

Transportation Impact Study - Addendum

PROPOSED MIXED USE RESIDENTIAL DEVELOPMENT

0 Atchison Drive
Caledon, ON

Second Submission: April 26, 2019
First Submission: January 23, 2018
Project No: NT-17-216

April 26, 2019

Mr. John Spina

Pluribus Corp.
7681 Highway 27 Unit 16
Woodbridge, Ontario L4L 4M5

**Re: Transportation Impact Study
Mixed Use Residential Development
Our Project No. NT-17-216**

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) acknowledges receipt of Town of Caledon comments dated October 24, 2018, with respect to our Transportation Study, dated January 23, 2018. The intention of this letter is to address these comments attached in **Appendix G**.

The subject site is currently vacant. Based on the preliminary site plan prepared by Architecture Unfolded, dated February 2018, the development proposal is to develop the existing subject lands into 87 apartment units and 696.70 m² of retail gross floor area (GFA) with surface and underground parking provided. Access to the site is envisioned via a full movement driveway onto Atchison Drive aligned with Boyces Creek Crescent.

Based on the comments and discussion with the City staff, our responses are addressed in the accompanying revised TIS as follows:

TOWN OF CALEDON COMMENTS

1. Regional staff acknowledge there are no accesses proposed to Old Church Road and have no comments on the traffic report. (Region of Peel)

Response: Acknowledged.

2. Staff are concerned with the proposed parking deficiency and the justification provided for same in the Transportation Impact Study (TIS), including: (TOC, Policy & Planning)
 - a) Section 6 of the Transportation Impact Study (TIS) should make reference to the Site-Specific By-law in place for this site, i.e. CV-507. Based on this, the parking requirement is 213 parking spaces (not 194) and the parking deficiency is 40 spaces (not 21).

Response: Acknowledged and addressed in **Section 6.0**.

- b) The TIS provides a review of parking supplies for other mixed-use sites as a comparable; please note that staff do not accept the two Markham sites as similar to the Caledon site. Please provide as a comparable municipality that are similar in size, population and transit infrastructure.

Response: Acknowledged and addressed in **Section 6.0**.

- c) Staff do not accept the proposal to share the proposed parking supply between residential and non-residential visitors as there will be overlap of parking demands during the day (8am to 8pm) on weekdays and weekends.

Response: The revised parking provision does not require the sharing of parking supply between residential and non-residential visitors.

- 3. The development application proposes a total of 173 vehicle parking spaces; 137 spaces for the Apartment Building and 36 spaces for the Visitors and Retail Stores. The parking provision is less than the by-law requirements. The Study also conducted a parking utilization review to justify the shortage and assumed that the duration of the utilization of the parking needs between the Retail Stores and Visitors are mutually exclusive. It is to be noted that more detailed content and calculation should be provided to identify the maximum shared parking needs based on the methodology outlined in Urban Land Institute (ULI) shared parking manual using time of the day factor, noting Planning's concern cited above. Please note that since the trips reduction justification by the Shopping Centre in PM is based on the number of parking, the Traffic Impact Study, specifically section 4 (Site Traffic) and LOS analysis, will need to be updated if the number of parking spaces increase. (Town of Caledon, FIS, Transportation)

Response: Acknowledged and addressed.

With the revisions noted, the study concludes that the proposed development can adequately be accommodated by the existing transportation network with minimal traffic impact to the adjacent public roadways. The proposed site access will operate at excellent levels of services.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

Nextrans Consulting Engineers

A Division of NextEng Consulting Group Inc.

Prepared by:



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Engineer-in-Training

Reviewed by:



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Principal

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1.0 INTRODUCTION

Nextrans Consulting Engineers was retained by Chateaux of Caledon Corporation (the 'Client') to undertake a Traffic Impact Study for a Site Plan Application in support of a proposed 5-storey mixed-use residential and commercial development located on Atchison Drive, in the Town of Caledon. The location of the proposed development is illustrated in **Figure 1-1**.

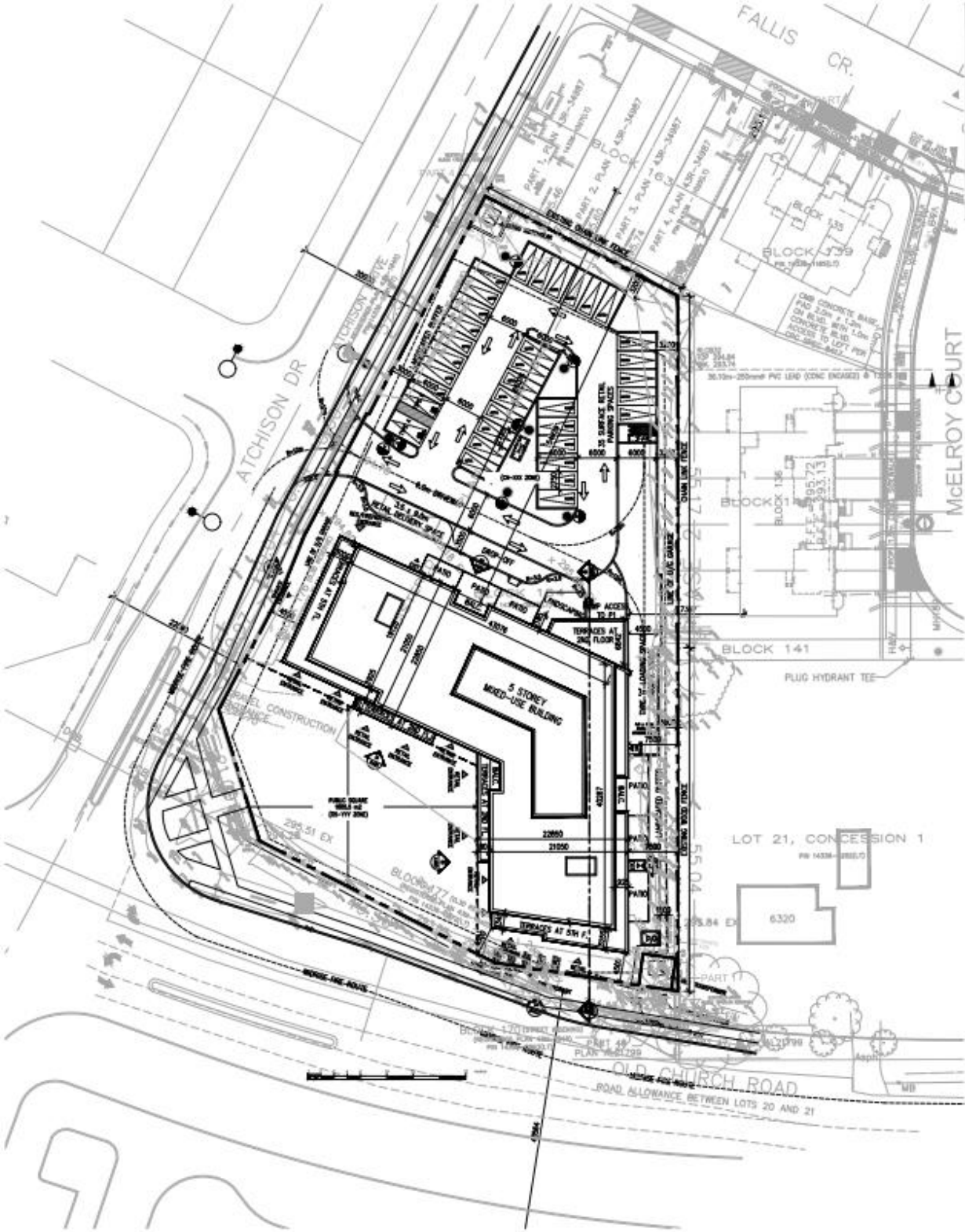
Figure 1-1 – Site Location



The subject site is currently vacant. Based on the preliminary site plan prepared by Architecture Unfolded, dated February 2018, the development proposal is to develop the existing subject lands into 87 apartment units and 696.70 m² of retail gross floor area (GFA) with surface and underground parking provided. Access to the site is envisioned via a full movement driveway onto Atchison Drive aligned with Boyces Creek Crescent. The preliminary site plan is provided in **Figure 1-2**; **Appendix A** also provides a larger scale version of the proposed site plan.

Given the residential based nature of the development proposal, the analysis will include the weekday morning and afternoon peak periods for assessment purposes.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing subject lands are generally located north of Old Church Road and east of Atchison Drive, in the Town of Caledon. The road network is described as follows:

Old Church Road: is classified as a collector road under the jurisdiction of Peel Region. It has a four-lane cross section including exclusive eastbound left and westbound right turn lanes onto Atchison Drive. Sidewalks are provided on both sides of the roadway. Old Church Road maintains a posted speed limit of 50 km/h in the vicinity of the subject site.

Atchison Drive: is classified as a local road under the jurisdiction of Caledon. It has a two-lane cross section with sidewalks provided on both sides and maintains an unposted speed limit of 15 km/h. Atchison Drive has an exclusive left turn lane on approach to Old Church Road.

Old Church Road and Atchison Drive meet at a newly installed signalized intersection. The south leg to this intersection provides access to the Town of Caledon municipal offices.

2.2. Existing Active Transportation Network

Sidewalks

There are currently sidewalks available on both sides of Old Church Street and Atchison Drive.

Bicycle Lanes

There are no dedicated bicycle lanes within the vicinity of the subject site.

2.3. Active Transportation Mode and Assessment

Existing Conditions

The review of the current amenities in the vicinity of the proposed development indicates there are significant retail, food and service establishments in the vicinity of the proposed development, many of which can be easily reached by non-auto options. Amenities within a 1-km radius (approximately a 10-minute walk) include Caledon Public Library, Caledon Town Hall, Canada Post, CIBC, Subway, Pizza Express, Caledon Community Complex, etc.

2.4. Existing Traffic Volumes

Existing traffic volumes at the study area intersections were undertaken by Spectrum Traffic on behalf of NexTrans Consulting Engineers on Wednesday, November 15, 2017 during the morning (7:00 a.m. to 10:00 a.m.) and afternoon (4:00 p.m. to 7:00 p.m.) peak periods. Detailed existing traffic data are provided in **Appendix B**.

2.5. Existing Traffic Assessment

The existing peak hour traffic volumes are illustrated in **Figure 2-2**, and were analyzed using Synchro 9 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. The detailed results are provided in **Appendix C** and summarized in **Table 2.1**.

Figure 2-1 – Existing Traffic Volumes

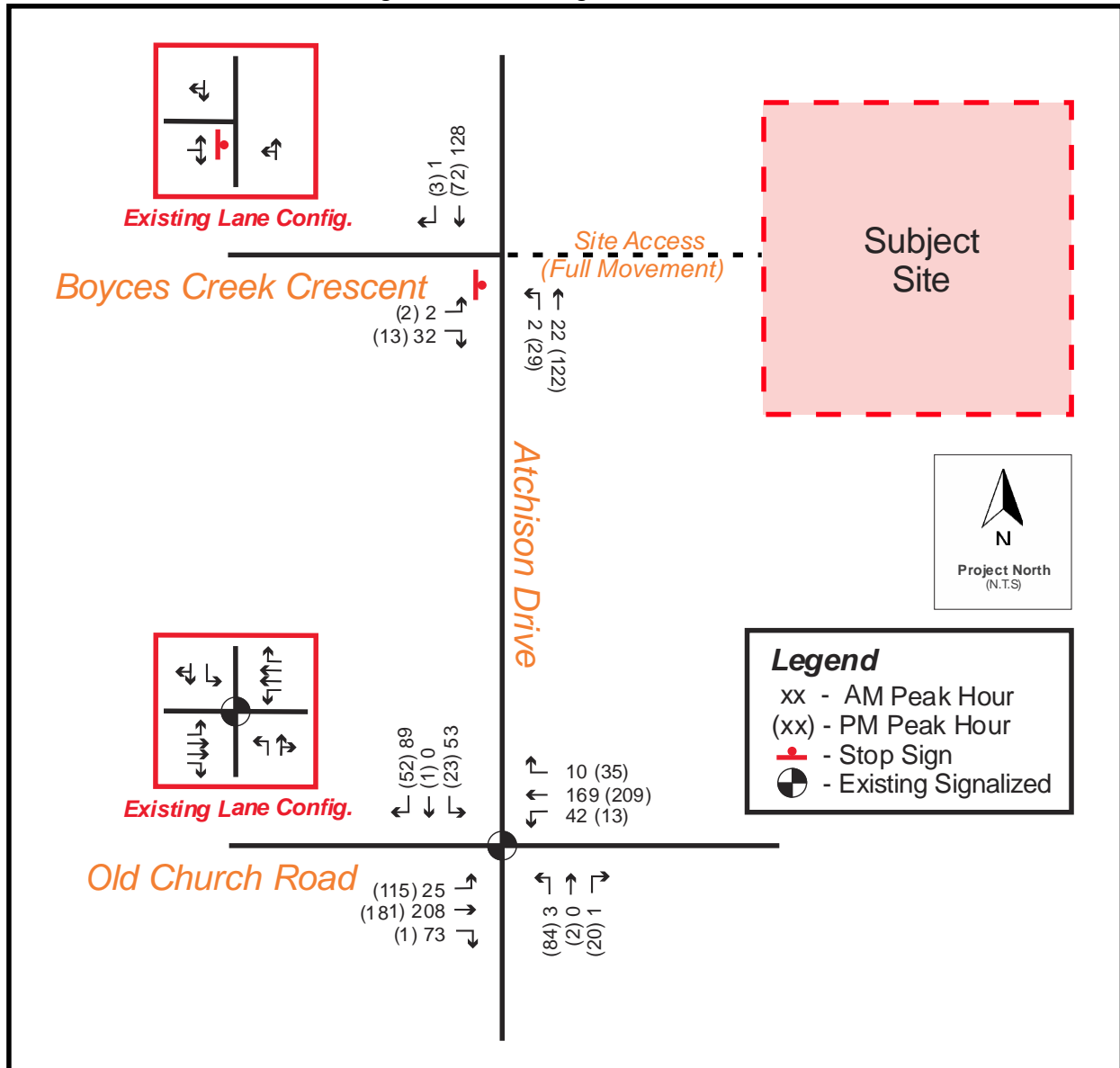


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Town Hall Access / Atchison Drive & Old Church Road (Signalized)	OVERALL	B (0.18)	15.8		B (0.35)	14.8	
	EBL	B (0.12)	17.4	7.0	B (0.29)	15.4	22.0
	EBT	B (0.40)	18.5	16.2	B (0.14)	13.2	14.3
	EBR	B (0.08)	17.0	3.2	B (0.00)	12.3	0.0
	WBL	B (0.39)	19.3	8.5	B (0.04)	12.6	3.7
	WBT	B (0.31)	18.0	13.7	B (0.17)	13.4	15.9
	WBR	B (0.02)	16.8	0.0	B (0.04)	12.6	0.5
	NBL	A (0.01)	6.5	0.9	B (0.42)	19.0	13.8
	NBTR	A (0.00)	6.4	0.0	B (0.03)	14.2	1.7
	SBL	A (0.09)	7.0	7.8	B (0.06)	14.5	6.1
	SBTR	A (0.08)	6.8	0.0	B (0.05)	14.4	0.0
Atchison Drive & Boyces Creek Crescent (Minor Street Stop Control)	EBLR	A (0.05)	9.2	1.3	A (0.03)	9.3	0.8
	NBTL	A (0.00)	1.0	0.1	A (0.02)	1.6	0.6

Under existing conditions, the study intersections are currently operating at excellent levels of service during both peak periods with no critical movements. During existing traffic conditions, the Town Hall Access / Atchison Drive & Old Church Road intersection is operating at overall LOS 'B' or better during the peak hour periods.

3.0 FUTURE BACKGROUND CONDITIONS

A 5-year (2022) horizon period was selected and assumed in this analysis, which generally coincides with the full build out of the proposed development. For a conservative analysis, a standard 2.5% growth rate per annum is assumed for the north-south through traffic on Atchison Drive and for the east-west through traffic on Old Church Road.

The future (2022) background traffic volumes are provided in **Figure 3-1**. **Table 3.1** summarizes the level of service at the given intersections under future background traffic conditions. Detailed output analysis can be found in **Appendix D**.

Figure 3-1 – Future (2022) Background Traffic Volumes

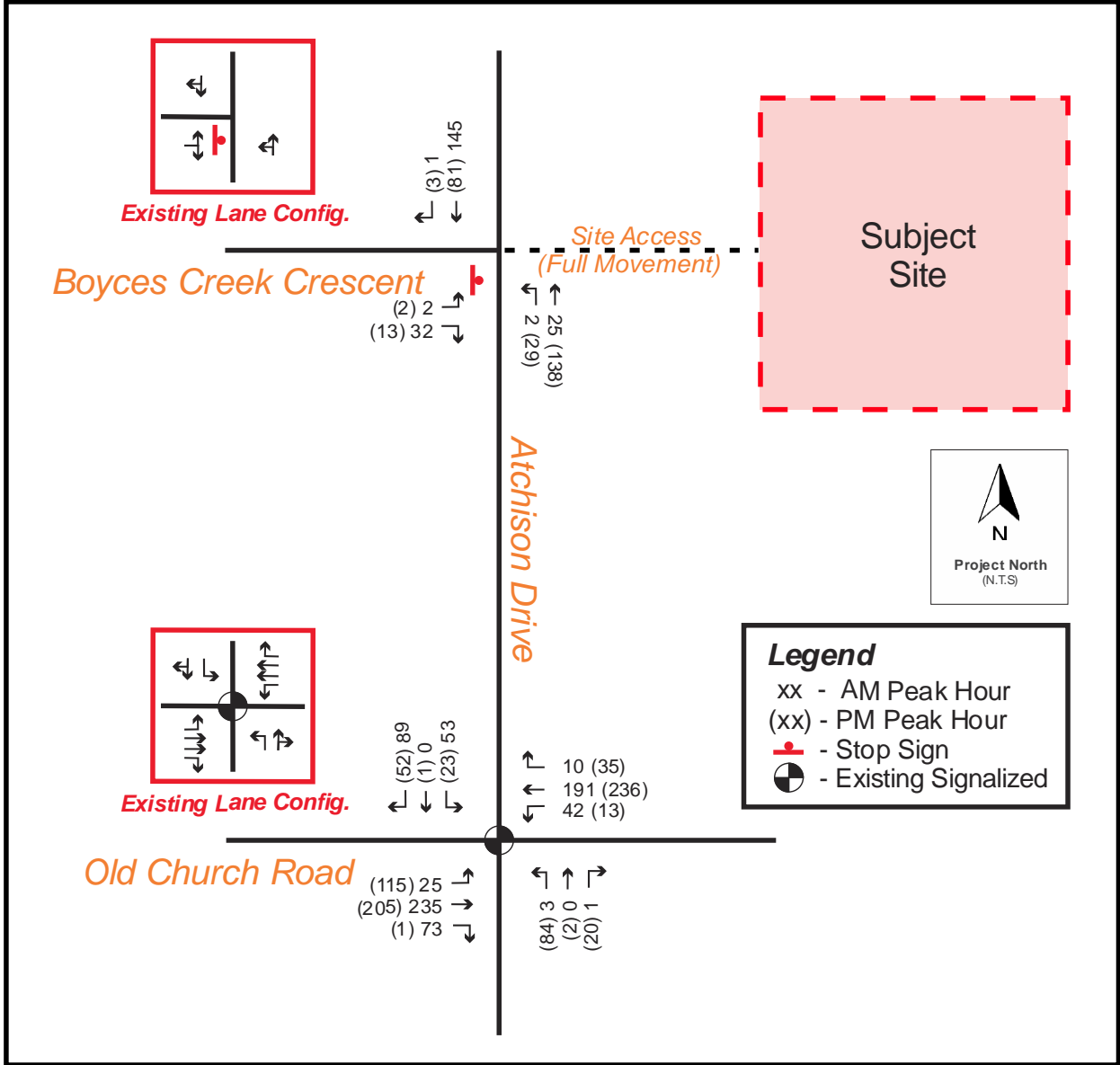


Table 3.1: Future (2022) Background Traffic Levels of Service

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Town Hall Access / Atchison Drive & Old Church Road (Signalized)	OVERALL	B (0.19)	16.0		B (0.35)	14.9	
	EBL	B (0.12)	17.2	7.0	B (0.29)	15.6	22.1
	EBT	B (0.44)	18.6	18.1	B (0.16)	13.3	15.9
	EBR	B (0.08)	16.9	3.2	B (0.00)	12.3	0.0
	WBL	B (0.40)	19.2	8.5	B (0.04)	12.6	3.7
	WBT	B (0.34)	18.1	15.2	B (0.20)	13.6	17.7
	WBR	B (0.02)	16.6	0.0	B (0.04)	12.6	0.5
	NBL	A (0.01)	6.6	0.9	B (0.42)	19.0	13.8
	NBTR	A (0.00)	6.6	0.0	B (0.03)	14.2	1.7
	SBL	A (0.09)	7.1	7.9	B (0.06)	14.5	6.1
SBTR	A (0.08)	7.0	0.0	B (0.05)	14.4	0.0	
Atchison Drive & Boyces Creek Crescent (Minor Street Stop Control)	EBLR	A (0.05)	9.4	1.3	A (0.03)	9.4	0.8
	NBTL	A (0.00)	0.9	0.1	A (0.02)	1.5	0.6

As summarized in **Table 3.1**, it is shown that during future background traffic conditions the subject study area intersections continue to operate at excellent level of services with no changes to expected operations. During future background traffic conditions, the Town Hall Access / Atchison Drive & Old Church Road intersection is operating at overall LOS 'B' or better during the peak hour periods.

4.0 SITE TRAFFIC

The development proposal is to develop the existing subject lands into 87 condominium apartment units and 696.70 m² of retail GFA. Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 9th Edition* published by the Institute of Transportation Engineers (ITE) for “Apartment” (LUC 220) and “Shopping Center” (LUC 820). The trip generation summary is shown in **Table 4.1**.

Table 4.1 – Site Traffic Trip Generation (Based on ITE)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Apartment (85 units)	New Trips	9	36	45	42	22	64
	Trip Rate	0.11	0.42	0.53	0.49	0.26	0.75
Shopping Center (899.88 m ²)	New Trips	24	14	38	60	65	125
	Trip Rate	2.48	1.44	3.92	6.19	6.71	12.90
Total	New Trips	33	50	83	102	87	189

As shown in **Table 4.1**, and according to the ITE rates, the proposed development is anticipated to generate 83 two-way auto trips (33 inbound and 50 outbound) during the AM peak hours and 189 two-way auto trips (102 inbound and 87 outbound) during the PM peak hours.

However, the commercial trip generation rates prove to be extremely high and unreasonable for the proposed end users particularly during the PM Peak Hour. In this instance, it is more reasonable to undertake a first principles assessment based on the proposed parking supply. The development proposes 22 parking spaces for the retail use at the subject site. Assuming a 30-minute turnover for each space and a 50/50 in/out split, the proposed commercial use is anticipated to generate 88 two-way auto trips (44 inbound and 44 outbound) during the PM peak hour. The revised trip generation summary is shown in **Table 4.2**.

Table 4.2 – Site Traffic Trip Generation (Based on ITE & First Principles)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Apartment (85 units)	New Trips	9	36	45	42	22	64
	Trip Rate	0.11	0.42	0.53	0.49	0.26	0.75
Shopping Center (899.88 m ²)	New Trips	24	14	38	44	44	88
	Trip Rate	2.48	1.44	3.92	4.54	4.54	9.08
Total	New Trips	33	50	83	86	66	152

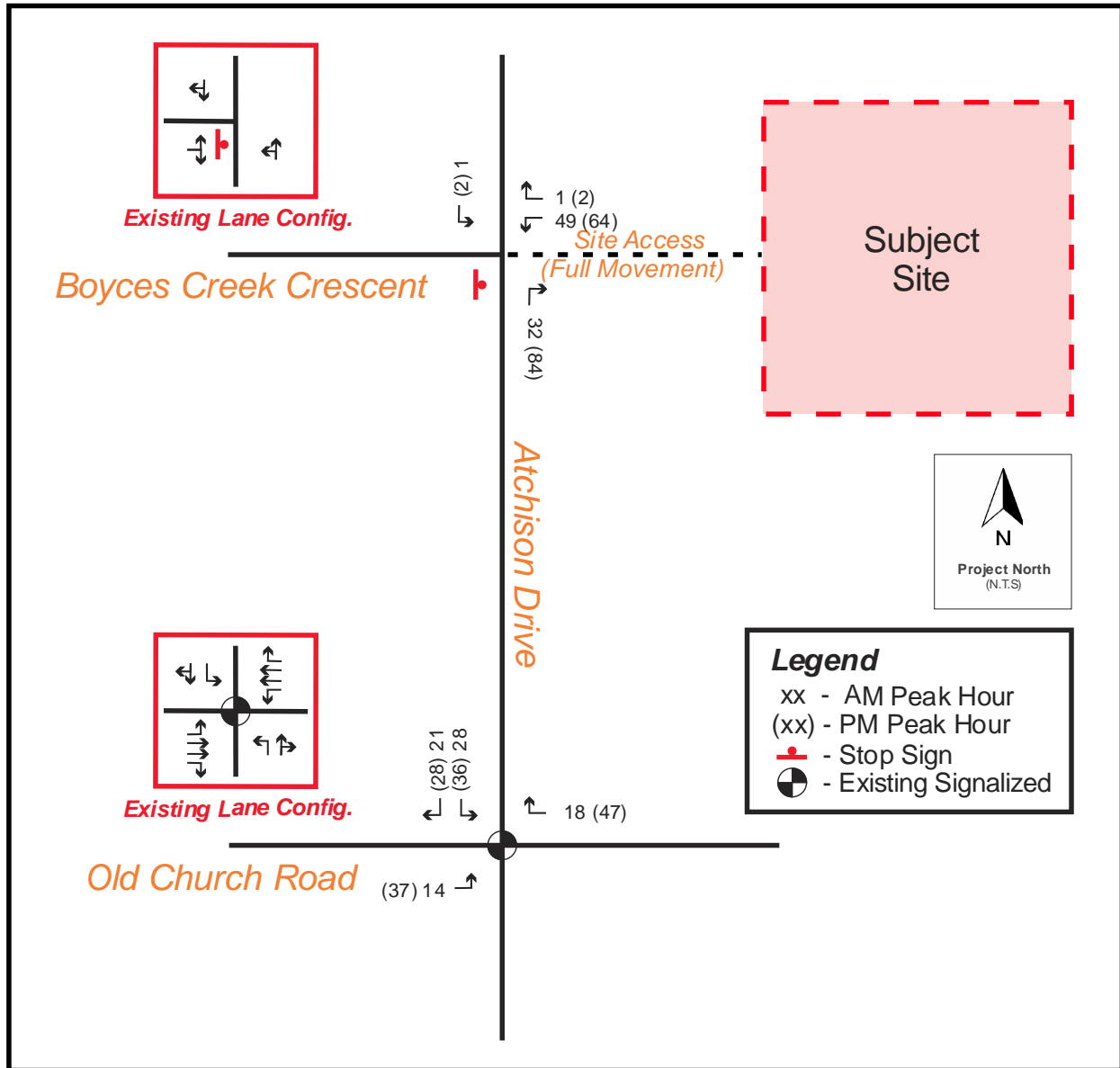
As shown in **Table 4.2**, according to ITE rates and first principles, the proposed development is anticipated to generate 83 two-way auto trips (33 inbound and 50 outbound) during the AM peak hours and 152 two-way auto trips (86 inbound and 66 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the information extracted from the 2011 Transportation Tomorrow Survey (TTS) and existing traffic patterns and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.2** with the trip assignment illustrated in **Figure 4-1**.

Table 4.3 – Site Traffic Trip Distribution

Direction	Via	Inbound	Outbound
North	Atchison Drive	2%	2%
East	Old Church Road	55%	55%
West	Old Church Road	43%	43%
Total		100%	100%

Figure 4-1 – Site Generated Traffic Assignments



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2022 future total traffic volumes (future background volumes plus site generated traffic volumes) are illustrated in **Figure 5-1**, and were analyzed using Synchro 9 software with stopped controlled at the proposed site access. The detailed calculations are provided in **Appendix E** and summarized in **Table 5.1**.

Figure 5-1 – Future (2022) Total Traffic Volumes

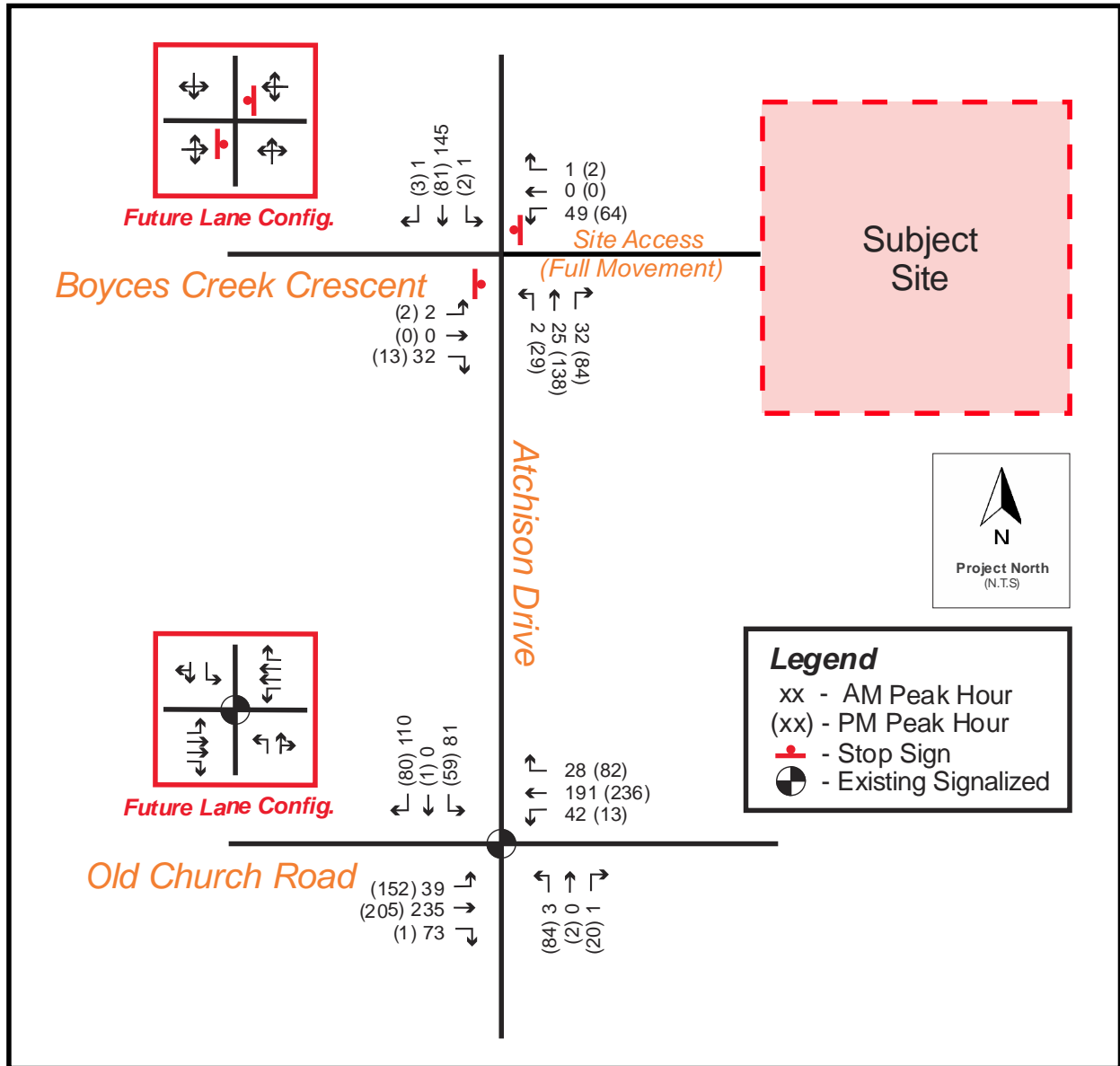


Table 5.1 – Level of Service – Future Total Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	95 th Queue (m)	LOS (v/c)	Delay (s)	95 th Queue (m)
Town Hall Access / Atchison Drive & Old Church Road (Signalized)	OVERALL	B (0.23)	15.5		B (0.41)	15.1	
	EBL	B (0.19)	17.5	9.8	B (0.39)	17.1	29.2
	EBT	B (0.43)	18.4	18.1	B (0.16)	13.3	15.9
	EBR	B (0.08)	16.8	3.1	B (0.00)	12.3	0.0
	WBL	B (0.39)	19.0	8.5	B (0.04)	12.6	3.7
	WBT	B (0.33)	17.9	15.2	B (0.20)	13.6	17.7
	WBR	B (0.04)	16.6	0.0	B (0.09)	13.0	0.9
	NBL	A (0.01)	6.8	0.9	B (0.43)	19.4	13.9
	NBTR	A (0.00)	6.7	0.0	B (0.03)	14.2	1.7
	SBL	A (0.15)	7.6	11.4	B (0.17)	15.6	12.2
SBTR	A (0.09)	7.3	0.0	B (0.07)	14.6	0.0	
Atchison Drive & Boyces Creek Crescent (Minor Street Stop Control)	EBLTR	A (0.06)	9.4	1.3	A (0.03)	9.6	0.8
	WBLTR	B (0.08)	11.0	2.1	B (0.13)	12.4	3.3
	NBLTR	A (0.00)	0.4	0.1	A (0.02)	1.1	0.6
	SBLTR	A (0.00)	0.0	0.0	A (0.00)	0.2	0.0

Under future total traffic conditions, the study intersection and proposed accesses are expected to continue operating with excellent level of service during both peak periods.

6.0 PARKING ASSESSMENT

Based on Town of Caledon Zoning By-law 13-253 (Revised September 18, 2018) Section 13.1 – Exceptions, a minimum of 207 parking spaces will be required for the proposed development. The preliminary site plan provides for a total of 172 parking spaces, resulting in a technical parking deficiency of 35 parking spaces. The parking requirement for the proposed development is detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements (Zoning By-law 2006-50)

Use	Units / GFA	Rate	Parking Requirement	Parking Provided	Difference
Apartment Building	87 units	2 spaces per dwelling unit	174	153	-21
Retail Store	647.40 m ²	1 space per 20 m ² of net floor area	33	19	-14
Total			207	172	-35

The Town of Caledon current By-law requires a parking standard rate of 1 space per 20 m² of net floor area for retail store. In our opinion, this would significantly oversupply the anticipated parking demand for the subject property as the retail use is generally an ancillary use based on the small floor area proposed that would generally support smaller retail end users. The retail requirement of 1 space per 20 m² is a balance between the more intense commercial uses (Restaurant – 1 space per 15 m²) and less impactful uses (Office – 1 space per 30 m²).

In order to identify a more reasonable parking standard to serve the site, Nextrans undertook a literature review of a commercial development in Caledon and two (2) in-house parking studies for similar developments across the Greater Toronto Area.

The data review included a review of the following mixed-use sites:

- 15955 Airport Road, April 2019
- 9500 & 9506 Markham Road, November 2017
- 60 South Town Centre Blvd & 50 Clegg Road, November 2017

Table 6.2 summarizes the proxy sites surveyed as part of the studies in the literature review. Proxy results are provided in **Appendix F**.

Table 6.2 – Proxy Sites

Site	Land Use	Survey Date	Peak Parking Demand
15955 Airport Road	Commercial: 2032 m ²	N/A	50 spaces provided Commercial: 2.46 spaces / 100 m ²
9500 & 9506 Markham Road	Residential: 434 Units Commercial: 1,338.42 m ²	November 18, 2017 & November 21, 2017	Tenant: 0.88 spaces / unit Visitor: 0.12 spaces / unit Commercial: 2.53 spaces / 100 m ²
60 South Town Centre Blvd & 50 Clegg Road	Residential: 532 Units Commercial: 890 m ²	November 22, 2017 & November 25, 2017	Tenant: 0.93 spaces / unit Visitor: 0.10 spaces / unit Commercial: 2.13 spaces / 100 m ²

Based on the proxy results, a parking rate of 2.5 spaces per 100 m² is appropriate for the proposed commercial component. The residential parking requirements will be based on the Town of Caledon Zoning By-law 2006-50 (Revised March 2016) Section 5 – Parking, Loading and Delivery at a rate of 1.5 spaces per dwelling unit and 0.25 spaces per unit for visitors. The parking requirement is detailed below in **Table 6.3**.

Table 6.3 – Vehicle Parking Requirements

Use	Units / GFA	Rate	Parking Requirement	Parking Provided	Difference
Apartment Building	87 units	1.5 spaces per dwelling unit	131	131	0
Apartment Visitor	87 units	0.25 spaces per unit for visitor	22	22	0
Retail Store	647.40 m ²	2.5 spaces per 100 m ²	17	19	+2
Total			170	172	+2

On this basis, the parking provision is completely met at the subject site, municipally known as, 0 Atchison Drive, in the Town of Caledon.

7.0 SITE PLAN REVIEW

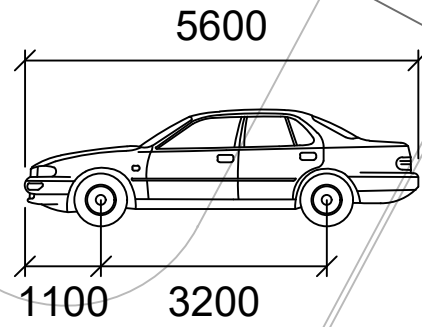
It is recommended that the proposed site access design be consistent with the Town of Caledon's Site Plan Submission Guidelines.

AutoTURN software was used (P TAC – 2017 & HSU TAC – 2017) to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed parking spaces. As illustrated in **Figure 7-1** and **Figure 7-2**, the AutoTURN analysis demonstrates that a 5.6 m long Passenger Car (P TAC – 2017) and an 11.5 m long Garbage Truck (HSU TAC – 2017) can effectively maneuver through the development area.

8.0 CONCLUSION

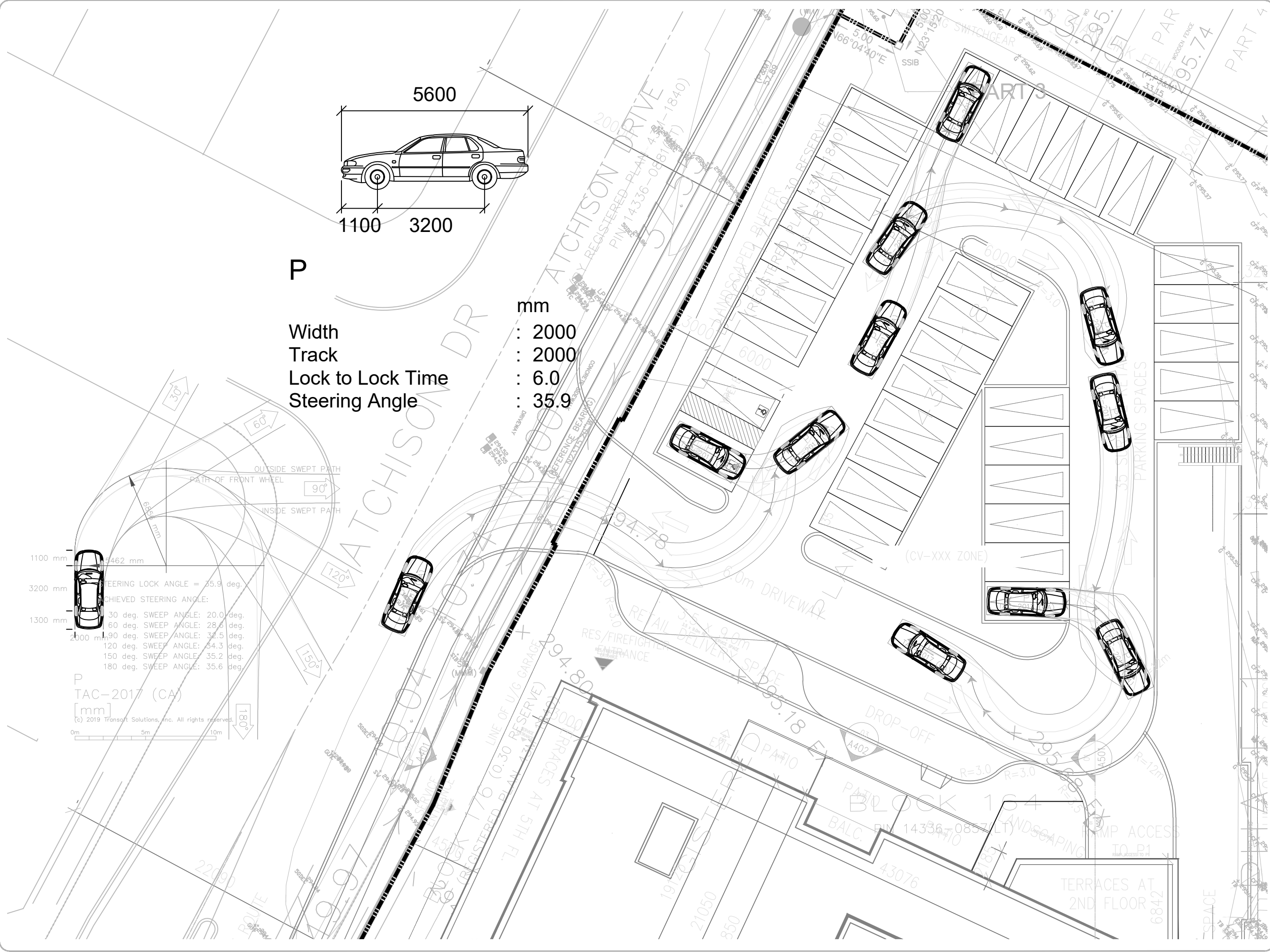
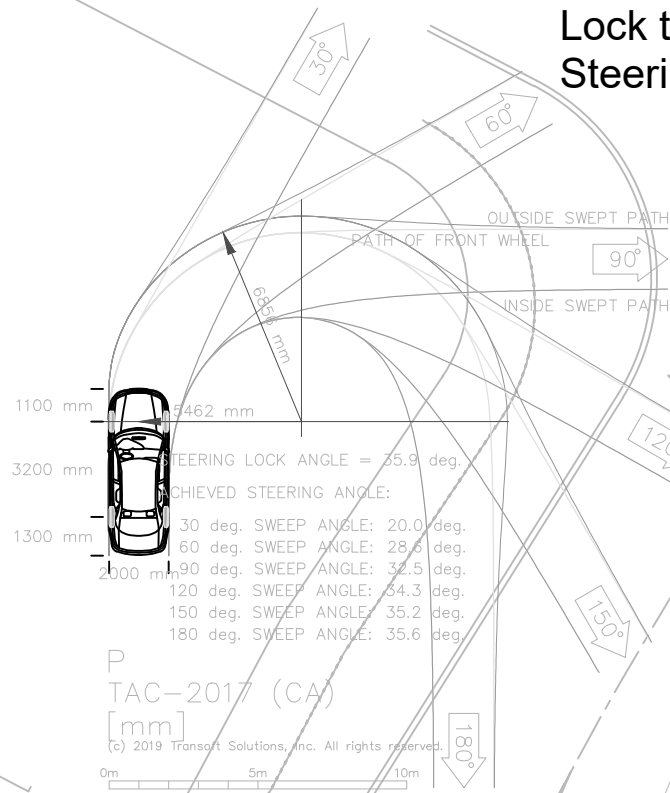
The findings and conclusions of our analysis are as follows:

- The development proposal is to develop the existing subject lands into 87 apartment units and 696.70 m² of retail gross floor area (GFA) with surface and underground parking provided.
- The proposed development is anticipated to generate 83 two-way auto trips (33 inbound and 50 outbound) during the AM peak hours and 152 two-way auto trips (86 inbound and 66 outbound) during the PM peak hours.
- The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study intersections and existing accesses are expected to operate with excellent levels of service.
- The preliminary site plan provides for a total of 172 parking spaces, resulting in a technical parking deficiency of 35 parking spaces. Based on the in-house parking data for mixed-use sites, a parking rate of 2.5 spaces per 100 m² is appropriate for the proposed commercial uses. On this basis, the parking provision is completely met at the subject site.
- The proposed site plan is accessible from a circulation perspective.
- No external road improvements are necessary to support the development application.



P

Width : 2000 mm
 Track : 2000 mm
 Lock to Lock Time : 6.0
 Steering Angle : 35.9



BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

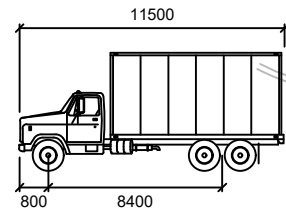
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PROJECT NAME:
 PROPOSED MIXED USE DEVELOPMENT
 Chateaux
 (TOWN OF CALEDON)

DRAWING TITLE:
 AutoTURN Analysis
 (P TAC-2019)

DESIGN BY: A.S.	DATE: April 25, 2019
CHECKED BY: R.P.	PROJECT NO.:
DRAWN BY: A.S.	NT-17-216
SCALE: NTS	DRAWING NO.:
	Figure 7-1



HSU

- Width : 2600 mm
- Track : 2600 mm
- Lock to Lock Time : 6.0
- Steering Angle : 40.0



RLCB32
TOP 294.9
INV. 293.7
36.10m

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

STAMP



PROJECT NAME:

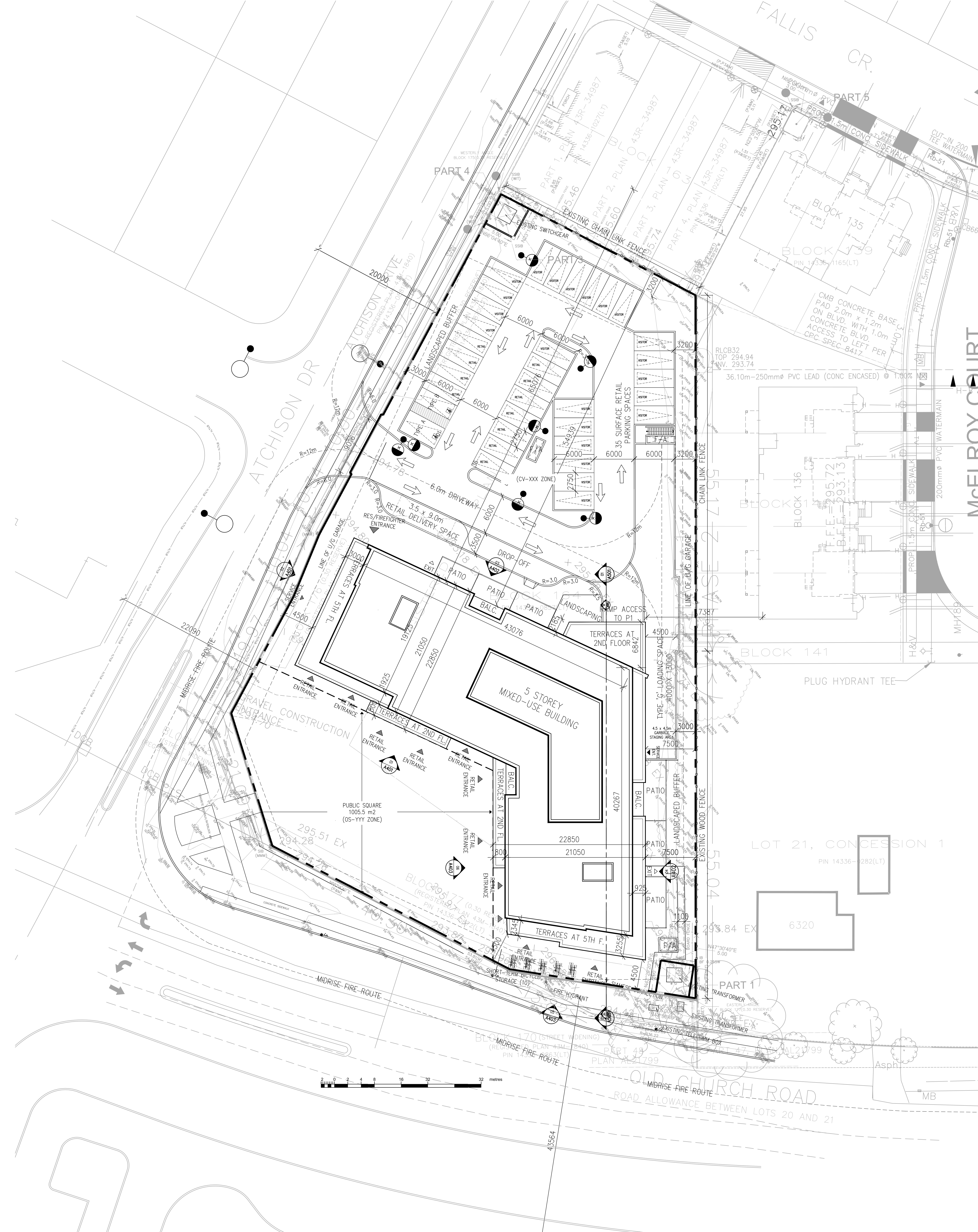
PROPOSED MIXED USE DEVELOPMENT
Chateaux
(TOWN OF CALEDON)

DRAWING TITLE:

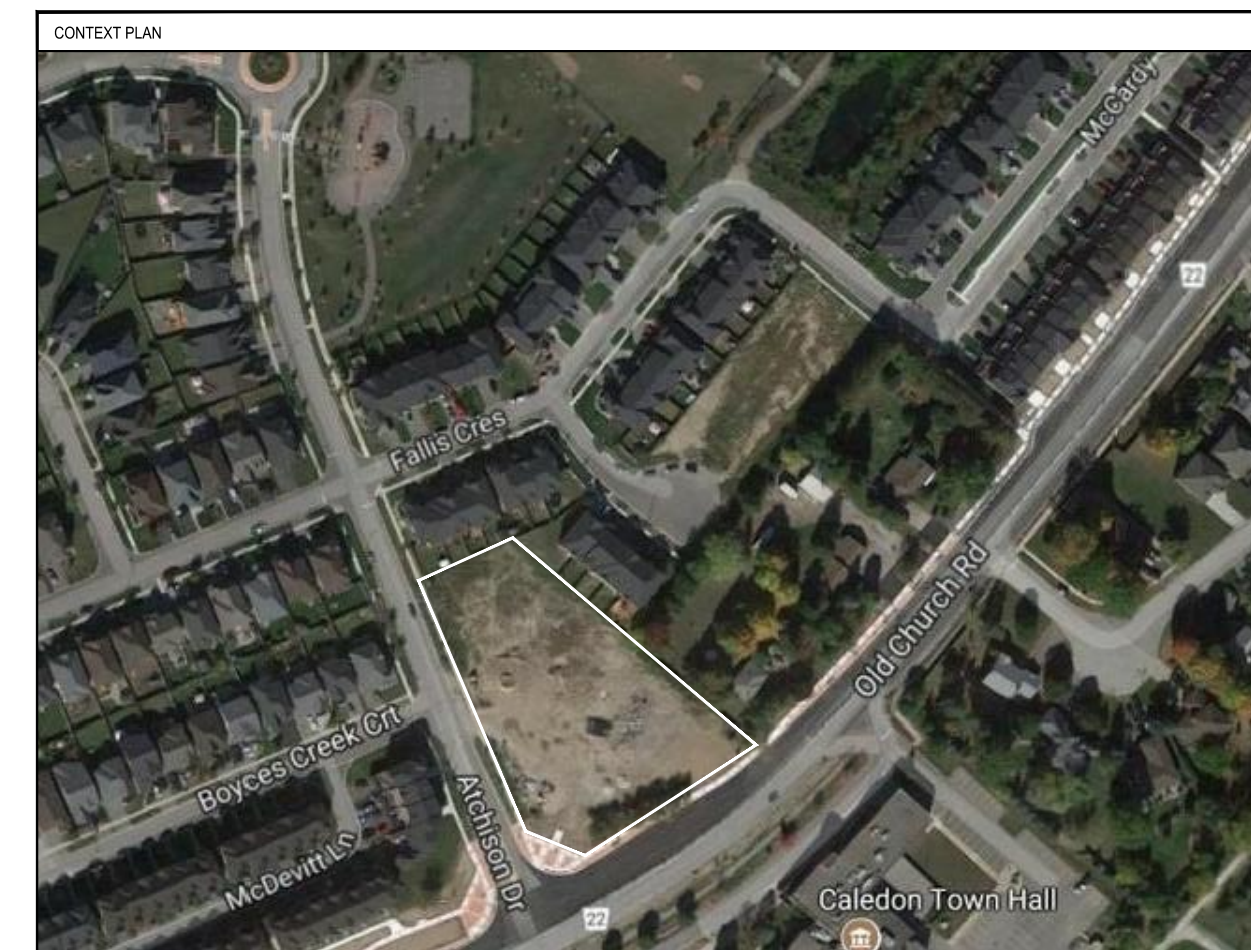
AutoTURN Analysis
(HSU TAC-2019)

DESIGN BY: A.S.	DATE: April 25, 2019
CHECKED BY: R.P.	PROJECT NO.:
DRAWN BY: A.S.	NT-17-216
SCALE: NTS	DRAWING NO.:
	Figure 7-2

Appendix A - Proposed Site Plan



ZONING DESIGNATION:	CALEDON ZONING BY-LAW 2011-27 CV	PROPOSED
LOT AREA (minimum)	5,500 m ²	5,985.86 m ²
LOT FRONTAGE (minimum)	9.00 m	90.48 m
BUILDING AREA (maximum)	n/a	7,840.26 m ²
BUILDING SETBACKS (minimum)		
FRONT YARD	4.50 m	S = 4.50 m
SIDE YARDS	1.80 m	W = 4.50 m
	4.50 m	E = 7.50 m
REAR YARD	9.50 m	N = 54.61 m
BUILDING HEIGHT (maximum)	11.00 m	17.9 m
RETAIL GFA (maximum)	650 m ²	696.7 m ²
PARKING SPACES		
RESIDENTIAL	1.5 space/unit = 131	1.57 space/unit = 137
VISITORS	0.25 space/unit = 22	shared w/ retail
RETAIL	1 space/20 m ² = 35	1 space/40 m ² = 17



STATISTICS			
1. ZONING		05-505 & CV-507	
2. SITE AREA	5,985.86 m ²	64,431.20 ft ²	1.48 ACRES
3. GROSS FLOOR AREA (GFA)	7,116.30 m ²	76,599.14 ft ²	
4. GROUND FLOOR AREA	1,712.10 m ²	18,426.87 ft ²	
5. PROPOSED BUILDING DENSITY		1.19 FSI (NFA / SA)	
6. PROPOSED BUILDING COVERAGE		28.6%	
7. LANDSCAPED AREA PROVIDED	0.00 m ² (0.00%)	0.00 m ² (0.00%)	0.00 m ² (0.00%)
8. FLOOR AREA:			
LEVEL	TOTAL FLOOR AREA (TFA)	GROSS FLOOR AREA (GFA)	NET LEASABLE AREA (NSA)
GND	5,283.82 m ²	54,700.20 ft ²	0.00 m ²
1ST	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
2ND	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
3RD	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
4TH	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
5TH	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
GRAND TOTAL	12,405.42 m ²	133,477.96 ft ²	76,599.14 ft ²
10. UNIT SUMMARY			
FLOOR	UNIT TYPE	28-D	38
Level	Studio	18	18-D
GND	0	0	0
1ST	0	3	0
2ND	0	3	0
3RD	0	3	0
4TH	0	3	0
5TH	0	3	0
TOTAL	0	11	0
	0.0%	12.6%	0.0%

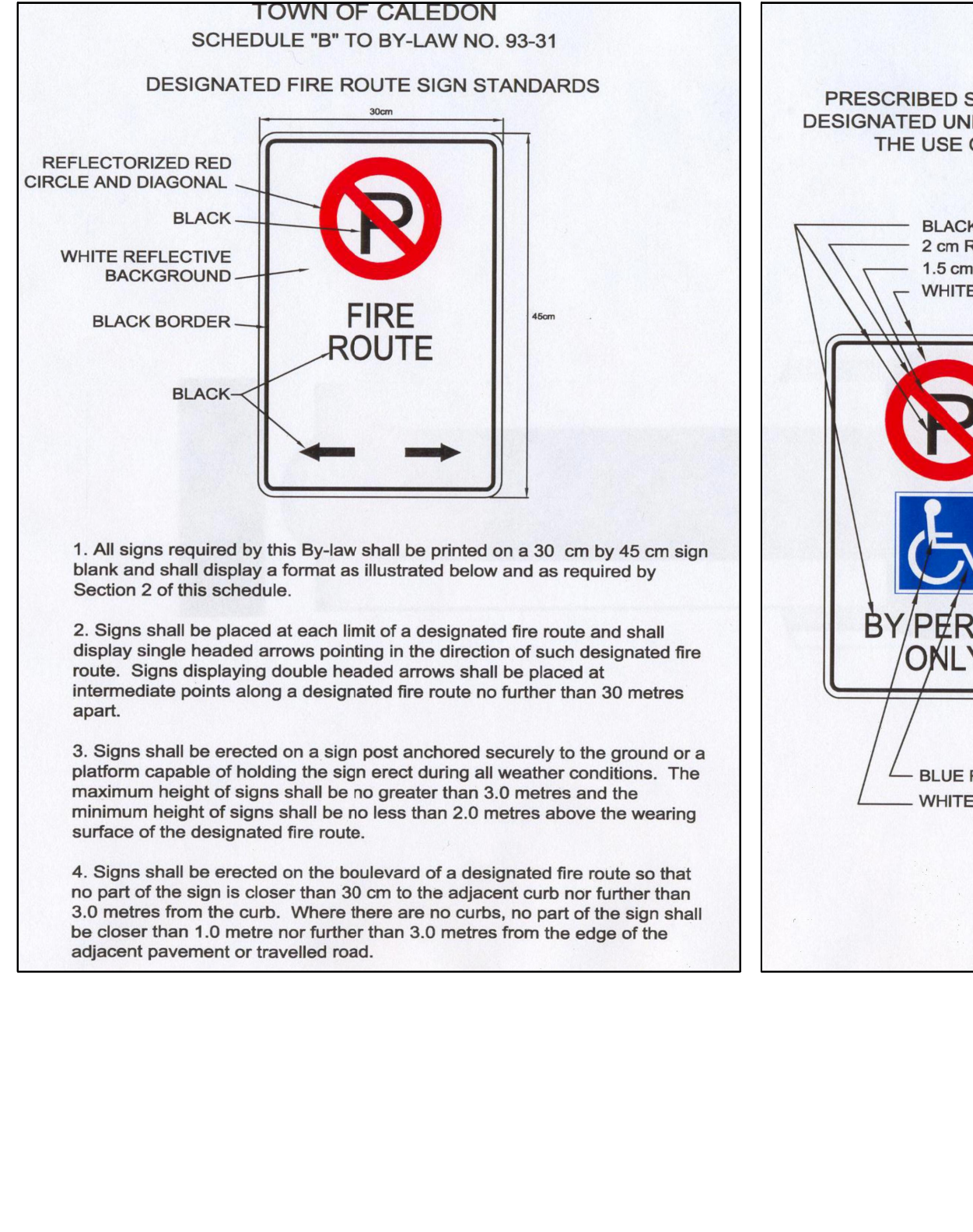
11. ACCESSIBLE UNITS			
	UNIT TYPE	28-D	38
TOTAL	Studio	18	18-D
	0	0	0
	0.0%	0.0%	0.0%

12. EFFICIENCY (NSA/GFA)			
TOTAL	0.0%	0.0%	0.0%

13. HEIGHT			
13. HEIGHT	REQUIRED:	PROPOSED:	
14. PARKING	REQUIRED:	PROPOSED:	
15. LOCKERS	REQUIRED:	PROPOSED:	
16. BICYCLE	REQUIRED:	PROPOSED:	
17. INDOOR AMENITY	REQUIRED:	PROPOSED:	
18. OUTDOOR AMENITY	REQUIRED:	PROPOSED:	
19. LOADING SPACES	REQUIRED:	PROPOSED:	

OBC MATRIX			
1. Project Description	Group 13, (PARTIAL)	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
2. Major Occupancy Group	Group 13, (PARTIAL)	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
3. Building Area	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
4. Gross Area	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
5. Number of Storeys	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
6. Number of Storeys/Fire Fighter Access	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
7. Building Classification	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
8. Sprinkler System Proposed	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
9. Standpipe required	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
10. Fire Alarm required	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
11. Water Service/Supply is Adequate	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
12. High Building	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
13. Permitted Construction	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
14. Mezzanine(s) Area m ²	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
15. Occupant load based on	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
16. Barrier-free Design	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
17. Hazardous Substances	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
18. Fire Resistance	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
19. Spatial Separation	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5

OBC MATRIX			
1. Project Description	Group 13, (PARTIAL)	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
2. Major Occupancy Group	Group 13, (PARTIAL)	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
3. Building Area	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
4. Gross Area	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
5. Number of Storeys	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
6. Number of Storeys/Fire Fighter Access	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
7. Building Classification	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
8. Sprinkler System Proposed	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
9. Standpipe required	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
10. Fire Alarm required	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
11. Water Service/Supply is Adequate	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
12. High Building	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
13. Permitted Construction	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
14. Mezzanine(s) Area m ²	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
15. Occupant load based on	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
16. Barrier-free Design	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
17. Hazardous Substances	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
18. Fire Resistance	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5
19. Spatial Separation	Existing	3.2.1.2, 3.2.1.5	3.2.1.2, 3.2.1.5



SURVEY DATA			
PLAN OF SUBMISSION OF	PREPARED BY:	DATE:	
PART OF LOT 21, CONCESSION 1	MM GEOMETRICS LTD.	2018-04-16	
TOWNSHIP OF ALTON COUNTY OF PEEL	2410 MIDLAND AVE. MISSISSAUGA	ONTARIO, L4N 6S2 (905) 828-4770	
BLOCKS 157 AND 173 (0.30 RESERVE)	REGISTERED PLAN 43M-1840 TOWN	08/24/16	
OF CALEDON			
REGIONAL MUNICIPALITY OF PEEL			

LEGEND			
▲	MAIN ENTRANCE	□	CATCH BASIN
△	EXIT	○	HYDRO POLE
▲	SERVICE	○	FIRE HYDRANT
○	EXISTING ELEVATION	○	BOLLARD LIGHT
○	PROPOSED ELEVATION	○	REFER TO ELEC DWGS
		○	HANDICAPPED PARKING

Notes:

Garbage Storage Room to be located inside building.

2 issued for rezoning / spa
1 issued for client review

architectural team
mark zwicker
bonnie clouthwright

owner:
pluribus corp.
55 blue willow drive, woodbridge, on L1R 9E8

applicant:
paul a. king
905 770 0232

planning:
paul a. king

structural:
-

electrical:
-

mechanical:
-

landscape:
insite landscape architects

interior:
-

site services:
startec consulting ltd

project:
chateaux mid-rise
1 atchison dr
caledon, ontario
spa# 2018-0008

site plan & statistics

feb 23 2018
1:250
17-49
bd

date:
scale:
project:
drawn by:

drawing number:
A101

Appendix B - Existing Traffic Data



Turning Movement Count (1 . BOYCES CREEK CRT (S) & ATCHISON DR)

Start Time	N Approach ATCHISON DR					S Approach ATCHISON DR					W Approach BOYCES CREEK CRT (S)					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	31	0	0	31	2	1	0	0	3	7	0	0	0	7	41	
07:15:00	1	33	0	0	34	3	1	0	0	4	7	0	0	0	7	45	
07:30:00	0	30	0	0	30	7	0	0	0	7	5	0	0	0	5	42	
07:45:00	0	36	0	0	36	6	1	0	0	7	11	1	0	0	12	55	183
08:00:00	0	29	0	0	29	6	0	0	0	6	9	1	0	1	10	45	187
08:15:00	0	21	0	0	21	8	1	0	0	9	5	1	0	0	6	36	178
08:30:00	0	28	0	0	28	11	2	0	0	13	1	0	0	0	1	42	178
08:45:00	0	16	0	1	16	8	1	0	0	9	7	1	0	5	8	33	156
09:00:00	0	30	0	0	30	16	4	0	0	20	1	3	0	2	4	54	165
09:15:00	1	12	0	0	13	8	0	0	0	8	2	1	0	5	3	24	153
09:30:00	0	21	0	0	21	11	3	0	0	14	2	1	0	2	3	38	149
09:45:00	0	14	0	0	14	3	2	0	0	5	1	1	0	2	2	21	137
BREAK																	
16:00:00	0	18	0	0	18	23	4	0	0	27	4	0	0	0	4	49	
16:15:00	1	20	0	0	21	33	12	1	0	46	0	1	0	0	1	68	
16:30:00	2	18	0	0	20	35	5	0	0	40	2	1	0	1	3	63	
16:45:00	1	9	0	0	10	29	8	0	0	37	4	1	0	0	5	52	232
17:00:00	1	21	0	0	22	31	2	0	0	33	1	0	0	1	1	56	239
17:15:00	0	21	0	0	21	32	4	0	0	36	3	0	0	0	3	60	231
17:30:00	0	17	0	0	17	36	9	0	0	45	3	0	0	0	3	65	233
17:45:00	1	14	0	0	15	30	9	0	0	39	5	0	0	0	5	59	240
18:00:00	2	20	0	0	22	24	7	0	0	31	2	2	0	0	4	57	241
18:15:00	0	26	0	0	26	22	7	0	0	29	3	0	0	0	3	58	239
18:30:00	0	17	0	0	17	19	4	0	0	23	7	0	0	0	7	47	221



18:45:00	0	14	0	0	14	27	4	0	0	31	2	1	0	0	3	48	210
Grand Total	10	516	0	1	526	430	91	1	0	522	94	16	0	19	110	1158	-
Approach%	1.9%	98.1%	0%	-	-	82.4%	17.4%	0.2%	-	-	85.5%	14.5%	0%	-	-	-	-
Totals %	0.9%	44.6%	0%	45.4%	37.1%	7.9%	0.1%	45.1%	8.1%	1.4%	0%	9.5%	-	-	-	-	-
Heavy	0	10	0	-	15	0	0	-	0	0	0	-	-	-	-	-	-
Heavy %	0%	1.9%	0%	-	3.5%	0%	0%	-	0%	0%	0%	-	-	-	-	-	-
Bicycles	4	0	0	-	0	0	0	-	0	0	0	-	-	-	-	-	-
Bicycle %	40%	0%	0%	-	0%	0%	0%	-	0%	0%	0%	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (1.6 °C)

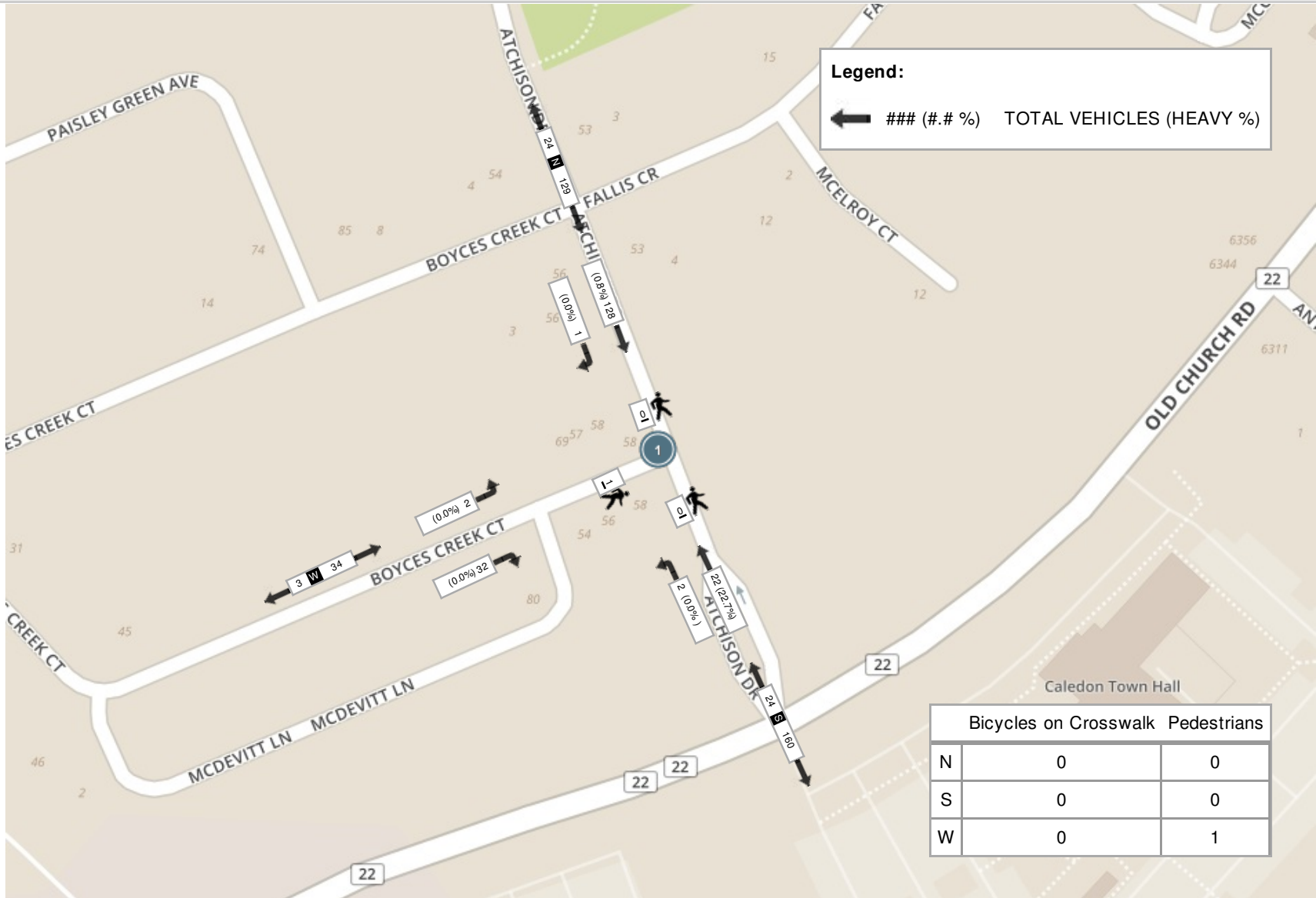
Start Time	N Approach ATCHISON DR					S Approach ATCHISON DR					W Approach BOYCES CREEK CRT (S)					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:15:00	1	33	0	0	34	3	1	0	0	4	7	0	0	0	7	45
07:30:00	0	30	0	0	30	7	0	0	0	7	5	0	0	0	5	42
07:45:00	0	36	0	0	36	6	1	0	0	7	11	1	0	0	12	55
08:00:00	0	29	0	0	29	6	0	0	0	6	9	1	0	1	10	45
Grand Total	1	128	0	0	129	22	2	0	0	24	32	2	0	1	34	187
Approach%	0.8%	99.2%	0%		-	91.7%	8.3%	0%		-	94.1%	5.9%	0%		-	-
Totals %	0.5%	68.4%	0%		69%	11.8%	1.1%	0%		12.8%	17.1%	1.1%	0%		18.2%	-
PHF	0.25	0.89	0		0.9	0.79	0.5	0		0.86	0.73	0.5	0		0.71	-
Heavy	0	1	0		1	5	0	0		5	0	0	0		0	-
Heavy %	0%	0.8%	0%		0.8%	22.7%	0%	0%		20.8%	0%	0%	0%		0%	-
Lights	1	127	0		128	17	2	0		19	32	2	0		34	-
Lights %	100%	99.2%	0%		99.2%	77.3%	100%	0%		79.2%	100%	100%	0%		100%	-
Single-Unit Trucks	0	0	0		0	1	0	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	4.5%	0%	0%		4.2%	0%	0%	0%		0%	-
Buses	0	1	0		1	4	0	0		4	0	0	0		0	-
Buses %	0%	0.8%	0%		0.8%	18.2%	0%	0%		16.7%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	1		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	100%		-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-



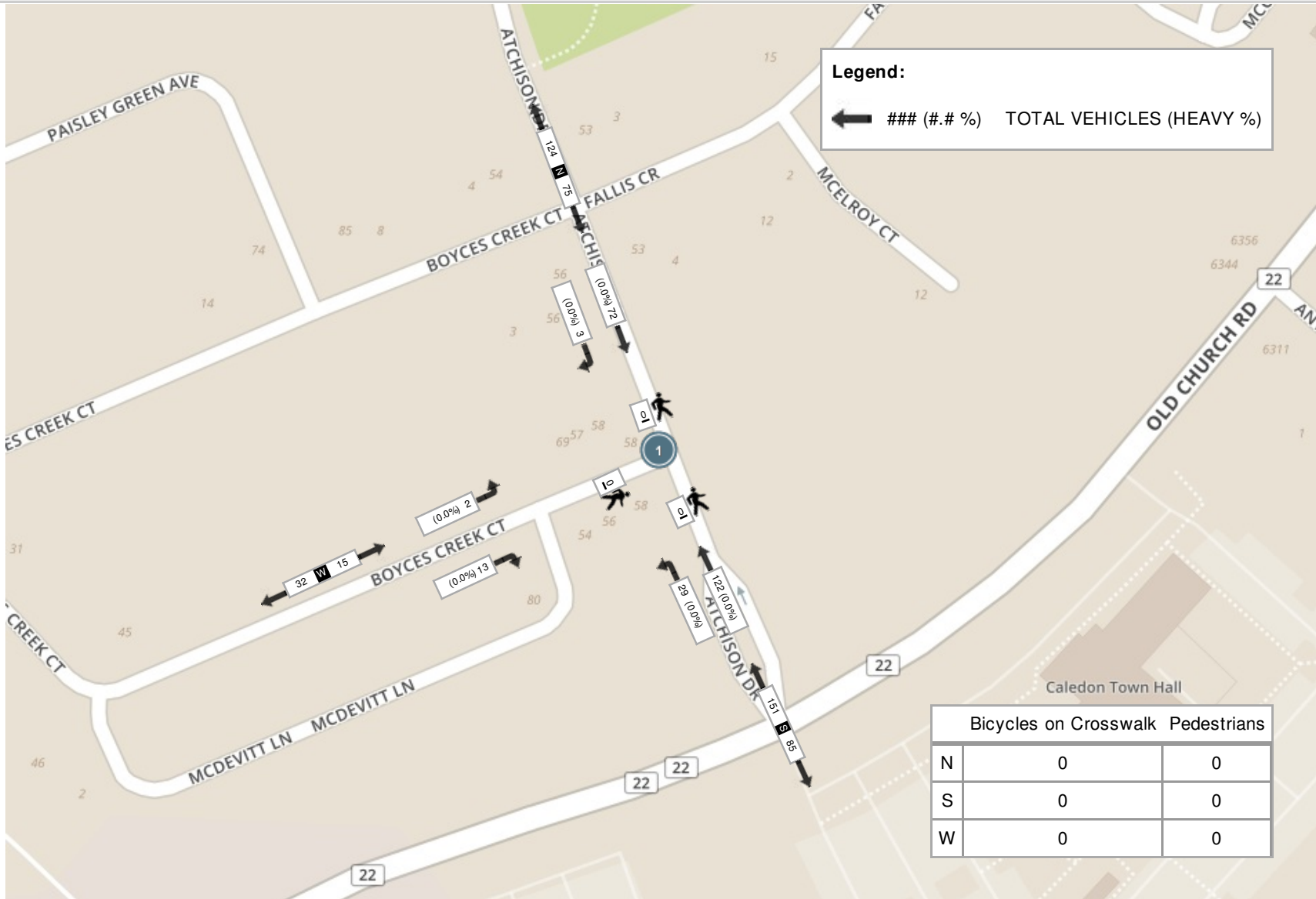
Peak Hour: 05:15 PM - 06:15 PM Weather: Rain (2.8 °C)

Start Time	N Approach ATCHISON DR					S Approach ATCHISON DR					W Approach BOYCES CREEK CRT (S)					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
17:15:00	0	21	0	0	21	32	4	0	0	36	3	0	0	0	3	60
17:30:00	0	17	0	0	17	36	9	0	0	45	3	0	0	0	3	65
17:45:00	1	14	0	0	15	30	9	0	0	39	5	0	0	0	5	59
18:00:00	2	20	0	0	22	24	7	0	0	31	2	2	0	0	4	57
Grand Total	3	72	0	0	75	122	29	0	0	151	13	2	0	0	15	241
Approach%	4%	96%	0%	-	-	80.8%	19.2%	0%	-	-	86.7%	13.3%	0%	-	-	-
Totals %	1.2%	29.9%	0%	31.1%	31.1%	50.6%	12%	0%	62.7%	62.7%	5.4%	0.8%	0%	6.2%	6.2%	-
PHF	0.38	0.86	0	0.85	0.85	0.85	0.81	0	0.84	0.84	0.65	0.25	0	0.75	0.75	-
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Lights	3	72	0	75	75	122	29	0	151	151	13	2	0	15	15	-
Lights %	100%	100%	0%	100%	100%	100%	100%	0%	100%	100%	100%	100%	0%	100%	100%	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	0%	-	-	-	0%	-	-	-	-	0%	-	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	0	-	-	-	-	0	-	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	0%	-	-	-	-	0%	-	-	-
Bicycles on Road	2	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%	-	-	-	-	0%	-	-	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (1.6 °C)



Peak Hour: 05:15 PM - 06:15 PM Weather: Rain (2.8 °C)





Turning Movement Count (2 . OLD CHURCH RD & ATCHISON DR)

Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	21	1	15	0	0	37	2	15	0	0	0	17	0	0	0	0	0	0	0	27	1	0	0	28	82	
07:15:00	28	0	12	0	0	40	2	27	1	0	0	30	0	0	0	0	0	0	0	28	3	0	0	31	101	
07:30:00	21	0	13	0	0	34	1	32	5	0	0	38	0	0	0	0	0	0	0	50	5	0	1	55	127	
07:45:00	30	0	17	0	1	47	1	51	5	0	0	57	0	0	0	0	0	0	8	60	6	0	2	74	178	488
08:00:00	22	0	15	0	0	37	0	55	6	0	0	61	0	0	1	0	0	1	6	70	6	0	0	82	181	587
08:15:00	19	0	9	0	1	28	3	39	21	0	0	63	0	0	2	0	0	2	29	43	6	0	0	78	171	657
08:30:00	18	0	12	0	3	30	6	24	10	1	0	41	1	0	0	0	1	1	30	35	7	0	1	72	144	674
08:45:00	18	3	2	0	0	23	3	33	27	0	2	63	0	0	1	0	0	1	31	28	6	0	0	65	152	648
09:00:00	22	1	7	0	0	30	6	52	16	0	0	74	1	0	0	0	0	1	17	49	13	0	0	79	184	651
09:15:00	11	0	3	0	0	14	6	48	6	0	0	60	2	0	2	0	0	4	10	34	3	0	3	47	125	605
09:30:00	11	0	12	0	0	23	3	25	4	0	0	32	2	1	1	0	3	4	3	26	8	0	4	37	96	557
09:45:00	9	0	6	0	1	15	1	21	3	0	1	25	6	1	3	0	1	10	3	22	3	0	0	28	78	483
BREAK																										
16:00:00	16	0	8	0	1	24	4	55	3	0	0	62	2	0	15	0	0	17	0	44	23	1	0	68	171	
16:15:00	14	1	6	0	0	21	16	51	5	0	0	72	3	1	2	0	1	6	1	49	29	0	1	79	178	
16:30:00	14	0	5	0	0	19	7	63	3	0	0	73	11	1	52	1	1	65	0	51	33	0	1	84	241	
16:45:00	8	0	4	0	0	12	8	40	2	0	0	50	4	0	15	0	0	19	0	37	30	0	0	67	148	738
17:00:00	14	1	7	0	1	22	7	47	4	0	0	58	4	0	12	0	0	16	0	32	26	0	0	58	154	721
17:15:00	22	0	2	0	2	24	10	45	3	0	0	58	1	0	5	0	0	6	3	30	25	0	0	58	146	689
17:30:00	12	2	6	0	0	20	6	46	5	0	0	57	0	0	4	0	0	4	2	38	39	0	0	79	160	608
17:45:00	16	0	3	0	0	19	10	45	3	0	0	58	1	0	5	0	0	6	5	38	29	0	0	72	155	615
18:00:00	13	0	9	0	1	22	13	31	3	0	0	47	0	0	0	0	0	0	2	34	18	0	0	54	123	584
18:15:00	20	3	5	0	1	28	7	32	4	0	0	43	3	0	0	0	0	3	1	27	22	0	0	50	124	562
18:30:00	22	1	2	0	1	25	7	32	5	0	0	44	10	0	1	0	0	11	3	38	15	0	0	56	136	538
18:45:00	9	0	6	0	1	15	7	31	5	0	0	43	3	1	0	0	0	4	0	28	24	0	0	52	114	497
Grand Total	410	13	186	0	14	609	136	940	149	1	3	1226	54	5	121	1	7	181	154	918	380	1	13	1453	3469	-
Approach%	67.3%	2.1%	30.5%	0%	-	-	11.1%	76.7%	12.2%	0.1%	-	-	29.8%	2.8%	66.9%	0.6%	-	-	10.6%	63.2%	26.2%	0.1%	-	-	-	-
Totals %	11.8%	0.4%	5.4%	0%	-	17.6%	3.9%	27.1%	4.3%	0%	-	35.3%	1.6%	0.1%	3.5%	0%	-	-	4.4%	26.5%	11%	0%	-	-	41.9%	-
Heavy	6	0	3	0	-	-	6	52	1	0	-	-	1	0	1	0	-	-	1	47	10	0	-	-	-	-
Heavy %	1.5%	0%	1.6%	0%	-	-	4.4%	5.5%	0.7%	0%	-	-	1.9%	0%	0.8%	0%	-	-	0.6%	5.1%	2.6%	0%	-	-	-	-
Bicycles	0	0	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	-	-



Turning Movement Count
Location Name: OLD CHURCH RD & ATCHISON DR
Date: Wed, Nov 15, 2017 Deployment Lead: Theo Daglis

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6



Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (1.6 °C)

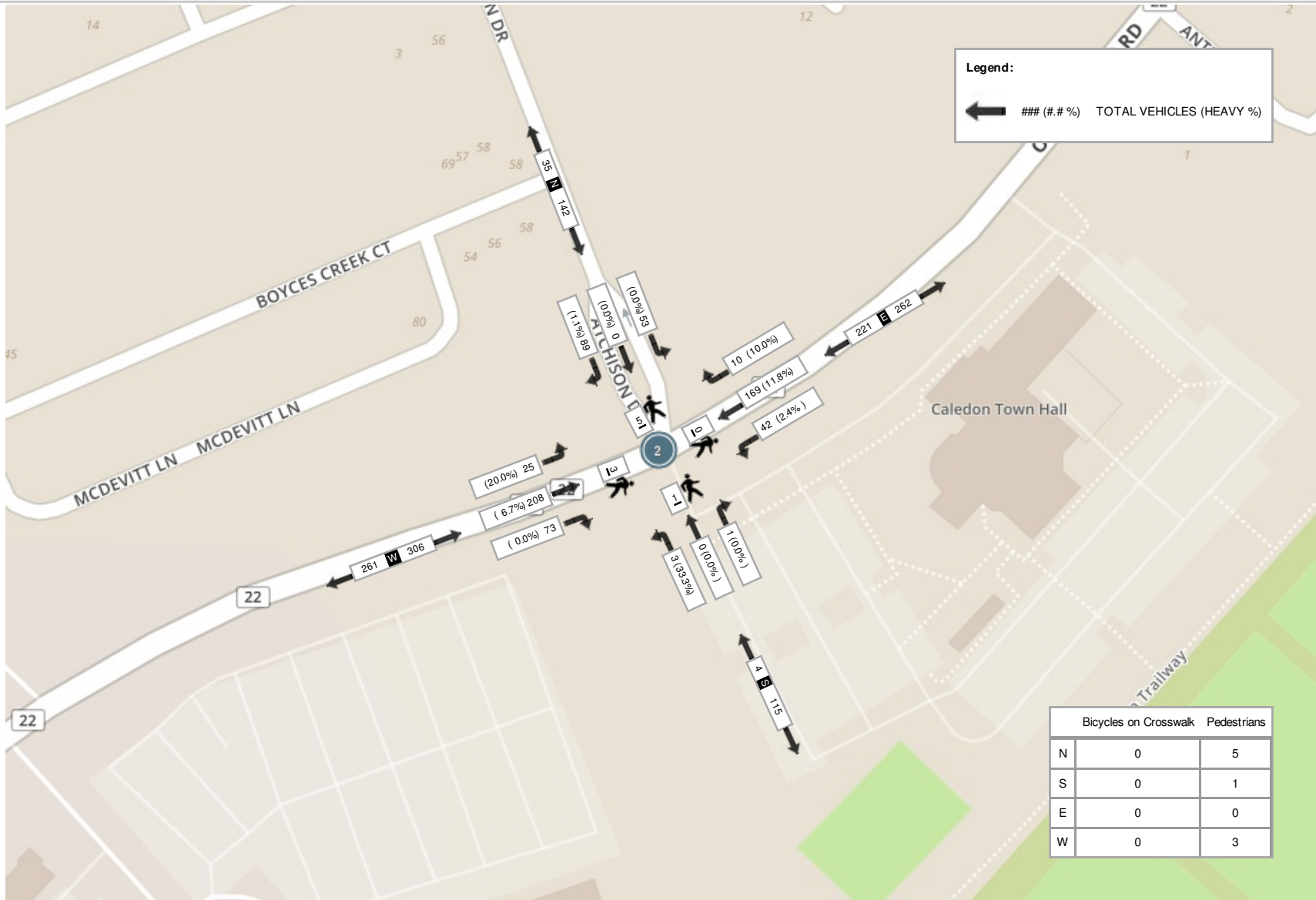
Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	30	0	17	0	1	47	1	51	5	0	0	57	0	0	0	0	0	0	8	60	6	0	2	74	178
08:00:00	22	0	15	0	0	37	0	55	6	0	0	61	0	0	1	0	0	1	6	70	6	0	0	82	181
08:15:00	19	0	9	0	1	28	3	39	21	0	0	63	0	0	2	0	0	2	29	43	6	0	0	78	171
08:30:00	18	0	12	0	3	30	6	24	10	1	0	41	1	0	0	0	1	1	30	35	7	0	1	72	144
Grand Total	89	0	53	0	5	142	10	169	42	1	0	222	1	0	3	0	1	4	73	208	25	0	3	306	674
Approach%	62.7%	0%	37.3%	0%	-	-	4.5%	76.1%	18.9%	0.5%	-	-	25%	0%	75%	0%	-	23.9%	68%	8.2%	0%	-	-	-	
Totals %	13.2%	0%	7.9%	0%	21.1%	1.5%	25.1%	6.2%	0.1%	32.9%	0.1%	0%	0.4%	0%	0.6%	10.8%	30.9%	3.7%	0%	45.4%	-	-	-	-	
PHF	0.74	0	0.78	0	0.76	0.42	0.77	0.5	0.25	0.88	0.25	0	0.38	0	0.5	0.61	0.74	0.89	0	0.93	-	-	-	-	
Heavy	1	0	0	0	1	1	20	1	0	22	0	0	1	0	1	0	14	5	0	19	-	-	-	-	
Heavy %	1.1%	0%	0%	0%	0.7%	10%	11.8%	2.4%	0%	9.9%	0%	0%	33.3%	0%	25%	0%	6.7%	20%	0%	6.2%	-	-	-	-	
Lights	88	0	53	0	141	9	149	41	1	200	1	0	2	0	3	73	194	20	0	287	-	-	-	-	
Lights %	98.9%	0%	100%	0%	99.3%	90%	88.2%	97.6%	100%	90.1%	100%	0%	66.7%	0%	75%	100%	93.3%	80%	0%	93.8%	-	-	-	-	
Single-Unit Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6	3	0	9	-	-	-	-	-	
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	1.8%	0%	0%	1.4%	0%	0%	0%	0%	0%	2.9%	12%	0%	2.9%	-	-	-	-	-	
Buses	1	0	0	0	1	1	17	1	0	19	0	0	1	0	1	7	2	0	9	-	-	-	-	-	
Buses %	1.1%	0%	0%	0%	0.7%	10%	10.1%	2.4%	0%	8.6%	0%	0%	33.3%	0%	25%	3.4%	8%	0%	2.9%	-	-	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.3%	-	-	-	-	-	
Pedestrians	-	-	-	-	5	-	-	-	-	0	-	-	-	-	1	-	-	-	3	-	-	-	-	-	
Pedestrians%	-	-	-	-	55.6%	-	-	-	-	0%	-	-	-	-	11.1%	-	-	-	33.3%	-	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	0	-	-	-	-	-	
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	0%	-	-	-	-	-	
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	0%	-	-	-	-	-	



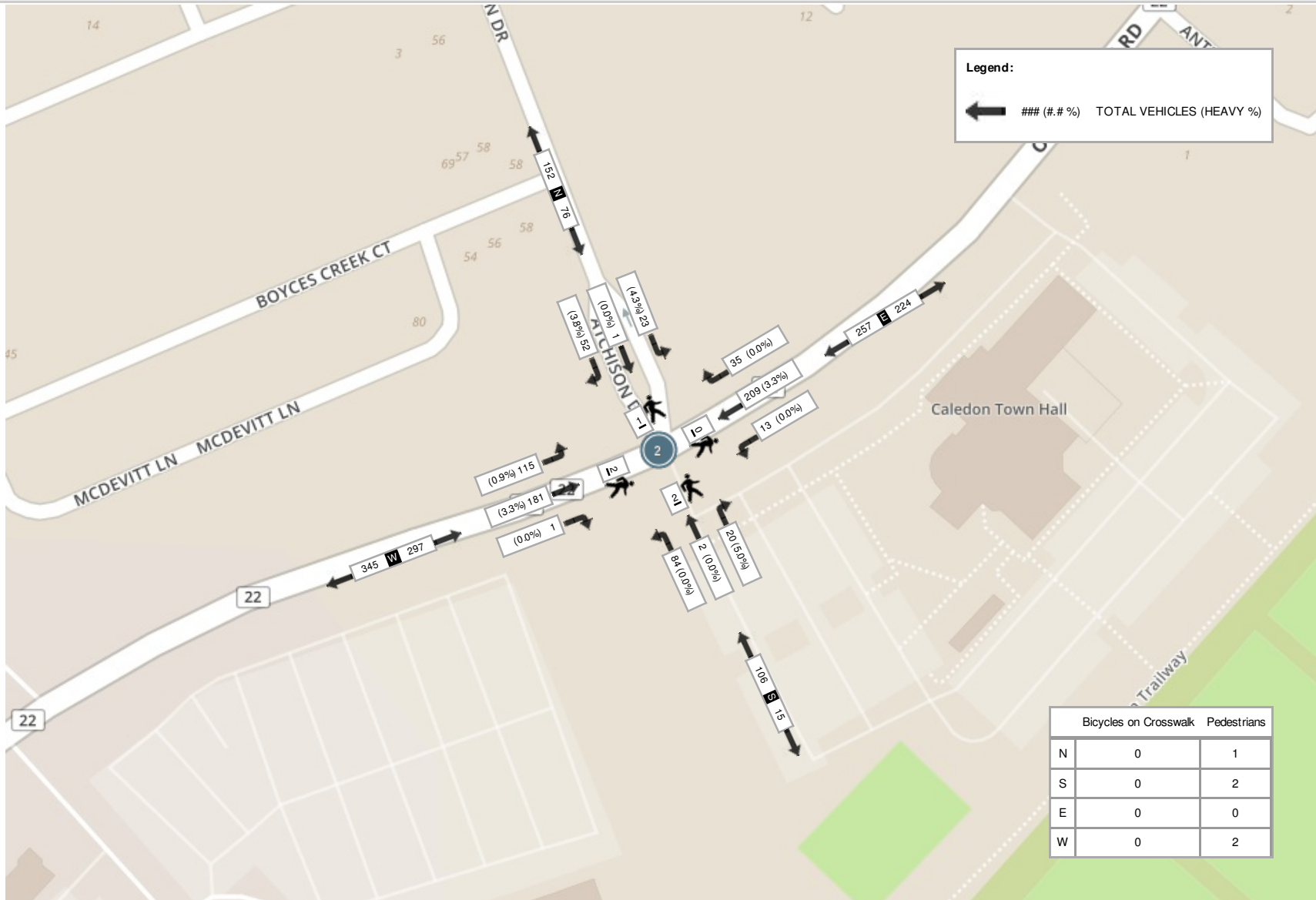
Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (2.8 °C)

Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:00:00	16	0	8	0	1	24	4	55	3	0	0	62	2	0	15	0	0	17	0	44	23	1	0	68	171
16:15:00	14	1	6	0	0	21	16	51	5	0	0	72	3	1	2	0	1	6	1	49	29	0	1	79	178
16:30:00	14	0	5	0	0	19	7	63	3	0	0	73	11	1	52	1	1	65	0	51	33	0	1	84	241
16:45:00	8	0	4	0	0	12	8	40	2	0	0	50	4	0	15	0	0	19	0	37	30	0	0	67	148
Grand Total	52	1	23	0	1	76	35	209	13	0	0	257	20	2	84	1	2	107	1	181	115	1	2	298	738
Approach%	68.4%	1.3%	30.3%	0%	-	-	13.6%	81.3%	5.1%	0%	-	-	18.7%	1.9%	78.5%	0.9%	-	0.3%	60.7%	38.6%	0.3%	-	-	-	-
Totals %	7%	0.1%	3.1%	0%	10.3%	4.7%	28.3%	1.8%	0%	34.8%	2.7%	0.3%	11.4%	0.1%	14.5%	0.1%	24.5%	15.6%	0.1%	40.4%	-	-	-	-	-
PHF	0.81	0.25	0.72	0	0.79	0.55	0.83	0.65	0	0.88	0.45	0.5	0.4	0.25	0.41	0.25	0.89	0.87	0.25	0.89	-	-	-	-	-
Heavy	2	0	1	0	3	0	7	0	0	7	1	0	0	0	1	0	6	1	0	7	-	-	-	-	-
Heavy %	3.8%	0%	4.3%	0%	3.9%	0%	3.3%	0%	0%	2.7%	5%	0%	0%	0%	0.9%	0%	3.3%	0.9%	0%	2.3%	-	-	-	-	-
Lights	50	1	22	0	73	35	202	13	0	250	19	2	84	1	106	1	175	114	1	291	-	-	-	-	-
Lights %	96.2%	100%	95.7%	0%	96.1%	100%	96.7%	100%	0%	97.3%	95%	100%	100%	100%	99.1%	100%	96.7%	99.1%	100%	97.7%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	-	-	-	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	1%	0%	0%	0.8%	5%	0%	0%	0%	0.9%	0%	0.6%	0%	0%	0.3%	-	-	-	-	-
Buses	2	0	1	0	3	0	4	0	0	4	0	0	0	0	0	0	4	1	0	5	-	-	-	-	-
Buses %	3.8%	0%	4.3%	0%	3.9%	0%	1.9%	0%	0%	1.6%	0%	0%	0%	0%	0%	0%	2.2%	0.9%	0%	1.7%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.3%	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-
Pedestrians%	-	-	-	-	20%	-	-	-	-	0%	-	-	-	-	40%	-	-	-	-	40%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-	-	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (1.6 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (2.8 °C)



REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

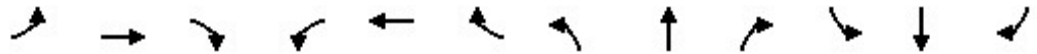
Database Date		June 27, 2017		Prepared Date:		November 27, 2017				
Database Rev		2		Completed By:		JA				
Timing Card / Field rev		-		Checked By:		RS				
Location:	Old Church Road at Atchison Drive/Town Hall						TIME PERIOD (sec.) (Green+Amber+All Red)			
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	MAX			
			WALK	FDWALK			AM	FREE	PM	
1										
2	Old Church Road - EB Green	8.0	8.0	20.0	4.0	3.4	36.0	0.0	36.0	
3										
4	Town Hall Access - NB Green	8.0	8.0	21.0	4.0	4.2	34.0	0.0	34.0	
5										
6	Old Church Road - WB Green	8.0	8.0	20.0	4.0	3.4	36.0	0.0	36.0	
7										
8	Atchison Drive - SB Green	8.0	8.0	21.0	4.0	4.2	34.0	0.0	34.0	
System Control		Yes								
Local Control		No								
Semi-Actuated Mode		Yes								
				TIME (M-F)		PEAK	CYCLE LENGTH (sec.)		OFFSET (sec.)	
				06:30 - 09:00		AM	70		20	
				09:00 - 15:00		FREE	FREE		0	
				18:30 - 00:00						
				15:00 - 18:30		PM	70		20	

Appendix C - Existing Traffic Level of Service Calculations

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

11/30/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖	↗		↖	↗	
Traffic Volume (vph)	25	208	73	42	169	10	3	0	1	53	0	89
Future Volume (vph)	25	208	73	42	169	10	3	0	1	53	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	3579	1598	1788	3579	1558	1785	1633		1825	1593	
Flt Permitted	0.61	1.00	1.00	0.58	1.00	1.00	0.68	1.00		0.76	1.00	
Satd. Flow (perm)	1152	3579	1598	1090	3579	1558	1278	1633		1451	1593	
Peak-hour factor, PHF	0.89	0.74	0.61	0.50	0.77	0.42	0.38	0.25	0.25	0.78	0.25	0.74
Adj. Flow (vph)	28	281	120	84	219	24	8	0	4	68	0	120
RTOR Reduction (vph)	0	0	97	0	0	19	0	2	0	0	60	0
Lane Group Flow (vph)	28	281	23	84	219	5	8	2	0	68	60	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%	2%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	10.1	10.1	10.1	10.1	10.1	10.1	25.9	25.9		25.9	25.9	
Effective Green, g (s)	10.1	10.1	10.1	10.1	10.1	10.1	25.9	25.9		25.9	25.9	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.50	0.50		0.50	0.50	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	700	312	213	700	304	641	819		728	799	
v/s Ratio Prot		c0.08			0.06			0.00				0.04
v/s Ratio Perm	0.02		0.01	0.08		0.00	0.01			c0.05		
v/c Ratio	0.12	0.40	0.08	0.39	0.31	0.02	0.01	0.00		0.09	0.08	
Uniform Delay, d1	17.1	18.1	16.9	18.1	17.8	16.7	6.4	6.4		6.7	6.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.1	1.2	0.3	0.0	0.0	0.0		0.3	0.2	
Delay (s)	17.4	18.5	17.0	19.3	18.0	16.8	6.5	6.4		7.0	6.8	
Level of Service	B	B	B	B	B	B	A	A		A	A	
Approach Delay (s)		18.0			18.3			6.5			6.9	
Approach LOS		B			B			A			A	

Intersection Summary		
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.18	B
Actuated Cycle Length (s)	51.6	Sum of lost time (s)
Intersection Capacity Utilization	48.8%	15.6
Analysis Period (min)	15	ICU Level of Service
		A

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Atchison Drive & Boyces Creek

11/30/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	32	2	22	128	1
Future Volume (Veh/h)	2	32	2	22	128	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.73	0.50	0.79	0.89	0.25
Hourly flow rate (vph)	4	44	4	28	144	4
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	80					
pX, platoon unblocked						
vC, conflicting volume	183	147	149			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183	147	149			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	100			
cM capacity (veh/h)	808	904	1443			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	48	32	148			
Volume Left	4	4	0			
Volume Right	44	0	4			
cSH	895	1443	1700			
Volume to Capacity	0.05	0.00	0.09			
Queue Length 95th (m)	1.3	0.1	0.0			
Control Delay (s)	9.2	1.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	1.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			17.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

11/30/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (vph)	115	181	1	13	209	35	84	2	20	23	1	52
Future Volume (vph)	115	181	1	13	209	35	84	2	20	23	1	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3544	1594	1820	3544	1597	1821	1584		1755	1569	
Flt Permitted	0.60	1.00	1.00	0.62	1.00	1.00	0.71	1.00		0.73	1.00	
Satd. Flow (perm)	1131	3544	1594	1196	3544	1597	1366	1584		1341	1569	
Peak-hour factor, PHF	0.87	0.89	0.25	0.65	0.83	0.55	0.40	0.50	0.45	0.72	0.25	0.81
Adj. Flow (vph)	132	203	4	20	252	64	210	4	44	32	4	64
RTOR Reduction (vph)	0	0	2	0	0	38	0	28	0	0	40	0
Lane Group Flow (vph)	132	203	2	20	252	26	210	20	0	32	28	0
Confl. Peds. (#/hr)	1		2	2		1	2					2
Heavy Vehicles (%)	1%	3%	0%	0%	3%	0%	0%	0%	5%	4%	0%	4%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41	0.41	0.37	0.37		0.37	0.37	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Grp Cap (vph)	462	1447	651	488	1447	652	503	583		494	578	
v/s Ratio Prot		0.06			0.07			0.01			0.02	
v/s Ratio Perm	c0.12		0.00	0.02		0.02	c0.15			0.02		
v/c Ratio	0.29	0.14	0.00	0.04	0.17	0.04	0.42	0.03		0.06	0.05	
Uniform Delay, d1	13.9	13.0	12.3	12.5	13.2	12.4	16.5	14.1		14.3	14.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.2	0.0	0.2	0.3	0.1	2.5	0.1		0.3	0.2	
Delay (s)	15.4	13.2	12.3	12.6	13.4	12.6	19.0	14.2		14.5	14.4	
Level of Service	B	B	B	B	B	B	B	B		B	B	
Approach Delay (s)		14.0			13.2			18.1			14.4	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

6: Atchison Drive & Boyces Creek

11/30/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	13	29	122	72	3
Future Volume (Veh/h)	2	13	29	122	72	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.65	0.81	0.85	0.86	0.38
Hourly flow rate (vph)	8	20	36	144	84	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	80					
pX, platoon unblocked	0.97					
vC, conflicting volume	304	88	92			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	273	88	92			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	686	976	1515			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	28	180	92			
Volume Left	8	36	0			
Volume Right	20	0	8			
cSH	871	1515	1700			
Volume to Capacity	0.03	0.02	0.05			
Queue Length 95th (m)	0.8	0.6	0.0			
Control Delay (s)	9.3	1.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	1.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			24.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Appendix D – Future Background Level of Service Calculations

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

12/8/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (vph)	25	235	73	42	191	10	3	0	1	53	0	89
Future Volume (vph)	25	235	73	42	191	10	3	0	1	53	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	3579	1598	1788	3579	1558	1785	1633		1825	1593	
Flt Permitted	0.60	1.00	1.00	0.56	1.00	1.00	0.68	1.00		0.76	1.00	
Satd. Flow (perm)	1120	3579	1598	1052	3579	1558	1278	1633		1451	1593	
Peak-hour factor, PHF	0.89	0.74	0.61	0.50	0.77	0.42	0.38	0.25	0.25	0.78	0.25	0.74
Adj. Flow (vph)	28	318	120	84	248	24	8	0	4	68	0	120
RTOR Reduction (vph)	0	0	96	0	0	19	0	2	0	0	60	0
Lane Group Flow (vph)	28	318	24	84	248	5	8	2	0	68	60	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%	2%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	10.5	10.5	10.5	10.5	10.5	10.5	25.9	25.9		25.9	25.9	
Effective Green, g (s)	10.5	10.5	10.5	10.5	10.5	10.5	25.9	25.9		25.9	25.9	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.50	0.50		0.50	0.50	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	722	322	212	722	314	636	813		722	793	
v/s Ratio Prot		c0.09			0.07			0.00				0.04
v/s Ratio Perm	0.02		0.02	0.08		0.00	0.01			c0.05		
v/c Ratio	0.12	0.44	0.08	0.40	0.34	0.02	0.01	0.00		0.09	0.08	
Uniform Delay, d1	17.0	18.2	16.8	18.0	17.8	16.6	6.6	6.6		6.9	6.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.1	1.2	0.3	0.0	0.0	0.0		0.3	0.2	
Delay (s)	17.2	18.6	16.9	19.2	18.1	16.6	6.6	6.6		7.1	7.0	
Level of Service	B	B	B	B	B	B	A	A		A	A	
Approach Delay (s)		18.1			18.3			6.6			7.0	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Atchison Drive & Boyces Creek

12/8/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	32	2	25	145	1
Future Volume (Veh/h)	2	32	2	25	145	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.73	0.50	0.79	0.89	0.25
Hourly flow rate (vph)	4	44	4	32	163	4
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	80					
pX, platoon unblocked						
vC, conflicting volume	206	166	168			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206	166	168			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	95	100			
cM capacity (veh/h)	784	883	1421			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	48	36	167			
Volume Left	4	4	0			
Volume Right	44	0	4			
cSH	874	1421	1700			
Volume to Capacity	0.05	0.00	0.10			
Queue Length 95th (m)	1.3	0.1	0.0			
Control Delay (s)	9.4	0.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	0.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			17.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

12/8/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	205	1	13	236	35	84	2	20	23	1	52
Future Volume (vph)	115	205	1	13	236	35	84	2	20	23	1	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3544	1594	1820	3544	1597	1821	1584		1755	1569	
Flt Permitted	0.58	1.00	1.00	0.61	1.00	1.00	0.71	1.00		0.73	1.00	
Satd. Flow (perm)	1097	3544	1594	1165	3544	1597	1366	1584		1341	1569	
Peak-hour factor, PHF	0.87	0.89	0.25	0.65	0.83	0.55	0.40	0.50	0.45	0.72	0.25	0.81
Adj. Flow (vph)	132	230	4	20	284	64	210	4	44	32	4	64
RTOR Reduction (vph)	0	0	2	0	0	38	0	28	0	0	40	0
Lane Group Flow (vph)	132	230	2	20	284	26	210	20	0	32	28	0
Confl. Peds. (#/hr)	1		2	2		1	2					2
Heavy Vehicles (%)	1%	3%	0%	0%	3%	0%	0%	0%	5%	4%	0%	4%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41	0.41	0.37	0.37		0.37	0.37	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Grp Cap (vph)	448	1447	651	475	1447	652	503	583		494	578	
v/s Ratio Prot		0.06			0.08			0.01			0.02	
v/s Ratio Perm	c0.12		0.00	0.02		0.02	c0.15			0.02		
v/c Ratio	0.29	0.16	0.00	0.04	0.20	0.04	0.42	0.03		0.06	0.05	
Uniform Delay, d1	13.9	13.1	12.3	12.5	13.3	12.4	16.5	14.1		14.3	14.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2	0.0	0.2	0.3	0.1	2.5	0.1		0.3	0.2	
Delay (s)	15.6	13.3	12.3	12.6	13.6	12.6	19.0	14.2		14.5	14.4	
Level of Service	B	B	B	B	B	B	B	B		B	B	
Approach Delay (s)		14.1			13.4			18.1			14.4	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

6: Atchison Drive & Boyces Creek

12/8/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	13	29	138	81	3
Future Volume (Veh/h)	2	13	29	138	81	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.65	0.81	0.85	0.86	0.38
Hourly flow rate (vph)	8	20	36	162	94	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	80					
pX, platoon unblocked	0.97					
vC, conflicting volume	332	98	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293	98	102			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	663	963	1503			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	28	198	102			
Volume Left	8	36	0			
Volume Right	20	0	8			
cSH	853	1503	1700			
Volume to Capacity	0.03	0.02	0.06			
Queue Length 95th (m)	0.8	0.6	0.0			
Control Delay (s)	9.4	1.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	1.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			25.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Appendix E – Future Total Level of Service Calculations

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

12/8/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Volume (vph)	39	235	73	42	191	28	3	0	1	81	0	110
Future Volume (vph)	39	235	73	42	191	28	3	0	1	81	0	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	3579	1598	1788	3579	1557	1785	1633		1825	1593	
Flt Permitted	0.60	1.00	1.00	0.56	1.00	1.00	0.66	1.00		0.76	1.00	
Satd. Flow (perm)	1120	3579	1598	1052	3579	1557	1245	1633		1451	1593	
Peak-hour factor, PHF	0.89	0.74	0.61	0.50	0.77	0.42	0.38	0.25	0.25	0.78	0.25	0.74
Adj. Flow (vph)	44	318	120	84	248	67	8	0	4	104	0	149
RTOR Reduction (vph)	0	0	95	0	0	53	0	2	0	0	75	0
Lane Group Flow (vph)	44	318	25	84	248	14	8	2	0	104	74	0
Confl. Peds. (#/hr)	5		1	1		5	3					3
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%	2%	0%	0%	0%	0%	1%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	10.9	10.9	10.9	10.9	10.9	10.9	25.9	25.9		25.9	25.9	
Effective Green, g (s)	10.9	10.9	10.9	10.9	10.9	10.9	25.9	25.9		25.9	25.9	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.49	0.49		0.49	0.49	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	744	332	218	744	323	615	807		717	787	
v/s Ratio Prot		c0.09			0.07			0.00				0.05
v/s Ratio Perm	0.04		0.02	0.08		0.01	0.01			c0.07		
v/c Ratio	0.19	0.43	0.08	0.39	0.33	0.04	0.01	0.00		0.15	0.09	
Uniform Delay, d1	17.1	18.0	16.7	17.9	17.7	16.6	6.7	6.7		7.2	7.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4	0.1	1.1	0.3	0.1	0.0	0.0		0.4	0.2	
Delay (s)	17.5	18.4	16.8	19.0	17.9	16.6	6.8	6.7		7.6	7.3	
Level of Service	B	B	B	B	B	B	A	A		A	A	
Approach Delay (s)		17.9			17.9			6.8			7.4	
Approach LOS		B			B			A			A	

Intersection Summary

HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	15.6
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Atchison Drive & Boyces Creek/Site Access

12/8/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	2	0	32	49	0	1	2	25	32	1	145	1
Future Volume (Veh/h)	2	0	32	49	0	1	2	25	32	1	145	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.92	0.73	0.92	0.92	0.92	0.50	0.79	0.92	0.92	0.89	0.25
Hourly flow rate (vph)	4	0	44	53	0	1	4	32	35	1	163	4
Pedestrians		1										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.1										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								80				
pX, platoon unblocked												
vC, conflicting volume	226	243	166	268	228	50	168			67		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226	243	166	268	228	50	168			67		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	95	92	100	100	100			100		
cM capacity (veh/h)	729	656	883	648	669	1019	1421			1535		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	48	54	71	168								
Volume Left	4	53	4	1								
Volume Right	44	1	35	4								
cSH	868	652	1421	1535								
Volume to Capacity	0.06	0.08	0.00	0.00								
Queue Length 95th (m)	1.3	2.1	0.1	0.0								
Control Delay (s)	9.4	11.0	0.4	0.0								
Lane LOS	A	B	A	A								
Approach Delay (s)	9.4	11.0	0.4	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			24.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Town Hall Access/Atchison Drive & Old Church Road

12/13/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	205	1	13	236	82	84	2	20	59	1	80
Future Volume (vph)	152	205	1	13	236	82	84	2	20	59	1	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3544	1594	1820	3544	1597	1821	1584		1755	1562	
Flt Permitted	0.58	1.00	1.00	0.61	1.00	1.00	0.69	1.00		0.73	1.00	
Satd. Flow (perm)	1097	3544	1594	1165	3544	1597	1324	1584		1341	1562	
Peak-hour factor, PHF	0.87	0.89	0.25	0.65	0.83	0.55	0.40	0.50	0.45	0.72	0.25	0.81
Adj. Flow (vph)	175	230	4	20	284	149	210	4	44	82	4	99
RTOR Reduction (vph)	0	0	2	0	0	88	0	28	0	0	63	0
Lane Group Flow (vph)	175	230	2	20	284	61	210	20	0	82	40	0
Confl. Peds. (#/hr)	1		2	2		1	2					2
Heavy Vehicles (%)	1%	3%	0%	0%	3%	0%	0%	0%	5%	4%	0%	4%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Effective Green, g (s)	28.6	28.6	28.6	28.6	28.6	28.6	25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41	0.41	0.37	0.37		0.37	0.37	
Clearance Time (s)	7.4	7.4	7.4	7.4	7.4	7.4	8.2	8.2		8.2	8.2	
Lane Grp Cap (vph)	448	1447	651	475	1447	652	487	583		494	575	
v/s Ratio Prot		0.06			0.08			0.01			0.03	
v/s Ratio Perm	c0.16		0.00	0.02		0.04	c0.16			0.06		
v/c Ratio	0.39	0.16	0.00	0.04	0.20	0.09	0.43	0.03		0.17	0.07	
Uniform Delay, d1	14.6	13.1	12.3	12.5	13.3	12.7	16.6	14.1		14.9	14.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.2	0.0	0.2	0.3	0.3	2.8	0.1		0.7	0.2	
Delay (s)	17.1	13.3	12.3	12.6	13.6	13.0	19.4	14.2		15.6	14.6	
Level of Service	B	B	B	B	B	B	B	B		B	B	
Approach Delay (s)		14.9			13.4			18.4			15.0	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 6: Atchison Drive & Boyces Creek/Site Access

12/13/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	2	0	13	64	0	1	29	138	84	2	81	3
Future Volume (Veh/h)	2	0	13	64	0	1	29	138	84	2	81	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.92	0.65	0.92	0.92	0.92	0.81	0.85	0.92	0.92	0.86	0.38
Hourly flow rate (vph)	8	0	20	70	0	1	36	162	91	2	94	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								80				
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	382	427	98	402	386	208	102			253		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	331	377	98	351	334	148	102			195		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	87	100	100	98			100		
cM capacity (veh/h)	586	516	963	554	546	859	1503			1317		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	28	71	289	104								
Volume Left	8	70	36	2								
Volume Right	20	1	91	8								
cSH	814	557	1503	1317								
Volume to Capacity	0.03	0.13	0.02	0.00								
Queue Length 95th (m)	0.8	3.3	0.6	0.0								
Control Delay (s)	9.6	12.4	1.1	0.2								
Lane LOS	A	B	A	A								
Approach Delay (s)	9.6	12.4	1.1	0.2								
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			37.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Appendix F – Parking Data

Saturday, November 18, 2017

Parking Utilization Survey

Location: 9500 & 9506 Markham Road

Land Use: Residential (434 Units) & Commercial (1,338.42m²)

Time: 10am-2pm

Time	Visitors	Commercial
10:00 AM	43	24
10:30 AM	44	22
11:00 AM	44	28
11:30 AM	43	29
12:00 PM	45	32
12:30 PM	47	34
1:00 PM	46	33
1:30 PM	48	32
2:00 PM	50	31
2:30 PM	47	30
3:00 PM	45	26
3:30 PM	44	20
MAX	50	34
PARKING RATE	0.12 spaces / unit	0.76 spaces / 30m ²

Tuesday, November 21, 2017

Parking Utilization Survey

Location: 9500 & 9506 Markham Road

Land Use: Residential (434 Units) & Commercial (1,338.42m²)

Time: 4pm-11pm & 12am-6am

Time	Visitor	Commercial
4:00 PM	39	17
4:30 PM	38	15
5:00 PM	39	18
5:30 PM	39	17
6:00 PM	35	20
6:30 PM	37	21
7:00 PM	33	16
7:30 PM	34	12
8:00 PM	33	12
8:30 PM	30	13
9:00 PM	31	11
9:30 PM	29	10
10:00 PM	25	6
10:30 PM	26	4
11:00 PM	26	4
MAX	39	21
PARKING RATE	0.09 spaces / unit	0.47 spaces / 30m ²

Time	TENANT
12:00 AM	360
12:30 AM	360
1:00 AM	367
1:30 AM	365
2:00 AM	376
2:30 AM	382
3:00 AM	384
3:30 AM	381
4:00 AM	381
4:30 AM	378
5:00 AM	369
5:30 AM	366
6:00 AM	363
MAX	384
PARKING RATE	0.88 spaces / unit

Use	MIN PARKING REQUIREMENT
Tenant	0.88 spaces / unit
Visitor	0.12 spaces / unit
Commercial	0.76 spaces / 30m ²

Saturday, November 25, 2017

Parking Utilization Survey

Location: 60 South Town Centre Blvd & 50 Clegg Road

Land Use: Residential (532 Units) & Commercial (890m²)

Time: 10am-2pm

Surveyor: Annosan Srikantha

Time	Visitors	Commercial
10:00 AM	42	12
10:30 AM	43	14
11:00 AM	44	12
11:30 AM	41	13
12:00 PM	43	14
12:30 PM	49	19
1:00 PM	52	15
1:30 PM	51	16
2:00 PM	49	17
2:30 PM	50	14
3:00 PM	46	10
3:30 PM	45	12
MAX	52	19
PARKING RATE	0.10 spaces / unit	0.64 spaces / 30m ²

Wednesday, November 22, 2017

Parking Utilization Survey

Location: 60 South Town Centre Blvd & 50 Clegg Road

Land Use: Residential (532 Units) & Commercial (890m²)

Time: 4pm-11pm & 12am-6am

Time	Visitor	Commercial
4:00 PM	26	9
4:30 PM	22	12
5:00 PM	24	10
5:30 PM	26	10
6:00 PM	28	8
6:30 PM	32	11
7:00 PM	34	11
7:30 PM	39	12
8:00 PM	35	11
8:30 PM	31	8
9:00 PM	18	7
9:30 PM	22	7
10:00 PM	21	5
10:30 PM	22	5
11:00 PM	23	3
MAX	39	12
PARKING RATE	0.07 spaces / unit	0.40 spaces / 30m ²

Time	TENANT
12:00 AM	472
12:30 AM	480
1:00 AM	486
1:30 AM	490
2:00 AM	492
2:30 AM	493
3:00 AM	496
3:30 AM	495
4:00 AM	495
4:30 AM	493
5:00 AM	492
5:30 AM	490
6:00 AM	486
MAX	496
PARKING RATE	0.93 spaces / unit

Use	MIN PARKING REQUIREMENT
Tenant	0.93 spaces / unit
Visitor	0.10 spaces / unit
Commercial	0.64 spaces / 30m ²

Appendix F – Parking Data

28. The North-East View (Drawing 405) should be updated to incorporate the propose landscape plan. (TOC – Planning)
29. Please provide an additional rendering of the proposed building and landscaping from Old Church Road, east of Atchison (looking westward). (TOC – Planning)
30. The Urban Design Brief, page 28 makes incorrect references to Policy 7.7.8.5.1. (TOC, Planning & Policy)

The following **Transportation Comments** must be addressed:

31. Regional staff acknowledge there are no accesses proposed to Old Church Road and have no comments on the traffic report. (Region of Peel)
32. Staff are concerned with the proposed parking deficiency and the justification provided for same in the Transportation Impact Study (TIS), including: (TOC, Policy & Planning)
 - a) Section 6 of the Transportation Impact Study (TIS) should make reference to the Site Specific By-law in place for this site, i.e. CV-507. Based on this, the parking requirement is 213 parking spaces (not 194) and the parking deficiency is 40 spaces (not 21).
 - b) The TIS provides a review of parking supplies for other mixed-use sites as a comparable; please note that staff do not accept the two Markham sites as similar to the Caledon site. Please provide as a comparable municipalities that are similar in size, population and transit infrastructure.
 - c) Staff do not accept the proposal to share the proposed parking supply between residential and non-residential visitors as there will be overlap of parking demands during the day (8am to 8pm) on weekdays and weekends.
33. The development application proposes a total of 173 vehicle parking spaces; 137 spaces for the Apartment Building and 36 spaces for the Visitors and Retail Stores. The parking provision is less than the by-law requirements. The Study also conducted a parking utilisation review to justify the shortage and assumed that the duration of the utilisation of the parking needs between the Retail Stores and Visitors are mutually exclusive. It is to be noted that more detailed content and calculation should be provided to identify the maximum shared parking needs based on the methodology outlined in Urban Land Institute (ULI) shared parking manual using time of the day factor, noting Planning's concern cited above. Please note that since the trips reduction justification by the Shopping Centre in PM is based on the number of parking, the Traffic Impact Study, specifically section 4 (Site Traffic) and LOS analysis, will need to be updated if the number of parking spaces increase. (Town of Caledon, FIS, Transportation)

The following **Noise Comments** must be addressed:

34. The noise report prepared by Swallow Acoustics, dated February 2, 2018, is to be revised to evaluate any impacts the proposed building will have on the surrounding residences, including but not limited to the garbage truck maneuvering area. Once the revised report is received by the Town, the noise report is to be peer reviewed at the applicant's expense. The Town will forward the applicant with the peer review costs once they are received from the vendor. (TOC – Development, Engineering & Planning)