0	1	0	0	0	0	1
2015-01-13 6:30	9	44	0	53	12	0	9	21	4	0	5	9	83
Lights	9	44	0	53	11	0	9	20	3	0	5	8	81
Other Vehicles	0	0	0	0	1	0	0	1	1	0	0	1	2
2015-01-13 6:45	16	68	0	84	11	0	17	28	10	0	2	12	124
Lights	16	67	0	83	10	0	17	27	10	0	2	12	122
Other Vehicles	0	1	0	1	1	0	0	1	0	0	0	0	2
2015-01-13 7:00	8	82	0	90	3	0	20	23	8	0	2	10	123
Lights	8	82	0	90	3	0	20	23	8	0	2	10	123
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
2015-01-13 7:15	31	114	0	145	17	0	28	45	29	0	6	35	225

Lights	31	113	0	144	15	0	28	43	29	0	6	35	222
Other Vehicles	0	1	0	1	2	0	0	2	0	0	0	0	3
2015-01-13 7:30	28	124	0	152	26	0	21	47	44	0	11	55	254
Lights	28	123	0	151	23	0	21	44	44	0	11	55	250
Other Vehicles	0	1	0	1	3	0	0	3	0	0	0	0	4
2015-01-13 7:45	34	201	0	235	22	0	33	55	35	0	10	45	335
Lights	34	201	0	235	19	0	32	51	34	0	10	44	330
Other Vehicles	0	0	0	0	3	0	1	4	1	0	0	1	5
2015-01-13 8:00	37	180	0	217	29	0	22	51	25	0	5	30	298
Lights	35	175	0	210	24	0	22	46	24	0	5	29	285
Other Vehicles	2	5	0	7	5	0	0	5	1	0	0	1	13
2015-01-13 8:15	45	168	0	213	24	0	16	40	29	0	5	34	287
Lights	43	167	0	210	23	0	16	39	27	0	5	32	281
Other Vehicles	2	1	0	3	1	0	0	1	2	0	0	2	6
2015-01-13 8:30	39	137	0	176	20	0	18	38	19	0	5	24	238
Lights	39	137	0	176	18	0	18	36	19	0	5	24	236
Other Vehicles	0	0	0	0	2	0	0	2	0	0	0	0	2
2015-01-13 8:45	22	96	0	118	27	0	21	48	32	0	8	40	206
Lights	22	92	0	114	25	0	20	45	31	0	8	39	198
Other Vehicles	0	4	0	4	2	0	1	3	1	0	0	1	8
2015-01-13 9:00	20	66	0	86	26	0	19	45	26	0	2	28	159
Lights	19	63	0	82	26	0	18	44	25	0	2	27	153
Other Vehicles	1	3	0	4	0	0	1	1	1	0	0	1	6
2015-01-13 9:15	12	50	0	62	18	0	13	31	30	0	9	39	132
Lights	12	50	0	62	16	0	13	29	28	0	9	37	128
Other Vehicles	0	0	0	0	2	0	0	2	2	0	0	2	4
2015-01-13 9:30	12	56	0	68	26	0	16	42	19	0	5	24	134
Lights	12	53	0	65	25	0	14	39	18	0	5	23	127
Other Vehicles	0	3	0	3	1	0	2	3	1	0	0	1	7
2015-01-13 9:45	18	47	0	65	19	0	12	31	33	0	15	48	144
Lights	18	44	0	62	19	0	12	31	31	0	15	46	139
Other Vehicles	0	3	0	3	0	0	0	0	2	0	0	2	5
2015-01-13 10:00	12	49	0	61	30	0	13	43	39	0	17	56	160
Lights	12	49	0	61	26	0	13	39	38	0	17	55	155
Other Vehicles	0	0	0	0	4	0	0	4	1	0	0	1	5
2015-01-13 10:15	9	60	0	69	28	0	8	36	32	0	16	48	153
Lights	9	57	0	66	25	0	6	31	32	0	15	47	144
Other Vehicles	0	3	0	3	3	0	2	5	0	0	1	1	9
2015-01-13 10:30	9	52	0	61	30	0	13	43	42	0	6	48	152
Lights	9	52	0	61	29	0	12	41	41	0	6	47	149
Other Vehicles	0	0	0	0	1	0	1	2	1	0	0	1	3
2015-01-13 10:45	4	57	0	61	27	0	16	43	43	0	10	53	157
Lights	4	56	0	60	26	0	14	40	43	0	10	53	153
Other Vehicles	0	1	0	1	1	0	2	3	0	0	0	0	4
2015-01-13 11:00	9	55	0	64	36	0	11	47	27	1	10	38	149
Lights	9	55	0	64	36	0	11	47	27	1	9	37	148
Other Vehicles	0	0	0	0	0	0	0	0	0	0	1	1	1
2015-01-13 11:15	10	49	0	59	36	0	13	49	34	0	9	43	151
Lights	10	48	0	58	34	0	13	47	34	0	8	42	147
Other Vehicles	0	1	0	1	2	0	0	2	0	0	1	1	4
2015-01-13 11:30	1	5	0	6	3	0	0	3	0	0	0	0	9
Lights	1	5	0	6	3	0	0	3	0	0	0	0	9
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	627	3690	0	4317	2858	1	975	3834	2983	1	1136	4120	12271

Study Name	Ocean Westway at Gault Road
Start Date	Thursday, August 07, 2014 11:45 AM
End Date	Friday, August 08, 2014 11:45 AM
Site Code	

Road Volumes

TMV	Movement																					
	Southbound				Southbound To	Westbound				Westbound To	Eastbound				Eastbound Tol	Southeastbound				Southeastbound	Grand Total
Interval	HR	R	L	U		R	U	BR	T		L	U	T	HL		HR	U	HL	BL		
2014-08-07 11:45	2	9	7	0	18	10	0	15	17	42	3	0	29	2	34	0	0	2	3	5	99
Lights	2	8	7	0	17	10	0	15	16	41	3	0	28	2	33	0	0	2	2	4	95
Other Vehicles	0	1	0	0	1	0	0	0	1	1	0	0	1	0	1	0	0	0	1	1	4
2014-08-07 12:00	0	8	7	0	15	14	0	23	19	56	2	0	38	2	42	1	0	2	0	3	116
Lights	0	8	7	0	15	14	0	23	19	56	2	0	37	2	41	1	0	2	0	3	115
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
2014-08-07 12:15	2	3	9	0	14	16	0	23	15	54	6	0	28	2	36	1	0	2	1	4	108
Lights	2	3	8	0	13	15	0	23	13	51	4	0	26	2	32	0	0	2	1	3	99
Other Vehicles	0	0	1	0	1	1	0	0	2	3	2	0	2	0	4	1	0	0	0	1	9
2014-08-07 12:30	4	11	9	0	24	7	0	22	14	43	1	0	23	2	26	3	0	4	3	10	103
Lights	1	11	9	0	21	6	0	20	13	39	1	0	23	1	25	3	0	3	3	9	94
Other Vehicles	3	0	0	0	3	1	0	2	1	4	0	0	0	1	1	0	0	1	0	1	9
2014-08-07 12:45	0	6	10	0	16	13	0	26	15	54	8	0	30	2	40	1	0	2	1	4	114
Lights	0	5	9	0	14	12	0	26	15	53	8	0	29	2	39	1	0	2	0	3	109
Other Vehicles	0	1	1	0	2	1	0	0	0	1	0	0	1	0	1	0	0	0	1	1	5
2014-08-07 13:00	1	3	10	0	14	12	0	21	27	60	4	0	36	2	42	3	0	2	1	6	122
Lights	1	3	9	0	13	12	0	21	26	59	4	0	35	2	41	3	0	2	1	6	119
Other Vehicles	0	0	1	0	1	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	3
2014-08-07 13:15	0	9	8	0	17	7	0	20	29	56	5	0	26	1	32	3	0	1	1	5	110
Lights	0	9	8	0	17	7	0	19	29	55	5	0	26	1	32	3	0	1	1	5	109
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 13:30	0	3	8	0	11	19	0	18	13	50	2	0	32	1	35	1	0	3	0	4	100
Lights	0	3	8	0	11	19	0	18	12	49	2	0	30	0	32	1	0	3	0	4	96
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	2	1	3	0	0	0	0	0	4
2014-08-07 13:45	3	5	5	1	14	11	0	27	21	59	1	0	33	3	37	1	0	4	4	9	119
Lights	3	5	5	1	14	10	0	27	20	57	1	0	33	3	37	1	0	4	4	9	117
Other Vehicles	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	2
2014-08-07 14:00	3	1	7	0	11	7	0	33	23	63	0	0	27	4	31	1	0	2	4	7	112
Lights	3	1	7	0	11	7	0	31	23	61	0	0	26	4	30	1	0	2	4	7	109
Other Vehicles	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	3
2014-08-07 14:15	2	3	4	1	10	13	2	23	15	53	3	0	30	2	35	3	0	3	4	10	108
Lights	2	3	4	1	10	13	2	22	15	52	2	0	30	2	34	3	0	3	3	9	105
Other Vehicles	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	1	3
2014-08-07 14:30	0	7	8	0	15	7	0	18	19	44	8	0	37	1	46	0	0	0	1	1	106
Lights	0	6	8	0	14	7	0	18	19	44	8	0	37	1	46	0	0	0	0	0	104
Other Vehicles	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
2014-08-07 14:45	3	4	7	0	14	20	0	25	28	73	8	0	32	6	46	0	0	2	1	3	136
Lights	3	4	7	0	14	20	0	25	28	73	8	0	31	6	45	0	0	2	1	3	135
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
2014-08-07 15:00	0	10	5	0	15	7	0	26	23	56	6	0	48	1	55	1	0	3	2	6	132
Lights	0	10	5	0	15	7	0	26	23	56	5	0	46	1	52	1	0	3	2	6	129
Other Vehicles	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	0	0	0	0	0	3
2014-08-07 15:15	1	5	12	0	18	7	0	34	26	67	6	0	35	1	42	2	0	0	5	7	134
Lights	1	5	12	0	18	7	0	34	25	66	6	0	35	1	42	2	0	0	5	7	133
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 15:30	1	1	5	0	7	20	1	29	21	71	4	0	35	2	41	2	1	5	3	11	130
Lights	1	1	5	0	7	19	1	29	19	68	4	0	33	2	39	2	0	5	3	10	124
Other Vehicles	0	0	0	0	0	1	0	0	2	3	0	0	2	0	2	0	1	0	0	1	6
2014-08-07 15:45	3	9	2	0	14	18	0	27	30	75	7	0	36	5	48	2	0	8	1	11	148
Lights	3	8	1	0	12	17	0	27	30	74	7	0	35	5	47	2	0	8	1	11	144
Other Vehicles	0	1	1	0	2	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4

2014-08-07 16:00	4	7	12	0	23	12	0	29	23	64	9	0	49	5	63	1	0	4	4	9	159
Lights	4	7	11	0	22	11	0	29	22	62	8	0	48	5	61	1	0	3	3	7	152
Other Vehicles	0	0	1	0	1	1	0	0	1	2	1	0	1	0	2	0	0	1	1	2	7
2014-08-07 16:15	7	6	9	0	22	14	0	34	39	87	4	0	36	1	41	3	0	3	4	10	160
Lights	7	5	8	0	20	13	0	32	37	82	4	0	36	1	41	3	0	3	4	10	153
Other Vehicles	0	1	1	0	2	1	0	2	2	5	0	0	0	0	0	0	0	0	0	0	7
2014-08-07 16:30	3	10	11	0	24	23	0	36	30	89	8	0	50	7	65	3	0	4	5	12	190
Lights	2	10	10	0	22	22	0	36	28	86	8	0	50	7	65	3	0	4	3	10	183
Other Vehicles	1	0	1	0	2	1	0	0	2	3	0	0	0	0	0	0	0	0	2	2	7
2014-08-07 16:45	1	9	9	0	19	30	1	39	23	93	4	0	34	3	41	6	0	7	8	21	174
Lights	1	9	9	0	19	30	1	38	23	92	4	0	34	3	41	6	0	7	8	21	173
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 17:00	3	6	7	0	16	18	0	41	19	78	20	0	45	11	76	1	0	12	2	15	185
Lights	2	6	7	0	15	18	0	41	19	78	19	0	45	11	75	1	0	12	1	14	182
Other Vehicles	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	3
2014-08-07 17:15	7	4	13	0	24	26	0	29	23	78	7	0	50	5	62	2	0	5	3	10	174
Lights	7	4	13	0	24	26	0	29	23	78	7	0	50	5	62	2	0	5	3	10	174
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 17:30	1	16	13	0	30	24	2	42	24	92	2	0	28	3	33	4	0	6	2	12	167
Lights	1	16	13	0	30	23	2	42	24	91	2	0	28	3	33	4	0	6	2	12	166
Other Vehicles	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 17:45	2	10	8	0	20	10	0	20	21	51	9	0	26	2	37	2	0	2	6	10	118
Lights	2	10	8	0	20	10	0	20	20	50	9	0	25	2	36	2	0	2	6	10	116
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	2
2014-08-07 18:00	3	11	9	0	23	19	0	20	20	59	6	0	27	1	34	3	0	7	6	16	132
Lights	3	11	9	0	23	19	0	20	20	59	6	0	27	1	34	3	0	7	5	15	131
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2014-08-07 18:15	2	5	13	0	20	19	0	17	22	58	5	0	41	3	49	3	0	3	7	13	140
Lights	2	5	12	0	19	19	0	17	22	58	5	0	41	3	49	3	0	3	6	12	138
Other Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
2014-08-07 18:30	2	13	6	0	21	9	0	27	20	56	4	0	25	4	33	2	0	2	3	7	117
Lights	2	13	6	0	21	9	0	26	19	54	4	0	25	4	33	2	0	2	3	7	115
Other Vehicles	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	2
2014-08-07 18:45	2	6	5	0	13	10	0	18	14	42	5	0	29	4	38	3	0	2	2	7	100
Lights	2	6	5	0	13	10	0	18	13	41	4	0	29	4	37	3	0	2	2	7	98
Other Vehicles	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	2
2014-08-07 19:00	2	5	3	0	10	11	0	19	19	49	10	0	35	1	46	1	0	2	1	4	109
Lights	2	5	3	0	10	11	0	19	19	49	10	0	34	1	45	1	0	1	1	3	107
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
2014-08-07 19:15	0	5	10	0	15	13	0	16	10	39	4	0	25	1	30	2	0	4	6	12	96
Lights	0	5	10	0	15	13	0	16	10	39	4	0	25	1	30	2	0	4	6	12	96
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 19:30	2	2	8	0	12	12	0	21	14	47	6	0	20	1	27	0	0	2	0	2	88
Lights	2	2	8	0	12	12	0	19	14	45	6	0	20	1	27	0	0	2	0	2	86
Other Vehicles	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
2014-08-07 19:45	1	5	13	0	19	17	0	13	15	45	2	0	19	2	23	2	0	0	2	4	91
Lights	1	5	13	0	19	17	0	13	15	45	2	0	19	2	23	2	0	0	2	4	91
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 20:00	2	0	3	0	5	15	0	24	12	51	7	0	22	7	36	2	0	0	1	3	95
Lights	2	0	3	0	5	15	0	24	12	51	7	0	22	7	36	2	0	0	1	3	95
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 20:15	1	3	8	0	12	13	0	13	22	48	4	0	24	2	30	0	0	2	1	3	93
Lights	1	3	8	0	12	13	0	13	22	48	4	0	24	2	30	0	0	2	1	3	93
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 20:30	3	2	5	0	10	15	0	10	20	45	1	0	16	1	18	3	0	4	2	9	82
Lights	3	2	5	0	10	15	0	10	19	44	1	0	16	1	18	3	0	4	2	9	81
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 20:45	1	0	7	0	8	6	0	6	7	19	5	0	14	0	19	2	0	2	0	4	50
Lights	1	0	7	0	8	6	0	6	7	19	5	0	14	0	19	2	0	2	0	4	50
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 21:00	2	1	1	0	4	9	0	11	9	29	4	0	15	0	19	1	0	0	1	2	54
Lights	2	1	1	0	4	9	0	11	9	29	4	0	15	0	19	1	0	0	1	2	54

Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 21:15	1	3	6	0	10	10	0	13	16	39	3	0	10	3	16	0	0	0	2	2	67
Lights	1	3	6	0	10	10	0	13	16	39	3	0	10	3	16	0	0	0	2	2	67
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 21:30	0	5	3	0	8	8	0	9	12	29	1	0	13	1	15	4	0	0	0	4	56
Lights	0	5	3	0	8	8	0	9	12	29	1	0	13	1	15	4	0	0	0	4	56
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 21:45	1	0	3	0	4	6	0	3	7	16	1	0	8	2	11	0	0	0	2	2	33
Lights	1	0	3	0	4	6	0	3	7	16	1	0	8	2	11	0	0	0	2	2	33
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 22:00	1	1	3	0	5	8	0	10	3	21	3	0	13	1	17	0	0	2	0	2	45
Lights	1	1	3	0	5	8	0	9	3	20	3	0	13	1	17	0	0	2	0	2	44
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-07 22:15	0	0	1	0	1	7	0	7	2	16	1	0	12	1	14	0	0	2	2	4	35
Lights	0	0	1	0	1	7	0	7	2	16	1	0	12	1	14	0	0	2	2	4	35
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 22:30	1	2	1	0	4	6	0	6	4	16	3	0	8	1	12	0	0	4	0	4	36
Lights	1	2	1	0	4	6	0	6	4	16	3	0	8	1	12	0	0	4	0	4	36
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 22:45	0	1	1	0	2	3	0	2	4	9	2	0	6	0	8	0	0	1	1	2	21
Lights	0	1	1	0	2	3	0	2	4	9	2	0	6	0	8	0	0	1	1	2	21
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 23:00	0	0	3	0	3	7	0	4	3	14	4	0	2	1	7	1	0	0	0	1	25
Lights	0	0	3	0	3	7	0	4	3	14	4	0	2	1	7	1	0	0	0	1	25
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 23:15	0	0	3	0	3	5	0	3	6	14	1	0	3	0	4	1	0	0	0	1	22
Lights	0	0	3	0	3	5	0	3	6	14	1	0	3	0	4	1	0	0	0	1	22
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 23:30	1	0	0	0	1	2	0	7	3	12	2	0	3	0	5	1	0	0	0	1	19
Lights	1	0	0	0	1	2	0	7	3	12	2	0	3	0	5	1	0	0	0	1	19
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-07 23:45	0	1	0	0	1	0	0	2	1	3	1	0	0	0	1	1	0	2	1	4	9
Lights	0	1	0	0	1	0	0	2	1	3	1	0	0	0	1	1	0	2	1	4	9
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08	0	0	0	0	0	2	0	1	3	6	1	0	5	0	6	0	0	0	0	0	12
Lights	0	0	0	0	0	2	0	1	3	6	1	0	5	0	6	0	0	0	0	0	12
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 0:15	0	1	0	0	1	1	0	1	1	3	0	0	2	0	2	0	0	1	1	2	8
Lights	0	1	0	0	1	1	0	1	1	3	0	0	2	0	2	0	0	1	1	2	8
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 0:30	0	0	0	0	0	0	0	3	4	7	0	0	2	0	2	0	0	0	0	0	9
Lights	0	0	0	0	0	0	0	3	3	6	0	0	2	0	2	0	0	0	0	0	8
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 0:45	0	1	0	0	1	0	0	0	0	0	2	0	2	0	4	0	0	0	0	0	5
Lights	0	1	0	0	1	0	0	0	0	0	2	0	2	0	4	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 1:00	0	0	1	0	1	0	0	1	2	3	0	0	1	0	1	0	0	0	0	0	5
Lights	0	0	1	0	1	0	0	1	2	3	0	0	1	0	1	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 1:15	1	0	0	0	1	0	0	1	1	2	1	0	1	0	2	0	0	0	0	0	5
Lights	1	0	0	0	1	0	0	1	1	2	1	0	1	0	2	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 1:30	0	0	0	0	0	0	0	1	1	2	0	0	2	0	2	0	0	0	0	0	4
Lights	0	0	0	0	0	0	0	1	1	2	0	0	2	0	2	0	0	0	0	0	4
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 1:45	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	3
Lights	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 2:00	0	1	1	0	2	3	0	0	1	4	0	0	3	0	3	1	0	0	0	1	10
Lights	0	1	1	0	2	3	0	0	1	4	0	0	3	0	3	1	0	0	0	1	10
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 2:15	0	0	1	0	1	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	3

Lights	0	0	1	0	1	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	3
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 2:30	0	1	0	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	4
Lights	0	1	0	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	4
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 2:45	0	1	0	0	1	0	0	0	1	1	1	0	1	0	2	0	0	0	0	0	4
Lights	0	1	0	0	1	0	0	0	1	1	1	0	1	0	2	0	0	0	0	0	4
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 3:00	0	0	0	0	0	0	0	1	1	2	0	0	1	0	1	0	0	0	0	0	3
Lights	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	2
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 3:15	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Lights	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 3:30	0	1	1	0	2	1	0	0	2	3	0	0	1	0	1	1	0	0	0	1	7
Lights	0	1	1	0	2	1	0	0	2	3	0	0	1	0	1	1	0	0	0	1	7
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 3:45	0	0	0	0	0	0	0	1	0	1	1	0	3	0	4	0	0	0	0	0	5
Lights	0	0	0	0	0	0	0	1	0	1	1	0	3	0	4	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 4:00	0	1	0	0	1	0	0	0	1	1	0	0	3	0	3	0	0	0	0	0	5
Lights	0	1	0	0	1	0	0	0	1	1	0	0	3	0	3	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 4:15	0	1	0	0	1	1	0	1	0	2	0	0	2	0	2	0	0	0	0	0	5
Lights	0	1	0	0	1	1	0	1	0	2	0	0	2	0	2	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 4:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	5
Lights	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	5
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 4:45	0	0	0	0	0	0	0	2	0	2	0	0	3	0	3	0	0	0	0	0	5
Lights	0	0	0	0	0	0	0	1	0	1	0	0	3	0	3	0	0	0	0	0	4
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 5:00	0	1	0	0	1	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	4
Lights	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	3
Other Vehicles	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 5:15	0	0	0	0	0	0	0	0	1	1	1	0	2	0	3	0	0	0	0	0	4
Lights	0	0	0	0	0	0	0	0	1	1	1	0	2	0	3	0	0	0	0	0	4
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 5:30	0	1	1	0	2	0	0	2	4	6	1	0	3	0	4	0	0	1	0	1	13
Lights	0	1	1	0	2	0	0	2	4	6	1	0	3	0	4	0	0	1	0	1	13
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 5:45	1	1	0	0	2	2	0	1	1	4	1	0	6	0	7	0	0	0	0	0	13
Lights	1	1	0	0	2	2	0	1	1	4	1	0	6	0	7	0	0	0	0	0	13
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 6:00	0	4	3	0	7	2	0	5	6	13	0	0	5	1	6	0	0	0	0	0	26
Lights	0	4	3	0	7	2	0	5	6	13	0	0	5	1	6	0	0	0	0	0	26
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 6:15	1	6	4	0	11	1	0	4	8	13	2	0	10	0	12	0	0	2	1	3	39
Lights	1	6	4	0	11	1	0	3	8	12	1	0	10	0	11	0	0	2	1	3	37
Other Vehicles	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
2014-08-08 6:30	1	8	4	0	13	2	0	1	12	15	2	0	20	2	24	0	0	0	1	1	53
Lights	1	8	4	0	13	2	0	1	12	15	2	0	19	2	23	0	0	0	0	0	51
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	2
2014-08-08 6:45	2	15	1	0	18	2	0	6	12	20	0	0	19	0	19	0	0	1	0	1	58
Lights	2	15	1	0	18	2	0	5	12	19	0	0	19	0	19	0	0	1	0	1	57
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 7:00	5	4	4	0	13	3	0	8	6	17	0	0	20	2	22	0	0	1	3	4	56
Lights	4	4	4	0	12	3	0	8	5	16	0	0	20	2	22	0	0	1	3	4	54
Other Vehicles	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
2014-08-08 7:15	0	6	7	0	13	7	0	5	17	29	0	0	25	1	26	2	0	2	0	4	72
Lights	0	6	7	0	13	6	0	5	17	28	0	0	23	1	24	0	0	1	0	1	66
Other Vehicles	0	0	0	0	0	1	0	0	0	1	0	0	2	0	2	2	0	1	0	3	6

2014-08-08 7:30	3	16	6	0	25	3	0	15	12	30	0	0	32	0	32	1	0	3	4	8	95
Lights	3	16	6	0	25	2	0	14	12	28	0	0	31	0	31	1	0	3	3	7	91
Other Vehicles	0	0	0	0	0	1	0	1	0	2	0	0	1	0	1	0	0	0	1	1	4
2014-08-08 7:45	3	17	7	0	27	4	0	7	21	32	4	0	35	0	39	1	0	0	1	2	100
Lights	3	16	6	0	25	3	0	7	19	29	4	0	35	0	39	1	0	0	1	2	95
Other Vehicles	0	1	1	0	2	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0	5
2014-08-08 8:00	2	8	9	0	19	9	0	16	11	36	2	0	22	3	27	1	0	2	3	6	88
Lights	2	8	9	0	19	9	0	16	10	35	2	0	22	3	27	1	0	1	1	3	84
Other Vehicles	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2	3	4
2014-08-08 8:15	2	14	12	0	28	7	0	16	13	36	4	0	20	1	25	0	0	2	0	2	91
Lights	2	14	12	0	28	5	0	14	12	31	4	0	19	1	24	0	0	2	0	2	85
Other Vehicles	0	0	0	0	0	2	0	2	1	5	0	0	1	0	1	0	0	0	0	0	6
2014-08-08 8:30	3	12	8	0	23	6	0	3	12	21	6	0	38	1	45	0	0	3	1	4	93
Lights	3	12	8	0	23	5	0	3	12	20	6	0	38	1	45	0	0	3	1	4	92
Other Vehicles	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2014-08-08 8:45	3	9	8	0	20	5	0	11	12	28	4	0	29	1	34	2	0	0	1	3	85
Lights	3	9	8	0	20	4	0	11	12	27	4	0	27	1	32	2	0	0	1	3	82
Other Vehicles	0	0	0	0	0	1	0	0	0	1	0	0	2	0	2	0	0	0	0	0	3
2014-08-08 9:00	1	3	11	0	15	11	0	13	14	38	3	0	24	1	28	1	0	1	3	5	86
Lights	1	3	11	0	15	11	0	11	13	35	2	0	24	1	27	1	0	1	2	4	81
Other Vehicles	0	0	0	0	0	0	0	2	1	3	1	0	0	0	1	0	0	0	1	1	5
2014-08-08 9:15	2	3	7	0	12	10	0	8	18	36	1	0	24	0	25	1	0	1	0	2	75
Lights	2	3	6	0	11	10	0	8	18	36	1	0	23	0	24	1	0	1	0	2	73
Other Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
2014-08-08 9:30	2	8	4	0	14	5	0	11	15	31	0	0	27	2	29	0	0	3	4	7	81
Lights	2	8	4	0	14	5	0	11	15	31	0	0	26	2	28	0	0	2	4	6	79
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	2
2014-08-08 9:45	3	1	9	0	13	2	0	15	12	29	1	0	33	5	39	1	0	1	2	4	85
Lights	3	1	9	0	13	2	0	14	12	28	1	0	32	5	38	1	0	1	2	4	83
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	2
2014-08-08 10:00	0	4	6	0	10	0	0	13	13	26	1	0	32	1	34	2	0	2	1	5	75
Lights	0	4	6	0	10	0	0	13	13	26	1	0	32	1	34	2	0	2	1	5	75
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 10:15	1	4	10	0	15	0	0	16	13	29	5	0	24	0	29	0	0	3	1	4	77
Lights	1	3	8	0	12	0	0	14	13	27	4	0	24	0	28	0	0	3	1	4	71
Other Vehicles	0	1	2	0	3	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	6
2014-08-08 10:30	0	4	5	0	9	0	0	17	12	29	3	0	27	3	33	0	0	3	2	5	76
Lights	0	3	5	0	8	0	0	16	12	28	3	0	27	3	33	0	0	3	1	4	73
Other Vehicles	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	3
2014-08-08 10:45	3	3	5	0	11	11	0	9	33	53	2	0	40	0	42	0	0	0	2	2	108
Lights	3	2	5	0	10	9	0	9	33	51	2	0	39	0	41	0	0	0	1	1	103
Other Vehicles	0	1	0	0	1	2	0	0	0	2	0	0	1	0	1	0	0	0	1	1	5
2014-08-08 11:00	4	2	5	0	11	11	0	18	29	58	4	0	31	3	38	4	0	3	3	10	117
Lights	4	2	5	0	11	11	0	18	29	58	4	0	31	3	38	4	0	3	3	10	117
Other Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014-08-08 11:15	4	5	10	0	19	11	0	17	15	43	4	0	43	4	51	9	0	2	2	13	126
Lights	4	5	10	0	19	11	0	16	15	42	4	0	41	4	49	9	0	1	0	10	120
Other Vehicles	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	0	1	2	3	6
2014-08-08 11:30	0	7	8	0	15	11	0	19	15	45	6	0	22	1	29	7	0	1	2	10	99
Lights	0	5	7	0	12	10	0	18	14	42	5	0	20	1	26	5	0	1	0	6	86
Other Vehicles	0	2	1	0	3	1	0	1	1	3	1	0	2	0	3	2	0	0	2	4	13
Grand Total	128	410	478	2	1018	728	6	1232	1183	3149	286	0	1916	145	2347	113	1	167	147	428	6942

Foster Thurston/Sandy Pt.

2010 Nov 30, Tue

	NB			SB			WB			EB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	Total
7:00 - 8:00	12	116	2	0	638	10	1	0	0	35	1	65	**880**
8:00 - 9:00	**17**	**105**	**0**	**0**	**735**	**17**	**2**	**1**	**0**	**20**	**1**	**67**	**965**
11:30 - 12:30	16	161	1	0	158	27	0	0	0	24	0	16	**403**
12:30 - 13:30	20	199	5	1	268	28	3	1	2	31	0	30	**588**
16:00 - 17:00	**59**	**571**	**2**	**1**	**173**	**41**	**0**	**0**	**2**	**29**	**0**	**19**	**897**
17:00 - 18:00	55	382	2	1	162	50	0	0	2	24	0	29	**707**

Study Name: Simms Corner

PEAK 6-HOUR SUMMARY

Count Date: 2014-06-25

	Bridge Road Southbound			Lancaster Avenue Westbound			Fairville Boulevard Northbound			Main Street West Eastbound			15 min total	Hourly Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
7:00	3	0	56	0	21	21	0	30	9	90	15	0	245	
7:15	1	0	54	0	18	19	0	38	17	133	15	0	295	
7:30	9	0	77	0	17	32	1	57	16	172	26	0	407	947
7:45	10	0	87	0	13	48	0	48	17	166	19	0	408	1355
8:00	13	2	73	0	17	42	1	50	6	155	23	0	382	1492
8:15	15	0	98	0	19	46	0	66	21	166	23	0	454	1651
8:30	13	0	129	0	24	32	0	53	19	146	28	0	444	1688
8:45	12	0	95	0	20	19	0	54	17	108	21	0	346	1626
11:30	17	0	107	0	33	16	2	35	26	67	33	0	336	
11:45	4	0	132	0	44	27	0	54	47	67	29	0	404	
12:00	13	0	125	0	26	18	1	50	35	76	24	0	368	
12:15	11	0	129	0	27	17	0	52	32	83	29	0	380	1488
12:30	10	0	127	0	34	15	0	60	42	95	33	0	416	1568
12:45	11	0	138	0	29	20	1	55	38	81	37	0	410	1574
13:00	24	0	109	0	39	10	1	73	40	88	27	0	411	1617
13:15	22	0	131	0	38	19	0	51	25	87	24	0	397	1634
16:00	24	0	170	0	29	22	2	44	37	97	48	0	473	
16:15	22	0	195	1	35	16	0	43	35	58	36	0	441	
16:30	35	0	177	0	38	18	0	44	49	90	30	0	481	
16:45	24	0	161	0	30	18	0	55	36	84	38	0	446	1841
17:00	27	0	167	0	26	14	1	68	46	92	33	0	474	1842
17:15	27	0	122	0	29	12	1	40	43	88	38	1	401	1802
17:30	18	0	113	1	31	18	1	47	32	87	42	0	390	1711
17:45	16	0	94	0	29	17	0	39	52	76	45	0	368	1633

	AM Peak: 1688												PM Peak: 1842	
AM Peak Hour	51	2	387	0	73	168	1	217	63	633	93	0	PHF=	0.93
HV%	6%	0%	9%		7%	4%	0%	9%	8%	3%	4%		Trucks%=	5.9%
PM Peak Hour	108	0	700	1	129	66	1	210	166	324	137	0	PHF=	0.96
HV%	0%		2%	0%	1%	2%	100%	7%	2%	3%	3%		Trucks%=	2.6%
6-Hour Total	381	2	2866	2	666	536	12	1206	737	2452	716	1	Trucks%=	3.6%
Estimated ADT	953	5	7165	5	1665	1340	30	3015	1843	6130	1790	3	Trucks%=	3.6%

Study Name: Simms Corner (TRUCKS)

PEAK 6-HOUR SUMMARY

Count Date: 2014-06-25

	Bridge Road Southbound			Lancaster Avenue Westbound			Fairville Boulevard Northbound			Main Street West Eastbound			15 min total	Hourly Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
7:00	0	0	1	0	0	0	0	2	1	2	0	0	6	
7:15	0	0	5	0	0	0	0	3	2	2	0	0	12	
7:30	1	0	4	0	0	0	0	6	2	3	2	0	18	
7:45	0	0	8	0	1	1	0	4	2	3	1	0	20	56
8:00	1	0	8	0	1	1	0	7	1	7	1	0	27	77
8:15	1	0	9	0	0	2	0	6	2	6	1	0	27	92
8:30	1	0	8	0	3	3	0	3	0	6	1	0	25	99
8:45	0	0	6	0	2	1	0	4	1	5	0	0	19	98
11:30	2	0	5	0	4	1	2	3	0	1	0	0	18	
11:45	0	0	7	0	2	0	0	1	1	2	1	0	14	
12:00	0	0	2	0	1	0	1	2	0	2	2	0	10	
12:15	1	0	6	0	3	0	0	4	0	4	1	0	19	61
12:30	1	0	1	0	0	0	0	3	0	0	0	0	5	48
12:45	0	0	4	0	2	0	0	2	1	1	1	0	11	45
13:00	0	0	5	0	2	1	1	2	1	4	0	0	16	51
13:15	0	0	4	0	3	0	0	1	1	6	0	0	15	47
16:00	1	0	6	0	2	0	2	3	1	1	0	0	16	58
16:15	0	0	7	0	0	0	0	3	0	4	2	0	16	63
16:30	0	0	2	0	1	0	0	3	0	0	0	0	6	53
16:45	0	0	3	0	0	0	0	5	0	3	2	0	13	51
17:00	0	0	1	0	0	1	1	3	3	4	0	0	13	48
17:15	0	0	4	0	1	1	0	2	0	4	0	0	12	44
17:30	0	0	2	0	0	0	0	2	0	1	0	0	5	43
17:45	0	0	2	0	0	0	0	0	0	0	0	0	2	32
		99									63			
AM Peak Hour HV%	3	0	33	0	5	7	0	20	5	22	4	0		
PM Peak Hour HV%	0	0	13	0	1	1	1	14	3	11	4	0		
6-Hour Total	9	0	110	0	28	12	7	74	19	71	15	0		
Estimated ADTT	23	0	275	0	70	30	18	185	48	178	38	0		

Appendix B
Roundabout Concepts

NOTES

NO.	DATE	REVISIONS	BY	APPR.

crandall
A DIVISION OF ENGLOBE

PRELIMINARY ONLY
DATE PLOTTED: Jul 25, 2019
NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

MOVE SAINT JOHN
PHASE 3

SAINT JOHN NB

DRAWING TITLE

ASHBURN ROAD/ROTHESAY ROAD
ROUNDABOUT CONCEPT

Scale	Drawn By	Design By
1:250	AB	ALAN B
	Checked By	Cadd Check AB
	Sheet 1 of 1	

File Name
CONCEPT PLAN.DWG

Drawing No.
19497-0P-C01

Q:\2019\19000497-00\C - MOVES\1 PHASE 3\CADD\DESIGN\DESIGN DRAWINGS\ASHBURN - ROTHESAY ROUNDABOUT\CONCEPT PLAN.DWG, 25/07/2019 11:50 AM

NOTES

NO.	DATE	REVISIONS	BY	APPR.

crandall
A DIVISION OF ENGLOBE

PRELIMINARY ONLY
DATE PLOTTED: July 23, 2019
NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

MOVE SAINT JOHN
PHASE 3

SAINT JOHN N.B.

DRAWING TITLE

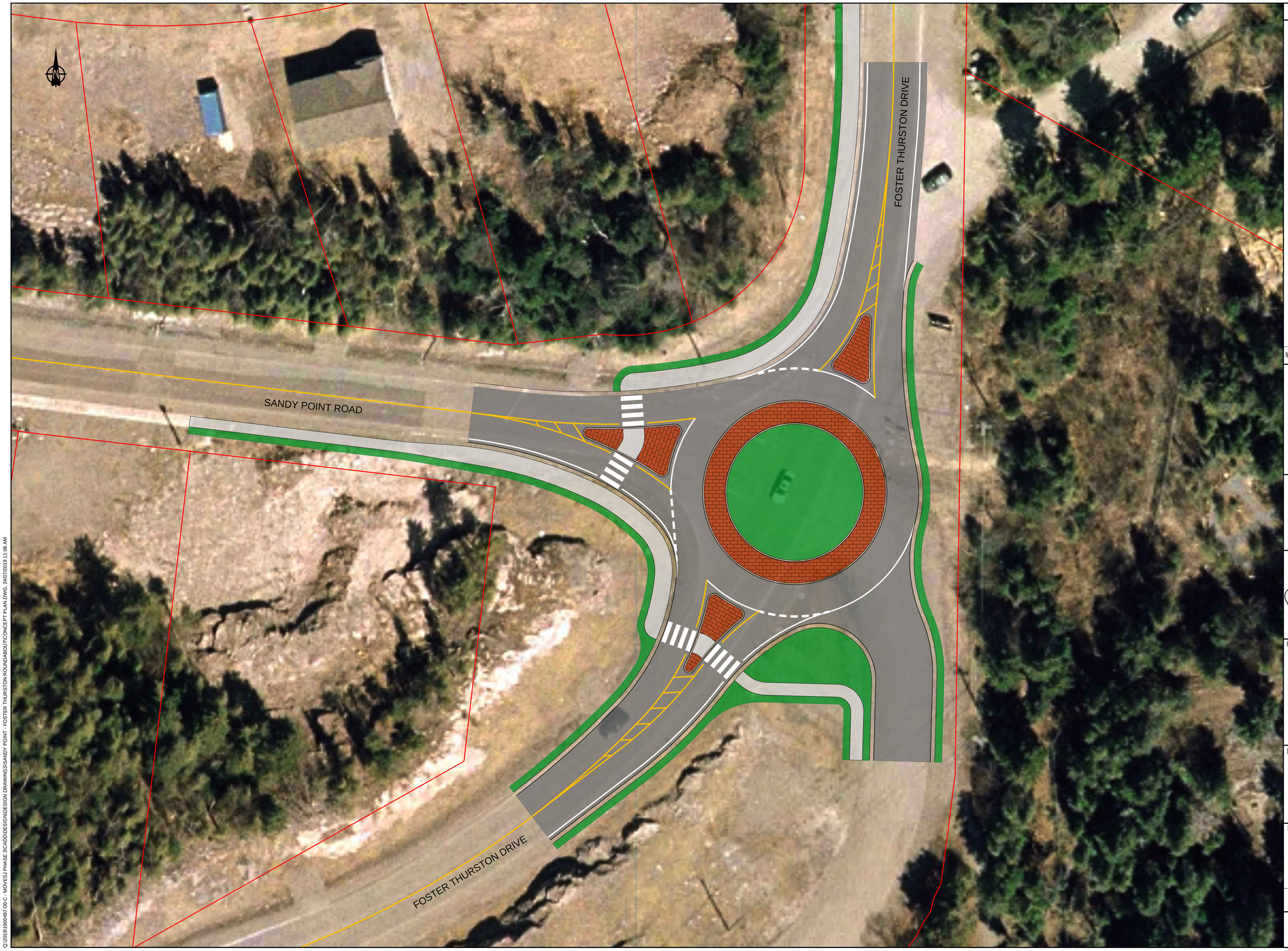
MANAWAGONISH ROAD
ROUNDABOUT CONCEPT

Scale	Drawn By	Design By
1:500	AB	ALAN B
	Checked By: AB	Cadd Check: AB
	Sheet 1 of 1	

File Name
MANAWAGONISH ROUNDABOUT CONCEPT.DWG

Drawing No.
22X34 CEL

Q:\2018\19004\97-00\C - MOVES\1 PHASE 3\CAD\DESIGN\DESIGN DRAWINGS\MANAWAGONISH ROUNDABOUT\MANAWAGONISH ROUNDABOUT CONCEPT.DWG, 23/08/2019 2:05 PM



NOTES

NO.	DATE	REVISIONS	BY	APPR.

crandall
A DIVISION OF ENGLOBE

PRELIMINARY ONLY
DATE PLOTTED: Jul 24, 2019
NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

MOVE SAINT JOHN
PHASE 3

SAINT JOHN NB

DRAWING TITLE

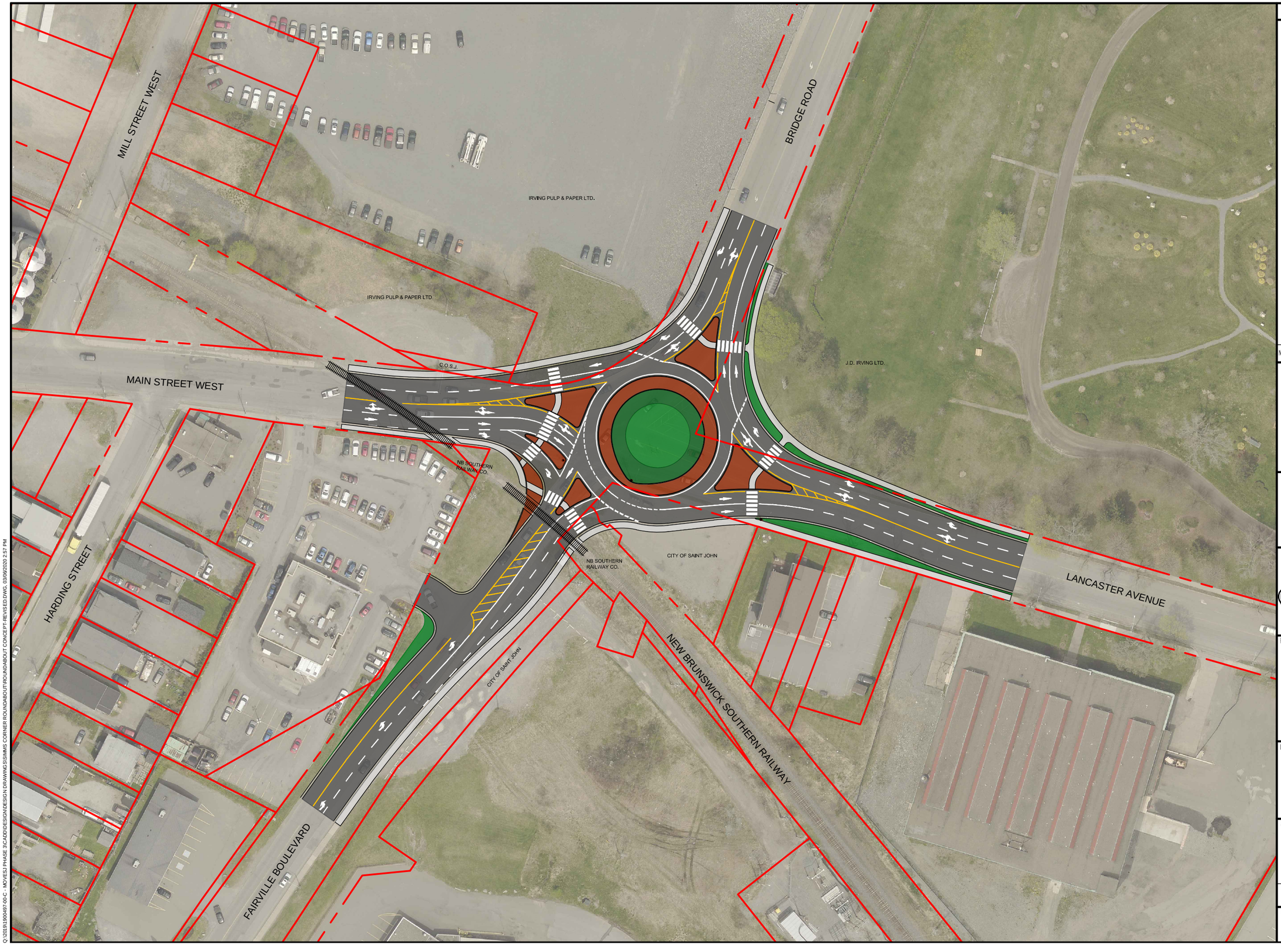
SANDY POINT ROAD - FOSTER THURSTON DRIVE ROUNDABOUT CONCEPT

Scale	Drawn By	Design By
1:250	AB	ALAN B
	Checked By	Cadd Check
	PA	AB
	Sheet 1 of 1	

File Name
CONCEPT PLAN.DWG

Drawing No.
19497-09-C01

Q:\2019\19090497-00\C - MOVESJ PHASE 3\CADD\DESIGN\DESIGN DRAWINGS\SANDY POINT - FOSTER THURSTON ROUNDABOUT\CONCEPT PLAN.DWG, 24/07/2019 11:08 AM



NOTES

NO.	DATE	REVISIONS	BY	APPR.

crandall
A DIVISION OF ENGLOBE

PRELIMINARY ONLY
DATE PLOTTED: Jun 03, 2020
NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

MOVE SAINT JOHN
PHASE 3

SAINT JOHN N.B.

DRAWING TITLE

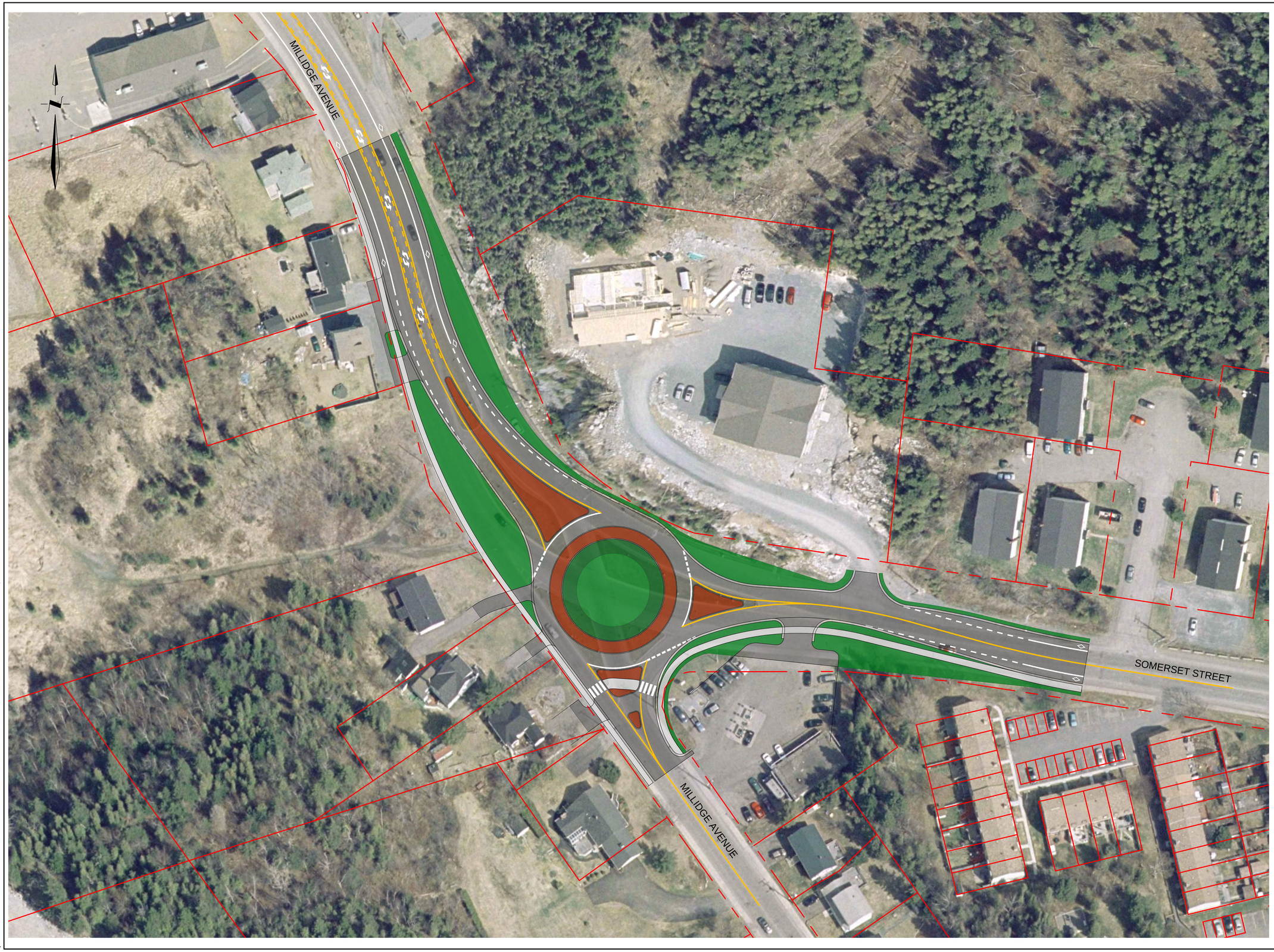
SIMMS CORNER
ROUNDABOUT CONCEPT

Scale	Drawn By	Design By
5m 0 10m (1:500 FULL SCALE)	AB	ALAN B
	Checked By	Cadd Check
	AB	AB
	Sheet 1 of 1	

File Name
ROUNDABOUT CONCEPT-REVISED.DWG

Drawing No.
22X34 CEL

Q:\2019\1900497-00-C - MOVESJ PHASE 3\CADD\DESIGN\DESIGN DRAWINGS\SIMMS CORNER ROUNDABOUT\ROUNDABOUT CONCEPT-REVISED.DWG, 03/06/2020 2:57 PM



NOTES

NO.	DATE	REVISIONS	BY	APPR.

crandall
A DIVISION OF ENGLOBE

PRELIMINARY ONLY
DATE PLOTTED: Nov 21, 2019
NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

MOVE SAINT JOHN
PHASE 3

SAINT JOHN N.B.

DRAWING TITLE

MILLIDGE AVE. - SOMERSET ST.
ROUNDABOUT CONCEPT

Scale	Drawn By	Design By
1:500	AB	ALAN B
	Checked By	Cadd Check
	AB	AB
	Sheet 1 of 1	

File Name
ROUNDABOUT CONCEPT.DWG

Drawing No.
1900497-0P-C01

Q:\2019\1900497-00\C - MOVESJ PHASE 3\CADD\DESIGN\DESIGN DRAWINGS\MILLIDGEVILLE - SOMERSET ROUNDABOUT\ROUNDABOUT CONCEPT.DWG, 21/11/2019 11:46 AM

Appendix C
Traffic Analysis Report Output

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
© Copyright TRL Limited, 2018

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Ocean Westway @ Gault Road.j9
Path: Q:\2019\1900497-00-C - MoveSJ Phase 3\Admin\Design\Roundabout Analysis\Ocean Westway @ Gault Road
Report generation date: 03/12/2019 9:32:06 AM

»Ocean Westway @ Gault Road - 2019, AM
»Ocean Westway @ Gault Road - 2019, PM
»Ocean Westway @ Gault Road - 20%, AM
»Ocean Westway @ Gault Road - 20%, PM

Summary of intersection performance

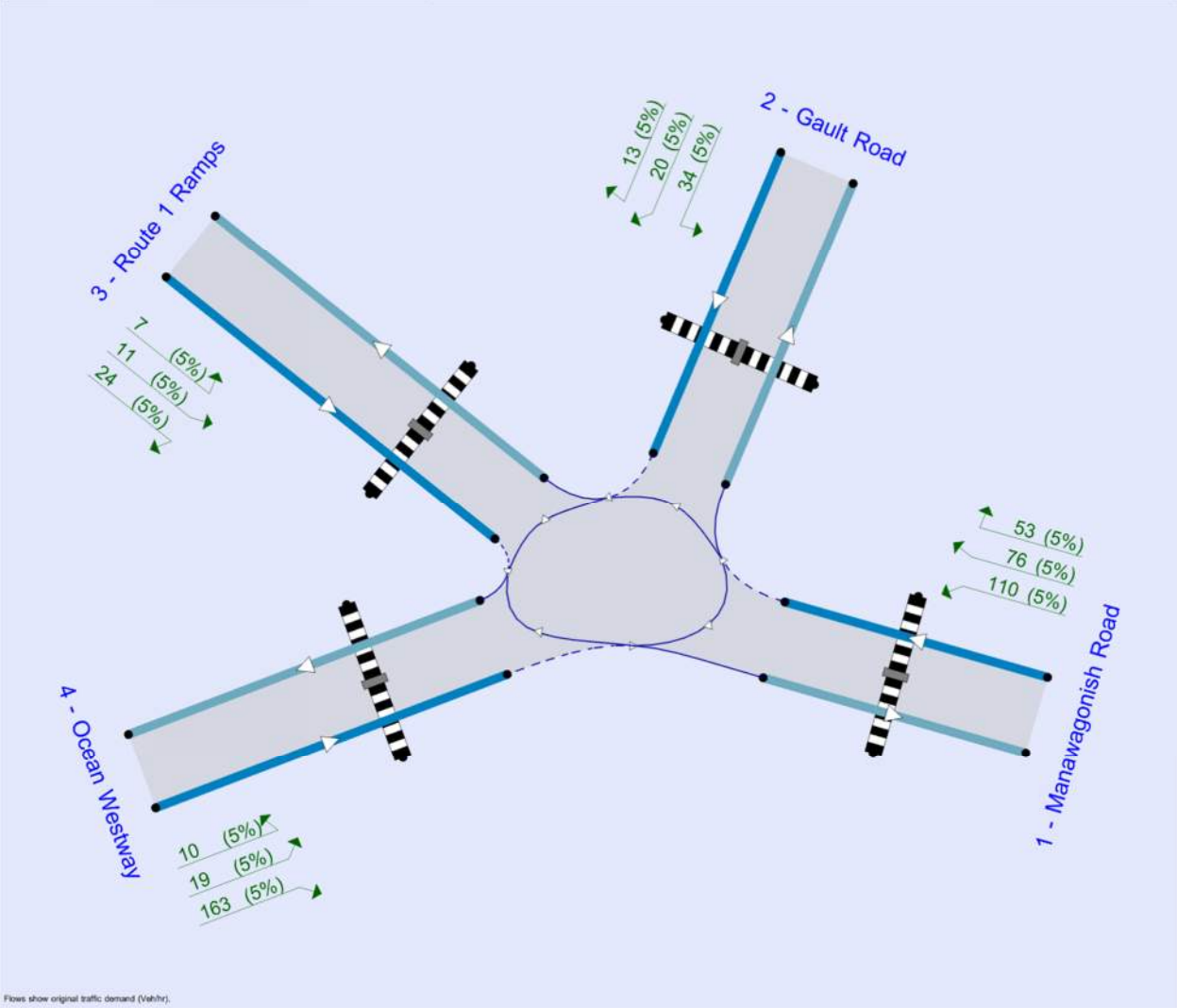
	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Ocean Westway @ Gault Road - 2019														
1 - Manawagonish Road	0.2	0.5	3.76	0.19	A	3.66	A	0.5	2.0	4.54	0.32	A	4.19	A
2 - Gault Road	0.1	0.5	3.49	0.06	A			0.1	0.5	3.73	0.09	A		
3 - Route 1 Ramps	0.0	0.5	3.37	0.03	A			0.1	0.5	3.40	0.06	A		
4 - Ocean Westway	0.2	0.5	3.66	0.15	A			0.3	1.3	4.04	0.23	A		
Ocean Westway @ Gault Road - 20%														
1 - Manawagonish Road	0.3	1.3	3.96	0.22	A	3.83	A	0.6	2.7	5.12	0.39	A	4.61	A
2 - Gault Road	0.1	0.5	3.60	0.07	A			0.1	0.5	3.96	0.11	A		
3 - Route 1 Ramps	0.0	0.5	3.46	0.04	A			0.1	0.5	3.51	0.07	A		
4 - Ocean Westway	0.2	0.5	3.83	0.18	A			0.4	1.5	4.40	0.28	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Int LOS and Int Del are demand-weighted Av.s.

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The intersection diagram reflects the last run of Intersections.

Ocean Westway @ Gault Road - 2019, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.66	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Manawagonish Road		ONE HOUR	✓	199	100.000
2 - Gault Road		ONE HOUR	✓	56	100.000
3 - Route 1 Ramps		ONE HOUR	✓	35	100.000
4 - Ocean Westway		ONE HOUR	✓	160	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Manawagonish Road	0.19	3.76	0.2	0.5	A	199	199
2 - Gault Road	0.06	3.49	0.1	0.5	A	56	56
3 - Route 1 Ramps	0.03	3.37	0.0	0.5	A	35	35
4 - Ocean Westway	0.15	3.66	0.2	0.5	A	160	160

Ocean Westway @ Gault Road - 2019, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.19	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Manawagonish Road		ONE HOUR	✓	338	100.000
2 - Gault Road		ONE HOUR	✓	83	100.000
3 - Route 1 Ramps		ONE HOUR	✓	58	100.000
4 - Ocean Westway		ONE HOUR	✓	244	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)

1 - Manawagonish Road	0.32	4.54	0.5	2.0	A	338	338
2 - Gault Road	0.09	3.73	0.1	0.5	A	83	83
3 - Route 1 Ramps	0.06	3.40	0.1	0.5	A	58	58
4 - Ocean Westway	0.23	4.04	0.3	1.3	A	244	244

Ocean Westway @ Gault Road - 20%, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.83	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Manawagonish Road		ONE HOUR	✓	239	100.000
2 - Gault Road		ONE HOUR	✓	67	100.000
3 - Route 1 Ramps		ONE HOUR	✓	42	100.000
4 - Ocean Westway		ONE HOUR	✓	192	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Manawagonish Road	0.22	3.96	0.3	1.3	A	239	239
2 - Gault Road	0.07	3.60	0.1	0.5	A	67	67
3 - Route 1 Ramps	0.04	3.46	0.0	0.5	A	42	42
4 - Ocean Westway	0.18	3.83	0.2	0.5	A	192	192

Ocean Westway @ Gault Road - 20%, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.61	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Manawagonish Road		ONE HOUR	✓	406	100.000
2 - Gault Road		ONE HOUR	✓	100	100.000
3 - Route 1 Ramps		ONE HOUR	✓	70	100.000
4 - Ocean Westway		ONE HOUR	✓	293	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Manawagonish Road	0.39	5.12	0.6	2.7	A	406	406
2 - Gault Road	0.11	3.96	0.1	0.5	A	100	100
3 - Route 1 Ramps	0.07	3.51	0.1	0.5	A	70	70
4 - Ocean Westway	0.28	4.40	0.4	1.5	A	293	293

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
© Copyright TRL Limited, 2018

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Rothesay @ Ashburn Roundabout.j9
Path: Q:\2019\1900497-00-C - MoveSJ Phase 3\Admin\Design\Roundabout Analysis\Ashburn - Rothesay
Report generation date: 03/12/2019 9:24:00 AM

»Rothesay Rd. @ Ashburn - 2019, AM
»Rothesay Rd. @ Ashburn - 2019, PM
»Rothesay Rd. @ Ashburn - 20%, AM
»Rothesay Rd. @ Ashburn - 20%, PM

Summary of intersection performance

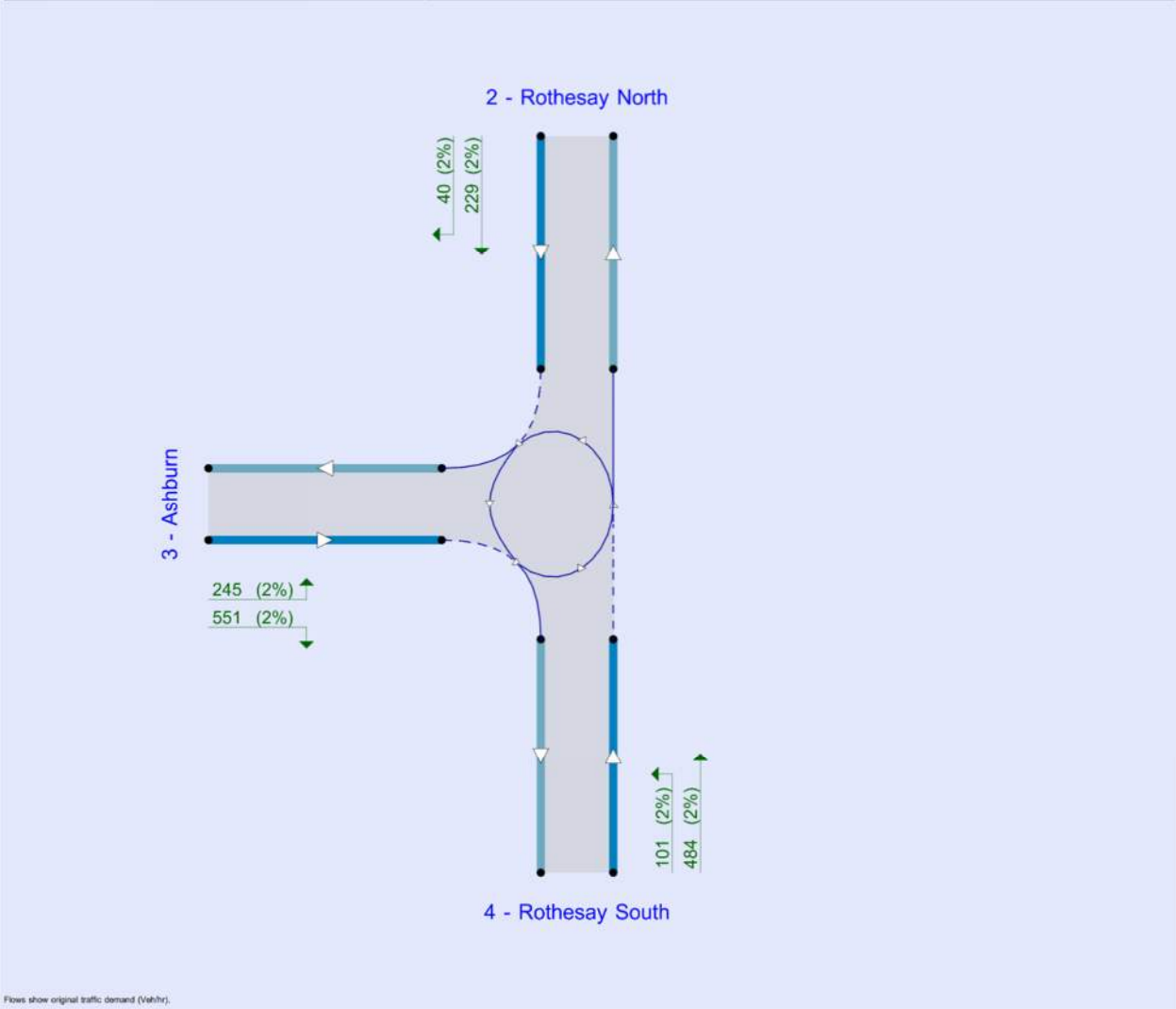
	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Rothesay Rd. @ Ashburn - 2019														
2 - Rothesay North	3.2	14.1	13.10	0.77	B	10.50	B	0.3	1.1	3.86	0.21	A	7.43	A
3 - Ashburn	0.3	1.2	5.71	0.22	A			1.9	3.5	9.43	0.66	A		
4 - Rothesay South	0.2	0.5	3.60	0.18	A			0.9	2.0	6.35	0.49	A		
Rothesay Rd. @ Ashburn - 20%														
2 - Rothesay North	10.3	55.8	36.88	0.93	E	27.26	D	0.3	1.4	4.13	0.25	A	11.73	B
3 - Ashburn	0.4	1.6	7.02	0.30	A			4.0	20.0	16.84	0.81	C		
4 - Rothesay South	0.3	1.2	3.78	0.21	A			1.5	1.7	8.28	0.60	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Int LOS and Int Del are demand-weighted Av.s.

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The intersection diagram reflects the last run of Intersections.

Rothesay Rd. @ Ashburn - 2019, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	10.50	B

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Rothesay North		ONE HOUR	✓	817	100.000
3 - Ashburn		ONE HOUR	✓	164	100.000
4 - Rothesay South		ONE HOUR	✓	193	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Rothesay North	0.77	13.10	3.2	14.1	B	817	817
3 - Ashburn	0.22	5.71	0.3	1.2	A	164	164
4 - Rothesay South	0.18	3.60	0.2	0.5	A	193	193

Rothesay Rd. @ Ashburn - 2019, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Demand Sets	D2 - 2019, PM	Time results are shown for central hour only. (Model is run for a 90 minute period.)
Warning	Queue variations	Analysis Options	Q percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	7.43	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Rothesay North		ONE HOUR	✓	224	100.000
3 - Ashburn		ONE HOUR	✓	663	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)

2 - Rothesay North	0.21	3.86	0.3	1.1	A	224	224
3 - Ashburn	0.66	9.43	1.9	3.5	A	663	663
4 - Rothesay South	0.49	6.35	0.9	2.0	A	487	487

Rothesay Rd. @ Ashburn - 20%, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	27.26	D

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Rothesay North		ONE HOUR	✓	980	100.000
3 - Ashburn		ONE HOUR	✓	197	100.000
4 - Rothesay South		ONE HOUR	✓	232	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Rothesay North	0.93	36.88	10.3	55.8	E	980	980
3 - Ashburn	0.30	7.02	0.4	1.6	A	197	197
4 - Rothesay South	0.21	3.78	0.3	1.2	A	232	232

Rothesay Rd. @ Ashburn - 20%, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	11.73	B

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Rothesay North		ONE HOUR	✓	269	100.000
3 - Ashburn		ONE HOUR	✓	796	100.000
4 - Rothesay South		ONE HOUR	✓	584	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Rothesay North	0.25	4.13	0.3	1.4	A	269	269
3 - Ashburn	0.81	16.84	4.0	20.0	C	796	796
4 - Rothesay South	0.60	8.28	1.5	1.7	A	584	584

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
© Copyright TRL Limited, 2018

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Sandy Point - Foster Thurston Roundabout.j9
Path: Q:\2019\1900497-00-C - MoveSJ Phase 3\Admin\Design\Roundabout Analysis\Sandy Point - Foster Thurston
Report generation date: 03/12/2019 9:34:18 AM

»Sandy Point @ Foster Thurston - 2019, AM
»Sandy Point @ Foster Thurston - 2019, PM
»Sandy Point @ Foster Thurston - 20%, AM
»Sandy Point @ Foster Thurston - 20%, PM

Summary of intersection performance

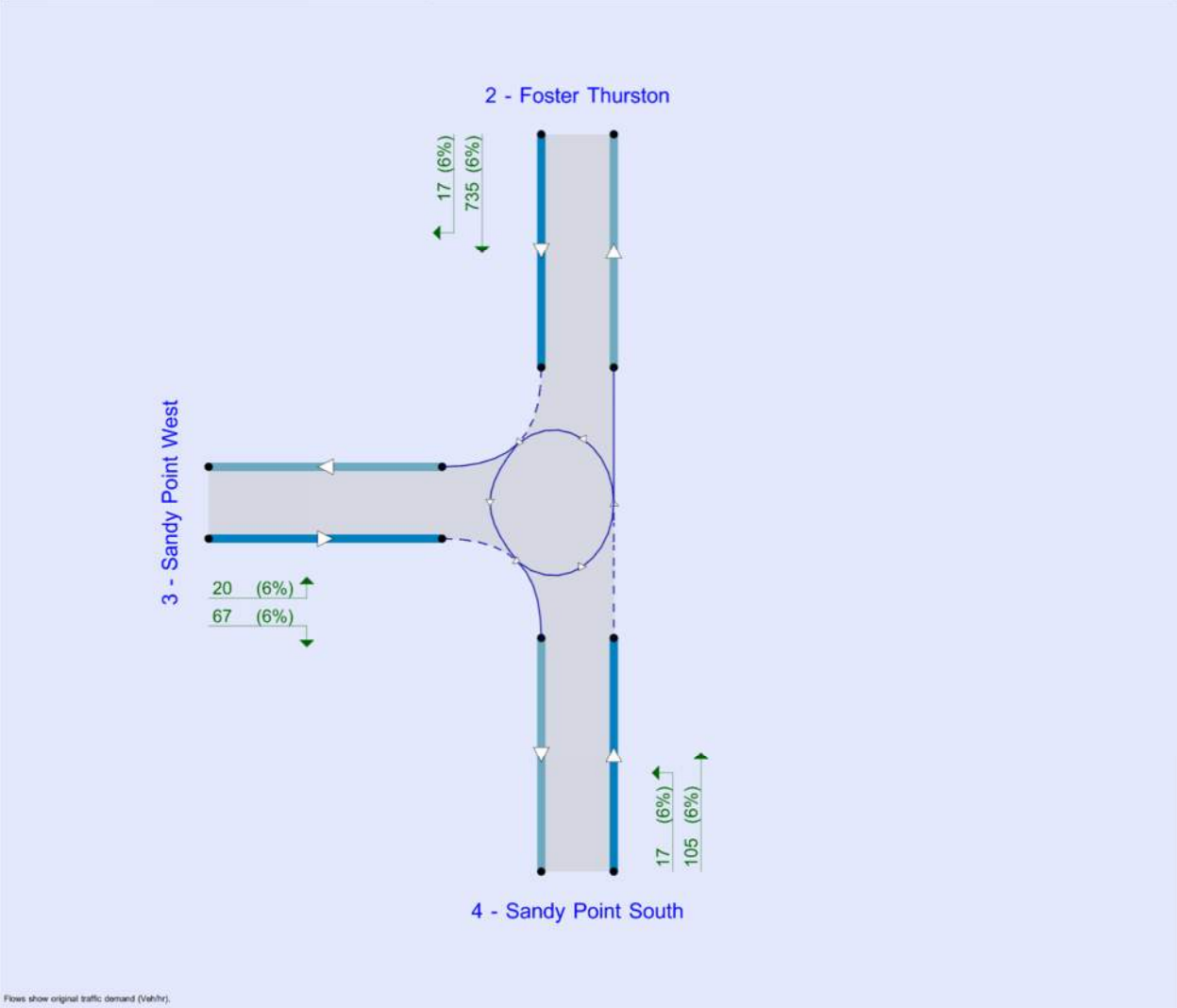
	AM							PM						
	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	V/C	LOS	Int Del (s)	Int LOS
Sandy Point @ Foster Thurston - 2019														
2 - Foster Thurston	2.4	7.0	10.42	0.71	B	9.11	A	0.2	1.0	3.79	0.20	A	6.08	A
3 - Sandy Point West	0.2	0.5	5.72	0.13	A			0.0	0.5	3.39	0.05	A		
4 - Sandy Point South	0.1	0.5	3.47	0.11	A			1.4	1.6	7.06	0.58	A		
Sandy Point @ Foster Thurston - 20%														
2 - Foster Thurston	5.2	27.1	19.88	0.85	C	16.63	C	0.3	1.4	4.02	0.24	A	8.07	A
3 - Sandy Point West	0.2	0.6	6.95	0.18	A			0.1	0.5	3.50	0.06	A		
4 - Sandy Point South	0.2	0.5	3.57	0.14	A			2.2	5.8	9.79	0.69	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Int LOS and Int Del are demand-weighted Av.s.

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The intersection diagram reflects the last run of Intersections.

Sandy Point @ Foster Thurston - 2019, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	9.11	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Foster Thurston		ONE HOUR	✓	752	100.000
3 - Sandy Point West		ONE HOUR	✓	88	100.000
4 - Sandy Point South		ONE HOUR	✓	122	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Foster Thurston	0.71	10.42	2.4	7.0	B	752	752
3 - Sandy Point West	0.13	5.72	0.2	0.5	A	88	88
4 - Sandy Point South	0.11	3.47	0.1	0.5	A	122	122

Sandy Point @ Foster Thurston - 2019, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	6.08	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Foster Thurston		ONE HOUR	✓	215	100.000
3 - Sandy Point West		ONE HOUR	✓	48	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Foster Thurston	0.20	3.79	0.2	1.0	A	215	215
3 - Sandy Point West	0.05	3.39	0.0	0.5	A	48	48
4 - Sandy Point South	0.58	7.06	1.4	1.6	A	632	632

Sandy Point @ Foster Thurston - 20%, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	16.63	C

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Foster Thurston		ONE HOUR	✓	902	100.000
3 - Sandy Point West		ONE HOUR	✓	106	100.000
4 - Sandy Point South		ONE HOUR	✓	146	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Foster Thurston	0.85	19.88	5.2	27.1	C	902	902
3 - Sandy Point West	0.18	6.95	0.2	0.6	A	106	106
4 - Sandy Point South	0.14	3.57	0.2	0.5	A	146	146

Sandy Point @ Foster Thurston - 20%, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		2, 3, 4	8.07	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
2 - Foster Thurston		ONE HOUR	✓	258	100.000
3 - Sandy Point West		ONE HOUR	✓	58	100.000
4 - Sandy Point South		ONE HOUR	✓	758	100.000

Results

Results Summary for whole modelled period

Leg	Max V/C	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
2 - Foster Thurston	0.24	4.02	0.3	1.4	A	258	258
3 - Sandy Point West	0.06	3.50	0.1	0.5	A	58	58
4 - Sandy Point South	0.69	9.79	2.2	5.8	A	758	758

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
© Copyright TRL Limited, 2018

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Simms Corner Roundabout - Multi-Lane.j9
Path: Q:\2019\1900497-00-C - MoveSJ Phase 3\Admin\Design\Roundabout Analysis\Simms Corner
Report generation date: 03/12/2019 9:38:06 AM

»Simms Corner - 2019, AM
»Simms Corner - 2019, PM
»Simms Corner - 25%, AM
»Simms Corner - 25%, PM

Summary of intersection performance

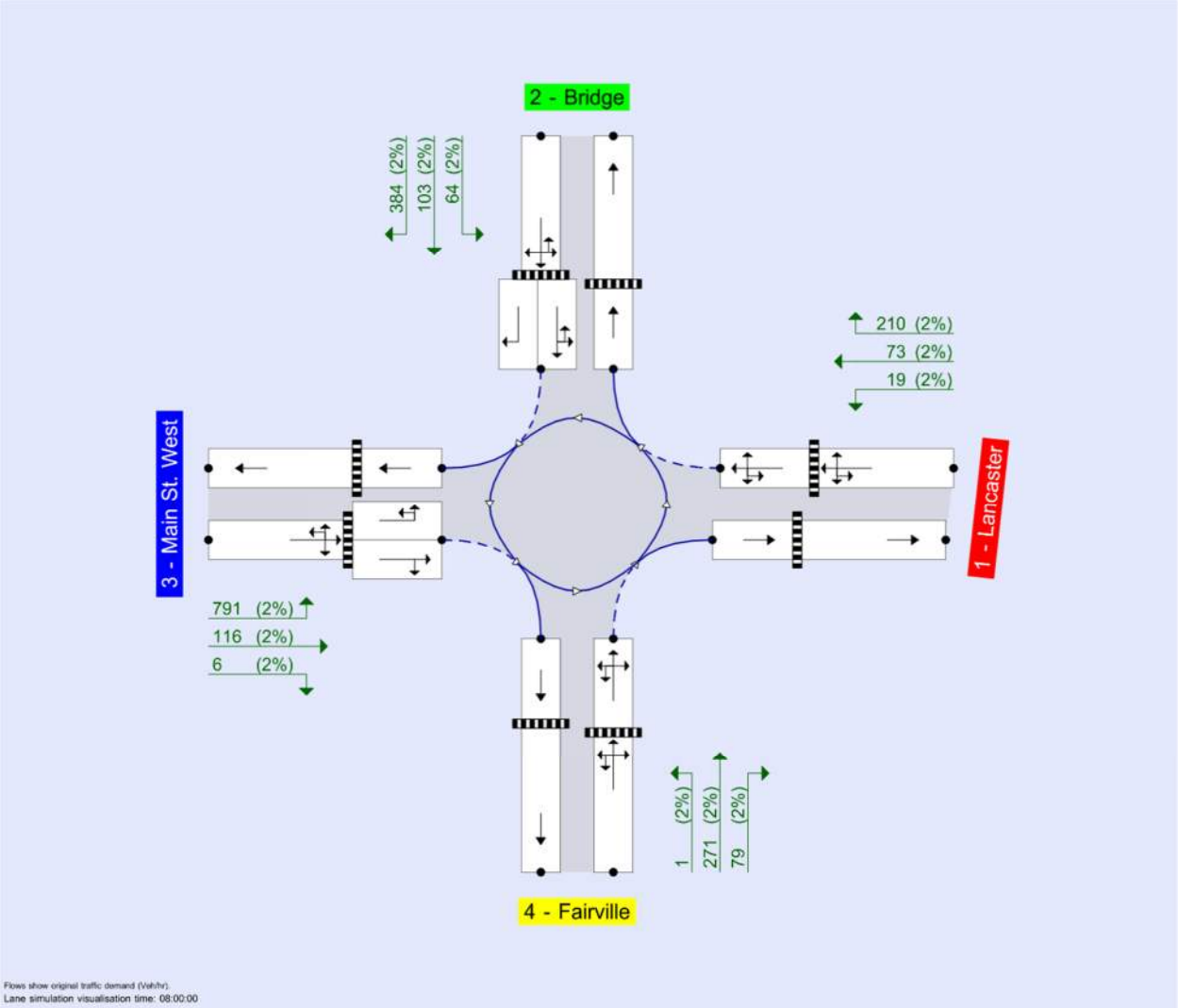
	AM						PM					
	Q (Veh)	Q95 (Veh)	Delay (s)	LOS	Int Del (s)	Int LOS	Q (Veh)	Q95 (Veh)	Delay (s)	LOS	Int Del (s)	Int LOS
Simms Corner [Lane Simulation] - 2019												
1 - Lancaster	0.6	2.0	7.08	A	7.86	A	0.4	2.9	4.91	A	6.73	A
2 - Bridge	0.8	2.6	4.64	A			2.1	5.6	7.91	A		
3 - Main St. West	2.4	8.2	10.32	B			0.7	2.5	5.39	A		
4 - Fairville	0.6	2.4	7.16	A			0.8	2.6	6.84	A		
Simms Corner [Lane Simulation] - 25%												
1 - Lancaster	1.1	4.8	11.70	B	13.63	B	0.5	1.7	6.04	A	10.68	B
2 - Bridge	1.0	3.6	5.43	A			4.9	16.0	14.16	B		
3 - Main St. West	5.8	20.1	19.96	C			1.1	3.4	6.83	A		
4 - Fairville	1.5	5.5	11.44	B			1.7	5.7	10.49	B		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Leg and Int Dels are Av.s for all movements, including movements with zero delay.

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin



The intersection diagram reflects the last run of Intersections.

Simms Corner - 2019, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	7.86	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Lancaster		ONE HOUR	✓	241	100.000

2 - Bridge		ONE HOUR	✓	440	100.000
3 - Main St. West		ONE HOUR	✓	731	100.000
4 - Fairville		ONE HOUR	✓	281	100.000

Results

Results Summary for whole modelled period

Leg	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Lancaster	7.08	0.6	2.0	A	220	330
2 - Bridge	4.64	0.8	2.6	A	402	603
3 - Main St. West	10.32	2.4	8.2	B	673	1010
4 - Fairville	7.16	0.6	2.4	A	258	387

Simms Corner - 2019, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	6.73	A

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Lancaster		ONE HOUR	✓	196	100.000
2 - Bridge		ONE HOUR	✓	808	100.000
3 - Main St. West		ONE HOUR	✓	479	100.000
4 - Fairville		ONE HOUR	✓	377	100.000

Results

Results Summary for whole modelled period

Leg	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Lancaster	4.91	0.4	2.9	A	184	276
2 - Bridge	7.91	2.1	5.6	A	740	1109
3 - Main St. West	5.39	0.7	2.5	A	437	655
4 - Fairville	6.84	0.8	2.6	A	343	514

Simms Corner - 25%, AM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	13.63	B

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Lancaster		ONE HOUR	✓	301	100.000
2 - Bridge		ONE HOUR	✓	550	100.000
3 - Main St. West		ONE HOUR	✓	914	100.000
4 - Fairville		ONE HOUR	✓	351	100.000

Results

Results Summary for whole modelled period

Leg	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Lancaster	11.70	1.1	4.8	B	276	413
2 - Bridge	5.43	1.0	3.6	A	497	745
3 - Main St. West	19.96	5.8	20.1	C	838	1257
4 - Fairville	11.44	1.5	5.5	B	324	485

Simms Corner - 25%, PM

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Int Del (s)	Int LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	10.68	B

Traffic Demand

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Av. Demand (Veh/hr)	Scaling Factor (%)
1 - Lancaster		ONE HOUR	✓	245	100.000
2 - Bridge		ONE HOUR	✓	1010	100.000

3 - Main St. West		ONE HOUR	✓	599	100.000
4 - Fairville		ONE HOUR	✓	471	100.000

Results

Results Summary for whole modelled period

Leg	Max Delay (s)	Max Q (Veh)	Max Q95 (Veh)	Max LOS	Av. Demand (Veh/hr)	Total Intersection Arrivals (Veh)
1 - Lancaster	6.04	0.5	1.7	A	224	337
2 - Bridge	14.16	4.9	16.0	B	932	1399
3 - Main St. West	6.83	1.1	3.4	A	549	824
4 - Fairville	10.49	1.7	5.7	B	430	646

	AM Peak					PM Peak				
	Max Queue (m)	**Veh Delay (s)**	**LOS**	**Int. Delay**	**Int. LOS**	**Max Queue (m)**	**Veh Delay (s)**	**LOS**	**Int. Delay**	**Int. LOS**
Existing										
Main St	57.77	2.34	A	5.22	A	44.56	2.80	A	4.09	A
Fairville Blvd	71.15	13.08	B			84.92	9.34	A		
Lancaster Ave	35.69	11.60	B			24.80	4.14	A		
Bridge Rd	15.57	1.26	A			35.39	2.29	A		
20% Growth										
Main St	65.66	3.10	A	11.09	B	57.00	3.99	A	6.64	A
Fairville Blvd	101.47	30.22	D			107.74	17.48	C		
Lancaster Ave	55.71	29.89	D			30.33	5.84	A		
Bridge Rd	23.78	1.52	A			53.20	3.23	A		