



SNC • LAVALIN



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3 August 2016

Mr. Peter Rouvalis

449-7165 Quinpool Road
Halifax, Nova Scotia
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Attention: Peter Rouvalis, Project Manager

Dear Mr. Rouvalis:

RE: Traffic Impact Statement – Proposed High-Rise Multi-Tenant Residential Building with Ground Floor Commercial Space, Robie Street & College Street

SNC-Lavalin Inc. (SLI) is pleased to submit this Traffic Impact Statement (TIS) required to accompany the development application for the proposed development.

Mr. Peter Rouvalis is preparing plans to re-develop a site at the corner of Robie Street and College Street, which is located on the east side of Robie Street and north side of College Street, at the Robie Street/College Street intersection.

The existing site contains six (6) structures including:

Four (4) buildings that front College Street:

- 5963 College - 3-storey residential building with 4 dwelling units;
- 5969 College - 3-storey multi-unit residential building with 17 dwelling units;
- 5977 College - 4-storey multi-unit residential building with 12 dwelling units; and
- 5993 College - 3-storey residential building with 4 dwelling units.

Two (2) buildings located alongside Robie Street:

- 1377 Robie - 2-storey converted residential building with 4 dwelling units; and
- 1389 Robie - 3-storey residential building with 24 dwelling units.

The proposed development includes the demolition and removal of five (5) of the existing six (6) structures on site (Figure 1 and Figure 2). The current structure at 5969 College St. is designated as a “Heritage Building” and is intended to be relocated adjacent to the proposed development. These buildings will be replaced with two (2) high-rise multi-unit residential buildings with ground floor commercial space (proposed building) as seen in Appendix A. The proposed building will include approximately 376 apartment units, 195 units in the 26 storey



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Robie Street tower (Tower A) and 181 units in the 20 storey College Street tower (Tower B). There will also be 14,000 square feet of ground floor commercial space, 20,000 square feet of commercial storage and 384 underground parking spaces (4-storey parking garage). This report is the Traffic Impact Statement (TIS) required to accompany the development application. The study area and site for the proposed development are included in this TIS, and is limited to property bounded to the west by Robie Street and south by College Street as seen in Appendix A.

Description of Existing Site

The existing buildings occupying the proposed site at the corner of Robie Street and College Street. will be demolished and removed, and have a combined square footage of approximately 21,300ft² of residential space. Figure 1 and Figure 2 show the existing buildings on site to be removed.



Figure 1: Existing structures looking north from College Street (Civic 5963 College, 5969 College & 5977 College).

Figure 1 shows three (3) of the six (6) onsite structures to be demolished and removed. Civic 5977 College St. is a 4-storey multi-unit residential building covering 3,130ft² containing 12 dwelling units. Civic 5969 College St. is a 3-storey multi-unit residential building covering 3,350ft² containing 17 dwelling units. Due to the heritage classification of this building it will be relocated adjacent to the proposed development. Civic 5963 College St. is a 3-storey residential building covering 1,570ft² containing 4 dwelling units.



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Figure 2: Existing structures looking east from Robie Street (Civic 1389 Robie, 1377 Robie and 5993 College)

Figure 2 shows three (3) of the six (6) onsite structures to be demolished and removed. Civic 1389 Robie St. is a 3-storey multi-unit residential building covering 8,600ft² containing 24 dwelling units. Civic 1377 Robie St. is a 3-storey residential building covering 1,500ft² containing 4 dwelling units. Civic 5993 College St. is a 2-storey residential building covering 2,070ft² with 4 dwelling units.

Existing Site Access

Vehicular

The existing site can be accessed via driveways along Robie Street and College Street. Along Robie Street there are two (2) access driveways; specifically 1389 Robie St. and 1377 Robie St. Along College Street there are three (3) access driveways to the site; one shared by 5993 and 5977 College St., a second located between 5977 and 5969 College St., and a third located between 5969 and 5963 College St.

Pedestrian

There are sidewalks located on both sides of Robie Street and College Street (located adjacent to the site), as well as Spring Garden Road (located north of the site). There are marked crosswalks at the Robie Street/Spring Garden Road controlled intersection, located north of the site. Another marked crosswalk extending north-south is located at the Robie Street/College Street intersection, located southwest directly adjacent to the site.

Robie Street

Robie Street is a four-lane major collector street with sidewalks extending along both sides of the street, located west and directly adjacent to the site. The street extends in a north-south direction. Traffic control north of the site at the Robie Street/Spring Garden





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Road intersection consists of a signalized intersection. Traffic control south of the site at the Robie Street/College Street intersection is stop controlled from College Street and free flow along Robie Street. There is a break in the road median allowing both south bound left movements from Robie Street and west bound left movements from College Street. Metered parking is available on the east side of the street adjacent to the site. Parking (2-hour) is permitted from 8 AM - 6 PM, Monday to Friday, on the west side of the street. A transit (bus) terminal is also located on the west side of the street near the controlled intersection.

Spring Garden Road

Spring Garden Road is a four-lane major collector street in the vicinity of the study area with sidewalks extending along both sides of the street, located north of the site. The street extends in an east-west direction. Traffic control at the Robie Street/Spring Garden Road intersection consists of a 4 way signalized intersection located northwest of the site. A small number of metered parking spots are available on both the



north and south side of the street; however, parking is not permitted from 8 AM - 6 PM, Monday to Friday, for the majority of the street. Two (2) transit (bus) terminals are also located on both sides of the street near the controlled intersection.

College Street

College Street is a two-lane local street with sidewalks extending along both sides of the street, located south and directly adjacent to the site. The street extends in an east - west direction and is approximately 1,722 feet in length, starting at Robie Street and extending east to Cathedral Lane. There are also stop controlled intersections with Carlton Street and Summer Street. Traffic control on College Street is one way stop controlled. Parking is not permitted on the north side of the street adjacent to the





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site. Parking is permitted on the south side of the street via parking meters.

Traffic Volumes

A turning movement count which HRM obtained at the Robie Street/Spring Garden Road intersection and the Robie Street/University Street intersection on October 8th, 2014, have been used to develop the traffic scenario at the Robie Street/College Street intersection. These values were adjusted for seasonal factors and a nominal growth rate of 1% per year was applied to adjust the volumes to 2016 values.

Description of Transit Service

The proposed development site is well served by Halifax Transit. Bus routes 80, 81, 17, 18 and 1 operate on Spring Garden Road located north of the site, with routes 42, 90 and 7 on Robie Street, located east directly adjacent to the site.

Trip Generation

Trip generation estimates for the existing and proposed land uses, prepared using published trip generation rates from the Institute of Transportation Engineers (ITE), Trip Generation, 9th Edition, are included in Table 1.

The existing buildings on the site, which include 21,300 square feet of residential space, will be demolished and removed (with the exception of the designated "Heritage Building" to be relocated). As such, trips now generated by the existing land use have been considered a reduction to the trips generated from the proposed site, when determining additional vehicle trips that will be generated by the redeveloped site.

Due to the central location of the proposed site it is expected that pedestrian and transit trips will result in an overall reduction in vehicle trips generated from the site. To accurately represent the expected conditions the values calculated from the ITE Trip Generation handbook were reduced by 30%.



Trip Generation				AM			PM			AM		PM	
Existing Infrastructure On Site ²	Land Use	Independent Variable		Rate ³	Enter	Exit	Rate	Enter	Exit	IN	OUT	IN	OUT
		Type	#										
Spring Rose Manor	223	DU*	24	0.3	31%	69%	0.39	58%	42%	2.232	4.968	5.4288	3.9312
1377 Robie	224	DU	4	0.7	33%	67%	0.72	51%	49%	0.924	1.876	1.4688	1.4112
5989 College	221	DU	4	0.46	21%	79%	0.58	20%	80%	0.3864	1.4536	0.464	1.856
5977 College	223	DU	12	0.3	31%	69%	0.39	58%	42%	1.116	2.484	2.7144	1.9656
5969 College ⁷	224	DU	12	0.7	33%	67%	0.72	51%	49%	2.772	5.628	4.4064	4.2336
5963 College	224	DU	4	0.7	33%	67%	0.72	51%	49%	0.924	1.876	1.4688	1.4112
Total Trips										8	18	16	15
30% Pedestrian Reduction										6	13	11	10

Trip Generation				AM			PM			AM		PM	
New Infrastructure	Land Use	Independent Variable		Rate	Enter	Exit	Rate	Enter	Exit	IN	OUT	IN	OUT
		Type	#										
Residential Units	222	DU	376	0.3	25%	75%	0.35	61%	39%	28.2	84.6	80.276	51.324
General Office Space	710	KGFA ⁴	7	1.55	88%	12%	1.49	17%	83%	9.548	1.302	1.7731	8.6569
Specialty Retail ⁵	826	KGFA	7	1.35	44%	56%	2.70	44%	56%	4.158	5.292	8.316	10.584
Total Trips										42	91	90	71
30% Pedestrian Reduction										29	64	63	49

NOTES:

- The Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012 was used to determine the rates for the respective land use codes.
- Trips generated by the existing site will be applied as a reduction to the overall trips generated by the proposed site.
- Rates are 'vehicles per hour per unit'; trips generated are 'vehicles per hour for peak hours'.
- KGFA is 'Gross Floor Area x 1000 square feet'.
- The Specialty Retail (Land Use 826) rate for 'Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM' has been used. There are currently no values for Land Use 826 during the AM peak. After reviewing similar land use rates an approximation of 50% of the PM rate was determined for use as the AM rate.
- The study area is located in the downtown core of the city. As a result it is expected that the vehicular traffic generated by the site will be reduced in the order of 30% due to the readily available transit access and general proximity to local conveniences.
- A portion 5969 College will be relocated. It was assumed that 30% of the existing units (5 units) will remain.

From Table 1, it is estimated that the proposed building will generate 93 two-way vehicle trips (29 entering and 64 exiting) during the AM peak hour, and 112 two-way vehicle trips (63 entering and 49 exiting) during the PM peak hour. However, when trips generated by the existing site land use are considered as a credit, it is estimated that the redeveloped site will generate 74 two-way vehicle trips (23 entering and 51 exiting) during the AM peak hour, and 91 two-way vehicle trips (52 entering and 39 exiting) during the PM peak hour.



Synchro / SimTraffic Analysis

Analysis of traffic operations in the study area were carried out for the Robie Street/College Street intersection for both, existing and horizon year conditions, using Synchro / SimTraffic traffic analysis software. Synchro is a macroscopic capacity analysis and optimization model that allows users to evaluate delays, queues, capacities, and other operational criteria that are used to determine intersection performance. SimTraffic is a microscopic simulation and visualization tool that fully simulates signalized intersections, unsignalized intersections, roundabouts (single lane) and the interactions that occur between intersections.

The criteria used to determine the impacts resulting from the proposed development were the 95th percentile queue length. The 95th-percentile queue is defined to be the queue length (in meters) that has only a 5-percent probability of being exceeded during the analysis time period. A summary of the results indicates that there is very little change in the queue lengths on College Street for both the AM and PM future conditions. There is the introduction of a queue length of approximately 23m (75ft) for the south bound left turning movement during the horizon PM peak. The results of the synchro analysis can be found in Appendix B.

Other Proposed Residential and Commercial Properties in the Study Area

One (1) known development in the immediate area (recently proposed/approved) was identified, and is located north directly adjacent to the site:

- A mid-rise multi-unit residential building with ground floor commercial space near the Robie Street/Spring Garden Road intersection.

Summary

1. The proposed development includes the demolition and removal of five (5) of the existing six (6) structures on site (Figure 1 and Figure 2). The current structure at 5969 College St. is designated as a "Heritage Building" and is intended to be relocated adjacent to the proposed development.
2. The proposed development includes the construction of two (2) high-rise multi-unit residential buildings with ground floor commercial space (proposed building). The proposed building will include approximately 376 apartment units, split between the two towers. There will also be 14,000 square feet of ground floor commercial space, 20,000 square feet of commercial storage and 384 underground parking spaces (4-storey parking garage).
3. Pedestrian right of entry for both residential and commercial land uses within the site will be accessible from Robie Street and College Street. Vehicle access will be by way of the proposed building parking garage driveway, to be located on College Street (Appendix A) approximately 80 meters (265 feet) east of the Robie Street property line. Visibility is clear at the College Street approach to the driveway.



4. It is estimated that the proposed buildings will generate 74 two-way vehicle trips (23 entering and 51 exiting) during the AM peak hour, and 91 two-way vehicle trips (52 entering and 39 exiting) during the PM peak hour.
5. The queue lengths that result from the proposed development generally do not change the characteristics of the network. The one point of concern is the introduction of a 23m queue length for the south bound left movement from Robie Street. This is a result of the high volume of opposing traffic and could be alleviated by restricting the south bound left movement during the PM peak period.
6. The site has good pedestrian facilities with sidewalks present on two (2) streets adjacent to the site, and crosswalks at the Robie Street/Spring Garden Road and Robie Street/College Street intersections. The site also has access to transit with Halifax Transit operating several bus routes along Spring Garden Road (north of the site) and Robie Street (directly west adjacent to the site).
7. At the time of this report, one (1) known development in the immediate area was identified. It is expected that trips generated by this site will be dispersed on local and major collector streets in the area and can also be considered as background traffic growth. As such, significant cumulative effects on traffic operations at area intersections or streets including the regional street network are not expected.
8. While the site plan indicates that the building is set back from the College Street sidewalk, final design for the proposed development must ensure that adequate visibility among vehicle drivers exiting the parking garage and pedestrians' using the sidewalk is present.

Conclusion

The proposed development is not expected to negatively impact the road network in the vicinity of the study area. The trips generated from the proposed development result in little to no negative change to the queue lengths developing at the Robie Street/College Street intersection.



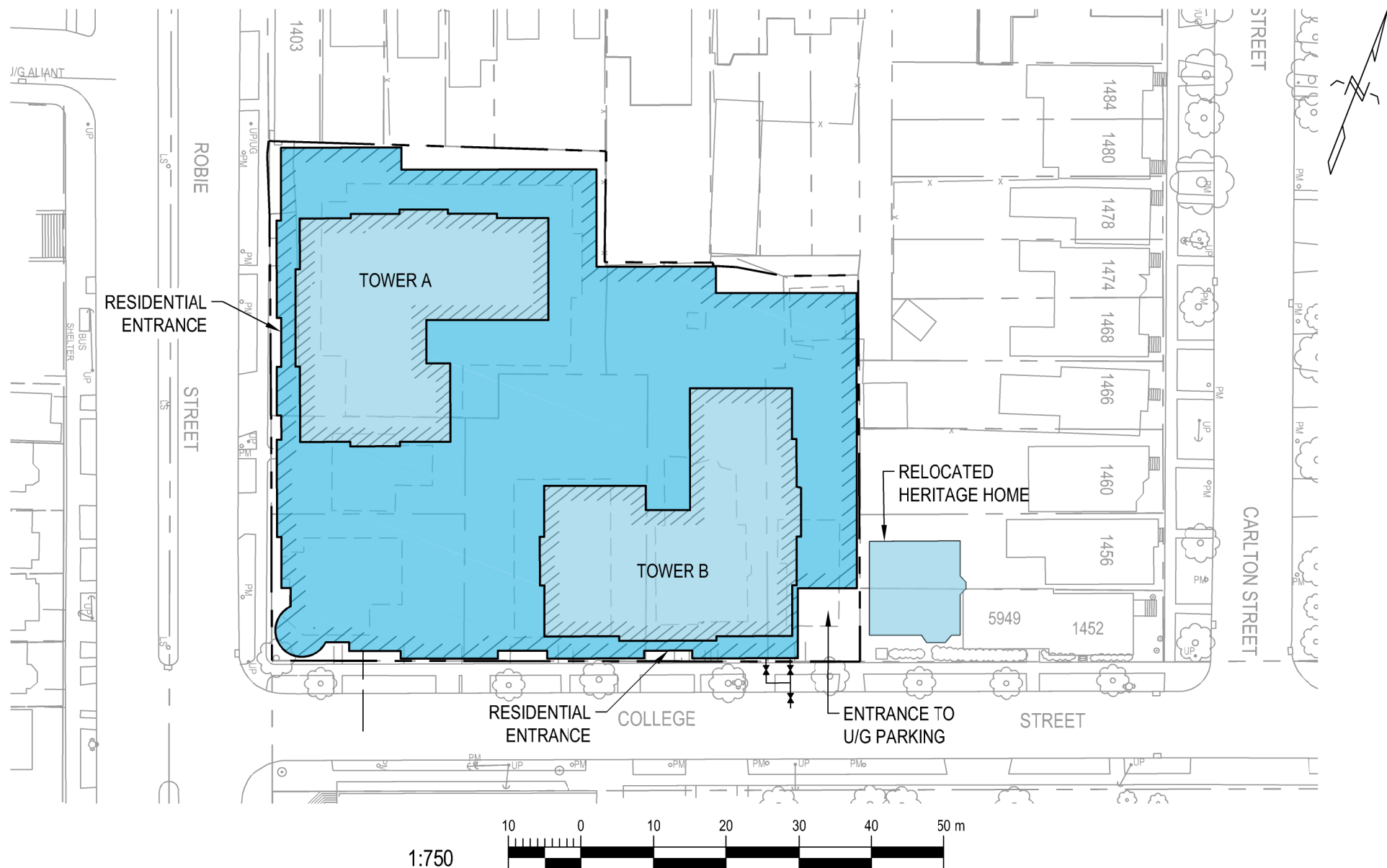
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APPENDIX A





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APPENDIX B

Queuing and Blocking Report
Existing AM Conditions

2016/07/21

Intersection: 2: Robie St & College St

Movement	WB
Directions Served	LR
Maximum Queue (m)	29.6
Average Queue (m)	19.5
95th Queue (m)	29.3
Link Distance (m)	288.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
Existing PM Conditions

2016/07/21

Intersection: 2: Robie St & College St

Movement	WB
Directions Served	LR
Maximum Queue (m)	15.5
Average Queue (m)	11.5
95th Queue (m)	16.5
Link Distance (m)	288.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Robie St & College St

Movement	WB
Directions Served	LR
Maximum Queue (m)	39.8
Average Queue (m)	23.6
95th Queue (m)	40.0
Link Distance (m)	288.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Robie St & College St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	25.9	22.9
Average Queue (m)	14.5	13.2
95th Queue (m)	26.3	22.5
Link Distance (m)	288.1	109.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		