

**Functional Servicing and
Stormwater Management
Report**

**Chateaux of Caledon Town
Square
Proposed Mid-Rise Mixed Use
Development**



Prepared for:

Chateaux of Caledon Corporation
55 Blue Willow Drive
Woodbridge, ON, L4L 9E8

Prepared by:

Stantec Consulting Ltd.
300W-675 Cochrane Drive Markham,
ON L3R 0B8

160622595

April 30, 2019

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

April 30, 2019

Revision	Description	Author	Quality Check	Independent Review



Sign-off Sheet

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Prepared by Asif Quader
(signature)

Asif Quader, Ph.D., P.Eng.

Reviewed by _____
(signature)

Shafqat Ali Khan, P.Eng., PMP.

Approved by Shafqat Ali Khan
(signature)



FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

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1.0 INTRODUCTION & BACKGROUND

Stantec Consulting Ltd. (Stantec) has been retained by The Chateaux of Caledon Corporation (the "Owner") to prepare this Functional Servicing Report (FSR), for the proposed mid-rise mixed use development (the "Site") in accordance with the Town of Caledon (the "Town"), The Region of Peel (the "Region") and the Toronto and Regional Conservation Authority (the "TRCA") development guidelines. The site is located in the Town of Caledon, as shown on the **Site Plan** included in **Appendix A**.

The site is located on the north-east quadrant of the Old Church Road and Atchison Drive Intersection in the Town of Caledon, Regional Municipality of York. The site is bounded by existing residential to the west and north, Atchison Drive to the west and Old Church Road to the south. See **Figure 1** for the Site Location Plan.

The Subject site is approximately 0.6 hectares (1.47 acres) in size and currently it is a vacant land. The southern half of the site is currently covered by a granular parking lot.

The purpose of this Functional Servicing Report is to address the municipal servicing strategies of the Subject Site, including:

- Site Grading
- Stormwater Management
- Storm Servicing
- Sanitary Servicing
- Water Distribution
- Erosion and Sedimentation Control

This report examines the existing boundary servicing (Storm, Sanitary and Water) grading conditions and outlines the serviceability of the site with respect to storm drainage, sanitary servicing, water supply and grading.

The following documents were referenced in the preparation of this report:

- *Preliminary Engineering Servicing Report, Chateaux of Caledon Residential Development, Old Church Road and Innis Lake Road, Town of Caledon, Region of Peel*, prepared by UMA Engineering Ltd., dated November 9, 2007 [UMA Report];
- *Stormwater Management Report, Chateaux of Caledon Corporation, Town of Caledon*, prepared by Cole Engineering, dated August 6, 2010 [SWM Report];
- As-Constructed Drawings, prepared by Cole Engineering, dated Dec 07, 2017;
- Policies and Guidelines, Version 4, dated January 2009;



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- Sit Plan Control Manual, Town of Caledon, dated September 2013; and,
- *Stormwater Management Criteria, Toronto and Regional Conservation Authority* dated August 2012.

2.0 PROPOSED DEVELOPMENT

The preliminary development concept for the site has been prepared by Architecture Unfolded (Site Plan Drawing A101, dated February 23, 2018) and consists of the following development statistics presented in **Table 2.1**:

Table 2.1 - Proposed Site Statistics

Suite Type	NO. of SUITES
1 Bedroom	11
1 Bedroom plus Den	52
2 Bedroom	12
2 Bedroom plus Den	12
Total	87 Suites

The new residential condominium building is proposed to be situated within the southern half of the site and the northern part will be used to provide surface parking. The site is underlain property line to property line by underground parking level. The 5 storey mixed-use development consists of one storey underground parking, retail and residential at the ground level and residential units in the remaining 4 storeys with a total of 87 residential units. The total proposed Gross Floor Area of the new building is +/- 76,599 sq. ft (including +/- 7,499 sq. ft of retail area).

One level of underground parking and surface parking is proposed to service the new building. The footprint of the proposed underground parking garage essentially covers the entire site. Refer to **Drawing GR5 (see Appendix E)** and **Site Plan (see Appendix A)** for a depiction of the existing site conditions and proposed development concept.

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3.0 SITE GRADING

Topographic survey completed by BMC Construction Layout Services Ltd., on November 21, 2017.

The existing topography for the site generally slopes in a westerly direction towards the Atchison Drive. There is an existing 3:1 slope towards the southern half of the site. The existing 3:1 slope drains generally southward towards the Old Church Road and to the east towards the existing houses. As shown in the approved Grading Plan, drawing number GR5, Dated July 25, 2011 included in **Appendix D**.

The proposed grading design for the site as shown on **Grading Plan SG-1**, has been created based on the site plan prepared by Architecture Unfolded, dated October 12, 2017. The area north of the building will be graded in a way that overland flow from the site will be directed towards the Atchison Drive. Due to the grading constraints, the area south side of the building will be graded to capture flows from a 100 year storm event and convey to the internal storm sewer system.

The grading design for the subject site aims to achieve the following:

- Match the existing boundary (property line or top of bank) elevations along the boundaries of the site;
- Provide road grades with a minimum of 0.7% (0.5% minimum in certain areas of grading constraint);
- Direct major stormwater flows to designated overland flow routes;
- Provide landscaped areas with slopes of 4:1 or less (1% minimum);
- Maintain general landform character.
- Maintain swale grades between 2.0% and 5.0%;
- Grade site for safe vehicular and pedestrian traffic.

The proposed grading design has been completed in accordance with the design requirements of the Town of Caledon and Toronto and Regional Conservation Authority. The proposed grading design as shown on **Grading Plan SG-1**.

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4.0 STORMWATER MANAGEMENT

The following documents have been reviewed for the Site for stormwater management criteria:

- **Drawing GR5 – Grading Plan (South Commercial Quadrant), Proposed Residential Development, Chateaux of Caledon Phase 2, Part of Lot 21, Concession 1 (Albion)**, prepared by Cole Engineering, dated July 25, 2012 (Townhouse Block Approval) [Grading Plan];
- *Preliminary Engineering Servicing Report, Chateaux of Caledon Residential Development, Old Church Road and Innis Lake Road, Town of Caledon, Region of Peel*, prepared by UMA Engineering Ltd., dated November 9, 2007; [UMA Report]; and,
- *Stormwater Management Report, Chateaux of Caledon Corporation, Town of Caledon*, prepared by Cole Engineering, dated August 6, 2010 [SWM Report].

Based on the SWM Report (specifically Figure DAP2 **Post-Development Storm Drainage Area**), the Site will drain to the existing SWM Pond located south of Street B, east of Existing Houses, west of Special Use Area, north of Old Church Road. The Site is part of Catchment "A2POST", 5.92 ha at 54% imperviousness.

The SWM criteria were:

1. Control post-development peak flows for all storm events up to the 100-year frequency design storm to unit flows resulting from the Humber River Watershed unit rate equations, provided by TRCA;
2. Enhanced (80% TSS Removal) Quality Control;
3. Erosion potential to be mitigated through maximizing infiltration through the site. In addition, detain runoff from 25 mm event for 24 hours; and,
4. Existing water balance conditions are to be maintained, as required by TRCA.

The SWM Report's Plan was to provide for criteria 1-3 in the SWM Pond, and 4 via a combination of soakaway pits, downspout disconnect, and infiltration trenches along some rear-lots. No measures were proposed in the Site.

Therefore, the SWM requirements for the Site are achieved by the SWM pond and water balance measures located elsewhere in the overall development.

A 0.16 ha area at the southwest corner of the site cannot be graded to convey 100-year flows to the north side of the high point on Atchison Drive, therefore 100-year capture and control of this



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area to the 5-year flows ($0.036 \text{ m}^3/\text{s}$) is proposed via detention storage (27.0 m^3). Refer to **Appendix B** and **Figure 2**.

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5.0 SANITARY SERVICING

Stantec has reviewed Chateaux of Caledon Phase 1 and 2 As-Built drawings, prepared by Cole Engineering, dated December 07, 2017 to assess the existing sanitary servicing adjacent the subject site. There is an existing sanitary control manhole MH9A located at the property line. This control manhole is connected to the sanitary manhole 93A within the Atchison Drive. This service connection is intended to service the proposed site with an assumed flow of 1.8 L/s for the subject site (Population:103, Area: 0.59ha), as shown on the drainage plan for Chateaux of Caledon As-built drawings included in **Appendix D**.

The subject site is proposed to be serviced by a control Manhole ultimately draining to a 250mm diameter sanitary sewer on the Atchison Drive and connecting to the existing 250mm diameter sanitary sewer on Old Church Road as shown on **Drawing Site Servicing SS-1**. Based on the Region of Peel design criteria the subject site will generate the following sanitary flow:

Average Flow: 302.8 l/capita/day

Infiltration: 0.20 l/s/ha

Subject site	Area (ha)	# of Units	Population (@475pph)	Peaking Factor $M = 1 + \frac{14}{4 + p^{0.5}}$	Residential Flow (L/s)	Infiltration (L/s)	Total Flow (L/s)
Mixed-Use	0.6	87	285	3.8	3.79	.012	3.91

Per the above table the site generates a flow of 3.91l/s conveyed to the existing sewer within Atchison Drive and then to the Old Church Road and ultimately south on Innis Lake Road. The sanitary flows generated from the proposed site increased from 1.8 L/s to 3.91 L/s. based on the review of the sanitary sewer design sheet prepared by Cole engineering, there is a 14.6 L/s spare capacity available in the sanitary sewer within the Atchison Drive and 20.4 L/s spare capacity is available within the sanitary sewer on Old Church Road. Therefore, the increase of 2.1 L/s can be accommodated within the existing sanitary sewer system on Atchison Drive and Old Church Road.

Sanitary sewers and appurtenances will be designed as per the Region of Peel and Town of Caledon standards; the proposed sanitary sewer servicing design can be seen in **Drawing Site Servicing SS-1**.

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6.0 WATER DISTRIBUTION

There is an existing 300mm diameter watermain located on the west side of Atchison Street. A 200mm diameter service connection from the existing 300mm diameter watermain at the intersection of Atchison Drive and Boyce Creek Court is extended within the property with a 200mm diameter plug and blow off to service the subject site.

The proposed building will be provided with a separate domestic and fire water service stubbed at the face of the proposed underground garage. The final location of the proposed service stub will be determined in conjunction with the project's mechanical consultant to suit the building's internal water distribution layout.

Existing and proposed watermains are shown in on **Drawing Site Servicing SS-1**.

Average Consumption: 280 (res) 300(ICI) l/capita/day

Infiltration: 0.20 l/s/ha

Subject site	Area (ha)	# of Units	Population (@475pph)	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor	Total Flow (L/s)
Residential	0.6	87	285	280	2.0	3.0	1.82
ICI (@ 50pph)	.069		4	300	1.4	3.0	.02
Total Flows							1.84

The estimated water consumption was calculated based on the occupancy rates of 280 litres/capita/day based on the Region's watermain design criteria. It is anticipated that an average consumption of approximately 79,800L/d (0.93 L/s), a maximum daily consumption of 158,976 L/d, and a peak hourly demand of 10,125 L/hr will be required to service this development with domestic water.

The required fire flow was determined in accordance with the calculations from the Water Supply for Public Fire Protection (Fire Underwriters Survey FUS, 1999). A minimum fire suppression flow of approximately 117 L/s will be required for the proposed condominium development within the subject site. Refer to detailed calculations found in **Appendix C**.

Two fire flow tests were conducted on December 13, 2018. The Test shows that at a flow of 2152 gpm the residual pressure in the 300mm dia pipe is 84 psi. The available fire flow exceeds the Town Minimum fire flow requirement at 40psi (275 kPa) and fire flows at 200 psi (140 kPa) calculated using the FUS formula with fire resistive construction and sprinkler systems.



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The pressure will be above the requirement of 550 kPa (80 psi) and will require pressure reduction. The type of pressure reduction should be designed by the mechanical designer and reviewed by the Town's building reviewer.

The proposed internal watermains will be designed and constructed to current Town of Caledon and Region of Peel criteria and specifications.

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7.0 EROSION AND SEDIMENTATION CONTROL

Prior to the initiation of any construction within the site, a comprehensive Erosion and Sediment Control program acceptable to the Town of Caledon (Town), The Region of Peel (Region), and the Toronto and Regional Conservation Authority (TRCA) will be implemented. Appropriate drawings will be prepared at the detailed design stage and submitted to the Agencies for review and approval.

The future ESC plans will include all necessary siltation control facilities and will be designed in accordance with current Town and TRCA guidelines. Below is a list of recommended erosion and sediment control measures that will be outlined during the construction of the subject property:

- Temporary sediment control fences shall be installed prior to commencing grading activities.
- Temporary mud tracking and dust control measures at construction entrance.
- Install temporary swales with rock check dams as required.
- All proposed open space areas will be restored with topsoil and vegetation as per the landscape plan.
- Install temporary sediment traps to capture and treat runoff before releasing into existing areas.

All temporary erosion and sediment control measures will be routinely inspected and repaired during construction. Temporary controls will not be removed until the areas they serve are restored and stable.

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8.0 CONCLUSION

Based on the findings of this report, the conclusions and recommendations are as follows:

- The proposed overall grading design for the site can be achieved using conventional design standards and compliance to the proposed Stormwater Management strategy.
- Quantity and quality control of the proposed site are provided by the existing SWM Pond, and 0.16 ha of site area using on-site quantity control (100-year post to 5-year post).
- Water balance is required and can be met with lot level infiltration controls located off-site.
- Major and minor system drainage will mimic existing conditions.
- The proposed development can be permanently serviced for sanitary drainage by the existing sanitary manhole provided for the development.
- The proposed development can be serviced with municipal water supply from the existing 300mm diameter watermain located on the west side of Atchison Drive.

Should you require any additional information, please contact the undersigned.

Sincerely,

STANTEC CONSULTING LTD.

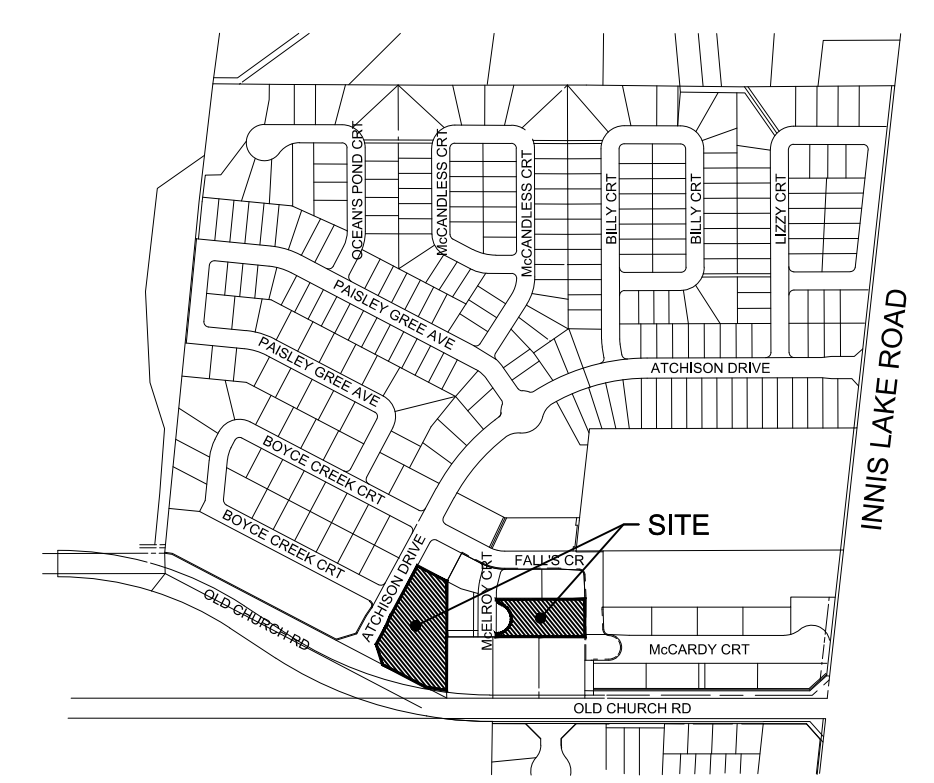
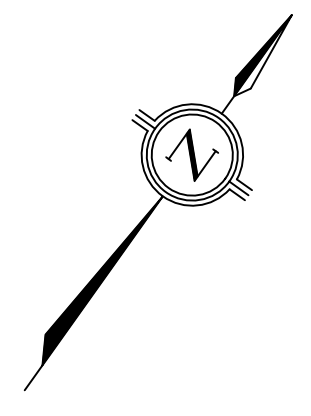


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KEY PLAN SCALE 1:7500

LEGEND

- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING SINGLE CATCHBASIN
- EXISTING DOUBLE CATCHBASIN
- PROPOSED AREA DRAINS
- EXISTING WATERMAIN
- EXISTING HYDRANT & VALVE
- EXISTING VALVE & CHAMBER
- EXISTING VALVE & BOX
- EXISTING WATER SERVICE BOX LOCATION
- EXISTING UTILITY LAMP
- SUBJECT SITE

No.	DESCRIPTION	DATE	BY	APPROVED
4.				
3.				
2.				
1.				

REVISIONS

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO

DATE: _____ APPROVED BY: _____

BENCH MARK:
 ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK No. 25, ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST.
 ELEVATION = 310.640

Stantec Consulting Ltd.
 675 COCHRANE DRIVE, WEST TOWER SUITE 300
 MARKHAM, ONTARIO L3R 0B8
 TELEPHONE: (905) 944-7777
 FAX: (905) 474-9889

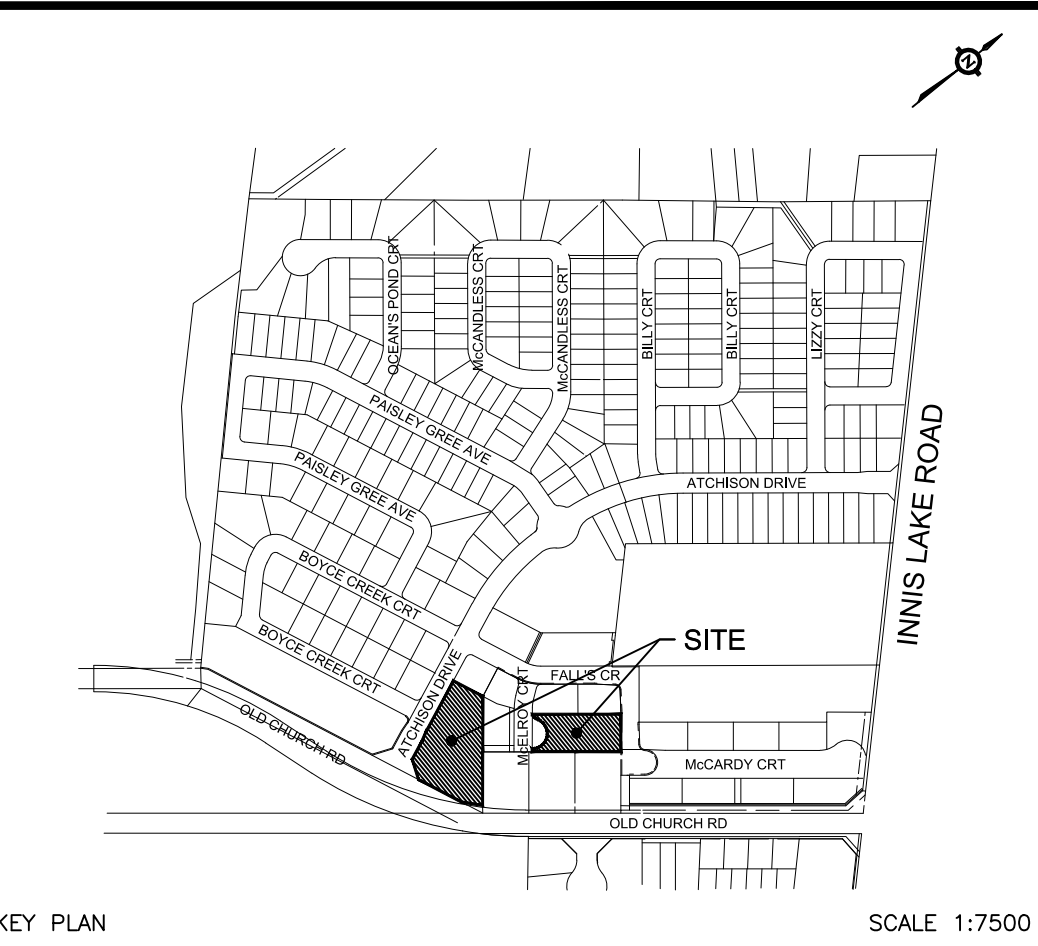
PROFESSIONAL ENGINEER
 S.A. KHAN
 100085491
 APR 30, 2019
 PROVINCE OF ONTARIO

PROJECT NAME
PROPOSED MIXED-USE DEVELOPMENT
 CHATEAUX OF CALEDON TOWN SQUARE
 0 ATCHISON DRIVE, BLOCK 164 ON PLAN 43M-1840
 TOWN FILE No.: PRE 17-0084



SERVICING PLAN

SCALE : 1:250	PROJECT No. 160622596
DESIGN BY: J.L.	CHECKED BY: S.K.
DRAWN BY: J.L.	DATE: APRIL 2019
	DRAWING No. SS-1



KEY PLAN SCALE 1:7500

LEGEND

- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- PROPOSED AREA DRAINS
- EXISTING SINGLE CATCHBASIN
- EXISTING DOUBLE CATCHBASIN
- ⊕ EXISTING VALVE & BOX
- ⊕ EXISTING VALVE & CHAMBER
- ⊕ EXISTING HYDRANT & VALVE
- EXISTING WATER SERVICE BOX LOCATION
- EXISTING UTILITY LAMP
- 175.0 EXISTING CONTOUR AND ELEVATION
- 295.06 EXISTING SPOT ELEVATION
- 295.06 PROPOSED SPOT ELEVATION
- 2.0% PROPOSED SLOPES
- ↗ 295.06 EXISTING ROAD GEADES
- ↗ EXISTING HIGH/LOW POINT
- ➔ OVERLAND FLOW
- 100 YEAR CAPTURE
- SUBJECT SITE
- 0.16ha 100 YEAR CAPTURE AREA

No.	DESCRIPTION	DATE	BY	APPROVED
4.				
3.				
2.				
1.				

REVISIONS

APPROVED FOR CONSTRUCTION

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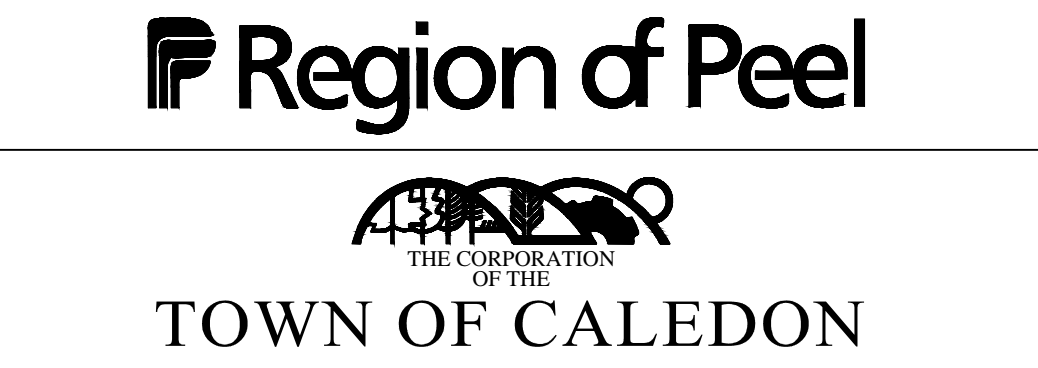
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BENCH MARK:
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK No. 25, ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST. ELEVATION = 310.640

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PROFESSIONAL ENGINEER
S.A. KHAN
100085491
APR 30, 2019
PROVINCE OF ONTARIO

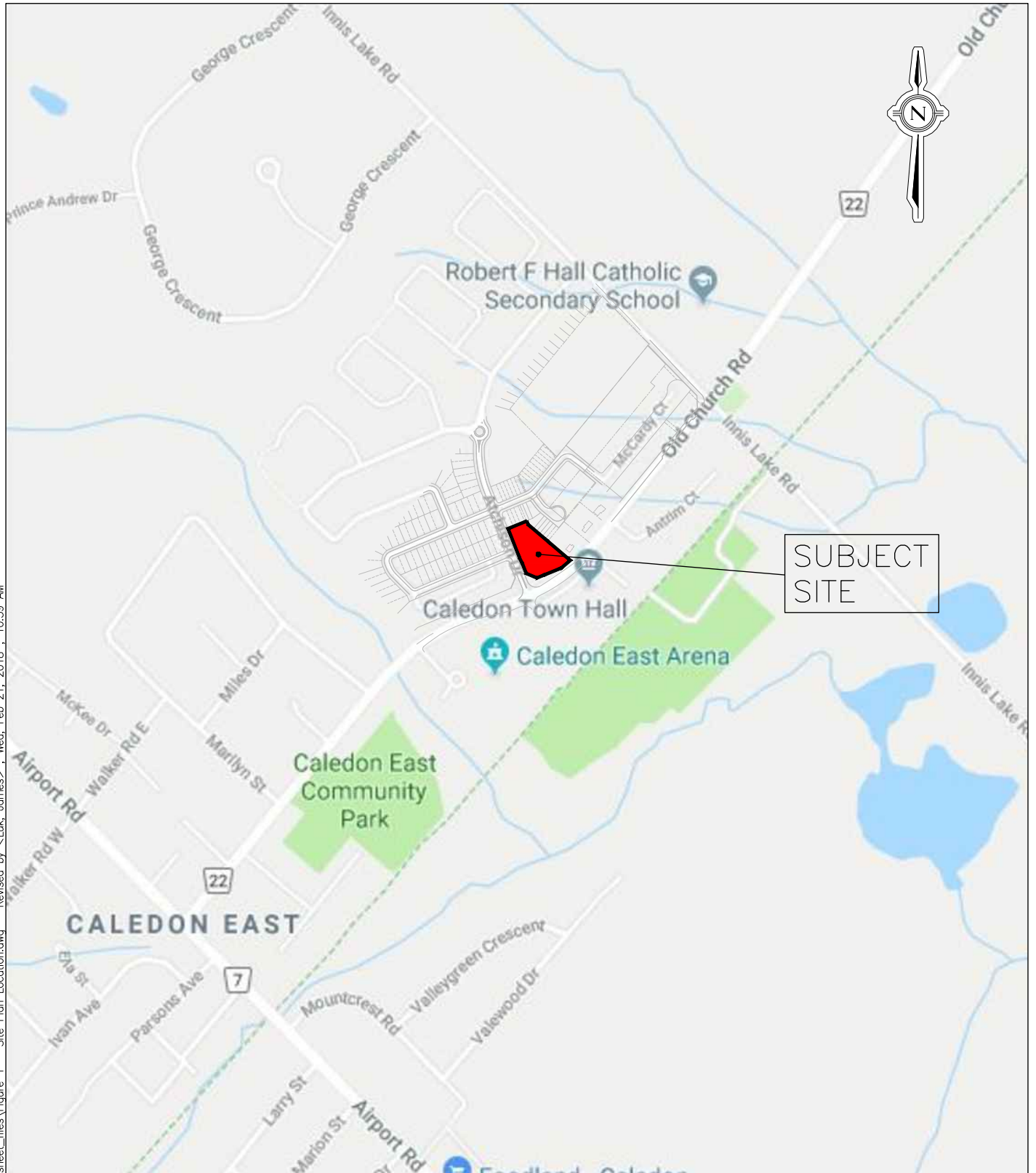
PROJECT NAME
**PROPOSED MIXED-USE DEVELOPMENT
CHATEAUX OF CALEDON TOWN SQUARE**
0 ATCHISON DRIVE, BLOCK 164 ON PLAN 43M-1840
TOWN FILE No.: PRE 17-0084



GRADING PLAN

SCALE : 1:250	PROJECT No. 160622596
DESIGN BY: J.L.	CHECKED BY: S.K.
DRAWN BY: J.L.	DATE: APRIL 2019
	DRAWING No. SG-1

File: V:\01606\Active\160622596\Drawing\sheet_files\Figure 1 - Site Plan Location.dwg - Revised by <Luk, James>, Wed, Feb 21, 2018, 10:39 AM



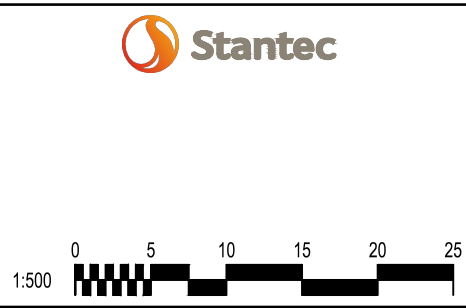
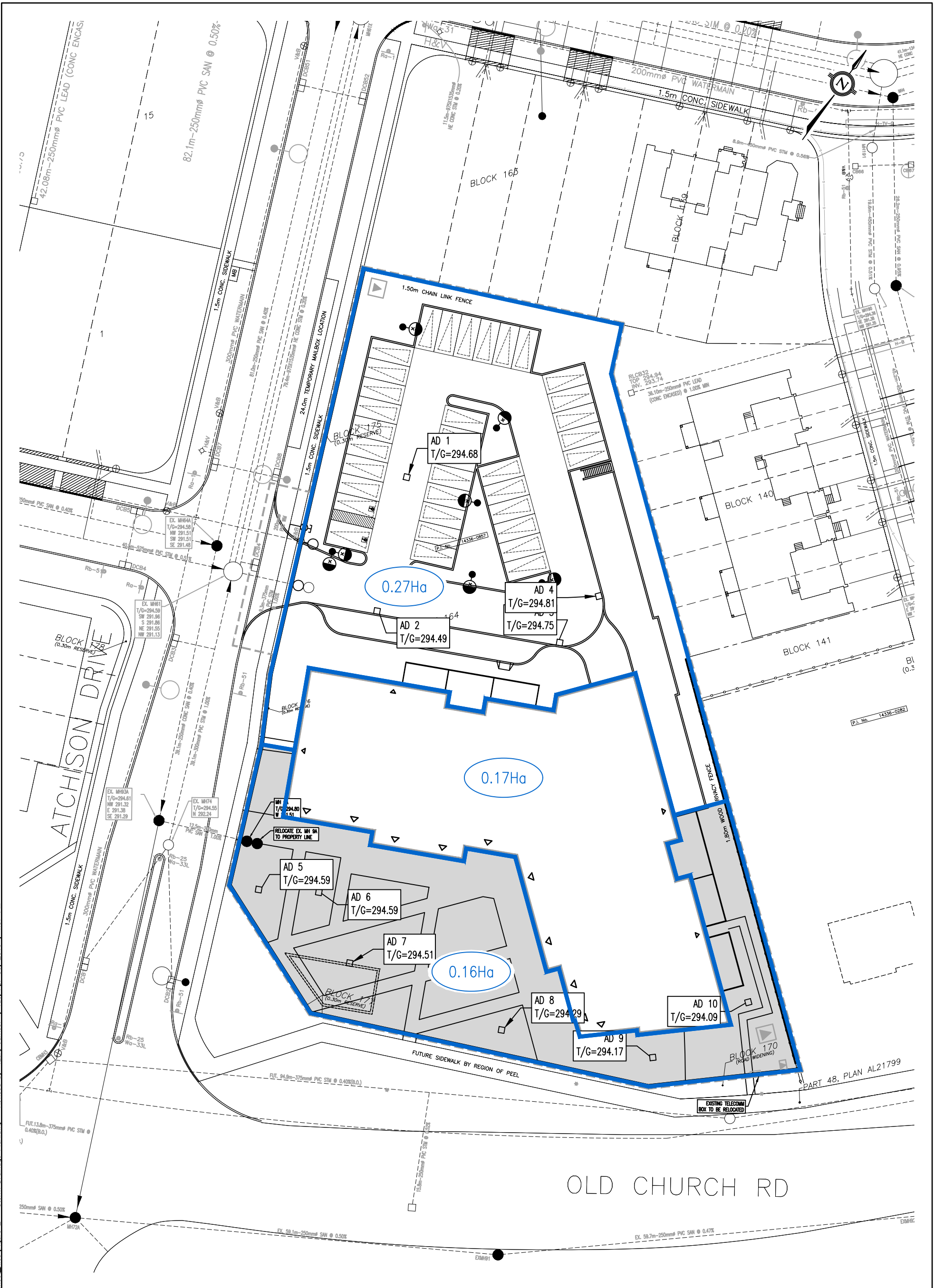
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FUNCTIONAL SERVICING REPORT
 CHATEAUX OF CALEDON PHASE 3
 6311 OLD CHURCH ROAD
 TOWN OF CALEDON

FIGURE 1
SITE PLAN LOCATION

FEBRUARY 2018





Legend			
	SUBJECT SITE		EXISTING SINGLE CATCHBASIN
	EXISTING STORM MANHOLE		EXISTING DOUBLE CATCHBASIN
	STORM DRAINAGE BOUNDARY		PROPOSED AREA DRAINS
	100 YEAR CAPTURE		EXISTING WATERMAIN
	100 YEAR CAPTURE AREA		EXISTING HYDRANT & VALVE
			EXISTING VALVE & CHAMBER
			EXISTING VALVE & BOX

FUNCTIONAL SERVICING REPORT
CHATEAUX OF CALEDON PHASE 3
6311 OLD CHURCH ROAD
TOWN OF CALEDON

FIGURE 2
STORM DRAINAGE PLAN

APRIL 2019

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

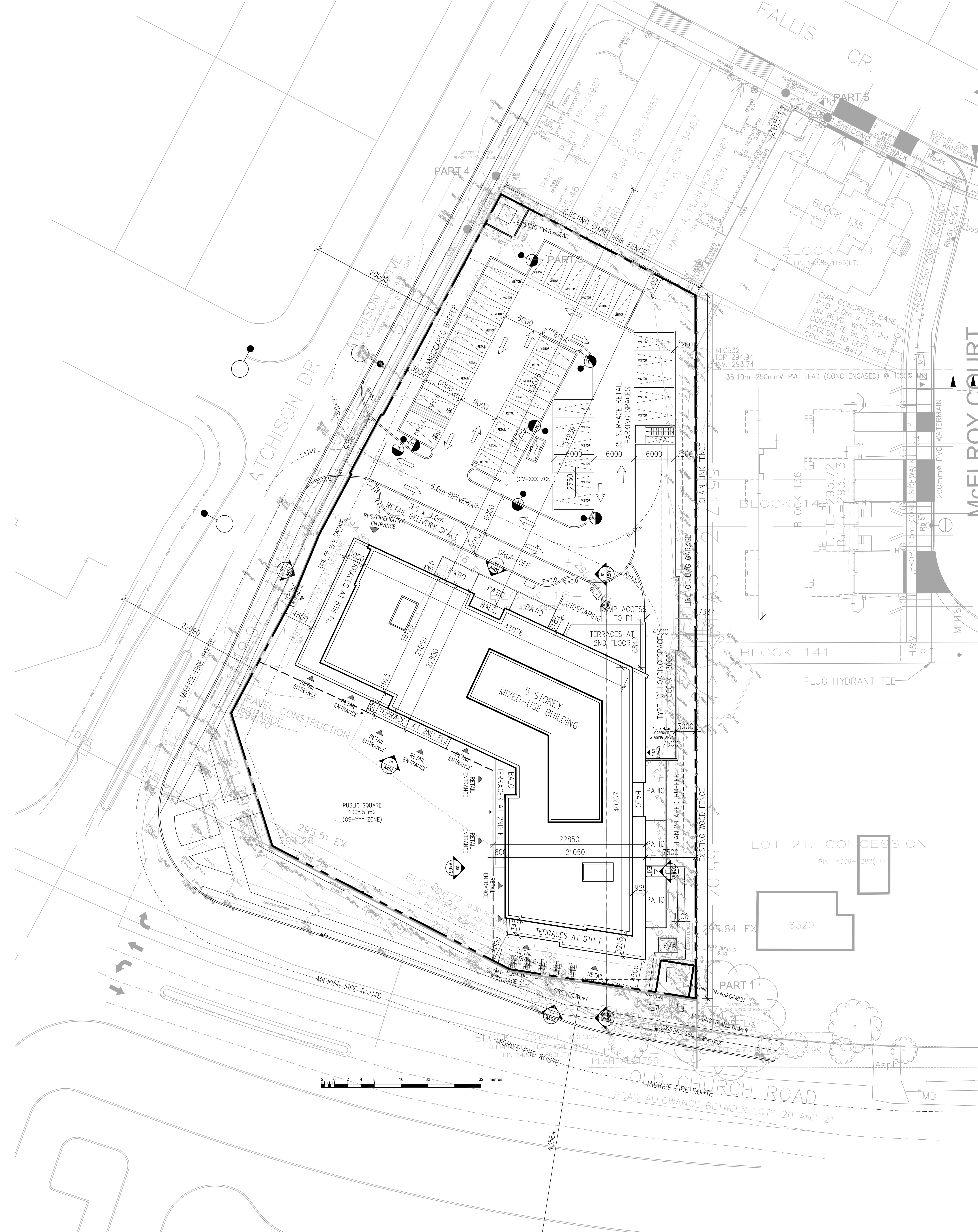
Appendix A Site Plan
April 30, 2019

APPENDICIES

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

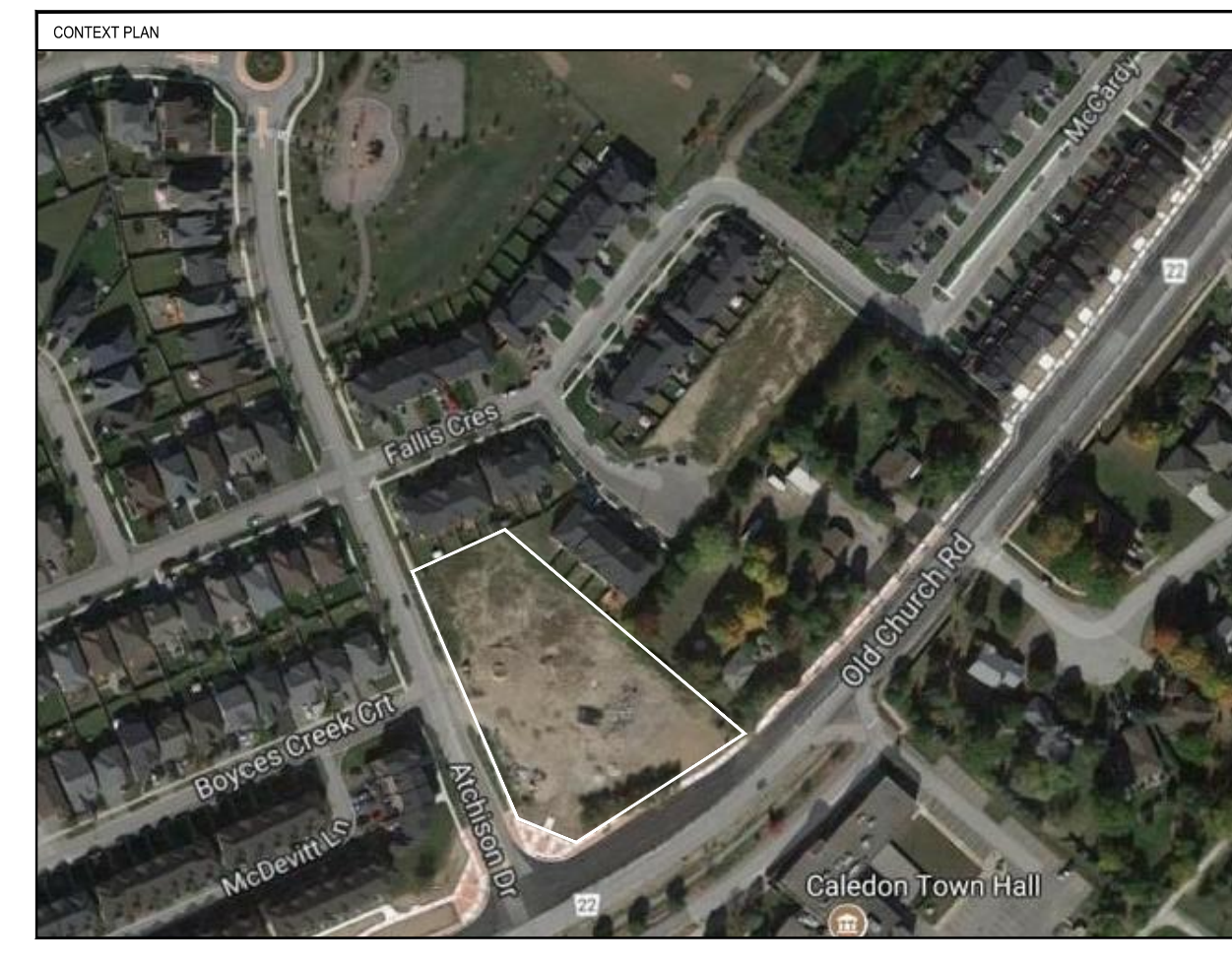
Appendix A Site Plan
April 30, 2019

Appendix A **SITE PLAN**



ZONING DESIGNATION: TOWN OF CALEDON BY-LAW CALEDON ZONING BY-LAW 2011-27 CV PROPOSED

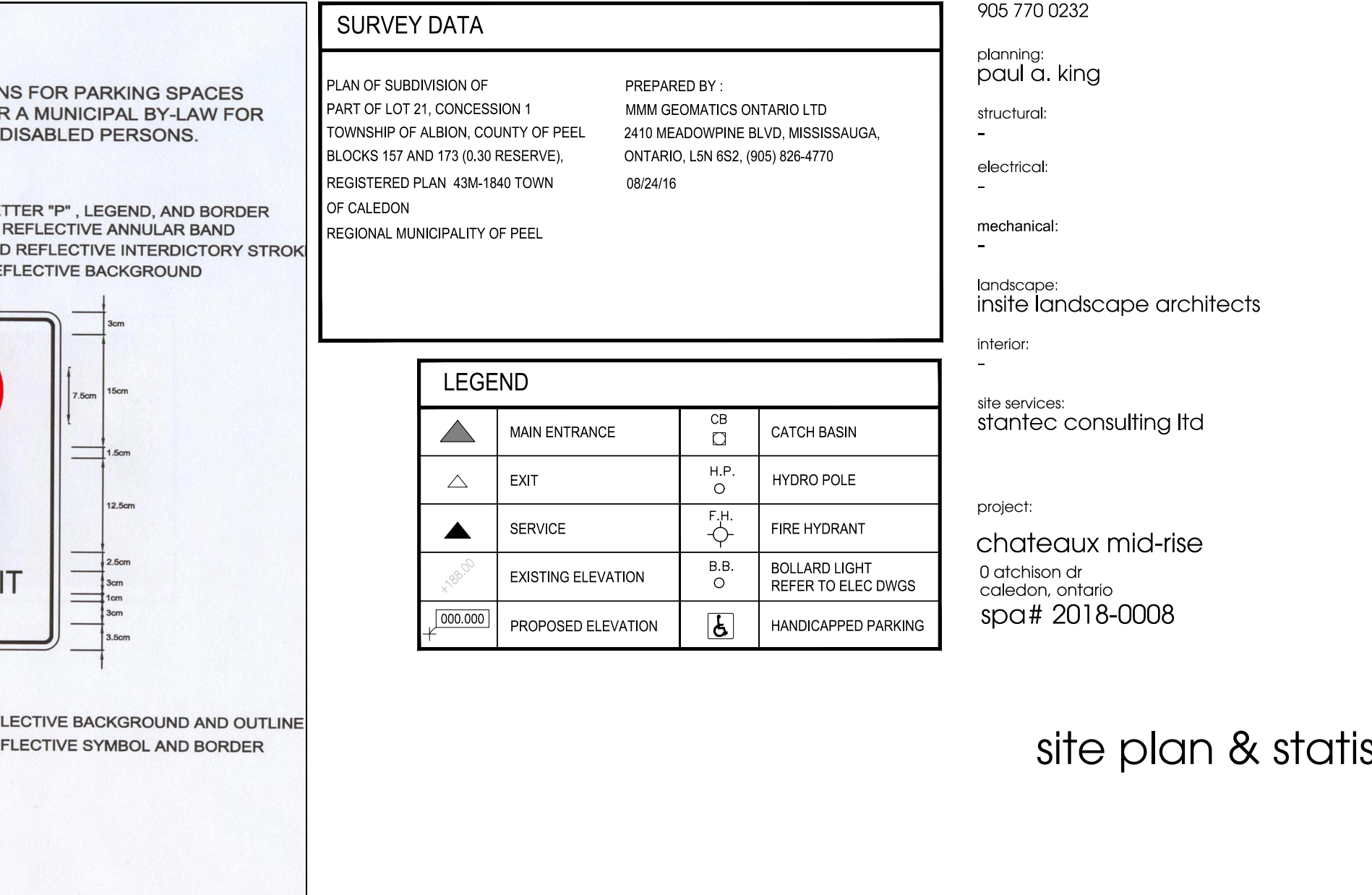
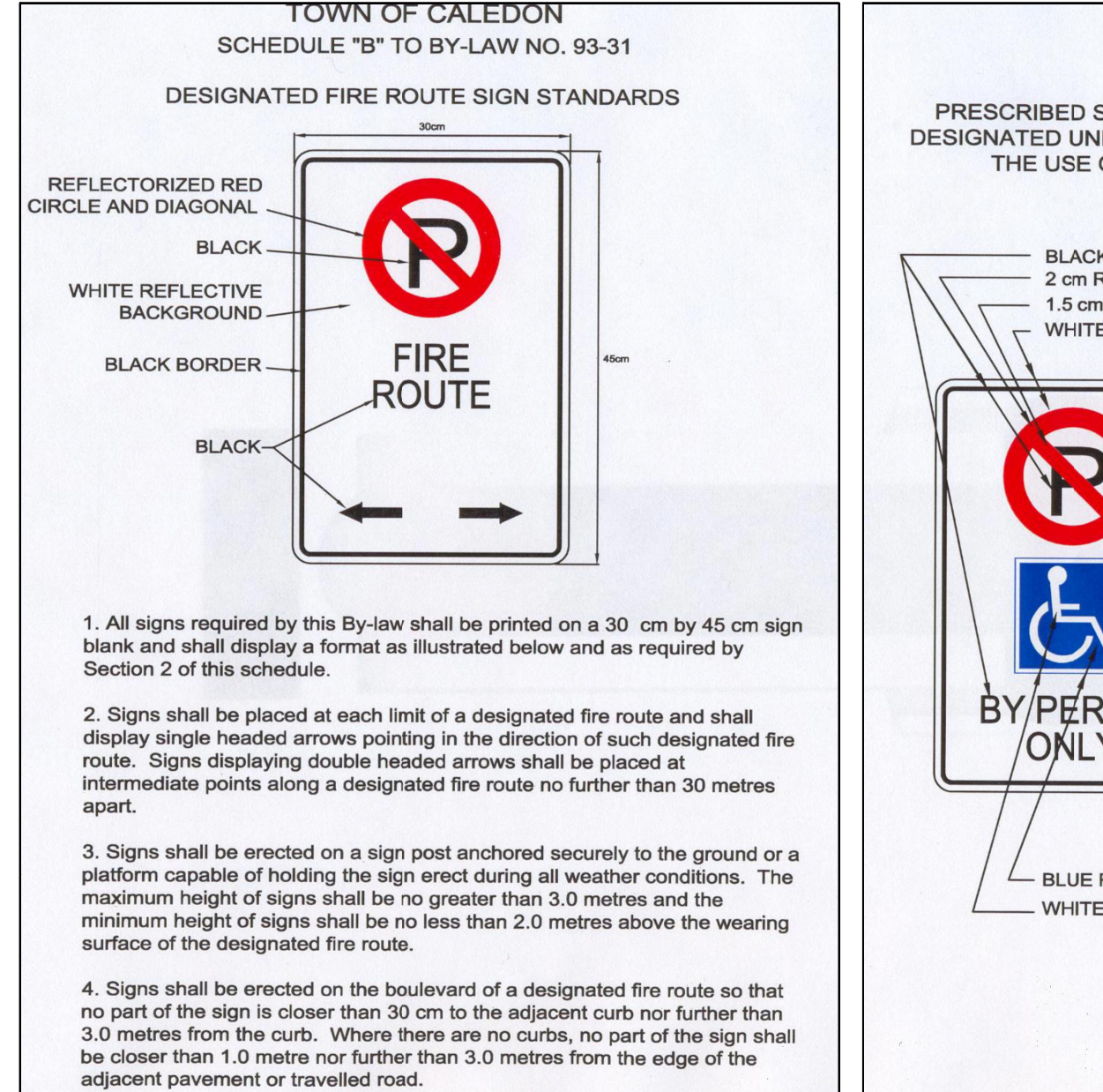
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11. ACCESSIBLE UNITS table with columns: UNIT TYPE, TOTAL, 16. BICYCLE, 17. INDOOR AMENITY, 18. OUTDOOR AMENITY, 19. LOADING SPACES.

OBC MATRIX table with columns: Item, Ontario Building Code Matrix Part 3 or 9, OBC Reference.

OBC MATRIX table with columns: Item, Ontario Building Code Matrix Part 3 or 9, OBC Reference.



notes:
1. All signs required by this By-law shall be printed on a 30 cm by 45 cm sign blank and shall display a format as illustrated below and as required by Section 2 of this schedule.
2. Signs shall be placed at each limit of a designated fire route and shall display single headed arrows pointing in the direction of such designated fire route. Signs displaying double headed arrows shall be placed at intermediate points along a designated fire route no further than 30 metres apart.
3. Signs shall be erected on a sign post anchored securely to the ground or a platform capable of holding the sign erect during all weather conditions. The maximum height of signs shall be no greater than 3.0 metres and the minimum height of signs shall be no less than 2.0 metres above the wearing surface of the designated fire route.
4. Signs shall be erected on the boulevard of a designated fire route so that no part of the sign is closer than 30 cm to the adjacent curb nor further than 3.0 metres from the curb. Where there are no curbs, no part of the sign shall be closer than 1.0 metre nor further than 3.0 metres from the edge of the adjacent pavement or travelled road.

2 issued for rezoning / spa
1 issued for client review
architectural team
architect: 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: startlec consulting ltd
project: chateaux mid-rise
at chateaux rd, caledon, ontario
spa# 2018-0008

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix B SWM Calculations
April 30, 2019

Appendix B SWM CALCULATIONS



Project: Caledon MidRise
Project Number: 1606 22596
Project Location: Caledon
Date: 4/30/2019

Rainfall Intensity and Existing and Proposed Catchment Parameters

Rainfall Intensity Parameters*

Storm	A	B	C
5 Year	1593	11	0.8789
100 Year	4688	17	0.9624

* Rainfall Intensity Parameters as per: Caldeon section 3.2.9

Pre-Development Areas

Catchment Description	Catchment ID	Area (ha)	C x A	Runoff Coefficient
South Area	101	0.16	0.11931	0.75
Total		0.16	0.11931	0.75

Controlled Post-Development Areas

Catchment Description	Catchment ID	Area (ha)	C x A	Runoff Coefficient
Building	201	0.16	0.14	0.90
Total		0.16	0.14	0.90



Project: Caledon MidRise
Project Number: 1606 22596
Project Location: Caledon

Target Flows

Rational Method

$$Q = 2.78 * C * i * A$$

Where:

C = Runoff Coefficient ¹

A = Site Drainage Area (ha)

i = Rain Intensity (mm/hr) ²

Q = Flow (m³/s)

Storm	A	B	C
5 Year	1593	11	0.8789

Pre-Development Conditions

Catchment Description	Catchment ID	Area (ha)	C x A	Runoff Coefficient	Time of Concentration (mins)	i (mm/hr) ²	Q (m ³ /s)
South Area	101	0.16	0.12	0.75	10	109.68	0.036
Total		0.16	0.12	0.75			0.036

Site Target Flow = **0.036** m³/s Based upon 5 year flows



Project: Caledon MidRise
 Project Number: 1606 22596
 Project Location: Caledon

100 Year Storage Stormwater Management Calculations

Rational Method

$$Q = 2.78 * C * i * A$$

Where:

C = Runoff Coefficient ¹

A = Site Drainage Area (ha)

i = Rain Intensity (mm/hr) ²

Q = Flow (m³/s)

Storm	A	B	C
100 Year	4688	17	0.9624

Site Target Flow **0.036** m³/s

Post Development Conditions

Catchment ID = 201
 Area = 0.16 ha
 Runoff Coefficient = 0.90
 Time of Conc = 10.0 min
 Time Increment = 5.0 min
 Design Release Rate = 0.036 m³/s
 Maximum Storage = 27 m³
 Water Balance Volume Storage Provided: 0 m³
 Maximum Storage Required Accounting for Water Balance Volume Stored **27** m³

Water Quantity Storage Requirements not Accounting for Water Balance Storage					
Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (m ³ /s)	Runoff Volume (m ³)	Volume Released (m ³)	Storage Required (m ³)
10.0	196.5	0.078	46.9	21.8	25.1
15.0	166.9	0.066	59.8	32.7	27.0
20.0	145.1	0.058	69.3	43.7	25.7
25.0	128.5	0.051	76.7	54.6	22.1
30.0	115.3	0.046	82.6	65.5	17.1
35.0	104.6	0.042	87.4	76.4	11.0
40.0	95.7	0.038	91.5	87.3	4.2
45.0	88.3	0.035	94.9	98.2	0.0
50.0	82.0	0.033	97.9	109.1	0.0
55.0	76.5	0.030	100.4	120.0	0.0
60.0	71.7	0.029	102.7	131.0	0.0
65.0	67.5	0.027	104.7	141.9	0.0
70.0	63.7	0.025	106.5	152.8	0.0
75.0	60.4	0.024	108.2	163.7	0.0
80.0	57.4	0.023	109.7	174.6	0.0
85.0	54.7	0.022	111.0	185.5	0.0
90.0	52.2	0.021	112.3	196.4	0.0
95.0	50.0	0.020	113.4	207.3	0.0
100.0	47.9	0.019	114.4	218.3	0.0
105.0	46.0	0.018	115.4	229.2	0.0
110.0	44.3	0.018	116.3	240.1	0.0

<<<<



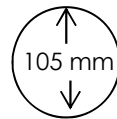
Project: Caledon MidRise
Project Number: 1606 22596
Project Location: Caledon

Outlet Control Detail Calculations

Orifice Equation: $Q = C_d A (2gh)^{1/2}$

Orifice Control

Invert = 291.64 m
 Size = 105 mm
 C = 0.62
 Obvert = 291.745 m



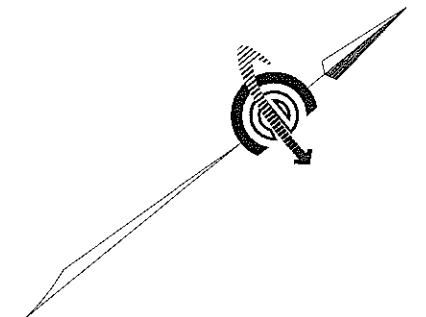
Type of Orifice Control: VERTICAL
 Location: MH116

inv = 291.64 m

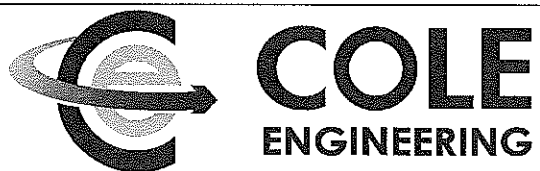
100 Year Water Level Elevation = 294.00 m

Area = 0.009 m²
 Head = 2.31 m

Design Flow = 0.036 m³/s
Target Flow = 0.036 m³/s



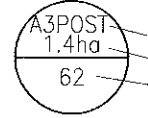
FLOW POINT A
DISCHARGE LOCATED SOUTH ON
WEST SIDE OF INNIS LAKE ROAD



70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
T:416.987.6161 / 905.940.6161 F:905.940.2064

LEGEND

- ▣▣▣▣▣▣▣▣ MINOR STORM DRAINAGE AREA BOUNDARY
- MAJOR STORM DRAINAGE AREA BOUNDARY
- ➔ MAJOR OVERLAND FLOW ROUTE



— STORM DRAINAGE AREA NUMBER
— DRAINAGE AREA (ha)
— CURVE NUMBER



— STORM DRAINAGE AREA NUMBER
— DRAINAGE AREA (ha)
— % IMPERVIOUSNESS

POST-DEVELOPMENT STORM DRAINAGE AREA

CHATEAUX OF CALEDON
TOWN OF CALEDON, REGION OF PEEL

DATE:	AUGUST, 2010	PROJECT No.:	L08-378
SCALE:	1:4000	FIGURE No.:	DAP2

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 PRECAST MAINTENANCE HOLE
 1200mm DIAMETER

REV. DATE: FEBRUARY 2007
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-1-1 SCALE: N.T.S.

NOTE:
 1. PRECAST MAINTENANCE HOLE SECTIONS TO CONFORM TO ASTM C-476, CPSS 1351.
 2. SPECIAL BASE DESIGN REQUIRED FOR DEPTHS GREATER THAN 8.0m.
 3. FELLING HOLES AND PIPE CONNECTIONS WITH 13mm BIRMINGHAM MESH.
 4. APPROVED ADJUSTMENT LIMITS INSTALLED AS MANUFACTURER'S INSTRUCTIONS.
 5. USE ALTERNATIVE BASE, TOP PIPE SUPPORT OR CONNECTOR, STEPS, FRAME AND COVER/AND/OR BENCHING WHERE SPECIFIED.
 6. FOR PVC PIPE USE TYPE D OR E PIPE SUPPORT ONLY.
 7. FOR RIGID PIPE SUPPORT FROM MAINTENANCE HOLE TO FIRST JOINT WITH MIN. 20 MPa CONCRETE GRADE.
 8. FOR 100mm AND LARGER SEWERS PRECAST MAINTENANCE HOLE TEES ARE ACCEPTABLE (SEE STD. DWG. 2-1-3).
 9. FOR MAINTENANCE HOLE WITH A DEPTH GREATER THAN 5m, SAFETY GRATE REQUIRED. (SEE STD. DWG. 2-3-1).

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 MAINTENANCE HOLE BENCHING DETAILS

REV. DATE: FEBRUARY 2007
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-1-4 SCALE: N.T.S.

NOTE:
 1. CONCRETE TO BE 20 MPa COMPRESSIVE STRENGTH.
 2. BENCHING TO BE GIVEN WOOD FLOOR FINISH, CHANGING TO BE GIVEN STEEL TROWEL FINISH.
 3. ALL CHANNEL MUST EXTEND 300mm STRAIGHT OUT FROM MAINTENANCE HOLE BEFORE CURVATURE BEGINS.
 4. BENCHING TO BE CONSTRUCTED TO THE OVERT OF THE PIPE.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 MAINTENANCE HOLE DROP STRUCTURE
 EXTERNAL ASSEMBLY

REV. DATE: FEBRUARY 2007
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-1-5 SCALE: N.T.S.

NOTES FOR RIGID PIPE:
 1. OVERT OF DROP PIPE TO MEET THE OVERT OF THE RECEIVING SEWER.
 2. DROP STRUCTURE TO BE COMPLETELY ENCASED IN MIN. 150mm OF GRANULAR BEDDING MATERIAL.
 3. PIPE FITTINGS MAY BE USED IN LIEU OF TEES.
 4. DROP PIPE TO BE ONE SIZE SMALLER THAN THE INCOMING SEWER, MINIMUM SIZE 250mm.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 SAFETY PLATFORM FOR 1200mm
 DIAMETER PRECAST MAINTENANCE HOLE

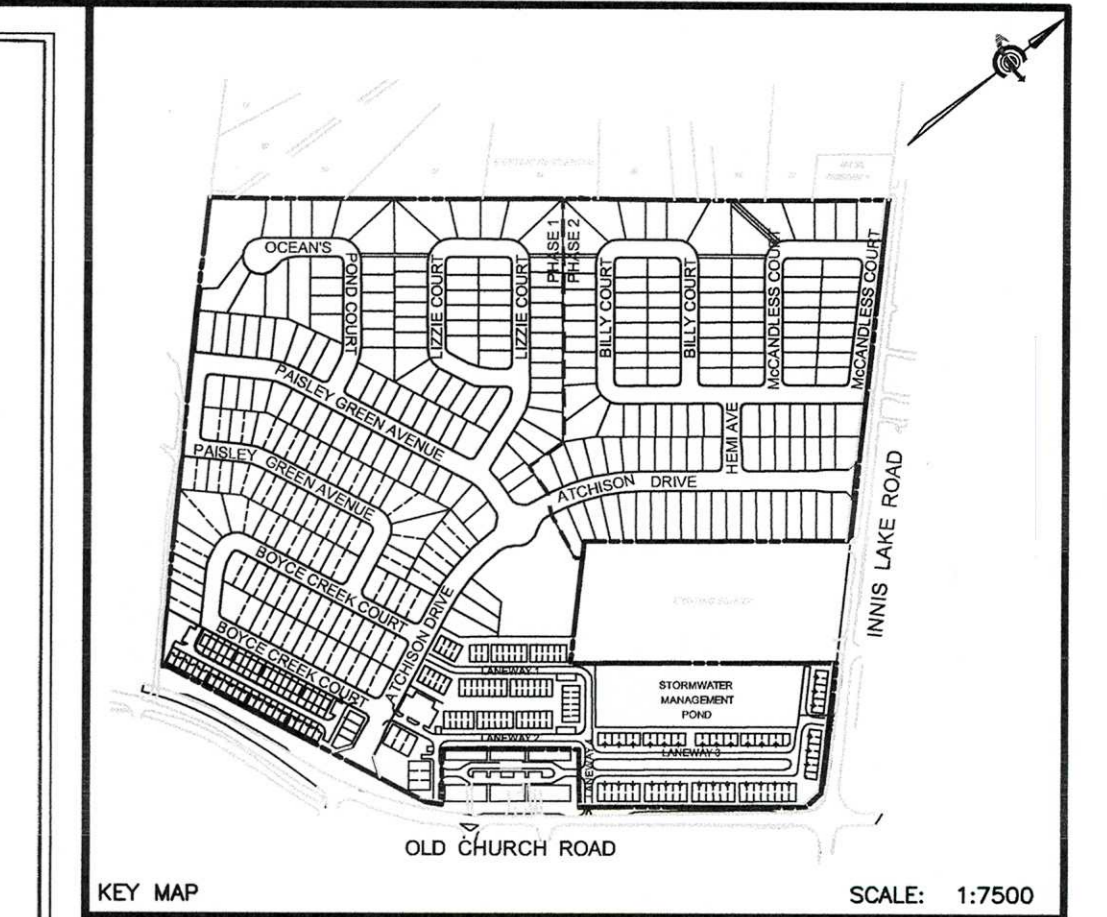
REV. DATE: FEB. 2006
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-2-1 SCALE: N.T.S.

NOTE:
 1. ALUMINUM TO BE OF APPROVED ALLOY AT ALL POINTS WHERE ALUMINUM AND CONCRETE COME INTO CONTACT (ENDS OF ANGLES).
 2. PLATFORM MUST BE USED FOR MAINTENANCE HOLE DEPTHS GREATER THAN 2m. FOR MAINTENANCE HOLE DEPTHS BETWEEN 2m AND 5m, PLATFORM TO BE PLACED AT MIDPOINT FOR MAINTENANCE HOLE DEPTH BETWEEN 10m AND 15m.
 3. DROP STRUCTURES TO BE LOCATED BELOW SAFETY PLATFORMS.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 STANDARD HEAVY DUTY
 FRAME AND COVER

REV. DATE: MARCH 1998
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-2-2 SCALE: N.T.S.

NOTE:
 1. THE WORD "SANITARY" TO BE CAST INTO COVER WITH 60mm LETTERS.
 2. COVER PATTERN AS PER CANON 519 FURNISHED OR SIMILAR.
 3. 25 x 25mm LIFT HOLES ALL THE WAY THROUGH COVER.



Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 BEDDING DETAILS FOR
 SANITARY SEWERS

REV. DATE: JUNE 2005
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-3-1 SCALE: N.T.S.

NOTE:
 1. ROCK OR SHALE EXCAVATION PROVIDE A 50mm LAYER OF COMPRESSIBLE MATERIAL BETWEEN THE TRENCH WALLS AND THE CONCRETE ENCASMENT.
 2. COVER MATERIAL, NO STRONGER THAN 20mm SHALL BE PERMITTED.
 3. IN ROCK EXCAVATION, A MINIMUM OF 100mm GRAN. MATERIAL BEDDING IS REQUIRED UNDER THE PIPE.
 4. MIN. AND MAX. TRENCH WIDTH AT TOP OF PIPE ARE 630mm AND 610mm RESPECTIVELY.
 5. THE CONSULTANT SHALL RECOMMEND THE APPROPRIATE BEDDING REQUIREMENTS BASED ON THE FINDINGS OF THE GEOTECHNICAL INVESTIGATION AND PROVIDE A CROSS-SECTION ILLUSTRATION ON THE FIRST PLAN & PROFILE DRAWING.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 SERVICE CONNECTIONS
 FOR FLEXIBLE PIPE

REV. DATE: MARCH 1998
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: 2-4-2 SCALE: N.T.S.

NOTE:
 1. FOR SEWERS 375mm AND SMALLER, CONNECTIONS MUST BE MADE USING FACTORY MADE TEES, FOR ALL OTHER SIZES, EITHER FACTORY MADE TEES OR APPROVED TEE-ON-BLOCKS MAY BE USED.
 2. STRAP ON BLOCKS MUST BE INSTALLED ON THE MAIN PIPE BEFORE THE PIPE IS Laid.
 3. APPROVED ON-TOOL MUST BE USED FOR THE FIELD MADE TEES.
 4. SERVICE CONNECTION MUST BE SECURELY PLUGGED AT PROPERTY LINE WITH AN APPROVED PLUG.
 5. AN APPROVED TEST FITTING TO BE INSTALLED AT PROPERTY LINE.
 6. ALTERNATIVE TO VERTICAL RISER IS ON STD. 2-4-1.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 CONCRETE BARRIER CURB
 WITH STANDARD GUTTER
 FOR RIGID PAVEMENT

April 1999 Rev
 OPSD - 600.050

NOTE:
 1. Composite pavement shall be placed 5mm above the adjacent edge of gutter.
 2. Where sidewalk is continuously adjacent, reduce the dropped curb at entrances to 75mm.
 3. For slipforming procedure, a 5% batter is acceptable.
 4. Depth of concrete curb to be adjusted to depth of concrete pavement.
 5. For tie bar details refer to OPSD-552.010 and 552.020.
 A Treatment at entrances shall conform with OPSD-351.010.
 B Outlet treatment shall conform with OPSD-610 Series.
 C The length of transition from one curb type to another shall be 3.0m, except in conjunction with guide roll, it shall conform to OPSD-900 Series.
 D All dimensions are in millimetres unless otherwise shown.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 CONCRETE BARRIER CURB
 WITH STANDARD GUTTER
 TWO STAGE CONSTRUCTION

Nov 2008 Rev 1
 OPSD 600.070

NOTE:
 1. Flexible and composite pavement shall be placed 5mm above the adjacent edge of gutter.
 2. Where sidewalk is continuously adjacent, reduce the dropped curb at entrances to 75mm.
 3. For slipforming procedure, a 5% batter is acceptable.
 A Treatment at entrances shall be according to the OPSD 351.010.
 B Outlet treatment shall be according to the OPSD 610 Series.
 C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide roll, where it shall be according to the OPSD 900 Series.
 D All dimensions are in millimetres unless otherwise shown.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 CROSS-SECTION A-A
 INFILTRATION TRENCH DETAIL

N.T.S.

NOTE:
 1. 19mm CLEAR STONE 35% VOID SPACE.
 2. FILTER FABRIC TERRAFIX 270R OR APPROVED EQUIVALENT.

Hanson IN-LINE STORMCEPTOR
 MODEL STC 750

REV. DATE: [Blank]
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: [Blank] SCALE: N.T.S.

NOTE:
 THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS:
 CANADIAN PATENT NO. 2,209,398
 CANADIAN PATENT NO. 2,157,842
 CANADIAN PATENT NO. 2,157,879
 CANADIAN PATENT NO. 2,136,395
 CANADIAN PATENT NO. 2,206,338

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 ROOF LEADER SOAKAWAY PIT DETAIL

REV. DATE: [Blank]
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: [Blank] SCALE: N.T.S.

NOTE:
 1. 1.5m MINIMUM CLEARANCE TO TOP OF PIT FROM EXISTING FIN.
 2. 1.5m MINIMUM CLEARANCE TO TOP OF PIT FROM EXISTING FIN.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 SEDIMENT CONTROL FENCE

REV. DATE: [Blank]
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: [Blank] SCALE: N.T.S.

NOTE:
 1. WOVEN GEOTEXTILE TO HAVE A WEAVE DENSITY OF 270g OR EQUIVALENT.
 2. WOVEN GEOTEXTILE TO HAVE A HORIZONTAL OVERLAP OF 100mm AT JOINTS.
 3. END RINGS SHALL BE TURNED UPSTREAM AT 90°.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 CROSS-SECTION A-A
 INFILTRATION TRENCH DETAIL

N.T.S.

NOTE:
 1. 19mm CLEAR STONE 35% VOID SPACE.
 2. FILTER FABRIC TERRAFIX 270R OR APPROVED EQUIVALENT.

Region of Peel PUBLIC WORKS STANDARD DRAWING
Working for you
 SEDIMENT CONTROL FENCE

REV. DATE: [Blank]
 APPROVED BY: [Signature] DRAWN BY: [Signature]
 STD. DWG. NUMBER: [Blank] SCALE: N.T.S.

NOTE:
 1. WOVEN GEOTEXTILE TO HAVE A WEAVE DENSITY OF 270g OR EQUIVALENT.
 2. WOVEN GEOTEXTILE TO HAVE A HORIZONTAL OVERLAP OF 100mm AT JOINTS.
 3. END RINGS SHALL BE TURNED UPSTREAM AT 90°.

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE: [Signature] APPROVED BY: [Signature]

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
1.	SG	AUG 7, 09	ISSUED FOR FIRST SUBMISSION REVIEW TO TOWN, REGION & TRCA		
2.	SG	FEB 17, 10	ISSUED FOR SECOND SUBMISSION REVIEW TO TOWN, REGION & TRCA		
3.	AR	AUG 06, 10	ISSUED FOR THIRD SUBMISSION REVIEW PHASE 1 APPROVAL		
4.	AR	SEPT 2, 10	PRE-SERVICING		

BENCH MARK: ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK No. 25. ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH ELEVATION = 310.840

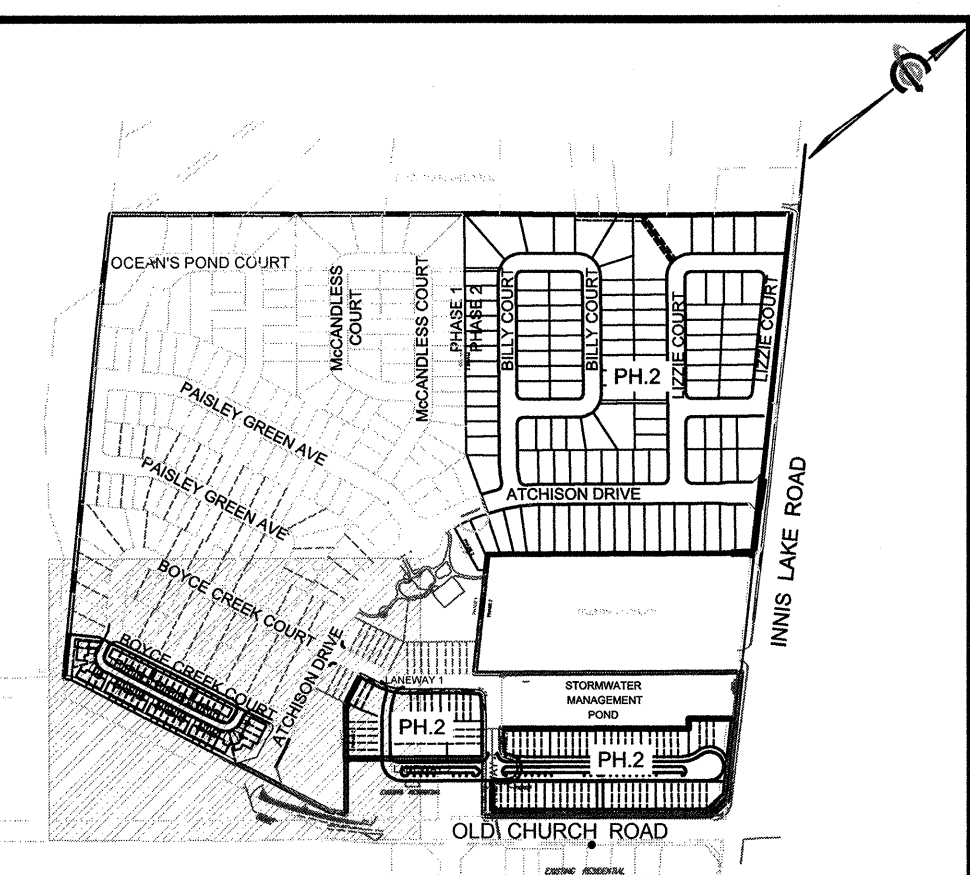
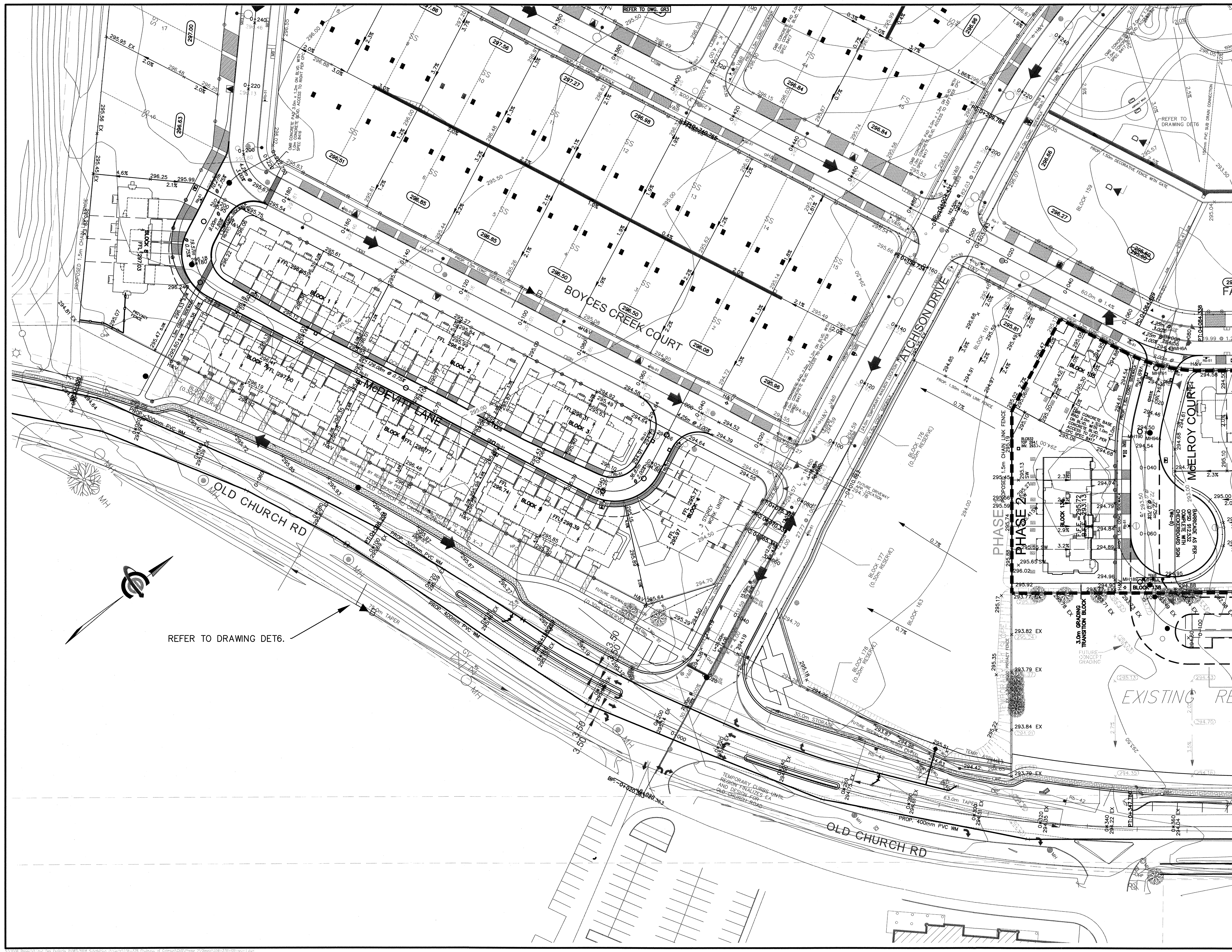
CONSULTANT: **COLE ENGINEERING**
 70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
 T438397 (905) 476-9161 F505.962304
 © COPYRIGHT 2010 Cole Engineering Group Ltd.

PROJECT NAME: **PROPOSED RESIDENTIAL DEVELOPMENT**
 CHATEAUX OF CALEDON PHASE 1
 PART OF LOT 21, CONCESSION 1 (ALBION)

Region of Peel
 THE CORPORATION OF THE TOWN OF CALEDON

21T-07003C
STANDARD DRAWING DETAILS

SCALE: N.T.S. PROJECT No. L08-378
 DESIGNED BY: DH DRAWN BY: JM DRAWING No. DET4
 CHECKED BY: AR DATE: AUG. 10 2010



KEY MAP SCALE: 1:7500

LEGEND

- EXISTING CONTOUR
- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED APRON ELEVATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING SINGLE CATCH BASIN / DOUBLE CATCH BASIN
- EXISTING DITCH INLET CATCH BASIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED SINGLE CATCHBASIN / DOUBLE CATCHBASIN (CD 'B')
- PROPOSED DITCH INLET CATCH BASIN
- PROPOSED WATER VALVE / CURB STOP
- PROPOSED FIRE HYDRANT
- PROPOSED WATERMAIN CROSS / TEE
- PROPOSED WATERMAIN CAP / REDUCER
- PROPOSED DITCH OR SWALE
- PROPERTY LINE
- EASEMENT LINE
- PROPOSED FRONT-SPLIT DRAINAGE LOT TYPE
- PROPOSED SIDE-SPLIT DRAINAGE LOT TYPE
- PROPOSED BACK-SPLIT DRAINAGE LOT TYPE
- PROPOSED REAR WALKOUT BASEMENT LOT TYPE
- PROPOSED DRIVEWAY
- OVERLAND FLOW ARROW
- ENGINEERED FILL LOT
- DENOTES LOTS WITH SUMP PUMP
- PHASE LINE
- INFILTRATION TRENCH
- SONKWAY PITS

NOTE!
ALL PROPOSED FENCING IS TO BE LOCATED ON PRIVATE PROPERTY

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPROV'D
1.	AR	OCT. 5, 11	ISSUED FOR 1ST SERVICING SUBMISSION		
2.	AR	DEC. 5, 11	ISSUED FOR 2ND SERVICING SUBMISSION		
3.	AR	DEC. 18, 11	ISSUED FOR 3RD SERVICING SUBMISSION - REGION OF PEEL		
4.	AR	JAN. 16, 12	ISSUED FOR PRE-SERVICING		
5.	AR	JUL. 10, 12	TOWNHOUSE BLOCK SUBMISSION		
6.	AR	JUL. 25, 12	TOWNHOUSE BLOCK APPROVAL		

APPROVED FOR CONSTRUCTION
THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE: Aug 1, 2012 APPROVED BY: M. Hill

BENCH MARK:
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK NO. 25. ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST. ELEVATION = 310.640

CONSULTANT

COLE ENGINEERING
70 HULLWOOD DRIVE, MISSISSAUGA, ON L4R 4T3
T: 905.881.6161 F: 905.881.6161

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PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 2
PART OF LOT 21, CONVESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-07003Cg
GRADING PLAN (SOUTH COMMERCIAL QUADRANT)

SCALE: 1:500	PROJECT No. L08-378-2
DESIGNED BY: AC	DRAWN BY: AL
CHECKED BY: AR	DATE: JUL. 22 2011
	DRAWING No. GR5

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix C WATERMAIN DESIGN Calculations
April 30, 2019

Appendix C WATERMAIN DESIGN CALCULATIONS

F = **220 · C · √A**

where,

F = the required fire flow in litres per minute

C = 0.6 for fire resistive construction (fully protected frame, floors, roof)
 = **0.60**

A = The total floor area in square metres (including all storeys, but excluding basements at least 50% below grade) in the building being considered. Note: for fire-resistive buildings, consider the two largest adjoining floors plus 50% of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected. If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor plus 25% of each of the two immediately adjoining floors. *

* vertical openings and exterior vertical communications properly protected (minimum one hour rating):

			Total Floor Area =	12,400	sq.m.
Level 1	1,713	sq.m.	(ground floor)		
Level 2	1,442	sq.m.	(adjoining floor)	@	50%
Level 3	1,442	sq.m.	(adjoining floor)	@	50%
Level 4	1,442	sq.m.	(adjoining floor)	@	50%
Level 5	1,283	sq.m.	(adjoining floor)	@	50%

A = **4,518** sq.m.

F = **220 · (C) · √(A)**
 = **8,872** Lpm
 = **9,000** Lpm (Rounded to the nearest 1,000 L/min)

The value obtained above may be reduced by as much as 25% for occupancies having a low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Apply a reduction of **25%** (Apartments/Dwellings = LOW HAZARD occupancy), or **-2,250** Lpm

F = **6,750** Lpm

The value obtained above may be reduced by up to 50% for complete automatic sprinkler protection depending upon the adequacy of the system. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. Additional credit of up to 10% may be granted if the water supply is standard for both the system and fire department hose lines required.

Apply a reduction of **30%** or **-2,025** Lpm

(per the OBC, a fully supervised NFPA 13 sprinkler system is required for this building)

Reduction = **-2,025** Lpm

To the value obtained, a percentage should be added for structures exposed within 45 metres:

North side	-	20	m	-	10%
East side	-	20	m	-	10%
South side	-	>45	m	-	0%
West side	-	25	m	-	10%
					30% (not to exceed 75%)

Increase = **2,025** Lpm

F = **6,750** Lpm
 -2,025
 2,025

6,750 Lpm
 = **7,000** Lpm (Rounded to the nearest 1,000 L/min)
 = **117** Lps
 = **1849** USGPM

**PRELIMINARY ESTIMATE of Required Fire Flow
As per Region of Peel Design Standards**

Fire Flow for Appartments

F	=	7,000	Lpm
	=	117	Lps
	=	1849	USGPM

Bldg

# of Units =		87	
Site Area		0.59	ha
Population =		280.25	@475 people per hectare
Avg Flow =		280	l/p/d
Peak Day =		1.82	L/s @ 2x factor per Region of Peel standards
Site Area		0.069	ha
Population =		4	@50 people per hectare
Avg Flow =		300	l/p/d
Peak Day =		0.02	L/s @ 1.4x factor per Region of Peel standards
Fire + Peak Day =		118.50	L/s
Watermain Dia =		200	mm
Watermain Area =		0.0314	m ²
Max Pipe Velocity =		3.77	m/s



Applied
Fire Technology Inc.
 Design • Consulting • Testing • Inspection

WATER SUPPLY TEST

Name of risk: File No.:
 Address: FALLS RD @ McELROY CT. Test by: AFTI
 Municipality: CALEDON DNT Date: DEC. 13. 2018

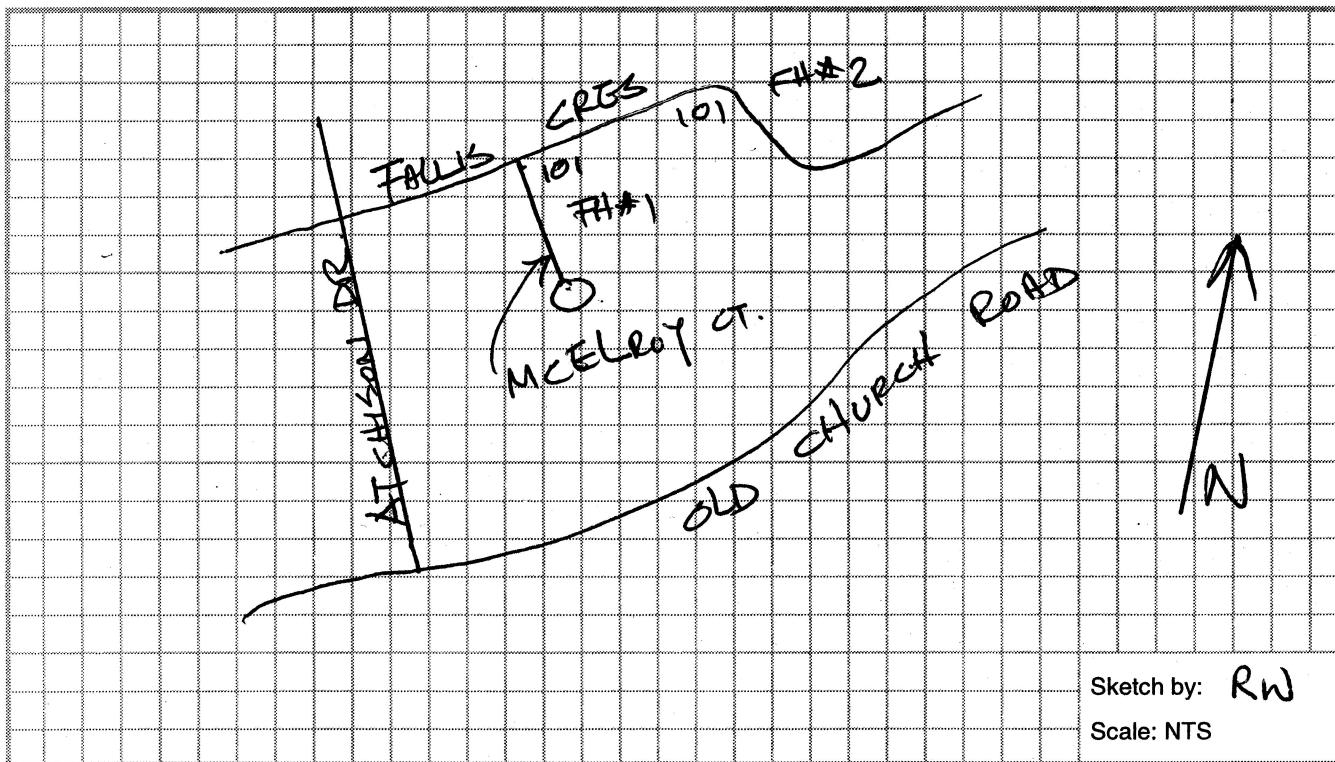
SYSTEM DATA:

Size of Main: 8" Dead End: - Two Ways: Loop:
 Source Reliable: YES If not explain:

TEST DATA:

Location of test fire hydrants; Residual: #1 FALLS CRGS AT McELROY CT
 Flow: #2 32 FALLS CRGS
 Static pressure: 93 psi Time: - A.M. 3:00 P.M.

Test No.	No. of Outlets	Orifice Size (in.)	Pitot Reading (psi)	Equivalent Flow gpm (U.S.)	Total Flow gpm (U.S.)	Residual Pressure (psi)	Comments
1	1	1 3/4	84	838	836	93	0.997
2	1	2 1/2	62	1470	1176	89	0.8
3	2	2 1/2	54	1371, 1371	2194	80	0.8
4							



Sketch by: RW
 Scale: NTS

Name and address of municipal authority who should receive a copy.

PUC

STATIC: 93 PSI
 (1) 836 USGPM @ 93 PSI
 (2) 1176 USGPM @ 89 PSI
 (3) 2194 USGPM @ 80 PSI

NAME OF RISK: _____ FILE NO.: _____
 STREET: FALLS ROAD AT McELROY CT.
 CITY: CALEDON EAST, ONT.

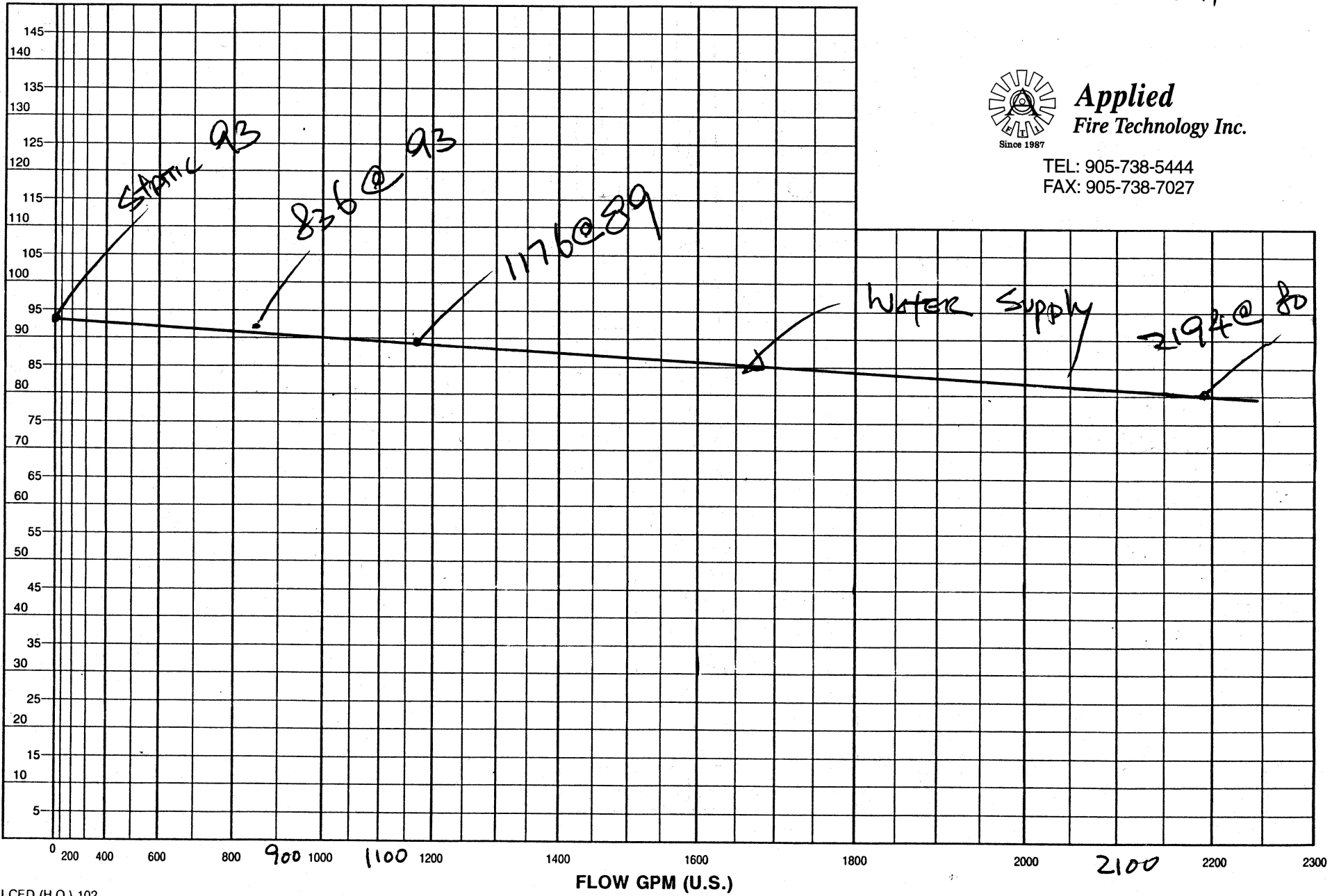
DATE: DEC. 13. 2018 BY: AETI



Applied
 Fire Technology Inc.

TEL: 905-738-5444
 FAX: 905-738-7027

PRESSURE = PSI





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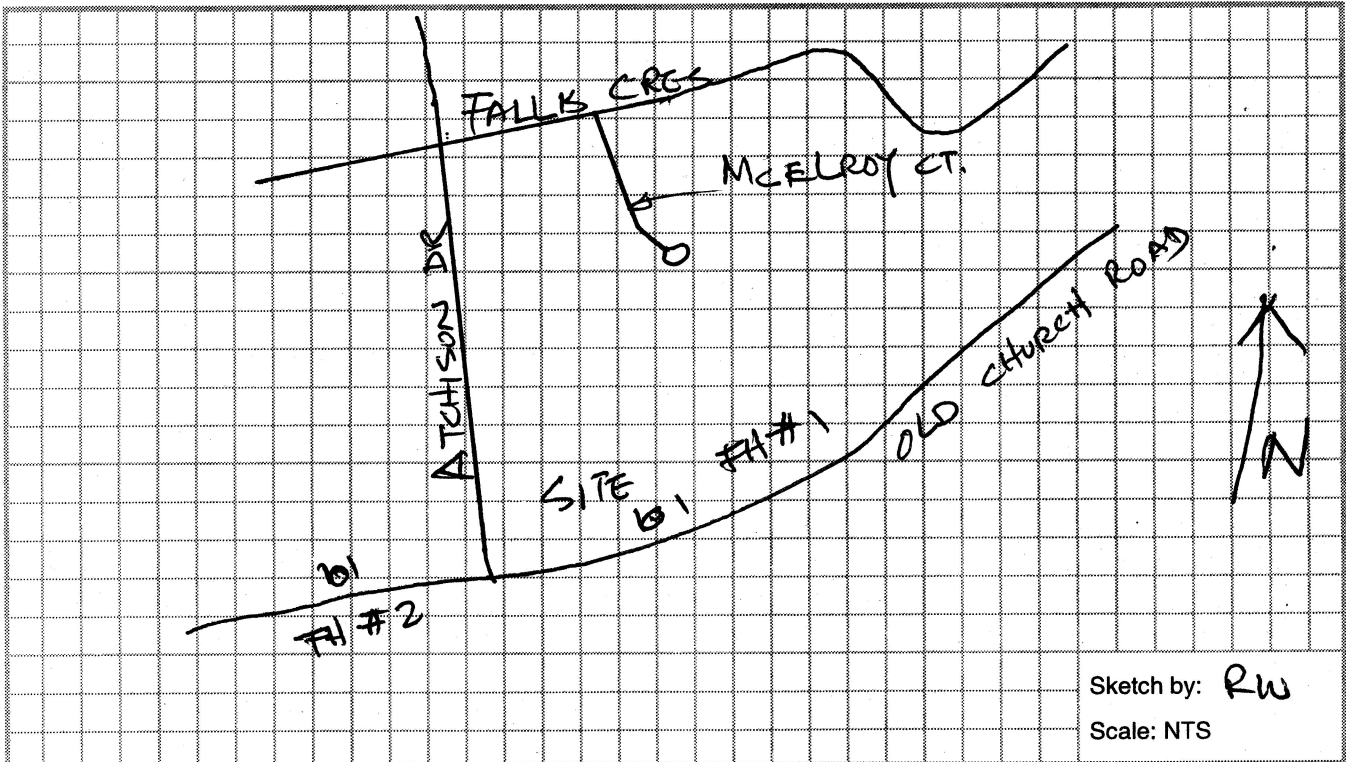
WATER SUPPLY TEST

Name of risk: File No.:
 Address: 6311 OLD CHURCH ROAD Test by: AFTI
 Municipality: CALEDON ONT. Date: DEC. 13, 2018

SYSTEM DATA:
 Size of Main: 12" Dead End: - Two Ways: ✓ Loop: ✓
 Source Reliable: YES If not explain:

TEST DATA:
 Location of test fire hydrants; Residual: #1 EAST SIDE OF ATCHISON DR ON OLD CHURCH ROAD
 Flow: #2 WEST SIDE OF ATCHISON DR ON OLD CHURCH ROAD
 Static pressure 93 psi Time: - A.M. 2:00 P.M.

Test No.	No. of Outlets	Orifice Size (in.)	Pitot Reading (psi)	Equivalent Flow gpm (U.S.)	Total Flow gpm (U.S.)	Residual Pressure (psi)	Comments
1	1	1 3/4	74	786	784	93	0.977
2	1	2 1/2	60	1445	1156	90	0.8
3	2	2 1/2	52	1340, 1345	2152	84	0.8
4							



Name and address of municipal authority who should receive a copy.
PUC

STATIC: 93 PSI
 (1) 784 USGPM @ 93 PSI
 (2) 1156 USGPM @ 90 PSI
 (3) 2152 USGPM @ 83 PSI

NAME OF RISK: _____ FILE NO.: _____
 STREET: OLD CHURCH ROAD
 CITY: CALGON EAST. ONT.

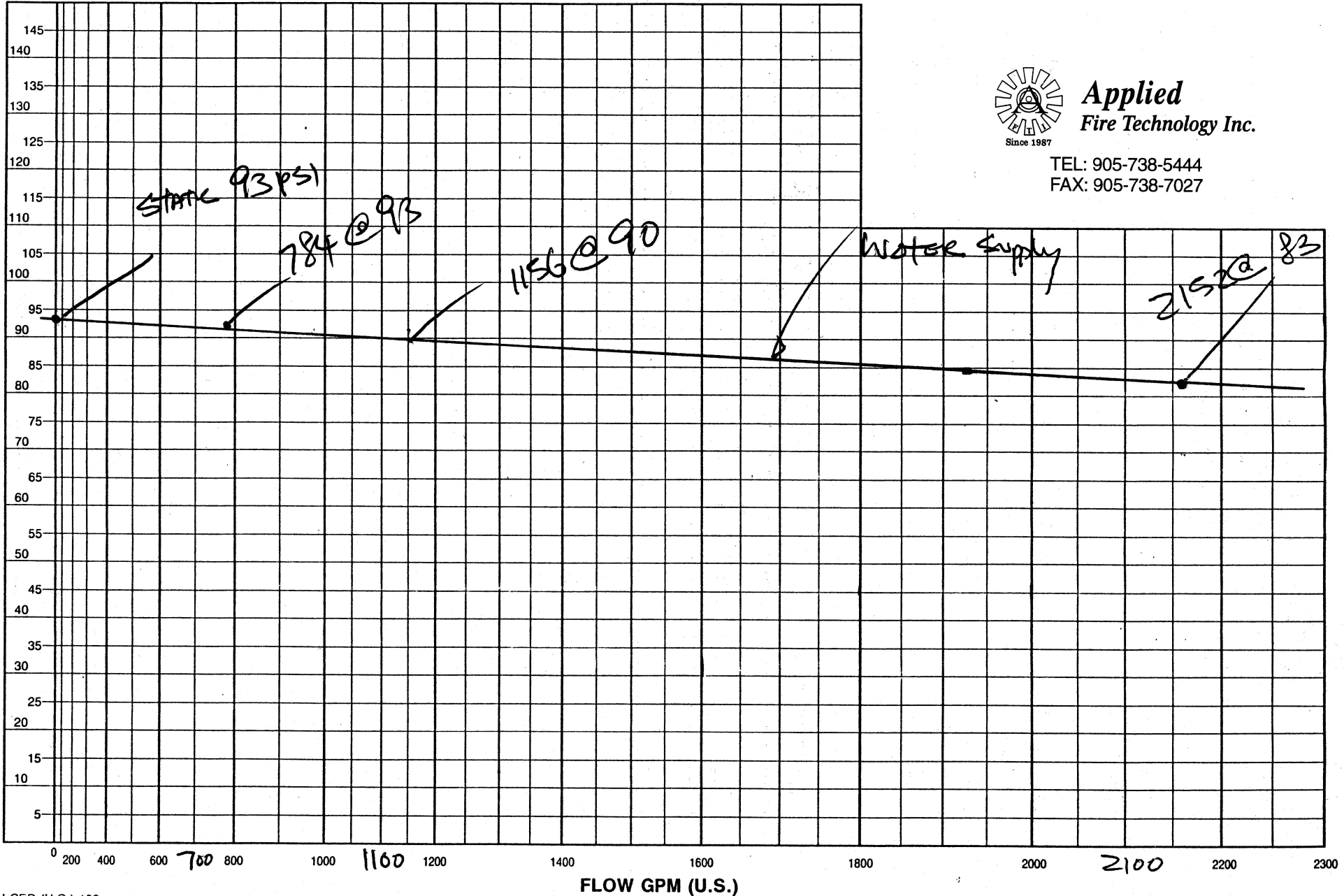
DATE: DEC 13 2018 BY: AFTI



Applied
 Fire Technology Inc.

TEL: 905-738-5444
 FAX: 905-738-7027

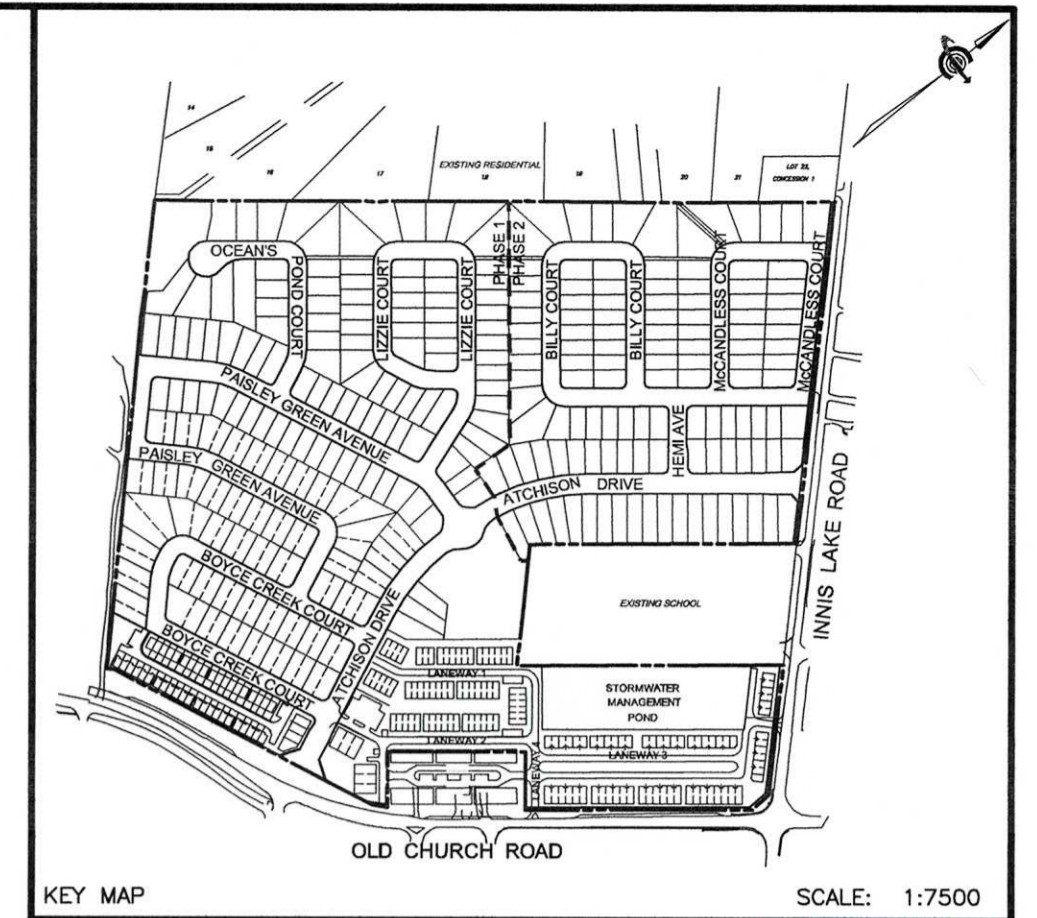
PRESSURE = PSI



FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix D Existing Information
April 30, 2019

Appendix D EXISTING INFORMATION



KEY MAP SCALE: 1:7500

- LEGEND
- EXISTING CONTOUR
 - EXISTING GRADE
 - PROPOSED GRADE
 - EXISTING STORM MANHOLE
 - EXISTING SANITARY MANHOLE
 - EXISTING SINGLE CATCH BASIN / DOUBLE CATCH BASIN
 - EXISTING DITCH INLET CATCH BASIN
 - PROPOSED SANITARY MANHOLE
 - PROPOSED SANITARY SEWER
 - PROPOSED SANITARY SERVICE
 - PROPOSED SANITARY DRAINAGE AREA
 - PROPERTY LINE
 - PROPERTY PHASE LINE



NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
1.	SG	AUG 7, 09	ISSUED FOR FIRST SUBMISSION REVIEW TO TOWN, REGION & TRCA		
2.	SG	FEB 17, 10	ISSUED FOR SECOND SUBMISSION REVIEW TO TOWN, REGION & TRCA		
3.	AR	AUG 06, 10	ISSUED FOR THIRD SUBMISSION REVIEW PHASE 1 APPROVAL		
4.	AR	SEPT 2, 10	PRE-SERVICING		

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE: Aug 10 2010 APPROVED BY: *[Signature]*

BENCH MARK:
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK No. 25, ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST.

CONSULTANT

70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
TEL: 905.477.1101 / 905.477.1101 F: 905.940.2066

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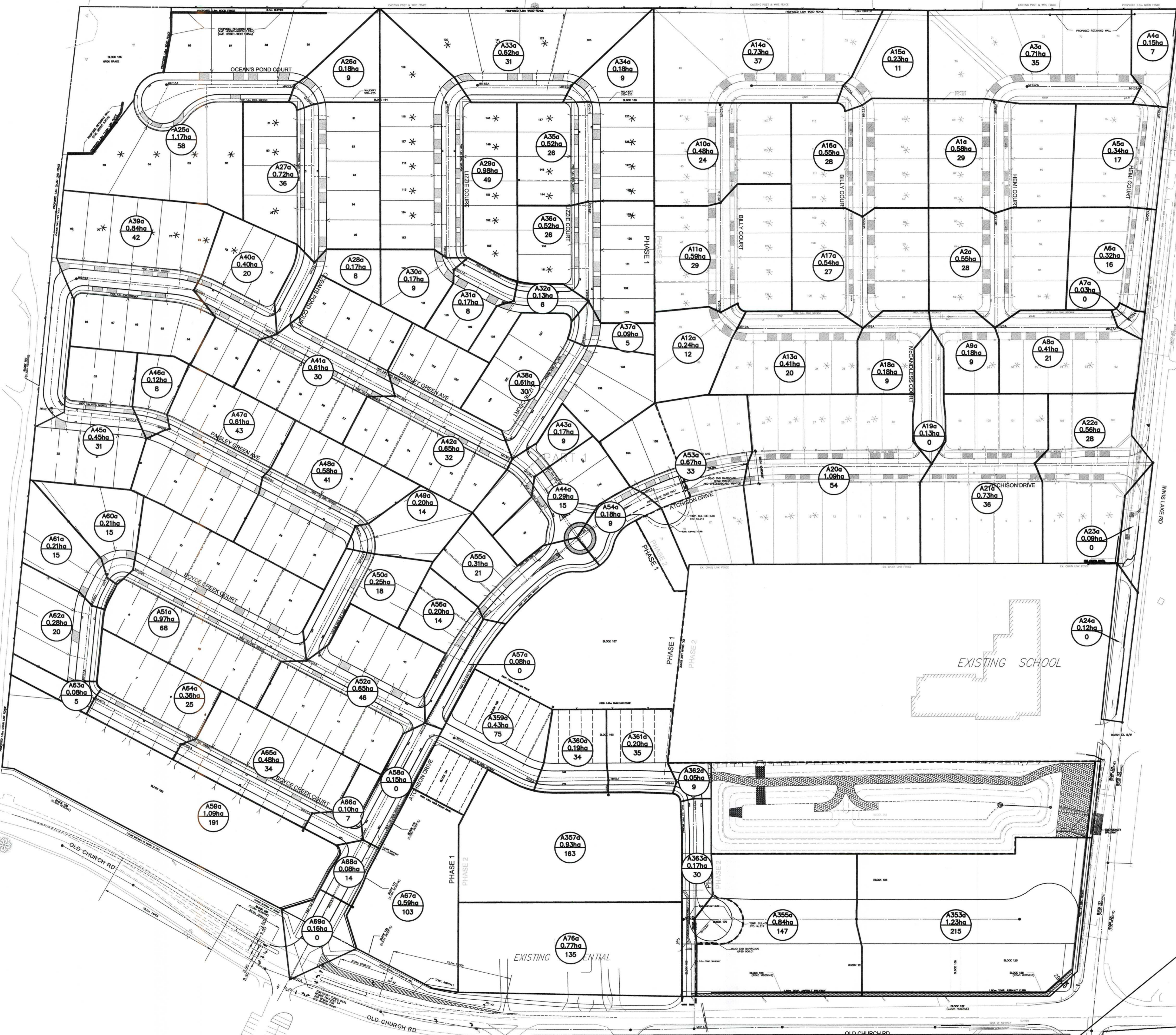
PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 1
PART OF LOT 21, CONCESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-07003C
SANITARY DRAINAGE AREA PLAN

SCALE: 1:1250	PROJECT No. L08-378
DESIGNED BY: DH	DRAWN BY: JM
CHECKED BY: AR	DATE: AUG. 10 2010
	DRAWING No. SAN1



EXISTING RESIDENTIAL



Region of Peel Sanitary Design Sheet

70 Valleywood, Markham, ON L3R 4T5
Phone: (905) 940-6161, Fax: (905)940-2064

Peaking Factor K = $1 + \frac{14}{4+P^{1/2}}$ P=Population in Thousands
 Average Flow = 365 l/ca/day
 Infiltration = 0.2 l/s/ha
 Minimum Velocity= 0.75 m/s
 Maximum Velocity= 3.5 m/s

Project: Chateaux of Caledon
 Project No: L08-378
 Date: 22-Dec-17
 Designed by: RM
 Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
McCANDLESS COURT	80A	33A	0.58	0.58	29	29	29	3.8	0.0005	0.0001	0.0006	67.9	3.5	250	0.111	2.27
McCANDLESS COURT	33A	26A	0.55	1.13	28	28	57	3.8	0.0009	0.0002	0.0011	70.0	2.0	250	0.084	1.71
McCANDLESS COURT	32A	31A	0.71	0.71	35	35	35	3.8	0.0006	0.0001	0.0007	69.8	2.5	250	0.094	1.92
McCANDLESS COURT	31A	30A	0.15	0.86	7	7	42	3.8	0.0007	0.0002	0.0008	16.0	2.5	250	0.094	1.92
McCANDLESS COURT	30A	29A	0.34	1.20	17	17	59	3.8	0.0009	0.0002	0.0012	63.0	3.0	250	0.103	2.10
McCANDLESS COURT	29A	28A	0.32	1.52	16	16	75	3.8	0.0012	0.0003	0.0015	63.0	3.0	250	0.103	2.10
McCANDLESS COURT	28A	27A	0.03	1.55	0	0	75	3.8	0.0012	0.0003	0.0015	14.9	0.5	250	0.042	0.86
McCANDLESS COURT	27A	26A	0.41	1.96	21	21	96	3.8	0.0015	0.0004	0.0019	75.3	0.5	250	0.042	0.86
McCANDLESS COURT	26A	17A	0.18	3.27	9	9	162	3.8	0.0026	0.0007	0.0033	39.0	0.5	250	0.042	0.86
BILLY COURT	25A	24A	0.73	0.73	37	37	37	3.8	0.0006	0.0001	0.0007	56.0	2.5	250	0.094	1.92
BILLY COURT	24A	23A	0.23	0.96	11	11	48	3.8	0.0008	0.0002	0.0010	16.7	4.0	250	0.119	2.42
BILLY COURT	23A	22A	0.55	1.51	28	28	76	3.8	0.0012	0.0003	0.0015	68.2	2.7	250	0.098	1.99
BILLY COURT	22A	18A	0.54	2.05	27	27	103	3.8	0.0017	0.0004	0.0021	68.2	1.5	250	0.073	1.48
BILLY COURT	79A	21A	0.48	0.48	24	24	24	3.8	0.0004	0.0001	0.0005	59.9	4.5	250	0.126	2.57
BILLY COURT	21A	20A	0.59	1.07	30	30	54	3.8	0.0009	0.0002	0.0011	67.1	1.0	250	0.059	1.21
BILLY COURT	20A	19A	0.24	1.31	12	12	66	3.8	0.0011	0.0003	0.0013	14.1	1.5	250	0.073	1.48
BILLY COURT	19A	18A	0.41	1.72	20	20	86	3.8	0.0014	0.0003	0.0017	77.0	2.0	250	0.084	1.71
BILLY COURT	18A	17A	0.18	3.95	9	9	198	3.8	0.0032	0.0008	0.0040	42.0	0.5	250	0.042	0.86
HEMI AVENUE	17A	15A	0.13	7.35	0	0	360	3.8	0.0058	0.0015	0.0072	83.3	0.5	250	0.042	0.86
ATCHISON DRIVE	14A	15A	1.09	1.09	54	54	54	3.8	0.0009	0.0002	0.0011	113.0	1.0	250	0.059	1.21
ATCHISON DRIVE	15A	73A	0.73	9.17	36	36	450	3.8	0.0072	0.0018	0.0091	63.1	0.5	250	0.042	0.86
ATCHISON DRIVE	73A	16A	0.56	9.73	28	28	478	3.8	0.0077	0.0019	0.0096	72.5	0.5	250	0.042	0.86
Innis Lake Road	16A	86A	0.09	9.82	0	0	478	3.8	0.0077	0.0020	0.0096	80.0	0.5	250	0.042	0.86
Innis Lake Road	86A	EX203A	0.12	9.94	0	0	478	3.8	0.0077	0.0020	0.0097	80.1	0.5	250	0.042	0.86
OCEAN'S POND COURT	53A	52A	1.17	1.17	58	58	58	3.8	0.0009	0.0002	0.0012	78.2	0.9	250	0.058	1.17
OCEAN'S POND COURT	52A	51A	0.18	1.35	9	9	67	3.8	0.0011	0.0003	0.0013	16.5	0.5	250	0.044	0.89
OCEAN'S POND COURT	51A	50A	0.72	2.07	36	36	103	3.8	0.0017	0.0004	0.0021	97.0	1.0	250	0.060	1.23



Region of Peel Sanitary Design Sheet

70 Valleywood, Markham, ON L3R 4T5
Phone: (905) 940-6161, Fax: (905)940-2064

Peaking Factor K = $1 + \frac{14}{4+P^{1/2}}$ P=Population in Thousands
 Average Flow = 365 l/ca/day
 Infiltration = 0.2 l/s/ha
 Minimum Velocity= 0.75 m/s
 Maximum Velocity= 3.5 m/s

Project: Chateaux of Caledon
 Project No: L08-378
 Date: 22-Dec-17
 Designed by: RM
 Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
OCEAN'S POND COURT	50A	37A	0.17	2.24	8	8	111	3.8	0.0018	0.0004	0.0022	49.2	1.0	250	0.059	1.21
LIZZIE COURT	49A	48A	0.98	0.98	49	49	49	3.8	0.0008	0.0002	0.0010	95.0	4.3	250	0.124	2.52
LIZZIE COURT	48A	47A	0.17	1.15	9	9	58	3.8	0.0009	0.0002	0.0012	8.2	4.0	250	0.119	2.42
LIZZIE COURT	47A	46A	0.17	1.32	8	8	66	3.8	0.0011	0.0003	0.0013	41.3	1.0	250	0.060	1.22
LIZZIE COURT	46A	41A	0.13	1.45	6	6	72	3.8	0.0012	0.0003	0.0014	45.8	0.6	250	0.046	0.93
LIZZIE COURT	45A	44A	0.62	0.62	31	31	31	3.8	0.0005	0.0001	0.0006	56.5	1.6	250	0.076	1.55
LIZZIE COURT	44A	43A	0.18	0.80	9	9	40	3.8	0.0006	0.0002	0.0008	13.7	2.6	250	0.095	1.93
LIZZIE COURT	43A	42A	0.52	1.32	26	26	66	3.8	0.0011	0.0003	0.0013	60.8	3.9	250	0.117	2.38
LIZZIE COURT	42A	41A	0.52	1.84	26	26	92	3.8	0.0015	0.0004	0.0018	61.0	3.9	250	0.117	2.38
LIZZIE COURT	41A	40A	0.09	3.38	5	5	169	3.8	0.0027	0.0007	0.0034	28.0	2.4	250	0.093	1.89
LIZZIE COURT	40A	35A	0.61	3.99	30	30	199	3.8	0.0032	0.0008	0.0040	81.0	0.5	250	0.042	0.85
PAISLEY GREEN AVENUE	39A	38A	0.84	0.84	42	42	42	3.8	0.0007	0.0002	0.0008	71.6	1.9	250	0.083	1.69
PAISLEY GREEN AVENUE	38A	37A	0.40	1.24	20	20	62	3.8	0.0010	0.0002	0.0012	57.5	1.4	250	0.070	1.43
PAISLEY GREEN AVENUE	37A	36A	0.61	4.09	30	30	203	3.8	0.0033	0.0008	0.0041	81.6	1.2	250	0.065	1.33
PAISLEY GREEN AVENUE	36A	35A	0.65	4.74	32	32	235	3.8	0.0038	0.0009	0.0047	81.8	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	35A	34A	0.17	8.90	9	9	443	3.8	0.0071	0.0018	0.0089	17.8	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	34A	12A	0.29	9.19	15	15	458	3.8	0.0074	0.0018	0.0092	45.3	0.8	250	0.051	1.05
PAISLEY GREEN AVENUE	61A	60A	0.45	0.45	31	31	31	3.8	0.0005	0.0001	0.0006	53.0	1.1	250	0.061	1.24
PAISLEY GREEN AVENUE	60A	59A	0.12	0.57	8	8	39	3.8	0.0006	0.0001	0.0007	20.4	0.5	250	0.043	0.88
PAISLEY GREEN AVENUE	59A	58A	0.61	1.18	43	43	82	3.8	0.0013	0.0002	0.0016	64.5	0.5	250	0.042	0.87
PAISLEY GREEN AVENUE	58A	57A	0.58	1.76	41	41	123	3.8	0.0020	0.0004	0.0023	64.0	0.6	250	0.044	0.91
PAISLEY GREEN AVENUE	57A	56A	0.20	1.96	14	14	137	3.8	0.0022	0.0004	0.0026	16.4	0.5	250	0.041	0.84
PAISLEY GREEN AVENUE	56A	54A	0.25	2.21	18	18	155	3.8	0.0025	0.0004	0.0029	75.1	0.5	250	0.042	0.85
BOYCE CREEK COURT	55A	54A	0.97	0.97	68	68	68	3.8	0.0011	0.0002	0.0013	119.5	1.0	250	0.059	1.21
BOYCE CREEK COURT	54A	10A	0.65	3.83	46	46	269	3.8	0.0043	0.0008	0.0051	80.9	0.5	250	0.043	0.87
ATCHISON DRIVE	14A2	13A	0.67	0.67	33	33	33	3.8	0.0005	0.0001	0.0007	65.7	1.0	250	0.060	
ATCHISON DRIVE	13A	12A	0.18	0.85	9	9	42	3.8	0.0007	0.0002	0.0008	49.3	0.5	250	0.042	0.87
ATCHISON DRIVE	12A	11A	0.31	10.35	21	21	521	3.8	0.0084	0.0021	0.0104	76.1	0.4	250	0.038	0.78



Region of Peel Sanitary Design Sheet

70 Valleywood, Markham, ON L3R 4T5
Phone: (905) 940-6161, Fax: (905)940-2064

Peaking Factor K = $1 + \frac{14}{4+P^{1/2}}$ P=Population in Thousands
 Average Flow = 365 l/ca/day
 Infiltration = 0.2 l/s/ha
 Minimum Velocity= 0.75 m/s
 Maximum Velocity= 3.5 m/s

Project: Chateaux of Caledon
 Project No: L08-378
 Date: 22-Dec-17
 Designed by: RM
 Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
ATCHISON DRIVE	11A	10A	0.51	10.86	30	30	551	3.8	0.0088	0.0022	0.0110	73.0	0.4	250	0.037	0.76
ATCHISON DRIVE	10A	64A	0.15	14.84	0	0	820	3.8	0.0132	0.0030	0.0161	80.9	0.4	250	0.039	0.79
Southwest Condo Block	81A	65A	1.91	1.91	191	191	191	3.8	0.0031	0.0004	0.0034	12.0	0.8	250	0.051	1.05
BOYCE CREEK COURT	70A	69A	0.42	0.42	30	30	30	3.8	0.0005	0.0001	0.0006	21.7	0.9	250	0.057	1.16
BOYCE CREEK COURT	69A	68A	0.28	0.70	20	20	50	3.8	0.0008	0.0001	0.0009	46.7	0.5	250	0.041	0.83
BOYCE CREEK COURT	68A	67A	0.08	0.78	5	5	55	3.8	0.0009	0.0002	0.0010	12.6	0.6	250	0.044	0.90
BOYCE CREEK COURT	67A	66A	0.36	1.14	25	25	80	3.8	0.0013	0.0002	0.0015	60.0	0.5	250	0.043	0.87
BOYCE CREEK COURT	66A	65A	0.48	1.62	34	34	114	3.8	0.0018	0.0003	0.0022	91.3	0.5	250	0.042	0.86
BOYCE CREEK COURT	65A	64A	0.10	3.63	7	7	312	3.8	0.0050	0.0007	0.0057	34.3	0.5	250	0.042	0.85
ATCHISON DRIVE	64A	93A	0.08	18.55	0	0	1132	3.8	0.0180	0.0037	0.0217	38.8	0.4	250	0.038	0.78
Block 163	9A	93A	0.59	0.59	103	103	103	3.8	0.0017	0.0001	0.0018	14.0	1.0	250	0.059	
ATCHISON DRIVE	93A	72A	0.16	19.30	0	0	1235	3.7	0.0195	0.0039	0.0234	39.0	0.4	250	0.038	0.77
FALLIS CR.	7A	6A	0.43	0.43	75	75	75	3.8	0.0012	0.0001	0.0013	60.9	1.0	250	0.059	
FALLIS CR.	6A	5A	0.19	0.62	34	34	109	3.8	0.0017	0.0001	0.0019	44.9	0.5	250	0.042	0.87
Block 122	8A	5A	0.84	0.84	146	146	146	3.8	0.0023	0.0002	0.0025	9.0	1.0	250	0.059	1.21
FALLIS CR.	5A	4A	0.20	1.66	35	35	290	3.8	0.0047	0.0003	0.0050	41.2	0.4	250	0.039	0.80
FALLIS CR.	4A	3A	0.05	1.71	0	0	290	3.8	0.0047	0.0003	0.0050	14.8	0.7	250	0.050	1.03
FALLIS CR.	3A	2A	0.17	1.88	0	0	290	3.8	0.0047	0.0004	0.0050	73.9	0.5	250	0.042	0.85
Fut. Development	92A	2A	0.93	0.93	163	163	163	3.8	0.0026	0.0002	0.0028	6.5	1.0	250	0.059	1.21
MACCARDY COURT	75A	74A	1.23	1.23	215	215	215	3.8	0.0035	0.0002	0.0037	99.9	0.5	250	0.042	0.86
MACCARDY COURT	74A	PLUG2	0.84	2.07	147	147	362	3.8	0.0058	0.0004	0.0062	67.9	0.5	250	0.042	0.86
MACCARDY COURT	PLUG2	2A	0.00	2.07	0	0	362	3.8	0.0058	0.0004	0.0062	31.5	0.5	250	0.042	0.86
OUTLET	2A	1A	0.00	4.88	0	0	815	3.8	0.0131	0.0010	0.0141	67.4	0.5	250	0.042	0.85



Region of Peel Sanitary Design Sheet

70 Valleywood, Markham, ON L3R 4T5
Phone: (905) 940-6161, Fax: (905)940-2064

Peaking Factor K = $1 + \frac{14}{4+P^{1/2}}$ P=Population in Thousands
Average Flow = 365 l/ca/day
Infiltration = 0.2 l/s/ha PHASE 2
Minimum Velocity= 0.75 m/s
Maximum Velocity= 3.5 m/s

Project: Chateaux of Caledon
Project No: L08-378
Date: 22-Dec-17
Designed by: RM
Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
Exist. Old Church Road	94	1A	6.70	6.70	335	335	335	3.8	0.0054	0.0013	0.0067	20.0	0.5	250	0.042	0.86
Exist. Old Church Road	1A	95	0.00	11.58	0	0	1150	3.8	0.0183	0.0023	0.0206	73.0	0.5	250	0.042	0.86
Exist. Old Church Road	95	96	1.34	12.92	52	52	1202	3.7	0.0190	0.0026	0.0216	93.6	0.5	250	0.042	0.86
Exist. Old Church Road	96	97	0.00	12.92	0	0	1202	3.7	0.0190	0.0026	0.0216	95.0	0.5	250	0.042	0.86



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Peaking Factor K =

$$\text{Average Flow} = \frac{1+}{4+P^{1/2}} \times \frac{14}{365} \text{ l/ca/day}$$

$$\text{Infiltration} = 0.2 \text{ l/s/ha}$$

$$\text{Minimum Velocity} = 0.75 \text{ m/s}$$

$$\text{Maximum Velocity} = 3.5 \text{ m/s}$$

P=Population in Thousands

PHASE 2

Project: Chateaux of Caledon

Project No: L08-378

Date: 13-Sep-11

Designed by: AC

Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
LIZZIE COURT	19A	18A	0.81	0.81	37	37	37	3.8	0.0006	0.0002	0.0008	80.6	5.0	250	0.133	2.70
LIZZIE COURT	18A	17A	0.35	1.16	20	20	57	3.8	0.0009	0.0002	0.0011	54.0	1.5	250	0.072	1.47
LIZZIE COURT	25A	24A	0.94	0.94	41	41	41	3.8	0.0007	0.0002	0.0008	69.9	#REF!	250	#REF!	#REF!
LIZZIE COURT	24A	23A	0.04	0.98	8	8	49	3.8	0.0008	0.0002	0.0010	17.5	3.0	250	0.103	2.11
LIZZIE COURT	23A	22A	0.35	1.33	15	15	64	3.8	0.0010	0.0003	0.0013	79.7	5.0	250	0.133	2.70
LIZZIE COURT	22A	21A	0.18	1.51	12	12	76	3.8	0.0012	0.0003	0.0015	49.2	1.2	250	0.064	1.30
LIZZIE COURT	21A	20A	0.02	1.53	0	0	76	3.8	0.0012	0.0003	0.0015	11.7	1.1	250	0.063	1.28
LIZZIE COURT	20A	17A	0.39	1.92	19	19	95	3.8	0.0015	0.0004	0.0019	76.5	0.8	250	0.051	1.05
LIZZIE COURT	17A	73A	0.30	3.38	15	15	167	3.8	0.0027	0.0007	0.0034	83.2	0.8	250	0.052	1.06
BILLY COURT	80A	79A	0.63	0.63	25	25	25	3.8	0.0004	0.0001	0.0005	56.1	2.2	250	0.088	1.79
BILLY COURT	79A	33A	0.15	0.78	15	15	40	3.8	0.0006	0.0002	0.0008	17.1	4.5	250	0.126	2.57
BILLY COURT	33A	32A	0.53	1.31	23	23	63	3.8	0.0010	0.0003	0.0013	55.4	4.6	250	0.127	2.59
BILLY COURT	32A	31A	0.58	1.89	32	32	95	3.8	0.0015	0.0004	0.0019	69.9	0.5	250	0.043	0.87
BILLY COURT	31A	30A	0.17	2.06	9	9	104	3.8	0.0017	0.0004	0.0021	15.9	0.6	250	0.047	0.96
BILLY COURT	30A	27A	0.43	2.49	21	21	125	3.8	0.0020	0.0005	0.0025	75.9	1.1	250	0.062	1.26
BILLY COURT	29A	28A	0.80	0.80	43	43	43	3.8	0.0007	0.0002	0.0009	86.2	4.9	250	0.132	2.69
BILLY COURT	28A	27A	0.46	1.26	20	20	63	3.8	0.0010	0.0003	0.0013	53.3	1.8	250	0.080	1.63
BILLY COURT	27A	26A	0.25	4.00	12	12	200	3.8	0.0032	0.0008	0.0040	59.9	0.5	250	0.041	0.83
BILLY COURT	26A	14A	0.00	4.00	0	0	200	3.8	0.0032	0.0008	0.0040	26.3	0.5	250	0.040	0.82
ATCHISON DRIVE	14A	15A	0.70	4.70	35	35	235	3.8	0.0038	0.0009	0.0047	73.4	0.6	250	0.044	0.90
ATCHISON DRIVE	15A	73A	0.91	5.61	45	45	280	3.8	0.0045	0.0011	0.0056	90.3	0.5	250	0.041	0.84
ATCHISON DRIVE	73A	16A	0.83	9.82	42	42	489	3.8	0.0079	0.0020	0.0098	87.3	0.5	250	0.042	0.86
INNIS LAKE ROAD	16A	87A	0.19	10.01	0	0	489	3.8	0.0079	0.0020	0.0099	12.1	1.0	250	0.059	1.21
INNIS LAKE ROAD	87A	86A	0.00	10.01	0	0	489	3.8	0.0079	0.0020	0.0099	72.9	0.5	250	0.041	0.84
INNIS LAKE ROAD	86A	EX203A	0.23	10.24	0	0	489	3.8	0.0079	0.0020	0.0099	79.4	0.5	250	0.043	0.87
OCEAN'S POND COURT	53A	52A	1.17	1.17	58	58	58	3.8	0.0009	0.0002	0.0012	78.6	1.0	250	0.059	1.21
OCEAN'S POND COURT	52A	51A	0.18	1.35	9	9	67	3.8	0.0011	0.0003	0.0013	16.7	1.0	250	0.059	1.21
OCEAN'S POND COURT	51A	50A	0.72	2.07	36	36	103	3.8	0.0017	0.0004	0.0021	97.0	2.0	250	0.084	1.71



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Peaking Factor K =

$$\text{Average Flow} = \frac{1+}{4+P^{1/2}} \times 365 \text{ l/ca/day}$$

$$\text{Infiltration} = 0.2 \text{ l/s/ha}$$

$$\text{Minimum Velocity} = 0.75 \text{ m/s}$$

$$\text{Maximum Velocity} = 3.5 \text{ m/s}$$

P=Population in Thousands

PHASE 2

Project: Chateaux of Caledon

Project No: L08-378

Date: 13-Sep-11

Designed by: AC

Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
OCEAN'S POND COURT	50A	37A	0.17	2.24	8	8	111	3.8	0.0018	0.0004	0.0022	49.5	0.8	250	0.051	1.05
McCANDLESS COURT	49A	48A	0.98	0.98	49	49	49	3.8	0.0008	0.0002	0.0010	95.0	4.3	250	0.124	2.52
McCANDLESS COURT	48A	47A	0.17	1.15	9	9	58	3.8	0.0009	0.0002	0.0012	8.6	3.0	250	0.103	2.10
McCANDLESS COURT	47A	46A	0.17	1.32	8	8	66	3.8	0.0011	0.0003	0.0013	41.5	1.0	250	0.059	1.21
McCANDLESS COURT	46A	41A	0.13	1.45	6	6	72	3.8	0.0012	0.0003	0.0014	45.9	0.5	250	0.042	0.86
McCANDLESS COURT	45A	44A	0.62	0.62	31	31	31	3.8	0.0005	0.0001	0.0006	57.7	1.5	250	0.073	1.48
McCANDLESS COURT	44A	43A	0.18	0.80	9	9	40	3.8	0.0006	0.0002	0.0008	14.2	2.5	250	0.094	1.92
McCANDLESS COURT	43A	42A	0.52	1.32	26	26	66	3.8	0.0011	0.0003	0.0013	61.0	4.0	250	0.119	2.42
McCANDLESS COURT	42A	41A	0.52	1.84	26	26	92	3.8	0.0015	0.0004	0.0018	61.0	4.0	250	0.119	2.42
McCANDLESS COURT	41A	40A	0.09	3.38	5	5	169	3.8	0.0027	0.0007	0.0034	27.5	2.0	250	0.084	1.71
McCANDLESS COURT	40A	35A	0.61	3.99	30	30	199	3.8	0.0032	0.0008	0.0040	82.0	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	39A	38A	0.84	0.84	42	42	42	3.8	0.0007	0.0002	0.0008	71.6	1.9	250	0.083	1.69
PAISLEY GREEN AVENUE	38A	37A	0.40	1.24	20	20	62	3.8	0.0010	0.0002	0.0012	57.5	1.4	250	0.070	1.43
PAISLEY GREEN AVENUE	37A	36A	0.61	4.09	30	30	203	3.8	0.0033	0.0008	0.0041	81.6	1.2	250	0.065	1.33
PAISLEY GREEN AVENUE	36A	35A	0.65	4.74	32	32	235	3.8	0.0038	0.0009	0.0047	81.8	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	35A	34A	0.17	8.90	9	9	443	3.8	0.0071	0.0018	0.0089	17.8	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	34A	12A	0.29	9.19	15	15	458	3.8	0.0074	0.0018	0.0092	45.3	0.8	250	0.051	1.05
PAISLEY GREEN AVENUE	61A	60A	0.45	0.45	31	31	31	3.8	0.0005	0.0001	0.0006	53.0	1.1	250	0.061	1.24
PAISLEY GREEN AVENUE	60A	59A	0.12	0.57	8	8	39	3.8	0.0006	0.0001	0.0007	20.2	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	59A	58A	0.61	1.18	43	43	82	3.8	0.0013	0.0002	0.0016	64.3	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	58A	57A	0.58	1.76	41	41	123	3.8	0.0020	0.0004	0.0023	64.3	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	57A	56A	0.20	1.96	14	14	137	3.8	0.0022	0.0004	0.0026	16.6	0.5	250	0.042	0.86
PAISLEY GREEN AVENUE	56A	54A	0.25	2.21	18	18	155	3.8	0.0025	0.0004	0.0029	75.2	0.5	250	0.042	0.86
BOYCE CREEK COURT	55A	54A	0.97	0.97	68	68	68	3.8	0.0011	0.0002	0.0013	120.0	1.0	250	0.059	1.21
BOYCE CREEK COURT	54A	10A	0.65	3.83	46	46	269	3.8	0.0043	0.0008	0.0051	82.3	0.5	250	0.042	0.86
ATCHISON DRIVE	14A2	13A	0.67	0.67	33	33	33	3.8	0.0005	0.0001	0.0007	66.0	1.0	250	0.059	1.21
ATCHISON DRIVE	13A	12A	0.18	0.85	9	9	42	3.8	0.0007	0.0002	0.0008	49.0	0.5	250	0.042	0.86
ATCHISON DRIVE	12A	11A	0.31	10.35	21	21	521	3.8	0.0084	0.0021	0.0104	76.0	0.4	250	0.038	0.77



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Peaking Factor K =

$$\text{Average Flow} = \frac{1+}{4+P^{1/2}} \times 365 \text{ l/ca/day}$$

$$\text{Infiltration} = 0.2 \text{ l/s/ha}$$

$$\text{Minimum Velocity} = 0.75 \text{ m/s}$$

$$\text{Maximum Velocity} = 3.5 \text{ m/s}$$

P=Population in Thousands

PHASE 2

Project: Chateaux of Caledon

Project No: L08-378

Date: 13-Sep-11

Designed by: AC

Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
ATCHISON DRIVE	11A	10A	0.51	10.86	30	30	551	3.8	0.0088	0.0022	0.0110	73.0	0.4	250	0.038	0.77
ATCHISON DRIVE	10A	64A	0.15	14.84	0	0	820	3.8	0.0132	0.0030	0.0161	81.0	0.4	250	0.038	0.77
Southwest Condo Block	81A	65A	0.00	0.00	0	0	0	3.8	0.0000	0.0000	0.0000	12.0	0.8	250	0.051	1.05
BOYCE CREEK COURT	70A	69A	0.42	0.42	30	30	30	3.8	0.0005	0.0001	0.0006	21.2	1.0	250	0.059	1.21
BOYCE CREEK COURT	69A	68A	0.28	0.70	20	20	50	3.8	0.0008	0.0001	0.0009	46.5	0.5	250	0.042	0.86
BOYCE CREEK COURT	68A	67A	0.08	0.78	5	5	55	3.8	0.0009	0.0002	0.0010	12.3	0.5	250	0.042	0.86
BLOCK 162	212A	211A	0.18	0.18	31	31	31	3.8	0.0005	0.0000	0.0005	25.1	1.2	250	0.065	1.32
BLOCK 162	211A	67A	0.00	0.18	0	0	31	3.8	0.0005	0.0000	0.0005	12.5	0.7	250	0.050	1.03
BOYCE CREEK COURT	67A	66A	0.54	1.50	57	57	143	3.8	0.0023	0.0003	0.0026	60.0	0.5	250	0.042	0.86
BOYCE CREEK COURT	66A	65A	0.68	2.18	69	69	212	3.8	0.0034	0.0004	0.0038	90.8	0.5	250	0.042	0.86
BOYCE CREEK COURT	65A	64A	0.10	2.28	7	7	219	3.8	0.0035	0.0005	0.0040	35.6	0.4	250	0.038	0.77
ATCHISON DRIVE	64A	EX93A	0.23	17.35	25	25	1064	3.8	0.0170	0.0035	0.0205	39.0	0.4	250	0.038	0.77
Block 163	9A	EX93A	0.59	0.59	103	103	103	3.8	0.0017	0.0001	0.0018	14.0	1.0	250	0.059	1.21
ATCHISON DRIVE	EX93A	208A	0.16	18.10	0	0	1167	3.8	0.0185	0.0036	0.0221	32.3	0.4	250	0.038	
OLD CHURCH ROAD BLVD	210A	209A	0.16	0.16	28	28	28	3.8	0.0004	0.0000	0.0005	72.1	1.0	250	0.060	
OLD CHURCH ROAD BLVD	209A	208A	0.22	0.38	39	39	67	3.8	0.0011	0.0001	0.0012	119.5	0.4	250	0.039	
ATCHISON DRIVE	208A	72A	0.00	18.48	0	0	1234	3.7	0.0195	0.0037	0.0232	24.2	0.4	250	0.038	
FALLIS CR.	7A	6A	0.43	0.43	75	75	75	3.8	0.0012	0.0001	0.0013	57.3	1.0	250	0.059	1.21
STREET 'A'	PLUG4	93A	0.93	163.00	163	163	163	3.8	0.0026	0.0326	0.0352	43.7	0.5	300	0.068	0.97
STREET 'A'	93A	94A	0.00	0.00	0	0	163	3.8	0.0026	0.0000	0.0026	46.0	0.8	300	0.085	1.21
STREET 'A'	94A	6A	0.00	0.00	0	0	163	3.8	0.0026	0.0000	0.0026	43.7	0.5	300	0.068	0.97
FALLIS CR.	6A	5A	0.19	0.62	34	34	272	3.8	0.0044	0.0001	0.0045	43.7	0.5	300	0.068	0.97
Block 122	8A	5A	0.00	0.00	0	0	0	3.8	0.0000	0.0000	0.0000	9.0	1.0	250	0.059	1.21
FALLIS CR.	5A	4A	0.20	0.82	35	35	307	3.8	0.0049	0.0002	0.0051	41.7	0.5	300	0.068	0.97
FALLIS CR.	4A	3A	0.05	0.87	0	0	307	3.8	0.0049	0.0002	0.0051	14.5	0.5	300	0.068	0.97
FALLIS CR.	3A	2A	0.17	1.04	0	0	307	3.8	0.0049	0.0002	0.0051	73.9	0.5	300	0.068	0.97



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PHASE 2

Project: Chateaux of Caledon

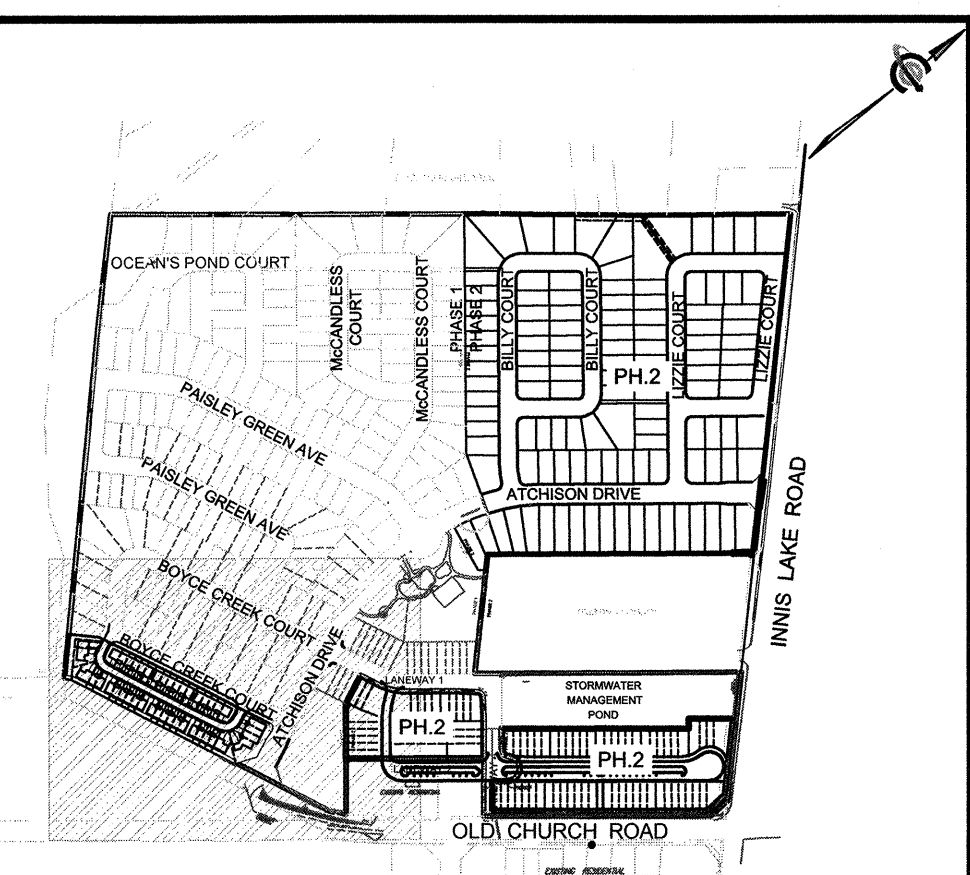
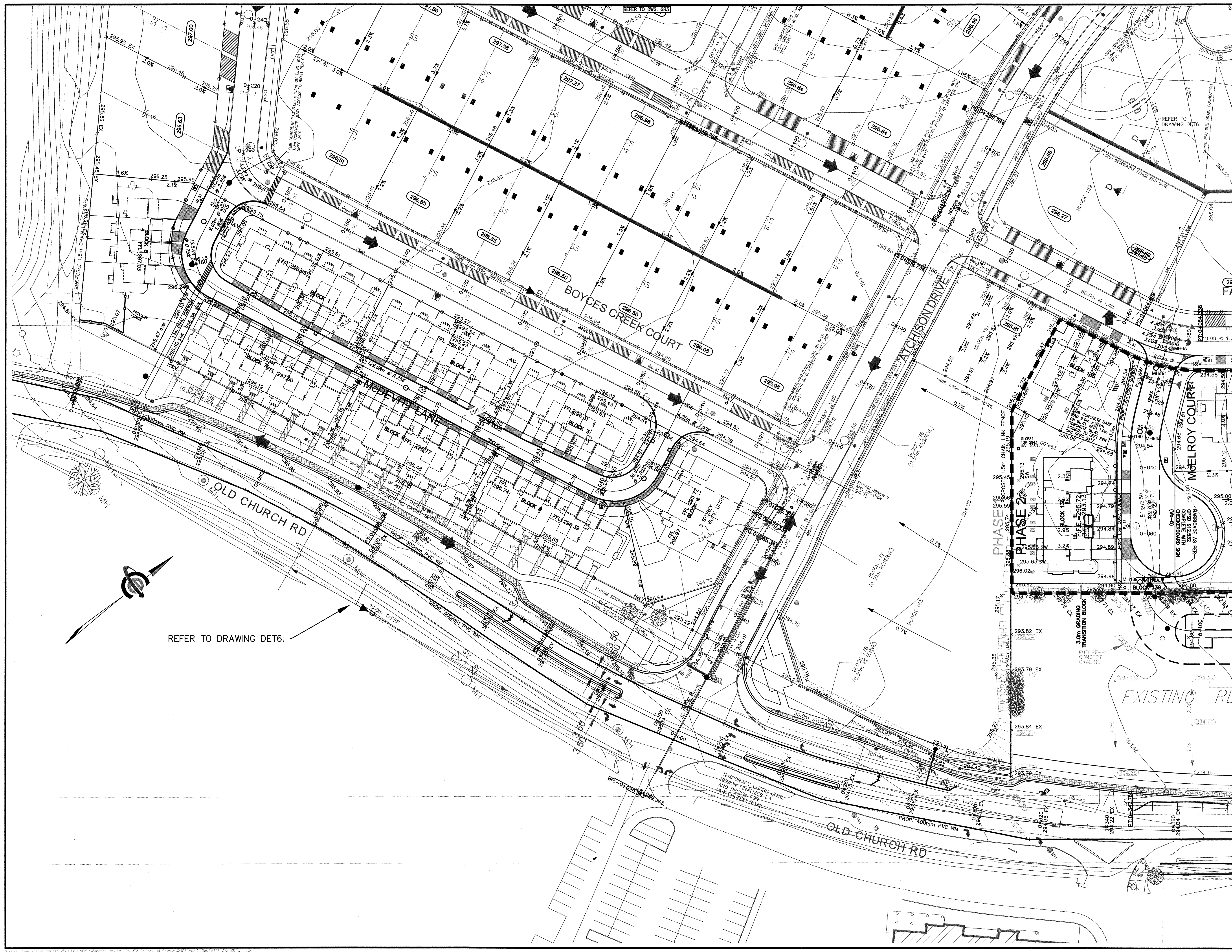
Project No: L08-378

Date: 13-Sep-11

Designed by: AC

Checked by: AR

STREET	MANHOLE		A AREA (ha)	TOTAL AREA (ha)	POPULATION PER	SECTION POPULATION	ACCUM. POPULATION	Peaking Factor K	Pop. Flow (m3/s)	Infil. Flow (m3/s)	Peak FLOW (m3/s)	SANITARY SEWER DESIGN INFORMATION				
	FROM	TO										LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)
Fut. Development	92A	2A	0.00	0.00	0	0	0	3.8	0.0000	0.0000	0.0000	6.5	1.0	250	0.059	1.21
MACCARDY COURT	75A	95A	0.48	0.48	85	85	85	3.8	0.0014	0.0001	0.0015	31.4	1.0	250	0.059	1.21
MACCARDY COURT	95A	74A	0.56	1.04	97	97	182	3.8	0.0029	0.0002	0.0031	68.8	0.5	250	0.041	0.84
MACCARDY COURT	74A	110A	0.79	1.83	137	137	319	3.8	0.0051	0.0004	0.0055	84.8	0.5	250	0.041	0.84
MACCARDY COURT	110A	111A	0.00	1.83	0	0	319	3.8	0.0051	0.0004	0.0055	5.6	1.1	250	0.062	1.26
MACCARDY COURT	111A	2A	0.25	2.08	43	43	362	3.8	0.0058	0.0004	0.0062	31.9	0.6	250	0.046	0.94
OUTLET	2A	1A	0.00	3.12	0	0	669	3.8	0.0107	0.0006	0.0114	66.9	0.5	300	0.068	0.97
Exist. Old Church Road	94	1A	6.70	6.70	335	335	335	3.8	0.0054	0.0013	0.0067	20.0	0.5	250	0.042	0.86
Exist. Old Church Road	1A	95	0.00	9.82	0	0	1004	3.8	0.0161	0.0020	0.0181	73.0	0.5	300	0.068	0.97
Exist. Old Church Road	95	96	1.34	11.16	52	52	1056	3.8	0.0169	0.0022	0.0191	93.6	0.5	300	0.068	0.97
Exist. Old Church Road	96	97	0.00	11.16	0	0	1056	3.8	0.0169	0.0022	0.0191	95.0	0.5	300	0.068	0.97



KEY MAP SCALE: 1:7500

LEGEND

- EXISTING CONTOUR
- EXISTING GRADE
- PROPOSED GRADE
- PROPOSED APRON ELEVATION
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING SINGLE CATCH BASIN / DOUBLE CATCH BASIN
- EXISTING DITCH INLET CATCH BASIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED SINGLE CATCHBASIN / DOUBLE CATCHBASIN (CD 'B')
- PROPOSED DITCH INLET CATCH BASIN
- PROPOSED WATER VALVE / CURB STOP
- PROPOSED FIRE HYDRANT
- PROPOSED WATERMAIN CROSS / TEE
- PROPOSED WATERMAIN CAP / REDUCER
- PROPOSED DITCH OR SWALE
- PROPERTY LINE
- EASEMENT LINE
- PROPOSED FRONT-SPLIT DRAINAGE LOT TYPE
- PROPOSED SIDE-SPLIT DRAINAGE LOT TYPE
- PROPOSED BACK-SPLIT DRAINAGE LOT TYPE
- PROPOSED REAR WALKOUT BASEMENT LOT TYPE
- PROPOSED DRIVEWAY
- OVERLAND FLOW ARROW
- ENGINEERED FILL LOT
- NOTES LOTS WITH SUMP PUMP
- PHASE LINE
- INFILTRATION TRENCH
- SONKWAY PITS

NOTE!
ALL PROPOSED FENCING IS TO BE LOCATED ON PRIVATE PROPERTY

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
1.	AR	OCT. 5, 11	ISSUED FOR 1ST SERVICING SUBMISSION		
2.	AR	DEC. 5, 11	ISSUED FOR 2ND SERVICING SUBMISSION		
3.	AR	DEC. 18, 11	ISSUED FOR 3RD SERVICING SUBMISSION - REGION OF PEEL		
4.	AR	JAN. 16, 12	ISSUED FOR PRE-SERVICING		
5.	AR	JUL. 10, 12	TOWNHOUSE BLOCK SUBMISSION		
6.	AR	JUL. 25, 12	TOWNHOUSE BLOCK APPROVAL		

APPROVED FOR CONSTRUCTION
THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.
DATE: Aug 1, 2012 APPROVED BY: M. Hill

BENCH MARK:
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK NO. 25, ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST. ELEVATION = 310.640

CONSULTANT

COLE ENGINEERING
70 HULLWOOD DRIVE, MISSISSAUGA, ON L4R 4T3
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LICENSED PROFESSIONAL ENGINEER
A.M. BARBOSA RIBEIRO
July 25, 2012
PROVINCE OF ONTARIO

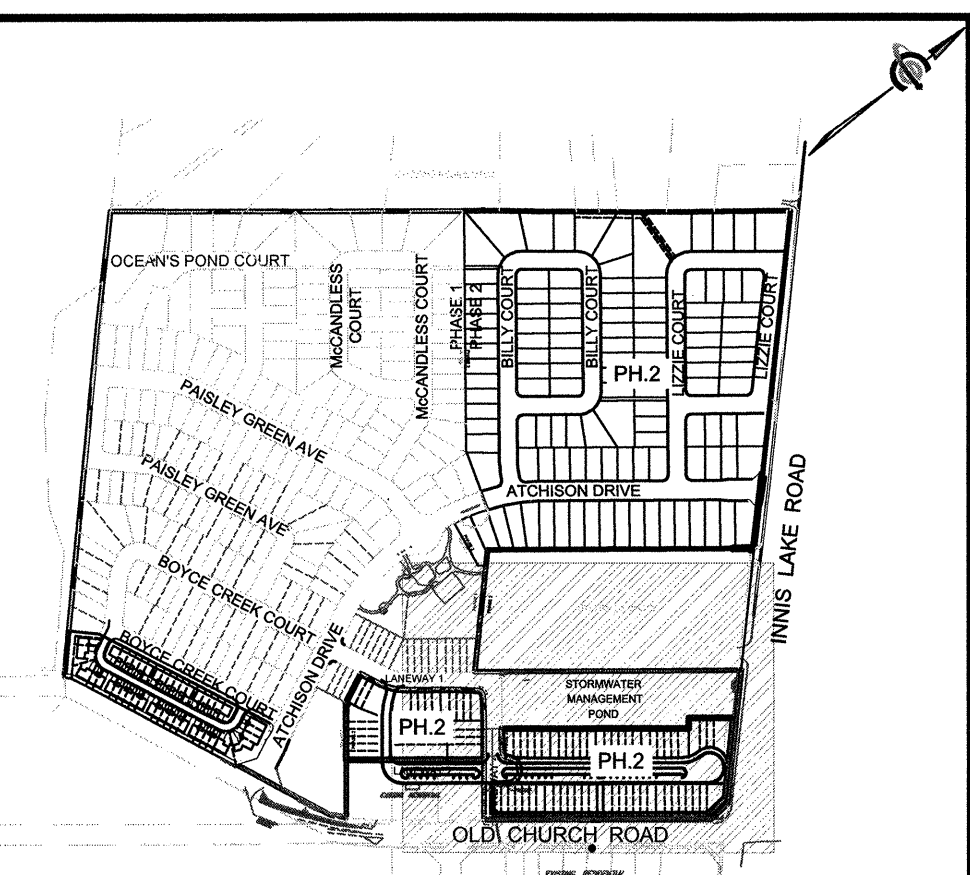
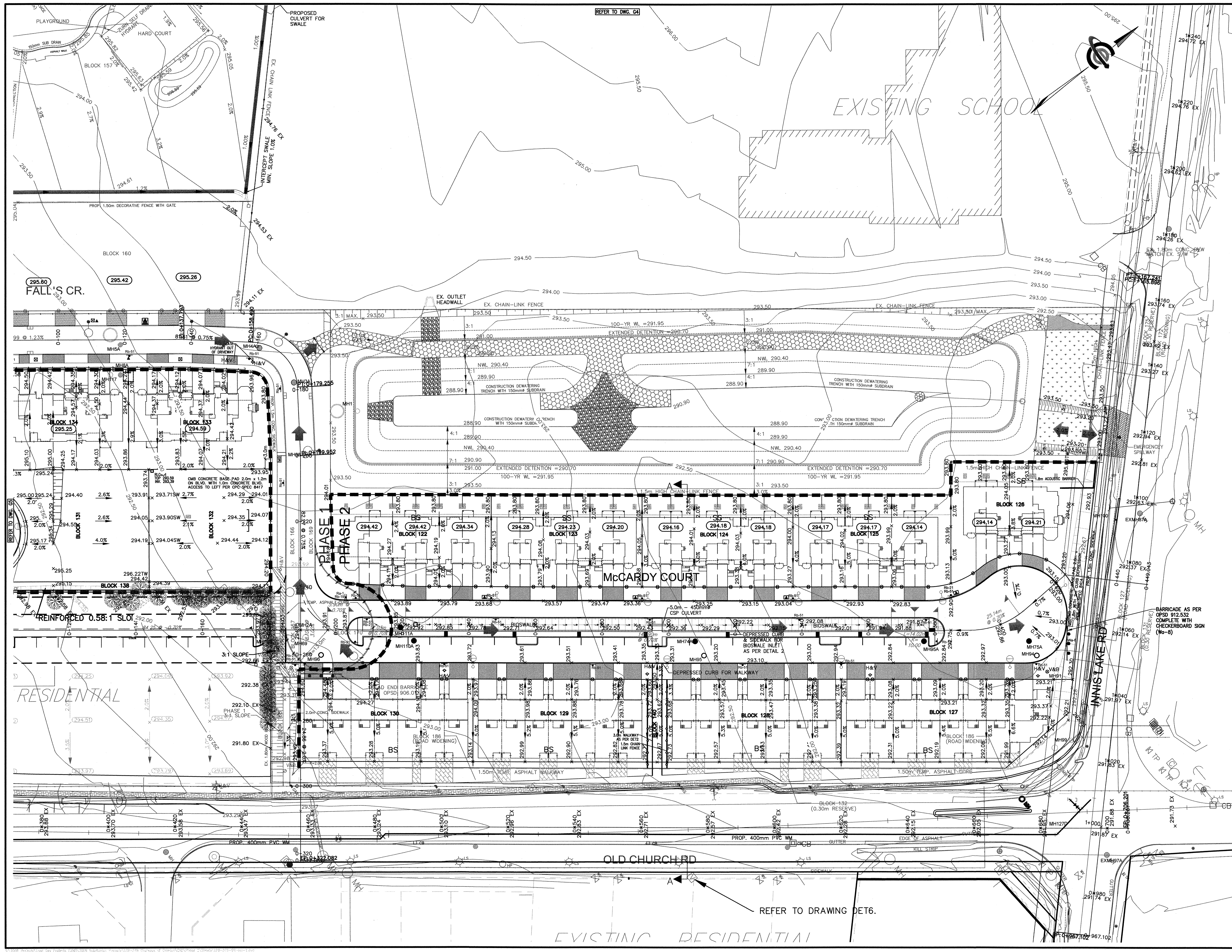
PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 2
PART OF LOT 21, CONVESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-07003C6
GRADING PLAN (SOUTH COMMERCIAL QUADRANT)

SCALE: 1:500	PROJECT No. L08-378-2
DESIGNED BY: AC	DRAWN BY: AL
CHECKED BY: AR	DATE: JUL. 22 2011
	DRAWING No. GR5



LEGEND

EXISTING CONTOUR	---
EXISTING GRADE	---
PROPOSED GRADE	---
PROPOSED APRON ELEVATION	---
EXISTING STORM MANHOLE	○
EXISTING SANITARY MANHOLE	○
EXISTING SINGLE CATCH BASIN / DOUBLE CATCH BASIN	□
EXISTING DITCH INLET CATCH BASIN	□
PROPOSED STORM MANHOLE	○
PROPOSED SANITARY MANHOLE	○
PROPOSED SINGLE CATCHBASIN / DOUBLE CATCHBASIN (CD 'B')	□
PROPOSED DITCH INLET CATCH BASIN	□
PROPOSED WATER VALVE / CURB STOP	+
PROPOSED FIRE HYDRANT	+
PROPOSED WATERMAIN CROSS / TEE	+
PROPOSED WATERMAIN CAP / REDUCER	+
PROPOSED DITCH OR SWALE	---
PROPERTY LINE	---
EASEMENT LINE	---
PROPOSED FRONT-SPLIT DRAINAGE LOT TYPE	FS
PROPOSED SIDE-SPLIT DRAINAGE LOT TYPE	SS
PROPOSED BACK-SPLIT DRAINAGE LOT TYPE	BS
PROPOSED REAR WALKOUT BASEMENT LOT TYPE	W/B
PROPOSED DRIVEWAY	---
OVERLAND FLOW ARROW	→
ENGINEERED FILL LOT	---
DENOTES LOTS WITH SUMP PUMP	SP
PHASE LINE	---
INFILTRATION TRENCH	---
SOAKAWAY PITS	---

NOTE!
ALL PROPOSED FENCING IS TO BE LOCATED ON PRIVATE PROPERTY

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPRO'D
1.	AR	OCT. 5, 11	ISSUED FOR 1ST SERVING SUBMISSION		
2.	AR	DEC. 5, 11	ISSUED FOR 2ND SERVING SUBMISSION		
3.	AR	DEC. 18, 11	ISSUED FOR 3RD SERVING SUBMISSION - REGION OF PEEL		
4.	AR	JAN. 16, 12	ISSUED FOR PRE-SERVING		
5.	AR	JUL. 10, 12	TOWNHOUSE BLOCK SUBMISSION		
6.	AR	JUL. 25, 12	TOWNHOUSE BLOCK APPROVAL		

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE: *Aug 1, 2012* APPROVED BY: *M. Hall*

BENCH MARK:
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM REGION OF PEEL BENCHMARK No. 25. ON THE NORTH FACE AT THE WEST CORNER OF A TWO STOREY CONCRETE BLOCK BUILDING LOCATED ON THE EAST SIDE OF AIRPORT ROAD APPROXIMATELY 0.32 KM NORTH OF THE NORTHERLY LIMIT OF CALEDON EAST.

CONSULTANT

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REGISTERED PROFESSIONAL ENGINEER
AL RABOYIA RABOYIA
JUL 27, 2012
PROVINCE OF ONTARIO

PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 2
PART OF LOT 21, CONCESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-07003C
**GRADING PLAN
(NORTH COMMERCIAL QUADRANT)**

SCALE: 1:500	PROJECT No. L08-378-2
DESIGNED BY: AC	DRAWN BY: AL
CHECKED BY: AR	DATE: JUL. 22 2011
	DRAWING No. GR6



71 Valleywood Drive, Markham, ON L3R 4T5
 Phone: (905) 940-6161, Fax: (905)940-2064

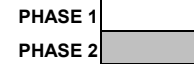
**PUBLIC WORKS AND ENGINEERING DEPARTMENT
 STORM DRAINAGE DESIGN CHART
 FOR CIRCULAR DRAINS FLOWING FULL**

Date: 22-Dec-17

Rainfall Intensity =

$(Tc+B)^c$
 A= 1593
 B= 11
 C= 0.8789

5yr Storm



Starting Tc = 15 min

Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/RM
 Checked by: AR

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION						DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	SECTION CONCENTRATION TIME	TIME OF CONCENTRATION
STREET	AREA ID	FROM		TO		COEFFICIENT			"AR" CUMUL. A°C	AREA CUMUL. A	INTENSITY (mm/hr)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
		MH	Sta.	MH	Sta.	A (ha)	C	A°C											
PHASE 1																			
OCEAN'S POND COURT EXTERNAL	A1	49	0+241.736	48	0+159.397	0.88	0.4	0.352	0.352	0.88	90.907	0.0889	84.84	0.99	375	0.1819	1.60	0.89	15.89
OCEAN'S POND COURT	A2	48	0+159.397	47	0+047.454	1.06	0.4	0.424	0.424	1.06	90.907	0.1071	70.50	5	300	0.2255	3.09	0.38	15.38
OCEAN'S POND COURT	A3	47	0+142.852	46	0+047.454	0.27	0.4	0.108	0.884	2.21	88.269	0.2167	14.31	1.18	450	0.3229	1.97	0.12	16.01
OCEAN'S POND COURT	A4	46	0+047.454	34	0+001.5	0.97	0.4	0.388	1.272	3.18	87.921	0.3107	95.19	1.07	525	0.4639	2.08	0.76	16.77
OCEAN'S POND COURT	A4	46	0+047.454	34	0+001.5	0.18	0.4	0.072	1.344	3.36	85.792	0.3203	45.35	1.19	525	0.4892	2.19	0.35	17.12
PAISLEY GREEN AVENUE	A5	36	0+357.134	35	0+286.576	0.87	0.4	0.348	0.348	0.87	90.907	0.0879	71.59	1.94	300	0.1404	1.93	0.62	15.62
RLCB	A6	RLCB8	0	35	0+286.576	0.28	0.4	0.112	0.112	0.28	90.907	0.0283	43.25	0.5	250	0.0438	0.87	0.83	15.83
RLCB	A7	RLCB9	0	35	0+286.576	0.23	0.4	0.092	0.092	0.23	90.907	0.0232	43.25	0.5	250	0.0438	0.87	0.83	15.83
PAISLEY GREEN AVENUE	A8	35	0+286.576	34	0+231.764	0.35	0.4	0.14	0.692	1.73	88.423	0.1700	55.28	1.46	375	0.2209	1.94	0.48	16.31
RLCB	A9	RLCB10	0	34	0+231.764	0.15	0.4	0.06	0.06	0.15	90.907	0.0152	43.25	0.61	250	0.0484	0.96	0.75	15.75
RLCB	A10	RLCB11	0	34	0+231.764	0.13	0.4	0.052	0.052	0.13	90.907	0.0131	43.25	0.61	250	0.0484	0.96	0.75	15.75
PAISLEY GREEN AVENUE	A11	34	0+231.764	33	0+149.934	0.6	0.4	0.24	2.388	5.97	84.865	0.5629	81.24	0.98	600	0.6338	2.17	0.62	17.74
RLCB	A12	RLCB12	0	33	0+149.934	0.16	0.4	0.064	0.064	0.16	90.907	0.0162	43.25	1.1	250	0.0650	1.28	0.56	15.56
RLCB	A13	RLCB13	0	33	0+149.934	0.2	0.4	0.08	0.08	0.2	90.907	0.0202	42.25	1	250	0.0620	1.22	0.58	15.58
PAISLEY GREEN AVENUE	A14	33	0+149.934	32	0+068.126	0.48	0.4	0.192	2.724	6.81	83.246	0.6299	81.81	1	675	0.8765	2.37	0.57	18.31
LIZZIE COURT	A15	45	0+316.96	44	0+412.559	0.35	0.4	0.14	0.14	0.35	109.677	0.0427	94.87	5.03	300	0.2261	3.10	0.51	10.51
LIZZIE COURT	A16	44	0+412.559	43	0+420.084	0.03	0.4	0.012	0.152	0.38	107.389	0.0453	7.16	4.61	300	0.2165	2.97	0.04	10.55
LIZZIE COURT	A17	43	0+420.084	42	0+460.424	0.09	0.4	0.036	0.188	0.47	107.213	0.0560	39.90	1.03	300	0.1023	1.40	0.47	11.02
LIZZIE COURT	A18	42	0+460.424	38	0+109.551	0.27	0.4	0.108	0.296	0.74	105.183	0.0865	42.37	0.73	375	0.1562	1.37	0.52	11.54
EXTERNAL		RLCB24	0	41	0+297.282	0.17	0.4	0.068	0.068	0.17	90.907	0.0172	39.07	1	250	0.0620	1.22	0.53	15.53
LIZZIE COURT	A19	41	0+297.282	40	0+240.532	0.57	0.4	0.228	0.296	0.74	89.303	0.0734	57.60	1.6	300	0.1275	1.75	0.55	16.08
LIZZIE COURT	A20	40	0+240.532	39	0+227.636	0.17	0.4	0.068	0.364	0.91	87.710	0.0887	11.36	3.52	300	0.1892	2.59	0.07	16.15
RLCB	A21	RLCB19	0	39	0+227.636	0.3	0.4	0.12	0.12	0.3	90.907	0.0303	39.07	1	250	0.0620	1.22	0.53	15.53
LIZZIE COURT	A22	39	0+227.636	38	0+109.551	0.65	0.4	0.26	0.744	1.86	87.503	0.1808	118.22	3.99	375	0.3652	3.20	0.61	16.77
LIZZIE COURT	A23	38	0+109.551	37	0+079.420	0.12	0.4	0.048	1.088	2.72	85.798	0.2593	30.03	2.4	450	0.4605	2.81	0.18	16.95
LIZZIE COURT	A24	37	0+079.420	32	0+001.374	0.54	0.4	0.216	1.304	3.26	85.316	0.3090	77.73	0.49	600	0.4482	1.82	0.71	17.66
PAISLEY GREEN AVENUE	A25	32	0+149.934	31	1.188	0.16	0.4	0.064	4.092	10.23	81.811	0.9299	22.10	1.27	750	1.3082	2.87	0.13	18.44
PAISLEY GREEN AVENUE	A26	31	0+068.126	7	1.188	0.2	0.4	0.08	4.172	10.43	81.497	0.9445	47.91	0.65	825	1.2067	2.19	0.36	18.81
PHASE 2																			
RLCB	A27	RLCB20	0	26	0+261.094	0.1	0.4	0.04	0.04	0.1	90.907	0.0101	42.08	1	250	0.0620	1.22	0.57	15.57
BILLY COURT	A28	26	0+261.094	25	0+193.983	0.49	0.4	0.196	0.236	0.59	89.182	0.0585	67.66	4.5	300	0.2139	2.93	0.38	15.96
RLCB	A29	RLCB21	0	25	0+193.983	0.17	0.4	0.068	0.068	0.17	90.907	0.0172	42.08	1	250	0.0620	1.22	0.57	15.57
BILLY COURT	A30	25	0+193.983	24	0+129.395	0.28	0.4	0.112	0.416	1.04	88.063	0.1018	64.25	1	375	0.1828	1.60	0.67	16.62
BILLY COURT	A31	24	0+129.395	23	0+116.604	0.05	0.4	0.02	0.436	1.09	86.190	0.1044	11.65	1	375	0.1828	1.60	0.12	16.75
BILLY COURT	A32	23	0+116.604	22	0+043.5	0.19	0.4	0.076	0.512	1.28	85.860	0.1221	72.76	1.5	375	0.2239	1.96	0.62	17.36
BILLY COURT	A33	30	0+227.398	29	0+332.407	0.42	0.4	0.168	0.168	0.42	90.907	0.0424	54.75	2.5	300	0.1594	1.82	0.50	15.50
BILLY COURT	A34	29	0+332.407	28	0+348.945	0.06	0.4	0.024	0.192	0.48	89.393	0.0477	14.18	5	300	0.2255	1.82	0.13	15.63
BILLY COURT	A35	28	0+348.945	27	0+415.323	0.83	0.4	0.332	0.524	1.31	89.010	0.1296	66.12	3	300	0.1746	1.82	0.61	16.24
RLCB	A36	RLCB22	0	27	0+415.323	0.17	0.4	0.068	0.068	0.17	90.907	0.0172	42.08	1	250	0.0620	1.82	0.39	15.39
BILLY COURT	A37	27	0+415.323	22	0+043.5	0.59	0.4	0.236	0.828	2.07	87.269	0.2007	66.11	1.5	450	0.3641	2.22	0.50	16.73
BILLY COURT	A38	22	0+043.5	13	0+001.5	0.09	0.4	0.036	1.376	3.44	84.216	0.3219	42.00	0.5	600	0.4527	1.55	0.45	17.81



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
STORM DRAINAGE DESIGN CHART
FOR CIRCULAR DRAINS FLOWING FULL**

Rainfall Intensity = **A** 5yr Storm

$$(Tc+B)^c$$

A= 1593
B= 11
C= 0.8789

PHASE 1
PHASE 2

Starting Tc = 15 min

Date: 22-Dec-17

Project: Chateaux of Caledon
Project No: L08-378
Designed by: AR/RM
Checked by: AR

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION						DRAINAGE AREA					RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	SECTION CONCENTRATION TIME (min)	TIME OF CONCENTRATION (min)
STREET	AREA ID	FROM		TO		COEFFICIENT			"AR" CUMUL.	AREA CUMUL.									
		MH	Sta.	MH	Sta.	A (ha)	C	A°C	A°C	A									
McCANDLESS COURT	A39	19	0+043.5	18	0+426.006	0.13	0.4	0.052	0.052	0.13	90.907	0.0131	10.26	1	300	0.1008	1.38	0.12	15.12
McCANDLESS COURT	A40	18	0+001.5	17	0+426.006	0.34	0.4	0.136	0.188	0.47	90.528	0.0473	65.99	3	300	0.1746	2.39	0.46	15.58
McCANDLESS COURT	A41	17	0	16	0+426.006	0.31	0.4	0.124	0.312	0.78	89.152	0.0773	57.47	3	300	0.1746	2.39	0.40	15.98
McCANDLESS COURT	A42	16	0+357.732	15	0+426.006	0.03	0.4	0.012	0.324	0.81	87.989	0.0792	12.85	0.5	375	0.1293	1.13	0.19	16.17
McCANDLESS COURT	A43	15	0+115.702	14	0+426.006	0.19	0.4	0.076	0.4	1	87.452	0.0972	70.98	0.5	375	0.1293	1.13	1.04	17.21
McCANDLESS COURT	A44	21	0+357.732	20	0+357.732	0.57	0.4	0.228	0.228	0.57	90.907	0.0576	65.00	3.5	300	0.1886	2.59	0.42	15.42
McCANDLESS COURT	A45	20	0+116.604	14	0+426.006	0.45	0.4	0.18	0.408	1.02	89.639	0.1016	70.00	2	300	0.1426	1.96	0.60	16.02
McCANDLESS COURT	A46	14	0+426.006	13	1.5	0.1	0.4	0.04	0.848	2.12	84.605	0.1993	45.00	0.5	525	0.3171	1.42	0.53	17.74
HEMI AVENUE	A47	13	0+087.75	10	1.5	0.14	0.4	0.056	2.28	5.7	83.056	0.5260	89.25	1.75	600	0.8470	2.90	0.51	18.33
ATCHISON DRIVE	A48	81A	0	12	0+668.683	0.05	0.4	0.02	0.02	0.05	90.907	0.0051	13.00	1	300	0.1008	1.38	0.16	15.16
RLCB	A49	RLCB18	0	12	0+655.722	0.33	0.4	0.132	0.132	0.33	90.907	0.0333	44.07	2	300	0.1426	1.96	0.38	15.38
ATCHISON DRIVE	A50	12	0+655.722	11	0+601.885	0.23	0.4	0.092	0.244	0.61	89.768	0.0608	53.80	0.4	450	0.1880	1.15	0.78	16.16
RLCB	A51	RLCB17	0	11	0+601.885	0.25	0.4	0.1	0.1	0.25	90.907	0.0253	44.26	2	250	0.0877	1.73	0.43	15.43
RLCB	A52	RLCB27	0	11	0+601.885	0.31	0.4	0.124	0.124	0.31	90.907	0.0313	56.89	1	250	0.0620	1.22	0.77	15.77
ATCHISON DRIVE	A53	11	0+601.885	10	0+543.885	0.18	0.4	0.072	0.54	1.35	87.490	0.1312	58.00	0.4	450	0.1880	1.15	0.84	17.00
RLCB	A54	RLCB16	0	10	0+543.885	0.38	0.4	0.152	0.152	0.38	90.907	0.0384	44.23	1.5	250	0.0759	1.50	0.49	15.49
RLCB	A55	RLCB15	0	10	0+543.885	0.26	0.4	0.104	0.104	0.26	90.907	0.0263	44.26	1	250	0.0620	1.22	0.60	15.60
ATCHISON DRIVE	A56	10	0+543.885	9	0+434.24	0.4	0.4	0.16	3.236	8.09	81.779	0.7351	109.60	0.3	825	0.8198	1.49	1.23	19.56
RLCB	A57	RLCB14	0	8	0+368.813	0.48	0.4	0.192	0.192	0.48	90.907	0.0485	53.02	2	250	0.0877	1.73	0.51	15.51
ATCHISON DRIVE	A58	9	0+434.24	8	0+368.813	0.36	0.4	0.144	3.38	8.45	78.881	0.7406	64.78	0.37	825	0.9104	1.65	0.65	20.21
RLCB	A59	RLCB13	0	8	0+368.813	0.03	0.4	0.012	0.012	0.03	90.907	0.0030	42.92	2.5	250	0.0980	1.94	0.37	15.37
ATCHISON DRIVE	A60	8	0+368.813	7	0+323.15	0.14	0.4	0.056	3.64	9.1	77.426	0.7829	45.72	0.33	825	0.8598	1.56	0.49	20.70
RLCB	A61	RLCB2	0	7	0+323.15	0.17	0.5	0.085	0.085	0.17	90.907	0.0215	50.00	1	250	0.0620	1.22	0.68	15.68
ATCHISON DRIVE (HE 975x1535)	A62	7	0+323.15	6	0+244.602	0.27	0.5	0.135	8.032	19.97	76.376	1.7040	78.38	0.21	1200	1.8629	1.60	0.82	21.52
RLCB	A63	RLCB6	0	6	0+244.602	0.1	0.5	0.05	0.05	0.1	90.907	0.0126	47.47	1	250	0.0620	1.22	0.65	15.65
RLCB	A64	RLCB7	0	6	0+244.602	0.22	0.5	0.11	0.11	0.22	90.907	0.0278	44.40	1	250	0.0620	1.22	0.60	15.60
ATCHISON DRIVE (HE 975x1535)	A65	6	0+244.602	5X	0+183.186	0	0.5	0	8.192	20.29	74.684	1.6995	61.14	0.2	1200	1.8180	1.56	0.65	22.17
ATCHISON DRIVE (HE 975x1535)	A65	5X	0+183.186	5	0+175.181	0	0.5	0	8.192	20.29	73.389	1.6700	11.30	0.2	1200	1.8180	1.56	0.12	22.29
RLCB	A66	RLCB5	0	57	0+446.454	0.26	0.5	0.13	0.13	0.26	90.907	0.0328	40.13	1	250	0.0620	1.22	0.55	15.55
PAISLEY GREEN AVENUE	A67+A68	57	0+446.454	56	0+495.154	0.43	0.5	0.215	0.345	0.69	89.260	0.0855	49.25	1.05	300	0.1033	1.42	0.58	16.13
PAISLEY GREEN AVENUE	A69	56	0+495.154	55	0+515.271	0.09	0.5	0.045	0.39	0.78	87.583	0.0949	20.37	0.49	375	0.1280	1.12	0.30	16.43
PAISLEY GREEN AVENUE	A70	55	0+515.271	54	0+578.911	0.21	0.5	0.105	0.495	0.99	86.734	0.1193	62.24	0.51	450	0.2123	1.29	0.80	17.23
PAISLEY GREEN AVENUE	A71	54	0+578.911	53	0+642.749	0.3	0.5	0.15	0.645	1.29	84.565	0.1515	64.43	0.49	450	0.2081	1.27	0.85	18.08
PAISLEY GREEN AVENUE	A72	53	0+642.749	52	0+659.183	0.13	0.5	0.065	0.71	1.42	82.397	0.1625	14.90	0.8	450	0.2659	1.62	0.15	18.23
PAISLEY GREEN AVENUE	A73	52	0+659.183	50	0+730.449	0.24	0.5	0.12	0.83	1.66	82.017	0.1891	70.88	0.52	450	0.2144	1.31	0.90	19.13
RLCB	A74	RLCB4	0	51	0+286.806	0.42	0.55	0.231	0.231	0.42	90.907	0.0583	39.08	1	250	0.0620	1.22	0.53	15.53
RLCB	A75	RLCB3	0	51	0+286.806	0.17	0.5	0.085	0.085	0.17	90.907	0.0215	39.08	1	250	0.0620	1.22	0.53	15.53



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
STORM DRAINAGE DESIGN CHART
FOR CIRCULAR DRAINS FLOWING FULL**

Rainfall Intensity = **A** 5yr Storm

$$(Tc+B)^c$$

A= 1593
B= 11
C= 0.8789

PHASE 1
PHASE 2

Starting Tc = 15 min

Date: 22-Dec-17

Project: Chateaux of Caledon
Project No: L08-378
Designed by: AR/RM
Checked by: AR

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION						DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	SECTION CONCENTRATION TIME	TIME OF CONCENTRATION
STREET	AREA ID	FROM		TO		COEFFICIENT			"AR" CUMUL.	AREA CUMUL. A	INTENSITY (mm/hr)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
		MH	Sta.	MH	Sta.	A	C	A^C	A^C										
RLCB	A76	RLCB26	0	51	0+286.806	0.19	0.5	0.095	0.095	0.19	90.907	0.0240	42.02	1.93	250	0.0861	1.70	0.41	15.41
RLCB	A77	RLCB25	0	51	0+286.806	0.16	0.5	0.08	0.08	0.16	90.907	0.0202	42.02	1.74	250	0.0818	1.62	0.43	15.43
BOYCE CREEK COURT	A78	51	0+286.806	50	0+406.367	0.39	0.5	0.195	0.686	1.33	89.303	0.1702	119.49	0.99	450	0.2958	1.80	1.10	16.64
RLCB	A79	RLCB23	0	50	0+406.367	0.21	0.5	0.105	0.105	0.21	90.907	0.0265	42.08	2.24	250	0.0928	1.83	0.38	15.38
BOYCE CREEK COURT	A80	50	0+406.367	5	0+175.181	0.36	0.5	0.18	1.801	3.56	79.850	0.3995	92.95	0.52	600	0.4617	1.58	0.98	20.11
BLOCK 162	A81	75	0	62	0+040.133	0.6	0.7	0.42	0.42	0.6	139.288	0.1625	9.00	1	525	0.4484	2.01	0.07	5.07
BOYCE CREEK COURT	A82	67	0+271.081	66	0+249.277	0.17	0.5	0.085	0.085	0.17	109.677	0.0259	22.63	0.97	300	0.0993	1.36	0.28	10.28
BOYCE CREEK COURT	A83	66	0+249.277	65	0+201.853	0.15	0.5	0.075	0.16	0.32	108.422	0.0482	48.06	0.66	300	0.0819	1.12	0.71	10.99
BOYCE CREEK COURT	A84	65	0+201.853	64	0+188.680	0.06	0.5	0.03	0.19	0.38	105.325	0.0556	14.06	0.56	300	0.0755	1.03	0.23	11.22
BOYCE CREEK COURT	A85	64	0+188.680	63	0+124.975	0.43	0.5	0.215	0.405	0.81	104.381	0.1174	65.21	0.56	375	0.1368	1.20	0.91	12.12
BOYCE CREEK COURT	A86	63	0+124.975	62	0+040.133	0.4	0.5	0.2	0.605	1.21	100.780	0.1694	83.65	0.49	450	0.2081	1.27	1.10	13.22
BOYCE CREEK COURT	A87	62	0+040.133	61	0+001.497	0.18	0.5	0.09	1.115	1.99	96.749	0.2997	40.08	0.6	525	0.3474	1.56	0.43	13.65
ATCHISON DRIVE	A88	74	0+048.714	61	0+087.866	0.2	0.7	0.14	0.14	0.2	90.907	0.0354	38.27	0.98	300	0.0998	1.37	0.47	15.47
BLOCK 163	A89	116	0+001.496	61	0+059.519	0.59	0.7	0.413	0.413	0.59	139.288	0.1598	10.80	1	375	0.1828	1.60	0.11	5.11
ATCHISON DRIVE (HE 975x1535)	A90	61X	0	5	0+059.519	0	0.5	0	1.793	3.03	87.001	0.4333	11.20	0.2	1200	1.8180	1.56	0.12	16.45
STREET I	A91	5	0+175.181	4	0+230.980	0.44	0.7	0.308	12.094	27.32	73.154	2.4576	66.65	0.2	1650	4.2502	1.93	0.58	22.87
STREET I	A92	4	0+175.927	3	0+097.540	0.2	0.7	0.14	12.234	27.52	72.059	2.4488	43.72	0.18	1650	4.0321	1.83	0.40	23.27
RLCB	A93	RLCB1	0	3	0+266.217	0.98	0.25	0.245	0.245	0.98	90.907	0.0619	38.89	2	250	0.0877	1.73	0.37	15.37
BLOCK 122	A94	117	0	3	0+266.217	0.93	0.7	0.651	0.651	0.93	139.288	0.2519	12.00	1	450	0.2973	1.81	0.11	5.11
STREET I		3	0+115.697	2	0+266.217	0	0	0	13.13	29.43	71.321	2.6012	43.39	0.28	1650	5.0289	2.28	0.32	23.58
STREET I	A95+A96	2	0+266.217	1	0+211.90	0.4	0.7	0.28	13.41	29.83	70.746	2.6353	31.93	0.22	1650	4.4576	2.02	0.26	23.85
STREET K	A97	72	0+266.217	71	0	0.65	0.7	0.455	0.455	0.65	139.288	0.176	86.40	0.4	450	0.1880	1.15	1.26	6.26
STREET K	A98	71	0+266.217	PLUG2	0	0.44	0.7	0.308	0.763	1.09	130.333	0.276	106.65	0.4	525	0.2836	1.27	1.40	7.66
STREET K		PLUG2	0+266.217	69	0	0	0	0	0.763	1.09	121.697	0.258	78.20	0.4	525	0.2836	1.27	1.03	8.68
FUTURE BLOCK	A99	110D	0+266.217	69	0	0.77	0.7	0.539	0.539	0.77	139.288	0.209	9.50	1.25	450	0.3324	2.03	0.08	5.08
STREET I		69	0+266.217	68	0	0	0.7	0	1.302	1.86	116.102	0.420	54.50	0.27	750	0.6032	1.32	0.69	9.37
STREET I		68	0+266.217	1	0	0	0.7	0	1.302	1.86	112.656	0.407	17.68	0.17	750	0.4786	1.05	0.28	9.65
STREET I		1	0+211.90	HW1	0	0	0.7	0	14.712	31.69	70.276	2.872	6.11	0.2	1650	4.2502	1.93	0.05	23.90
EXTERNAL FLOW FROM NORTH TO INNISLAKE PHASE 2																			
EASEMENT LOT 213-214	A100+EXT.	DITCH1	0+009.439	85	0+064.834	36.32	0.2	7.264	7.264	36.32	21.946	0.443	39.10	1.38	675	1.0296	2.79	0.23	120.23
EASEMENT LOT 213-214	A101 (CBMH)	85	0+064.834	84	0+134.119	0.38	0.4	0.152	7.416	36.7	21.911	0.451	69.29	0.427	675	0.5727	1.55	0.74	120.98
McCANDLESS COURT	A102	84	0+343.662	83	0+257.496	0.42	0.4	0.168	7.584	37.12	21.803	0.459	94.59	1.64	675	1.1225	3.04	0.52	121.50
INNIS LAKE ROAD		83	0+265.287	82	0+253.485	0	0.4	0	7.584	37.12	21.728	0.458	150.00	2.5	675	1.3859	3.75	0.67	122.16
INNIS LAKE ROAD		82	0+253.485	81	0+187.158	0	0.4	0	7.584	37.12	21.632	0.456	81.45	0.5	675	0.6198	1.68	0.81	122.97
INNIS LAKE ROAD		81	0+187.158	80	0+122.123	0	0.4	0	7.584	37.12	21.517	0.453	46.70	0.3	750	0.6358	1.39	0.56	123.53
DITCH CSP	A103+A104	CSP1	0+253.485	80	0	0.43	0.7	0.301	0.301	0.43	90.907	0.076	4.30	3	600	1.1089	3.80	0.02	15.02
INNIS LAKE ROAD		80	0+187.158	79	0	0	0.4	0	7.885	37.55	21.439	0.470	4.40	0.3	750	0.6358	1.39	0.05	123.58
DITCH INLET	A105	DITCH2	0+187.158	EXCSP1	0	0.33	0.4	0.132	0.132	0.33	90.907	0.033	5.40	1	250	0.0620	1.22	0.07	15.07
INNIS LAKE ROAD		79	0+122.123	EXCSP1	0	0	0.4	0	7.885	37.55	21.431	0.469	23.80	0.05	1200	0.9090	0.78	0.51	124.09
POND OUTLET																			



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
STORM DRAINAGE DESIGN CHART
FOR CIRCULAR DRAINS FLOWING FULL**

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$ 5yr Storm
A= 1593
B= 11
C= 0.8789

PHASE 1
PHASE 2

Project: Chateaux of Caledon
Project No: L08-378
Designed by: AR/RM
Checked by: AR

Date: 22-Dec-17

Starting Tc = 15 min

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION						DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW VELOCITY	SECTION CONCENTRATION TIME	TIME OF CONCENTRATION
STREET	AREA ID	FROM		TO		COEFFICIENT			"AR" CUMUL.	AREA CUMUL.	INTENSITY (mm/hr)	(m ³ /s)	(m)	(%)	(mm)	(m ³ /s)	(m/s)	(min)	(min)
		MH	Sta.	MH	Sta.	A (ha)	C	A*C	A*C	A									
POND OUTLET (4hr TC)		93	0+559.686	92	0+662.48	0	0.4	0	0	0	42.962	0.330	20.76	0.82	525	0.4061	1.82	0.19	50.19
EASEMENT POND OUTLET		92	0+662.48	91	0+668.480	0	0.4	0	0	0	42.845	0.330	82.31	0.39	750	0.7249	1.59	0.86	51.05
EASEMENT POND OUTLET		91	1+568.747	90	1+418.747	0	0	0	0	0	42.321	0.331	21.35	1.03	750	1.1781	2.58	0.14	51.19
OUTFALL		90	1+418.747	89	1+668.480	0	0	0	0	0	42.239	0.331	9.10	0.4	750	0.7342	1.61	0.09	51.28
OUTFALL		89	1+668.480	88	1+286.062	0	0	0	0	0	42.183	0.331	140.00	0.4	750	0.7342	1.61	1.45	52.73
OUTFALL		88	1+286.062	87	1+284.047	0	0	0	0	0	41.339	0.331	120.82	1.03	750	1.1781	2.58	0.78	53.51
OUTFALL		87	0	HW3	88.416	0	0	0	0	0	40.900	0.000	20.00	1.5	750	1.4217	3.12	0.11	53.62
EXSITING SCHOOL ON INNIS LAKE ROAD																			
EX. SCHOOL	A106	DICB	88.416	101	0+053.277	1.06	0.75	0.795	0.795	1.06	109.677	0.242	14.5	0.45	525	0.3008	1.35	0.18	10.18
INNIS LAKE	A107	101	88.416	100	0+053.277	0.14	0.7	0.098	0.893	1.2	139.288	0.346	47.70	0.4	600	0.4049	1.39	0.57	5.57
EX. SCHOOL	EXT.	CULVERT	1+668.480	100	0+053.277	0.43	0.75	0.323	0.3225	0.43	90.907	0.081	22.80	0.83	525	0.4085	1.83	0.21	15.21
INNIS LAKE		100	1+286.062	99	0+053.277	0	0	0	1.2155	1.63	90.273	0.305	76.40	0.4	600	0.4049	1.39	0.92	16.13
INNISLAKE CB	A108	CB	1+284.047	99	0+053.277	0.17	0.7	0.119	0.119	0.17	90.907	0.030	4.60	1	300	0.1008	1.38	0.06	15.06
INNISLAKE		99	0	98	0+053.277	0	0	0	1.3345	1.8	87.584	0.325	14.20	0.4	600	0.4049	1.39	0.17	16.30
PROP. STORM CATCHBASINS ON OLD CHURCH																			
OLD CHURCH	A109	CB4	0	CBMH2	0+053.277	0.34	0.7	0.238	0.238	0.34	139.288	0.092	89.90	0.4	375	0.1156	1.01	1.48	6.48
OLD CHURCH	A110	CBMH2	0	98	0+053.277	0.31	0.7	0.217	0.455	0.65	128.890	0.163	29.10	0.4	450	0.1880	1.15	0.42	6.90
INNIS LAKE OUTLET HEADWALL 2																			
INNIS LAKE		98	88.416	97	0+053.277	0	0	0	1.7895	2.45	87.103	0.433	28.70	0.45	675	0.5880	1.59	0.30	16.60
INNIS LAKE		97	88.416	HW2	0+053.277	0	0	0	1.7895	2.45	86.269	0.429	7.50	0.45	675	0.5880	1.59	0.08	16.67



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
 STORM DRAINAGE DESIGN CHART
 FOR CIRCULAR DRAINS FLOWING FULL**

Date: December 22, 2017
 Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/NL
 Checked by: AR

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$

5-Year
 A= 1593
 B= 11
 C= 0.8789
 Starting Tc = 15 min

PHASE 1
 PHASE 2

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION						DRAINAGE AREA					RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	SECTION CONCENTRATION TIME (min)	TIME OF CONCENTRATION (min)
STREET	AREA ID	FROM		TO		COEFFICIENT			"AR" CUMUL. A°C	AREA CUMUL. A									
		MH	Sta.	MH	Sta.	A (ha)	C	A°C											
OCEAN'S POND COURT		49	0+241.736	48	0+159.397	0.88	0.4	0.35	0.35	0.88	90.91	0.09	84.68	1.00	375.00	0.18	1.60	0.88	15.88
EXTERNAL	DINL2		0+159.397	48	0+142.852	1.06	0.4	0.42	0.42	1.06	90.91	0.11	70.50	5.00	300.00	0.23	3.09	0.38	15.38
OCEAN'S POND COURT		48	0+159.397	47	0+047.454	0.27	0.4	0.11	0.88	2.21	88.29	0.22	14.40	1.20	450.00	0.33	1.98	0.12	16.00
OCEAN'S POND COURT		47	0+142.852	46	0+047.454	0.97	0.4	0.39	1.27	3.18	87.94	0.31	94.20	1.00	525.00	0.45	2.01	0.78	16.78
OCEAN'S POND COURT		46	0+047.454	34	0+001.5	0.18	0.4	0.07	1.34	3.36	85.76	0.32	45.78	1.00	525.00	0.45	2.01	0.38	17.16
McCANDLESS COURT		45	0+316.96	44	0+412.559	0.35	0.4	0.14	0.14	0.35	109.68	0.04	95.00	5.00	300.00	0.23	3.09	0.51	10.51
McCANDLESS COURT		44	0+412.559	43	0+420.084	0.03	0.4	0.01	0.15	0.38	107.38	0.05	6.90	4.50	300.00	0.21	2.93	0.04	10.55
McCANDLESS COURT		43	0+420.084	42	0+460.424	0.09	0.4	0.04	0.19	0.47	107.21	0.06	39.93	1.00	300.00	0.10	1.38	0.48	11.03
McCANDLESS COURT		42	0+460.424	38	0+109.551	0.27	0.4	0.11	0.30	0.74	105.15	0.09	42.13	0.50	375.00	0.13	1.13	0.62	11.65
EXTERNAL	RLCB24		0	41	0+297.282	0.17	0.4	0.07	0.07	0.17	90.91	0.02	39.07	1.00	250.00	0.06	1.22	0.53	15.53
McCANDLESS COURT		41	0+297.282	40	0+240.532	0.57	0.4	0.23	0.30	0.74	89.30	0.07	56.41	1.50	300.00	0.12	1.69	0.56	16.09
McCANDLESS COURT		40	0+240.532	39	0+227.636	0.17	0.4	0.07	0.36	0.91	87.69	0.09	11.71	3.50	300.00	0.19	2.59	0.08	16.16
RLCB	RLCB19		0	39	0+227.636	0.3	0.4	0.12	0.12	0.30	90.91	0.03	39.07	1.00	250.00	0.06	1.22	0.53	15.53
McCANDLESS COURT		39	0+227.636	38	0+109.551	0.5	0.4	0.20	0.68	1.71	87.48	0.17	117.75	4.00	300.00	0.20	2.77	0.71	16.87
McCANDLESS COURT		38	0+109.551	37	0+079.420	0.1	0.4	0.04	1.02	2.55	85.52	0.24	29.48	2.50	375.00	0.29	2.54	0.19	17.07
McCANDLESS COURT		37	0+079.420	32	0+001.374	0.53	0.4	0.21	1.23	3.08	85.00	0.29	77.85	1.00	525.00	0.45	1.82	0.71	17.78
RLCB	RLCB20		0	16	0+225.65	0.1	0.4	0.04	0.04	0.10	90.91	0.01	42.20	2.50	250.00	0.10	1.94	0.36	15.36
BILLY COURT		16	0+225.65	15	0+133.31	0.8	0.4	0.32	0.36	0.90	89.80	0.09	91.85	4.89	300.00	0.22	3.06	0.50	15.86
RLCB	RLCB21		0	15	0+133.31	0.15	0.4	0.06	0.06	0.15	90.91	0.02	42.25	3.00	250.00	0.11	2.12	0.33	15.33
BILLY COURT		15	0+133.31	14	0+91.29	0	0	0.00	0.42	1.05	88.33	0.10	42.24	1.37	375.00	0.21	1.88	0.37	16.24
BILLY COURT		22	0+246.51	21	0+301.52	0	0	0.00	0.00	0.00	90.91	0.00	54.52	2.07	300.00	0.15	1.99	0.46	15.46
BILLY COURT		21	0+301.52	20	0+318.13	0.21	0.4	0.08	0.08	0.21	89.53	0.02	14.87	5.25	300.00	0.23	3.17	0.08	15.54
RLCB	RLCB23		0	20	0+318.13	0.53	0.4	0.21	0.21	0.53	90.91	0.05	42.51	2.00	250.00	0.09	1.73	0.41	15.41
BILLY COURT		20	0+318.13	19	0+372.97	0.42	0.4	0.17	0.46	1.16	89.29	0.12	54.69	4.64	300.00	0.22	2.98	0.31	15.84
RLCB	RLCB25		0	19	0+372.97	0.16	0.4	0.06	0.06	0.16	90.91	0.02	41.01	2.00	250.00	0.09	1.73	0.39	15.39
RLCB	RLCB29		0	19	0+372.97	0.18	0.4	0.07	0.07	0.18	90.91	0.02	42.49	2.00	250.00	0.09	1.73	0.41	15.41
BILLY COURT		19	0+372.97	18	0+441.39	0.37	0.4	0.15	0.75	1.87	88.40	0.18	68.06	0.66	450.00	0.24	1.47	0.77	16.61
BILLY COURT		18	0+441.39	17	0+456.7	0	0.4	0.00	0.75	1.87	86.23	0.18	13.38	1.05	450.00	0.30	1.86	0.12	16.73
RLCB	RLCB24		0	17	0+456.7	0.27	0.4	0.11	0.11	0.27	90.91	0.03	26.54	1.00	250.00	0.06	1.22	0.36	15.36
BILLY COURT		17	0+456.7	14	0+91.29	0.41	0.4	0.16	1.02	2.55	85.90	0.24	71.65	0.61	525.00	0.35	1.57	0.76	17.49
RLCB	RLCB30		0	14	0+91.29	0.26	0.4	0.10	0.10	0.26	90.91	0.03	29.52	1.50	250.00	0.08	1.50	0.33	15.33
BILLY COURT		14	0+91.29	13	0+30.56	0.42	0.4	0.17	1.71	4.28	83.88	0.40	61.20	0.92	600.00	0.61	2.11	0.48	17.98
BILLY COURT		13	0+30.56	9	0+425.33	0.43	0.4	0.17	1.88	4.71	82.64	0.43	31.48	0.51	675.00	0.63	1.70	0.31	18.29



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
 STORM DRAINAGE DESIGN CHART
 FOR CIRCULAR DRAINS FLOWING FULL**

Date: December 22, 2017
 Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/NL
 Checked by: AR

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$

5-Year
 A= 1593
 B= 11
 C= 0.8789

PHASE 1
 PHASE 2

Starting Tc = 15 min

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION	DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW	SECTION CONCENTRATION	TIME OF CONCENTRATION				
	COEFFICIENT	"AR"	AREA															
LIZZIE COURT	25	0+218.97	24	0+136.77	0.63	0.4	0.25	0.25	0.63	90.91	0.06	82.01	4.94	300.00	0.22	3.07	0.44	15.44
LIZZIE COURT	24	0+136.77	23	0+87.75	0.35	0.4	0.14	0.39	0.98	89.56	0.10	49.32	1.58	300.00	0.13	1.74	0.47	15.92
RLCB	RLCB28	0	29	0+335.75	0.25	0.4	0.10	0.10	0.25	90.91	0.03	44.32	2.50	250.00	0.10	1.94	0.38	15.38
LIZZIE COURT	29	0+335.75	28	0+405.75	0.66	0.4	0.26	0.36	0.91	89.75	0.09	69.50	4.50	300.00	0.21	2.93	0.39	15.78
LIZZIE COURT	28	0+405.75	27	0+453.74	0	0	0.00	0.36	0.91	88.59	0.09	47.58	1.11	300.00	0.11	1.46	0.54	16.32
LIZZIE COURT	27	0+453.74	26	0+464.55	0.32	0.4	0.13	0.49	1.23	87.03	0.12	9.49	0.84	375.00	0.17	1.47	0.11	16.43
RLCB	RLCB26	0	26	0+464.55	0.27	0.4	0.11	0.11	0.27	90.91	0.03	26.35	2.00	250.00	0.09	1.73	0.25	15.25
LIZZIE COURT	26	0+464.55	23	0+87.75	0.1	0.4	0.04	0.64	1.60	86.73	0.15	73.38	0.53	450.00	0.22	1.32	0.93	17.36
LIZZIE COURT	23	0+87.75	11	0+588.89	0.19	0.4	0.08	1.11	2.77	84.23	0.26	89.35	0.47	525.00	0.31	1.38	1.08	18.44
PAISLEY GREEN AVENUE	36	0+357.134	35	0+286.576	0.87	0.4	0.35	0.35	0.87	90.91	0.09	71.67	2.00	300.00	0.14	1.96	0.61	15.61
RLCB	RLCB8	0	35	0+286.576	0.28	0.4	0.11	0.11	0.28	90.91	0.03	43.25	0.50	250.00	0.04	0.87	0.83	15.83
RLCB	RLCB9	0	35	0+286.576	0.23	0.4	0.09	0.09	0.23	90.91	0.02	43.25	0.50	250.00	0.04	0.87	0.83	15.83
PAISLEY GREEN AVENUE	35	0+286.576	34	0+231.764	0.35	0.4	0.14	0.69	1.73	88.42	0.17	55.28	1.46	375.00	0.22	1.94	0.48	16.31
RLCB	RLCB10	0	34	0+231.764	0.15	0.4	0.06	0.06	0.15	90.91	0.02	43.25	0.61	250.00	0.05	0.96	0.75	15.75
RLCB	RLCB11	0	34	0+231.764	0.13	0.4	0.05	0.05	0.13	90.91	0.01	43.25	0.61	250.00	0.05	0.96	0.75	15.75
PAISLEY GREEN AVENUE	34	0+231.764	33	0+149.934	0.6	0.4	0.24	2.39	5.97	84.74	0.56	81.24	0.98	600.00	0.63	2.17	0.62	17.79
RLCB	RLCB12	0	33	0+149.934	0.16	0.4	0.06	0.06	0.16	90.91	0.02	43.25	1.10	250.00	0.07	1.28	0.56	15.56
RLCB	RLCB13	0	33	0+149.934	0.2	0.4	0.08	0.08	0.20	90.91	0.02	42.25	1.00	250.00	0.06	1.22	0.58	15.58
PAISLEY GREEN AVENUE	33	0+149.934	32	0+068.126	0.48	0.4	0.19	2.72	6.81	83.13	0.63	82.09	1.09	675.00	0.92	2.48	0.55	18.34
PAISLEY GREEN AVENUE	32	0+149.934	31	1.188	0.16	0.4	0.06	4.02	10.05	81.75	0.91	22.10	1.27	750.00	1.31	2.87	0.13	18.47
PAISLEY GREEN AVENUE	31	0+068.126	7	1.188	0.2	0.4	0.08	4.10	10.25	81.44	0.93	47.91	0.65	825.00	1.21	2.19	0.36	18.83
RLCB	RLCB5	0	57	0+446.454	0.26	0.5	0.13	0.13	0.26	90.91	0.03	40.13	1.00	250.00	0.06	1.22	0.55	15.55
PAISLEY GREEN AVENUE	57	0+446.454	56	0+495.154	0.43	0.5	0.22	0.35	0.69	89.26	0.09	49.57	1.00	300.00	0.10	1.38	0.60	16.14
PAISLEY GREEN AVENUE	56	0+495.154	55	0+515.271	0.09	0.5	0.05	0.39	0.78	87.53	0.09	19.63	0.50	375.00	0.13	1.13	0.29	16.43
PAISLEY GREEN AVENUE	55	0+515.271	54	0+578.911	0.21	0.5	0.11	0.50	0.99	86.72	0.12	63.57	0.50	450.00	0.21	1.28	0.83	17.26
PAISLEY GREEN AVENUE	54	0+578.911	53	0+642.749	0.3	0.5	0.15	0.65	1.29	84.49	0.15	63.57	0.50	450.00	0.21	1.28	0.83	18.09
PAISLEY GREEN AVENUE	53	0+642.749	52	0+659.183	0.13	0.5	0.07	0.71	1.42	82.37	0.16	14.13	0.50	450.00	0.21	1.28	0.18	18.27
PAISLEY GREEN AVENUE	52	0+659.183	50	0+730.449	0.24	0.5	0.12	0.83	1.66	81.92	0.19	71.00	0.50	450.00	0.21	1.28	0.92	19.19
RLCB	RLCB4	0	51	0+286.806	0.42	0.55	0.23	0.23	0.42	90.91	0.06	39.08	1.00	250.00	0.06	1.22	0.53	15.53
RLCB	RLCB3	0	51	0+286.806	0.17	0.5	0.09	0.09	0.17	90.91	0.02	39.08	1.00	250.00	0.06	1.22	0.53	15.53
RLCB	RLCB26	0	51	0+286.806	0.19	0.5	0.10	0.10	0.19	90.91	0.02	42.02	1.93	250.00	0.09	1.70	0.41	15.41
RLCB	RLCB25	0	51	0+286.806	0.16	0.5	0.08	0.08	0.16	90.91	0.02	42.02	1.74	250.00	0.08	1.62	0.43	15.43
BOYCE CREEK COURT	51	0+286.806	50	0+406.367	0.39	0.5	0.20	0.69	1.33	89.30	0.17	119.82	1.00	450.00	0.30	1.81	1.10	16.63



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 STORM DRAINAGE DESIGN CHART
 FOR CIRCULAR DRAINS FLOWING FULL**

Date: December 22, 2017
 Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/NL
 Checked by: AR

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$

5-Year
 A= 1593
 B= 11
 C= 0.8789

PHASE 1
 PHASE 2

Starting Tc = 15 min

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION	DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW	SECTION CONCENTRATION	TIME OF CONCENTRATION				
	COEFFICIENT	"AR"	AREA															
RLCB	RLCB23	0	50	0+406.367	0.21	0.5	0.11	0.11	0.21	90.91	0.03	42.08	2.24	250.00	0.09	1.83	0.38	15.38
BOYCE CREEK COURT	50	0+406.367	5	0+175.181	0.36	0.5	0.18	1.80	3.56	79.71	0.40	96.68	0.40	675.00	0.55	1.50	1.07	20.27
ATCHISON DRIVE	82W	0+665.79	12	0+646.9	0.36	0.4	0.14	0.14	0.36	90.91	0.04	19.48	1.18	375.00	0.20	1.74	0.19	15.19
ATCHISON DRIVE	12	0+646.9	11	0+588.89	0.11	0.4	0.04	0.19	0.47	90.34	0.05	57.96	0.47	375.00	0.13	1.10	0.88	16.06
RLCB	RLCB16	0	11	0+588.89	0.22	0.4	0.09	0.09	0.22	90.91	0.02	44.65	2.50	250.00	0.10	1.94	0.38	15.38
ATCHISON DRIVE	11	0+588.89	10	0+497.14	0.2	0.4	0.08	1.46	3.66	81.51	0.33	90.98	0.32	675.00	0.50	1.34	1.13	19.57
RLCB	RLCB17	0	10	0+497.14	0.2	0.4	0.08	0.08	0.20	90.91	0.02	44.08	2.25	250.00	0.09	1.84	0.40	15.40
ATCHISON DRIVE	10	0+497.14	9	0+425.33	0.25	0.4	0.10	1.64	4.11	78.86	0.36	72.03	0.33	675.00	0.50	1.36	0.88	20.45
RLCB	RLCB14	0	9	0+425.33	0.17	0.4	0.07	0.07	0.17	90.91	0.02	53.02	2.00	250.00	0.09	1.73	0.51	15.51
ATCHISON DRIVE	9	0+425.33	8	0	0.34	0.4	0.14	3.73	9.33	76.91	0.80	56.07	0.25	825.00	0.75	1.36	0.69	21.14
RLCB	RLCB13	0	8	0	0.03	0.4	0.01	0.01	0.03	90.91	0.00	42.92	2.50	250.00	0.10	1.94	0.37	15.37
ATCHISON DRIVE	8	0	7	0+323.15	0.14	0.4	0.06	3.80	9.50	75.46	0.80	45.45	0.33	825.00	0.86	1.55	0.49	21.62
RLCB	RLCB2	0	7	0+323.15	0.17	0.5	0.09	0.09	0.17	90.91	0.02	50.00	1.00	250.00	0.06	1.22	0.68	15.68
ATCHISON DRIVE (HE 975x1535)	7	0+323.15	6	0+244.602	0.27	0.5	0.14	8.12	20.19	74.47	1.68	78.16	0.22	1200.00	1.89	1.62	0.80	22.43
RLCB	RLCB6	0	6	0+244.602	0.1	0.5	0.05	0.05	0.10	90.91	0.01	47.47	1.00	250.00	0.06	1.22	0.65	15.65
RLCB	RLCB7	0	6	0+244.602	0.22	0.5	0.11	0.11	0.22	90.91	0.03	44.40	1.00	250.00	0.06	1.22	0.60	15.60
ATCHISON DRIVE (HE 975x1535)	6	0+244.602	5X	0+183.186	0	0.5	0.00	8.28	20.51	72.89	1.68	61.24	0.23	1200.00	1.94	1.66	0.61	23.04
ATCHISON DRIVE (HE 975x1535)	5X	0+183.186	5	0+175.181	0	0.5	0.00	8.28	20.51	71.74	1.65	11.30	0.46	1200.00	2.74	2.35	0.08	23.12
BOYCE CREEK COURT	67	0+271.081	66	0+249.277	0.17	0.5	0.09	0.09	0.17	109.68	0.03	22.58	1.00	300.00	0.10	1.38	0.27	10.27
BOYCE CREEK COURT	66	0+249.277	65	0+201.853	0.15	0.5	0.08	0.16	0.32	108.44	0.05	48.01	0.50	300.00	0.07	0.98	0.82	11.09
BOYCE CREEK COURT	65	0+201.853	64	0+188.680	0.06	0.5	0.03	0.19	0.38	104.90	0.06	14.16	0.50	300.00	0.07	0.98	0.24	11.33
BOYCE CREEK COURT	64	0+188.680	63	0+124.975	0.43	0.5	0.22	0.41	0.81	103.91	0.12	63.90	0.50	450.00	0.21	1.28	0.83	12.16
BOYCE CREEK COURT	63	0	62	0+040.133	0.4	0.5	0.20	0.61	1.21	100.62	0.17	84.84	0.50	450.00	0.21	1.28	1.10	13.27
BLOCK 162	203	0+201.853	202	0+040.133	0	0.7	0.00	0.24	0.34	84.72	0.06	12.97	0.77	375.00	0.16	1.41	0.15	17.32
BLOCK 162	202	0+188.680	201	0+040.133	0.26	0.7	0.18	0.42	0.60	84.32	0.10	15.05	0.66	375.00	0.15	1.30	0.19	17.52
BLOCK 162	201	0+124.975	62	0+040.133	0	0.7	0.00	0.42	0.60	83.82	0.10	11.29	0.62	375.00	0.14	1.26	0.15	17.67
BLOCK 162 (ABANDONED)	75	0	62	0+040.133	0	0.7	0.00	0.00	0.00	139.29	0.00	9.00	1.00	525.00	0.45	2.01	0.07	5.07
BOYCE CREEK COURT	62	0+040.133	61	0+001.497	0.18	0.5	0.09	1.12	1.99	83.43	0.26	40.50	0.51	525.00	0.32	1.43	0.47	18.14
ATCHISON DRIVE	74	0+048.714	61	0+087.866	0.2	0.7	0.14	0.14	0.20	90.91	0.04	39.14	1.00	300.00	0.10	1.38	0.47	15.47



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 FOR CIRCULAR DRAINS FLOWING FULL**

Date: December 22, 2017
 Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/NL
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Rainfall Intensity = $\frac{A}{(Tc+B)^c}$

5-Year
 A= 1593
 B= 11
 C= 0.8789

PHASE 1
 PHASE 2

Starting Tc = 15 min

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION	DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW	SECTION CONCENTRATION	TIME OF CONCENTRATION				
	COEFFICIENT	"AR"	AREA															
BLOCK 163	116	0+001.496	61	0+059.519	0.59	0.7	0.41	0.41	0.59	139.29	0.16	10.80	1.00	375.00	0.18	1.60	0.11	5.11
ATCHISON DRIVE (HE 975x1535)	61	0	61X	0	0.25	0.5	0.13	1.79	3.03	82.25	0.41	79.40	0.20	1200.00	1.82	1.56	0.85	18.99
ATCHISON DRIVE (HE 975x1535)	61X	0	5	0+059.519	0	0.5	0.00	1.79	3.03	80.20	0.40	11.20	0.20	1200.00	1.82	1.56	0.12	19.11
FALLIS CRESCENT	5	0+175.181	4	0+230.980	0.44	0.7	0.31	12.18	27.54	71.59	2.42	64.17	0.27	1650.00	4.94	2.24	0.48	23.60
STREET 'A'	PLUG3	0+175.927	189	0+097.540	0	0	0.00	0.00	0.00	90.91	0.00	4.90	1.00	300.00	0.10	1.38	0.06	15.06
STREET 'A'	189	0+175.927	190	0+097.540	0.04	0.7	0.03	0.03	0.04	90.73	0.01	45.63	0.50	300.00	0.07	0.98	0.78	15.84
STREET 'A'	190	0+175.927	191	0+097.540	0.37	0.7	0.26	0.29	0.41	88.41	0.07	22.38	0.50	375.00	0.13	1.13	0.33	16.17
STREET 'A'	191	0+175.927	4	0+097.540	0	0	0.00	0.29	0.41	87.47	0.07	7.79	0.50	375.00	0.13	1.13	0.11	16.28
FALLIS CRESCENT	4	0+175.927	3	0+097.540	0.27	0.7	0.19	12.66	28.22	70.72	2.49	41.11	0.18	1650.00	4.05	1.84	0.37	23.97
RLCB	RLCB1	0	3	0+266.217	0.98	0.25	0.25	0.25	0.98	90.91	0.06	38.89	2.00	250.00	0.09	1.73	0.37	15.37
BLOCK 122	117	0	3	0+266.217	0	0.7	0.00	0.00	0.00	139.29	0.00	12.00	1.00	450.00	0.30	1.81	0.11	5.11
FALLIS CRESCENT	3	0+115.697	2	0+266.217	0	0	0.00	12.90	29.20	70.06	2.51	44.95	0.28	1650.00	4.99	2.26	0.33	24.30
FALLIS CRESCENT	2	0+266.217	1	0+211.90	0.72	0.7	0.50	13.41	29.92	69.48	2.59	32.60	0.22	1650.00	4.45	2.02	0.27	24.57
McCARDY COURT	DICB4	0+266.217	71	0	1.11	0.7	0.78	0.78	1.11	37.60	0.08	5.14	0.97	300.00	0.10	1.36	0.06	60.06
McCARDY COURT	71	0+266.217	PLUG2	0	0.48	0.7	0.34	1.11	1.59	37.57	0.12	91.57	0.40	450.00	0.19	1.15	1.33	61.39
McCARDY COURT	PLUG2	0+266.217	69	0	0	0	0.00	1.11	1.59	36.96	0.11	78.20	0.40	525.00	0.28	1.27	1.03	62.42
FUTURE BLOCK	100D	0+266.217	69	0	0.85	0.7	0.60	0.60	0.85	139.29	0.23	9.50	1.25	450.00	0.33	2.03	0.08	5.08
RLCB	RLCB31	0+266.217	69	0	0.25	0.7	0.18	0.18	0.25	90.91	0.04	45.70	1.00	250.00	0.06	1.22	0.62	15.62
FALLIS CRESCENT	69	0+266.217	68	0	0	0.7	0.00	1.88	2.69	36.50	0.19	55.00	0.40	525.00	0.28	1.27	0.72	63.14
FALLIS CRESCENT	68	0+266.217	1	0	0	0.7	0.00	1.88	2.69	36.19	0.19	16.40	0.20	600.00	0.29	0.98	0.28	63.42
FALLIS CRESCENT	1	0+211.90	HW1	0	0	0.7	0.00	15.29	32.61	36.07	1.53	6.11	0.37	1650.00	5.78	2.62	0.04	63.46
EASEMENT	HW4	0	DICBMH1	0	34.88	0.201050014	7.01	7.01	34.88	16.52	0.32	14.92	11.06	375.00	0.61	5.34	0.05	170.03
EASEMENT	DICBMH1	0	MH86	0	0	0.201050014	0.00	7.01	34.88	16.52	0.32	44.37	0.54	600.00	0.47	1.61	0.46	170.49
EASEMENT	MH86	0	85	0	0	0	0.00	7.01	34.88	16.48	0.32	51.47	0.54	600.00	0.47	1.61	0.53	171.02
LIZZIE COURT	85	0	180	0+238.98	0	0	0.00	7.01	34.88	16.44	0.32	18.41	1.09	600.00	0.67	2.29	0.13	171.15
LIZZIE COURT	180	0+238.98	84	0+313.17	0	0.4	0.00	7.01	34.88	16.43	0.32	72.63	1.47	600.00	0.78	2.66	0.45	171.61
LIZZIE COURT	84	0+313.17	182	0	0	0	0.00	7.01	34.88	16.39	0.32	22.22	1.71	600.00	0.84	2.87	0.13	171.73
LIZZIE COURT	182	0	83	0+1418.47	0	0	0.00	7.01	34.88	16.38	0.32	135.46	2.02	600.00	0.91	3.12	0.72	172.46
RLCB	RLCB18	0	83	0+1418.47	0.35	0.4	0.14	0.14	0.35	90.91	0.04	24.02	2.00	250.00	0.09	1.73	0.23	15.23
INNIS LAKE ROAD (DICB)	83	0+1418.47	82SE	0+665.79	1.32	0.7	0.92	8.08	36.55	16.32	0.37	50.56	1.48	600.00	0.78	2.67	0.32	172.77
INNIS LAKE ROAD	82SE	0+665.79	81	0+1319.18	0	0	0.00	8.08	36.55	16.30	0.37	14.21	2.89	600.00	1.09	3.73	0.06	172.84
INNIS LAKE ROAD	81	0+1319.18	80	0+1281.02	0	0	0.00	8.08	36.55	16.29	0.37	41.27	0.85	600.00	0.59	2.02	0.34	173.18
RLCB	RLCB27	0	CBMH89	0	0.31	0.4	0.12	0.12	0.31	90.91	0.03	58.84	1.00	250.00	0.06	1.22	0.80	15.80
SOUTH EASEMENT	CBMH89	0	80	0+1281.02	0.33	0.4	0.13	0.26	0.64	88.51	0.06	25.93	1.00	300.00	0.10	1.38	0.31	16.11
INNIS LAKE ROAD	80	0+1281.02	EX. CSP	0	0	0	0.00	8.33	37.19	16.27	0.38	13.29	0.50	1200.00	2.87	2.46	0.09	173.27



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**PUBLIC WORKS AND ENGINEERING DEPARTMENT
 STORM DRAINAGE DESIGN CHART
 FOR CIRCULAR DRAINS FLOWING FULL**

Date: December 22, 2017
 Project: Chateaux of Caledon
 Project No: L08-378
 Designed by: AR/NL
 Checked by: AR

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$

5-Year
 A= 1593
 B= 11
 C= 0.8789

PHASE 1
 PHASE 2

Starting Tc = 15 min

*Equivalent circular pipe shown for elliptical pipe noted

LOCATION	DRAINAGE AREA					RAINFALL	FLOW	LENGTH	SLOPE	PIPE DIAMETER	FULL FLOW CAPACITY	FULL FLOW	SECTION CONCENTRATION	TIME OF CONCENTRATION				
	COEFFICIENT	"AR"	AREA															
POND OUTLET (4hr TC)	93	0+559.686	92	0+662.48	0	0.4	0.00	0.00	0.00	42.96	0.33	43.18	0.81	525.00	0.40	1.81	0.40	50.40
EASEMENT POND OUTLET	92	0+662.48	91	0+668.480	0	0.4	0.00	0.00	0.00	42.72	0.33	82.13	0.40	750.00	0.73	1.61	0.85	51.25
EASEMENT POND OUTLET	91	1+568.747	90	1+418.747	0	0	0.00	0.00	0.00	42.20	0.33	60.20	0.40	750.00	0.73	1.61	0.62	51.87
OUTFALL	90	1+418.747	89	1+668.480	0	0	0.00	0.00	0.00	41.84	0.33	9.10	0.40	750.00	0.73	1.61	0.09	51.97
OUTFALL	89	1+668.480	88	1+286.062	0	0	0.00	0.00	0.00	41.78	0.33	140.00	0.40	750.00	0.73	1.61	1.45	53.41
OUTFALL	88	1+286.062	87	1+284.047	0	0	0.00	0.00	0.00	40.95	0.33	120.00	1.00	750.00	1.16	2.55	0.79	54.20
OUTFALL	87	0	HW3	88.416	0	0	0.00	0.00	0.00	40.52	0.33	20.00	1.50	750.00	1.42	3.12	0.11	54.31
EX. SCHOOL	DICB	88.416	101	0+053.277	1.06	0.75	0.80	7.81	35.94	109.68	2.38	14.50	0.45	1350.00	3.73	2.53	0.10	10.10
INNIS LAKE	101	88.416	100	0+053.277	0.14	0.7	0.10	7.91	36.08	139.29	3.06	47.70	0.40	1350.00	3.52	2.38	0.33	5.33
EX. SCHOOL	CULVERT	1+668.480	100	0+053.277	0.43	0.75	0.32	0.32	0.43	90.91	0.08	22.80	0.83	525.00	0.41	1.83	0.21	15.21
INNIS LAKE	100	1+286.062	99	0+053.277	0	0	0.00	8.23	36.51	90.27	2.06	76.40	0.40	1350.00	3.52	2.38	0.53	15.74
OLD CHURCH	CB4	0	CBMH2	0+053.277	0.36	0.7	0.25	0.25	0.36	139.29	0.10	89.90	0.40	375.00	0.12	1.01	1.48	6.48
OLD CHURCH	CBMH2	0	98	0+053.277	0.35	0.7	0.25	0.50	0.71	128.89	0.18	29.10	0.40	525.00	0.28	1.27	0.38	6.86
INNIS LAKE	98	88.416	97	0+053.277	0	0	0.00	8.97	37.70	88.07	2.19	28.70	0.45	1350.00	3.73	2.53	0.19	16.14
INNIS LAKE	97	0	HW2	0+053.277	0	0	0.00	8.97	37.70	87.53	2.18	7.50	0.45	1350.00	3.73	2.53	0.05	16.19