Proposed Multiple Residential Condo Development – 12148 Albion Vaughan Rd
• Town of Caledon

Functional Servicing and Stormwater Management Report

December 2020
MAEL Reference 17-849

MASONGSONG ASSOCIATES ENGINEERING LIMITED
ENGINEERING SUSTAINABLE FUTURES

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Multiple Residential Condo Development

12148 Albion Vaughan Rd

Town of Caledon

December 2020

MAEL Project No: 17-849

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TABLE OF CONTENTS

APPENDICES

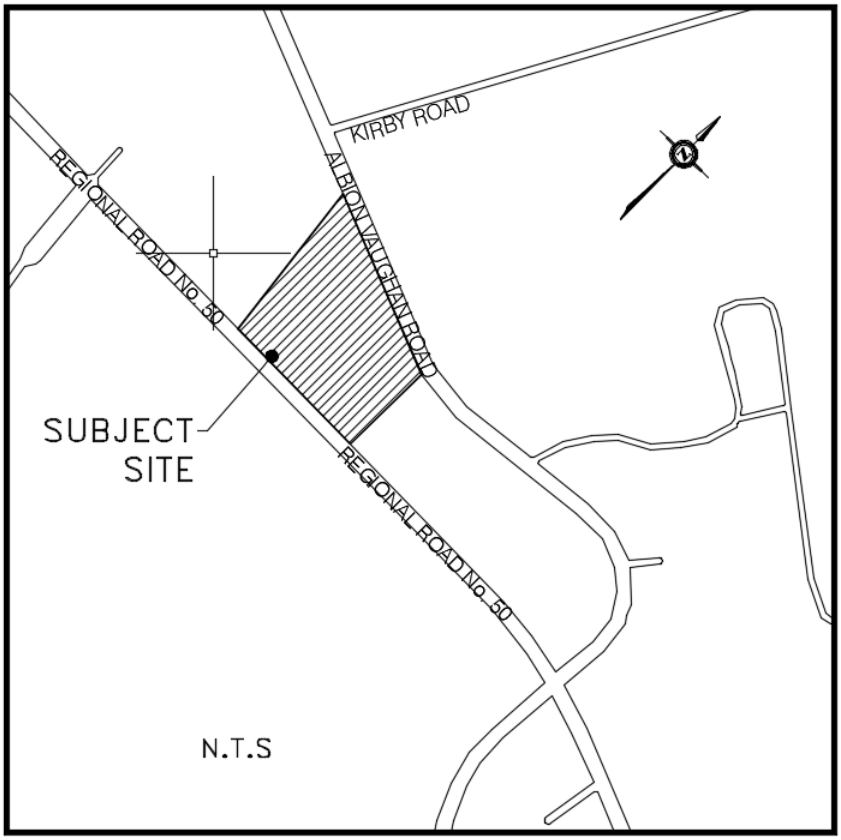
1 INTRODUCTION

1.1 Study Objectives and Location

Masongsong Associates Engineering Limited has been retained by Aztec Restoration Inc. to prepare this Functional Servicing Plan (FSR), and Stormwater Management Report in support of a Site Plan Application for the development of a Multiple Residential comprising a total of 240 units and 10 Townhomes in the Town of Caledon

The subject site is located 370m North of Mayfield Road between Regional Road 50 and Albion-Vaughan Road in the south sector of Town of Caledon. Figure 1 below illustrates the location of the proposed development.
The site has an overall area of approximately 1.538 ha (3.80 ac), but only 1.136 hectares (2.807 acres) is the developable portion of the property, 0.402ha (0.99 acres) at the west side will not be developed, and instead will be slightly regraded to realign a portion of the Robinson creek inside the subject site which was improperly realigned by the previous land owner.

Figure 1 *Site Location Key Plan*



The objective of this report is to identify the requirements for the site servicing and stormwater management as it relates to current Town of Caledon criteria, and to demonstrate how this proposed site will function within the framework of existing infrastructure.

1.2 Existing Site Description

The subject site is part of Lot 1 Concession 7 Town of Caledon. Regional Municipality of Peel. Refer to Survey plan prepared by David B. Searles Surveying enclosed In Appendix A.

The site is identified with municipality address 12148 Albion Vaughan comprising of two brick dwellings and framed stucco pavilion with approximately 97% of the site covering with small vegetation and a few trees. The subject site is bounded by regional Road 50/Robinson Creek to the west, Commercial lands to the south, Albion-Vaughan Road to the east and a residential property to the North.

There is a portion of the existing channel running on the west site of the study which will be realign.

The subject site is located partially within the Regulatory Flood Plain as identified on Humber River Floodplain mapping Sheet No.169 provided by the Toronto and Region Conservation Authority (TRCA), enclosed in Appendix A for reference.

1.3 Proposed Development Plan

The development proposal is to construct a 6-storey residential high-rise condominium tower A, 6-storey residential high-rise condominium tower B with a total of 240 units, 20 townhomes, 438 underground parking spaces and 15 parking spaces at grade.

Vehicular access to the site will be provided at the following three locations: one main driveway, and one service road for each tower all on Albion Vaughan Road.

The proposed architectural Site Plan Concept is included in Appendix A1.0 prepared by Fausto Cortese Architects.

It is proposed to modify slightly the existing floodplain as identified by TRCA and to provide the required minimum 10m setback from the floodplain line to the development limit.

2 GRADING

2.1 Existing Topography

The existing topography indicates that the lands generally slope from the north to the south, with a 1.42m grade differential, ranging from a high of 230.08m to a low of 228.66m over 115.5m (a 1.2% gradient). The peak elevation runs along the furthest northwest corner of the existing site, while the low elevations are at the south of the subject site. A topographic survey plan prepared by David B. Searles Surveying Ltd. dated June 6, 2016 is included in Appendix A.

The pre-development drainage pattern indicates that the majority area currently sheet drains towards the existing channel located at the west site of the subject site, refer to Pre-development Drainage Plan, Figure 2 enclosed in Appendix B.

The west portion of site is bounded by an existing channel that runs south. Part of the existing channel will be regraded in accordance with TRCA policies; however, the pre-development drainage pattern and existing grade will be maintained at the south, east and majority of north property line. Refer to figure 3 for Post-development Master storm drainage plan and grading plan drawing SG1 enclosed in appendix B and D respectively.

The subject site is currently accessible from one driveway on Albion Vaughan Road and one on Highway 50, leading to the front of the existing two houses.

The existing topography data was provided by prepared by David B. Searles Surveying Ltd. dated June 6, 2016 is included in Appendix A.

2.2 Proposed Roadway and Grading

As illustrated on the Conceptual grading plan enclosed in Appendix D, the internal road network will have three accesses off Albion Vaughan Road.

The western portion of the site, of approximately 0.41ha which represents almost 27% of the entire site, has been identified as an Open Space area and will be regraded to match the original drainage pattern of the site prior to the improper creek realignment by the previous landowner. The remainder of the site, which consists of 1.13 ha of developable area, will be graded to ensure that the storm drainage is self contained. Driveways, road, and laneway drainage will be directed towards a local low point where a Low Impact Development (LID) measure will be located to capture and treat the storm drainage. Only 0.118ha of the developable area will be remain as per pre-development conditions consisted of uncontrolled area drained into the south side of the site. Refer to post-development Master storm drainage plan, enclosed in Appendix B.

3 WATER SERVICING

3.1 Existing Water Servicing

The subject site will be serviced by an existing 300mm diameter PVC watermain located along the Albion Vaughn Road.
Refer to existing municipal infrastructure Figure 5 enclosed in Appendix B and drawing 51608-D enclosed in Appendix B for existing infrastructure.

3.2 Proposed Water Servicing

A 300 mm watermain lateral servicing as the fire line will be tapped into the existing 300mm PVC watermain running along Albion Vaughn Road. A 150mm diameter domestic cold-water supply will branch off the main service, both fire and domestic lines will contain shut-off valves at the streetline and water meters in accordance with Region Peel Standards.

Fire Protection for the subject site will be provided by one proposed private hydrant within the site and two existing hydrants located on Albion Vaughn Road.

For proposed watermain layout refer to figure 6 enclosed in Appendix B

3.3 Proposed Water Demands

The residential per capita demand is estimated based on the Region of Peel criteria of 280 L/c/d. with 604 persons for the residential area (as shown in sanitary section 4.3), the average-day domestic demand is 1.96 L/s. The maximum day demand has a factor of 2.0, therefore yielding a max-day domestic consumption rate of **3.92L/s** or **235.2L/min**. The max peak hour demand has a factor of 3.0, therefore yielding a peak hour consumption rate of **5.87*L/s*** or **352.2 L/s**.

3.4 Water Distribution System Modeling

Hydraulic analysis of proposed water distribution system is conducted using EPANET 2 modeling software to ensure the system delivers desired pressures and flows for the proposed development under various demand scenarios. It was assumed a residential fire flow of 7000L/min or 116.67L/s

The summary of analysis result is provided in the following Table 3.3:

Table 3.3

No	Scenarios	EPANET Results	Region Criteria
1	Max. pressure during min. hour demand (kpa)	346	< 690 (Ok)
2	Min. pressure during max. hour demand (kpa)	345	> 275 (OK)
3	Min. pressure during max. day demand + fire (kpa)	270	> 140 (OK)

The above summary of EPANET modeling result shows that proposed watermain system meets Region standard criteria for required pressures for the noted scenarios.

Refer to table 3.3.1 and Epanet results for watermain calculations enclosed in Appendix C

Prior to detailed design, a flow test on the existing hydrants will be performed to confirm available pressures and supply, and to confirm the sizing of the internal watermain system.

- **The proposed 150 mm diameter will be tapped into the existing 300mm diameter municipal waterman running on Albion Vaughan Road to provide both fire and domestic water services for the subject site. Hydrant flow tests and analysis will be performed to confirm that there is adequate supply and pressure for firefighting purposes.**

4 SANITARY SERVICING

4.1 Existing Sanitary Servicing

Sanitary servicing is available from an existing 900m sanitary sewer running on Albion Vaughan Road; refer to existing municipal infrastructure Figure 5 and drawing 51608-D enclosed in Appendix B for existing infrastructure.

4.2 Proposed Sanitary Servicing

It is proposed to connect into the existing sanitary sewer system on Albion Vaughan Road, providing a 200 mm diameter PVC sanitary sewer connection to service the proposed multiple Residential Condo. The sanitary flow generated by the study area will discharge into the proposed sanitary control manhole MH2A to ultimately discharge into the existing sanitary manhole MH6A.

Refer to figure 6 enclosed in Appendix B for proposed sanitary connections details, respectively.

4.3 Sanitary Sewage Flow Estimates

The proposed development comprises 240units and 20 Townhouses, which is estimated with the current Region's Peel Design, Specification & Procedures Manual as having an equivalent population of 604 persons as outlined in the following Table 4.3.

Table 4.3 Estimated *Population for Residential Development*

Unit type	Density	No. of Units	Total Population
2+ Bedroom	2.54p/unit	145	368
1 Bedroom	1.68p/unit	95	160
Townhouses	3.8 p/unit	20	76
Total		260	604

In accordance with the Region's requirements, the sanitary sewage flow estimates are calculated based on the STD. DWG. 2-5-2 and ground water infiltration flows. Using the above population estimates, the future sanitary sewerage rate from the subject site is calculated as follow.

Proposed Site Design Flow:

Peak Flow Design Parameters

Residential Population	*= 604 (Refer to Table2.2)*
Total Population	= 604
If Population<1000 =	0.013 m^3/s (STD. DWG. 2-5.2)

The sanitary discharge from the subject site will be accommodated with a proposed 200mm diameter PVC sanitary sewer, discharging to the existing 900mm diameter sanitary sewer on Albion Vaughn Road.

From the Region of Peel Drawing 51608-D Plan and Profile, enclosed in Appendix B, the existing sewer is at a depth of approximately 5.7 m from existing ground.

5 STORM DRAINAGE AND STORMWATER MANAGEMENT

The stormwater management plan for the subject site will be designed in accordance with the Town of Caledon Criteria in conjunction with the Best Management Practice guidelines in the MOE SWMPP Manual and Low Impact Development Guidelines by TRCA. Specific criteria to be applied in the stormwater management design are as follows:

- **Water Quality control** – Level 1 or Enhanced Protection
- **Water Balance** – a minimum 5 mm "first-flush" event retained for infiltration and water reuse
- **Water Quantity** – 100 year post-development controlled to 5 year pre-development

The following sections will detail the pre- and post-development conditions, and describe how the Low Impact Development targets can be achieved on site.

5.1 Existing Storm Servicing

There is an existing ditch running on the east of the subject site along Albion Vaughan Road and existing channel running on the west part of the subject site. There is no existing municipal storm sewer available for the subject site.

Refer to existing municipal infrastructure Figure 2 enclosed in Appendix B

5.2 Water Balance

On-site water balance to a minimum 5 mm retention, through infiltration, evapotranspiration and/or rainwater reuse; and

The volume of on-site water retention is estimated in the following Table 5.2

Table 5.2 *5 mm Water Balance Volumes*

Surface Area Component	Area	Initial Abstraction		Water Retention Target	Deficit Storage Required to meet Water Balance Target	
	(m^2)	(mm)	(m^3)	(mm)	(mm)	(m^3)
Roofs	5002.7	1	5.0	4	4	20.01
Landscape	2294.75	2	4.59	3	0	6.88
Driveways and Road Surface	4063.53	0	0	5	5	20.32
Total	**11360.98**		**9.59**			**47.21**

A total of **47.21 m^3** of additional on-site storage is required to meet the Town's 5 mm site retention targets.

In conjunction with water quantity and quality mitigation to be imposed at the source control level, efforts shall be made to preserve the pre-development hydrology of the lands prior to development, through the implementation of water balance targets for new site plan developments.

Authority guidelines recommend the retention of runoff from frequent rainfall events - typically 5 mm.

It is recommended that this target be achieved through the application of infiltration measures where soil conditions permit, and through grey-water capture and re-use. Typically, grey-water recycling can be applied to landscape and lawn watering, and for sanitary applications such as toilet flushing. Grey-water capture is an environmentally sustainable practice which also provides water conservation benefits, in addition to the preservation of pre-development hydrology.

All new development including re-development projects are strongly encouraged to apply low impact development strategies and design techniques that are suitable and applicable to individual site conditions. Some lot level control strategies and techniques to be considered are outlined below:

Site Planning:

Incorporating stormwater management concepts during the site planning process is very important to overall site stormwater management measures as it can eliminate unnecessary increases in runoff and reduce sediment/erosion problems. Site planning techniques will minimize the creation of new runoff and provide removal of some suspended solids by reducing the size of hard, impervious surfaces within the site plan layout.

Retention of Roof Runoff:

It is recommended to separate roof runoff from street and parking lot runoff and retain it on the rooftops. One of the targets for water balance is that essentially all roof runoff be infiltrated or undergo evapotranspiration as much as possible, leaving very little roof runoff that will discharge through overland pathways to surface waters.
A primary roof drain design indicates that each roof can accommodate controlled flow and volumes with the use of control-flow drain; roof drain calculations based on a Zurn Control- Flo Model are given in appendix C.

The required storage on roof will be 243.295m^3. Refer to table 5.2.1 enclosed In Appendix C.

Assuming 90% of the rooftop area is usable for storage, and pyramidal storage to a depth of 0.061 m, the following storage volume is available:

The provided storage on roof will be 91.87m^3 ((5020/3) m^2 * 0.061m*0.9). Refer to table 5.2.1 enclosed In Appendix D for storage volume calculation.

It is noted that the calculation above is preliminary and need to be undertaken by the project's mechanical engineer at the detail design stage, in coordination with the architect and structural.

Use of Green Roof Technologies:

Green roofs can significantly reduce the volume and rate of runoff from building lots. A layer of absorbent soil and vegetation on top of building can retain rainfall and allow it to evaporate or transpire. Engineered green roofs may also provide heating or cooling savings by insulating buildings, as well as aesthetic benefits, air quality benefits, and reductions in the "urban heat island" effect, etc.

Based on the above storage volume of 91.87m^3, the green roof on site will be sufficient for the water balance require for the subject site.

Rainwater Harvesting:

Rainwater harvesting (re-use) can provide significant flow reduction benefits. Depending on the size of the water storage facility and the rate of use, a significant percentage of the annual runoff volume can be re-used. Where it is not feasible to meet a development site's full flow control obligation, rainwater harvesting can be used to manage a portion of the flow and lessen the overall flow control requirement. It also helps in reducing pollution. Some of the greywater use may include for toilet flushing, commercial carwash bays and site landscape irrigation.

5.3 Stormwater Quality Control

Long-term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis, based on the site discharge at post-development imperviousness

5.3.1 TSS Removal

The subject site will require Best Management Practices (BMP) of stormwater runoff to achieve 80% TSS removal. Storm runoff from the site consists of the landscape, roof, and pavement areas. Runoff from the roof areas is considered clean, while the landscape area runoff will attain an 80% TTS removal by natural filtration.

The overall baseline TSS removal efficiency is presented in the following Table 4.3

Table 5.3.1 *Baseline TSS Removal Rate and Average Runoff Coefficient*

Surface Area Component	Area	Percent Area	Baseline TSS Removal Rate	Weighted TSS Removal Rate
	(m^2)	(%)	(%)	
Roofs	5002.7	44.03	80%	35.22%
Pavement	4063.53	35.76	80%	28.61%
Landscape	2294.75	20.21	0%	0%
Totals	**11360.98**	100%		**63.83%**

The subject site will also require *best-practice* treatment of stormwater runoff to achieve 80% TSS removal.

Storm runoff from the site consists of the landscape, roof and pavement areas. Runoff from the roof areas is considered clean, while the landscape area runoff will attain an 80% TTS removal by natural filtration.

The baseline weight average TSS removal is 63.83%, which does not meet the targeted 80% long-term average rate required by the WWFMG policies. Therefore, an oil grit separator device will be provided as a supplementary water quality treatment for the storm flow generated by the permanent drainage area.
A EFO6 Stormceptor has been selected to treat an area of 0.765ha at R=0.78, refer to detailed STC sizing report enclosed in Appendix C

5.4 Quantity Controls

5.4.1 Allowable Peak Flow

It is proposed to control the peak flows for each event (2 year, 5 year, 10 year,25 year, 50 year and 100 years) to pre-developments levels in accordance with TRCA criteria for Humber River Storm Management Quantity Control Release Rates, therefore on site-controls are required as follows:

2-year storm rainfall intensity:

$$i_2 = \frac{1070}{(T + 7.85)^{.8759}}$$

5-year storm rainfall intensity:

$$i_5 = \frac{1593}{(T + 11)^{.8789}}$$

10-year storm rainfall intensity:

$$i_{10} = \frac{2221}{(T + 12)^{0.9080}}$$

25-year storm rainfall intensity:

$$i_{25} = \frac{3158}{(T + 15)^{0.9335}}$$

50-year storm rainfall intensity:

$$i_{50} = \frac{3886}{(T + 16)^{0.9495}}$$

100-year storm rainfall intensity:

$$i_{100} = \frac{4668}{(T + 17)^{0.9624}}$$

Where:
i = rainfall intensity (mm/hr)
T_c= time of concentration (hr) = 10 minutes

$\therefore i_2 = 85.718 mm/hr$ $\therefore i_5 = 109.68 mm/hr$

$\therefore i_{10} = 134.62 mm/hr$ $\therefore i_{25} = 156.47 mm/hr$

$\therefore i_{50} = 176.19 mm/hr$ $\therefore i_{100} = 196.54 mm/hr$

The site specifics indicate that the post-development runoff coefficient is R=0.78 in accordance with the development standards manual of Town of Caledon standards, refer to table 5.4 below for composite runoff coefficient, therefore on-site controls are required as follows :

$Q_{2\ yr\ Post}$ at Runoff coefficient of 0.78 to be controlled to $Q_{2\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{5yr\ Post}$ at Runoff coefficient of 0.78 to be controlled to $Q_{5\ yr\ Pre}$ at Runoff coefficient of 0.25

$Q_{10yr\ Post}$ at Runoff coefficient of 0.78 to be controlled to $Q_{10\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{25yr\ Post}$ at Runoff coefficient of 0.78 to be controlled to $Q_{25\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{50yr\ Post}$ at Runoff coefficient of 0.78 to be controlled to $Q_{50\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{100yr\ Post}$ at Runoff coefficient of 0.65 to be controlled to $Q_{100yr\ Pre}$ at Runoff coefficient of 0.25

The allowable release rate for each storm event is calculated as follows:

Q_{2yr} = 9.506-0.719*ln(A) =9.1084 L/s/ha
Q_{5yr} = 14.652-1.136*ln(A) =14.024 L/s/ha
Q_{10yr} = 17.957-1.373*ln(A) =17.198 L/s/ha
Q_{25yr} = 22.639-1.71*ln(A) =21.676 L/s/ha
Q_{50yr} = 26.566-2.082*ln(A) =25.505 L/s/ha
Q_{100yr} = 29.912-2.316*ln(A) =28.631 L/s/ha

Q unit flow (L/s/ha- litres per second per hectare)
A = Area in hectares (ha) =1.136Ha

$Q_{2yr\text{-}allow}$ = 10.347 L/s
$Q_{5yr\text{-}allow}$ = 15.931 L/s
$Q_{10yr\text{-}allow}$ = 19.537 L/s
$Q_{25yr\text{-}allow}$ = 24.624 L/s
$Q_{50yr\text{-}allow}$ = 28.974 L/s
$Q_{100yr\text{-}allow}$ = 32.525 L/s

Table 5.4 *Post-Development Composite Runoff Coefficient*

Area Component	Area (ha)	Runoff Coeff. "R"	Area x R
Prop. Roof	0.50	0.90	0.45
Impervious Area	0.362	0.90	0.326
Landscaped Area	0.191	0.25	0.048
Totals	**1.053**		**0.824**

*T*he uncontrolled area of 0.083 ha was subtracted for runoff coefficient calculations*

Composite Weighted R_{post} = 0.824 / 1.053
= 0.78

Refer to figure 4 for Surface Composition Plan

5.4.2 Post-development Discharge

To meet the stormwater quantity objectives, the subject site is proposed to provide on-site water quantity control up to the maximum allowable release rate. The required storage volume has been calculated using Modified Rational Method included as Table 5.4.2-F in Appendix C.

From Table 5.4.2-F including in Appendix C, the required total onsite storage is 229.51 m^3, will be provided utilizing a storage tank.

A storm trap tank, or approval equal, is sized as follows:

Required Onsite storage volume = 229.510 m^3
Tank Volume = Ax h
Tank Volume = 84m^2 x 3.1 (h)x0.9
Tank Volume = 234.36 m^3

Due to the depth of the cistern and the elevation of point of discharge of the proposed storm system the cistern outflow must be pumped, and the discharge will be set at a maximum rate for each event. of 32.5 L/s, with a high-level overflow for emergency spillover.
Refer to tables 5.4.2-A to table 5.4.2-F for onsite storage calculation and release rates.

As the underground storage tanks involve coordination with architectural, structural and mechanical disciplines, the detailed design of the underground storage tanks are to be undertaken by the project architect and building-team at building design stage.

- **In summary, the total post-development discharges are controlled to allowable release levels for all storms up to the 100-year events; therefore, the existing storm sewers can accommodate the site without imposing any detrimental effects downstream.**

6 Erosion and Sediment Control

Erosion and sediment control should be implemented for all construction activities within the subject site, including topsoil stripping, parking lot construction, foundation excavation and stockpiling of materials. The basic principles considered to minimize erosion and sedimentation and resultant negative environmental impacts include:

- Minimize local disturbance activities (e.g. limit area-wide grading);
- Expose the smallest possible land area to erosion for the shortest possible time;
- Implement erosion and sediment control measures before the outset of construction activities; and,
- Carry out regular inspections of erosion and sediment control measures and repair or maintain as necessary.

The proposed grading, servicing and building construction should be carried out in such a manner that a minimum amount of erosion occurs and such that sedimentation facilities control any erosion that does occur. Erosion and sediment control measures should include but not be limited to the following:

- Erection of silt fences around all site perimeters.
- Provide sediment traps (e.g. rock check dams, straw bales, scour basins) along interceptor swales and points of swale discharge;
- Inlet controls at catchbasins, comprising filter cloth overlain with rip-rap;
- Implement a weekly street sweeping and cleaning program for any mudtracking onto Albion Vaughan Road;
- Provide gravel “mud mats” at construction vehicle access points to minimize off-site tracking of sediments; and,
- Confine refueling/servicing equipment to areas well away from inlets to the minor system or major system elements.
- All waste and unused building materials (including garbage, cleaning wastes, wastewater, toxic materials, or hazardous materials) shall be properly disposed of and not allowed to be mixed with and carried off by runoff from the site into a receiving watercourse or storm sewer.

Erosion and sediment control measures outlined above should be implemented in consultation with the Construction Manager prior to any stage of construction.

Removal of the erosion and sediment controls should be done once construction is completed and sediment run-off from the construction activities has stabilized.

7 CONCLUSIONS AND SUMMARY RECOMMENDATIONS

This functional servicing and stormwater management report demonstrates that the proposed residential development has been accommodated by the existing local infrastructure. More specifically:

- **Water Service** will be provided by an existing 300 mm diameter municipal watermain located on Albion Vaughan Road. A proposed 150mm fire servicing with 100mm domestic branch will be used to service the subject site. A proposed private fire hydrant will be provided as per Fire Code requirements.
- **Sanitary Service** is accommodated by the existing 200 mm diameter sanitary sewer running on Albion Vaughan Road. A 200mm diameter service lateral is proposed to service the subject development.

  Stormwater Quantity Controls will be provided for each storm event using an underground storage tank located on P1. The outlet will directly discharge into Robinson Creek.
- **Stormwater Quality Controls** A treatment train of LID devices (roof green, rainwater harvesting,) will provide on-site stormwater quality controls. Supplementary quality control and TSS removals will be provided by an OGS device.
- **Water Balance** will be provided by storage roof green.
- **Quality control** for TSS removal meeting will be provide with 1 oil-grit separator device EFO6. The OGS device will provide pre-treatment ahead discharge on the existing channel.
- **Erosion and Sediment Controls** will need to be implemented during development until the site has been stabilized with groundcover.

Respectfully Submitted,
MASONGSONG ASSOCIATES ENGINEERING LIMITED

Tony Masongsong.
Principal

Isabel Strauch,
Municipal Designer

Appendix A

Topographical Survey
Site Plan

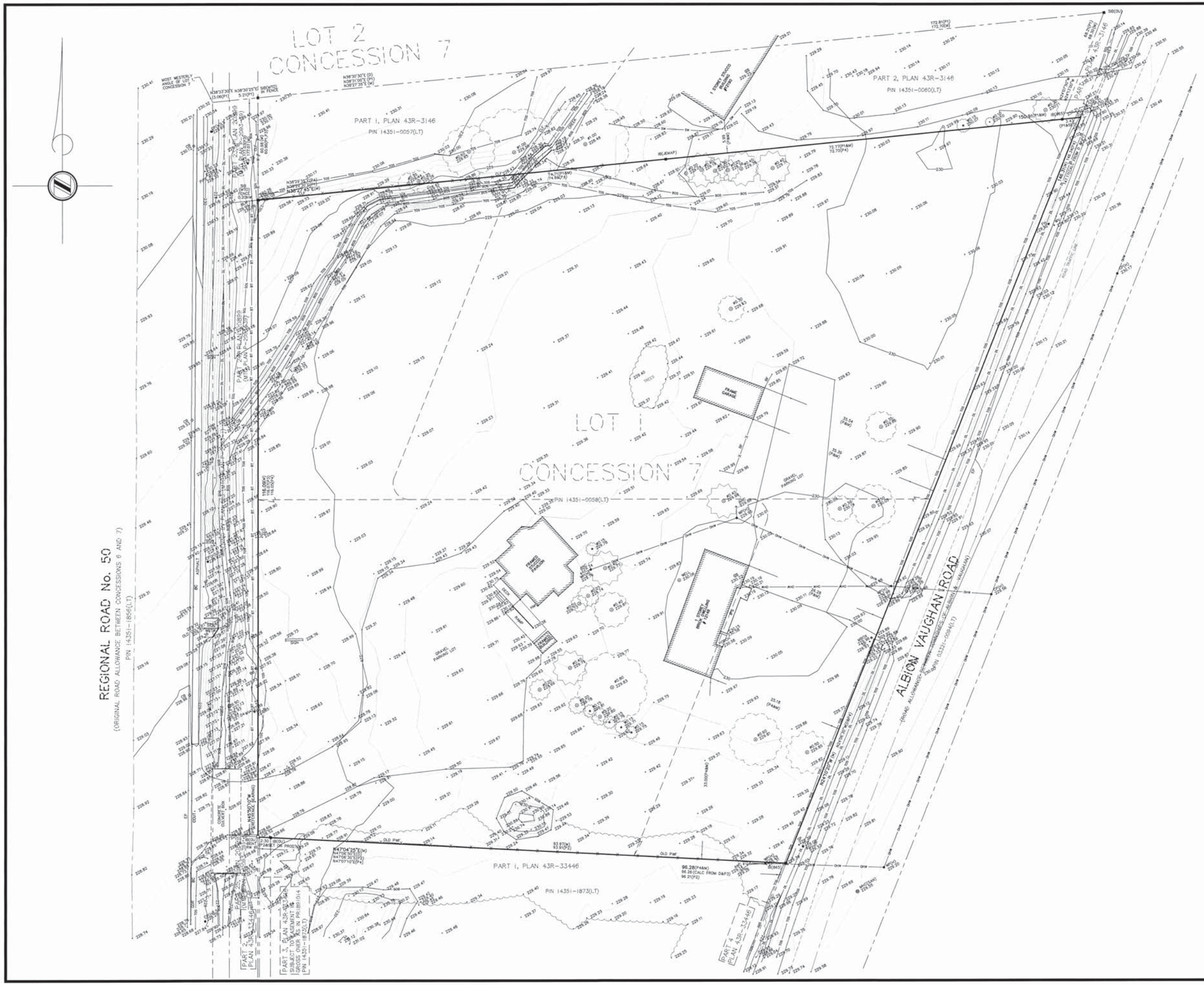
SURVEYOR'S REAL PROPERTY REPORT
PART 1, PLAN OF
PART OF LOT 1
CONCESSION 7
(GEOGRAPHIC TOWNSHIP OF ALBION)
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

SCALE 1: 300

5 0 5 10 15 20 30 metres

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS

METRIC
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048



BEARING NOTE

BEARINGS ARE DERIVED FROM GPS OBSERVATIONS USING THE SMARTNET NETWORK, AND ARE REFERRED TO UTM ZONE 17, CENTRAL MERIDIAN 81°00' WEST LONGITUDE, NAD 83 (CSRS) (2010).

BEARINGS ON INSTRUMENT R01179599 (D), PLAN 43R-3146 (P1), PLAN 43R-33446 (P2), PLAN AL20899 (P3) AND PLAN OF SURVEY BY JEMAP HOLDINGS LIMITED, DATED JANUARY 22, 2007 (REF NO. 2006-026)(P4) HAVE BEEN ROTATED 00°52'30" COUNTERCLOCKWISE TO MAKE COMPARISONS.

BEARINGS ON PLAN 43R-33446 (P2) HAVE BEEN ROTATED 1°01'25" COUNTERCLOCKWISE TO MAKE COMPARISONS.

DISTANCE NOTE

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.9997046.

LEGEND

■	DENOTES	MONUMENT FOUND
□	DENOTES	MONUMENT SET
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
OU	DENOTES	ORIGIN UNKNOWN
B65	DENOTES	McLEAN McMURCHY BIASON., O.L.S.
MTO	DENOTES	MINISTRY OF TRANSPORTATION
JEMAP	DENOTES	JEMAP HOLDINGS LIMITED
M	DENOTES	MEASURED
P	DENOTES	TOPOGRAPHIC SURVEY BY J.D. BARNES LIMITED, DATED APRIL 3, 2003.
P1	DENOTES	PLAN 43R-3146
P2	DENOTES	PLAN 43R-33446
P3	DENOTES	PLAN AL20899
P4	DENOTES	PLAN OF SURVEY BY JEMAP HOLDINGS LIMITED DATED JANUARY 22, 2007 (REF # 2006-026)
D	DENOTES	INSTRUMENT R01179599
ANC	DENOTES	ANCHOR
BB	DENOTES	BELL BOX
BC	DENOTES	BACK OF CURB
BF	DENOTES	BOARD FENCE
CB	DENOTES	CATCH BASIN
COUT	DENOTES	CURB CUT
CLF	DENOTES	CHAIN LINK FENCE
CP(H)	DENOTES	CONCRETE POLE (HYDRO)
CP(H)LS	DENOTES	CONCRETE POLE (HYDRO) WITH LIGHT STANDARD
CPP	DENOTES	CULVERT (PLASTIC PIPE)
EP	DENOTES	EDGE OF PAVEMENT
FH	DENOTES	FIRE HYDRANT
GDR	DENOTES	GUARDRAIL
GS	DENOTES	GARAGE SILL
HM	DENOTES	HYDRO METER
INV	DENOTES	INVERT
IPS	DENOTES	INTERLOCKING PAVING STONES
MBOX	DENOTES	MAILBOX
MHC(SAN)	DENOTES	MAINTENANCE HOLE COVER (SANITARY)
PWF	DENOTES	POST AND WIRE FENCE
SP	DENOTES	SIGN POST
WP(H)	DENOTES	WOODEN POLE (HYDRO)
WRTW	DENOTES	WOODEN RETAINING WALL
WV	DENOTES	WATER VALVE
#	DENOTES	DIAMETER
BOS	DENOTES	BOTTOM OF SLOPE
BT	DENOTES	UNDERGROUND BELL CABLE
DL	DENOTES	DITCH LINE
OHW	DENOTES	OVERHEAD WIRES
SW	DENOTES	SWALE
TOS	DENOTES	TOP OF SLOPE
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE

BENCH MARK NOTE

ELEVATIONS ARE REFERRED TO THE CITY OF BRAMPTON BENCHMARK No. 042010221, BEING A BRASS CAP IN CONCRETE APPROX. 21 m SOUTH OF CENTRELINE OF NASHVILLE ROAD AND 11 m EAST OF CENTRELINE OF REGIONAL ROAD 50, IN FRONT OF GAS STATION/COFFEE SHOP. HAVING AN ELEVATION OF 220.967 m.

CAUTION

LOCATIONS OF ALL UTILITIES ARE APPROXIMATE. ALL UTILITIES SHOULD BE CONTACTED PRIOR TO ANY DIGGING OR CONSTRUCTION.

NOTE

PROPERTY LIMITS ARE NOT FENCED UNLESS OTHERWISE NOTED ON THE FACE OF THE PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE *SURVEYS ACT*, THE *SURVEYORS ACT*, AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 19th DAY OF MAY, 2016

JUNE 6, 2016
DATE

ALISTER SANKEY
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
1968767
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

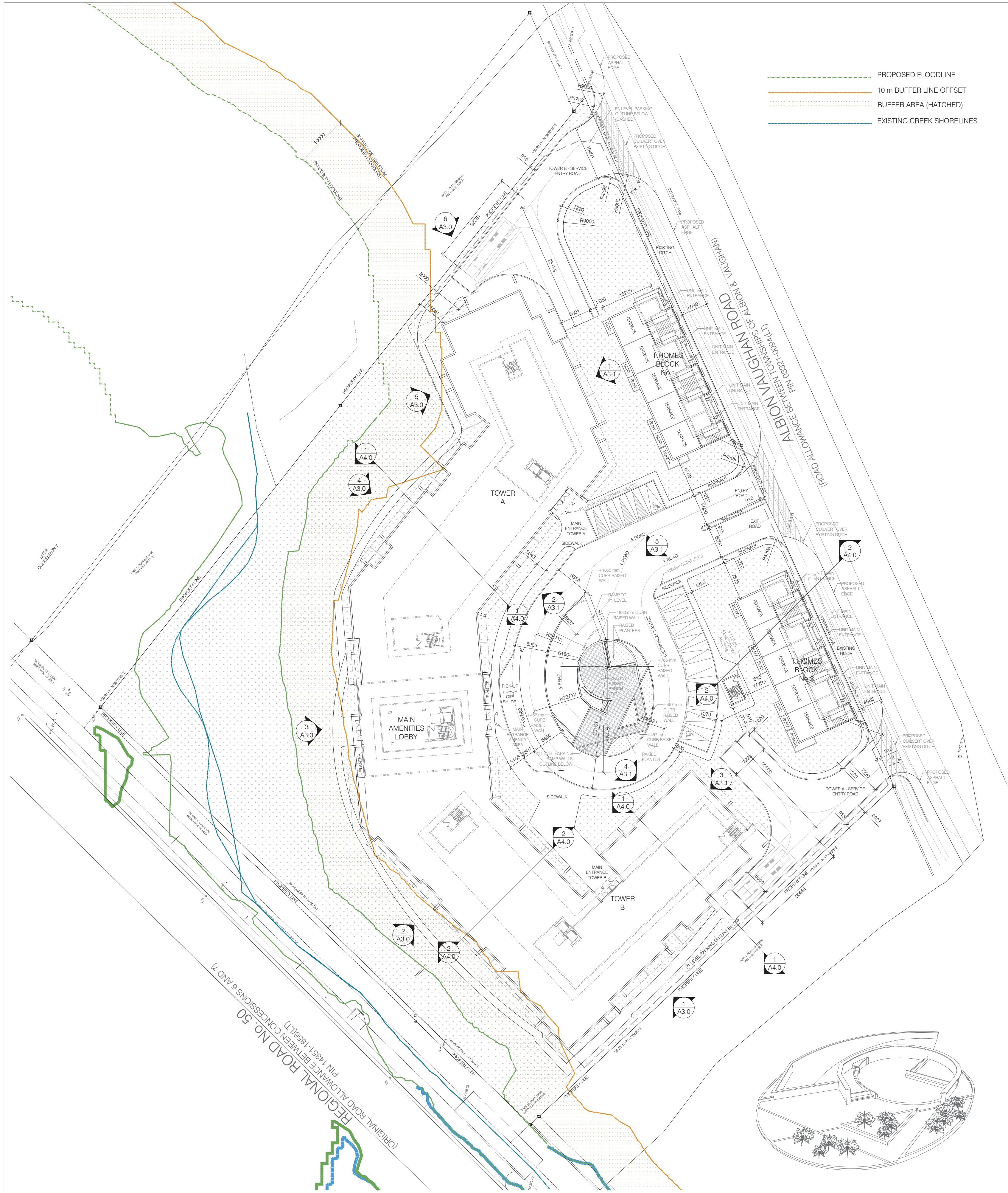
THIS PLAN WAS PREPARED FOR
ALBION-VAUGHAN (12148) INC.
DAVID B. SEARLES SURVEYING LTD. IS NOT RESPONSIBLE FOR USE BY OTHER PARTIES

PART 2
THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED JUNE 6th, 2016

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS
4255 Sherwoodtowne Blvd, Suite 206, Mississauga, Ont. L4Z 1Y5
Tel: (905) 273-6840 Fax: (905) 896-4410
Email: info@dbsearles.ca

Calculator	Draftsperson
BJ/KR	IV/KR
Editor	Plan Index No.
DAS	H 17

Calculation File	Drawing File	File No.
76-16CALC.DWG	76-0-16.DWG	76-0-16



1 / A1.0 SITE PLAN - MASTER PLAN
SCALE: 1:400

2 / A1.0 SITE PLAN - ROUNDABOUT VIEW
SCALE: N/A

SITE DEVELOPMENT - RM ZONE (MULTIPLE RESIDENTIAL AREA)

	QTY.	m2	SQ/FT
A - LOT AREA			
TOTAL LOT AREA		m2	SQ/FT
GROSS SITE AREA		15376.75	165513.96
NET DEVELOPABLE AREA		11360.98	122288.57
B - GROSS FLOOR AREA			
B.1 - TOWER A (RESIDENTIAL CONDO GFA)			
	QTY.	m2	SQ/FT
GROUND FLOOR LEVEL	1	1691.04	18202.15
2ND FLOOR LEVEL	1	1870.88	20137.98
3RD FLOOR LEVEL	1	1882.24	20260.26
4TH TO 6TH FLOOR LEVEL	3	5646.72	60780.79
TOTAL GFA		11090.88	119381.18
B.2 - TOWER B (RESIDENTIAL CONDO GFA)			
GROUND FLOOR LEVEL	1	1799.09	19365.23
2ND FLOOR LEVEL	1	1933.11	20807.82
3RD FLOOR LEVEL	1	1943.36	20918.15
4TH TO 6TH FLOOR LEVEL	3	5830.08	62754.46
TOTAL GFA		11505.64	123845.67
B.3 - TOWNHOMES (GFA)			
P1 LEVEL	1	171.66	
GROUND FLOOR LEVEL	1	683.51	7357.24
2ND FLOOR LEVEL	1	683.51	7357.24
3RD FLOOR LEVEL (TERRACE)	1	304.97	3282.68
TOTAL GFA		1843.65	17997.16
B.4 - AMENITY SPACE (GFA)			
GROUND FLOOR LEVEL	1	432.68	4657.33
2ND FLOOR LEVEL	1	432.68	4657.33
3RD FLOOR LEVEL (TERRACE)	1	147.97	1592.74
TOWER A	1	630.34	6784.92
TOWER B	1	575.52	6194.85
TOTAL GFA	20% OF DEVELOPABLE LOT AREA = 2272.2 m2 (min.)	2219.19	26106.35
B.5 - SERVICE AREAS (GFA)			
TOWER A - STORAGE		138.78	1493.82
TOWER B - STORAGE		124.59	1341.08
TOTAL GFA		263.37	2834.89
B.6 - GRAND TOTAL GFA		26922.73	290165.26
C - FLOOR SPACE INDEX (FSI)			
FSI = TOTAL GFA / LOT AREA		15376.75 / 25760.09	
TOTAL SITE FSI		1.75 times	
TOTAL USABLE SITE FSI		2.37 times	

Ontario Building Code Data Matrix - Part 3 & 9

Name of Project:
Fausto Cortese Architect
MIX-USED CONDO DEVELOPMENT AT 12148 ALBION VAUGHAN RD. BOLTON - CALEDON

Location:
3560 Rutheford road, Unit 35 & 55
Vaughan, Ontario

ITEM	Ontario Building Code Data Matrix - Part 3 & 9	OBC Reference (Part 3)	OBC Reference (Part 9)
		References are to Division B unless noted [A] for Division A or [C] for Division C	
1	Project Description: 2-6 Storeys Condo Building; ☒ New; ☐ Addition; ☐ Change of Use; ☐ Alteration; ☐ Part 11 11.1 to 11.4	☒ Part 3 1.1.2. [A]	☐ Part 9 1.1.2. 9.10.1.3.
2	Major Occupancy(s) Group C	3.1.2.1.(1)	9.10.2.
3	Building Area (m^2) NEW: 4577.3 m2 TOTAL: 4577.3 m2	1.4.1.2 [A] 1	1.4.1.2 [A]
4	Gross Area (m^2) NEW: 25760.00 m2 TOTAL: 25760.00 m2	1.4.1.2 [A]	1.4.1.2 [A]
5	Number of Storeys Above Grade: 6 Below Grade: 1	1.4.1.2 [A] & 3.2.1.1.	1.4.1.2 [A] 9.10.4.
6	Number of Streets/Fire Fighter Access: 1	3.2.2.10 & 3.2.5.	9.10.20.
7	Building Classification: GROUP C 3.2.2.43	3.2.2.70.B	9.10.2.
8	Sprinkler System Proposed: ☒ entire building; ☐ selected compartments; ☐ selected floor areas; ☐ basement; ☐ in lieu of roof rating; ☐ not required; ☐ EXISTING NO CHANGE	3.2.2.67 3.2.1.5 3.2.2.17 INDEX	9.10.8.2. INDEX
9	Standpipe required ☒ Yes ☐ No	3.2.9.	N/A
10	Fire Alarm required ☒ Yes ☐ No	3.2.4.	9.10.18.
11	Water Service/Supply is Adequate ☐ Yes ☒ No	3.2.5.7.	N/A
12	High Building ☐ Yes ☐ No	3.2.6	N/A
13	Construction Restrictions: ☐ Combustible Permitted ☒ Non-combustible Required ☐ Both; Actual Construction: ☐ Combustible ☒ Non-combustible ☐ Both	3.2.2.67	9.10.6.
14	Mezzanine Area (m^2): N/A	3.2.1.1.(3)-(8)	9.10.4.1.
15	Occupant load based on ☐ m^2/person ☒ design of building; Occupancy: Load: Load: 770 m2	3.1.17	9.9.1.3.
16	Barrier-free Design ☒ Yes ☐ No (Explain):	3.8	9.5.2.
17	Hazardous Substances ☐ Yes ☒ No	3.3.1.2. & 3.3.1.19	9.10.1.3.(4)
18	Required Fire Resistance Rating (FRR): Horizontal Assemblies FRR (Hours) — Floor: 0.75 Hours; Roof: 0 Hours; Listed Design No. or Description (SB-3). FRR of Supporting Members — Floor: 0.75 Hours; Roof: Hours; Listed Design No. or Description (SB-3): S1. EBF (m) (m²) Permitted Max. % of Openings, Proposed % of Openings	3.2.2.20.-.83 & 3.2.1.4	9.10.8. 9.10.9.
19	Spatial Separation - Construction of Exterior Walls - Existing Building	3.2.3	9.10.14.

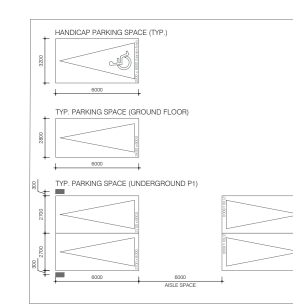
	Wall	Area of ²	L.D.	L/H or H/L			FRR (Hours)	Listed Design or Description	Comb Const	Comb. Constr. Nonc. Cladding	Non-comb Const
Left / Front	North	NO CHANGE	–	–	–	–	–	–	–	–	–
Rear	South	NO CHANGE	–	–	–	–	–	–	–	–	–
	East	NO CHANGE	–	–	–	–	–	–	–	–	–
Right	West	NO CHANGE	–	–	–	–	-	–	–	–	–

TOWERS

STOREYS	UNIT TYPE	SQ/FT	m2	TOWER A GROUND FLOOR	TOWER A 2ND FLOOR	TOWER A 3RD FLOOR	TOWER A 4TH FLOOR	TOWER A 5TH FLOOR	TOWER A 6TH FLOOR	TOWER B GROUND FLOOR	TOWER B 2ND FLOOR	TOWER B 3RD FLOOR	TOWER B 4TH FLOOR	TOWER B 5TH FLOOR	TOWER B 6TH FLOOR
1 BEDROOM	TYPE 1	633.6	58.86	4	4	3	3	3	3	4	4	4	4	4	4
1 BEDROOM	TYPE 2	685.75	63.71	3	3	3	3	3	3	0	0	0	0	0	0
1 BEDROOM	TYPE 3	649.62	60.35	0	1	1	1	1	1	0	0	0	0	0	0
1 BEDROOM	TYPE 4	592.30	55.03	0	0	0	0	0	0	0	1	0	0	0	0
1 BEDROOM + DEN	TYPE 1	800	74.32	1	1	0	0	0	0	0	0	0	0	0	0
1 BEDROOM + DEN	TYPE 2	825.16	76.66	1	1	0	0	0	0	0	0	0	0	0	0
1 BEDROOM + DEN	TYPE 3	955.97	88.81	1	1	1	1	1	1	0	0	0	0	0	0
1 BEDROOM + DEN	TYPE 4	899.23	83.54	1	1	1	1	1	1	0	0	0	0	0	0
1 BEDROOM + DEN	TYPE 5	812.45	75.48	1	1	1	1	1	1	0	0	0	0	0	0
1 BEDROOM + DEN	TYPE 6	923	85.75	0	0	0	0	0	0	1	1	0	0	0	0
1 BEDROOM + DEN	TYPE 7	1004.22	93.30	0	0	0	0	0	0	1	1	0	0	0	0
1 BEDROOM + DEN	TYPE 8	609.47	56.62	0	0	0	0	0	0	0	1	0	0	0	0
2 BEDROOM	TYPE 1	1001.10	93.01	3	3	3	3	3	3	0	0	0	0	0	0
2 BEDROOM	TYPE 2	944.57	87.75	1	1	1	1	1	1	0	0	0	0	0	0
2 BEDROOM	TYPE 3	961.38	89.32	1	1	1	1	1	1	0	0	0	0	0	0
2 BEDROOM	TYPE 4	1114.62	103.55	1	0	0	0	0	0	0	0	0	0	0	0
2 BEDROOM	TYPE 5	1011.47	93.97	1	0	0	0	0	0	0	0	0	0	0	0
2 BEDROOM	TYPE 6	997.15	92.64	0	0	0	0	0	0	2	2	2	2	2	2
2 BEDROOM	TYPE 7	1006.41	93.50	0	0	0	0	0	0	1	1	1	1	1	1
2 BEDROOM	TYPE 8	1073.34	99.72	0	0	0	0	0	0	1	0	0	0	0	0
2 BEDROOM	TYPE 9	933.07	86.69	0	0	0	0	0	0	5	5	5	5	5	5
2 BEDROOM	TYPE 10	902.34	83.83	0	0	0	0	0	0	1	1	1	1	1	1
2 BEDROOM	TYPE 11	932.87	86.67	0	0	0	0	0	0	1	1	1	1	1	1
2 BEDROOM	TYPE 12	895.61	83.20	0	0	0	0	0	0	1	1	1	1	1	1
2 BEDROOM	TYPE 13	992.85	92.24	0	0	0	0	0	0	1	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 1	1114.62	103.55	0	1	1	1	1	1	0	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 2	1011.47	93.97	0	1	1	1	1	1	0	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 3	1043.68	96.96	0	1	1	1	1	1	0	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 4	1244.17	115.59	0	0	1	1	1	1	0	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 5	1237.55	114.97	0	0	1	1	1	1	0	0	0	0	0	0
2 BEDROOM + LARGE BALCONY	TYPE 6	1073.34	99.72	0	0	0	0	0	0	0	1	1	1	1	1
2 BEDROOM + LARGE BALCONY	TYPE 7	992.85	92.24	0	0	0	0	0	0	0	1	1	1	1	1
2 BEDROOM + LARGE BALCONY	TYPE 8	1153.37	107.15	0	0	0	0	0	0	0	0	1	1	1	1
2 BEDROOM + LARGE BALCONY	TYPE 9	1015.89	94.38	0	0	0	0	0	0	0	0	1	1	1	1
2 BEDROOM + LARGE BALCONY	TYPE 10	1192.72	110.81	0	0	0	0	0	0	0	0	1	1	1	1
	PARTIAL UNITS PER TOWER			19	21	20	20	20	20	19	21	20	20	20	20
	TOTAL UNITS PER TOWER			120						120					
	TOTAL UNITS			240											

PARKING

BY LAW - PARKING REQUIREMENTS			
CONDO UNITS PARKING SPACES	1.5 PARKING SPOTS PER DWELLING UNIT	360	
VISITOR - CONDO UNITS PARKING SPACE	0.25 PARKING SPACES PER UNIT FOR VISITOR PARKING IN A DESIGNATED VISITOR PARKING AREA	60	
TOWNHOMES	2 PARKING SPOTS PER DWELLING UNIT	20	
VISITOR -TOWNHOMES	0.25 PARKING SPACES PER UNIT FOR VISITORS ON A LOT WITH FOUR OR MORE DWELLING UNITS	3	
NET TOTAL PARKING REQUIRED		443	
GRAND TOTAL PARKING REQUIRED			443 spaces req'd
TOTAL PARKING PROVIDED	RESIDENT (HANDICAP)	RESIDENT SPOTS	TOTAL
P1 LEVEL	14	280	
P2 LEVEL	5	139	
GROUND FLOOR	2	13	
GRAND TOTAL PARKING PROVIDED	21	432	453 spaces prov.



2 / A1.0 PARKING LEGEND
SCALE: N/A

TOWNHOMES

BLOCK 1			BLOCK 2		
END UNIT 1 (TOTAL: 1731.48 SQ/FT - 160.86 M2)	END UNIT 2 (TOTAL: 1742.14 SQ/FT - 161.85 M2)	INTERMEDIATE UNIT - (TOTAL: 1678.30 SQ/FT - 155.92 M2)	END UNIT 1 (TOTAL: 1731.48 SQ/FT - 160.86 M2)	END UNIT 2 (TOTAL: 1742.14 SQ/FT - 161.85 M2)	INTERMEDIATE UNIT - (TOTAL: 1678.30 SQ/FT - 155.92 M2)
1	1	3	1	1	3

KEY PLAN

No.	DESCRIPTION	DATE
1	ISSUED FOR	DD/MM/YYYY
	REVISIONS	

SUBMITTALS
- ISSUED FOR CONSTRUCTION
- ISSUED FOR BID
- ISSUED FOR BUILDING PERMIT
- ISSUED FOR SITE PLAN APPROVAL

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE DESIGNER BEFORE PROCEEDING WITH CONSTRUCTION.

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL SEALED AND SIGNED BY THE DESIGNER.

DO NOT SCALE DRAWINGS.

FCA
FAUSTO CORTESE ARCHITECTS
3590 RUTHERFORD RD. UNIT 7
VAUGHAN, ONTARIO, L4H 3T8
416-806-7000
FCORTESE@FCARCHITECTS.CA

DRAWING: PROPOSED MIX-USED CONDO DEVELOPMENT ON 12148 ALBION VAUGHAN RD BOLTON TOWN OF CALEDON

DRAWING: SITE PLAN

PLOTTED: N/A

DATE: 24/11/2020 | PROJECT No: 2019-22

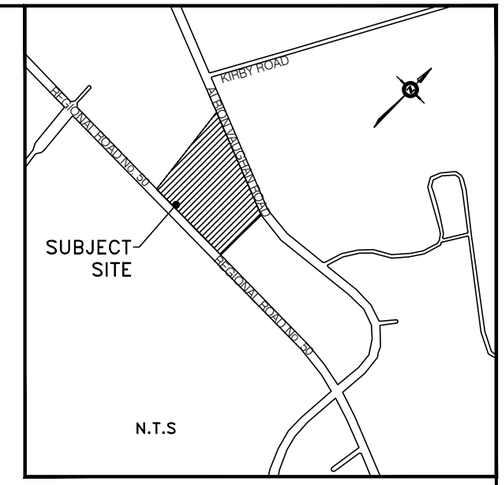
SCALE: AS NOTED | DRAWING No: A1.0

DRAWN BY: L.C. | REVIEWED BY: F.C.

XREFS:
FILE NAME: 2012-22_SHEET SET.DWG
PLOT SCALE: 1 =

Appendix B

Figures



LEGEND

EX. OVERLAND FLOW DIRECTION

A1 0.45 — ID AREA
1.49 — RUNOFF COEFICIENT
DRAINAGE AREA (HA)

EX. DRAIANGE AREA BOUNDARY

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C7
T: (905) 944-0162
www.maeng.ca

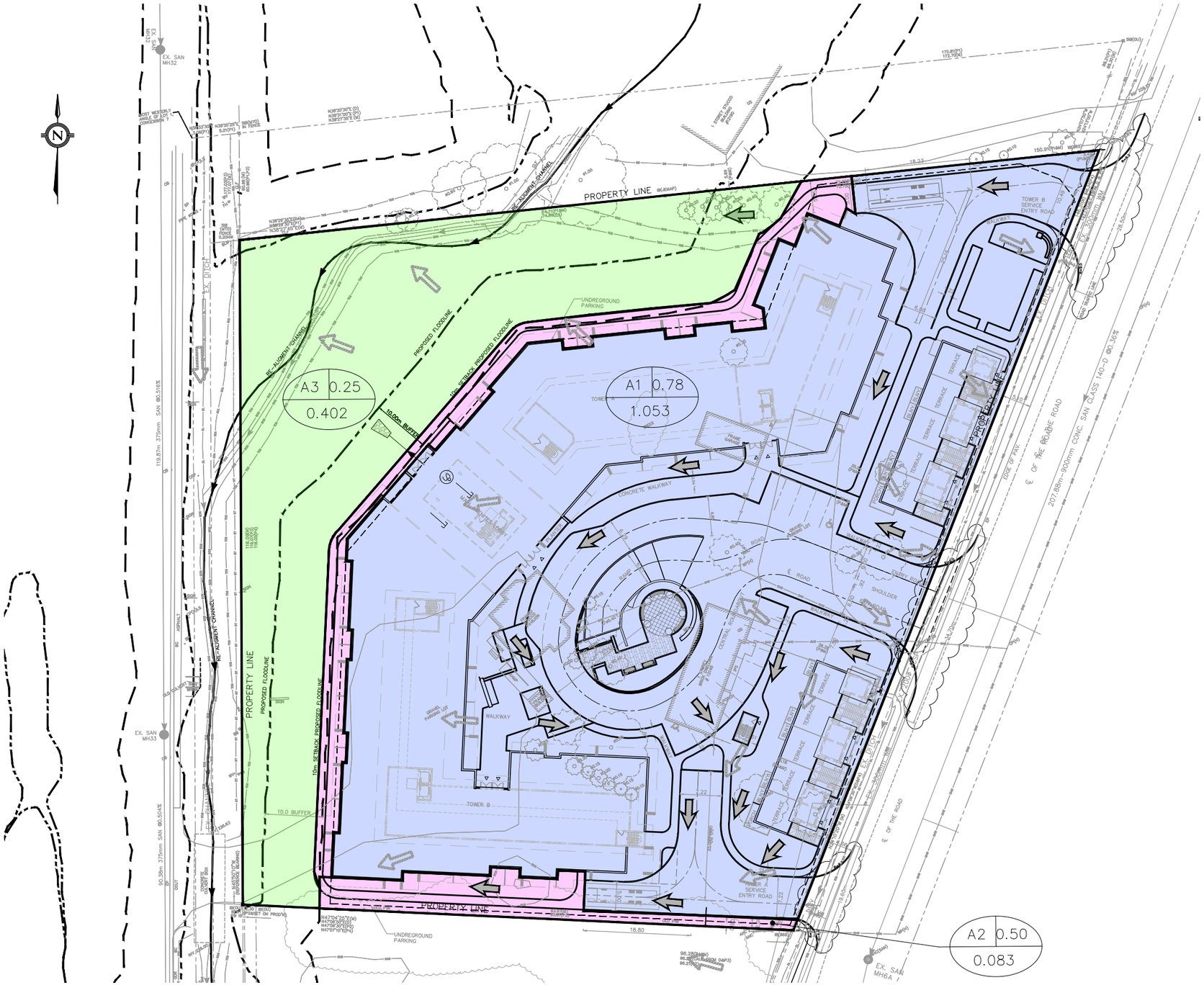
No.	DESCRIPTION	BY	DATE
1.			

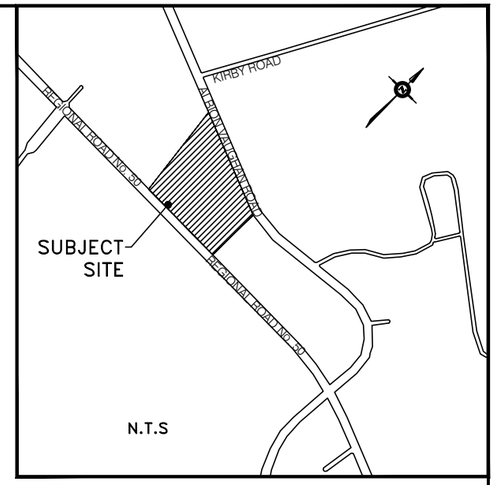
REVISIONS

12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

EXISTING DRAINAGE AREA

DATE:	SCALE	DESIGN BY:	DRAWN BY:	PROJECT No.	FIG. No.
DEC. 2020	N.T.S		I.S	17-849	2





LEGEND

- EX. OVERLAND FLOW DIRECTION
- PROP. OVERLAND FLOW DIRECTION
- SUBJECT SITE ONSITE CONTROL AREA
- UNCONTROLLED AREA
- NON-DEVELOPABLE AREA
- A1 0.45 / 1.49 — ID AREA / RUNOFF COEFICIENT / DRAINAGE AREA (HA)

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L3R 2C7
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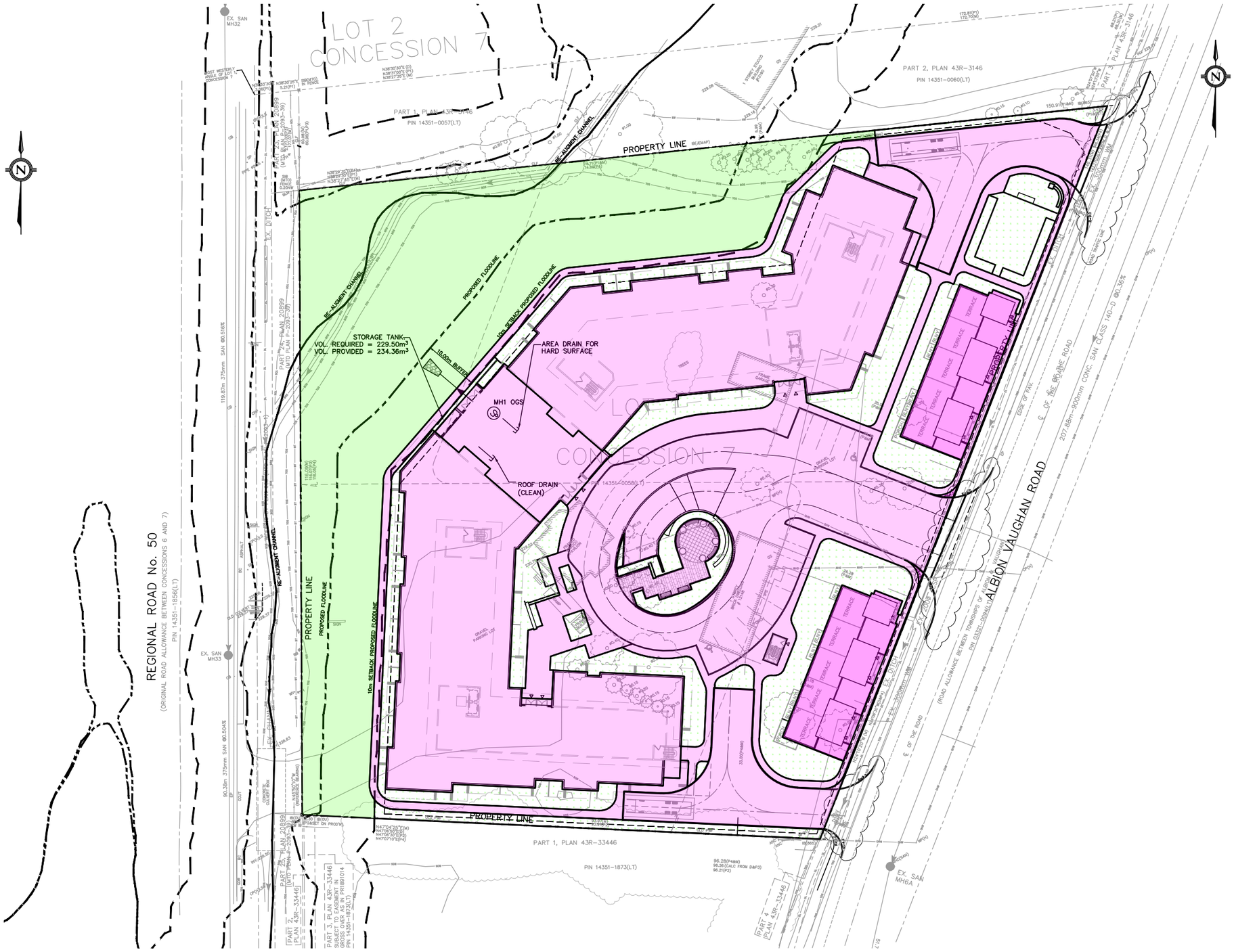
No.	DESCRIPTION	BY	DATE
1.			

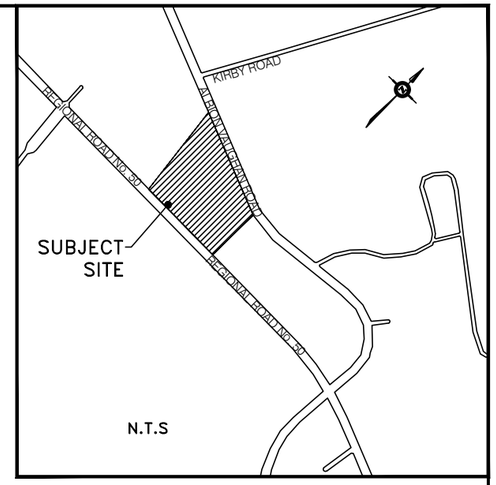
REVISIONS

12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

POST-DEVELOPMENT MASTER STORM DRAINAGE PLAN

DATE:	SCALE	DESIGN BY:	DRAWN BY:	PROJECT No.	FIG. No.
DEC. 2020	N.T.S		I.S	17-849	3





LEGEND

LEGEND :

- GREEN AREA
- HARD SURFACE
- NON-DEVELOPABLE AREA (GREEN)

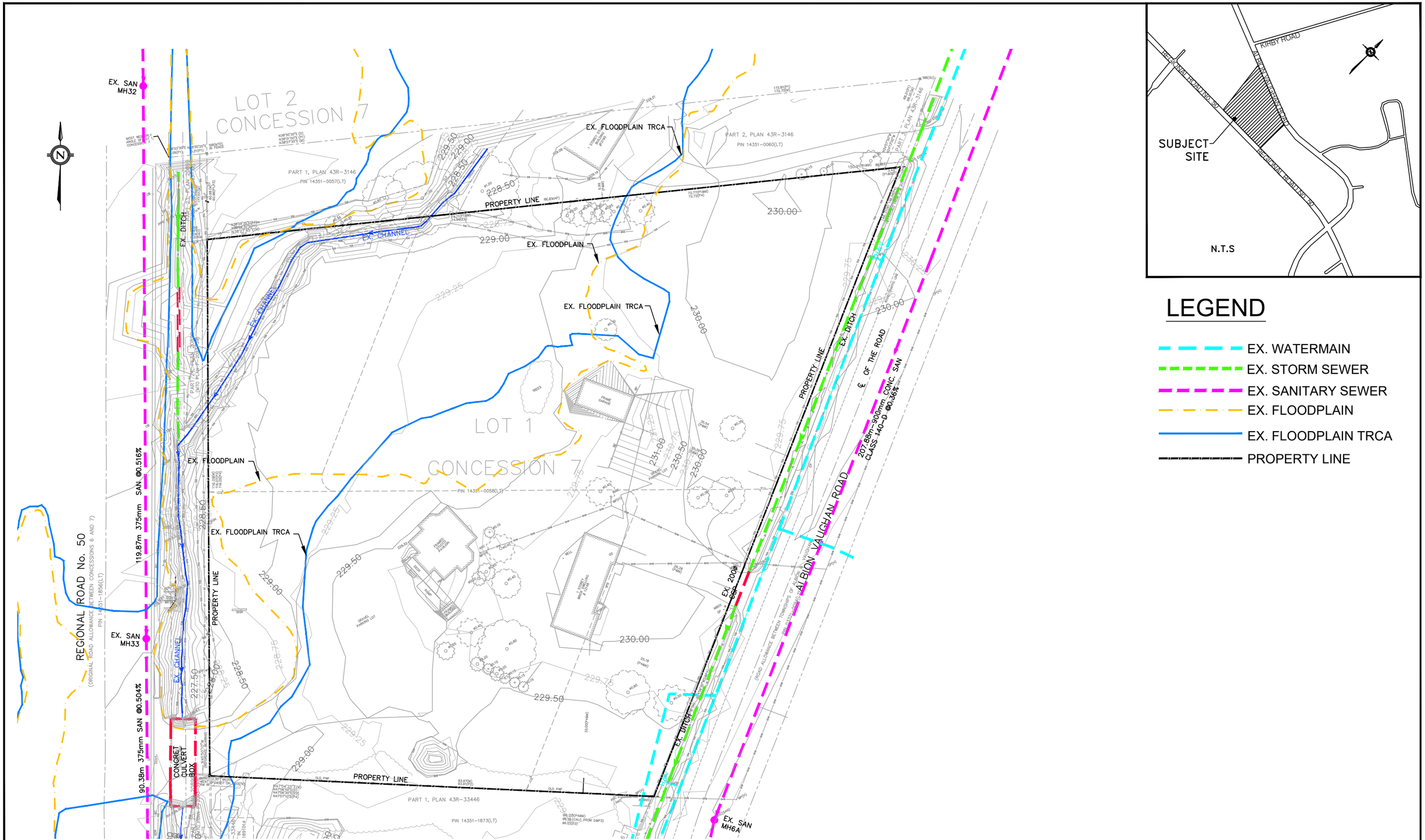
MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C7
T: (905) 944-0162
www.maeng.ca

No.	DESCRIPTION	BY	DATE
	REVISIONS		
1.			

12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

SURFACE COMPOSITION PLAN

DATE:	SCALE	DESIGN BY:	DRAWN BY:	PROJECT No.	FIG. No.
DEC. 2020	N.T.S		I.S	17-849	4



LEGEND

- EX. WATERMAIN
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. FLOODPLAIN
- EX. FLOODPLAIN TRCA
- PROPERTY LINE

MASONGSONG ASSOCIATES
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MARKHAM, ONTARIO
L3R 2C7
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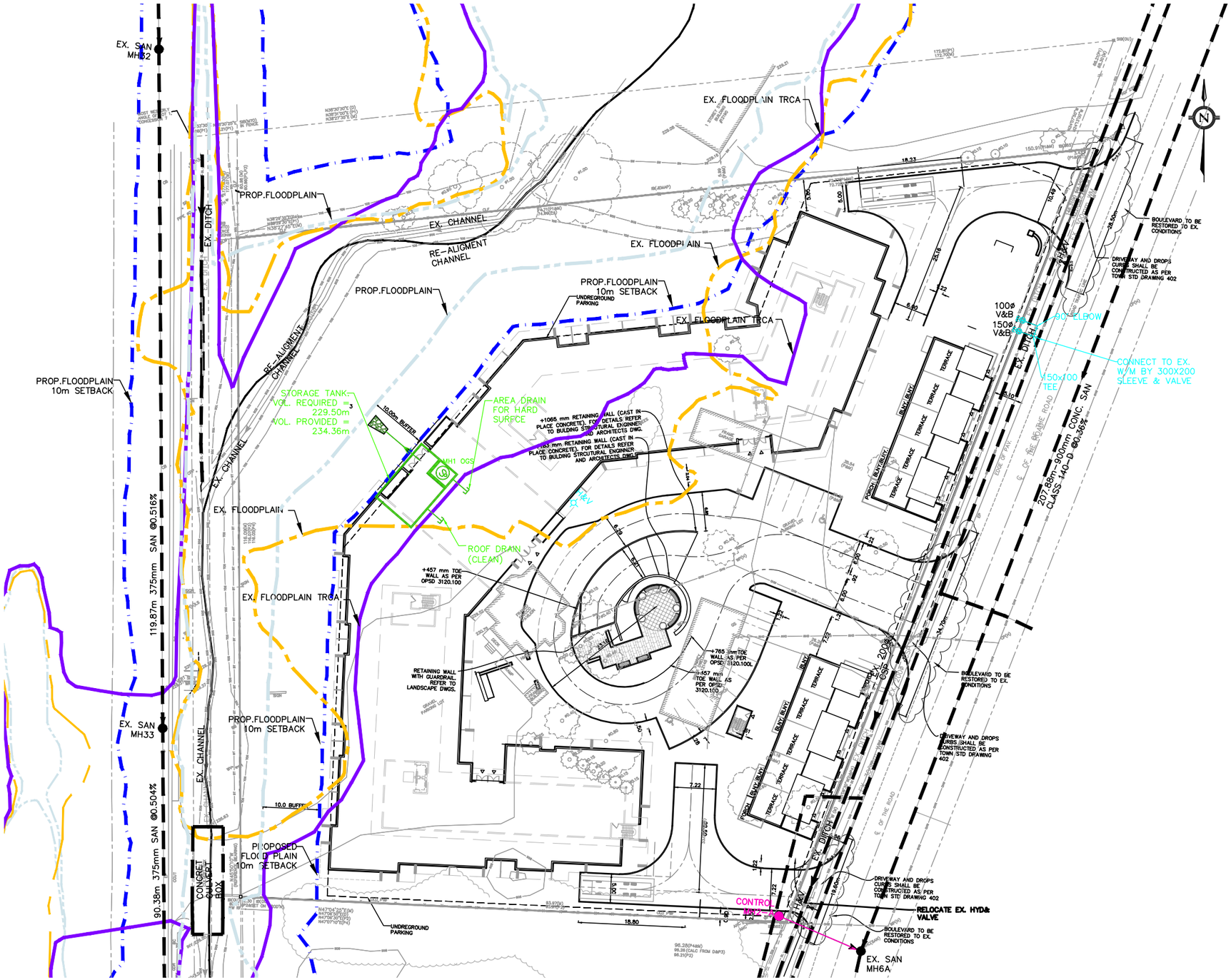
No.	DESCRIPTION	BY	DATE
1.			

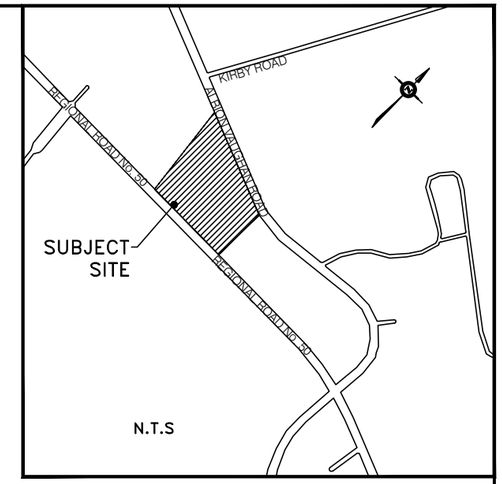
REVISIONS

12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

EXISTING MUNICIPAL INFRASTRUCTURE

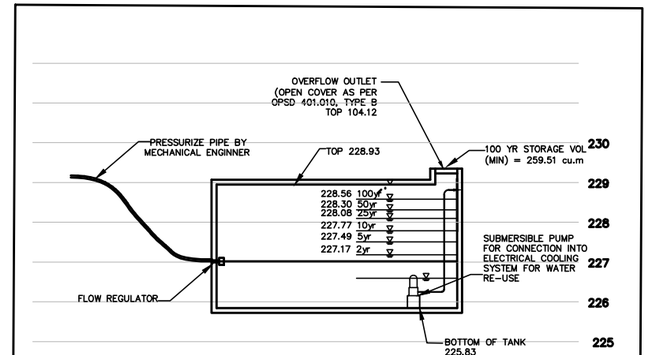
DATE:	SCALE	DESIGN BY:	DRAWN BY:	PROJECT No.	FIG. No.
DEC. 2020	N.T.S		I.S	17-849	5





LEGEND

- EX. WATERMAIN
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. FLOODPLAIN
- EX. FLOODPLAIN TRCA
- PROP. FLOOPLAIN
- PROP. FLOODPLAIN 10m SETBACK



PROPOSED UNDERGROUND TANK
TOTAL PROPOSED VOLUME 229.51m³ (MINIMUM)

NOTE:
THE STORAGE TANK DESIGN TO BE COORDINATED WITH ARCHITECT/STRUCTURAL CONSULTANTS. PROPOSED PIPES/PUMPS WITHIN THE STORAGE TANK TO BE DESIGNED BY MECHANICAL ENGINEER. I

N.T.S.

SWM TANK = 84m² X 3.1m(H)X0.9
TOTAL STORAGE VOLUME PROVIDED = 234.36m³
TOTAL STORAGE VOLUME REQUIRED = 229.51m³

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C7
T: (905) 944-0162
www.maeng.ca

No.	DESCRIPTION	BY	DATE
1.			

REVISIONS

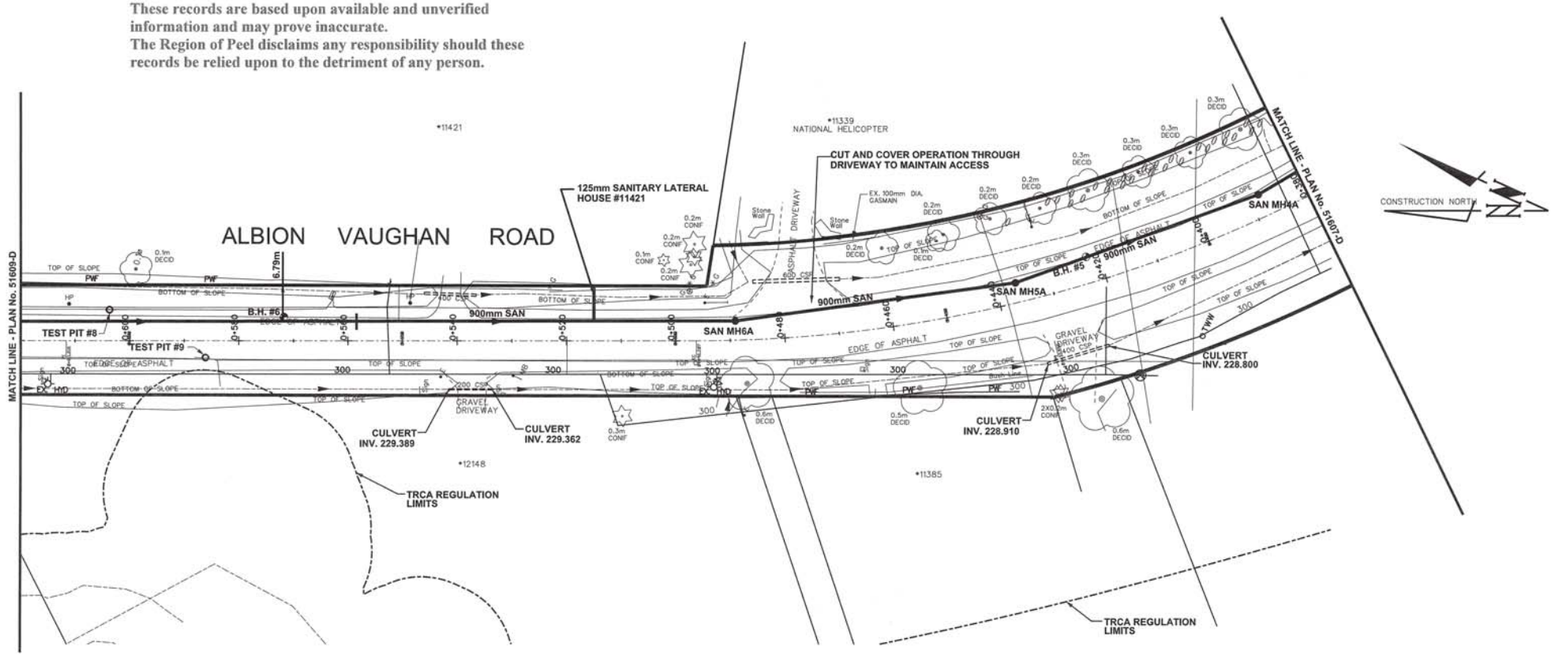
12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

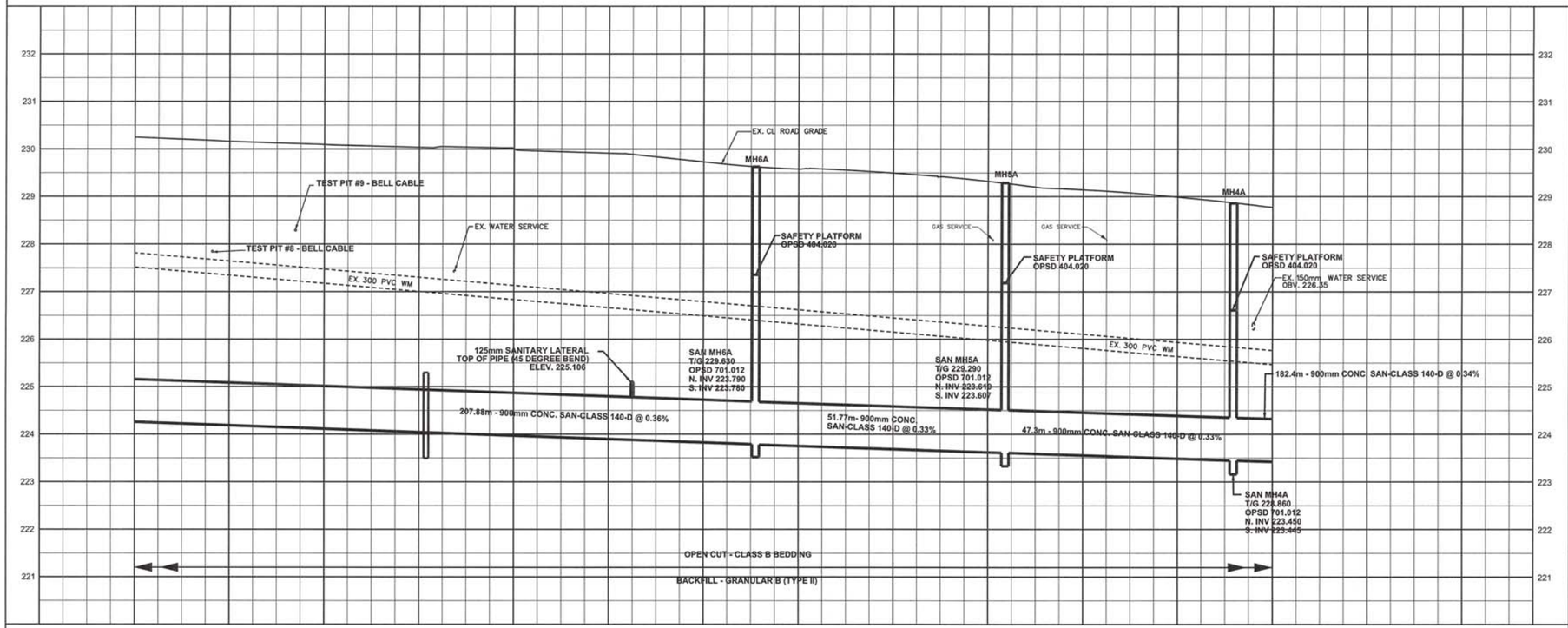
PROPOSED SERVICING PLAN

DATE:	SCALE	DESIGN BY:	DRAWN BY:	PROJECT No.	FIG. No.
NOV. 2020	N.T.S		I.S	17-849	6

DISCLAIMER

These records are based upon available and unverified information and may prove inaccurate.
The Region of Peel disclaims any responsibility should these records be relied upon to the detriment of any person.





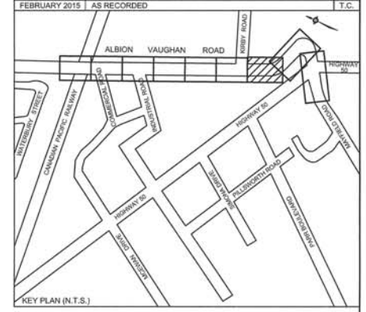
230.30	230.20	230.13	230.04	230.00	229.91	229.73	229.58	229.50	229.32	229.14	228.99	228.77	EX. ROAD ELEV.
0+620	0+600	0+580	0+560	0+540	0+520	0+500	0+480	0+460	0+440	0+420	0+400	0+380	ROAD CHAINAGE

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS		
STORM SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE		
PARKS & REC.			CTV		
ONT. CLEAN WATER			COMMUNIC. CABLES		

REVISIONS

DATE	DETAILS	INIT.
AUGUST 2013	PRELIMINARY DESIGN SUBMISSION	K.A.
OCTOBER 2013	PRELIMINARY DESIGN - REVISED ALIGNMENT	S.M.
DECEMBER 2013	DETAILED DESIGN SUBMISSION	S.M.
MARCH 2014	90% SUBMISSION	S.M.
AUGUST 2014	ISSUED FOR CONSTRUCTION	J.C.
FEBRUARY 2015	AS RECORDED	T.C.



LEGEND

- OPSD 911.140
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY MH
- EXISTING SANITARY SEWER
- EXISTING SANITARY MH
- TRCA REGULATION LIMIT
- 2.4m HIGH HOARDING COMPLETE WITH SILT FILTER CLOTH REFER TO PLAN No. 51616-D
- HEAVY DUTY SILT FENCE PER OPSD 219.130
- BOREHOLE
- SNOW FENCE

Chisholm, Fleming and Associates
consulting engineers

General Notes

All Driveways Are ASPHALT Unless Otherwise Noted
All Existing Water And Sanitary Service Locations Are Approximate And Must Be Located Accurately In The Field
All Pipes Size In mm
20C Existing Water Service, Size In mm
B.M. No. 37 Elev. 227.190m
Description
Location: North face at the east corner of a red insul. brick house # 11970 located on the west side of Highway 50 approx. 0.30 km south of Mayfield Road

The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.
Confirm all the existing connection and maintenance holes/sewer inverts prior to the start of any construction and notify the contract administrator immediately of any discrepencies with the contract drawings.

Designed by
Chkd.
Approved by

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF VAUGHAN
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE INCORPORATED-GAS DISTRIBUTION
HYDRO ONE NETWORKS

CABLE TELEVISION/FIBRE/OPTIC PROVIDERS:
BELL CANADA
HYDRO ONE TELECOM
ROGERS CABLE
ALLSTREAM

10m 0 10 20 30m — HORIZONTAL SCALE 1:500
1m 0 1 2 3m — VERTICAL SCALE 1:50

Region of Peel
Working for you

ALBION-VAUGHAN ROAD

(FROM HIGHWAY 50 TO ALBION-VAUGHAN SPS)

PROP. 900mm DIA. TRUNK SANITARY SEWER

STA. 0+380 TO STA. 0+620

CAD Area	Area C-01	Project No.	12-2210
Checked by S.M.	Drawn by R.S./G.S.		
Date JULY 2013	Sheet 4 of 18	Plan No.	51608-D

Appendix C

Tables

Table 5.2.1

On-Site Storage Calculator

TOWN OF CALEDON 100-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.5003	ha
Composite C =	0.90	
i-100y (Allowable) =	195.70	mm/hr
$Q_{Allowable}$ =	0.0158	m^3/s
Q_{Actual} =	0.0158	m^3/s

$$i_{100} = 4688(t_c+17)^{-0.9624}$$

t_c (min)	I (mm/hr)	Q_{100} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	290.344	0.363	0.347	20.840	
2	275.623	0.345	0.329	39.470	
3	262.347	0.328	0.312	56.216	
4	250.313	0.313	0.297	71.343	
5	239.354	0.299	0.284	85.066	
6	229.330	0.287	0.271	97.566	
7	220.126	0.275	0.260	108.993	
8	211.646	0.265	0.249	119.472	
9	203.806	0.255	0.239	129.111	
10	196.536	0.246	0.230	138.002	
11	189.777	0.237	0.222	146.222	
12	183.475	0.229	0.214	153.840	
13	177.585	0.222	0.206	160.915	
14	172.068	0.215	0.199	167.497	
15	166.890	0.209	0.193	173.633	
16	162.020	0.203	0.187	179.362	
17	157.432	0.197	0.181	184.718	
18	153.100	0.191	0.176	189.733	
19	149.005	0.186	0.171	194.435	
20	145.128	0.182	0.166	198.849	
21	141.450	0.177	0.161	202.997	
22	137.958	0.173	0.157	206.898	
23	134.637	0.168	0.153	210.571	
24	131.475	0.164	0.149	214.031	
25	128.461	0.161	0.145	217.295	
26	125.585	0.157	0.141	220.375	
27	122.837	0.154	0.138	223.283	
28	120.209	0.150	0.135	226.031	
29	117.693	0.147	0.131	228.628	
30	115.282	0.144	0.128	231.084	
31	112.969	0.141	0.125	233.408	
32	110.750	0.139	0.123	235.607	
33	108.617	0.136	0.120	237.689	
34	106.567	0.133	0.117	239.660	
35	104.594	0.131	0.115	241.527	
36	102.694	0.128	0.113	243.295	***
37	100.863	0.126	0.110	244.970	

Table 5.4.2-A

On-Site Storage Calculator

TOWN OF CALEDON 2-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-Roof Area
Composite C =	0.78		
i-2y (Allowable) =	85.72	mm/hr	$i\_2 = 1070(t_c+7.85)^{-0.8759}$
$Q_{Allowable}$ =	0.0103	m^3/s	
Q_{Actual} =	0.0103	m^3/s	Q2= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q_2 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	158.473	0.221	0.211	12.660	
2	144.289	0.189	0.178	21.389	
3	132.572	0.175	0.164	29.558	
4	122.720	0.163	0.152	36.579	
5	114.313	0.153	0.142	42.703	
6	107.050	0.144	0.134	48.113	
7	100.709	0.136	0.126	52.943	
8	95.121	0.130	0.119	57.294	
9	90.158	0.124	0.113	61.246	
10	85.718	0.118	0.108	64.861	
11	81.722	0.114	0.103	68.189	
12	78.104	0.109	0.099	71.269	
13	74.813	0.105	0.095	74.134	
14	71.806	0.102	0.091	76.811	
15	69.045	0.098	0.088	79.323	
16	66.503	0.095	0.085	81.688	
17	64.153	0.093	0.082	83.923	
18	61.974	0.090	0.080	86.041	
19	59.948	0.088	0.077	88.055	
20	58.058	0.085	0.075	89.974	
21	56.291	0.083	0.073	91.807	
22	54.636	0.081	0.071	93.563	
23	53.082	0.079	0.069	95.247	
24	51.619	0.078	0.067	96.865	
25	50.240	0.076	0.066	98.425	
26	48.938	0.074	0.064	99.928	
27	47.705	0.073	0.063	101.381	
28	46.538	0.072	0.061	102.787	
29	45.430	0.070	0.060	104.149	
30	44.377	0.069	0.059	105.471	
31	43.375	0.068	0.057	106.754	
32	42.420	0.067	0.056	108.003	
33	41.509	0.066	0.055	109.218	
34	40.639	0.064	0.054	110.402	
35	39.807	0.063	0.053	111.557	
36	39.011	0.063	0.052	112.685	***
37	38.248	0.062	0.051	113.787	
38	37.516	0.061	0.050	114.864	
39	36.814	0.060	0.050	115.919	
40	36.139	0.059	0.049	116.952	

Table 5.4.2-B

On-Site Storage Calculator

TOWN OF CALEDON 5-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-Roof Area
Composite C =	0.78		
i-5y (Allowable) =	109.68	mm/hr	$i\_2 = 1593(t_c+11)^{-0.8789}$
$Q_{Allowable}$ =	0.0159	m^3/s	
Q_{Actual} =	0.0159	m^3/s	Q5= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q_5 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	179.359	0.231	0.215	12.879	
2	167.175	0.216	0.200	24.008	
3	156.633	0.203	0.187	33.739	
4	147.418	0.192	0.176	42.337	
5	139.288	0.183	0.167	50.001	
6	132.061	0.174	0.158	56.885	
7	125.590	0.166	0.150	63.112	
8	119.762	0.159	0.143	68.777	
9	114.483	0.153	0.137	73.961	
10	109.677	0.147	0.131	78.726	
11	105.284	0.142	0.126	83.126	
12	101.250	0.137	0.121	87.204	
13	97.532	0.133	0.117	90.999	
14	94.095	0.128	0.113	94.541	
15	90.907	0.125	0.109	97.858	
16	87.941	0.121	0.105	100.972	
17	85.174	0.118	0.102	103.904	
18	82.587	0.115	0.099	106.670	
19	80.163	0.112	0.096	109.287	
20	77.886	0.109	0.093	111.766	
21	75.742	0.107	0.091	114.121	
22	73.721	0.104	0.088	116.360	
23	71.812	0.102	0.086	118.494	
24	70.006	0.100	0.084	120.531	
25	68.294	0.098	0.082	122.478	
26	66.669	0.096	0.080	124.342	
27	65.124	0.094	0.078	126.128	
28	63.654	0.092	0.076	127.842	
29	62.254	0.090	0.074	129.489	
30	60.917	0.089	0.073	131.073	
31	59.641	0.087	0.071	132.599	
32	58.420	0.086	0.070	134.069	
33	57.251	0.084	0.068	135.488	
34	56.132	0.083	0.067	136.859	
35	55.058	0.082	0.066	138.183	
36	54.027	0.080	0.065	139.465	***
37	53.036	0.079	0.063	140.705	
38	52.084	0.078	0.062	141.908	
39	51.167	0.077	0.061	143.073	
40	50.284	0.076	0.060	144.205	

Table 5.4.2-C

On-Site Storage Calculator

TOWN OF CALEDON 10-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-Roof Area
Composite C =	0.78		
i-10y (Allowable) =	134.16	mm/hr	$i_{10} = 2221(t_c+12)^{-0.9080}$
$Q_{Allowable}$ =	0.0195	m^3/s	
Q_{Actual} =	0.0195	m^3/s	Q10= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q10 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	216.316	0.275	0.255	15.318	
2	202.239	0.258	0.238	28.614	
3	189.958	0.243	0.224	40.273	
4	179.146	0.230	0.211	50.590	
5	169.551	0.219	0.199	59.791	
6	160.976	0.209	0.189	68.052	
7	153.264	0.199	0.180	75.516	
8	146.290	0.191	0.171	82.295	
9	139.950	0.183	0.164	88.482	
10	134.162	0.176	0.157	94.154	
11	128.855	0.170	0.151	99.375	
12	123.970	0.164	0.145	104.198	
13	119.459	0.159	0.139	108.667	
14	115.280	0.154	0.134	112.822	
15	111.396	0.149	0.130	116.696	
16	107.778	0.145	0.125	120.315	
17	104.398	0.141	0.121	123.707	
18	101.233	0.137	0.117	126.891	
19	98.263	0.133	0.114	129.886	
20	95.471	0.130	0.111	132.710	
21	92.841	0.127	0.107	135.376	
22	90.358	0.124	0.104	137.898	
23	88.011	0.121	0.102	140.287	
24	85.788	0.119	0.099	142.553	
25	83.680	0.116	0.096	144.707	
26	81.678	0.114	0.094	146.755	
27	79.774	0.111	0.092	148.706	
28	77.961	0.109	0.090	150.566	
29	76.233	0.107	0.088	152.342	
30	74.583	0.105	0.086	154.039	
31	73.006	0.103	0.084	155.662	
32	71.498	0.101	0.082	157.215	
33	70.054	0.100	0.080	158.704	
34	68.670	0.098	0.078	160.132	
35	67.342	0.096	0.077	161.502	
36	66.067	0.095	0.075	162.818	***
37	64.841	0.093	0.074	164.083	
38	63.663	0.092	0.072	165.300	
39	62.528	0.091	0.071	166.471	
40	61.435	0.089	0.070	167.599	

Table 5.4.2-D

On-Site Storage Calculator

TOWN OF CALEDON 25-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-Roof Area
Composite C =	0.78		
i-25y (Allowable) =	156.47	mm/hr	$i\_10 = 3158(t_c+15)^{-0.9335}$
$Q_{Allowable}$ =	0.0246	m^3/s	
Q_{Actual} =	0.0246	m^3/s	Q25= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q25 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	237.337	0.300	0.275	16.523	
2	224.279	0.284	0.260	31.170	
3	212.625	0.270	0.246	44.244	
4	202.160	0.258	0.233	55.984	
5	192.708	0.247	0.222	66.584	
6	184.128	0.236	0.212	76.202	
7	176.303	0.227	0.202	84.967	
8	169.137	0.218	0.194	92.986	
9	162.549	0.210	0.186	100.349	
10	156.471	0.203	0.179	107.132	
11	150.846	0.196	0.172	113.399	
12	145.624	0.190	0.166	119.206	
13	140.764	0.184	0.160	124.599	
14	136.227	0.179	0.154	129.621	
15	131.983	0.174	0.149	134.306	
16	128.005	0.169	0.144	138.685	
17	124.267	0.165	0.140	142.787	
18	120.748	0.160	0.136	146.635	
19	117.429	0.156	0.132	150.252	
20	114.294	0.153	0.128	153.654	
21	111.328	0.149	0.124	156.861	
22	108.517	0.146	0.121	159.887	
23	105.848	0.143	0.118	162.745	
24	103.313	0.140	0.115	165.448	
25	100.900	0.137	0.112	168.007	
26	98.600	0.134	0.109	170.432	
27	96.407	0.131	0.107	172.733	
28	94.313	0.129	0.104	174.916	
29	92.310	0.126	0.102	176.991	
30	90.394	0.124	0.099	178.963	
31	88.558	0.122	0.097	180.840	
32	86.798	0.120	0.095	182.626	
33	85.109	0.118	0.093	184.328	
34	83.486	0.116	0.091	185.950	
35	81.926	0.114	0.089	187.497	
36	80.426	0.112	0.087	188.972	***
37	78.981	0.110	0.086	190.381	
38	77.589	0.109	0.084	191.726	
39	76.247	0.107	0.082	193.010	
40	74.952	0.106	0.081	194.238	

Table 5.4.2-E

On-Site Storage Calculator

TOWN OF CALEDON 50-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-Roof Area
Composite C =	0.78		
i-50y (Allowable) =	176.19	mm/hr	$i\_50 = 3886(t_c+16)^{-0.9495}$
$Q_{Allowable}$ =	0.0290	m^3/s	
Q_{Actual} =	0.0290	m^3/s	Q150= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q50 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	263.749	0.332	0.303	18.160	
2	249.817	0.315	0.286	34.318	
3	237.316	0.300	0.271	48.783	
4	226.035	0.286	0.258	61.801	
5	215.802	0.274	0.245	73.576	
6	206.477	0.263	0.234	84.271	
7	197.944	0.253	0.224	94.024	
8	190.104	0.243	0.214	102.950	
9	182.877	0.235	0.206	111.145	
10	176.192	0.227	0.198	118.691	
11	169.990	0.219	0.190	125.658	
12	164.220	0.212	0.183	132.107	
13	158.839	0.206	0.177	138.089	
14	153.807	0.200	0.171	143.650	
15	149.092	0.194	0.165	148.830	
16	144.665	0.189	0.160	153.662	
17	140.499	0.184	0.155	158.178	
18	136.573	0.179	0.150	162.404	
19	132.865	0.175	0.146	166.365	
20	129.358	0.171	0.142	170.081	
21	126.036	0.167	0.138	173.573	
22	122.885	0.163	0.134	176.857	
23	119.891	0.159	0.130	179.949	
24	117.043	0.156	0.127	182.862	
25	114.331	0.153	0.124	185.609	
26	111.745	0.150	0.121	188.202	
27	109.276	0.147	0.118	190.651	
28	106.916	0.144	0.115	192.965	
29	104.659	0.141	0.112	195.153	
30	102.498	0.139	0.110	197.224	
31	100.426	0.136	0.107	199.183	
32	98.438	0.134	0.105	201.038	
33	96.530	0.131	0.102	202.796	
34	94.696	0.129	0.100	204.461	
35	92.932	0.127	0.098	206.038	
36	91.234	0.125	0.096	207.534	***
37	89.599	0.123	0.094	208.951	
38	88.023	0.121	0.092	210.295	
39	86.502	0.119	0.090	211.569	
40	85.035	0.118	0.089	212.777	

Table 5.4.2-F

On-Site Storage Calculator

TOWN OF CALEDON 100-Year

Project: Multiple Residential Condo Development
Project No.: 17-849
By: I.S
Date: 11-Dec-20

Location: TOWN OF CALEDON

A =	0.553	ha	Area= Area total- Uncontrolled area-roof Area
Composite C =	0.78		
i-100y (Allowable) =	196.54	mm/hr	$i_{100} = 4688(t_c+17)^{-0.9624}$
$Q_{Allowable}$ =	0.0325	m^3/s	
Q_{Actual} =	0.0325	m^3/s	Q100= including roof control rate of 15.8L/s

t_c (min)	I (mm/hr)	Q_{100} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
1	290.344	0.363	0.331	19.858	
2	275.623	0.346	0.313	37.601	
3	262.347	0.330	0.297	53.539	
4	250.313	0.316	0.283	67.927	
5	239.354	0.302	0.270	80.971	
6	229.330	0.290	0.258	92.845	
7	220.126	0.279	0.247	103.690	
8	211.646	0.269	0.237	113.628	
9	203.806	0.260	0.227	122.762	
10	196.536	0.251	0.219	131.178	
11	189.777	0.243	0.211	138.954	
12	183.475	0.236	0.203	146.152	
13	177.585	0.228	0.196	152.830	
14	172.068	0.222	0.189	159.037	
15	166.890	0.216	0.183	164.816	
16	162.020	0.210	0.177	170.205	
17	157.432	0.204	0.172	175.238	
18	153.100	0.199	0.167	179.945	
19	149.005	0.194	0.162	184.351	
20	145.128	0.190	0.157	188.481	
21	141.450	0.185	0.153	192.357	
22	137.958	0.181	0.148	195.996	
23	134.637	0.177	0.145	199.417	
24	131.475	0.173	0.141	202.635	
25	128.461	0.170	0.137	205.664	
26	125.585	0.166	0.134	208.517	
27	122.837	0.163	0.130	211.206	
28	120.209	0.160	0.127	213.741	
29	117.693	0.157	0.124	216.132	
30	115.282	0.154	0.121	218.388	
31	112.969	0.151	0.119	220.518	
32	110.750	0.148	0.116	222.527	
33	108.617	0.146	0.113	224.425	
34	106.567	0.143	0.111	226.217	
35	104.594	0.141	0.109	227.908	
36	102.694	0.139	0.106	229.506	***
37	100.863	0.137	0.104	231.013	
38	99.097	0.134	0.102	232.437	
39	97.394	0.132	0.100	233.779	
40	95.749	0.130	0.098	235.046	

Table 3.3.1. Nodal Demand Summary
12149 Albion Vaugh Rd
Town of Caledon

Node	Elev	No. of Units	Demand Pop *1.68 ppu (1 bedroom) 2.54 ppu (2+ bedroom) 3.8 ppu (Townhouses)*	Average Daily Demand Flow (280L/capita/day) *L/s*	Min Hourly Demand (Res.) *0.7X280L/c/d* *L/s*	Peak Daily Demand-Res. *2.0X280 L/c/d* *L/s*	Peak hourly Demand Res. *3.0X280 L/c/d* *L/s*
1.00	180.28	95	160	0.519	0.363	1.04	1.556
		145	368	1.193	0.835	2.39	3.578
		20	76	0.246	0.172	0.49	0.739
Total			604.00	1.96	1.37	3.91	5.87

Reservoir	**VSB**
Elevation (m)	229.82
Pressure (Kpa)	344.74
Pressure (m)	35.16
Total Head (m)	264.98

Total requiered fire flow L/s	116.67
At Node 1 Fire demand and max day L/s	120.58

			Analysis Results		**Region of Peel Criteria**	**Type of Scenarios**
Pressure	27.58	m	270.40	kPA	140 kPA min	Peak Daily Flow Plus Fire Scenario
(Node 1)			39.22	psi	20 psi	
Pressure	35.27	m	345.79	kPA	690 kPA max	Minimum Hourly Demand Scenario
(Node 1)			50.15	psi	100 psi	
Pressure	35.20	m	345.11	kPA	275 kPA min	Peak Hourly Demand Scenario
(Node 1)			50.05	psi	40 psi	

```
******************************************************************
*                          E P A N E T                           *
*                   Hydraulic and Water Quality                  *
*                   Analysis for Pipe Networks                   *
*                         Version 2.0                            *
******************************************************************

Input File: 17-849wmminhourly.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	VSB-R	1	17.7	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality	
1	1.37	264.98	35.27	0.00	
VSB-R	-1.37	264.98	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
1	1.37	0.08	0.11	Open

```
******************************************************************
*                            E P A N E T                         *
*                     Hydraulic and Water Quality                *
*                     Analysis for Pipe Networks                 *
*                          Version 2.0                           *
******************************************************************

Input File: 17-849wmpeakdaily+fire.net



Link - Node Table:
------------------------------------------------------------------
Link           Start          End                Length  Diameter
ID             Node           Node                    m        mm
------------------------------------------------------------------
1              VSB-R          1                    17.7       150

Node Results:
------------------------------------------------------------------
Node                Demand      Head  Pressure   Quality
ID                     LPS         m         m
------------------------------------------------------------------
1                   120.58    257.33     27.58      0.00
VSB-R              -120.58    264.98      0.00      0.00 Reservoir

Link Results:
------------------------------------------------------------------
Link                  Flow  VelocityUnit Headloss    Status
ID                     LPS       m/s      m/km
------------------------------------------------------------------
1                   120.58      6.82    432.33      Open
```

```
******************************************************************
*                            E P A N E T                         *
*                     Hydraulic and Water Quality                *
*                     Analysis for Pipe Networks                 *
*                          Version 2.0                           *
******************************************************************

Input File: 17-849wmpickhourly.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
1	VSB-R	1	17.7	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality	
1	5.87	264.95	35.20	0.00	
VSB-R	-5.87	264.98	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
1	5.87	0.33	1.60	Open

Stormceptor®

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

12/14/2020

Province:	Ontario
City:	Caledon
Nearest Rainfall Station:	TORONTO CENTRAL
NCDC Rainfall Station Id:	0100
Years of Rainfall Data:	18
Site Name:	
Drainage Area (ha):	0.76
% Imperviousness:	78.00

Runoff Coefficient 'c': 0.76

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	9.17
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	Multiple Residential Condo
Project Number:	17-849
Designer Name:	Isabel Strauch
Designer Company:	Masonsong
Designer Email:	isabelS@maeng.ca
Designer Phone:	905-944-0162
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	79
EFO6	87
EFO8	90
EFO10	92
EFO12	92

Recommended Stormceptor EFO Model: EFO6

Estimated Net Annual Sediment (TSS) Load Reduction (%): 87

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

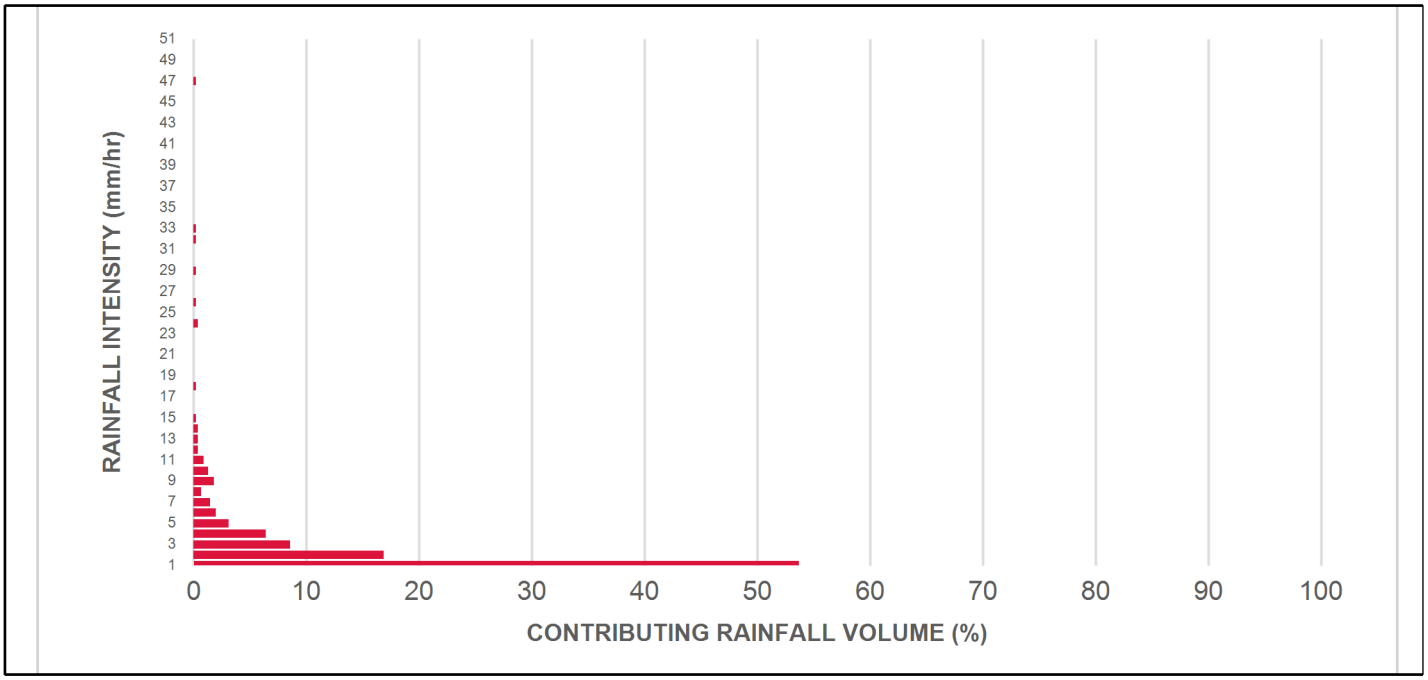
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

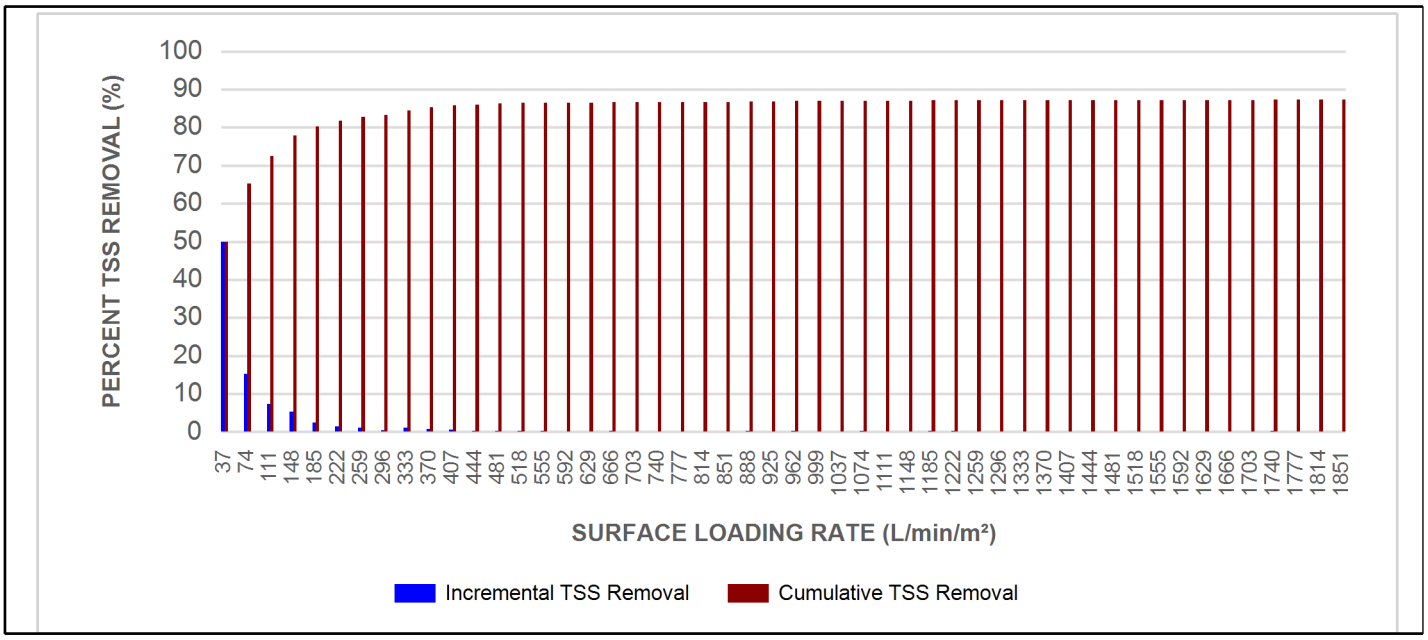
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	53.7	53.7	1.62	97.0	37.0	93	49.9	49.9
2	16.9	70.6	3.25	195.0	74.0	90	15.2	65.2
3	8.6	79.2	4.87	292.0	111.0	86	7.4	72.5
4	6.4	85.6	6.49	389.0	148.0	83	5.3	77.8
5	3.1	88.7	8.11	487.0	185.0	78	2.4	80.2
6	2.0	90.7	9.74	584.0	222.0	74	1.5	81.7
7	1.5	92.2	11.36	682.0	259.0	71	1.1	82.8
8	0.7	92.9	12.98	779.0	296.0	68	0.5	83.2
9	1.8	94.7	14.60	876.0	333.0	64	1.2	84.4
10	1.3	96.0	16.23	974.0	370.0	61	0.8	85.2
11	0.9	96.9	17.85	1071.0	407.0	58	0.5	85.7
12	0.4	97.3	19.47	1168.0	444.0	57	0.2	85.9
13	0.4	97.7	21.09	1266.0	481.0	56	0.2	86.2
14	0.4	98.1	22.72	1363.0	518.0	55	0.2	86.4
15	0.2	98.3	24.34	1460.0	555.0	54	0.1	86.5
16	0.0	98.3	25.96	1558.0	592.0	52	0.0	86.5
17	0.0	98.3	27.58	1655.0	629.0	52	0.0	86.5
18	0.2	98.5	29.21	1752.0	666.0	52	0.1	86.6
19	0.0	98.5	30.83	1850.0	703.0	52	0.0	86.6
20	0.0	98.5	32.45	1947.0	740.0	51	0.0	86.6
21	0.0	98.5	34.08	2045.0	777.0	51	0.0	86.6
22	0.0	98.5	35.70	2142.0	814.0	51	0.0	86.6
23	0.0	98.5	37.32	2239.0	851.0	51	0.0	86.6
24	0.4	98.9	38.94	2337.0	888.0	51	0.2	86.8
25	0.0	98.9	40.57	2434.0	925.0	50	0.0	86.8

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.2	99.1	42.19	2531.0	962.0	50	0.1	86.9
27	0.0	99.1	43.81	2629.0	999.0	50	0.0	86.9
28	0.0	99.1	45.43	2726.0	1037.0	50	0.0	86.9
29	0.2	99.3	47.06	2823.0	1074.0	49	0.1	87.0
30	0.0	99.3	48.68	2921.0	1111.0	49	0.0	87.0
31	0.0	99.3	50.30	3018.0	1148.0	49	0.0	87.0
32	0.2	99.5	51.92	3115.0	1185.0	48	0.1	87.1
33	0.2	99.7	53.55	3213.0	1222.0	48	0.1	87.2
34	0.0	99.7	55.17	3310.0	1259.0	48	0.0	87.2
35	0.0	99.7	56.79	3408.0	1296.0	47	0.0	87.2
36	0.0	99.7	58.41	3505.0	1333.0	47	0.0	87.2
37	0.0	99.7	60.04	3602.0	1370.0	46	0.0	87.2
38	0.0	99.7	61.66	3700.0	1407.0	46	0.0	87.2
39	0.0	99.7	63.28	3797.0	1444.0	45	0.0	87.2
40	0.0	99.7	64.91	3894.0	1481.0	44	0.0	87.2
41	0.0	99.7	66.53	3992.0	1518.0	43	0.0	87.2
42	0.0	99.7	68.15	4089.0	1555.0	42	0.0	87.2
43	0.0	99.7	69.77	4186.0	1592.0	41	0.0	87.2
44	0.0	99.7	71.40	4284.0	1629.0	40	0.0	87.2
45	0.0	99.7	73.02	4381.0	1666.0	39	0.0	87.2
46	0.0	99.7	74.64	4478.0	1703.0	38	0.0	87.2
47	0.2	99.9	76.26	4576.0	1740.0	37	0.1	87.3
48	0.0	99.9	77.89	4673.0	1777.0	36	0.0	87.3
49	0.0	99.9	79.51	4771.0	1814.0	36	0.0	87.3
50	0.0	99.9	81.13	4868.0	1851.0	35	0.0	87.3
						Estimated Net Annual Sediment (TSS) Load Reduction =		**87 %**

RAINFALL DATA FROM TORONTO CENTRAL RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

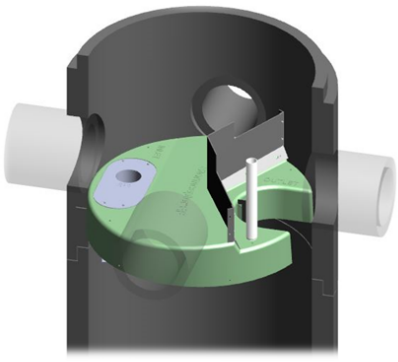
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

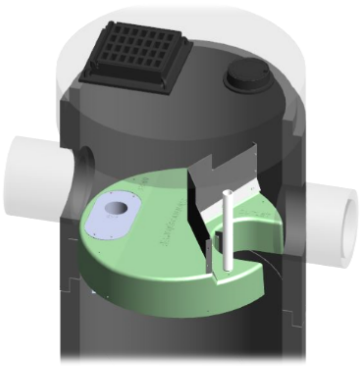
DESIGN FLEXIBILITY

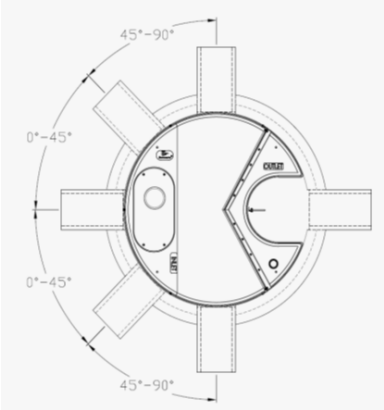
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m2 to 2600 L/min/m2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

Stormceptor®

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

12/14/2020

Province:	Ontario
City:	Caledon
Nearest Rainfall Station:	TORONTO CENTRAL
NCDC Rainfall Station Id:	0100
Years of Rainfall Data:	18
Site Name:	
Drainage Area (ha):	0.76
% Imperviousness:	78.00

Runoff Coefficient 'c': 0.76

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	9.17
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	Multiple Residential Condo
Project Number:	17-849
Designer Name:	Isabel Strauch
Designer Company:	Masonsong
Designer Email:	isabelS@maeng.ca
Designer Phone:	905-944-0162
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	79
EFO6	87
EFO8	90
EFO10	92
EFO12	92

Recommended Stormceptor EFO Model: EFO6

Estimated Net Annual Sediment (TSS) Load Reduction (%): 87

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

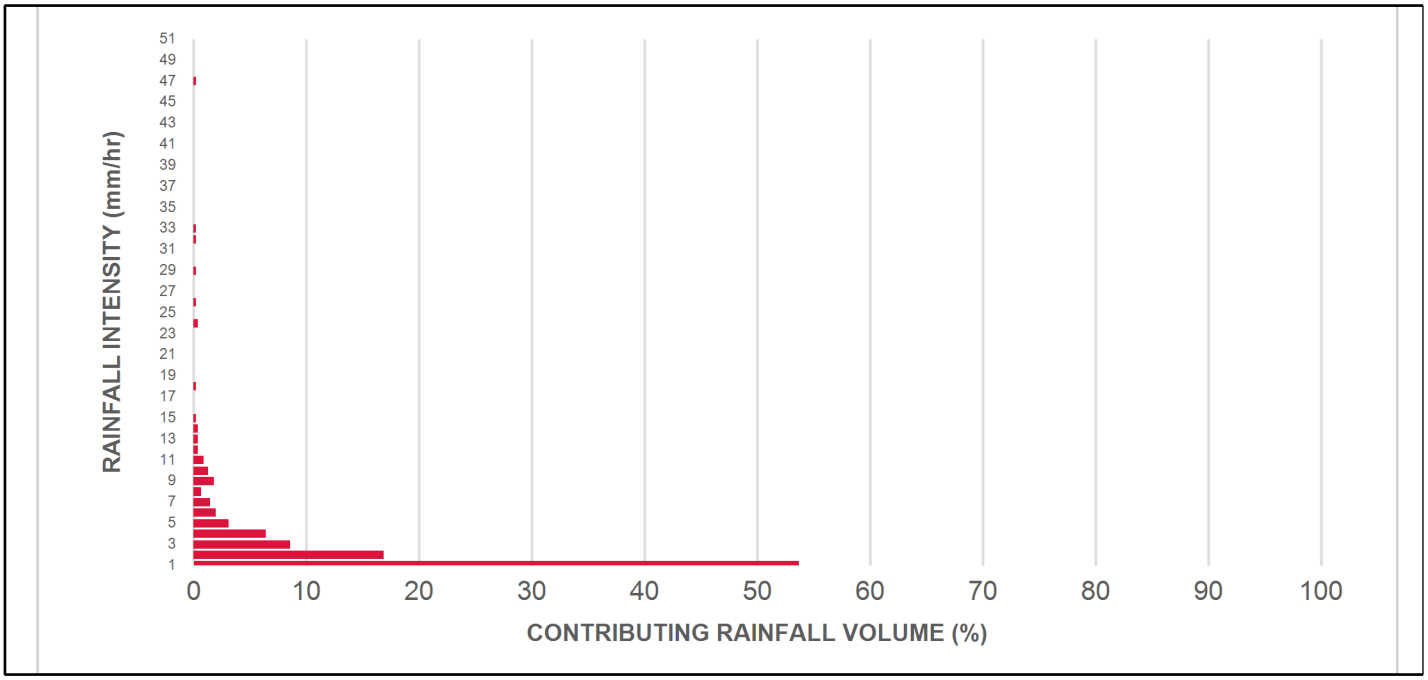
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

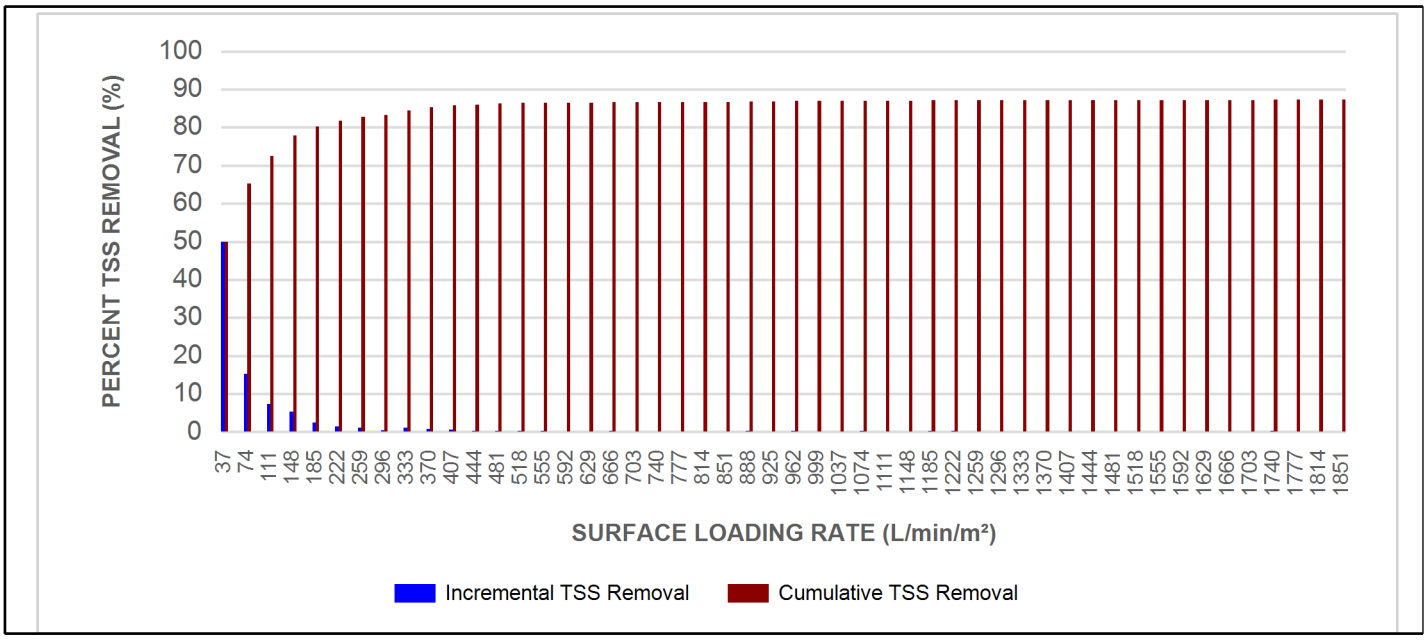
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	53.7	53.7	1.62	97.0	37.0	93	49.9	49.9
2	16.9	70.6	3.25	195.0	74.0	90	15.2	65.2
3	8.6	79.2	4.87	292.0	111.0	86	7.4	72.5
4	6.4	85.6	6.49	389.0	148.0	83	5.3	77.8
5	3.1	88.7	8.11	487.0	185.0	78	2.4	80.2
6	2.0	90.7	9.74	584.0	222.0	74	1.5	81.7
7	1.5	92.2	11.36	682.0	259.0	71	1.1	82.8
8	0.7	92.9	12.98	779.0	296.0	68	0.5	83.2
9	1.8	94.7	14.60	876.0	333.0	64	1.2	84.4
10	1.3	96.0	16.23	974.0	370.0	61	0.8	85.2
11	0.9	96.9	17.85	1071.0	407.0	58	0.5	85.7
12	0.4	97.3	19.47	1168.0	444.0	57	0.2	85.9
13	0.4	97.7	21.09	1266.0	481.0	56	0.2	86.2
14	0.4	98.1	22.72	1363.0	518.0	55	0.2	86.4
15	0.2	98.3	24.34	1460.0	555.0	54	0.1	86.5
16	0.0	98.3	25.96	1558.0	592.0	52	0.0	86.5
17	0.0	98.3	27.58	1655.0	629.0	52	0.0	86.5
18	0.2	98.5	29.21	1752.0	666.0	52	0.1	86.6
19	0.0	98.5	30.83	1850.0	703.0	52	0.0	86.6
20	0.0	98.5	32.45	1947.0	740.0	51	0.0	86.6
21	0.0	98.5	34.08	2045.0	777.0	51	0.0	86.6
22	0.0	98.5	35.70	2142.0	814.0	51	0.0	86.6
23	0.0	98.5	37.32	2239.0	851.0	51	0.0	86.6
24	0.4	98.9	38.94	2337.0	888.0	51	0.2	86.8
25	0.0	98.9	40.57	2434.0	925.0	50	0.0	86.8

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.2	99.1	42.19	2531.0	962.0	50	0.1	86.9
27	0.0	99.1	43.81	2629.0	999.0	50	0.0	86.9
28	0.0	99.1	45.43	2726.0	1037.0	50	0.0	86.9
29	0.2	99.3	47.06	2823.0	1074.0	49	0.1	87.0
30	0.0	99.3	48.68	2921.0	1111.0	49	0.0	87.0
31	0.0	99.3	50.30	3018.0	1148.0	49	0.0	87.0
32	0.2	99.5	51.92	3115.0	1185.0	48	0.1	87.1
33	0.2	99.7	53.55	3213.0	1222.0	48	0.1	87.2
34	0.0	99.7	55.17	3310.0	1259.0	48	0.0	87.2
35	0.0	99.7	56.79	3408.0	1296.0	47	0.0	87.2
36	0.0	99.7	58.41	3505.0	1333.0	47	0.0	87.2
37	0.0	99.7	60.04	3602.0	1370.0	46	0.0	87.2
38	0.0	99.7	61.66	3700.0	1407.0	46	0.0	87.2
39	0.0	99.7	63.28	3797.0	1444.0	45	0.0	87.2
40	0.0	99.7	64.91	3894.0	1481.0	44	0.0	87.2
41	0.0	99.7	66.53	3992.0	1518.0	43	0.0	87.2
42	0.0	99.7	68.15	4089.0	1555.0	42	0.0	87.2
43	0.0	99.7	69.77	4186.0	1592.0	41	0.0	87.2
44	0.0	99.7	71.40	4284.0	1629.0	40	0.0	87.2
45	0.0	99.7	73.02	4381.0	1666.0	39	0.0	87.2
46	0.0	99.7	74.64	4478.0	1703.0	38	0.0	87.2
47	0.2	99.9	76.26	4576.0	1740.0	37	0.1	87.3
48	0.0	99.9	77.89	4673.0	1777.0	36	0.0	87.3
49	0.0	99.9	79.51	4771.0	1814.0	36	0.0	87.3
50	0.0	99.9	81.13	4868.0	1851.0	35	0.0	87.3
						Estimated Net Annual Sediment (TSS) Load Reduction =		**87 %**

RAINFALL DATA FROM TORONTO CENTRAL RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

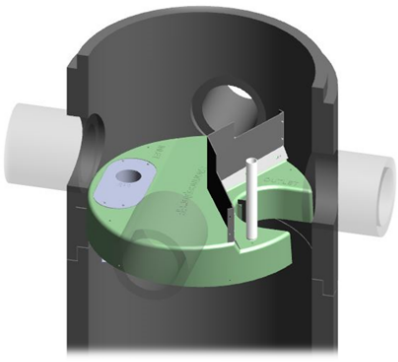
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

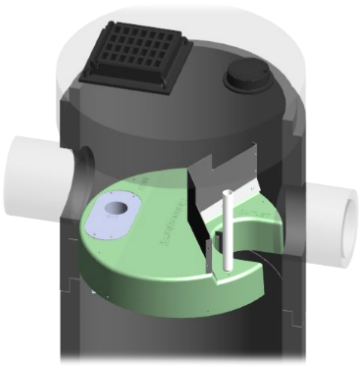
DESIGN FLEXIBILITY

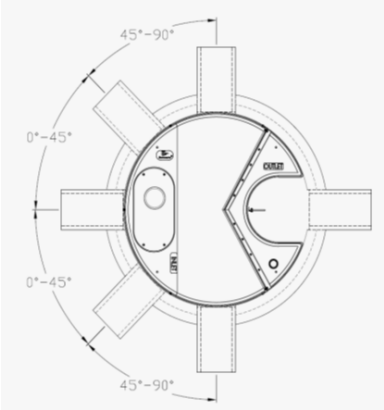
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

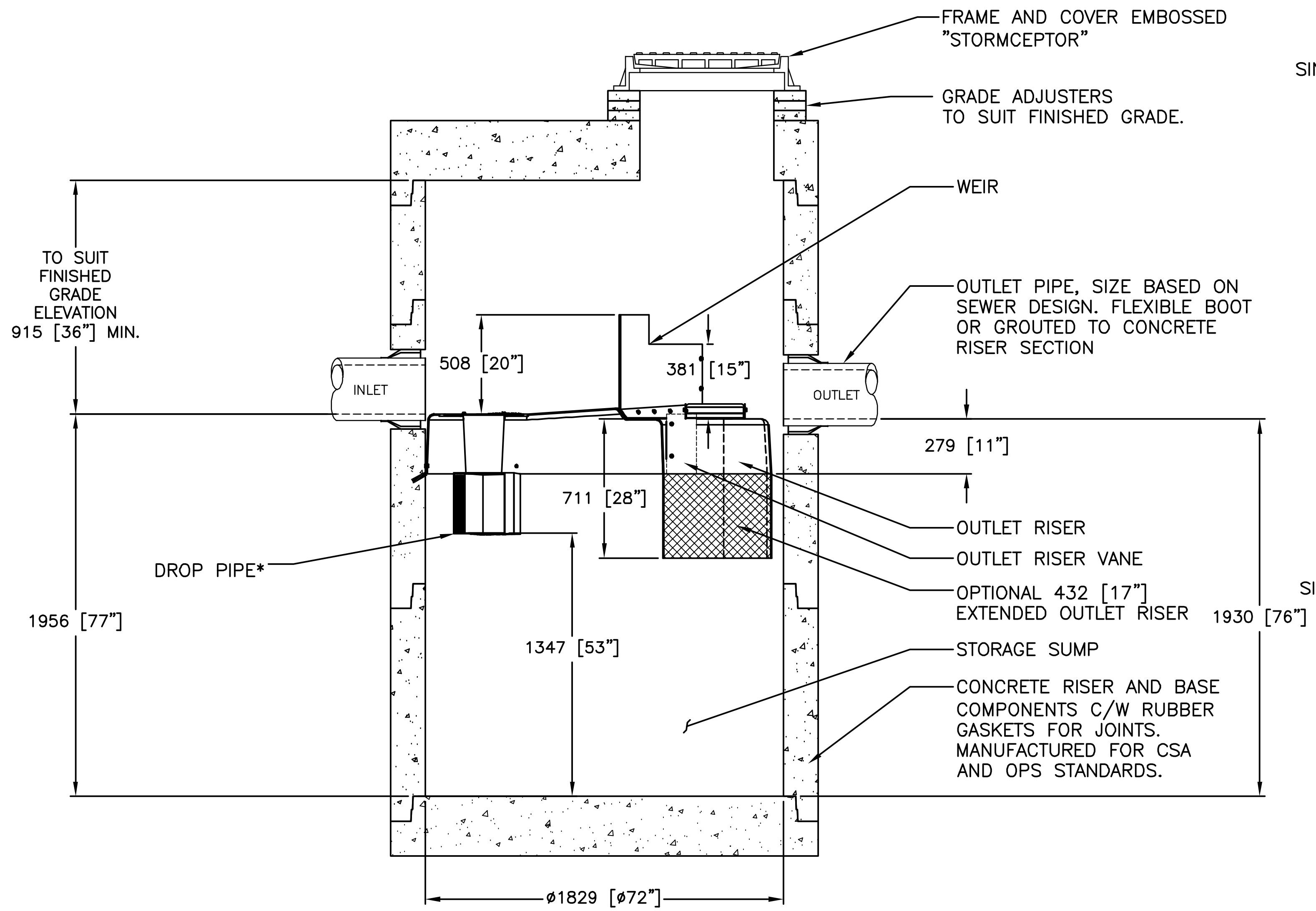
3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

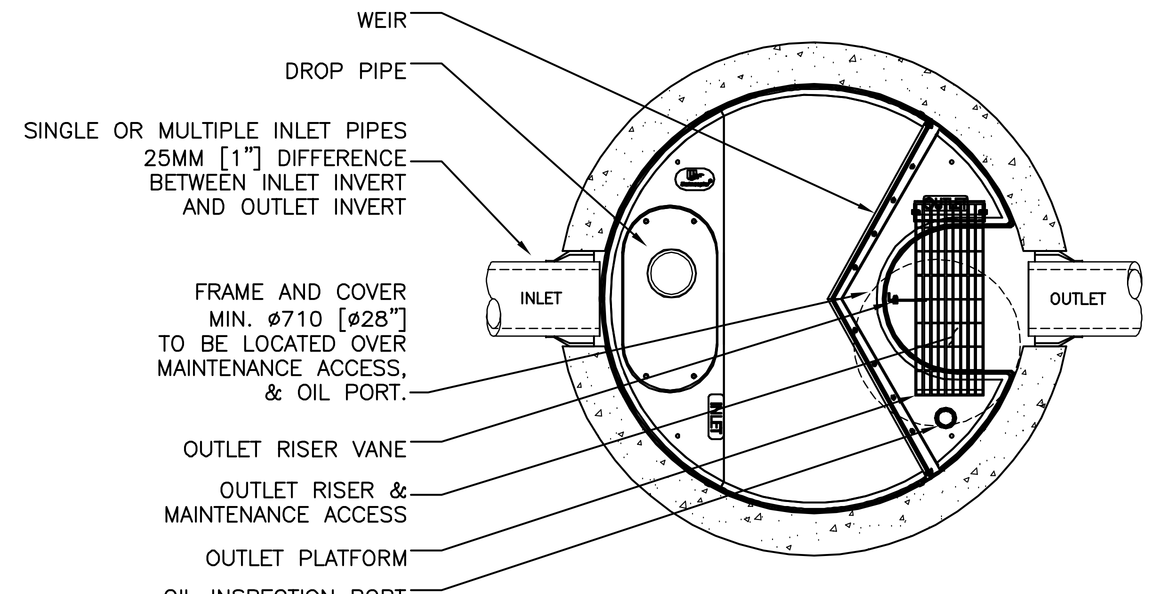
The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m2 to 2600 L/min/m2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

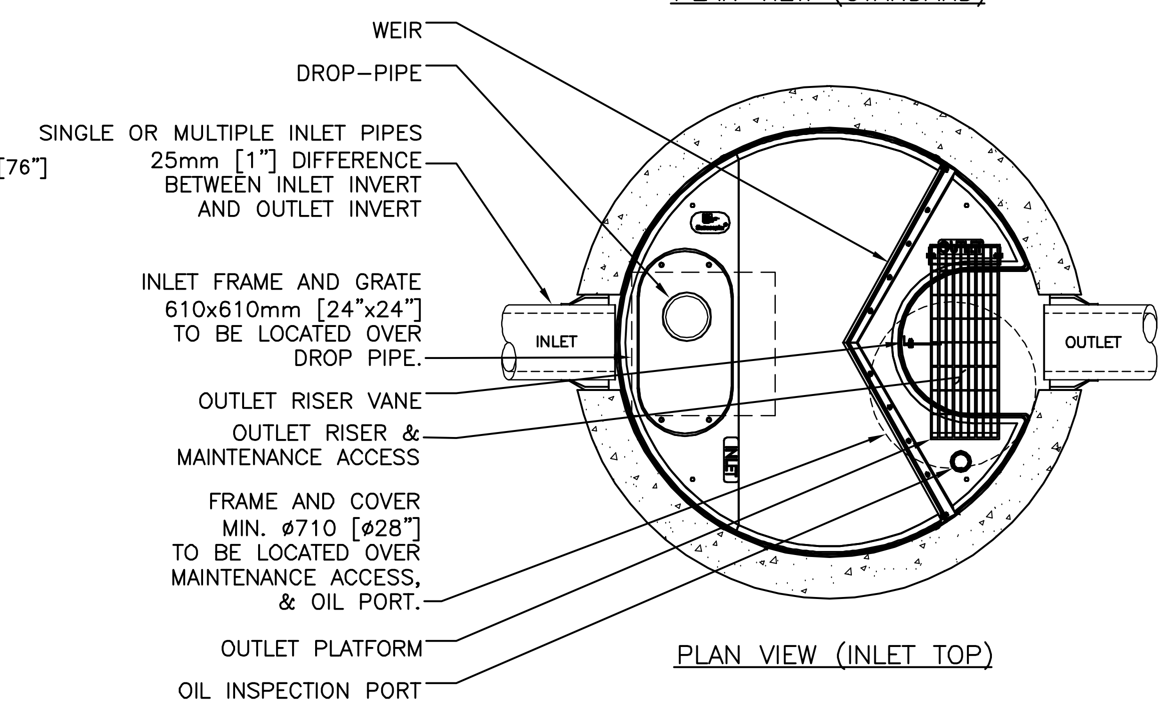
DRAWING NOT TO BE USED FOR CONSTRUCTION



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF6 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO6 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EFO6				
STRUCTURE ID					*
HYDROCARBON STORAGE REQ'D (L)					*
WATER QUALITY FLOW RATE (L/s)					*
PEAK FLOW RATE (L/s)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
DRAINAGE AREA (HA)					*
DRAINAGE AREA IMPERVIOUSNESS (%)					*
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
####	####	####	####
####	####	####	####
####	####	####	####
1	6/8/18	OUTLET PLATFORM	JSK
0	05/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®

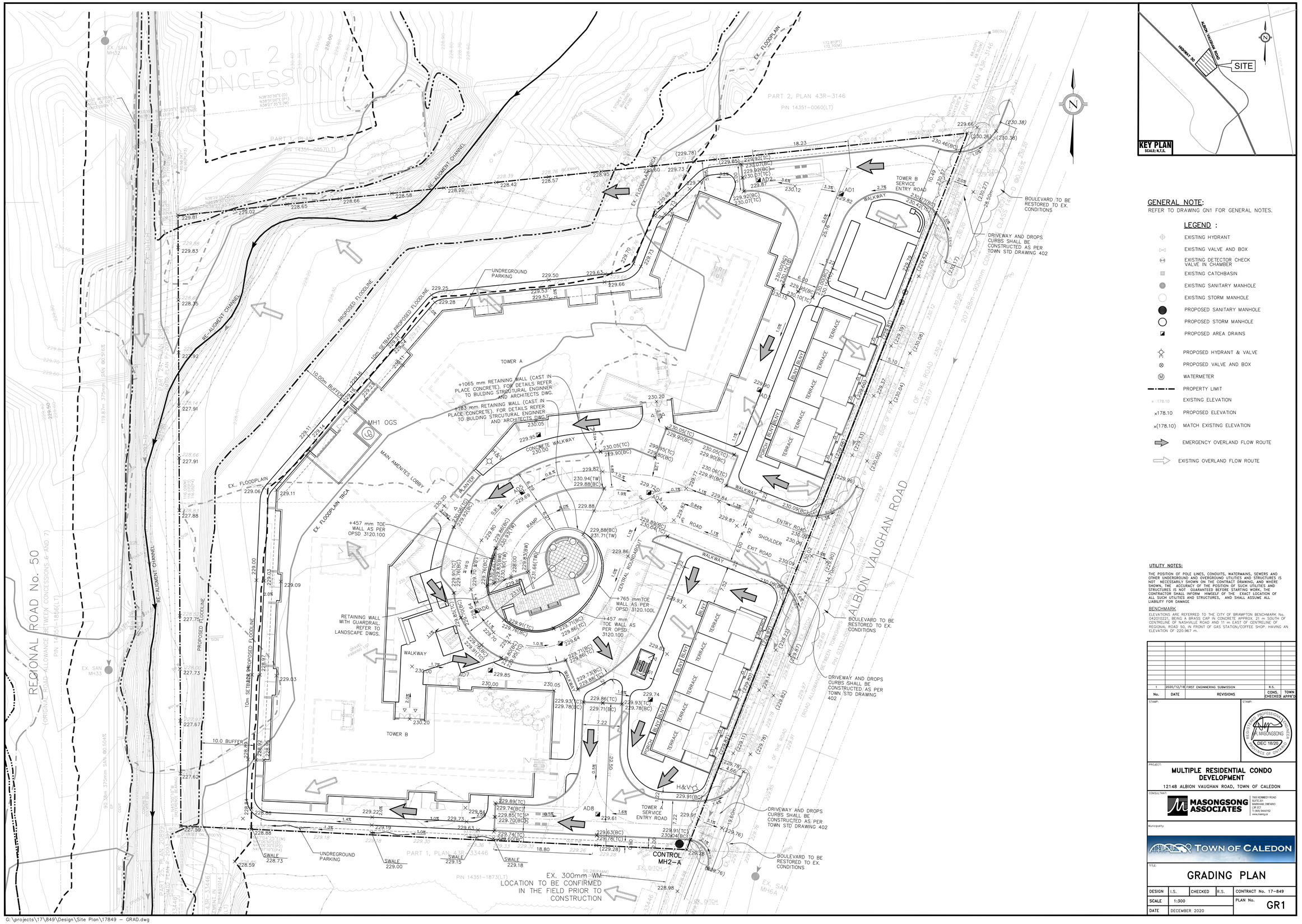
407 FAIRVIEW DRIVE, WHITBY, ON L1N 3A9
TF 800-565-4801 CA 416-960-9900 INTL +1-416-960-9900

DATE: 10/13/2017	
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: SP
PROJECT No.: EFO6	SEQUENCE No.: *
SHEET: 1 OF 1	

I:\IMBRIUM\PRODUCTS\STORMCEPTOR EF\40 DRAWINGS & DETAILS\STANDARD DETAILS\EFO STANDARD DETAILS\EFO6-DETAIL.DWG 4/12/2019 11:05 AM

Appendix D

Engineering drawings


KEY PLAN
SCALES N.T.S.
ALBION VAUGHAN ROAD
HIGHWAY 50
SITE
N
GENERAL NOTE:
REFER TO DRAWING GN1 FOR GENERAL NOTES.
LEGEND :
EXISTING HYDRANT
EXISTING VALVE AND BOX
EXISTING DETECTOR CHECK VALVE IN CHAMBER
EXISTING CATCHBASIN
EXISTING SANITARY MANHOLE
EXISTING STORM MANHOLE
PROPOSED SANITARY MANHOLE
PROPOSED STORM MANHOLE
PROPOSED AREA DRAINS
PROPOSED HYDRANT & VALVE
PROPOSED VALVE AND BOX
WATERMETER
PROPERTY LIMIT
EXISTING ELEVATION
PROPOSED ELEVATION
MATCH EXISTING ELEVATION
EMERGENCY OVERLAND FLOW ROUTE
EXISTING OVERLAND FLOW ROUTE
UTILITY NOTES:
THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE
BENCHMARK
ELEVATIONS ARE REFERRED TO THE CITY OF BRAMPTON BENCHMARK No. 042010221, BEING A BRASS CAP IN CONCRETE APPROX. 21 m SOUTH OF CENTRELINE OF NASHVILLE ROAD AND 11 m EAST OF CENTRELINE OF REGIONAL ROAD 50, IN FRONT OF GAS STATION/COFFEE SHOP. HAVING AN ELEVATION OF 220.967 m.
No. DATE REVISIONS CONS. CHECKED TOWN APP'D
1 2020/12/18 FIRST ENGINNERING SUBMISSION R.S.
STAMP:
REGISTERED PROFESSIONAL ENGINEER A. MASONGSONG DEC 18/20 PROVINCE OF ONTARIO
PROJECT:
MULTIPLE RESIDENTIAL CONDO DEVELOPMENT
12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON
CONSULTANT:
MASONGSONG ASSOCIATES
7300 KENNEDY ROAD SUITE 201 WOODBRIDGE, ONTARIO L4L 0G5 T: (905) 944-0152 www.msainc.ca
Municipality
TOWN OF CALEDON
TITLE:
GRADING PLAN
DESIGN I.S. CHECKED R.S. CONTRACT No. 17-849
SCALE 1:300 PLAN No. GR1
DATE DECEMBER 2020
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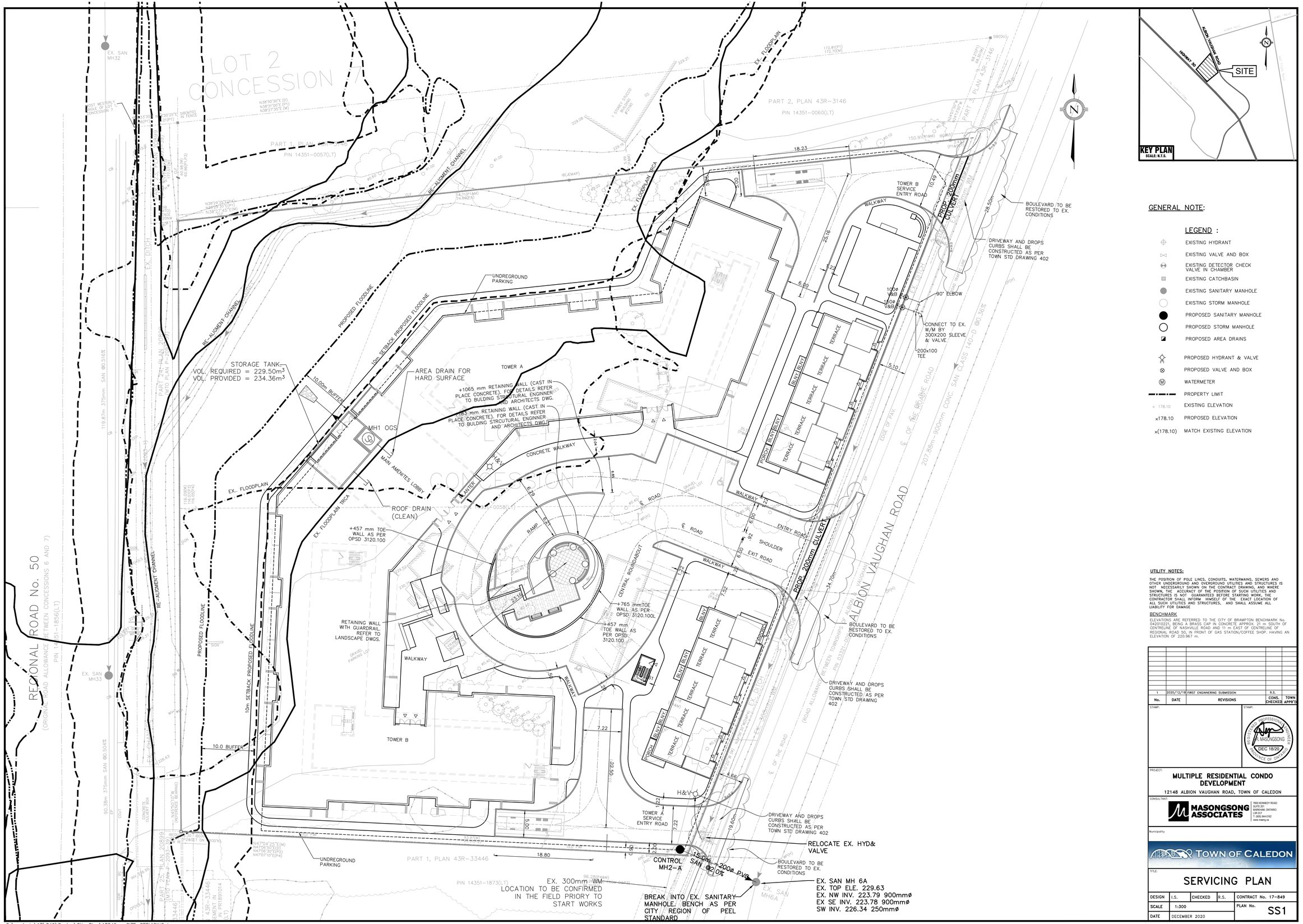

GENERAL NOTE:

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- EXISTING DETECTOR CHECK VALVE IN CHAMBER
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED AREA DRAINS
- PROPOSED HYDRANT & VALVE
- PROPOSED VALVE AND BOX
- WATERMETER
- PROPERTY LIMIT
- EXISTING ELEVATION (×178.10)
- PROPOSED ELEVATION (×178.10)
- MATCH EXISTING ELEVATION (×(178.10))

UTILITY NOTES:

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REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO R. MASONGSONG DEC 18/20

PROJECT:

MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES
780 KENNEDY ROAD SUITE 201 MARKHAM ONTARIO L3R 3Y7
T. (905) 944-0162
www.msamg.ca

Municipality

TOWN OF CALEDON

TITLE:

SERVICING PLAN

DESIGN	I.S.	CHECKED	R.S.	CONTRACT No. 17-849
SCALE	1:300			PLAN No. SS1
DATE	DECEMBER 2020			

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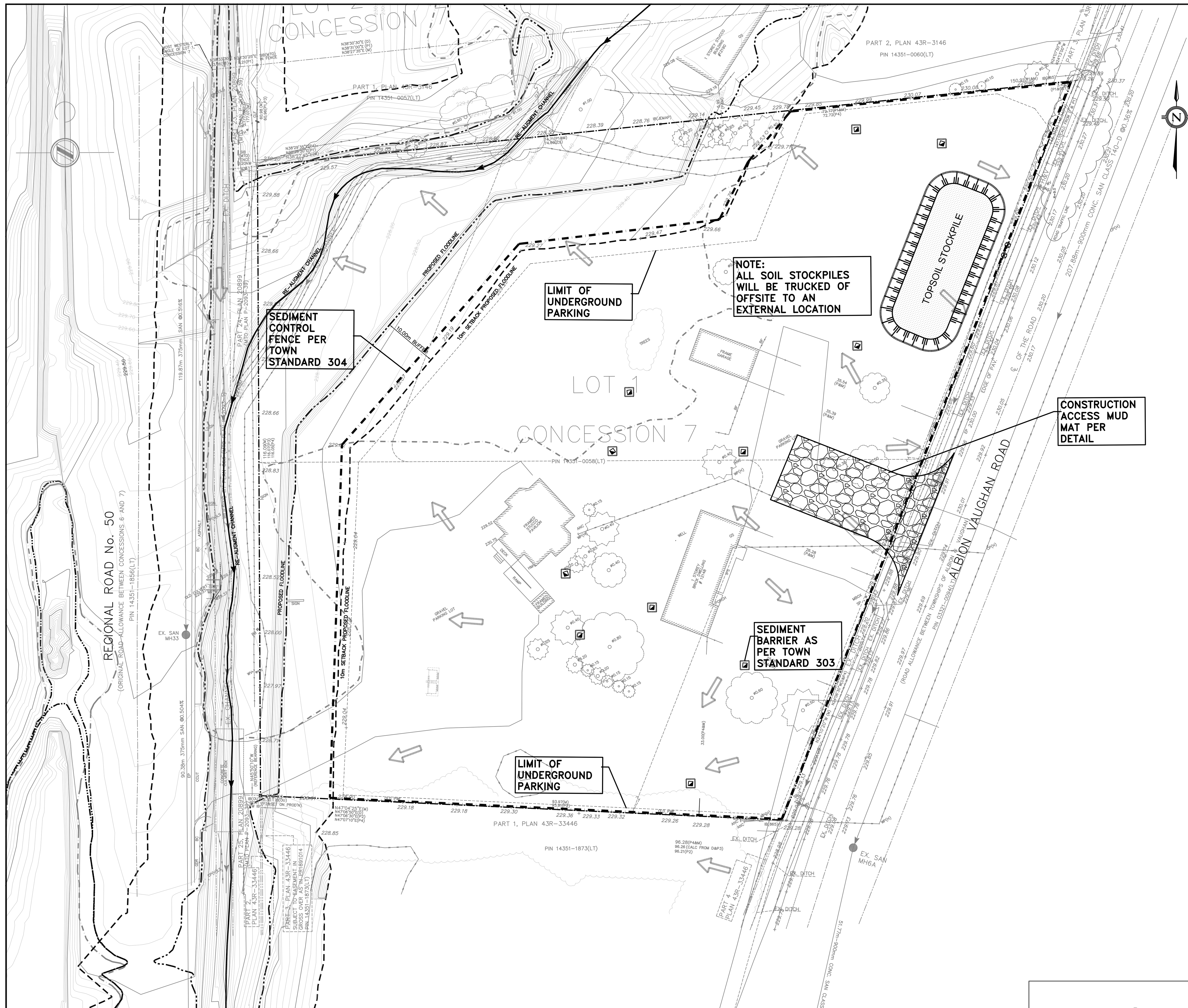
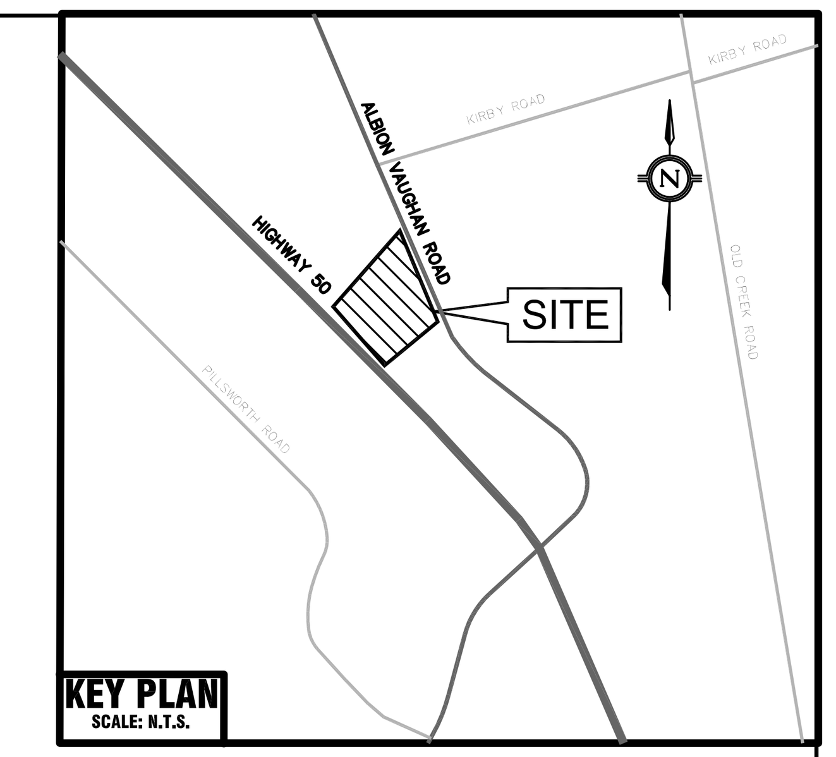


TRCA STANDARD EROSION AND SEDIMENT CONTROL NOTES

#	Standard Notes
Section 1: Site Management	
1	"Erosion and Sediment Control (ESC) measures will be implemented prior to, and maintained during the construction phases, to prevent entry of sediment into the water. All damaged erosion and sediment control measures should be repaired and/or replaced within 48 hours of the inspection."
2	"disturbed areas will be minimized to the extent possible, and temporarily or permanently stabilized or restored as the work progresses."
3	"All in-water and near water works will be conducted in the dry with appropriate erosion and sediment controls."
4	"The erosion and sediment control strategies outlined on the plans are not static and may need to be upgraded/amended as site conditions change to minimize sediment laden runoff from leaving the work areas. If the prescribed measures on the plans are not effective in preventing the release of a deleterious substance, including sediment, then alternative measures must be implemented immediately to minimize potential ecological impacts. TRCA Enforcement Officer should be immediately contacted. Additional ESC measures to be kept on site and used as necessary."
5	"An Environmental Monitor will attend the site to inspect all new controls, as well as on a regular basis, or following rain/snowmelt event, to monitor all works, and in particular works related to erosion and sediment controls, dewatering or unwatering, restoration and in- or near- water works. Should concerns arise on site the Environmental Monitor will contact the TRCA Enforcement Officer as well as the proponent.
6	"All activities, including maintenance procedures, will be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water. Vehicular refueling and maintenance will be conducted a minimum of 30 metres from the water."
7	"All grades within the Regulatory Flood Plain will be maintained or matched."
8	"The proponent/contractor shall monitor the weather several days in advance of the onset of the project to ensure that the works will be conducted during favourable weather conditions. Should an unexpected storm arise, the contractor will remove all unfixed items from the Regional Storm Flood Plain that would have the potential to cause a spill or an obstruction to flow, e.g., fuel tanks, porta-potties, machinery, equipment, construction materials, etc."
9	"All dewatering/unwatering shall be treated and released to the environment at least 30 metres from a watercourse or wetland and allowed to drain through a well-vegetated area. No dewatering effluent shall be sent directly to any watercourse, wetland or forest, or allowed to drain onto disturbed soils within the work area. These control measures shall be monitored for effectiveness and maintained or revised to meet the objective of preventing the release of sediment laden water."
10	"All access to the work site shall be from either side of the watercourse. No equipment or vehicles are permitted to cross through the watercourse unless approved by TRCA."
Section 2: Construction Timing	
11	"In order to comply with the *Migratory Birds Convection Act*, TRCA recommends that tree removals be completed between August 1 and April 1."



GENERAL NOTE:
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- EXISTING DETECTOR CHECK VALVE IN CHAMBER
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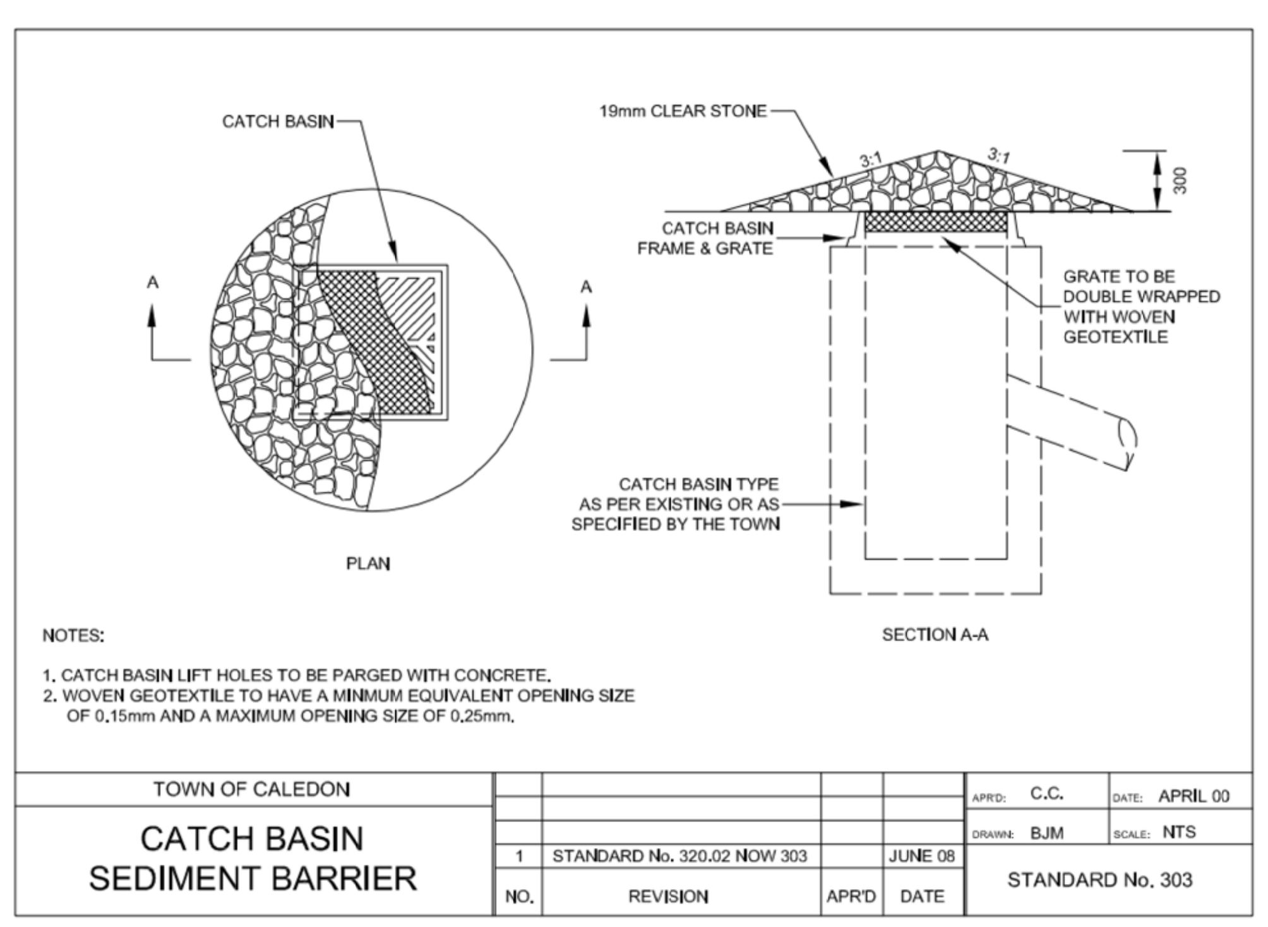
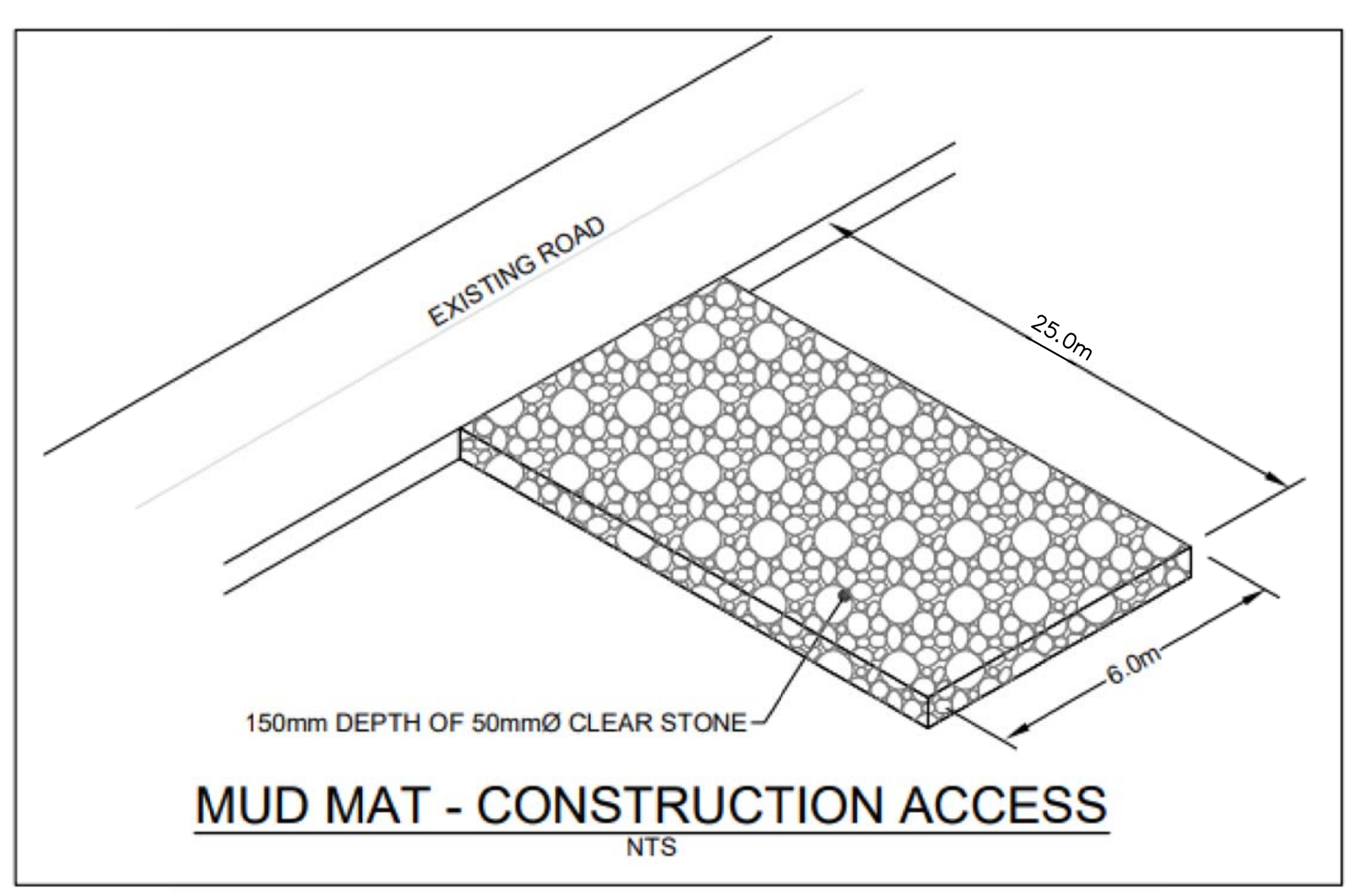
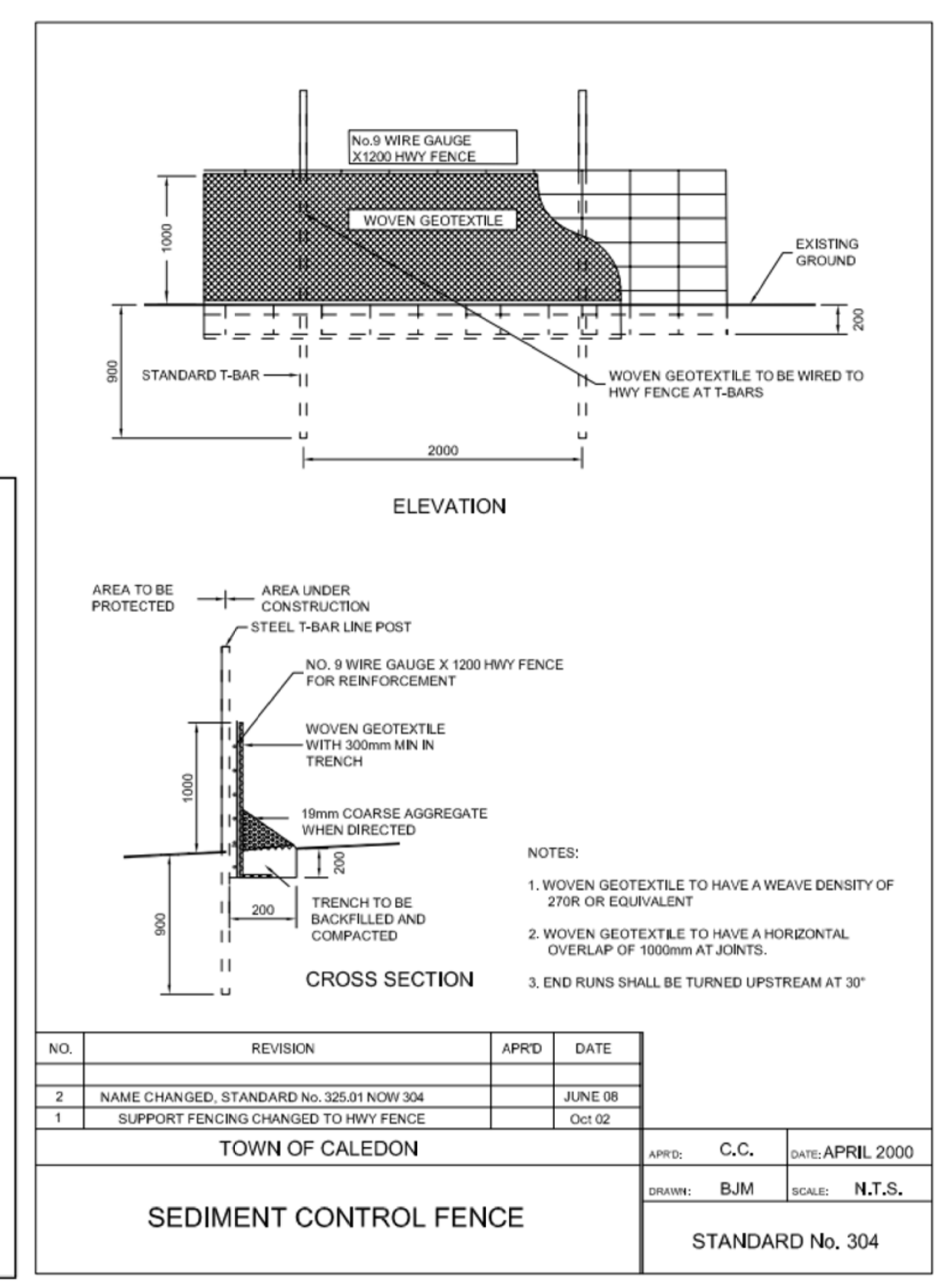
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED AREA DRAINS
- PROPERTY LIMIT
- 178.10 EXISTING ELEVATION
- 178.10 PROPOSED ELEVATION
- (178.10) MATCH EXISTING ELEVATION
- EXISTING OVERLAND FLOW ROUTE
- ONSITE AREA DRAIN SEDIMENT TRAP
- SEDIMENT CONTROL FENCE







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STAMP:

STAMP: REGISTERED PROFESSIONAL ENGINEER — A.R. MASONGSONG — DEC 18/20 — PROVINCE OF ONTARIO

PROJECT:
MULTIPLE RESIDENTIAL CONDO DEVELOPMENT
12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:
MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C7
T: (905) 944-0162
www.maeng.ca

Municipality
TOWN OF CALEDON

TITLE:
EROSION AND SEDIMENT CONTROL PLAN

DESIGN	I.S.	CHECKED	R.S.	CONTRACT No. 17-849
SCALE	1:300			PLAN No. ESC1
DATE	DECEMBER 2020			