

**Functional Servicing and
Stormwater Management
Report**

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



Prepared for:

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Prepared by:

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160622596

June 23, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

June 23, 2020

Revision	Description	Date	Author	Quality Check		Independent Review	
1	First Submission	Feb 21, 2018					
2	2 nd Submission	April 30, 2019					
3	3 rd submission	June 23, 2020					



Sign-off Sheet

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

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Approved by _____
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1.0 INTRODUCTION & BACKGROUND

Stantec Consulting Ltd. (Stantec) has been retained by The Pluribus Corp. (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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- Site 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 June 23, 2020) 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	13
1 Bedroom plus Den	38
2 Bedroom	16
2 Bedroom plus Den	11
3 Bedroom	5
Total	83 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 83 residential units. The total proposed Gross Floor Area of the new building is +/- 80,323 sq. ft (including +/- 6,997 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 June 23, 2020. 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 were reviewed for the stormwater management (SWM) design of the Site:

- **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].

The SWM design of the Site is governed by the following criteria:

1. **Quantity Control:** 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. **Quality Control:** Enhanced (80% TSS Removal) Quality Control;
3. **Erosion Control:** Erosion potential to be mitigated through maximizing infiltration through the site. In addition, detain runoff from 25 mm event for 24 hours; and,
4. **Water Balance:** Existing water balance conditions are to be maintained, as required by TRCA.

4.1 EXISTING SITE

Based on the 2010 SWM Report, the subject Site (referred to as Block 163) was included in the design of Chateaux of Caledon development comprising of an area of 36.9 ha. According to Figure DAP2 **Post-Development Storm Drainage Area**, the subject Site is part of Catchment "A2POST". This catchment is 5.92 ha in size with a 54% imperviousness, which drains 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 characteristics of the existing SWM pond outlined in the SWM Report include:

- The existing SWM pond was designed for a total drainage area of 36.9 ha with 34% imperviousness;

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- The available permanent pool volume of the existing SWM pond (wet pond) is 4029 m³. The required permanent pool volume of the existing SWM pond is 3600 m³. Thus the wet pond has a surplus permanent pool volume of 429 m³.
- The available extended detention volume of the existing SWM pond (wet pond) is 1672 m³. The required extended detention volume of the existing SWM pond is 1474 m³. Thus the wet pond has a surplus extended detention volume of 198 m³.
- The available active storage volume of the existing SWM pond (wet pond) is 14,108 m³. The required active storage volume of the existing SWM pond is 12,050 m³. Thus the wet pond has a surplus active storage volume of 2,058 m³.

According to Storm Drainage (Minor and Major) Area Plan and Storm Drainage Design Chart (see **Appendix D**):

- The minor system of the Site (Block 163) is drained by storm sewers to the SWM pond (assumed 0.59 ha area with runoff coefficient of 0.7).
- The major flows from 0.4 ha of the Site (Block 163) is directed to Atchison Drive and ultimately to the SWM pond. The major flows from the remainder of the Site are directed south to Old Church Road.
- Target release rate was determined assuming a runoff coefficient of 0.7.

The minor flows from the Site (Block 163) is conveyed by 975x1535 mm storm sewer, ultimately to the SWM pond. The existing 975x1535 mm storm sewer conveys minor flow of 0.446 m³/s, has a full flow capacity of 1.818 m³/s, and a surplus capacity of 1.372 m³/s. Relevant storm sewer design sheets provided in **Appendix D**. Based on a review of the grading plans and storm design sheets, it appears that the some major system flow is directed to a low point at the intersection at the Atchison Drive and Boyces Creek Court, collected and piped to the SWM pond in the oversized 975x1535 mm storm sewers.

Table 4-1: Existing/Target Flow

Catchment	Total Area (ha)	Final Runoff Coefficient (C)	Peak Flow (m ³ /s)					
			2yr	5yr	10yr	25yr	50yr	100yr
Site (Block 163)	0.59	0.70	0.131	0.160	0.195	0.221	0.248	0.275
North Area	0.45	0.70	0.100	0.122	0.148	0.169	0.189	0.209
South Area	0.14	0.70	0.031	0.038	0.046	0.052	0.059	0.065

Note: Minimum inlet time is 5 minutes, as per Town of Caledon Standards.



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4.2 PROPOSED DRAINAGE

The proposed Site is 0.59 ha in size and consists of a multi-story building, surface and underground parking lots, and landscaped areas. The proposed drainage area remains the same however the runoff coefficient for the proposed Site is slightly higher than assumed value in the existing SWM report. As a result, the impervious area of the site has increased slightly and peak flows generated are higher than assumed as shown in **Table 4-2**. The peak flows are based on the Town of Caledon Intensity-Duration-Frequency (IDF) curve parameters with an inlet time of 5 minutes. The area-weighted runoff coefficients in **Table 4-2** were based on the typical C values from Town of Caledon's Drawing Standard 112.01.

Under the proposed condition, major and minor flows from 0.14 ha area south of the building will be intercepted by a storm sewer system. There are adequate number of catchbasins (CBs) south of the building to intercept the 100-year peak flow. The CB capture assessment calculations is provided in **Appendix B**.

The area north of the building (approximately 0.27 ha) will be serviced by a separate storm sewer system. The runoff from the building (approximately 0.18 ha) will drain to the storm sewer system on the north side of the Site.

The proposed drainage plan is shown in **Figure 2**. Design calculations are provided in **Appendix B**.

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Table 4-2: Proposed Landuse Pattern and Peak Flows

Catchment	Landscaped (ha) (C = 0.25)	Impervious (ha) (C = 0.9)	Total Area (ha)	Final Runoff Coefficient (C)	Peak Flow (m ³ /s)					
					2yr	5yr	10yr	25yr	50yr	100yr
North Area	0.025	0.245	0.27	0.84	0.072	0.088	0.107	0.121	0.136	0.151
Building		0.180	0.18	0.90	0.051	0.063	0.076	0.087	0.097	0.108
South Area (Uncontrolled)	0.024	0.116	0.14	0.79	0.035	0.043	0.052	0.059	0.066	0.073
Total Area (Uncontrolled)			0.59	0.85	0.159	0.193	0.235	0.267	0.299	0.332
South Area (Controlled)	0.024	0.116	0.14	0.79	0.035	0.038	0.038	0.038	0.038	0.038
Total Area			0.59	0.85	0.159	0.189	0.221	0.246	0.271	0.297

Note:

- Minimum inlet time is 5 minutes, as per Town of Caledon Standards.

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4.3 STORMWATER MANAGEMENT PLAN

Under the proposed condition, the stormwater management criteria 1-3 will be achieved by the existing SWM pond.

Quantity Control: The existing SWM pond provides quantity control for the Chateaux of Caledon development and the Site (Block 163). To ensure that the quantity control criteria is satisfied, it is necessary to ensure that the downstream storm sewer system and the pond have available capacity for the increased impervious area.

- The existing SWM pond was designed to provide quantity control for 0.59 ha for the minor system flow and 0.4 ha for the major system flow from the Site with runoff coefficient of 0.7. The proposed Site will direct runoff from 0.59 ha with a runoff coefficient of 0.85 for the minor system flow and 0.45 ha with runoff coefficient of 0.86 for the major system flow. The increased impervious area is 0.098 ha for the minor system and 0.116 ha for the major system.
- The area south of the building will be controlled on site to the 5-year peak flow of 0.038 m³/s. Based on the Modified Rational approach, the required storage volume during a 100 year event is 13 m³, which is provided by an underground storage tank (located south-west of the Site). The flow from the south of the building is controlled by a 152 mm orifice tube, located on the south end of MH 116. See calculations in **Appendix B**.
- The minor flows from the proposed building (0.18 ha) and the area north of the building (0.27 ha) will drain uncontrolled to manhole MH 116. The combined minor flow (both controlled and uncontrolled) from the Site is 0.188 m³/s, which is slightly higher than the assumed release rate from the Site by 0.028 m³/s. The combined major flow (both controlled and uncontrolled) from the Site is 0.297 m³/s, which is slightly higher than the assumed release rate from the Site by 0.049 m³/s. The downstream 975x1535 mm storm sewer has surplus capacity to convey the minor and major system increase in flow.
- The existing SWM pond services the Chateaux of Caledon development (including the Site) and provides an active storage volume of 14,108 m³. The required active storage volume is 12,050 m³. The pond has a surplus active storage volume of 2,058 m³ and provides additional quantity storage for the increased impervious area of 0.116 ha for the major system.

Quality Control: The existing SWM pond provides quality control for the Chateaux of Caledon development and the Site (Block 163). To ensure that the quality control criteria is satisfied, it is necessary to ensure that the pond has sufficient permanent pool volume for the increased impervious area.

- To provide enhanced treatment for the increased impervious area of 0.098 ha for the minor system, the required permanent pool volume is 27.5 m³.



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- Section 4.1 indicates that the existing SWM pond consists of surplus permanent pool volume of 429 m³.

Erosion Control: The existing SWM pond provides erosion control for the Chateaux of Caledon development and the Site itself. To ensure that the erosion control criteria is satisfied, it is necessary to ensure that the pond has sufficient extended detention volume for the increased impervious area.

- To provide enhanced treatment for the excess area of 0.098 ha for the minor system, the required extended detention volume is 4.68 m³.
- Section 4.1 indicates that the existing SWM pond consists of surplus extended detention volume of 198 m³.

Water Balance: The water balance criteria for the Chateaux of Caledon development is satisfied by existing off-site Low Impact Development (LID) measures, including soakaway pits, downspout disconnect, and infiltration trenches located in the residential lots.

Therefore, the SWM requirements are achieved by the existing SWM pond, on-site quantity control, and off-site LID measures.

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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 for population in apartment, one bedroom 1.68ppu and 2 and more 2.54ppu, 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	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	83	200	3.8	2.67	.012	2.79

Per the above table the site generates a flow of 2.791l/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 2.791 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 available within the sanitary sewer on Old Church Road. Therefore, the increase of 0.99 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	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor	Total Flow (L/s)
Residential	0.6	83	200	280	2.0	3.0	1.30
ICI (@ 50pph)	.076		4	300	1.4	3.0	.02
Total Flows							1.32

The estimated water consumption was calculated based on the Average consumption rates of 280 litres/capita/day based on the Region's watermain design criteria. It is anticipated that an average consumption of approximately 55,899L/d (0.65 L/s), a maximum daily consumption of 111,799 L/d, and a peak hourly demand of 6,988 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 on-site quantity control storage for 0.14 ha area (100-year post to 5-year post).
- Water balance is satisfied 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.

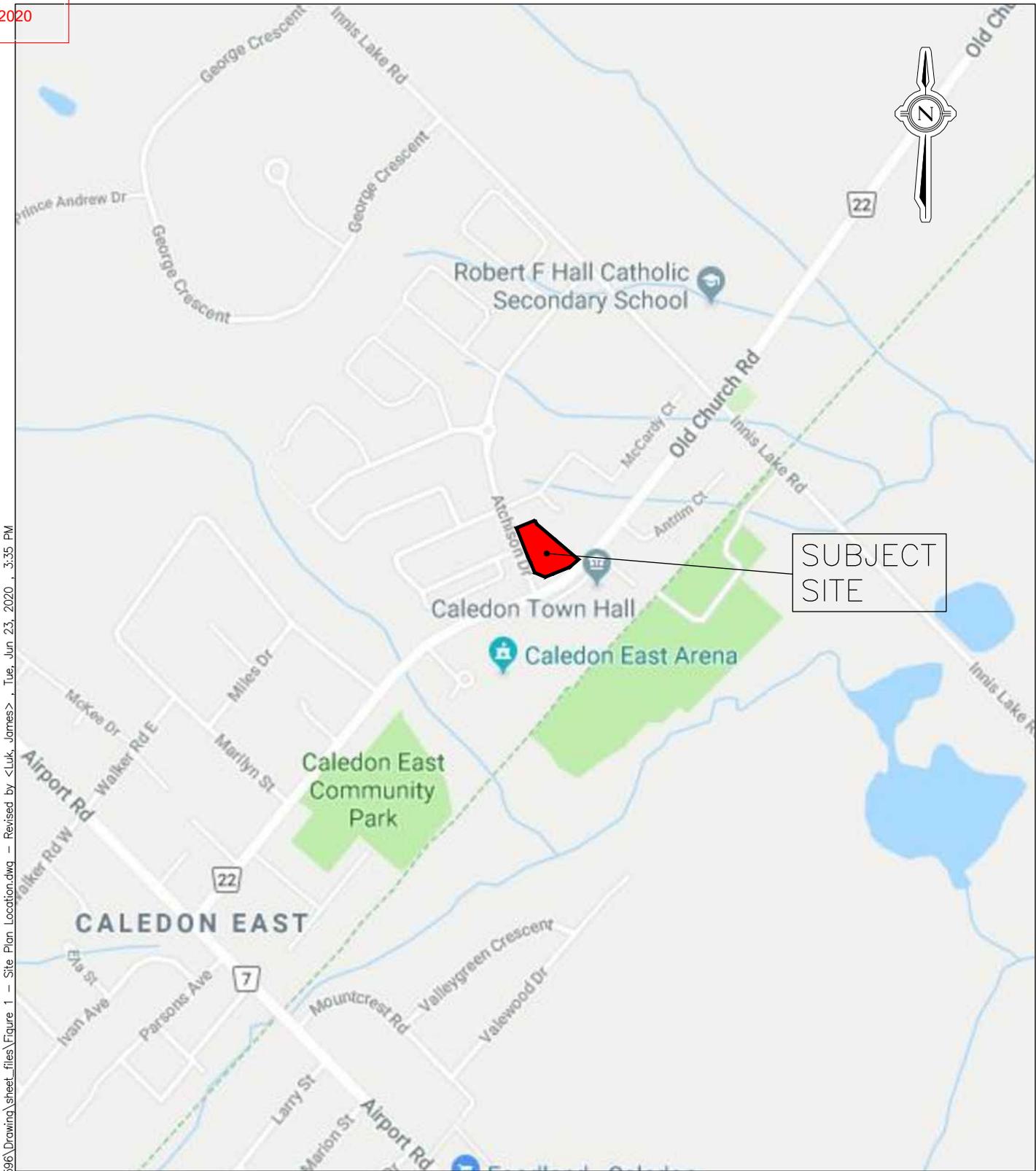


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File: \\cd1215-f01\01606\Active\160622596\Drawing\sheet_files\Figure 1 - Site Plan Location.dwg -- Revised by <Luk, James> , Tue, Jun 23, 2020 , 3:35 PM

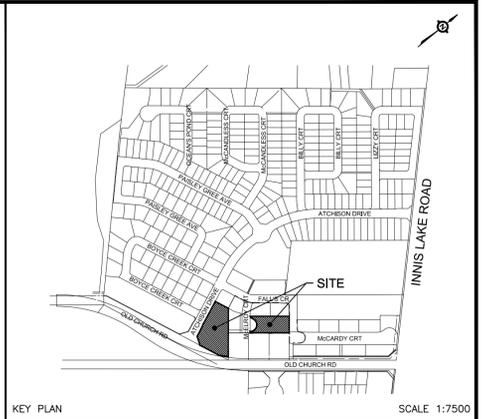


Legend

FUNCTIONAL SERVICING REPORT
PLURIBUS CORP.
0 ATCHISON DR.
TOWN OF CALEDON

FIGURE 1
SITE PLAN LOCATION

JUNE 2020



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

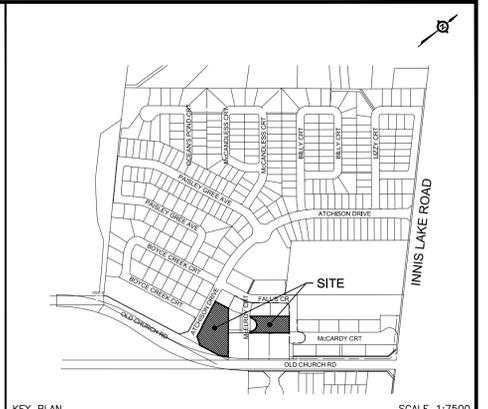
Stantec Consulting Ltd.
675 COCHRANE DRIVE, WEST TOWER SUITE 300
MARKHAM, ONTARIO L3R 0B8
TELEPHONE: (905) 944-7777
FAX: (905) 474-9889

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: JUNE 2020
	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.				

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

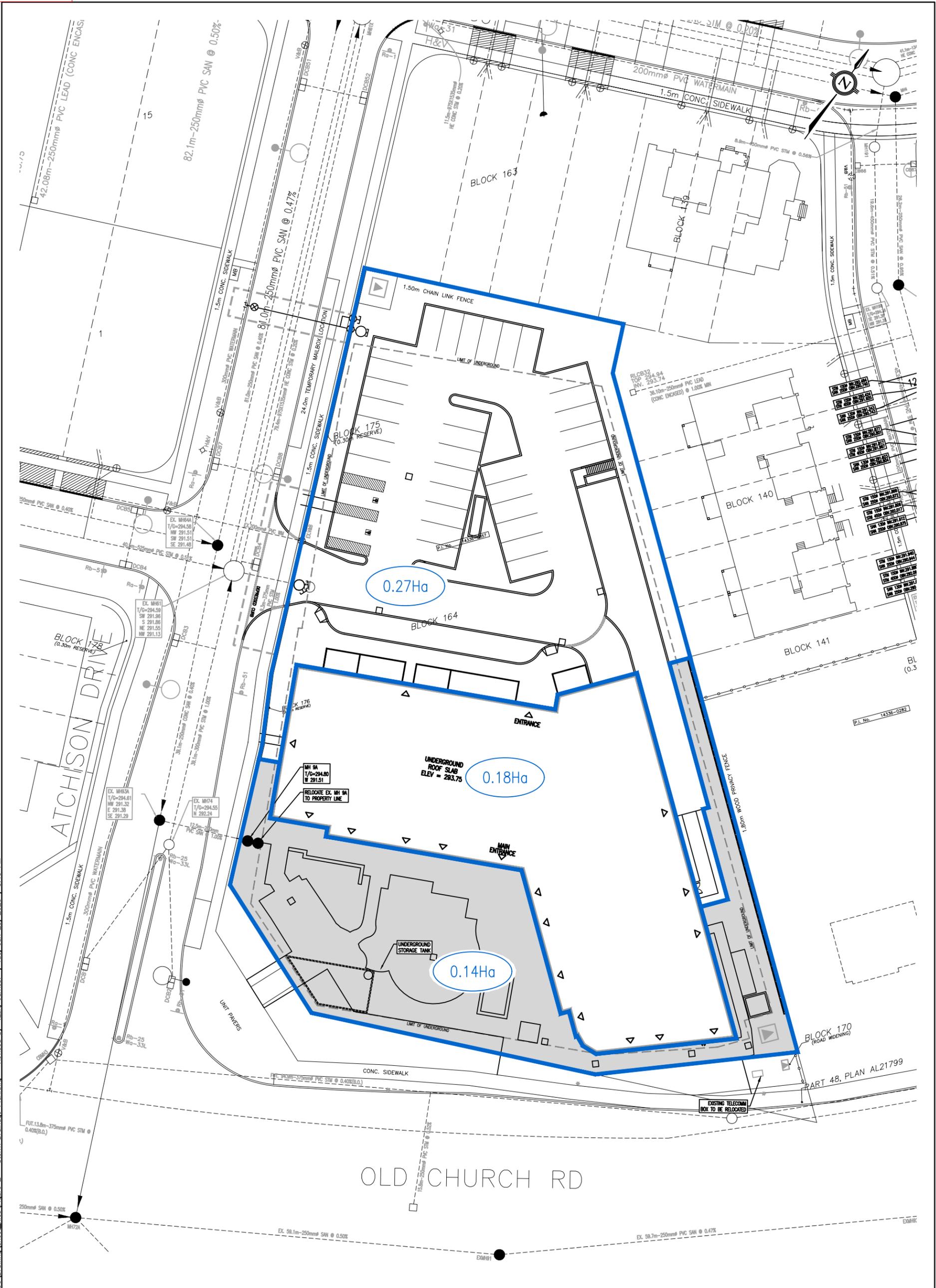
PROJECT NAME
**PROPOSED MIXED-USE DEVELOPMENT
CHATEAUX OF CALEDON TOWN SQUARE**
0 ATCHISON DRIVE, BLOCK 164 ON PLAN 43M-1840
TOWN FILE No.: PRE 17-0084



GRADING PLAN

SCALE : 1:250	DESIGN BY: J.L.	CHECKED BY: S.K.	DRAWN BY: J.L.	DATE: JUNE 2020	PROJECT No. 160622596
					DRAWING No. SG-1

File: \\ced1215-f01\01606\Active\16062998\Drawing\sheet_files\Figure 2 - Storm Drainage Plan.dwg - Revised by <Luk_James> , Tue, Jun 23, 2020 , 3:40 PM



Stantec

0 5 10 15 20 25
 1:500

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
 PLURIBUS CORP.
 0 ATCHISON DR.
 TOWN OF CALEDON

FIGURE 2
STORM DRAINAGE PLAN

JUNE 2020

TOWN OF CALEDON
PLANNING
RECEIVED
Jun 29, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix A Site Plan
June 19, 2020

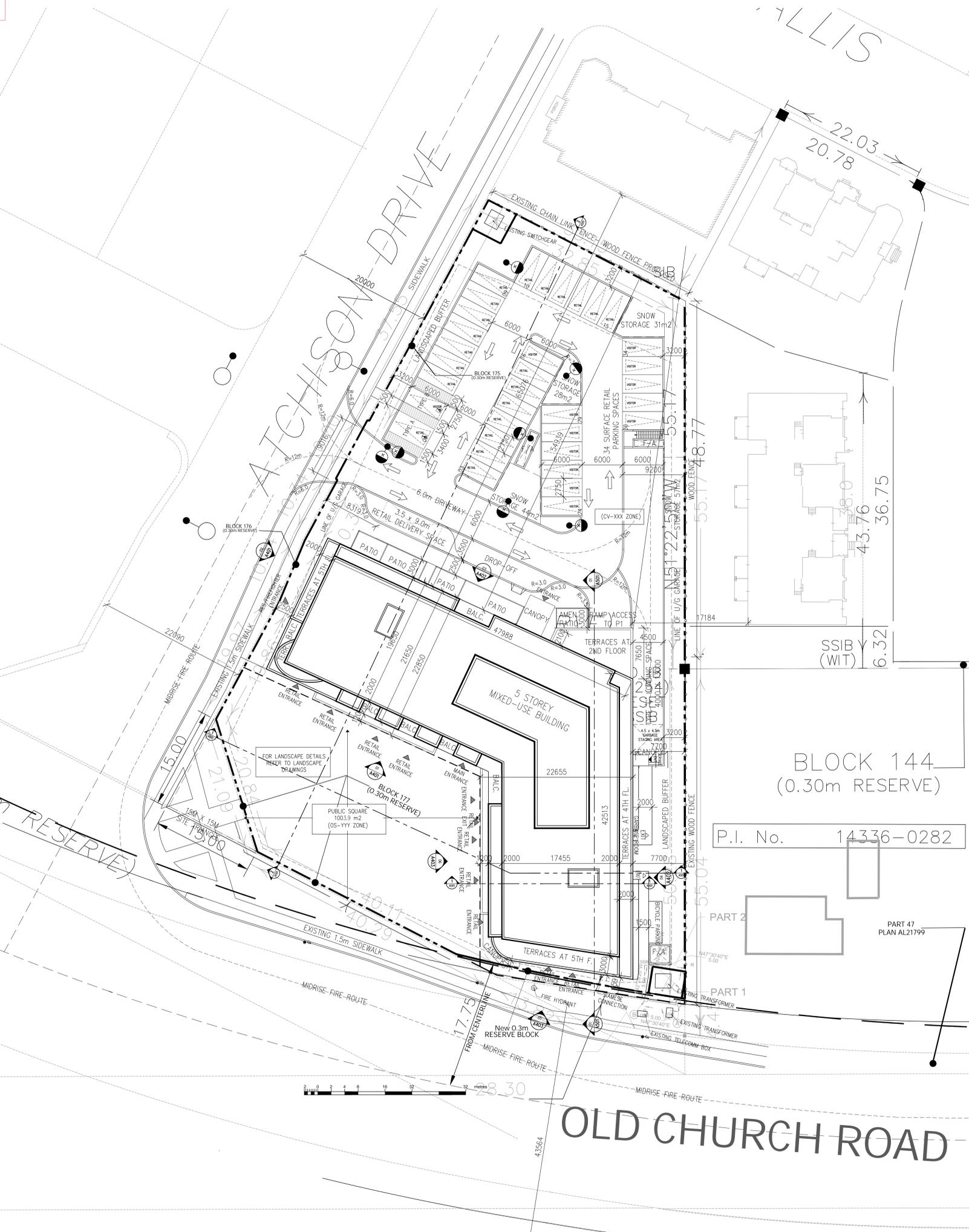
APPENDICES

TOWN OF CALEDON
PLANNING
RECEIVED
Jun 29, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix A Site Plan
June 23, 2020

Appendix A **SITE PLAN**



CV-507 Zone Standards		
	Required	Proposed
Lot Area (minimum)	5,500 m ²	4,933.3 m ²
Lot Frontage (minimum)	9 m	18.4 m
Building Area (maximum)	n/a	40%
Building Setbacks (minimum)		
Old Church Road	4.5 m	0.7 m
Minimum		0.7 m
Maximum		1.2 m
Atchison Road	4.5 m	2.5 m
Minimum		1.2 m
Maximum		1.2 m
from any other lot line	10 m	7.5 m
Minimum		10 m
Maximum		10 m
Building Separation between buildings separated by a walkway	4.5 m	n/a
between all other buildings	3 m	18.9 m
Building Height	11 m	18.9 m
Gross Floor Area (maximum)		
combined non-residential uses	650 m ²	650 m ²
individual non-residential uses	185 m ²	185 m ²
Dwelling Units per lot (maximum)	12	83
Planning Street Width (minimum)	3 m	3 m
Parking Spaces		
Residential	1.5 x 83 = 125	1.5 x 83 = 125
Visitors	0.25 x 83 = 21	0.25 x 83 = 21
Retail	1/300 x 647.4 = 22	1/250 x 647.4 = 22
Parking Space Size		
Outside garage	2.75 m x 6 m	2.75 m x 6 m
Inside garage	2.75 m x 6 m	2.6 m x 5.8 m
Parking Space Setbacks (minimum)	3 m	3 m
Delivery Spaces (minimum)	2 per lot	2 per lot
Delivery Space Size (minimum)	3.5 m x 9 m	3.5 m x 9 m
Delivery Space Setbacks (minimum)	3 m	3 m
from any residential zone boundary	4 m	5 m
Driveway Setbacks (minimum)		
from a lot line abutting a residential zone	4.5 m	3 m
Landscaping Area (minimum)	20%	20%

OS-505 Zone Standards		
	Required	Proposed
Lot Area (minimum)	n/a	1,003 m ²
Lot Frontage (minimum)	9 m	8.5 m
Building Area (maximum)	20 m ²	35 m ²
Building Separation (minimum)	3 m	3 m
Building Height (maximum)	10.5 m	10.5 m
All Yards (minimum)	7.5 m	2.5 m

Parking spaces are not required for any outdoor patio that is less than 40% of the net floor area of the restaurant it serves. The standard restaurant ratio shall apply to any area over 40% use.

5 parking spaces per hectare or portion thereof

50%

STATISTICS							
		OS-505 & CV-507					
1. ZONING							
2. SITE AREA	5,985.86 m ²	64,431.20 ft ²	1.48	ACRES			
3. GROSS FLOOR AREA (GFA)	7,462.30 m ²	80,323.45 ft ²					
4. GROUND FLOOR AREA	1,800.93 m ²	19,400.93 ft ²					
5. PROPOSED BUILDING DENSITY		1.25 FSI (NFA / SA)					
6. PROPOSED BUILDING COVERAGE		30.1%					
7. LANDSCAPED AREA PROVIDED	0.00 m ² SOFT + 0.00 m ² HARD = TOTAL: 0						
8. BLOOR AREA :							
LEVEL	TOTAL FLOOR AREA (TFA)	GROSS FLOOR AREA (GFA)	NET SALABLE AREA (NSA)				
P1	5,081.6 m ²	54,700 m ²	0.0 m ²	0.0 m ²			
RESIDENTIAL	1,036.6 m ²	11,158 m ²	983.8 m ²	264.3 m ²			
RETAIL	252.2 m ²	2,724 m ²	252.2 m ²	674.2 m ²			
2ND	1,370.0 m ²	14,689 m ²	1,370.0 m ²	3,800.0 m ²			
3RD	1,370.0 m ²	14,689 m ²	1,370.0 m ²	3,800.0 m ²			
4TH	1,466.9 m ²	15,780 m ²	1,466.9 m ²	4,055.9 m ²			
5TH	1,370.0 m ²	14,689 m ²	1,370.0 m ²	3,800.0 m ²			
GRAND TOTAL	12,862.4 m ²	138,450 m ²	7,462.3 m ²	6,918.8 m ²			
10. UNIT SUMMARY							
FLOOR		UNIT TYPE					
(sq. ft.)	Studio	1B	1B+0	2B	2B+0	3B	TOTAL
0	0	2	0	2	0	0	4
2ND	0	3	13	3	2	0	21
3RD	0	3	13	3	2	0	21
4TH	0	4	10	3	3	0	20
5TH	0	4	1	5	4	5	17
TOTAL	0	13	38	16	11	5	83
	0.0%	15.7%	45.8%	19.3%	13.3%	6.0%	100.0%
11. ACCESSIBLE UNITS							
		UNIT TYPE					
	Studio	1B	1B+0	2B	2B+0	3B	TOTAL
TOTAL	0	8	4	4	0	0	16
	0.0%	0.0%	21.1%	25.0%	36.4%	0.0%	19.3%
12. EFFICIENCY (NSA/GFA)							80.7%
13. HEIGHT	PERMITTED: 10.5 m	PROPOSED: 10.5 m	5 STOREYS (18.9m)				
14. PARKING	REQUIRED: 125 VISITOR SPACES PER UNIT (83) = 125 VISITOR SPACES PER 100 m ² (1000)	PROPOSED: 125 VISITOR SPACES PER UNIT (83) = 125 VISITOR SPACES PER 1000 m ² (1000)	125 VISITOR SPACES PER 1000 m ² (1000)				
15. LOCKERS	REQUIRED: 108 (7 ACCESSIBLE SPACES REQUIRED)	PROPOSED: 108 (7 ACCESSIBLE SPACES PROVIDED)	108				
16. BICYCLE	REQUIRED: 10	PROPOSED: 10	10				
17. INDOOR AMENITY	REQUIRED: m ² F12	PROPOSED: 175.68 m ² F12	175.68 m ² F12				
18. OUTDOOR AMENITY	REQUIRED: m ² F12	PROPOSED: 1,000.00 m ² F12	1,000.00 m ² F12				

This drawing is not to be used for construction unless it is approved by the City of Caledon. The Designer of these plans and specifications gives no warranty or representation to any party about the completeness of these documents or the accuracy of any information or data contained therein. The Designer shall not be liable for any errors or omissions in these documents or for any consequences or damages of any kind arising from the use of these documents. The Designer shall not be liable for any delays or damages of any kind arising from the use of these documents. The Designer shall not be liable for any delays or damages of any kind arising from the use of these documents.

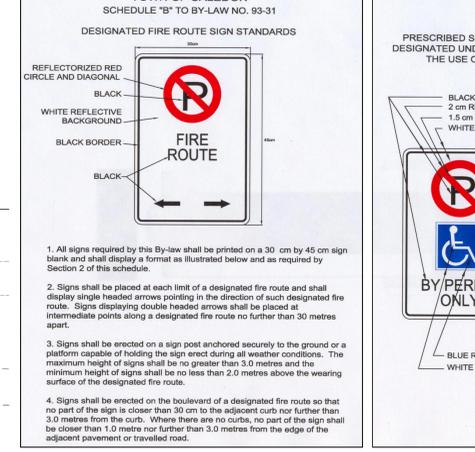
Garbage storage room to be located inside building - ground floor for retail, garbage and P1 for residential garbage.

3 issued for rezoning / spa
2 issued for rezoning / spa
1 issued for client review

04.30.19
02.23.18
11.23.17

OBC MATRIX				
Item	Ontario Building Code Data Matrix Part 3 or 9	OBC Reference		
1. Project Description	<input checked="" type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Change of Use	<input type="checkbox"/> Part 11 <input type="checkbox"/> Part 3 <input type="checkbox"/> Part 9	1.1.2 1.1.1 9.10.1.3	2.1.1 2.1.1 9.10.1.3
2. Major Occupancy(s)	Group F1, (PARKING)	3.2.1.2, 3.2.1.5	9.10.2	9.10.2
3. Building Area	Existing: 5,082 m ² New: 5,082 m ² Total: 5,082 m ²	11.3.2	11.3.2	11.3.2
4. Gross Area	Existing: 5,082 m ² New: 5,082 m ² Total: 5,082 m ²	11.3.3	11.3.3	11.3.3
5. Number of Storeys	Below grade: 1	3.2.1.4, 11.3.2	11.3.3	11.3.3
6. Number of Streets/Fire Fighter Access	2	3.2.2.0 & 3.2.5	9.10.9	9.10.9
7. Building Classification	3.2.2.7c	9.10.4	9.10.4	9.10.4
8. Sprinkler System Proposed	<input checked="" type="checkbox"/> Entire Building <input type="checkbox"/> Partial Building <input type="checkbox"/> None	3.2.2.15, 11.4.3.4, 3.3.4.3(1), 3.6.2.5(1)(b), 3.6.3.3(3)	9.10.8	9.10.8
9. Staircase required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.16	N/A	N/A
10. Fire Alarm required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.4	9.10.2	9.10.2
11. Water Service/Supply is Adequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.7	N/A	N/A
12. High Building	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.6	N/A	N/A
13. Permitted Construction	<input type="checkbox"/> Combustible <input type="checkbox"/> Non-combustible <input type="checkbox"/> Both	3.2.2.20-83	9.10.6	9.10.6
14. Mezzanine(s) Area m ²	N/A	3.2.1.1(3)-(8)	9.10.4	9.10.4
15. Occupant load based on	<input checked="" type="checkbox"/> m ² /person <input type="checkbox"/> design of building	3.1.6	9.0.1.3	9.0.1.3
16. Barrier-Free Design	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No(Explain)	3.8	9.2.3	9.2.3
17. Hazardous Substances	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.3.1.2 & 3.3.1.9	9.10.13(4)	9.10.13(4)
18. Required Fire Resistance	Required: FRR (Hours) Rating: Floor-to-Floor between "G" and "1" = 2 hours FRR of support members = 2 hours mezzanine 2 hours N/A	Listed Design No. or Description 3.2.2.20-83 & 3.2.1.4 3.10.9 3.10.9	9.10.9 9.10.9	9.10.9 9.10.9
19. Spill Separation - Construction of Exterior Walls		3.2.3	9.10.14	9.10.14

OBC MATRIX				
Item	Ontario Building Code Data Matrix Part 3 or 9	OBC Reference		
1. Project Description	<input checked="" type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Change of Use	<input type="checkbox"/> Part 11 <input type="checkbox"/> Part 3 <input type="checkbox"/> Part 9	1.1.2 1.1.1 9.10.1.3	2.1.1 2.1.1 9.10.1.3
2. Major Occupancy(s)	Group C, (RESIDENTIAL)	3.2.2.45	9.10.2	9.10.2
3. Building Area	Existing: 1,456 m ² New: 1,456 m ² Total: 1,456 m ²	11.3.2	11.3.2	11.3.2
4. Gross Area	Existing: 1,456 m ² New: 1,456 m ² Total: 1,456 m ²	11.3.3	11.3.3	11.3.3
5. Number of Storeys	Below grade: 1	3.2.1.4, 11.3.2	11.3.3	11.3.3
6. Number of Streets/Fire Fighter Access	2	3.2.2.0 & 3.2.5	9.10.9	9.10.9
7. Building Classification	3.2.2.7c	9.10.4	9.10.4	9.10.4
8. Sprinkler System Proposed	<input checked="" type="checkbox"/> Entire Building <input type="checkbox"/> Partial Building <input type="checkbox"/> None	3.2.2.15, 11.4.3.4, 3.3.4.3(1), 3.6.2.5(1)(b), 3.6.3.3(3)	9.10.8	9.10.8
9. Staircase required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.16	N/A	N/A
10. Fire Alarm required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.4	9.10.2	9.10.2
11. Water Service/Supply is Adequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.7	N/A	N/A
12. High Building	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.6	N/A	N/A
13. Permitted Construction	<input checked="" type="checkbox"/> Combustible <input type="checkbox"/> Non-combustible <input type="checkbox"/> Both	3.2.2.20-83	9.10.6	9.10.6
14. Mezzanine(s) Area m ²	N/A	3.2.1.1(3)-(8)	9.10.4	9.10.4
15. Occupant load based on	<input checked="" type="checkbox"/> m ² /person <input type="checkbox"/> design of building	3.1.6	9.0.1.3	9.0.1.3
16. Barrier-Free Design	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No(Explain)	3.8	9.2.3	9.2.3
17. Hazardous Substances	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.3.1.2 & 3.3.1.9	9.10.13(4)	9.10.13(4)
18. Required Fire Resistance	Required: FRR (Hours) Rating: Floors 1 hours Roof 0 hours FRR of support members = 2 hours mezzanine 2 hours N/A	Listed Design No. or Description 3.2.2.20-83 & 3.2.1.4 3.10.9 3.10.9	9.10.9 9.10.9	9.10.9 9.10.9
19. Spill Separation - Construction of Exterior Walls		3.2.3	9.10.14	9.10.14



SURVEY DATA	
PLAN OF SUBDIVISION OF PART OF LOT 21, CONVESSION 1 TOWNSHIP OF ALBION, COUNTY OF PEEI BLOKS 157 AND 173 (0.30M RESERVE), REGISTERED PLAN 43M-1840 TOWN OF CALEDON REGIONAL MUNICIPALITY OF PEEI	PREPARED BY: MMH GEOMATICS ONTARIO LTD. 2410 MADONVILLE BLVD. MISSISSAUGA, ONTARIO, L5N 6S1, (905) 828-4770 082416

architectural team
 architect: mark zwicker
 owner: pluribus corp.
 applicant: mdf group
 planning: mdf group
 structural: -
 electrical: -
 mechanical: -
 landscape: baker turner inc.
 interior: -
 site services: stantec consulting ltd
 project: pluribus town square
 0 atchison rd, caledon ontario
 spa# 2018-0008

TOWN OF CALEDON
PLANNING
RECEIVED
Jun 29, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix B SWM Calculations
June 19, 2020

Appendix B SWM CALCULATIONS

Project: Mid Rise
Project Number: 160622596
Project Location: Caledon



Proposed Condition

Landuse Type	Landscape 0.25	Imp surf 0.9	Atotal (ha)	C	Peak Flow (m3/s)					
					2yr	5yr	10yr	25yr	50yr	100yr
North Area	0.025	0.245	0.270	0.840	0.072	0.088	0.107	0.121	0.136	0.151
Building		0.180	0.180	0.900	0.051	0.063	0.076	0.087	0.097	0.108
South Area	0.024	0.116	0.140	0.789	0.035	0.043	0.052	0.059	0.066	0.073
			0.590	0.85	0.159	0.193	0.235	0.267	0.299	0.332

Town of Caledon IDF curve parameters

Tr yr	Tc		5 min	
	A	B	C	
2	1070	7.85	0.8759	
5	1593	11	0.8789	
10	2221	12	0.908	
25	3158	15	0.9335	
50	3886	16	0.9495	
100	4688	17	0.9624	

RUNOFF COEFFICIENT

COMMERCIAL	
- DOWNTOWN & SUBURBAN SHOPPING	0.90
INDUSTRIAL	
- DOWNTOWN	0.90
- SUBURBAN INDUSTRIAL PARKS	0.75
RESIDENTIAL	
- APARTMENTS	
- ROW DWELLINGS	0.75
- DUPLEX DWELLINGS	0.70
- SEMIDETACHED - DOWNTOWN	0.60
- SINGLE FAMILY - DOWNTOWN	0.60
- SEMIDETACHED - SUBURBAN	0.50
- SINGLE FAMILY - SUBURBAN	0.40
SCHOOLS, CHURCHES, HOSPITALS	0.75
PARKS, CEMETERIES, RAIL YARDS	
(OVER 4 Ha)	0.20
(UNDER 4 Ha)	0.25

Mid Rise
 160622596
 Caledon



System	Condition	A (ha)	C	Imp (%)	Imp A (ha)	Diff A (ha)
Minor	Existing	0.59	0.7	72.22	0.43	0.098
	Proposed	0.59	0.85	88.89	0.52	
Major	Existing	0.4	0.7	72.22	0.29	0.116
	Proposed	0.45	0.86	90.00	0.41	

Wet Pond
 Total Required Volume (275m³/ha) 32.18 m³
 Extended Detention Volm (40m³/ha) 4.68 m³
 Permenant Pool Volume 27.50 m³

Table 3.2 Water Quality Storage Requirements based on Receiving Waters^{1, 2}

Protection Level	SWMP Type	Storage Volume (m ³ /ha) for Impervious Level			
		35%	55%	70%	85%
<i>Enhanced</i> 80% long-term S.S. removal	Infiltration	25	30	35	40
	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
<i>Normal</i> 70% long-term S.S. removal	Infiltration	20	20	25	30
	Wetlands	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
<i>Basic</i> 60% long-term S.S. removal	Infiltration	20	20	20	20
	Wetlands	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240



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	0.14	0.10	0.70	5	139.29	0.038
Total		0.14	0.10	0.70			0.038

Site Target Flow = **0.038** 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

$$Q = 2.78 \cdot C \cdot i \cdot A$$

Where:

C = Runoff Coefficient ¹

A = Site Drainage Area (ha)

i = Rain Intensity (mm/hr) ²

Q = Flow (m³/s)

Runoff Coefficients Scaled as Per The MTO Design Chart 1.07

¹Note 25 Year Runoff Coefficient is 2/5 Year Runoff Coefficient x 1.2

²Note 100 Year Runoff Coefficient is 2/5 Year Runoff Coefficient x 1.25

Storm	A	B	C
100 Year	4688	17	0.9624

Site Target Flow = **0.038** m³/s

Post Development Conditions

Catchment ID = 201

Area = 0.14 ha

Runoff Coefficient = **0.79**

25 Year Scaled Runoff Coefficient =

100 Year Scaled Runoff Coefficient =

Time of Conc = **10.0** min

Time Increment = **5.0** min

Design Release Rate = 0.038 m³/s

Maximum Storage = 13 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	0.060	36.2	23.0	13.2
15.0	166.9	0.051	46.1	34.5	11.6
20.0	145.1	0.045	53.5	46.0	7.5
25.0	128.5	0.039	59.2	57.5	1.7
30.0	115.3	0.035	63.7	69.0	0.0
35.0	104.6	0.032	67.4	80.5	0.0
40.0	95.7	0.029	70.6	92.0	0.0
45.0	88.3	0.027	73.2	103.5	0.0
50.0	82.0	0.025	75.5	115.0	0.0
55.0	76.5	0.023	77.5	126.5	0.0
60.0	71.7	0.022	79.2	138.0	0.0
65.0	67.5	0.021	80.8	149.5	0.0
70.0	63.7	0.020	82.2	161.0	0.0
75.0	60.4	0.019	83.5	172.5	0.0
80.0	57.4	0.018	84.6	184.0	0.0
85.0	54.7	0.017	85.7	195.5	0.0
90.0	52.2	0.016	86.6	207.0	0.0
95.0	50.0	0.015	87.5	218.6	0.0
100.0	47.9	0.015	88.3	230.1	0.0
105.0	46.0	0.014	89.1	241.6	0.0
110.0	44.3	0.014	89.8	253.1	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 = 292.16 m
Size = 152 mm
C = 0.62
Obvert = 292.309 m



Type of Orifice Control: VERTICAL
Location: MH116

inv = 292.157 m

100 Year Water Level Elevation = 292.83 m

Area = 0.018 m²
Head = 0.59 m

Design Flow = 0.038 m³/s
Target Flow = 0.038 m³/s



160622596: Chateaux of Caledon Town Square
Catchbasin (CB) Capture Analysis

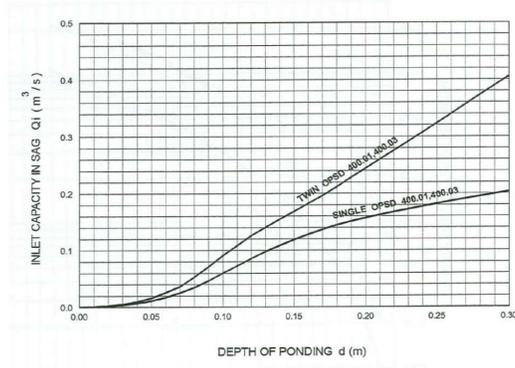
South Area (ha) 0.14
 Tc min 5 1100 (mm/h) 239.35
 C coeff 0.79

CB ID	T/G Elv.	High Point Elv. (m)	Ponding Depth (m)	CB Qcap m3/s	CB Qcap 50% Blocked (m3/s)	Site Q100 m3/s
AD5	294.58	294.65	0.07	0.02	0.01	0.074
AD6	294.37	294.5	0.13	0.1	0.05	
AD7	294.35	294.4	0.05	0.015	0.0075	
CB8	294.28	294.34	0.06	0.02	0.01	
CB9	294.18	294.27	0.09	0.04	0.02	
AD10	294.16	294.2	0.04	0.01	0.005	
Total Qcap (m3/s)				0.205	0.1025	

Note:
 Qcap refers to CB capacity
 Q100 refers to 100yr flow generated from Site
 MTO Design Chart 4.19 used for determining CB capacity
 T/G is top of ground elevation

CBs able to capture Q100 with all CBs 50% Blocked.

Design Chart 4.19: Inlet Capacity at Road Sag



3.2.9. Meteorology

Town of Caledon intensity-duration frequency curves were originally derived from the rainfall data taken from the Guelph O.A.C. (Town Standard Drawing No. 105). The equations for these curves are as follows:

Return Period (Yrs.)	a	B	C
2	1070	0.8759	7.85
5	1593	0.8789	11
10	2221	0.9080	12
25	3158	0.9335	15
50	3886	0.9495	16
100	4688	0.9624	17

$$I = \frac{a}{(t + c)^b}$$

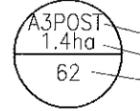
Where: a, b, c = above
 I = intensity (mm/hr)
 t = storm duration (min)



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

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.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

MAINTENANCE HOLE BENCHING DETAILS

REV. DATE: FEBRUARY 2007

APPROVED BY: [Signature] DRAWN BY: [Signature]

STD. DWG. NUMBER: 2-1-4 SCALE: N.T.S.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

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.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

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.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

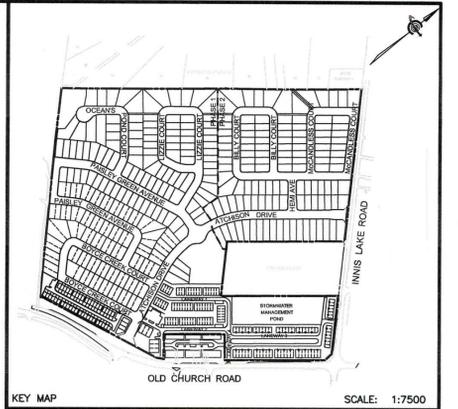
STANDARD HEAVY DUTY
FRAME AND COVER

REV. DATE: MARCH 1998

APPROVED BY: [Signature] DRAWN BY: [Signature]

STD. DWG. NUMBER: 2-2-2 SCALE: N.T.S.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING



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.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

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.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

CONCRETE BARRIER CURB
WITH STANDARD GUTTER
FOR RIGID PAVEMENT

April 1999 Rev

OPSD - 600.050

Ontario Provincial Standard Drawing

CONCRETE BARRIER CURB
WITH STANDARD GUTTER
TWO STAGE CONSTRUCTION

Nov 2008 Rev 1

OPSD 600.070

Ontario Provincial Standard Drawing

SEDIMENT CONTROL FENCE

STANDARD No. 304

APRIL 2000

TOWN OF CALEDON

IN-LINE STORMCEPTOR
MODEL STC 750

REV. DATE: FEBRUARY 2007

APPROVED BY: [Signature] DRAWN BY: [Signature]

STD. DWG. NUMBER: 2-3-1 SCALE: N.T.S.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING

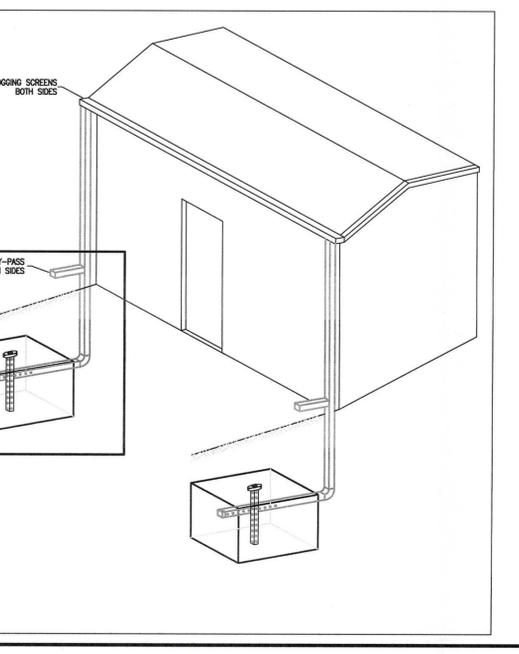
ROOF LEADER SOAKAWAY PIT DETAIL

REV. DATE: FEBRUARY 2007

APPROVED BY: [Signature] DRAWN BY: [Signature]

STD. DWG. NUMBER: 2-4-2 SCALE: N.T.S.

Region of Peel
PUBLIC WORKS
STANDARD DRAWING



CROSS-SECTION A-A
INFILTRATION TRENCH DETAIL

N.T.S.

SEDIMENT CONTROL FENCE

STANDARD No. 304

APRIL 2000

TOWN OF CALEDON

REVISION

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: Sept 9, 2010 APPROVED BY: [Signature]

BENCH MARK: BENCHMARKS 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: **COLE ENGINEERING**

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

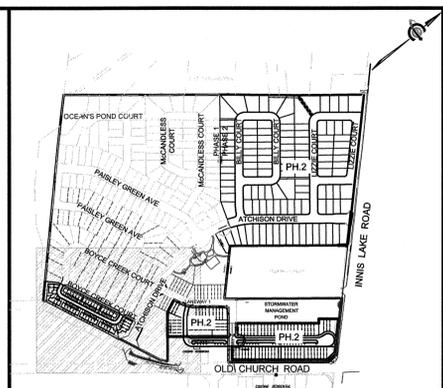
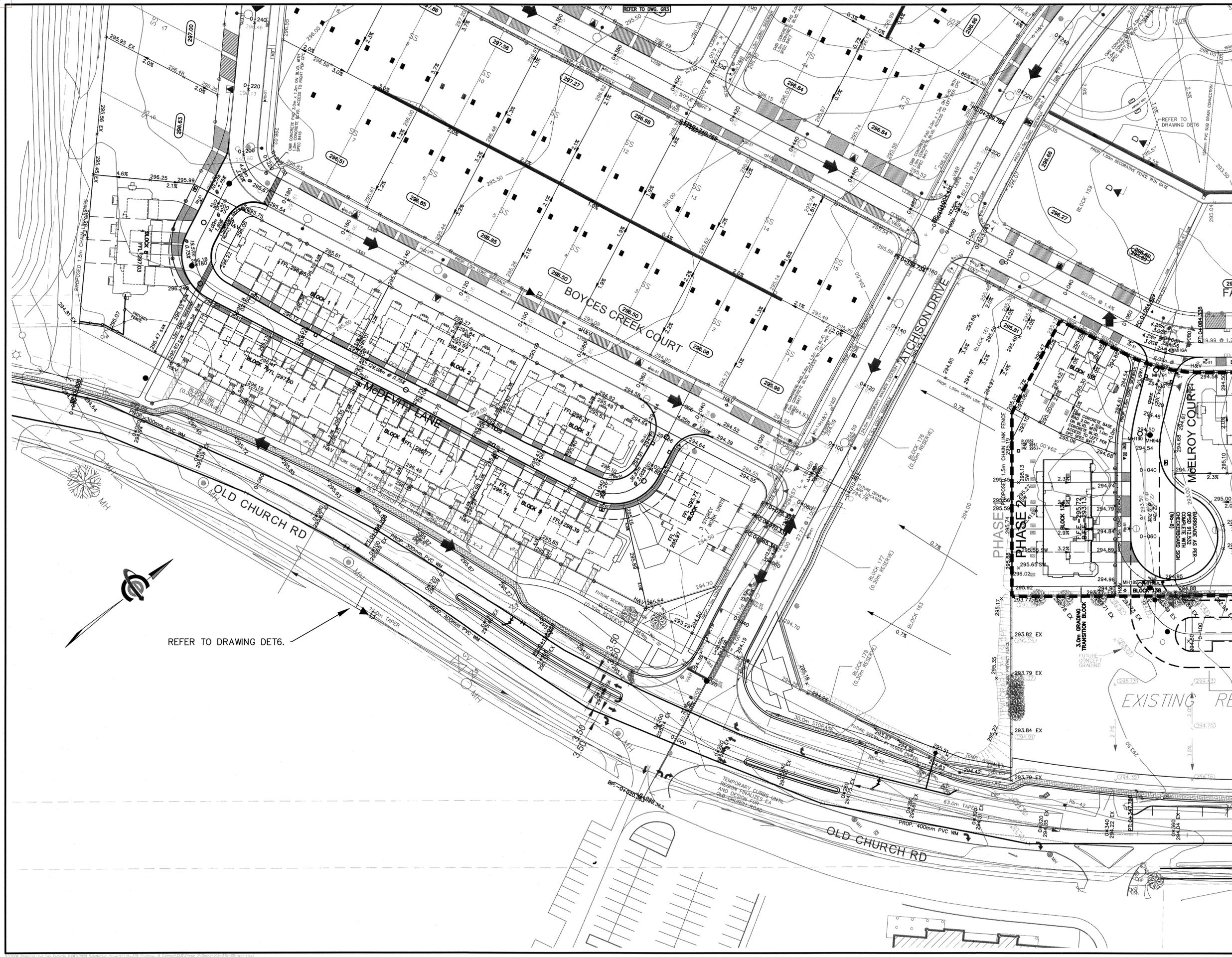
21T-07003C

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
- 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 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

LICENCED 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

TOWN OF CALEDON
PLANNING
RECEIVED
Jun 29, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix C WATERMAIN DESIGN Calculations
June 19, 2020

Appendix C WATERMAIN DESIGN CALCULATIONS

PRELIMINARY ESTIMATE of Required Fire Flow
Fire Underwriters Survey "Water Supply for Public Fire Protection", 1999
Mid-Rise Development, Chateaux of Caledon
Caledon

June, 2020

Project #160622596

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 =	7,781	sq.m.
Level 1	1,803	sq.m.	(ground floor)		
Level 2	1,570	sq.m.	(adjoining floor)	@	50%
Level 3	1,570	sq.m.	(adjoining floor)	@	50%
Level 4	1,467	sq.m.	(adjoining floor)	@	50%
Level 5	1,371	sq.m.	(adjoining floor)	@	50%

A = 4,792 sq.m.

F = 220 · (C) · √(A)
= 9,137 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 =		200	one bedroom 1.68ppu and 2 and more 2.54ppu
Avg Flow =		280	l/p/d
Peak Day =		1.30	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 =		117.98	L/s
Watermain Dia =		200	mm
Watermain Area =		0.0314	m ²
Max Pipe Velocity =		3.76	m/s



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

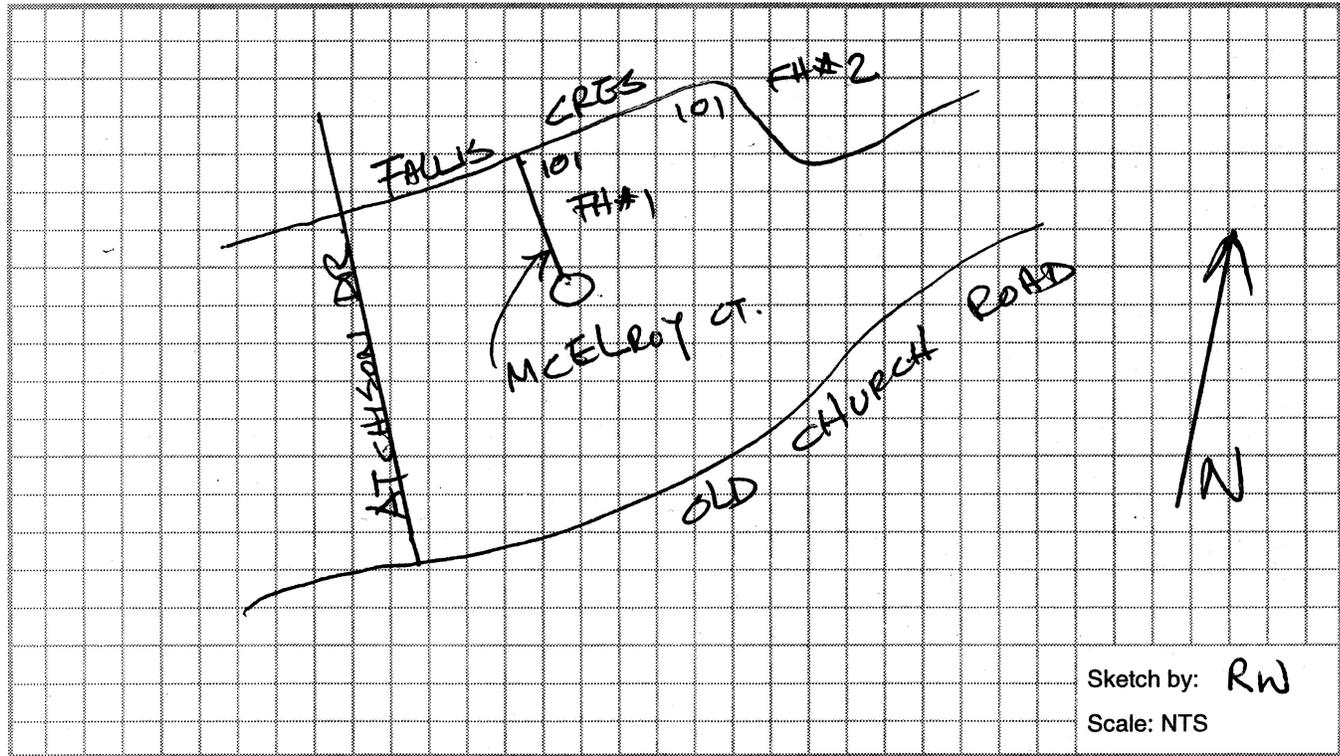
WATER SUPPLY TEST

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:
Comments:

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

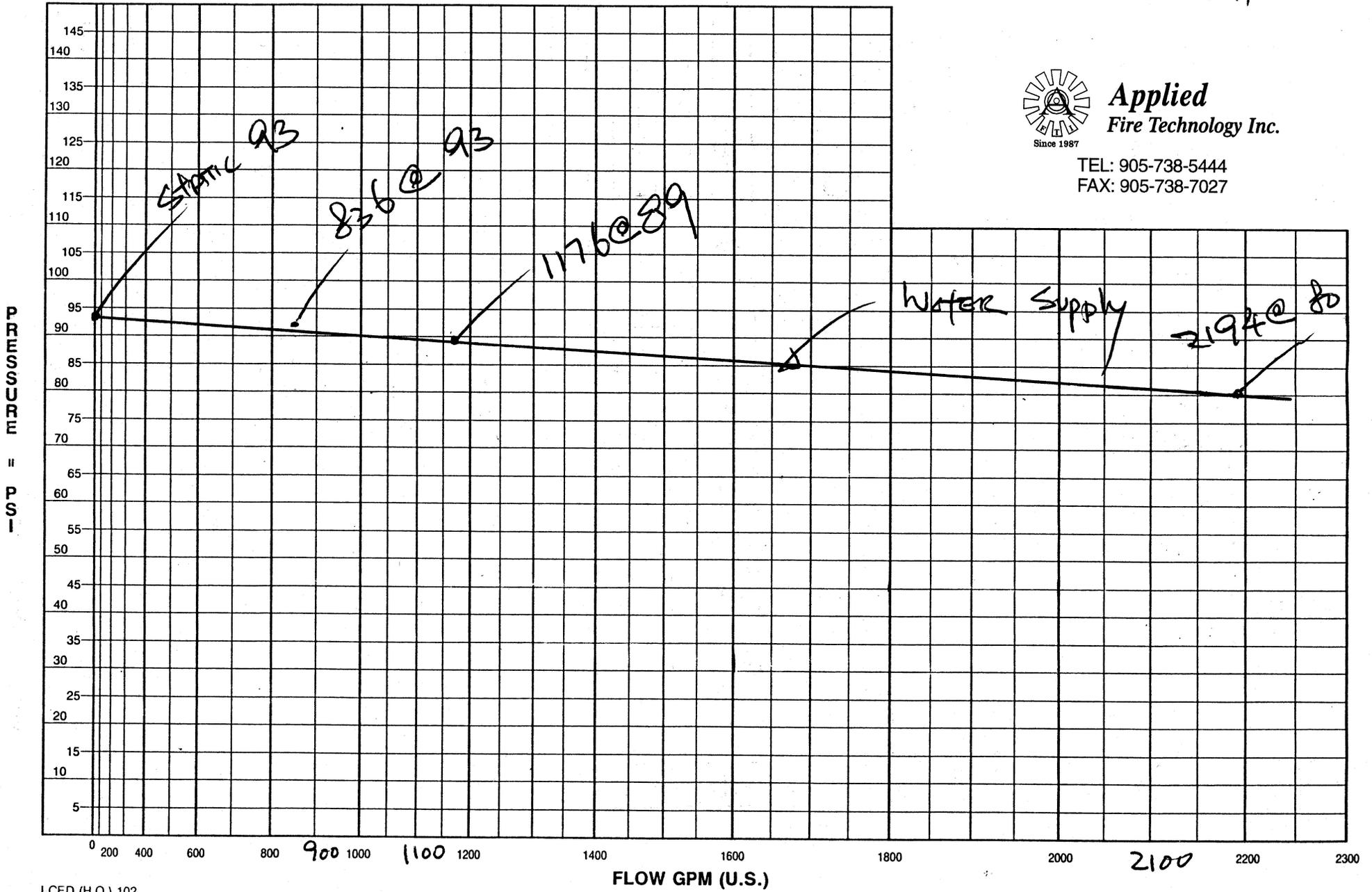
Test No.	No. of Outlets	Orifice Size (in.)	Pitot Reading (psi)	Equivalent Flow gpm (U.S.)	Total Flow gpm (U.S.)	Residual Pressure (psi)	Comments
1	1	1 3/4	84	838	836	93	0.997
2	1	2 1/2	62	1470	1176	89	0.8
3	2	2 1/2	54	1371, 1371	2194	80	0.8
4							

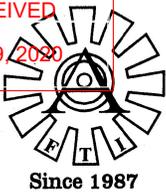


Name and address of municipal authority who should receive a copy.
PUC

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





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Design • Consulting • Testing • Inspection

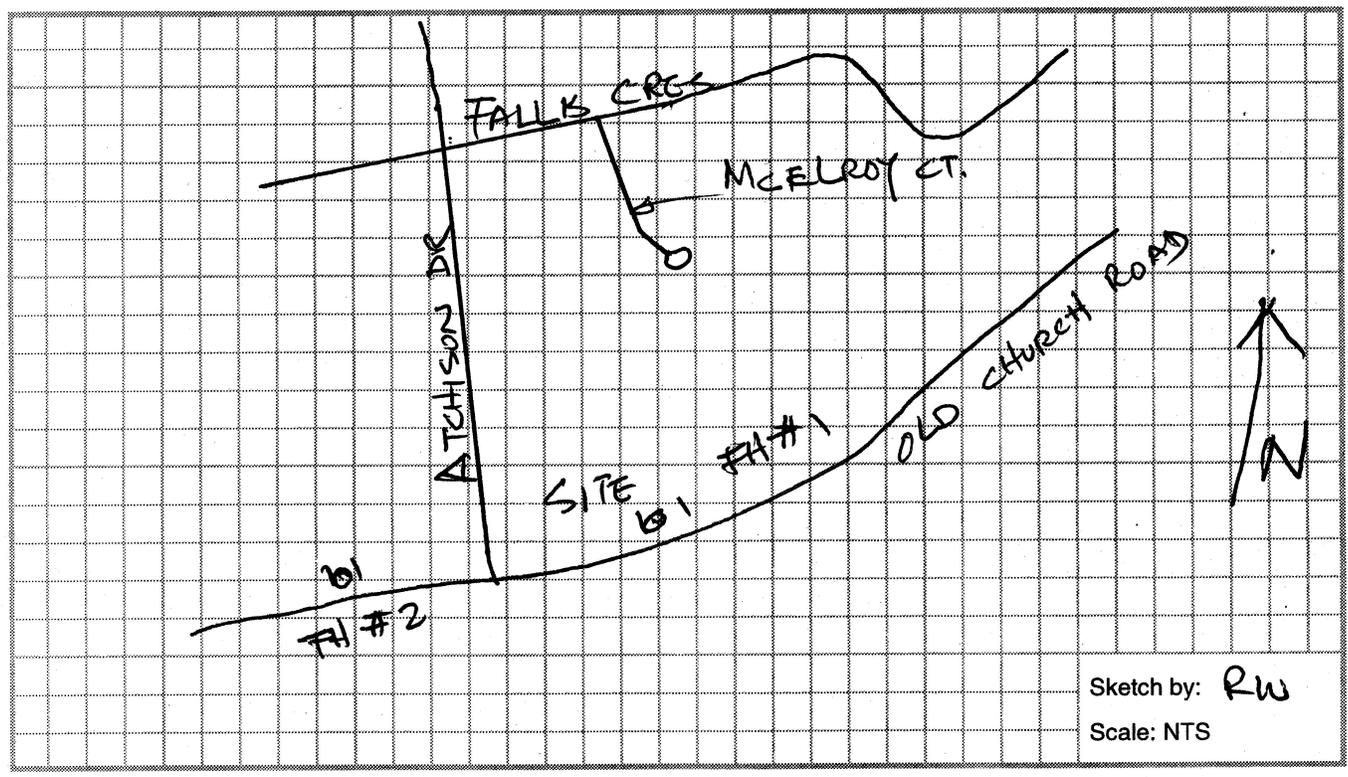
WATER SUPPLY TEST

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:
Comments:

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	0.997
2	1	2 1/2	60	1445	1156	90	0.8
3	2	2 1/2	52	1340, 1345	2152	84	0.8
4							



Sketch by: RW
Scale: NTS

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

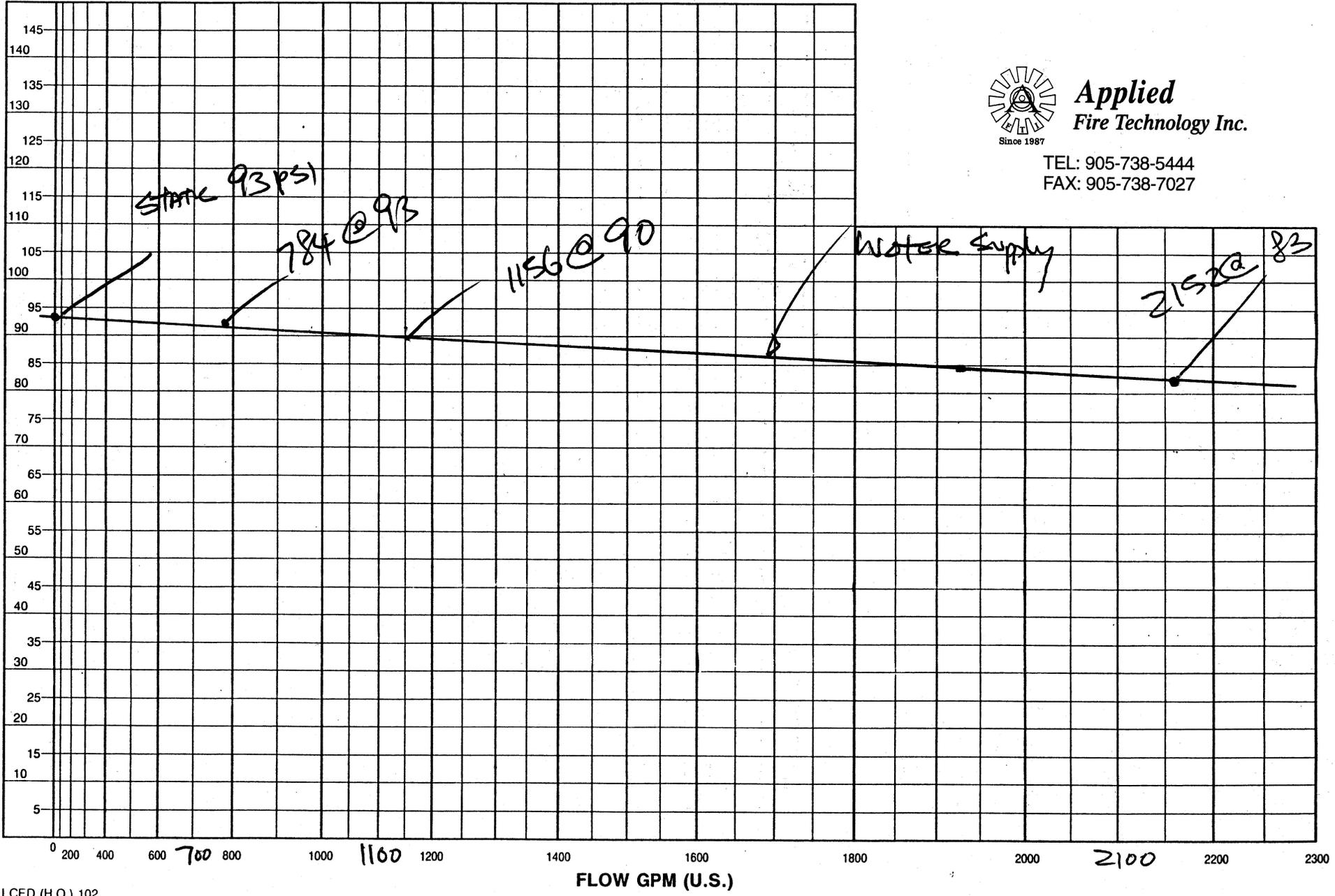
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Jun 29, 2020

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: CALDON EAST, ONT.

DATE: DEC 13 2018 BY: AFTI

PRESSURE = PSI



Applied
Fire Technology Inc.

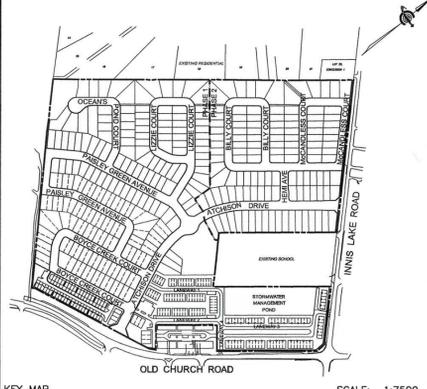
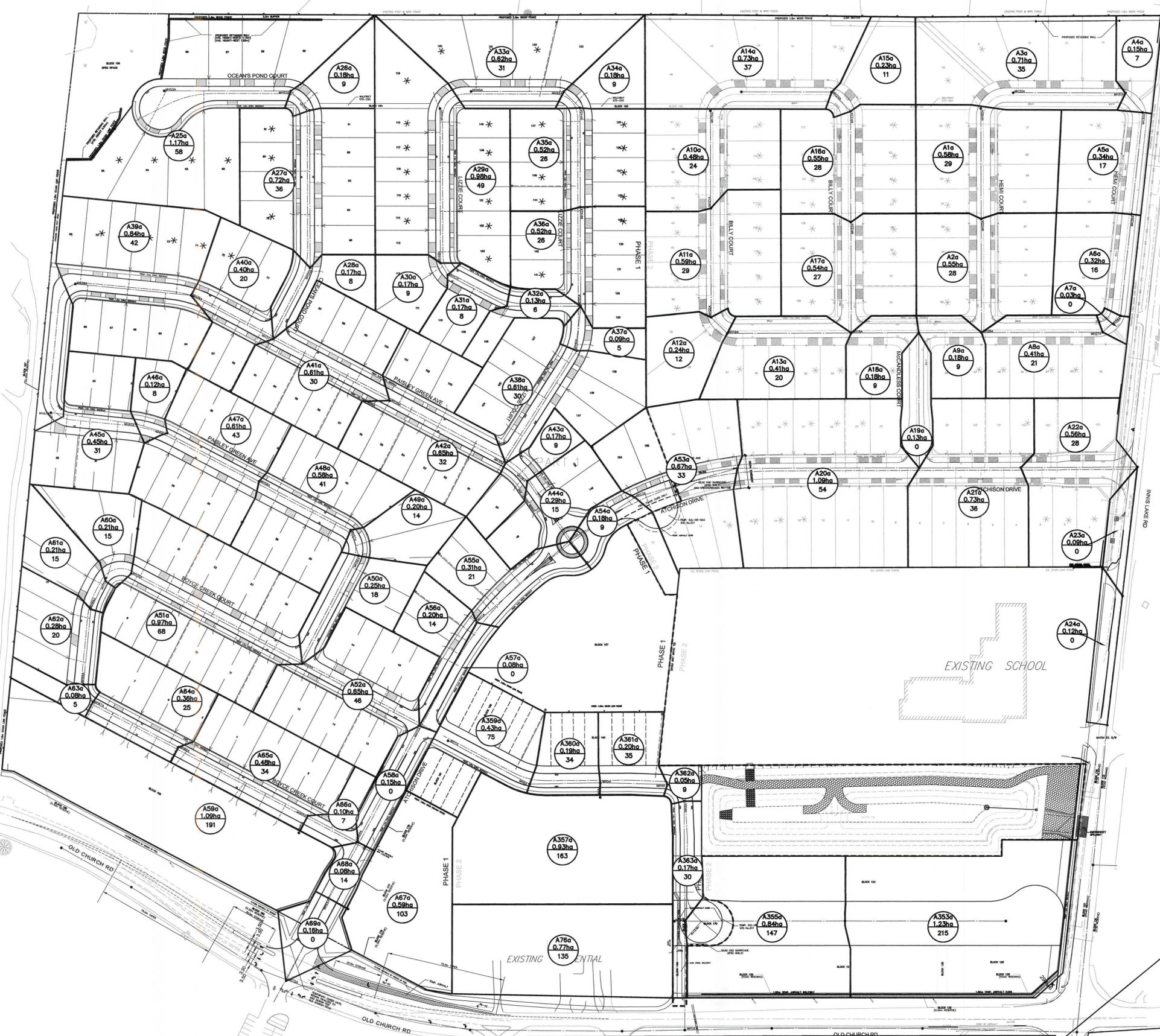
TEL: 905-738-5444
FAX: 905-738-7027

TOWN OF CALEDON
PLANNING
RECEIVED
Jun 29, 2020

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Appendix D Existing Information
June 19, 2020

Appendix D EXISTING INFORMATION



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

475
 x265.15 EX
 x265.15

SANITARY DRAINAGE AREA NUMBER
 DRAINAGE AREA (ha) A10a
 0.50ha

POPULATION 0

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: 2/10/20 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. ELEVATION = 310.640

CONSULTANT

COLE ENGINEERING
 70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
 T: 905.947.1161 F: 905.947.1161 F: 905.947.0266

PROFESSIONAL ENGINEER
 A.M. BARROSA HERRERO
 2/10/20
 PROVINCE OF ONTARIO

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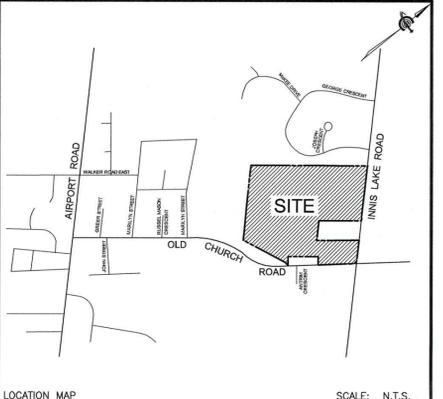
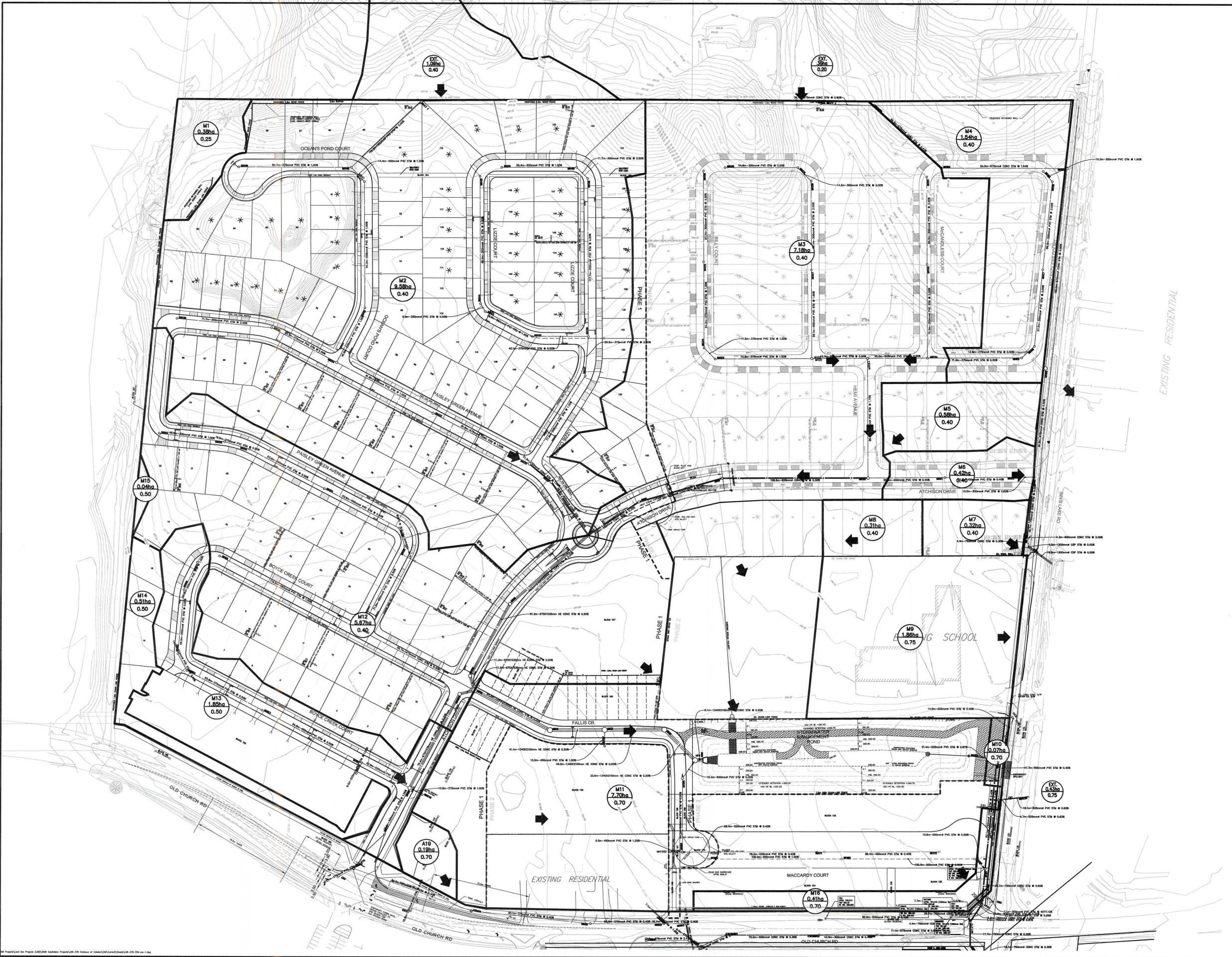
PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
 CHATEAUX OF CALEDON PHASE 1
 PART OF LOT 21, CONCESSION 1 (ALBION)

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



LOCATION MAP SCALE: N.T.S.

LEGEND

EXISTING CONTOUR	- 475
EXISTING GRADE	x 265.15 EX
PROPOSED GRADE	x 265.15
EXISTING STORM MANHOLE	○
EXISTING SANITARY MANHOLE	○
EXISTING SINGLE CATCH BASIN / DOUBLE CATCH BASIN	□
EXISTING DITCH INLET CATCH BASIN	□
PROPOSED STORM MANHOLE	○
PROPOSED SINGLE CATCH BASIN / DOUBLE CATCH BASIN	□
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	-
PROPOSED STORM SEWER	-
PROPOSED STORM SERVICE	-
PROPERTY LINE	-
EASEMENT LINE	-
PROPERTY PHASE LINE	-
OVERLAND FLOW DIRECTION	→
PROPOSED MAJOR STORM DRAINAGE AREA	→

STORM DRAINAGE AREA NUMBER	M6
DRAINAGE AREA (ha)	0.50ha
COMPOSITE RUNOFF COEFFICIENT	0.25

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: 2/15/2012 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. ELEVATION = 310.640

CONSULTANT

COLE ENGINEERING

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

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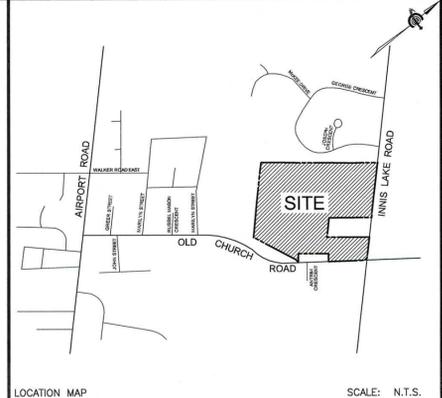
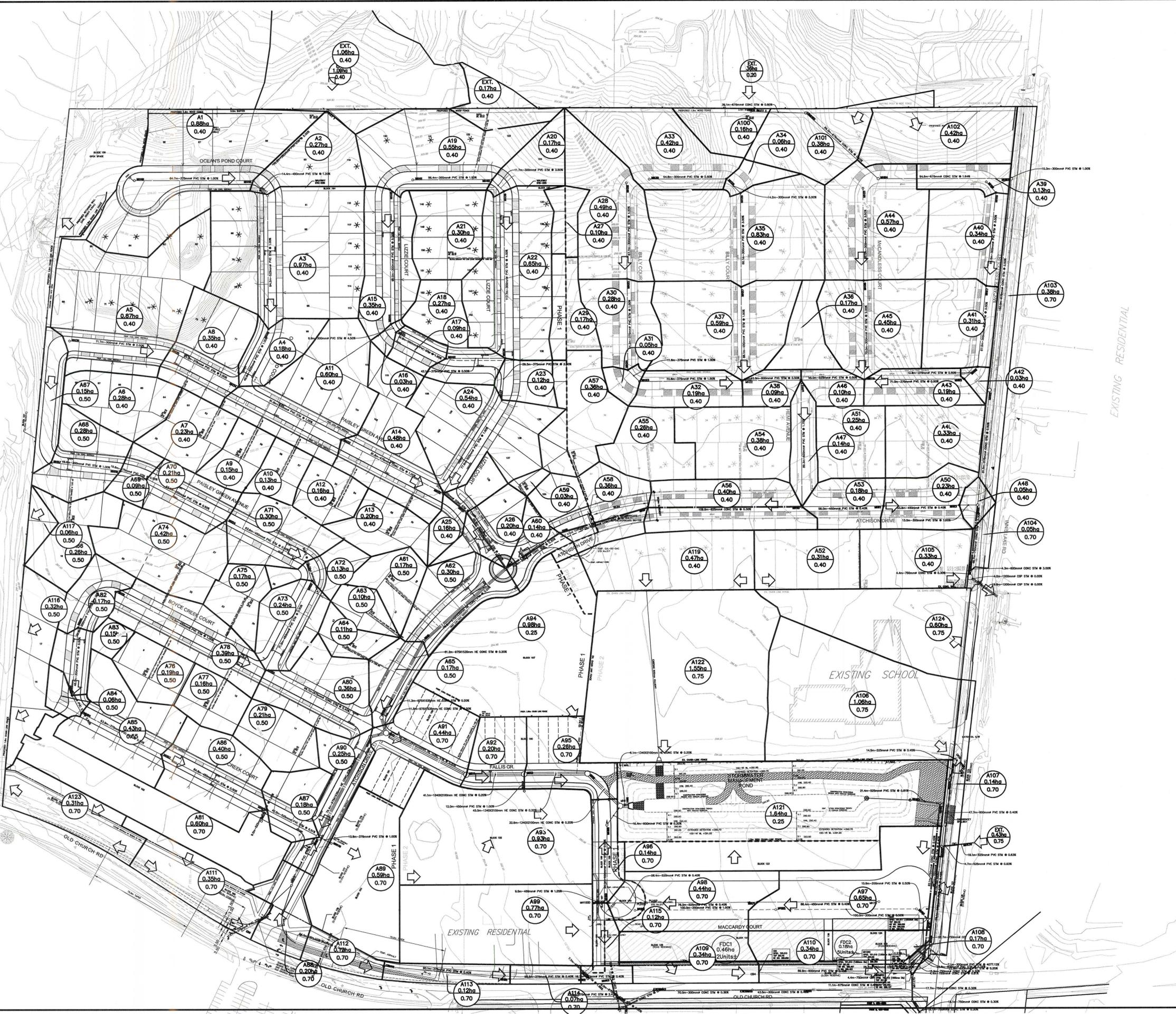
PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 1
PART OF LOT 21, CONCESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-07003C
STORM DRAINAGE (MAJOR) AREA PLAN

SCALE:	1:1250	PROJECT No.	LO8-378
DESIGNED BY:	DH	DRAWN BY:	JM
CHECKED BY:	AR	DATE:	AUG. 10 2010
		DRAWING No.	STM2



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 STORM MANHOLE
- PROPOSED SINGLE CATCHBASIN / DOUBLE CATCHBASIN
- 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
- PROPOSED STORM SEWER
- PROPOSED STORM SERVICE
- PROPERTY LINE
- EASEMENT LINE
- PROPERTY PHASE LINE
- OVERLAND FLOW DIRECTION

STORM DRAINAGE AREA NUMBER
DRAINAGE AREA (ha) **A6 0.50ha**

COMPOSITE RUNOFF COEFFICIENT **0.25**

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	SEP 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 10/20* 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.
ELEVATION = 310.640

CONSULTANT

COLE ENGINEERING
70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
TEL: 905.477.1100 FAX: 905.477.1101 P: 905.960.0264

[Professional Engineer Stamp: A.M. BARBOSA BENEHO, P.Eng., 17,200, PROVINCE OF ONTARIO]

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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

211-07003C

**STORM DRAINAGE (MINOR)
AREA PLAN**

SCALE: 1:1250 PROJECT No. L08-378
DESIGNED BY: DH DRAWN BY: JM DRAWING No.
CHECKED BY: AR DATE: AUG. 10 2010 STM1



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
 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



70 Valleywood, Markham, ON L3R 4T5

Phone: (905) 940-6161, Fax: (905)940-2064

Region of Peel Sanitary Design Sheet

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



70 Valleywood, Markham, ON L3R 4T5

Phone: (905) 940-6161, Fax: (905)940-2064

Region of Peel Sanitary Design Sheet

Peaking Factor K =

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

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

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

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

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



70 Valleywood, Markham, ON L3R 4T5

Phone: (905) 940-6161, Fax: (905)940-2064

Region of Peel Sanitary Design Sheet

Peaking Factor K =

$$\text{Average Flow} = \frac{1+14}{4+P^{1/2}} = \frac{15}{4+P^{1/2}}$$

Average Flow = 365 l/ca/day
Infiltration = 0.2 l/s/ha
Minimum Velocity = 0.75 m/s
Maximum Velocity = 3.5 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



70 Valleywood, Markham, ON L3R 4T5

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Region of Peel
 Sanitary Design Sheet

Peaking Factor K =

Average Flow = $365 \frac{l}{ca/day}$
 Infiltration = $0.2 \frac{l}{s/ha}$
 Minimum Velocity = 0.75 m/s
 Maximum Velocity = 3.5 m/s

P=Population in Thousands

PHASE 2

Project: Chateaux of Caledon

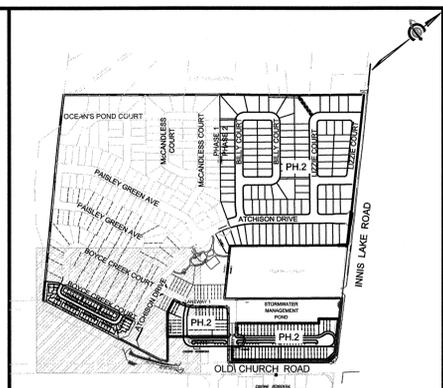
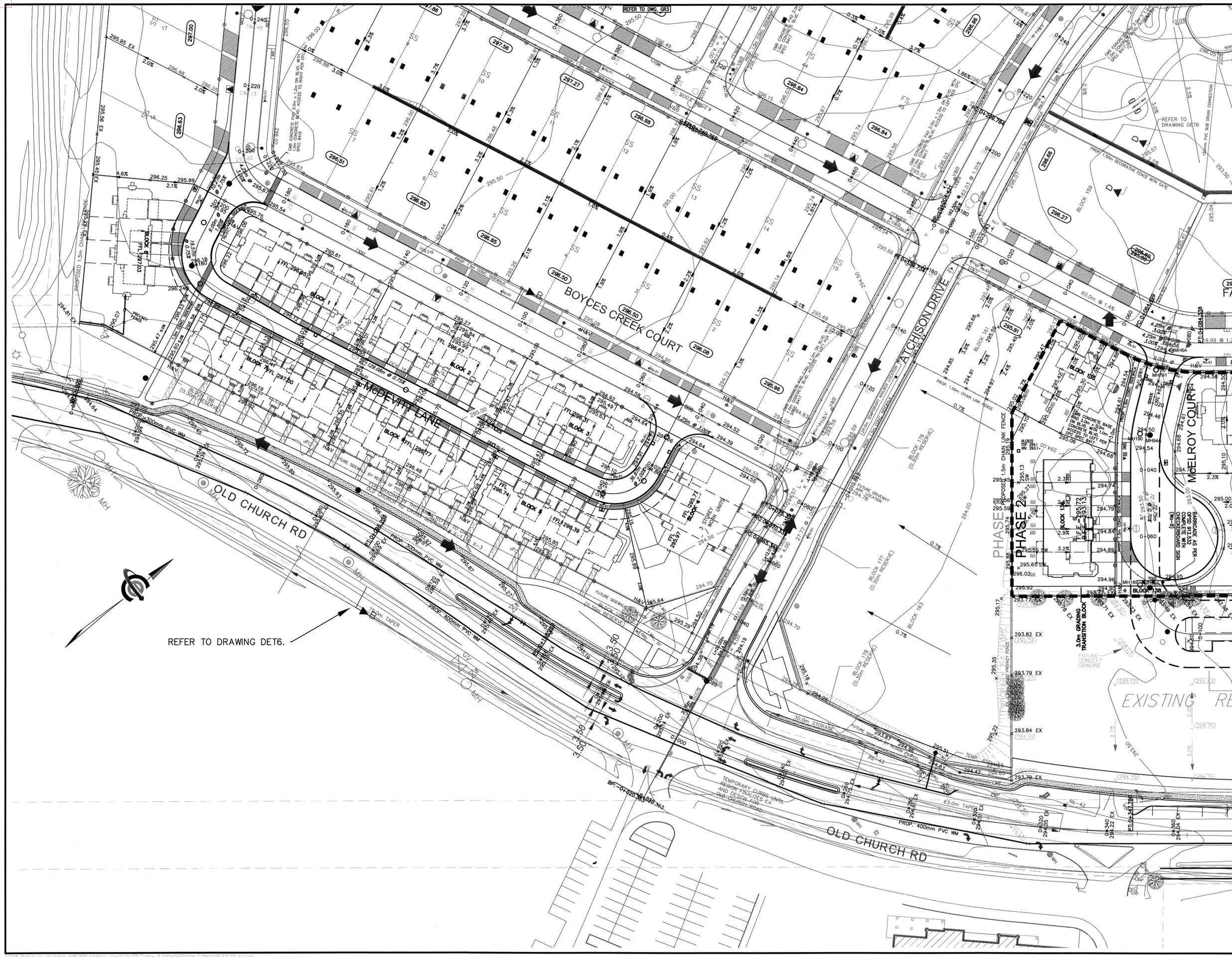
Project No: L08-378

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)
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



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
- EXISTING DITCH
- 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 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

LICENCED PROFESSIONAL ENGINEER
A.M. BARBOSA RIBEIRO
July 25, 2012
PROVINCE OF ONTARIO

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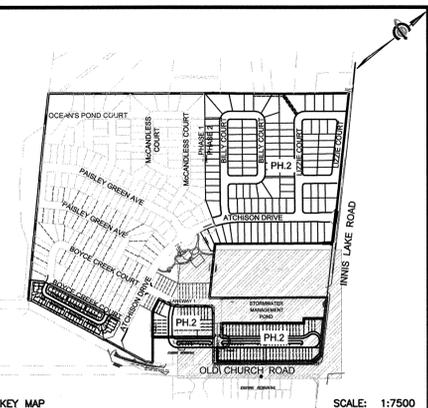
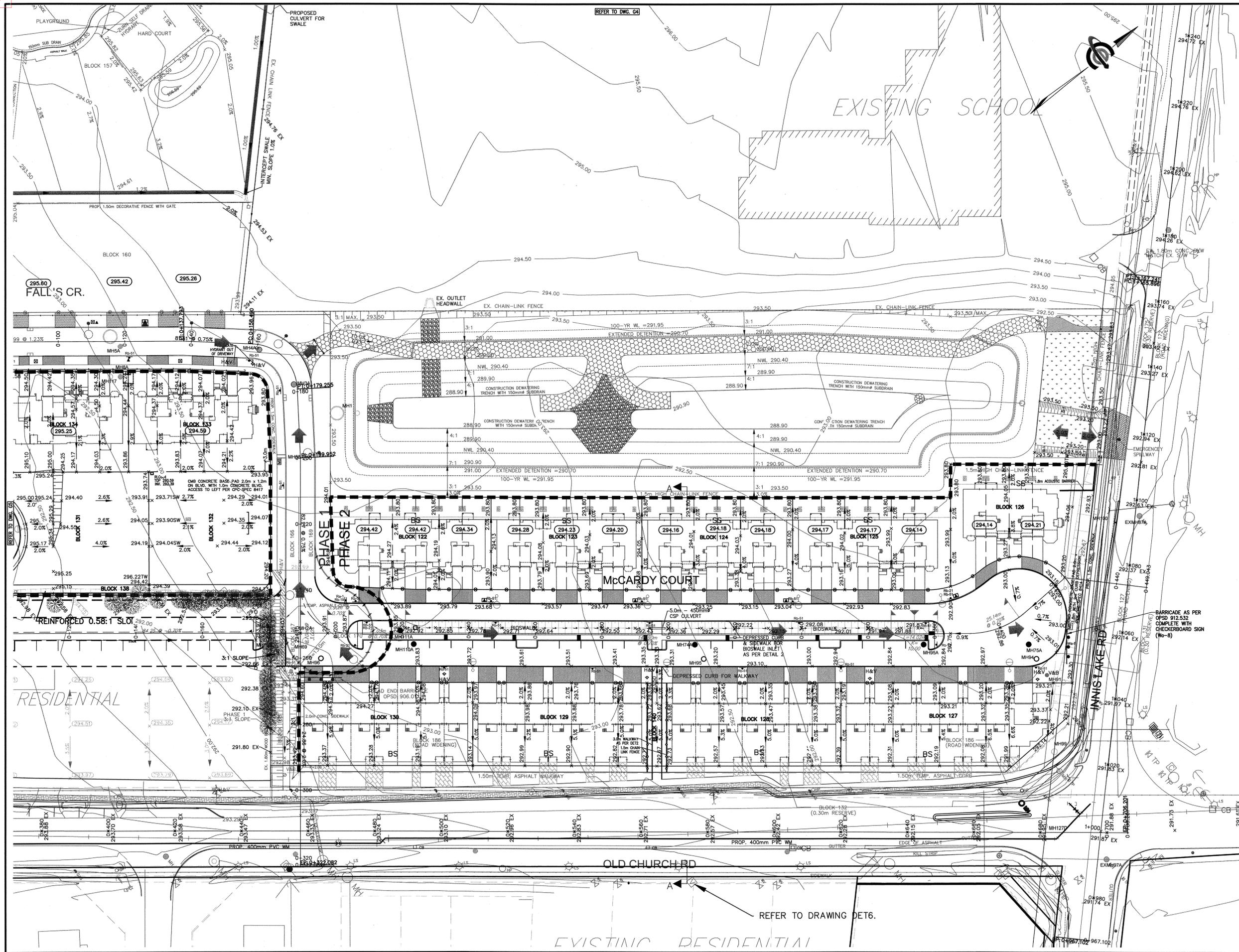
PROJECT NAME
PROPOSED RESIDENTIAL DEVELOPMENT
CHATEAUX OF CALEDON PHASE 2
PART OF LOT 21, CONVESSION 1 (ALBION)

Region of Peel

TOWN OF CALEDON

21T-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 APPROV'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

COLE ENGINEERING

70 WALLSWOOD DRIVE, MARKHAM, ON L3R 4T5
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REGISTERED PROFESSIONAL ENGINEER
AL RABOORA RABOORA
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-07003Cg

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**

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

A = 1593
B = 11
C = 0.8789

PHASE 1
PHASE 2

Date: 22-Dec-17

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

Starting Tc = 15 min

*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											
PHASE 1																			
OCEAN'S POND COURT	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
EXTERNAL		DINL2	0+159.397	48	0+142.852	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	A2	48	0+159.397	47	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	A3	47	0+142.852	46	0+047.454	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																			
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
PAISLEY GREEN AVENUE																			
PAISLEY GREEN AVENUE	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																			
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
LIZZIE COURT																			
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																			
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																			
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																			
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



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**

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

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)		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.	INTENSITY (mm/hr)	(m3/s)	(m)	(%)	(mm)	(m3/s)	(m/s)	(min)	(min)
		MH	Sta.	MH	Sta.	A	C	A^C	A^C	A									
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
 Starting Tc = 15 min

PHASE 1
 PHASE 2

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

Date: 22-Dec-17

*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)	(m ³ /s)	(m)	(%)	(mm)	(m ³ /s)	(m/s)	(min)	(min)
		MH	Sta.	MH	Sta.	A (ha)	C	A*C	A*C										
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
Starting Tc = 15 min

PHASE 1
PHASE 2

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

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

PHASE 1
 PHASE 2

*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
 Starting Tc = 15 min

PHASE 1
 PHASE 2

*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