MASONGSONG ASSOCIATES
ENGINEERING SUSTAINABLE FUTURES

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Proposed Multi-Residential Condo Development
12148 Albion Vaughan Road • Town of Caledon
Aztec Restoration Inc.

March 2024

MAEL Project 17-849

REPORT TITLE: **Functional Servicing and Stormwater Management Report**

PROJECT TITLE: Multi-Residential Condo Development

PROJECT ADDRESS: 12148 Albion Vaughan Road

CLIENT: Aztec Restoration Inc.

MAEL PROJECT NO: 17-849

NO.	DATE (YY.MM.DD)	DESCRIPTION OF ISSUED AND/OR REVISION
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APPENDICES

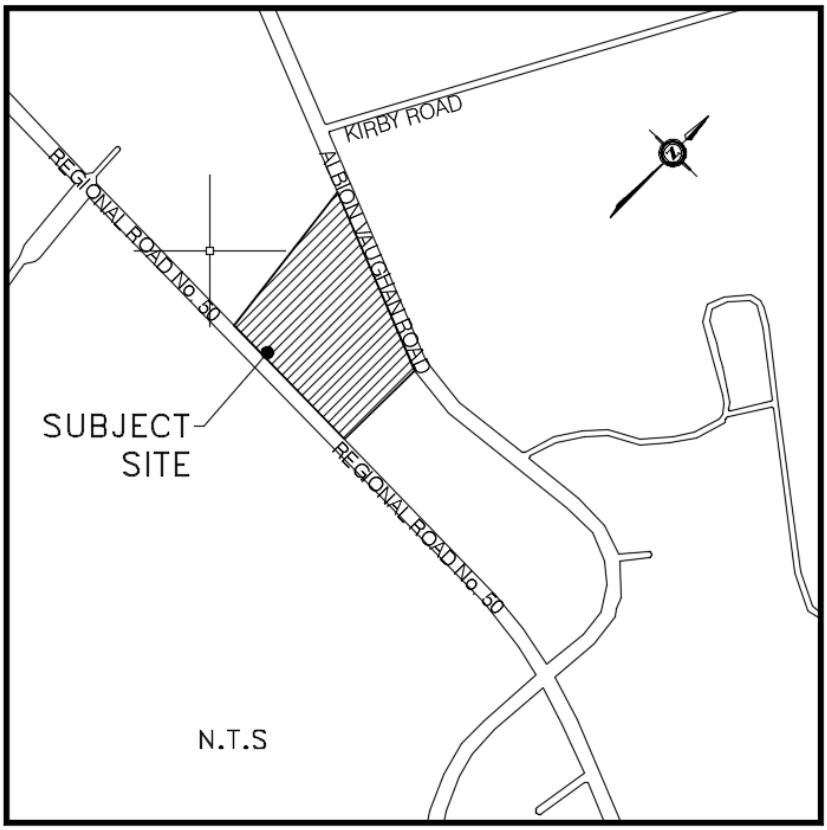
1 INTRODUCTION

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 265 condo units 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 existing site has an overall area of approximately 1.538 ha (3.80 ac), however road widening plans on Albion Vaughan Road, Highway 50 and 0.3m reserves further reduce the overall area by 0.1152 ha, 0.0812 ha, and 0.0079 ha respectively for a total area of 1.334 ha. There are 0.3078 ha at the west side are undevelopable floodplain lands, 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 landowner. for a final developable area of 1.026 ha (2.53 ac)

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 realigned as per the approved TRCA submission, attached in Appendix E.

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 265 units, 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.

The proposal to slightly modify the existing floodplain has been approved by TRCA and the required minimum 10m setback will be provided 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 A.

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 GR1 enclosed in Appendix A and F 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 grading plan GR1 enclosed in Appendix F, the internal road network will have three accesses off Albion Vaughan Road. The current driveway and culvert on Highway 50 will be removed. Correspondence between TRCA and the Region of Peel is attached in Appendix A shows that the Region is currently pursuing the culvert removal works.

The western portion of the site, of approximately 0.376ha which represents about 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 1.042 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. There are 0.1067ha of uncontrolled area draining into the south west side of the site. Refer to post-development Master storm drainage plan, enclosed in Appendix A.

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 and drawing 51608-D enclosed in Appendix A 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 drawing SS1 enclosed in Appendix F.

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 686 persons for the residential area (as shown in sanitary section 4.3), the average-day domestic demand is **2.22 L/s**. The maximum day demand has a factor of 2.0, therefore yielding a max-day domestic consumption rate of **4.45L/s** or **267L/min**. The max peak hour demand has a factor of 3.0, therefore yielding a peak hour consumption rate of **6.67*L/s*** or **400.2 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 B

A hydrant flow test was performed in July 2023 to ascertain the available municipal supply on Albion Vaughan Road. Based on the Fire Underwriters Survey (FUS), the required fire flow is 9,000 L/min. See Appendix B for the results of the hydrant test as well as tables F1-F6 for the FUS calculations of Building A + podium and Building B.

Detailed hydrant flows confirm that the existing Albion Vaughan system is capable of delivering a fire flow of **11,732 L/min at a minimum pressure of 140 kPa**, which satisfies both FUS and ISO fire flows.

Based on the hydrant testing results, the existing main has adequate supply and pressures to meet the critical high-demand flow for fire-fighting plus the maximum-day-domestic consumption rate in accordance with the Fire Underwriters Survey model calculations. Therefore, the existing municipal water main is sufficient to support the proposed development.

- **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 A 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 plans SS1 and DE1 enclosed in Appendix F for proposed sanitary connections details.

4.3 Sanitary Sewage Flow Estimates

The proposed development comprises 265 condo units, which is estimated with the current Region's Peel Design, Specification & Procedures Manual as having an equivalent population of 686 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
Apartments smaller than 750 sqft	1.6p/unit	78	124.8
Apartments larger than 750 sqft	3.0p/unit	187	561
Total		265	686

In accordance with the Region's requirements, the sanitary sewage flow estimates are calculated based on the STD. DWG. 2-9-2 and ground water infiltration flows. Using the

above population estimates, the future sanitary sewerage rate from the subject site is calculated as follow. Appendix C shows the Regions sanitary design standards as well as the design sheet for the proposed development.

Proposed Site Design Flow:

Peak Flow Design Parameters

Residential Population	*= 686 (Refer to Table 4.3 above)*
Total Population	= 686
If Population<1000 =	0.013 m^3/s (STD. DWG. 2-9-2)
Infiltration	= 0.000821 m^3/s
Total Flow	= 0.0138821 m^3/s

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 A, 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** – 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

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 A

5.2 Water Balance

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.

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	2096.1	1	2.10	5	5	10.48
Green Roof	2335.6	5	11.68	0	0	0
Landscape	2277.4	5	11.39	0	0	0
Hard surface	3547.9	1	3.55	5	5	17.74
Undevelopable area (landscape)	**3078**	**5**	**15.39**	**0**	**0**	**0**
Total	**13335**		**44.11**			**28.22**

A total of **28.22 m^3** of additional on-site storage is required to meet 5 mm site retention targets. This will be captured by a cistern located within the stormwater management tank, which will collect clean rainwater from the rooftops only, to be reused over 72 hours. Excess water will overflow into the stormwater management tank.

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 runoffs be infiltrated or undergo evapotranspiration as much as possible, leaving very little roof runoff that will discharge through overland pathways to surface waters. The rooftops will be designed to the most current Ontario Building Code (OBC) structural standards and will be capable of storing quantity of stormwater on its surface.

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 D.

To gain the necessary storage volume, we propose to implement flow control drains that will allow a total release rate of 42 L/s/ha., which is an industry standard. Roof controls are typically specified at the working-drawing stage of building designs as they necessarily need to be coordinated between the architect, mechanical and structural engineers. Roof scuppers will need to be provided for emergency overflow or for events exceeding the 100-year storms. In practice, the roof ponding areas will need to be determined by roof and column geometry at the time of building design.

Release rate = 42 L/s/ha x Area
Release rate = 42 x 0.4432 = **18.61 L/s**

Based on the above release rate, the roof drain notch configuration required for general compliance is: **10-Zurn105** units with a **465 notch area rating**, having **1 notch per drain** The calculations are shown in table 5.2.2 in Appendix D.

The required storage on roof will be **151.9 m^3**. Refer to table 5.2.1 enclosed In Appendix D. Assuming 90% of the rooftop area is usable for storage, and pyramidal storage to a depth of 0.1245m, the following storage volume is available:
The provided storage on roof will be **165.5 m^3** = ((4432/3) m^2 * 0.1245m*0.9).

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.

A total of 2335.6 m^3 of green roof is proposed for this site, which is just over half of the total roof area and greatly reduces the water balance deficit.

Irrigation:

Irrigation calculations by the landscape architects MSLA are shown in Appendix D and demonstrate that the site has enough landscape to provide up to **43.87 m^3** of irrigation volume. A proposed **28.4 m^3** cistern will collect rainwater from the roofs only and be used to provide enough water to meet the water balance requirements though a pumped irrigation system.

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 5.3.1

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	4432	33.2	80%	26.6
Pavement	3548	26.6	0	0%
Landscape	2277	17.1	80%	13.7
Landscape area (non-developable area)	3078	23.1	80%	18.5
Totals	**13335**	100%		**58.8%**

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 58.8%, which does not meet the targeted 80% long-term. Therefore, a Jellyfish system will be provided as a supplementary water quality treatment for the storm flow generated by the permanent drainage area (Pavement area)

A Stormfilter SFPD 0612 has been selected to treat an area of 0.4922ha at R=0.67, refer to detailed Stormfilter sizing report enclosed in Appendix D.

5.4 Quantity Controls

5.4.1 Allowable Peak Flow

The allowable peak flows for each storm event (2-year, 5-year, 10 year,25 year, 50 year and 100 years) are based on the pre-developments levels in accordance with TRCA criteria for Humber River Storm Management Quantity Control Release Rates. The following section shows the calculations for the allowable flows for the subject site:

The site specifics indicate that the post-development runoff coefficient is R=0.50 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 0.50 to be controlled to $Q_{2\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{5yr\ Post}$ at Runoff coefficient of 0.50 to be controlled to $Q_{5\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{10yr\ Post}$ at Runoff coefficient of 0.50 to be controlled to $Q_{10\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{25yr\ Post}$ at Runoff coefficient of 0.50 to be controlled to $Q_{25\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{50yr\ Post}$ at Runoff coefficient of 0.50 to be controlled to $Q_{50\ yr\ Pre}$ at Runoff coefficient of 0.25
$Q_{100yr\ Post}$ at Runoff coefficient of 0.50 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) =9.299 L/s/ha
Q_{5yr} = 14.652-1.136*ln(A) =14.325 L/s/ha
Q_{10yr} = 17.957-1.373*ln(A) =17.562 L/s/ha
Q_{25yr} = 22.639-1.71*ln(A) =22.147 L/s/ha
Q_{50yr} = 26.566-2.082*ln(A) =25.967 L/s/ha
Q_{100yr} = 29.912-2.316*ln(A) =29.245 L/s/ha

Q unit flow (L/s/ha- litres per second per hectare)
A = Area in hectares (ha) =1.3335Ha

$Q_{2yr\text{-}allow}$ = 12.400 L/s
$Q_{5yr\text{-}allow}$ = 19.102 L/s
$Q_{10yr\text{-}allow}$ = 23.419 L/s
$Q_{25yr\text{-}allow}$ = 29.533 L/s
$Q_{50yr\text{-}allow}$ =34.627 L/s
$Q_{100yr\text{-}allow}$ = 38.999 L/s

Q unit flow (L/s/ha- litres per second per hectare)
Non developable Area = 0.3078 Ha, Uncontrolled Area = 0.0903 Ha
Total uncontrolled area = 0.3981 Ha
$Q_{2yr\text{-}allow}$ = 3.702 L/s
$Q_{5yr\text{-}allow}$ = 5.703 L/s
$Q_{10yr\text{-}allow}$ = 6.991 L/s
$Q_{25yr\text{-}allow}$ = 8.817 L/s
$Q_{50yr\text{-}allow}$ =10.337 L/s
$Q_{100yr\text{-}allow}$ = 11.642 L/s

Therefore, the net allowable release rated for the controlled areas of the site is calculate as follows:

$Q_{2yr\text{-}allow}$ = 12.400 L/s- 4.465 L/s = 8.698 L/s
$Q_{5yr\text{-}allow}$ = 19.102 L/s- 6.877 L/s= 13.399 L/s
$Q_{10yr\text{-}allow}$ = 23.419 L/s – 8.431 L/s = 16.428 L/s
$Q_{25yr\text{-}allow}$ = 29.533 L/s – 10.633 L/s= 20.716 L/s
$Q_{50yr\text{-}allow}$ = 34.627 L/s – 12.465 L/s= 24.290 L/s
$Q_{100yr\text{-}allow}$ = 38.999 L/s – 14.039 L/s= 27.357 L/s

Refer to figure 4 in Appendix A for Surface Composition Plan

All flows from the ground level of the subject site will be captured using area drains sized for the 100-year storm event, which will be directed into the Jellyfish Filter and stormwater management tank.

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 D.

From Table 5.4.2-F, the required total onsite storage is **196.99m^3**, and will be provided utilizing a storage tank. The proposed stormwater management tank is **230m^3**, which includes a 28.4m^3 cistern. As the proposed volume is greater than the requirement, the site will be able to control all storm events up to the 100 year storm.

As the depth of the tank and cistern is below the elevation of the discharge location, the proposed system must be pumped. The discharge will be set at a maximum rate for each storm event with a peak flow of **27.357 L/s** for the 100 year storm, and an above grade access manhole that also services as an 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 to maintain the area and volume of the tank.

- **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.**

5.5 Inspection and Maintenance

Stormfilter

The primary purpose of the Stormfilter system is to filter and prevent pollutants from entering the waterways. Routine inspection and maintenance tasks are key to restore the Stormfilter to its full efficiency and effectiveness. Maintenance activities may be required in the event of a chemical spill or after a major storm events.

Routine inspection and maintenance activities as shown in the attached Appendix D "Stormfilter Owner's Manual" should be implemented for the continued operation of the Stormfilter Unit.

Stormwater Management Tank

As per the Ontario Stormwater Management Planning and Design Manual. During the first two years of operation, inspections after significant storms will ensure that the system is functioning properly. After this, annual checks may be done to identify maintenance needs. Blockages may need to be cleared from inlets and outlets.

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 daily street sweeping and cleaning program for any mud tracking 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 a Storm filter.
- **Water Balance** will be provided by a combination of green roofs and irrigation using stormwater from the roof.
- **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, P. Eng
Principal

Rui Song, P. Eng
Project Engineer

Appendix A

Background Figures
Topographical Survey
Site Plan
Pre-Development Plan
Post-Development Figures
TRCA and Region Correspondence Regarding Driveway/Culvert Removal

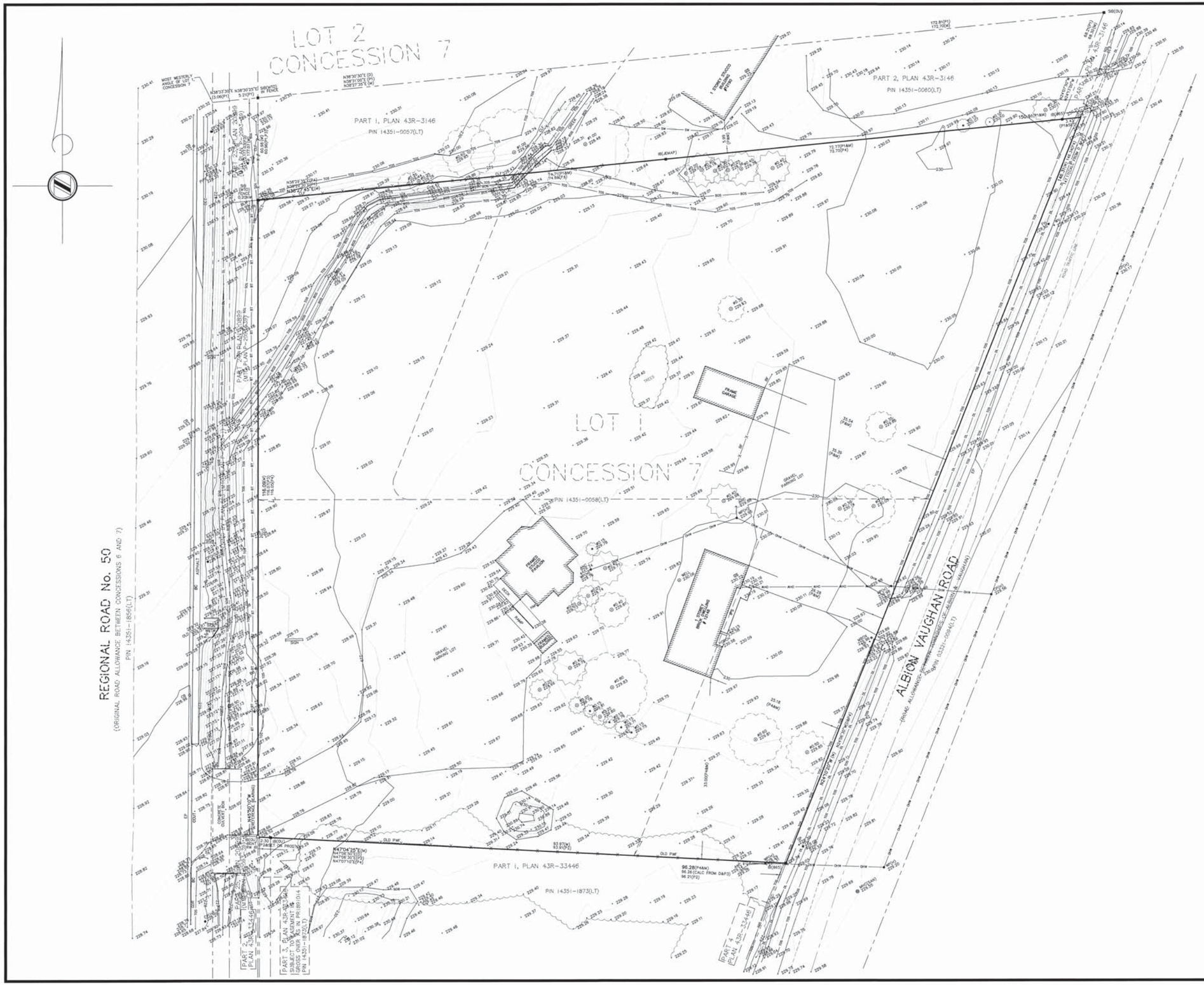
SURVEYOR'S REAL PROPERTY REPORT
PART 1, PLAN OF
PART OF LOT 1
CONCESSION 7
(GEOGRAPHIC TOWNSHIP OF ALBION)
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

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).

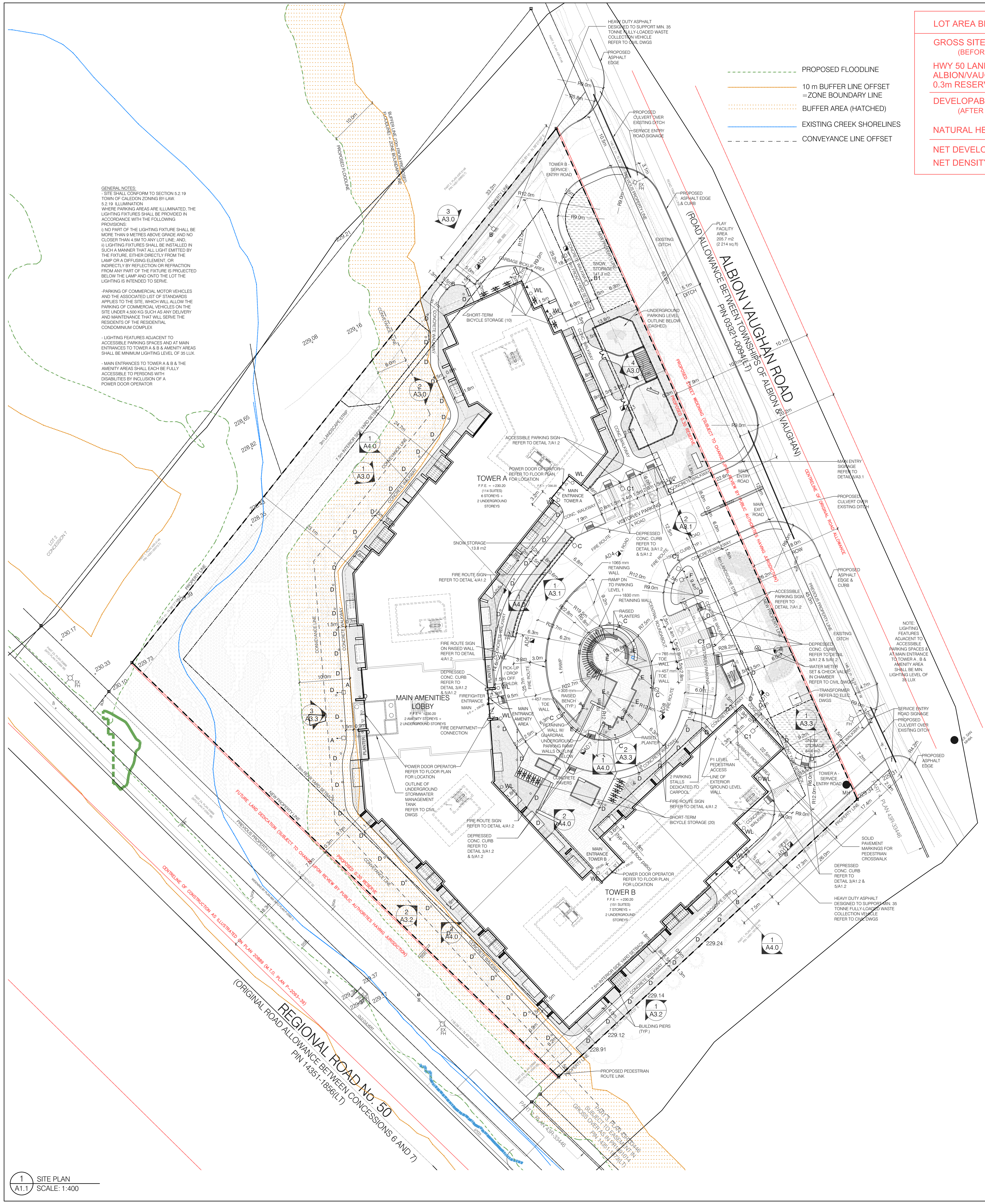
THIS PLAN WAS PREPARED FOR
ALBION-VAUGHAN (12148) INC.
DAVID B. SEARLES SURVEYING LTD. IS NOT RESPONSIBLE FOR USE BY OTHER PARTIES

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



GENERAL NOTES:
- SITE SHALL CONFORM TO SECTION 5.2.19 TOWN OF CALEDON ZONING BY-LAW.
5.2.19 ILLUMINATION
WHERE PARKING AREAS ARE ILLUMINATED, THE LIGHTING FIXTURES SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING PROVISIONS:
i) NO PART OF THE LIGHTING FIXTURE SHALL BE MORE THAN 9 METRES ABOVE GRADE AND NO CLOSER THAN 4.5M TO ANY LOT LINE; AND,
ii) LIGHTING FIXTURES SHALL BE INSTALLED IN SUCH A MANNER THAT ALL LIGHT EMITTED BY THE FIXTURE, EITHER DIRECTLY FROM THE LAMP OR A DIFFUSING ELEMENT, OR INDIRECTLY BY REFLECTION OR REFRACTION FROM ANY PART OF THE FIXTURE IS PROJECTED BELOW THE LAMP AND ONTO THE LOT THE LIGHTING IS INTENDED TO SERVE.

-PARKING OF COMMERCIAL MOTOR VEHICLES AND THE ASSOCIATED LIST OF STANDARDS APPLIES TO THE SITE, WHICH WILL ALLOW THE PARKING OF COMMERCIAL VEHICLES ON THE SITE UNDER 4,500 KG SUCH AS ANY DELIVERY AND MAINTENANCE THAT WILL SERVE THE RESIDENTS OF THE RESIDENTIAL CONDOMINIUM COMPLEX

- LIGHTING FEATURES ADJACENT TO ACCESSIBLE PARKING SPACES AND AT MAIN ENTRANCES TO TOWER A & B & AMENITY AREAS SHALL BE MINIMUM LIGHTING LEVEL OF 35 LUX.

- MAIN ENTRANCES TO TOWER A & B & THE AMENITY AREAS SHALL EACH BE FULLY ACCESSIBLE TO PERSONS WITH DISABILITIES BY INCLUSION OF A POWER DOOR OPERATOR

LOT AREA BREAKDOWN

GROSS SITE AREA (BEFORE ROAD WIDENING)	15,375.96 m2 (165,505 sq/ft) 1.54 ha
HWY 50 LAND DEDICATION	811.65 m2 (8,737 sq/ft)
ALBION/VAUGHAN ROAD WIDENING	1,151.89 m2 (12,399 sq/ft)
0.3m RESERVES	78.59 m2 (846 sq/ft)
DEVELOPABLE SITE AREA (AFTER ROAD WIDENING & RESERVE DEDUCTIONS)	13,333.83 m2 (143,524 sq/ft) 1.33 ha
NATURAL HERITAGE/10m BUFFER AREA	3,077.84 m2 (33,130 sq/ft)
NET DEVELOPABLE AREA	10,255.99 m2 (110,394 sq/ft) 1.03 ha
NET DENSITY (UNIT/HECTARE)	257.4

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 AS NOTED IN ORIGINAL SURVEY PLAN
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

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
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NOTE
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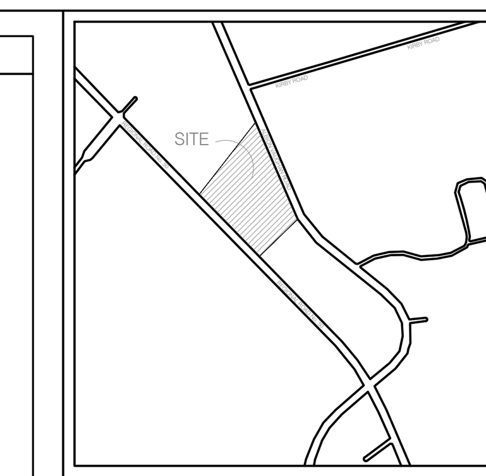
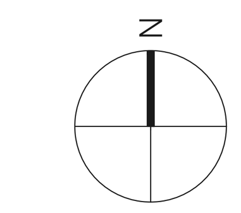
LEGEND

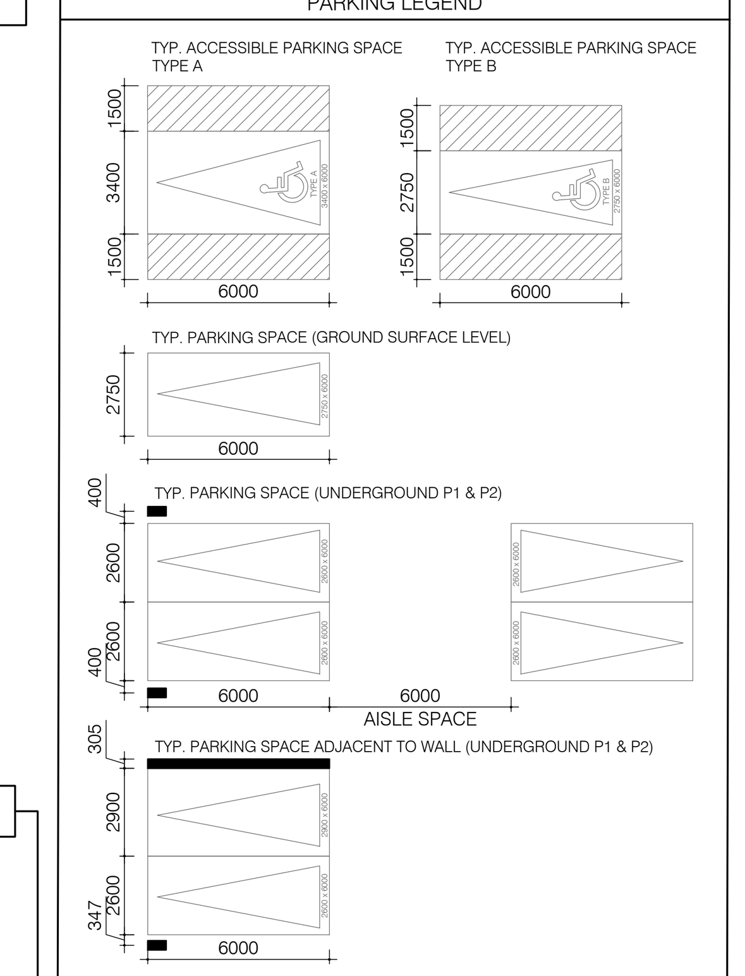
- +0000 PROPOSED GRADE
- PROPOSED AREA DRAINS
- MAN DOOR ENTRANCES
- DRIVE-IN DOOR LOCATIONS
- FENCING
- SIGNAGE
- GROUND/WALL LIGHTING REFER TO LUMINAIRE SCHEDULE
- WALL LIGHTING
- FH FIRE HYDRANT LOCATION
- SNOW STORAGE AREA
- CHILD'S PLAYGROUND AREA





ONTARIO ASSOCIATION OF ARCHITECTS
FAUSTO CORTESE
LICENCE
7774

PARKING LEGEND



SITE DEVELOPMENT STATS

A - ZONING

	REQUIRED	PROPOSED
ZONE	RR - RURAL RESIDENTIAL	RM - MULTIPLE RESIDENTIAL

B - LOT AREA

	REQUIRED	PROPOSED
GROSS SITE AREA (BEFORE ROAD WIDENING)	650 m2	15375.96 m2
DEVELOPABLE SITE AREA (AFTER ROAD WIDENING)	N/A	13333.83 m2
NET DEVELOPABLE AREA	N/A	10255.99 m2

C - SITE STATISTICS

	REQUIRED	PROVIDED
BUILDING HEIGHT (FROM FIN. GRADE)	12.2 m	25.9 m
LOT COVERAGE	2051.2 m2 (20% MAX.)	4872.0 m2 (47.5%)
LANDSCAPE AREA	4615.2 m2 (45% MIN.)	3075.1 m2 (30.0%)
FRONTAGE	30 m (MIN.)	106.9 m
FRONT YARD	9.0 m (MIN.)	9.2 m
REAR YARD	7.5 m (MIN.)	0.0 m
SOUTH SIDE YARD	7.5 m (MIN.)	3.9 m
NORTH SIDE YARD	7.5 m (MIN.)	5.6 m
SNOW STORAGE	205.1 m2 (2% MIN.)	239.8 m2 (2.3%)
PLAY FACILITY AREA (OUTDOOR)	410.2 m2 (4% MIN.)	205.7 m2 (2.0%)
PRIVATE AMENITY AREA (PER UNIT)	N/A	6.5 m2 (1.8 m X 3.6 m)
PUBLIC AMENITY AREA	2051.2 m2 (20% MIN.)	2158.9 m2 (21.1%)

D - NET DENSITY (UNITS/HECTARE)

	REQUIRED	PROVIDED
TOTAL DENSITY (UNITS/TOTAL NET DEVELOPABLE AREA)	N/A	258 (264/1.025599)

E - PARKING

	REQUIRED	PROVIDED
CONDO RESIDENT PARKING SPACES (1.5 SPOTS PER DWELLING UNIT)	396 (1.5 * 264)	401
CONDO VISITOR PARKING SPACES (0.25 SPOTS PER DWELLING UNIT)	66 (0.25 * 264)	67
ACCESSIBLE PARKING (2% OF TOTAL + 2)	12 (INCLUDED IN TOTAL ABOVE)	12 (INCLUDED IN TOTAL ABOVE)
TOTAL PARKING	462	468

F - STORAGE

	REQUIRED	PROVIDED
BICYCLE STORAGE	N/A	86
LOCKER STORAGE	N/A	271

LOT COVERAGE BREAKDOWN

TOWER A FLOOR AREA	1829.3 m2
TOWER A BALCONIES	280.3 m2
TOTAL TOWER A BUILDING AREA	2109.6 m2
TOWER B FLOOR AREA	2019.1 m2
TOWER B BALCONIES	310.6 m2
TOTAL TOWER B BUILDING AREA	2329.7 m2
AMENITY FLOOR AREA	432.7 m2
TOTAL FLOOR AREA (TOWER A + TOWER B + AMENITY)	4872.0 m2

STORAGE BREAKDOWN

	BICYCLE STORAGE			LOCKER STORAGE
	LONG TERM	SHORT-TERM	TOTAL	TOTAL
FLOORS 1-7 + PENTHOUSE	0	0	0	79
GROUND SURFACE LEVEL	0	30	30	0
P1 LEVEL	28	0	28	96
P2 LEVEL	28	0	28	96
GRAND TOTAL	56	30	86	271

PUBLIC AMENITY AREA BREAKDOWN

GROUND FLOOR LEVEL	432.7 m2
2ND FLOOR LEVEL	432.7 m2
TOWER A (ROOF LEVEL)	664.8 m2
TOWER B (ROOF LEVEL)	628.7 m2
TOTAL GFA	2158.9 m2

PARKING BREAKDOWN

PARKING PROVIDED

	VISITOR	RESIDENT	TOTAL
P1 LEVEL	59	164	223
P2 LEVEL	0	237	237
GROUND SURFACE LEVEL	8	0	8
GRAND TOTAL PARKING PROVIDED	67	401	468 spaces prov.

EV PARKING

	TOTAL
GROUND SURFACE LEVEL	8 INCLUDES 4 ACCESSIBLE PARKING SPOTS
P1 LEVEL	29
P2 LEVEL	38
GRAND TOTAL EV PARKING SPOTS	75 INCLUDED IN PARKING TOTAL

ACCESSIBLE PARKING

	TOTAL
GROUND SURFACE LEVEL	4
P1 LEVEL	8
P2 LEVEL	0
GRAND TOTAL PARKING SPOTS	12 INCLUDED IN PARKING TOTAL

REVISIONS

No.	DESCRIPTION	DATE
4	RE-ISSUED FOR SPA	2024-04-05
3	ISSUE FOR COORDINATION	2024-01-30
2	ISSUED FOR COORDIANTION	2023-12-08
1	RE-ISSUED FOR SPA	2023-03-10

SUBMITTALS

ISSUED FOR CONSTRUCTION	
ISSUED FOR BID	
ISSUED FOR BUILDING PERMIT	
ISSUED FOR SITE PLAN APPROVAL	2021-01-27

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.

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

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

DRAWING:
SITE PLAN

PLOTTED: N/A
DATE: 02/04/2024
PROJECT No: 2019-22
SCALE: AS NOTED
DRAWING No: A1.1
DRAWN BY: AD
REVIEWED BY: F.C.

FILE NAME: 12148 ALBION RD - A1.1-A1.2 - 2023-12-08.DWG
PLOT SCALE: 1=

TOWER A + AMENITY

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

Location:
3560 Rutheford road, Unit 7
Vaughan, Ontario

ITEM	Ontario Building Code Data Matrix - Part 3 & 9	OBC Reference (References are to Division B unless noted [A] for Division A or [C] for Division C)	
1	Project Description: 3 & 6 Storeys Condo Building ☒ New ☐ Addition ☐ Alteration ☐ Change of Use ☐ 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: 2261.94 m2 TOTAL: 2261.94 m2	1.4.1.2 [A] 1	1.4.1.2 [A]
4	Gross Area (m^2) NEW: 13132.05 m2 TOTAL: 13132.05 m2	1.4.1.2 [A]	1.4.1.2 [A]
5	Number of Storeys Above Grade: 6 Below Grade: 2	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: 3.2.2.43 GROUP C	3.2.2.43	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: 350 Load: Load:	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: 1 Hours; Roof: 0 Hours; Listed Design No. or Description (SB-3). FRR of Supporting Members — Floor: 1 Hours; Roof: - Hours; Listed Design No. or Description (SB-3)	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 EBF (m^2)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb Const	Comb. Constr. Nonc. Cladding	Non-comb Const
North	–	–	–	–	–	–	–	–	–	–
South	–	–	–	–	–	–	–	–	–	–
East	–	–	–	–	–	–	–	–	–	–
West	–	–	–	–	–	-	–	–	–	–

TOWER B

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

Location:
3560 Rutheford road, Unit 7
Vaughan, Ontario

ITEM	Ontario Building Code Data Matrix - Part 3 & 9	OBC Reference (References are to Division B unless noted [A] for Division A or [C] for Division C)	
1	Project Description: 7 Storey Condo Building ☒ New ☐ Addition ☐ Alteration ☐ Change of Use ☐ 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: 2019.14 m2 TOTAL: 2019.14 m2	1.4.1.2 [A] 1	1.4.1.2 [A]
4	Gross Area (m^2) NEW: 15601.62 m2 TOTAL: 15601.62 m2	1.4.1.2 [A]	1.4.1.2 [A]
5	Number of Storeys Above Grade: 7 Below Grade: 2	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: 3.2.2.42 GROUP C	3.2.2.42	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: 420 Load: Load:	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: 2 Hours; Roof: 0 Hours; Listed Design No. or Description (SB-3). FRR of Supporting Members — Floor: 2 Hours; Roof: - Hours; Listed Design No. or Description (SB-3)	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 EBF (m^2)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb Const	Comb. Constr. Nonc. Cladding	Non-comb Const
North	–	–	–	–	–	–	–	–	–	–
South	–	–	–	–	–	–	–	–	–	–
East	–	–	–	–	–	–	–	–	–	–
West	–	–	–	–	–	-	–	–	–	–

BUILDING STATISTICS

UNDERGROUND LEVEL	QTY.	m2	SQ/FT
PARKING LEVEL 1 - P1	1	9040.92	97315.65
PARKING LEVEL 2 - P2	1	9040.92	97315.65
TOTAL GFA		18081.84	194631.31
TOWER A (RESIDENTIAL CONDO)			
GROUND FLOOR LEVEL	1	1713.24	18441.16
2ND FLOOR LEVEL	1	1870.33	20132.06
3RD FLOOR LEVEL	1	1882.15	20259.29
4TH TO 6TH FLOOR LEVEL	3	5646.45	60777.88
ROOF LEVEL	1	169.29	1822.22
TOTAL BUILDING AREA		1713.24	18441.16
TOTAL GFA		11281.46	121432.62
TOWER B (RESIDENTIAL CONDO)			
GROUND FLOOR LEVEL	1	1907.84	20535.82
2ND FLOOR LEVEL	1	2019.14	21733.84
3RD FLOOR LEVEL	1	2113.65	22751.14
4TH TO 7TH FLOOR LEVEL	4	8454.60	91004.56
ROOF LEVEL	1	327.19	3521.84
TOTAL BUILDING AREA		1907.84	20535.82
TOTAL GFA		14822.42	159547.20
AMENITY SPACE			
GROUND FLOOR LEVEL	1	432.68	4657.33
2ND FLOOR LEVEL	1	432.68	4657.33
TOWER A (ROOF LEVEL)	1	664.84	7156.28
TOWER B (ROOF LEVEL)	1	628.70	6767.27
TOTAL BUILDING AREA		432.68	4657.33
TOTAL GFA	20% OF DEVELOPABLE LOT AREA = 2051.2 m2 (min.)	2158.90	23238.21
SERVICE AREAS			
TOWER A - GARBAGE (GROUND FLOOR)		116.02	1248.83
TOWER A - MECHANICAL ROOM (ROOF LEVEL)		204.37	2199.82
TOWER B - GARBAGE (GROUND FLOOR)		111.30	1198.02
TOWER B - MECHANICAL ROOM (ROOF LEVEL)		39.20	421.95
TOTAL BUILDING AREA		227.32	4646.67
TOTAL GFA		470.89	5068.62
GRAND TOTAL			
TOTAL BUILDING AREA		4281.08	48280.98
TOTAL GFA (NOT INCLUDING UNDERGROUND PARKING)		28733.67	309286.65

8 AREAS
A1.2 SCALE: NTS

UNIT BREAKDOWN

STOREYS	UNITS TYPE	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	TOWER B 7TH FLOOR	TOTALS
1 BEDROOM		TYPE 1-4	592-633	55-64	6	7	6	6	6	6	4	6	6	6	6	6	6	77
1 BEDROOM + DEN		TYPE 1-7	800-1004	74-93	5	5	3	3	3	3	2	2	2	2	2	2	2	36
2 BEDROOM		TYPE 1-13	932-1114	86-104	6	5	5	5	5	5	12	11	9	9	9	9	9	99
2 BEDROOM + LARGE BALCONY*		TYPE 1-9	1011-1244	94-116	0	2	4	4	4	4	0	1	4	4	4	4	4	39
3 BEDROOM		TYPE 1	1584-1801	147-167	1	1	1	1	1	1	1	1	1	1	1	1	1	13
	PARTIAL UNITS PER TOWER				18	20	19	19	19	19	19	21	22	22	22	22	22	
	TOTAL UNITS PER TOWER				114						150							
	TOTAL UNITS				264													

* INCLUDES 40 BARRIER-FREE SUITES - (15% OF TOTAL SUITES OBC 3.8.2.1.(5))*

1ST FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

2ND FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

3RD FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

4TH FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

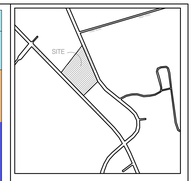
5TH FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

6TH FLOOR - TOWER A - (2) - 1 BEDROOM + (1) 2 BEDROOM; TOWER B - (1) - 1 BEDROOM + (2) 2 BEDROOM — (6) - TOTAL

7TH FLOOR - TOWER A - N/A; TOWER B - (1) - 1 BEDROOM + (3) 2 BEDROOM — (4) - TOTAL

TOTAL - (19) 1 BEDROOM + (21) 2 BEDROOM

(40) BARRIER-FREE SUITES

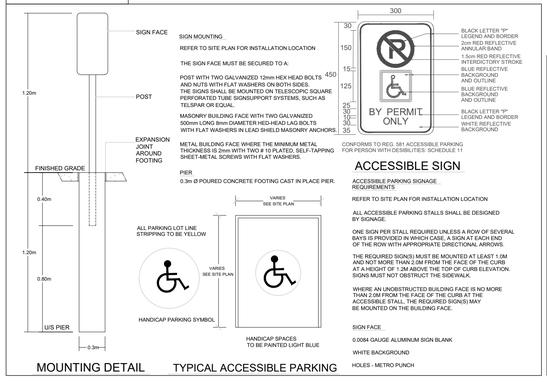


KEY PLAN

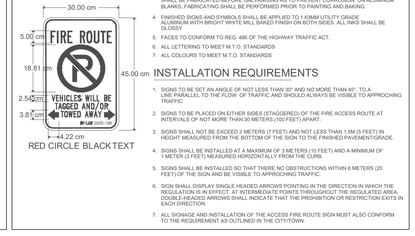
ONTARIO ASSOCIATION OF ARCHITECTS
FAUSTO CORTESE
LICENCE
7774

Luminaire Schedule						
Symbol	Label	Qty	Description	LLF	Luminaire Lumens	Luminaire Watts
▪□	A	2	MRM-LED-07L-SIL-2-30-70CRI-IL	0.880	4594	48
▪□	B	4	MRS-LED-03L-SIL-3-30-70CRI-IL	0.580	4030	39
▪□	B1	1	MRS-LED-06L-SIL-3-30-70CRI-IL	0.880	4030	39
▪□	C	5	MRS-LED-06L-SIL-3-30-70CRI	0.880	6017	39
▪□	C1	5	MRS-LED-06L-SIL-3-30-70CRI-IL	0.880	4030	39
◦	D	67	RZRB1-PLED-III-M-20LED-175mA-30K-HS	0.930	1261	11
◦	E	12	MRB-LED-25L-ACR-S-30	0.930	2156	30.5
▪□	F	1	MRS-LED-06L-SIL-4-30-70CRI-IL	0.880	3581	39
∞	WL	11	MO13HL-PP-MW-8L40K-DCC-DV	0.900	963	11.47
∞	WL1	1	WPSLS-01L-40	0.900	1286	12.34

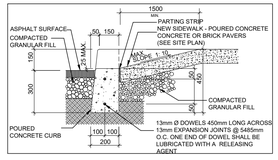
ACCESSIBLE PARKING SIGN TYPE A-VAN ACCESSIBLE



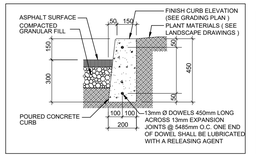
7 'BY PERMIT ONLY' ACCESSIBLE PARKING SIGN DETAIL
A1.2 SCALE: NTS



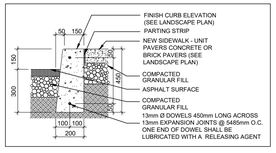
4 FIRE ROUTE SIGN DETAIL
A1.2 SCALE: NTS



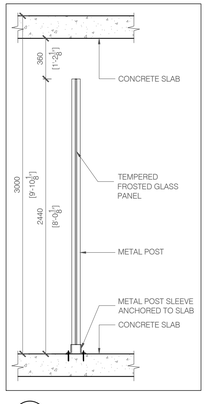
3 DEPRESSED CONCRETE CURB DETAIL
A1.2 SCALE: 1:20



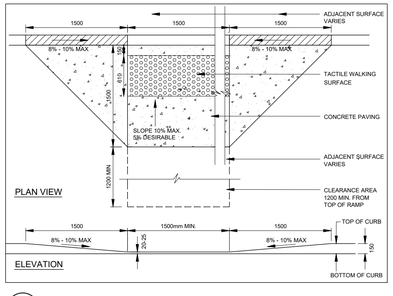
2 CONCRETE CURB DETAIL
A1.2 SCALE: 1:20



1 CONCRETE CURB/SIDEWALK DETAIL
A1.2 SCALE: 1:20



6 PRIVACY PANEL SCREENS
A1.2 SCALE: 1:25



5 DEPRESSED CONC. CURB PLAN VIEW
A1.2 SCALE: NTS

No.	DESCRIPTION	DATE
	REVISIONS	
	RE-ISSUED FOR SPA	2024-04-26
	ISSUED FOR COORDINATION	2023-12-08
	RE-ISSUED FOR SPA	2021-03-31
	ISSUED FOR CONSTRUCTION	
	ISSUED FOR BID	
	ISSUED FOR BUILDING PERMIT	
	ISSUED FOR SITE PLAN APPROVAL	2021-01-27

SUBMITTALS

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.

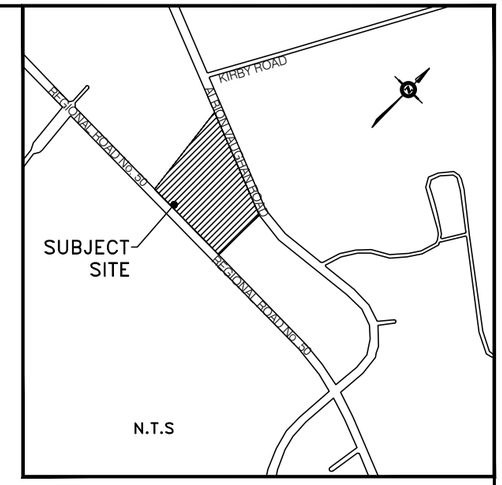
FCA
FAUSTO CORTESE ARCHITECTS
3590 RUTHERFORD RD. UNIT 7
VAUGHAN, ONTARIO, L4H 3T8
416-806-7000
FCORTESE@FCARCHITECTS.CA

DRAWING: PROPOSED MIX-USE CONDO DEVELOPMENT
12148 ALBION VAUGHAN RD.
BOLTON
TOWN OF CALEDON

DRAWING: SITE DETAILS & AREAS

PLOTTED: N/A
DATE: 02/04/2024
PROJECT No: 2019-22
SCALE: AS NOTED
DRAWN BY: AD
REVIEWED BY: F.C.
DRAWING No: A1.2

FILE NAME: 12148-BLDG(NOV) - A1.A1.2 - 2020-12-08.DWG
PLOT SCALE: 1:1



LEGEND

EX. OVERLAND FLOW DIRECTION

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

EX. DRAINAGE AREA BOUNDARY

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

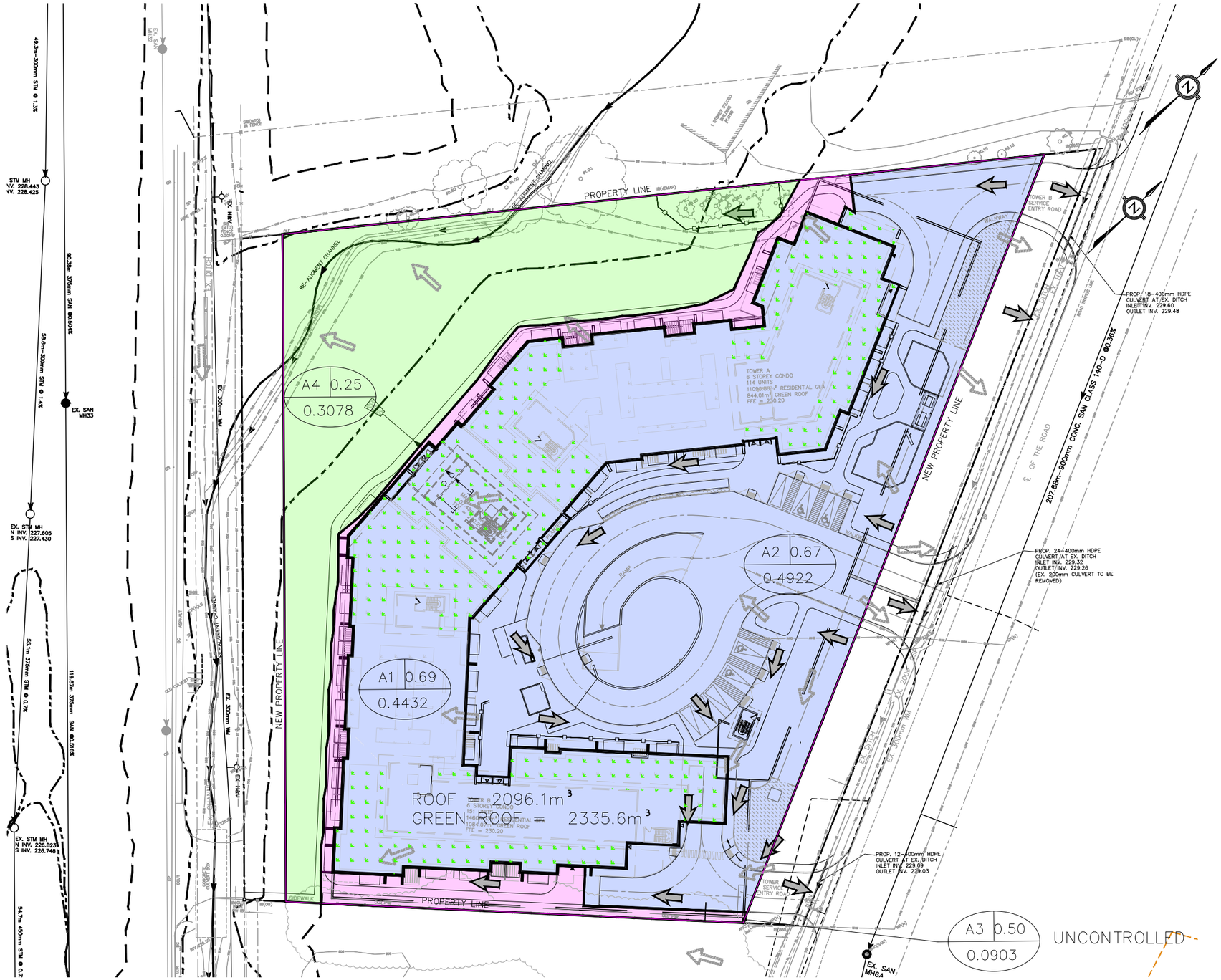
No.	DESCRIPTION	BY	DATE
1.			

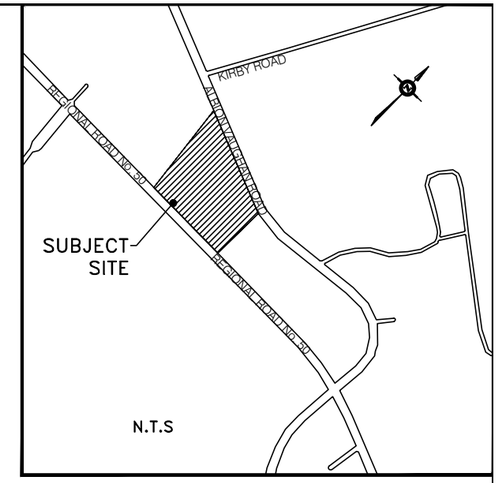
REVISIONS

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
- ID AREA
- RUNOFF COEFICIENT
- DRAINAGE AREA (HA)

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

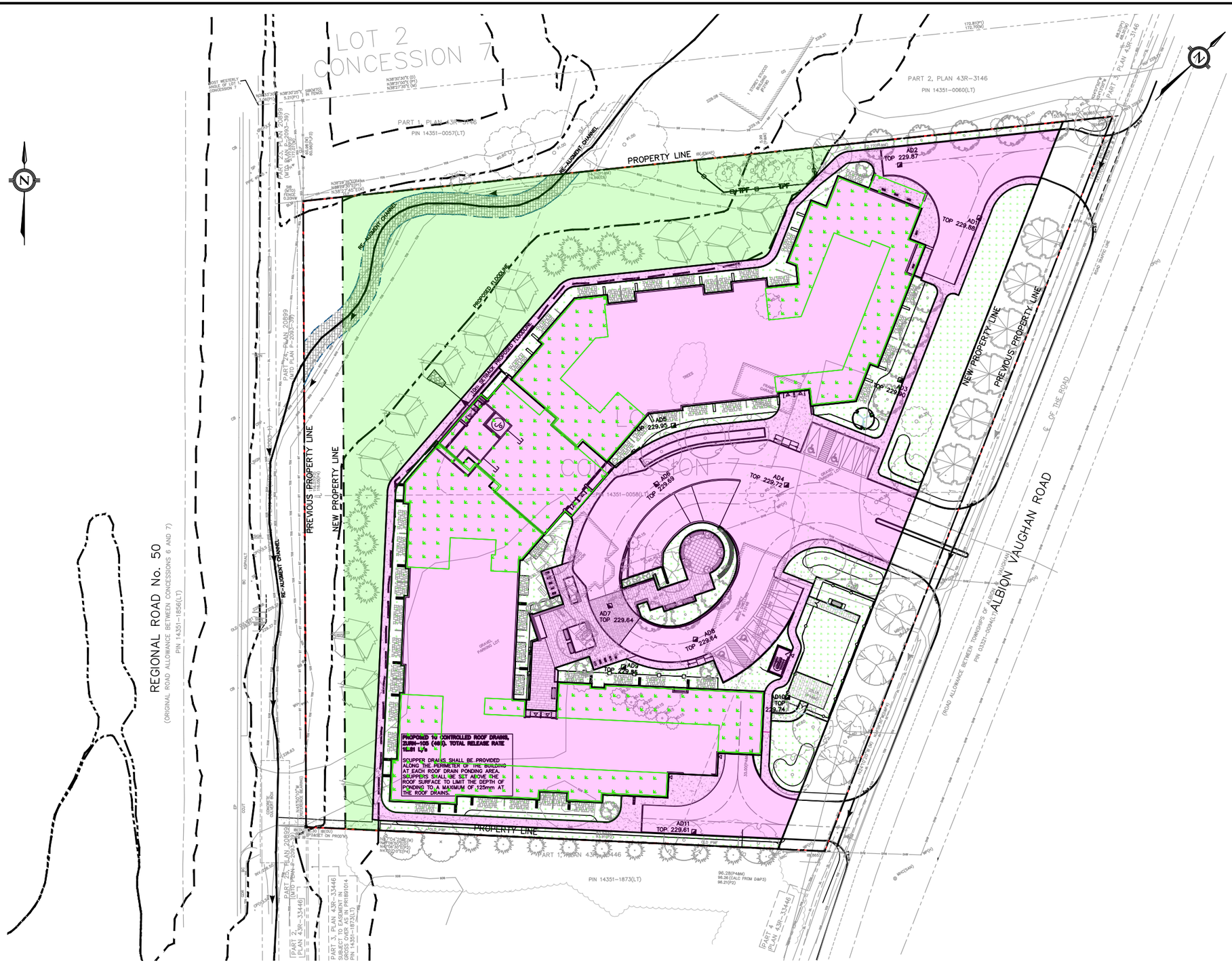
No.	DESCRIPTION	BY	DATE
1.			

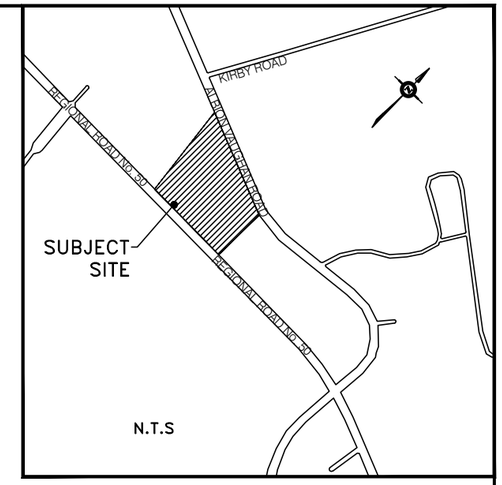
REVISIONS

12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

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)

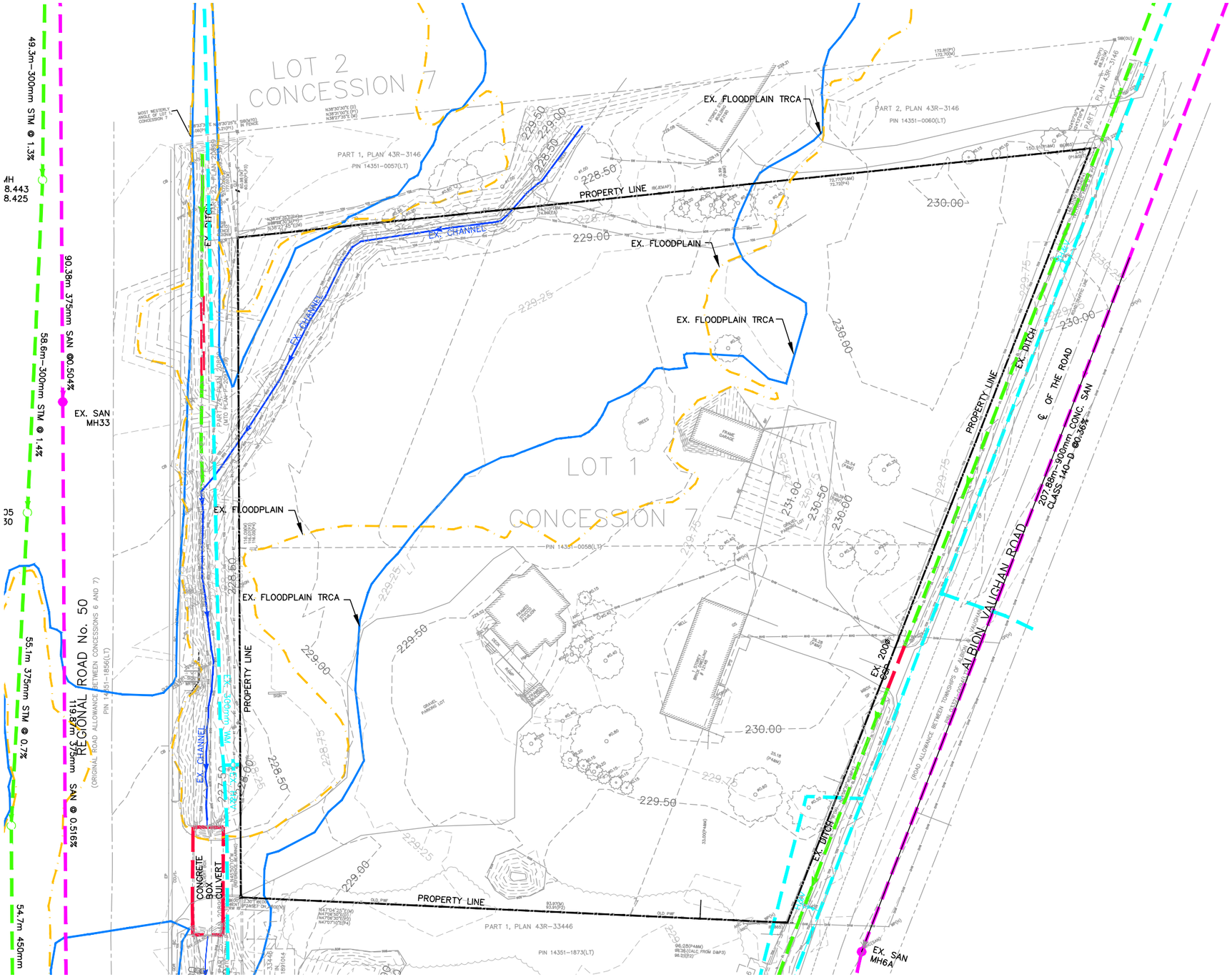
MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C7
T: (905) 944-0162
www.maeng.ca

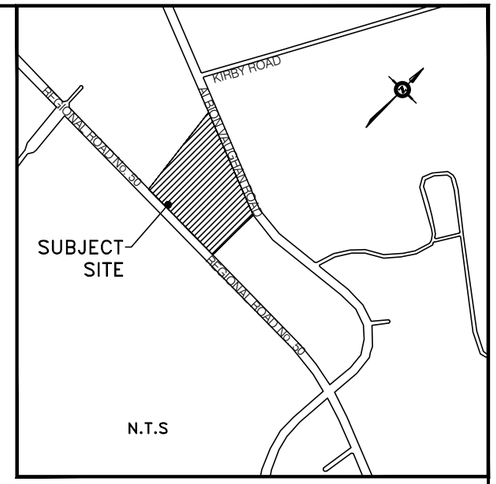
No.	DESCRIPTION	BY	DATE
	REVISIONS		

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

No.	DESCRIPTION	BY	DATE
1.			

REVISIONS

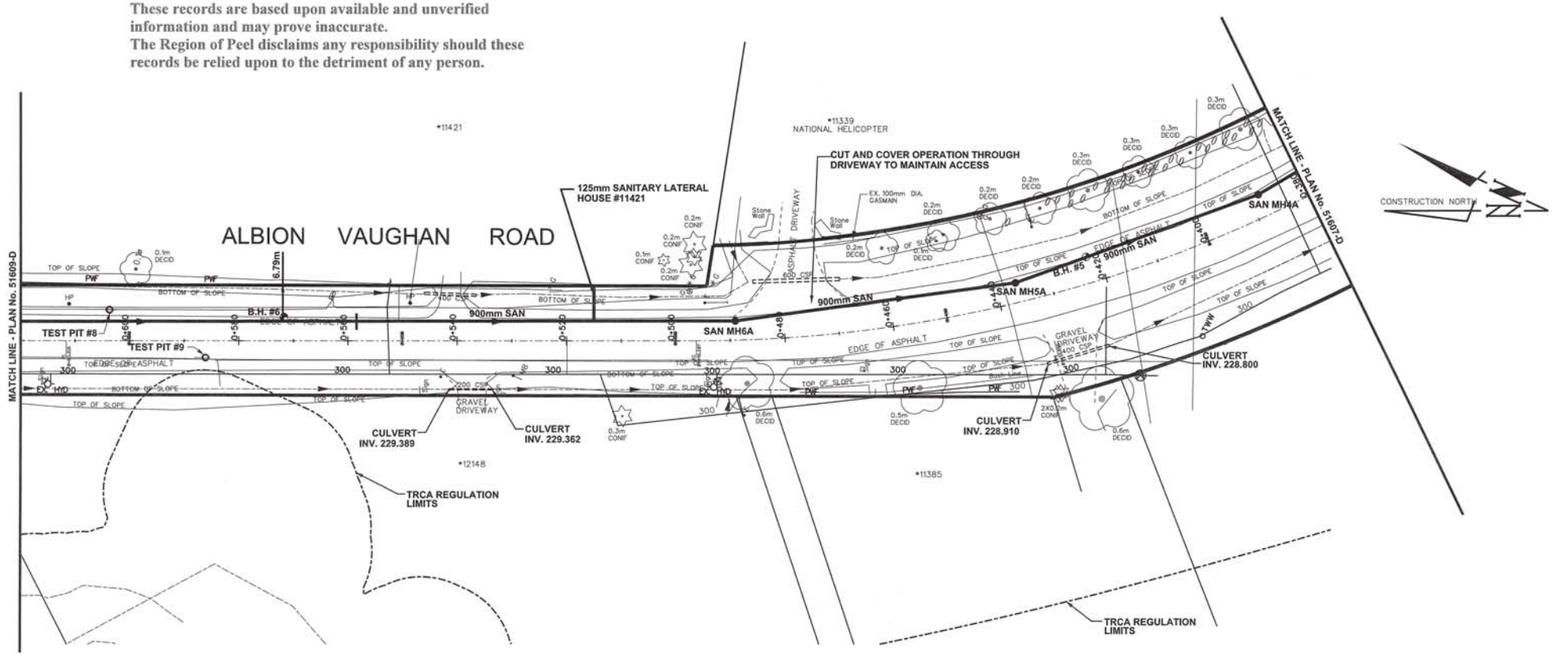
12148 ALBION VAUGHAN ROAD
TOWN OF CALEDON

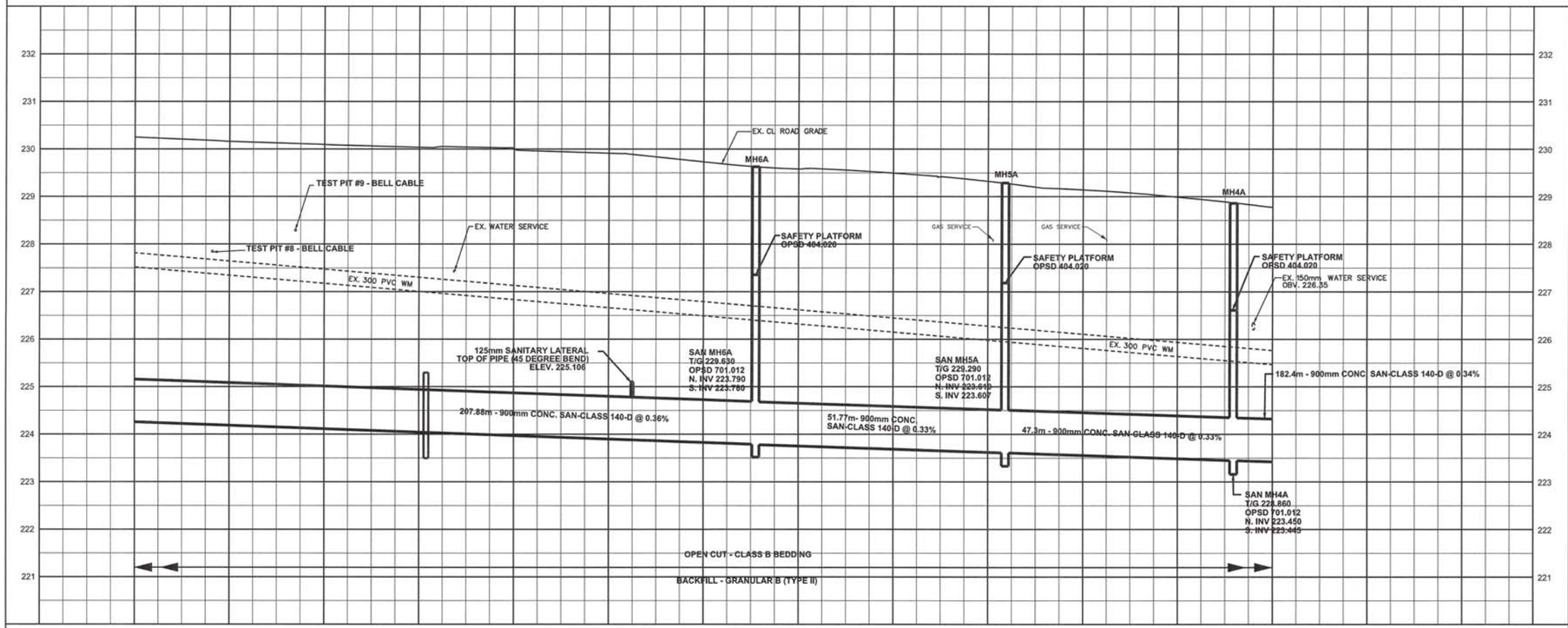
EXISTING MUNICIPAL INFRASTRUCTURE

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

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.





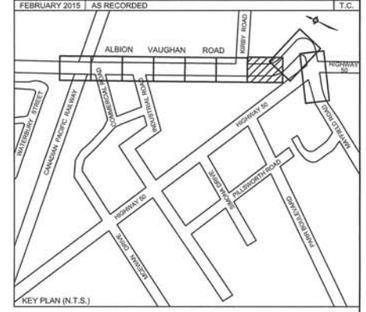
230.30	230.20	230.13	230.04	230.00	229.91	229.73	229.58	229.50	229.32	229.14	228.99	228.77	EX. ROAD ELEV.
0+620	0+600	0+580	0+560	0+540	0+520	0+500	0+480	0+460	0+440	0+420	0+400	0+380	ROAD CHAINAGE

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

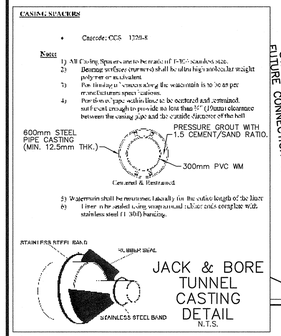
ALBION-VAUGHAN ROAD

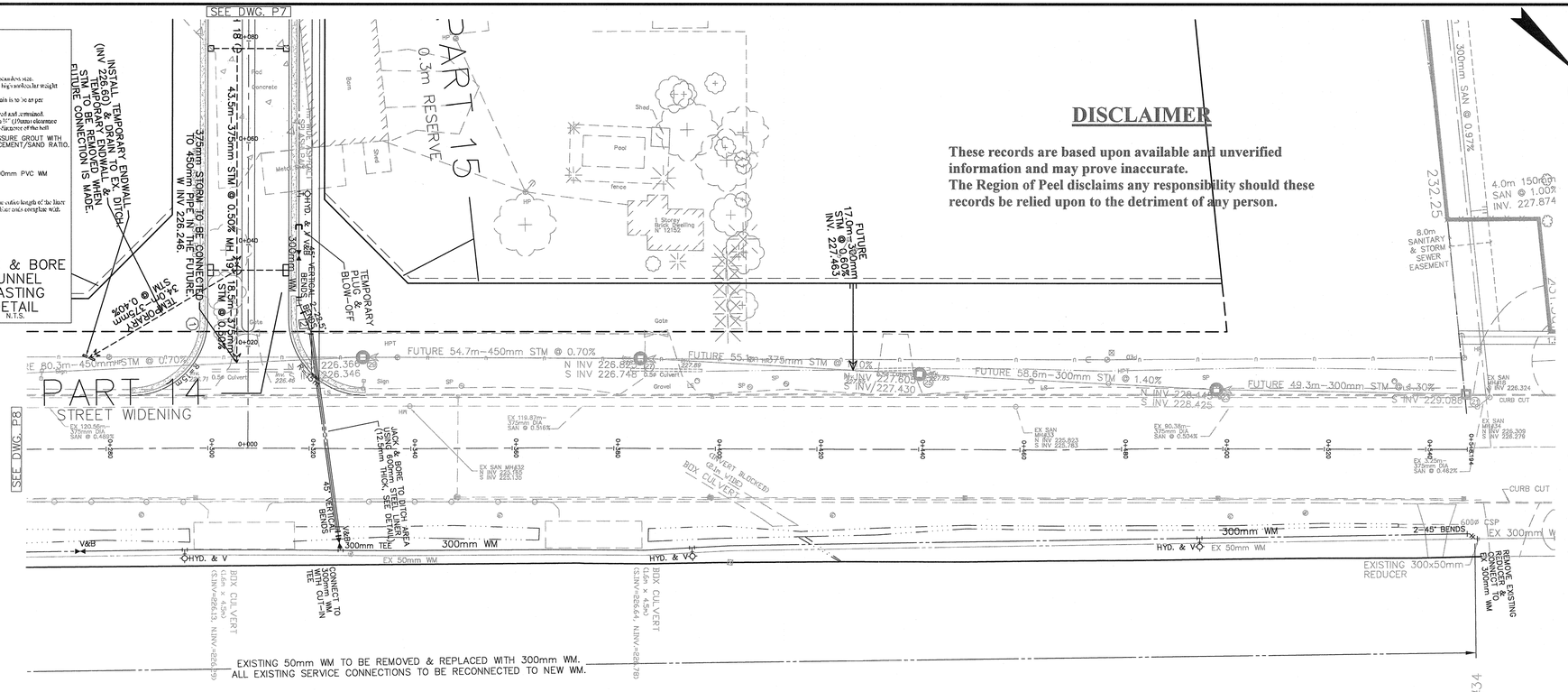
(FROM HIGHWAY 50 TO ALBION-VAUGHAN SPS)

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





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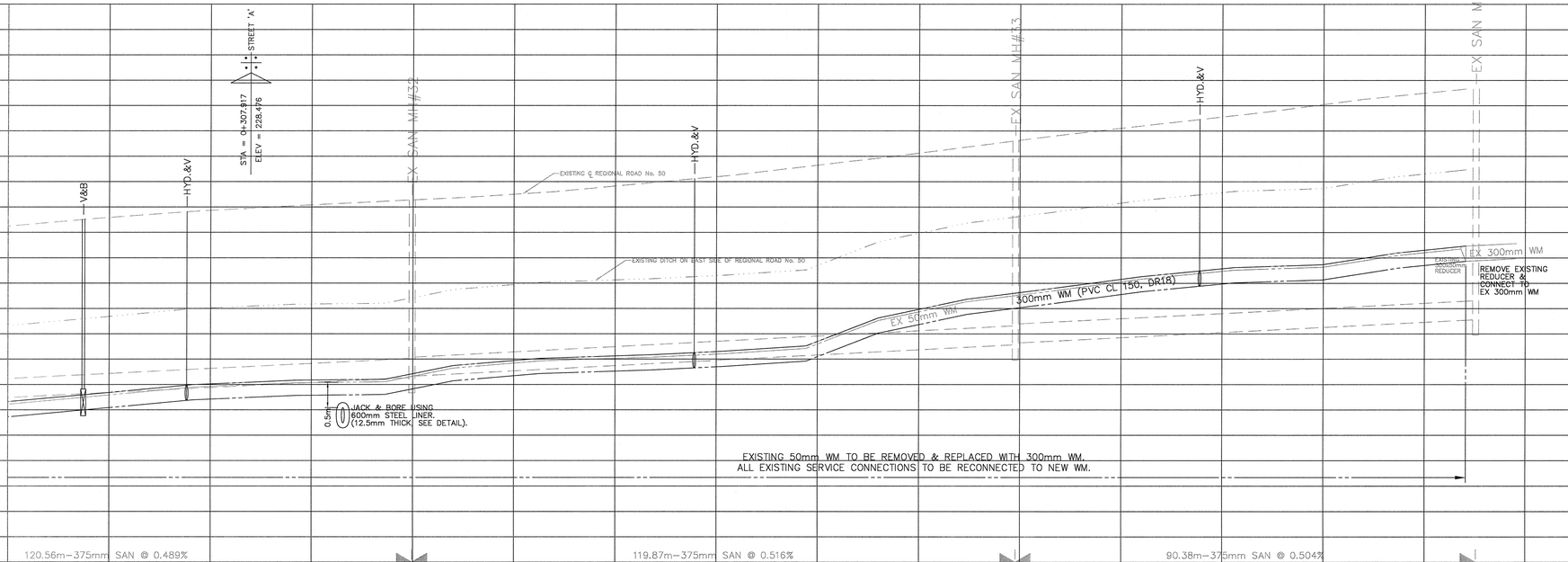
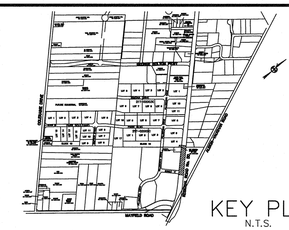


STORM INVERTS																	STORM INVERTS
SANITARY INVERTS					S 225.135 N 225.165				S 225.783 N 225.863					S 226.279 N 226.309			SANITARY INVERTS
PROPOSED ℄ ELEVATION	228.284	228.432	228.541	228.639	228.750	228.913	229.066	229.324	229.562	229.817	230.053	230.277	230.522	230.747			PROPOSED ℄ ELEVATION
CENTERLINE CHAINAGE	0+280		0+320		0+360		0+400		0+440		0+480		0+520				CENTERLINE CHAINAGE



FOR GENERAL NOTES REFER TO DWG C3

LEGEND

- HYDRANT AND VALVE
- CATCHBASIN
- DOUBLE CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- 236.00 PROPOSED ELEVATION
- 235.50 EXISTING ELEVATION
- VALVE AND BOX
- VALVE AND CHAMBER

TOWN OF CALEDON
APPROVED AS NOTED
THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.
THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.
DATE: _____
APPROVED BY: _____
C.A. CAMPBELL, C.E.T
DIRECTOR OF PUBLIC WORKS & ENGINEERING

CONTRACTOR TO BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE UTILITIES AND SERVICES. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY DISCREPANCIES PROIR TO PROCEEDING WITH CONSTRUCTION. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCED NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. A.M. CANDARAS ASSOCIATES INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

PLAN OF SUBDIVISION OF
PART OF THE EAST HALF OF LOT 1,
CONCESSION 6,
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

BENCH MARK

REGION OF PEEL #37 ELEV. 227.187m
ON THE NORTH FACE AT THE EAST CORNER OF A RED INSUL. BRICK HOUSE LOCATED ON THE SOUTH WEST CORNER OF SEVENTEENTH SIDEROAD (REGION ROAD #14) AND HIGHWAY #50

No.	Date	By	REVISIONS
7	08/28/08	M.F.S.	FINAL SUBMISSION, PHASE II FOR REGION
6	02/21/08	M.F.S.	4th SUBMISSION, PHASE II FOR TOWN
5	12/18/07	M.F.S.	3rd SUBMISSION, PHASE II FOR TOWN
4	07/18/07	M.F.S.	3rd SUBMISSION, PHASE II FOR REGION
3	06/28/07	M.F.S.	2nd SUBMISSION, PHASE II FOR TOWN
2	06/22/07	M.F.S.	2nd SUBMISSION, PHASE II FOR REGION
1	07/07/06	M.F.S.	1st SUBMISSION

a.m.candaras associates inc.
consulting engineers
8551 Weston rd., suite 203
Woodbridge ont. L4L 9R4
905-850-8020 Fax 905-850-8099
Email: civil@amcai.com

21T-06001Ca (PHASE II)

GIFFELS ENTERPRISES

REGIONAL ROAD No. 50 & MAYFIELD ROAD

DEVELOPMENT

TOWN OF CALEDON

REGIONAL ROAD No. 50

0+280.000 TO 0+548.194

SCALE: HORZ 1:500 VERT 1:50	DATE: APRIL 2006	PROJ No.	0496
DRAWN: M.F.S.	CHK'D: A.M.C.	PLAN No.	56548-D
DESIGNED: M.F.S.	SHEET 9 OF 9		

FILENAME: O:\Vol#8\Vol#8-P8(PHASE II).dwg
PLOTTED: Fri, Jun 4, 2010 - 11:42pm
PLOTTED BY: Sandra

From:	Nick Cascone
To:	Rui Song; Prowse, Dylan
Cc:	Garbos, Olek; Shen, Yifan; Mike Liburdi; patsypaquet@icloud.com; Alyssa Woods; Grant Uyeyama; Dilnesaw Chekol; Emma Benko
Subject:	RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road
Date:	February 22, 2024 1:52:02 PM
Attachments:	image001.png image002.png image003.png image004.png

---

Further my previous email, I have received word from our Infrastructure Planning and Permits (IPP) team that the Region will be perusing the culvert removal work though a separate permit/approval.

As such, the requirements listed below will not be needed as part of the development process relating to 12148 Albion Vaughan Road and instead will be addressed through the Region's permit.

Thanks,

Nick Cascone, M.Sc.Pl
Senior Planner
Development Planning and Permits | Development and Engineering Services

T: (437) 880-1943
E: nick.cascone@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: Nick Cascone
Sent: Thursday, February 22, 2024 12:04 PM
To: Rui Song <RuiS@maeng.ca>; Prowse, Dylan <dylan.prowse@peelregion.ca>
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>; Mike Liburdi <mike@aztecrestoration.com>; patsypaquet@icloud.com; Alyssa Woods <awoods@klmplanning.com>; Grant Uyeyama <GUyeyama@klmplanning.com>; Shirin Varzgani <Shirin.Varzgani@trca.ca>; Kristen Sullivan <kristen.sullivan@trca.ca>; Dilnesaw Chekol <Dilnesaw.Chekol@trca.ca>
Subject: RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

Hello Rui,

Thanks for the additional information. I had a chance to look at this matter with the project Water Resources Engineer. It seems that this may have been missed on our end as part of the original permit (which is now expired). Also, there may have been some confusion on our end as well given more recent discussions regarding a sidewalk that would potentially use that culvert as a crossing.

Notwithstanding, if the plan is to remove the culvert as part of this development, we require

additional minor details/revisions to the drawings that were not initially provided. These include the following:

- Clearly identify the removal of the culvert on all relevant engineering drawings. Currently, the only location where this is identified is the profile on Drawing P1.
- Please revise the channel plan to show the new channel in the area of the culvert removal. Further, please include a cross-section showing the new channel (once the culvert is removed) along with erosion protection measures.
- Revise the ESC plan to account for the culvert removal.
- I believe the floodplain modelling accounts for removal of the culvert. As such, I don't believe anything will need to be updated on this end, however, I will allow you to confirm this is the case.

In addition to the above, I would also like confirmation on the following matters (perhaps for Dylan at the Region):

- Is the intention to approve the culvert removal (and associated plan) through the development applications for this site, with the works being carried out by the Region? Or would they form part of other ongoing road improvement works associated with Highway 50? I am just trying to understand what this will mean from a permitting perspective on our end.

Thanks,

Nick Cascone, M.Sc.Pl
Senior Planner
Development Planning and Permits | Development and Engineering Services

T: (437) 880-1943
E: nick.cascone@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: Rui Song <RuiS@maeng.ca>
Sent: Friday, February 16, 2024 5:20 PM
To: Nick Cascone <Nick.Cascone@trca.ca>; Prowse, Dylan <dylan.prowse@peelregion.ca>
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>; Mike Liburdi <mike@aztecrestoration.com>; patsypaquet@icloud.com; Alyssa Woods <awoods@klmplanning.com>; Grant Uyeyama <GUyeyama@klmplanning.com>; Shirin Varzgani <Shirin.Varzgani@trca.ca>; Kristen Sullivan <kristen.sullivan@trca.ca>
Subject: RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

EXTERNAL SENDER
Hi Nick,

In our original application, we had proposed for the culvert and driveway to be removed when

making the floodline analysis. Please see attached drawing P1 which shows the removal in the profile along with the rest of our channel realignment. I have also attached the rest of the permit files for everyone's information.

Thank you,

MASONGSONG ASSOCIATES
ENGINEERING SUSTAINABLE FUTURES

Rui Song, P.Eng | Project Engineer
Cell (416) 302-3413

Masongsong Associates Engineering Limited
7800 Kennedy Road, Suite 201 . Markham, Ontario . L3R 2C7
T: (905) 944-0162 F:(905) 944-0165 www.maeng.ca

From: Nick Cascone <Nick.Cascone@trca.ca>
Sent: Friday, February 16, 2024 5:05 PM
To: Prowse, Dylan <dylan.prowse@peelregion.ca>
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>; Mike Liburdi <mike@aztecrestoration.com>; patsypaquet@icloud.com; Rui Song <RuiS@maeng.ca>; Alyssa Woods <awoods@klmplanning.com>; Grant Uyeyama <GUyeyama@klmplanning.com>; Shirin Varzgani <Shirin.Varzgani@trca.ca>; Kristen Sullivan <kristen.sullivan@trca.ca>
Subject: RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

Hello Dylan,

It is TRCA's understanding that the culvert will not be removed as part of this development application. Any removal of the culvert would require TRCA approval as it conveys a regulated watercourse and floodplain. The impacts of removal of the culvert on the flood hazard would likely need to be assessed to ensure that adjacent properties are not being impacted.

Please note that if culvert removal is to proceed as part of a future Peel capital project, our Infrastructure Planning and Permits (IPP) team will need to be consulted. I have copied my colleagues Kristen Sullivan and Shirin Varzgani on this email chain – they will be able to assist you with any future inquires on the matter.

Thanks,

Nick Cascone, M.Sc.Pl
Senior Planner

Development Planning and Permits | Development and Engineering Services

T: (437) 880-1943
E: nick.cascone@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

Toronto and Region Conservation Authority

From: Grant Uyeyama <GUyeyama@klmplanning.com>
Sent: Friday, February 16, 2024 2:50 PM
To: Prowse, Dylan <dylan.prowse@peelregion.ca>; Nick Cascone <Nick.Cascone@trca.ca>
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>; Mike Liburdi <mike@aztecrestoration.com>; patsypaquet@icloud.com; Rui Song <RuiS@maeng.ca>; Alyssa Woods <awoods@klmplanning.com>; Grant Uyeyama <GUyeyama@klmplanning.com>
Subject: RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

EXTERNAL SENDER
KLM File: P-2623

Hi Dylan,

I spoke with the Owner, and he gives permission for the Region of Peel to remove the culvert and driveway access adjacent to Highway 50 as part of Peel's capital project. Let us know if you require anything else from the Owner, and please keep us informed as the capital project moves ahead.

Grant Uyeyama, BAA, MCIP, RPP
Principal Planner

KLM PLANNING 35 YEARS

Mobile 416-871-6887 **Office** 905-669-4055
Email guyeyama@klmplanning.com
Web www.klmplanning.com
64 Jardin Drive, Unit 1B, Concord, Ontario L4K 3P3
CELEBRATING 35 YEARS

Please note that I may be working remotely at times and can be reached by email and on my mobile phone at 416-871-6887

From: Grant Uyeyama <GUyeyama@klmplanning.com>
Sent: Friday, February 16, 2024 10:04 AM
To: Prowse, Dylan <dylan.prowse@peelregion.ca>; Nick.Cascone@trca.ca
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>; Grant Uyeyama <GUyeyama@klmplanning.com>
Subject: RE: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

Hi Dylan,

Thanks for your email.

Will there be any costs charged back to the client for Peel to remove the driveway access and culvert or will Peel absorb all costs as part of the capital works project? Please let me know.

I will also discuss with the client and respond back to you soon. However, if you can get back to me first that would be great. Thanks!

Grant Uyeyama, BAA, MCIP, RPP
Principal Planner

KLM PLANNING 35 YEARS

Mobile 416-871-6887 **Office** 905-669-4055
Email guyeyama@klmplanning.com
Web www.klmplanning.com
64 Jardin Drive, Unit 1B, Concord, Ontario L4K 3P3
CELEBRATING 35 YEARS

Please note that I may be working remotely at times and can be reached by email and on my mobile phone at 416-871-6887

From: Prowse, Dylan <dylan.prowse@peelregion.ca>
Sent: Thursday, February 15, 2024 8:19 PM
To: Grant Uyeyama <GUyeyama@klmplanning.com>; Nick.Cascone@trca.ca
Cc: Garbos, Olek <olek.garbos@peelregion.ca>; Shen, Yifan <yifan.shen@peelregion.ca>
Subject: Culvert and Access Removal: OZ-21-001C - 12148 Albion Vaughan Road

Hi Grant and Nick,

Our Traffic Development and Capital works teams reached out to me regarding the culvert under the location of the existing access at 12148 Albion Vaughan Road (see image below). They are looking for your input on whether or not the culvert will be retained as part of the development. My understanding is that the access and culvert will be removed as they are no longer required for vehicle or pedestrian movement but I wanted to confirm with you. If these features can be removed, please advise if the Region can advance those removals through the capital project works in this area?

I have included Olek Garbos on this email as he is leading the capital project, please reach out to either of us if you have any additional questions or wish to set up a call to discuss.

Best,

Dylan Prowse
(He/Him)
Intermediate Planner
Development Services
Region of Peel
10 Peel Centre Drive Suite A, 6th Floor
dylan.prowse@peelregion.ca

In response to the emergence of the novel coronavirus, the Region of Peel is implementing various measures to protect our customers, employees and workplaces. Development Services will endeavour to maintain the continuity of our business operations, however delays in service may still be experienced. We appreciate your patience during this time.

We have recently updated our website to better serve your needs. For information on Planning and Engineering matters of Regional interest, please visit this link : https://www.peelregion.ca/planning/about/devservices.htm . Let us know how we can serve you better

Appendix B

Water Demand Calculations
Hydrant Flow Test
Existing Water Connection Locates

FALCON FIRE SPRINKLER DESIGN AND CONSULTING INC.
521 Piercey Rd., Unit 6, Bolton, Ontario, L7E 5B5

HYDRANT FLOW TEST REPORT

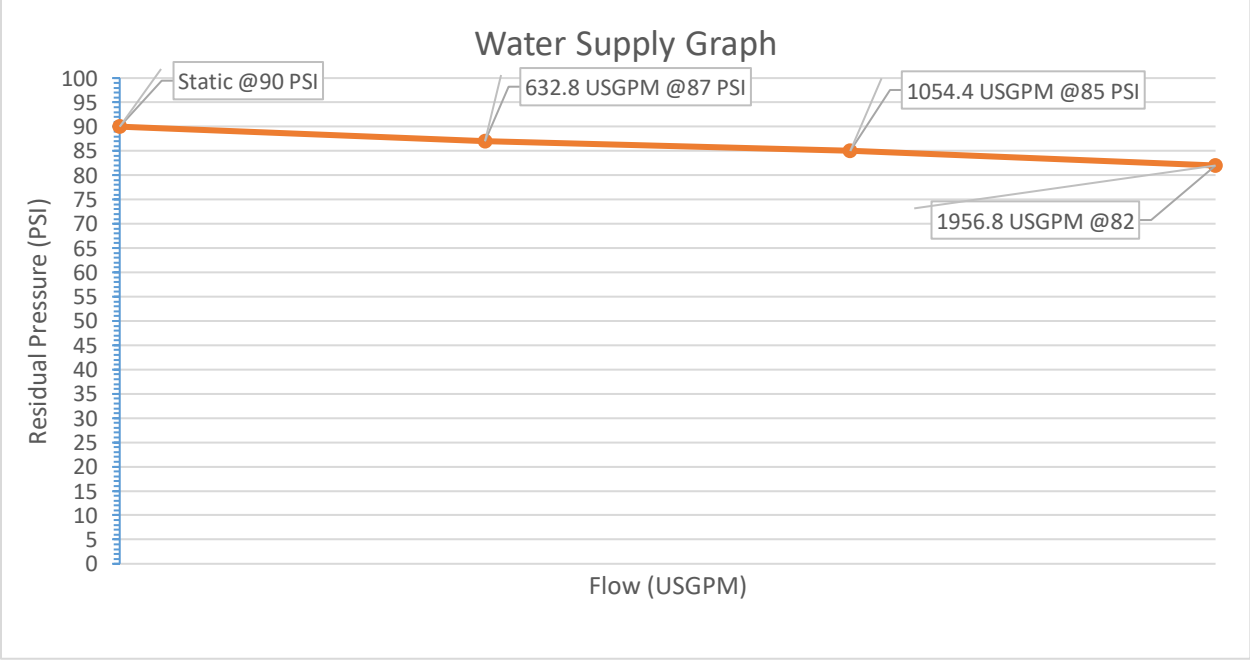
SITE INFORMATION

Test Location:	12148 Albion Vaughan Road, Bolton	Underground W/M Size:	12" (300 mm)
Date of Test:	July 5, 2023	Pipe Material:	PVC
Time of Test	9:00am		
Flow Hydrant ID:	12190 Albion Vaughan Road, Bolton	Flow Hyd. Co-Efficient:	0.8
Res. Hydrant ID:	11401 Albion Vaughan Road, Bolton	Static Reading:	90 PSI

FIELD DATA

Test No.	Outlet Size (inches)	Pitot Reading (PSI)	Flow Adjustment (USGPM)	Total Flow (USGPM)	Residual (PSI)	Field Notes (if applicable)
1	1 – 1¾"	75	791	632.80	87	0.997
2	1 – 2½"	50	1,318	1,054.40	85	-
3	2 – 2½"	43, 43	2,446	1,956.80	82	-
4	-	-	-	-	-	-

WATER SUPPLY GRAPH



ADDITIONAL COMMENTS

- All readings are true at the time of actual hydrant test.

FALCON FIRE SPRINKLER DESIGN AND CONSULTING INC.
521 Piercey Rd., Unit 6, Bolton, Ontario, L7E 5B5

AREA MAP (NTS) –

For test hydrant locations only.

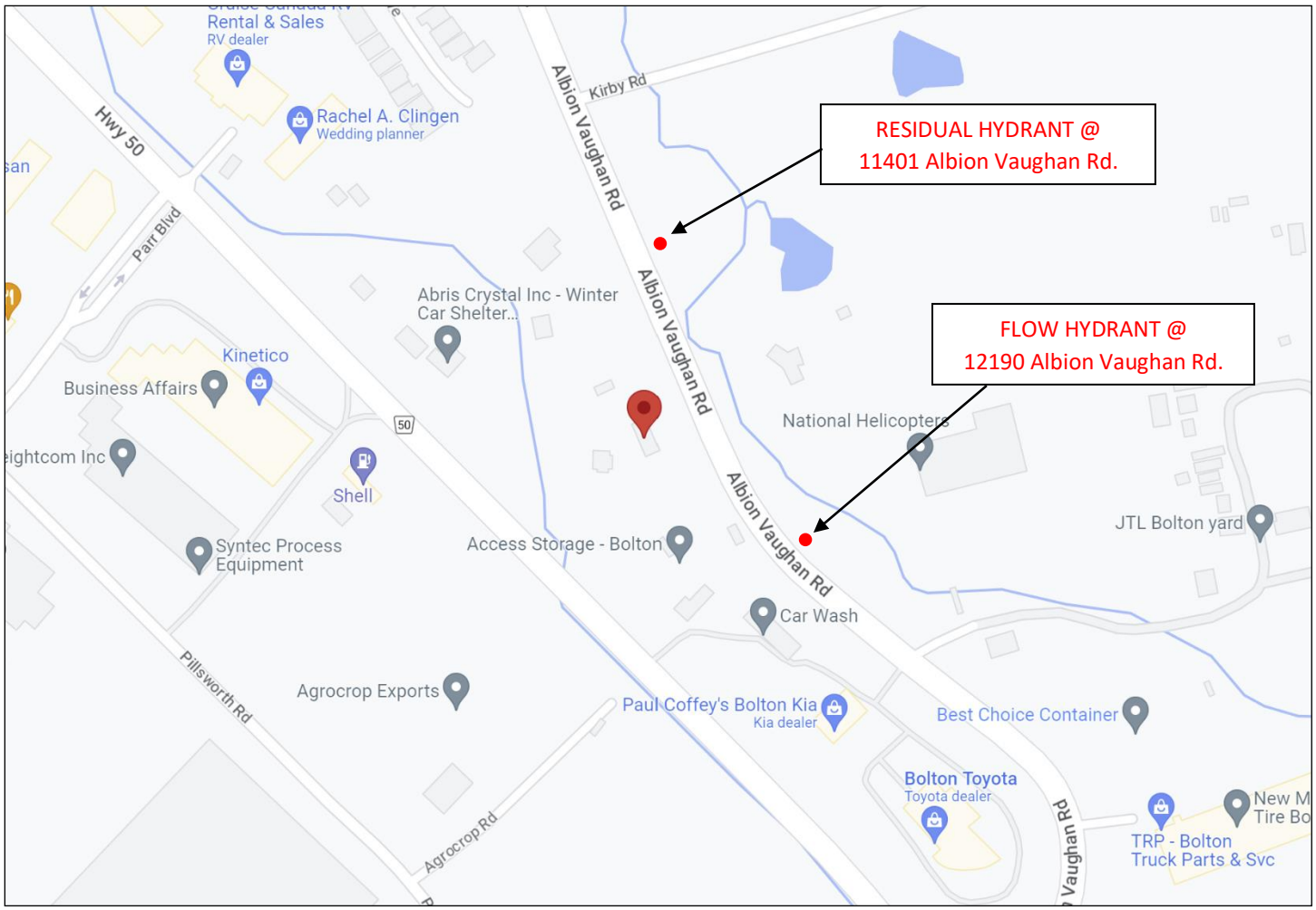


Table F1 Available Fire Flow Calculations

Project:	**12148 Albion Vaughan Road**
Client:	**Aztec Restoration**

Outlet diameter:	**2.5**	in, one port	Location:	**12148 Albion Vaughan Road, Bolton**
Static pressure:	**90**	psi	Date of Test:	**05-Jul-23**
Resid. pressure:	**82**	psi, one port	Operator:	**Falcon Fire Sprinkler**

• **Observed Flow** $Q_F = 29.83 \times C \times (d^2) \times (p^{0.5})$

where	C =	**0.80**	Coefficient
	d =	**2.50**	in, Outlet diameter
	p =	**43.00**	psi, Pitot Pressure
⇨	Q_F =	**961**	USGPM
		3,637	L/min

• **Available Flow** $Q_R = Q_F \times (h_R^{0.54}) / (h_F^{0.54})$

where	h_F =	8.00	psi, Pressure difference, static to measured residual
	h_R =	70.00	psi, Pressure difference, static to required residual
	Required =	**20.00**	psi
⇨	Q_F =	**3,099**	USGPM
		11,732	L/min

Table F2 Required Fire Flow Calculations

Project: **12148 Albion Vaughan Road**
Client: **Aztec Restoration**

• Base Flow

$F_B = 220 \times C_C \times A^{0.5}$

where C_C = 0.70 from Table F3

A = 4567.5 m^2 from Table F3

⇨ F_B = 10,408 L/min

11,000 L/min rounded to nearest 1,000 L/min

• Occupancy Factor

C_O = **-15%** from Table F3

$F_O = F_B + (F_B \times C_O)$

= 9,350 L/min

• Sprinkler Factor

C_S = **-50%** from Table F3

$f_S = F_O \times C_S$

= -4,675 L/min

• Exposure Factor

C_E = **50%** from Table F3

$f_E = F_O \times C_E$

= 4,675 L/min

• Total Required Flow

$F = F_O + f_S + f_E$

= 9,350 L/min

= **9,000** L/min rounded to nearest 1,000 L/min

Table F3 Building Area and Coefficients

Project: **12148 Albion Vaughan Road**
Client: **Aztec Restoration**

• Area of Building A **4,568** m^2 =2401 + 2303/2 + 2030/2

The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

For fire-resistive buildings, consider the two largest adjoining floors plus 50 percent of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected.

✓ **If the vertical openings and exterior vertical communications are property protected (one hour rating), consider only the area of the largest floor plus 25 percent of each of the two immediately adjoining floors.**

• Construction Coefficient floors. **0.70** ⇔

1.50	Wood Frame
1.00	Ordinary Construction
0.80	Non-Combustible
0.70	**Fire Resistive (<2 hrs)**
0.60	Fire Resistive (>2 hrs)

• Occupacy Coefficient C_O = **-15%** ⇔

-25%	Non-Combustible
-15%	**Limited Combustible**
0%	Combustible
15%	Free Burning
25%	Rapid Burning

• Sprinkler Coefficient C_S = **-50%** ⇔

-30%	NFPA 13 standard
-40%	+ fully supervised
-50%	**+ std water supply**

• Exposure Coefficient C_E = **50%** ⇔

N	10-20m	15%
S	0-3m	25%
E	>30m	5%
W	> 30m	5%

25%	0 - 3m separation
20%	3.1- 10m separation
15%	10.1- 20m separation
10%	20.1- 30m separation
5%	> 30m separation
	percentages counted per side, max 75%

Table F4 Available Fire Flow Calculations - Building B

Project:	**12148 Albion Vaughan Road**
Client:	**Aztec Restoration**

Outlet diameter:	**2.5**	in, one port	Location:	**12148 Albion Vaughan Road, Bolton**
Static pressure:	**90**	psi	Date of Test:	**05-Jul-23**
Resid. pressure:	**82**	psi, one port	Operator:	**Falcon Fire Sprinkler**

• **Observed Flow** $Q_F = 29.83 \times C \times (d^2) \times (p^{0.5})$

where	C =	**0.80**	Coefficient
	d =	**2.50**	in, Outlet diameter
	p =	**43.00**	psi, Pitot Pressure
⇨	Q_F =	**961**	USGPM
		3,637	L/min

• **Available Flow** $Q_R = Q_F \times (h_R^{0.54}) / (h_F^{0.54})$

where	h_F =	8.00	psi, Pressure difference, static to measured residual
	h_R =	70.00	psi, Pressure difference, static to required residual
	Required =	**20.00**	psi
⇨	Q_F =	**3,099**	USGPM
		11,732	L/min

Table F5 Required Fire Flow Calculations

Project: **12148 Albion Vaughan Road**
Client: **Aztec Restoration**

• Base Flow

$F_B = 220 \times C_C \times A^{0.5}$

where C_C = 0.60 from Table F3

A = 4159 m^2 from Table F3

⇨ F_B = 8,513 L/min

9,000 L/min rounded to nearest 1,000 L/min

• Occupancy Factor

C_O = **-15%** from Table F3

$F_O = F_B + (F_B \times C_O)$

= 7,650 L/min

• Sprinkler Factor

C_S = **-50%** from Table F3

$f_S = F_O \times C_S$

= -3,825 L/min

• Exposure Factor

C_E = **40%** from Table F3

$f_E = F_O \times C_E$

= 3,060 L/min

• Total Required Flow

$F = F_O + f_S + f_E$

= 6,885 L/min

= **7,000** L/min rounded to nearest 1,000 L/min

Table F6 Building Area and Coefficients

Project: **12148 Albion Vaughan Road**
Client: **Aztec Restoration**

• Area of Building B **4,159** m^2 =2093 + 2019/2 + 2113/2

The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered.

For fire-resistive buildings, consider the two largest adjoining floors plus 50 percent of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected.

✓ **If the vertical openings and exterior vertical communications are property protected (one hour rating), consider only the area of the largest floor plus 25 percent of each of the two immediately adjoining floors.**

• Construction Coefficient floors. **0.60** ⇔

1.50	Wood Frame
1.00	Ordinary Construction
0.80	Non-Combustible
0.70	Fire Resistive (<2 hrs)
0.60	**Fire Resistive (>2 hrs)**

• Occupacy Coefficient C_O = **-15%** ⇔

-25%	Non-Combustible
-15%	**Limited Combustible**
0%	Combustible
15%	Free Burning
25%	Rapid Burning

• Sprinkler Coefficient C_S = **-50%** ⇔

-30%	NFPA 13 standard
-40%	+ fully supervised
-50%	**+ std water supply**

• Exposure Coefficient C_E = **40%** ⇔

N	10-20m	25%
S	0-3m	5%
E	>30m	5%
W	> 30m	5%

25%	0 - 3m separation
20%	3.1- 10m separation
15%	10.1- 20m separation
10%	20.1- 30m separation
5%	> 30m separation
	percentages counted per side, max 75%

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

Node	Elev	No. of Units	Demand Pop *1.6 ppu (< 750 sqft)* *3.0 ppu (> 750 sqft)*	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	78	125	0.405	0.284	0.81	1.215
		187	561	1.818	1.273	3.64	5.454
				-	-	-	-
Total			686.00	2.22	1.56	4.45	6.67

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 121.11

			Analysis Results		**Region of Peel Criteria**	**Type of Scenarios**
Pressure	27.50	m	269.61	kPA	140 kPA min	Peak Daily Flow Plus Fire Scenario
(Node 1)			39.10	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	35.21	m	345.20	kPA	275 kPA min	Peak Hourly Demand Scenario
(Node 1)			50.07	psi	40 psi	

```
******************************************************************
*                            E P A N E T                         *
*                     Hydraulic and Water Quality                *
*                     Analysis for Pipe Networks                 *
*                          Version 2.2                           *
******************************************************************

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	2.29	264.98	35.27	0.00	
VSB-R	-2.29	264.98	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
1	2.29	0.13	0.28	Open

```
******************************************************************
*                            E P A N E T                         *
*                     Hydraulic and Water Quality                *
*                     Analysis for Pipe Networks                 *
*                          Version 2.2                           *
******************************************************************

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                   121.25    257.25     27.50      0.00
VSB-R              -121.25    264.98      0.00      0.00 Reservoir

Link Results:
------------------------------------------------------------------
Link                  Flow  VelocityUnit Headloss    Status
ID                     LPS       m/s      m/km
------------------------------------------------------------------
1                   121.25      6.86    436.79      Open
```

```
******************************************************************
*                          E P A N E T                           *
*                   Hydraulic and Water Quality                  *
*                   Analysis for Pipe Networks                   *
*                         Version 2.2                            *
******************************************************************

Input File: 17-849wmpeakhourly.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	4.58	264.96	35.21	0.00	
VSB-R	-4.58	264.98	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	VelocityUnit m/s	Headloss m/km	Status
1	4.58	0.26	1.01	Open

Appendix C

Sanitary Design Criteria

Population	Peak Flow (m^3/sec)	Population	Peak Flow (m^3/sec)	Population	Peak Flow (m^3/sec)
1000	0.0130	4750	0.0542	13000	0.1292
1050	0.0139	5000	0.0569	14000	0.1376
1100	0.0145	5250	0.0594	15000	0.1459
1150	0.0151	5500	0.0618	16000	0.1540
1200	0.0157	5750	0.0640	17000	0.1620
1300	0.0169	6000	0.0666	18000	0.1700
1400	0.0181	6250	0.0691	19000	0.1779
1500	0.0193	6500	0.0710	20000	0.1857
1600	0.0204	6750	0.0737	25000	0.2236
1700	0.0217	7000	0.0762	30000	0.2601
1800	0.0228	7250	0.0784	35000	0.2955
1900	0.0239	7500	0.0809	40000	0.3298
2000	0.0251	7750	0.0830	45000	0.3634
2200	0.0273	8000	0.0854	50000	0.3963
2400	0.0296	8250	0.0878	55000	0.4286
2600	0.0318	8500	0.0898	60000	0.4603
2800	0.0340	8750	0.0922	65000	0.4915
3000	0.0361	9000	0.0945	70000	0.5224
3250	0.0387	9250	0.0968	75000	0.5528
3500	0.0415	9500	0.0981	80000	0.5828
3750	0.0441	9750	0.1010	85000	0.6126
4000	0.0467	10000	0.1033	90000	0.6420
4250	0.0492	11000	0.1120	95000	0.6711
4500	0.0518	12000	0.1210	100000	0.7000

Notes:
1. Domestic sewage flows are based upon a unit sewage flow of 302.8 Lpcd.
2. The flows in the above table include the Harmon Peaking Factor.
3. Domestic sewage flow for less than 1000 persons shall be 0.013m^3/sec.
4. Domestic sewage flow for greater than 100,000 persons shall be 7.0×10^{-6} m^3/sec per capita.
5. Lpcd = Litres per capita per day 1 Litre = 0.001 $metre^3$

Region of Peel
Working for you

Date: June 2005 Rev: 1

Approved:

SEWAGE FLOWS
(EXCLUDING INFILTRATION)

STD. DWG. ~~2-5-2~~ 2-9-2

REGION OF PEEL

SANITARY SEWER DESIGN SHEET
12148 Albion Vaughan Road
Caledon, Ontario

LOCATION	MH FROM	TO MH	AREA (ha)	# OF UNIT	DENSITY (ppu)	POPULATION	CUMULATIVE AREA (ha)	CUMULATIVE POPULATION	1 SEWAGE FLOW (m^3/sec)	2 INFILTRATION FLOW (m^3/sec)	3 FOUNDATION DRAIN (m^3/sec)	TOTAL FLOW 1+2+3 (m^3/sec)	LENGTH (m)	PIPE DIAMETER (mm)	GRADIENT (%)	CAPACITY (m^3/sec)	VELOCITY (m/sec)	DROP IN LOWER M.H. (m)
SUBJECT SITE	SAN MH	EX MH	1.03			686	1.026	686	0.0130	0.000821	-	**0.0138**	22.0	200	2.00	**0.0464**	1.476	

Consultant: Masongsong Associates Engineering Limited
Client: Aztec Restorations
Sheet: 1 of 1 1
Project No.: 17-849

Region of Peel
Working for you

Design Criteria:

Aparments	2.7 ppu
Domestic Flow	302.8 L/p/ha.
Infiltration	0.0002 m^3/s/ha.
Additional MH inflow	0.000028 m^3/s/m. of sewer length

Sewer flow numbers taken from STD.DWG 2-9-2

Date: 01-Apr-24
Designed By: R.S.
Checked By: T.M.

Date
Approved

Appendix D

Storage Calculations
Storm Design Sheet
Jellyfish Design Report
Jellyfish Filter Maintenance Manual
Commitment Letter by Owner
Irrigation Calculations

Table 5.2.1

PRELIMINARY Calculation of Roof Drain Sizing

Multiple Residential Condo Development

	Rise					
	51		102		152	
Notch Area m^2	**Discharge**	**Water Depth**	**Discharge**	**Water Depth**	**Discharge**	**Water Depth**
	LPM	**mm**	**LPM**	**mm**	**LPM**	**mm**
232	66	73.5	82	91.5	97.5	109
465	77.5	86.5	93	104	111.5	124.5
697	84	94	100	112	120.5	134.5
929	86.5	96.5	104.5	117	127.5	142
	LPS		**LPS**		**LPS**	
232	1.10		1.37		1.63	
465	1.29		1.55		1.86	
697	1.40		1.67		2.01	
929	1.44		1.74		2.13	

Allowable Release Rate

Roof Area	0.4332	ha
*Release Rate	42	L/s/ha
Allowable Release Rate	18.19	L/s

Roof Drain Sizing

Drain Type	465	
Depth of Ponding	0.1245	m (Standard Max. ponding depth
Number of Drains	10	for roof storage)
Number of Notches per Drain	1	
Flow Rating per Notch	1.86	L/m
Flow from Each Drain Type 465	1.86	L/s
Total Flow from Drain Type 465	18.19	L/s
Total Number of Drains	10	

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 =	0.492	ha	Area= Area total- Uncontrolled area-roof Area
Composite C =	0.67		
$i_{100y\ (Allowable)}$ =	196.54	mm/hr	$i_{100} = 4688(t_c+17)^{-0.9624}$
$Q_{Allowable}$ =	0.0274	m^3/s	
Q_{Actual} =	0.0274	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)	
55	76.470	0.086	0.058	193.025	
56	75.462	0.085	0.058	193.431	
57	74.480	0.084	0.057	193.810	
58	73.524	0.083	0.056	194.162	
59	72.593	0.082	0.055	194.490	
60	71.685	0.081	0.054	194.794	
61	70.800	0.081	0.053	195.074	
62	69.938	0.080	0.053	195.332	
63	69.096	0.079	0.052	195.569	
64	68.275	0.078	0.051	195.784	
65	67.473	0.078	0.050	195.980	
66	66.691	0.077	0.050	196.157	
67	65.927	0.076	0.049	196.314	
68	65.180	0.076	0.048	196.454	
69	64.451	0.075	0.047	196.576	
70	63.737	0.074	0.047	196.681	
71	63.040	0.074	0.046	196.771	
72	62.358	0.073	0.046	196.844	
73	61.691	0.072	0.045	196.902	
74	61.039	0.072	0.044	196.945	
75	60.400	0.071	0.044	196.974	
76	59.775	0.071	0.043	196.988	
77	59.163	0.070	0.043	196.990	***
78	58.563	0.069	0.042	196.978	
79	57.976	0.069	0.042	196.954	
80	57.401	0.068	0.041	196.917	
81	56.837	0.068	0.041	196.869	
82	56.284	0.067	0.040	196.809	
83	55.743	0.067	0.040	196.737	
84	55.211	0.066	0.039	196.655	
85	54.690	0.066	0.039	196.562	
86	54.179	0.065	0.038	196.458	
87	53.678	0.065	0.038	196.345	
88	53.186	0.065	0.037	196.222	
89	52.703	0.064	0.037	196.089	
90	52.229	0.064	0.036	195.947	
91	51.763	0.063	0.036	195.796	
92	51.306	0.063	0.035	195.636	
93	50.857	0.062	0.035	195.468	
94	50.416	0.062	0.035	195.291	

Determining Number of Cartridges for Flow Based Systems

Date	**2/20/2024**	**Black Cells =**	**Calculation**

Site Information

Project Name	**12148 Albion Vaughan Road**		
Project Location	**Caledon, ON**		
OGS ID	**Stormfilter**		
Drainage Area, Ad	**1.44**	ac	(0.5825 ha)
Impervious Area, Ai	**0.87**	ac	
Pervious Area, Ap	**0.57**		
% Impervious	**61%**		
Runoff Coefficient, Rc	**0.64**		
Treatment storm flow rate, Q_{treat}	**0.46**	cfs	(13.01 L/s)
Peak storm flow rate, Q_{peak}	**TBC**	cfs	

Filter System

Filtration brand	**StormFilter**	
Cartridge height	**18**	in
Specific Flow Rate	**2.00**	gpm/ft^2
Flow rate per cartridge	**15.00**	gpm

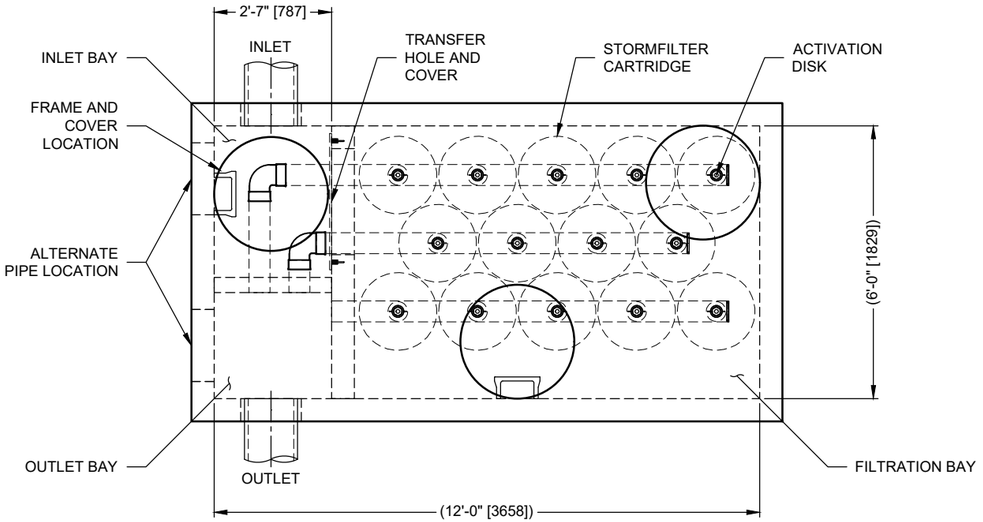
SUMMARY

Number of Cartridges	14
Media Type	Perlite

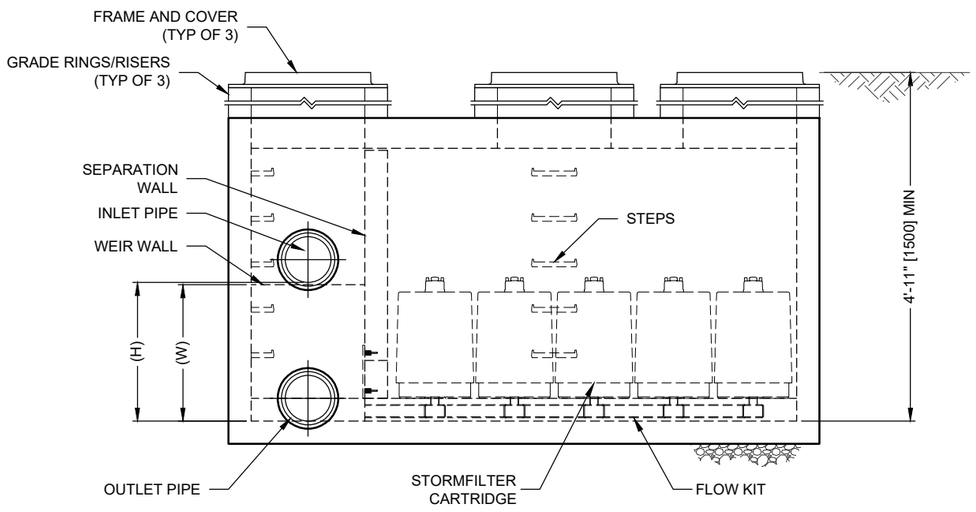
Event Mean Concentration (EMC)	**120**	mg/L
Annual TSS Removal	**80%**	
Percent Runoff Capture	**90%**	

Recommend SFPD 0612 vault or CIP

200 Enterprise Drive
Scarborough, ME 04074
Phone 877-907-8676
Fax 207-885-9825



PLAN



ELEVATION

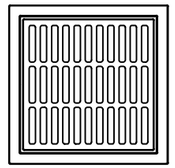
The Stormwater Management StormFilter®

STORMFILTER DESIGN NOTES

- STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD
- A 6' x 12' [1829 x 3658] PEAK DIVERSION STYLE STORMFILTER IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (14) AND IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR A RIGHT INLET CONFIGURATION
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS NOTED OTHERWISE

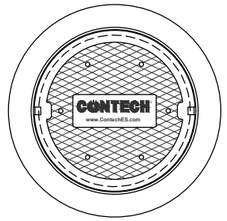
CARTRIDGE SIZE (in. [mm])	27 [686]			18 [457]			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H) (ft. [mm])	3.05 [930]			2.3 [701]			1.8 [549]		
HEIGHT OF WEIR (W) (ft. [mm])	3.00 [914]			2.25 [686]			1.75 [533]		
SPECIFIC FLOW RATE (gpm/sf [L/s/m^2])	2 [1.36]	1.67* [1.13]*	1 [0.68]	2 [1.36]	1.67* [1.13]*	1 [0.68]	2 [1.36]	1.67* [1.13]*	1 [0.68]
CARTRIDGE FLOW RATE (gpm [L/s])	22.5 [1.42]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.47]	10 [0.63]	8.35 [0.53]	5 [0.32]

* 1.67 gpm/sf [1.13 L/s/m^2] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND GRATE

(24" SQUARE)
(NOT TO SCALE)



FRAME AND COVER

(30" ROUND)
(NOT TO SCALE)

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
CARTRIDGE FLOW RATE	
CARTRIDGE SIZE (27, 18, LOW DROP (LD))	
MEDIA TYPE (PERLITE, ZPG, PSORB)	
NUMBER OF CARTRIDGES REQUIRED	
INLET BAY RIM ELEVATION	
FILTER BAY RIM ELEVATION	

PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			

NOTES/SPECIAL REQUIREMENTS:

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7" [178].** FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **37 SECONDS**. SPECIFIC FLOW RATE SHALL BE **2 GPM/SF [1.36 L/s/m^2] (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF [13.39 L/s/m^3] OF MEDIA (MAXIMUM).**

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. ALTERNATE DIMENSIONS ARE IN MILLIMETERS [mm] UNLESS NOTED OTHERWISE.
4. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
5. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
6. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 10' [3048] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

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 STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER OPENING COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-526-3999 513-645-7000 513-645-7993 FAX

SFPD0612 (6' x 12')
PEAK DIVERSION STORMFILTER
STANDARD DETAIL

CONTECH®
ENGINEERED SOLUTIONS

StormFilter Inspection and Maintenance Procedures

The Stormwater Management StormFilter®

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. **Inspection**
   - Inspection of the vault interior to determine the need for maintenance.
2. **Maintenance**
   - Cartridge replacement
   - Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.

In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..

Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit and the unit's role, relative to detention or retention facilities onsite.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered).

Please note Stormwater Management StormFilter devices installed downstream of, or integrated within, a stormwater storage facility typically have different operational parameters (i.e. draindown time). In these cases, the inspector must understand the relationship between the retention/detention facility and the treatment system by evaluating site specific civil engineering plans, or contacting the engineer of record, and make adjustments to the below guidance as necessary. Sediment deposition depths and patterns within the StormFilter are likely to be quite different compared to systems without upstream storage and therefore shouldn't be used exclusively to evaluate a need for maintenance.

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
   a. While not required in all cases, inspection of the media within the cartridge may provide valuable additional information.
   b. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.

Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

   Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.

Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood and float.

D. At location under structure access, tip the cartridge on its side.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

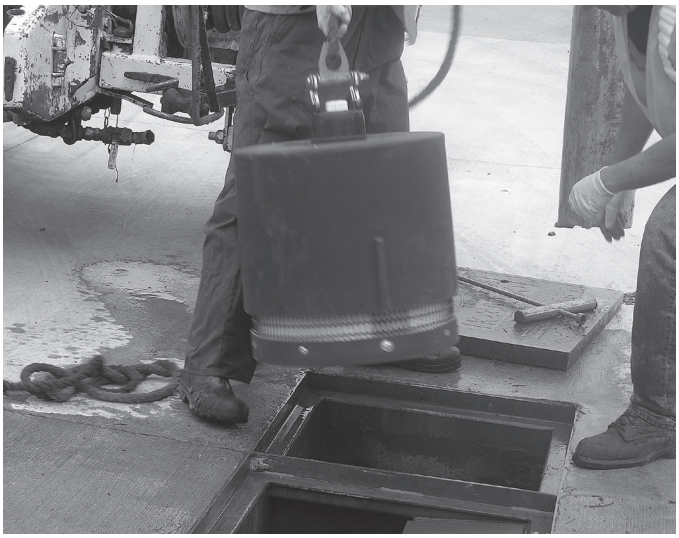
Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Related Maintenance Activities - Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.



Inspection Report

Date: _____ Personnel: _____

Location: _____ System Size: _____ Months in Service: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

Sediment Thickness in Forebay: _____ Date: _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Estimated Flow from Drainage Pipes (if available): _____

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water: _____

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal: _____

☐ Minor Structural Repairs: _____

☐ Drainage Area Report _____

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

Items Needing Further Work: _____

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service: _____

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

_____

_____

_____

_____

_____

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Aztec Restoration

11 Holland Drive

Bolton, ON, Canada

L7E 1G7

Attention: Christopher Winterfield, Peel Region Public Works

February 2nd, 2024

Dear Christopher,

I/We, **Mike Liburdi**, the property owner for subject lands 12148 Albion Vaughan Road, shall adhere to the inspection and maintenance guidelines set out in the functional stormwater management report by Masongsong Associates Engineering Limited for all stormwater management facilities related to the proposed development at 12148 Albion Vaughan Road.

Mike Liburdi (Owner) Mike Liburdi, Principal
Name (Print) and Title

mike@aztecrestoration.com
Email

Signature

MARTON SMITH LANDSCAPE ARCHITECTS
170 The Donway West, Suite 206
North York, Ontario. M3C 2G3
Tel. 416 492-9966
e-mail: msla@msla.ca

Attn. Masongsong Associates
c/o Rui Song
7800 Kennedy Road, Suite 201
Markham, ON. L3R 2C7

Date: Mar. 19, 2024

Re.: Landscape Irrigation Calculation Estimate
12148 Albion-Vaughan Road, Caledon, Ontario.

The purpose of this letter is to confirm whether the water stored in the stormwater cistern can be reused within 72 hours, by using an on-site irrigation system.

ESTIMATED POTENTIAL IRRIGATION USE IN CUBIC METRES

May	384.42
June	445.27
July	490.70
August	445.27
September	384.42
Total WR m^3	2150.08
Total Monthly Avg WR m^3	430.02
Total 72 hr Avg	43.87

Notes:

- Please refer to the following sheets for formulas and monthly water use breakdowns
- This irrigation calculation has been estimated for landscape consumption only and reflects an approximate potential irrigation use based on standard landscape coefficients and local values.
- The months May through September are included in the calculation to represent the typical irrigation potential for the Toronto region growing season (153 days).
- Landscape planting specific irrigation design, mechanical systems, and related specifications shall be provided by a qualified irrigation consultant or contractor during the construction phase. This includes confirming the daily use frequency of the irrigation system.
- Any additional irrigation, beyond the rainwater harvesting system, is considered optional.

Therefore, based on the above potential irrigation use, **43.87 m^3** of water can be re-used for the purposes of irrigation, during the average 72 hr period. Any additional irrigation, beyond the rainwater harvesting system, is considered optional, and to conform with local by-laws and green standard requirements.

Sincerely,

Dave Reid, O.A.L.A., C.S.L.A.
Per. MSLA Landscape Architects

WATER REQUIREMENT STANDARD FORMULA

$$WR = \frac{[(ETo \times KL) - RE] \times A}{DU \times EWM \times CU}$$

		Item Type	Description
WR	=	Irrigation Water Requirement	Quantity of water required to irrigate the landscape areas
ETo	=	Reference Evapotranspiration in mm	Based on industry standards for the City of Toronto July (ETo = 138.2) is used as the reference value, and a percentage is determined based on the remaining months of irrigation use: May = 103.65 (75% of July) June = 124.38 (90% of July) July = 138.2 (Reference Value) August = 124.38 (90% of July) September = 103.65 (75% of July)
KL	=	Landscape Coefficient	Based on the type of plant material, and in conjunction with LEED standards and calculating system (Standard LEED Calculator) Shrubs/Perennials = 1.0 Green Roof = 1.0 Sodded Area = 1.2
RE	=	Effective Rainfall	See chart and description on following page
A	=	Area in m^2	Area of landscape to be irrigated
DU	=	Distribution Uniformity	Based on industry standards Sodded Area = 0.75 Shrubs/Perennials = 0.75 Green Roof = 0.9
EWM	=	Water Management Efficiency	Water management efficiency of the irrigation system Good = 0.85 (constant)
CU	=	1000 (Constant)	Constant for unit conversion

MSLA 170 The Donway W., Suite 206, North York, Ontario. M3C 2G3 **Tel**: (416) 492-9966 **Fax**: (416) 492-0426 **e-mail**: msla@msla.ca

EFFECTIVE RAINFALL

The effective rainfall is the total rainfall, minus runoff, minus evaporation, and minus deep percolation; only the water retained in the root zone can be used by the plants and represents what is called the effective part of the rainwater. The remaining water requirement for the plants is fulfilled by the irrigation system, as needed. (see: https://www.fao.org/3/s2022e/s2022e08.htm)

For the purposes of this calculation, Rainfall (ETo) = 138.2 mm for July. This is then entered into the chart below, which results in an Effective Rainfall (RE) value of 85. The same is done for the remaining months included in this report.

This value is then subtracted from the irrigation estimate, in order to account for initial 5mm of rain abstraction (which is already included in the stormwater report). Please refer to the formula on the previous page

RAINFALL (ETo) AND EFFECTIVE RAINFALL (RE) in mm/month

ETo (mm/month)	RE (mm/month)	ETo (mm/month)	RE (mm/month)
0	0	130	79
10	0	140	87
20	2	150	95
30	8	160	103
40	14	170	111
50	20	180	119
60	26	190	127
70	32	200	135
80	39	210	143
90	47	220	151
100	55	230	159
110	63	240	167
120	71	250	175

Source: Based on “Irrigation Water Management: Irrigation Water Needs.” http://www.fao.org/3/s2022e/s2022e03.htm . FAO (Food and Agriculture Organization of the United Nations) 1986.

MONTHLY BREAKDOWN - ESTIMATED POTENTIAL IRRIGATION USE

MAY

Type	% of July Reference ET	ETo (Reference ET in mm)	KL	RE (50% Effective Rainfall in mm)	A (m^2)	DU (Distribution Uniformity)	EWM (Water Management Efficiency)	WR (m^3)
Sodded Area	75%	103.65	1.2	28.5	599.7	0.75	0.85	90.19
Green Roof	75%	103.65	1	28.5	1420.3	0.9	0.85	139.52
Shrubs/ Perennials	75%	103.65	1	28.5	1312.3	0.75	0.85	154.70

May Total **384.42**

Scheduled Irrigation Flow per 72 hr in m^3 **39.71**

JUNE

Type	% of July Reference ET	ETo (Reference ET in mm)	KL	RE (50% Effective Rainfall in mm)	A (m^2)	DU (Distribution Uniformity)	EWM (Water Management Efficiency)	WR (m^3)
Sodded Area	90%	124.38	1.2	37.5	599.7	0.75	0.85	105.13
Green Roof	90%	124.38	1	37.5	1420.3	0.9	0.85	161.30
Shrubs/ Perennials	90%	124.38	1	37.5	1312.3	0.75	0.85	178.84

June Total **445.27**

Scheduled Irrigation Flow per 72 hr in m^3 **44.53**

JULY

Type	% of July Reference ET	ETo (Reference ET in mm)	KL	RE (50% Effective Rainfall in mm)	A (m^2)	DU (Distribution Uniformity)	EWM (Water Management Efficiency)	WR (m^3)
Sodded Area	100%	138.2	1.2	42.5	599.7	0.75	0.85	116.03
Green Roof	100%	138.2	1	42.5	1420.3	0.9	0.85	177.68
Shrubs/ Perennials	100%	138.2	1	42.5	1312.3	0.75	0.85	197.00

July Total **490.70**

Scheduled Irrigation Flow per 72 hr in m^3 **50.69**

AUGUST

Type	% of July Reference ET	ETo (Reference ET in mm)	KL	RE (50% Effective Rainfall in mm)	A (m^2)	DU (Distribution Uniformity)	EWM (Water Management Efficiency)	WR (m^3)
Sodded Area	90%	124.38	1.2	37.5	599.7	0.75	0.85	105.13
Green Roof	90%	124.38	1	37.5	1420.3	0.9	0.85	161.30
Shrubs/ Perennials	90%	124.38	1	37.5	1312.3	0.75	0.85	178.84

August Total **445.27**

Scheduled Irrigation Flow per 72 hr in m^3 **46.00**

SEPTEMBER

Type	% of July Reference ET	ETo (Reference ET in mm)	KL	RE (50% Effective Rainfall in mm)	A (m^2)	DU (Distribution Uniformity)	EWM (Water Management Efficiency)	WR (m^3)
Sodded Area	75%	103.65	1.2	28.5	599.7	0.75	0.85	90.19
Green Roof	75%	103.65	1	28.5	1420.3	0.9	0.85	139.52
Shrubs/ Perennials	75%	103.65	1	28.5	1312.3	0.75	0.85	154.70

September Total **384.42**

Scheduled Irrigation Flow per 72 hr in m^3 **38.44**

Total Combined WR in m^3

May	384.42
June	445.27
July	490.70
August	445.27
September	384.42
Total WR m^3	**2150.08**
Total Monthly Avg WR m^3	**430.02**
Total 72 hr Avg	**43.87**

Appendix E

Approved TRCA Creek Realignment Submission and Drawings (2021)

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MEMORANDUM

Date: January 25, 2021 **MA-Project No**: 2017-849

To: Sameer Dhalla
Director, Development and Engineering Services
Toronto and Region Conservation Authority

From: David Hoover
Masongsong Associates Engineering Limited

Subject: Robinson Creek Channel Re-Alignment
12148 Albion Vaughan Road, Bolton
Town of Caledon, Ontario

Masongsong Associates Engineering Limited (MAEL) has been retained by Aztec Restoration to prepare this technical memorandum in support of the channel re-alignment at Reach 1 of Robinson Creek, a tributary to the Humber River. The purpose of this memo is to identify the existing hydraulic conditions and to demonstrate how the proposed alignment will preserve and enhance the function of the watercourse to the satisfaction of the Toronto and Region Conservation Authority (TRCA).

The proposed re-alignment is located entirely within the property of 12148 Albion Vaughan Road and characterized by proposed site grading in support a new building. The requirement for this re-alignment was identified during the zoning by-law and site plan application process when it was discovered that the previous land use had significantly altered the site topography resulting in negative impacts to regulatory floodplain. Therefore, channel re-alignment is necessary to restore and enhance the function of the watercourse while supporting the proposed development.

The areas of concerns for Robinson Creek is identified as Reach 1 starting from River Station 2223.1 to River Station 2223.16. The lands tributary to this length of Robinson Creek is limited to the subject property.

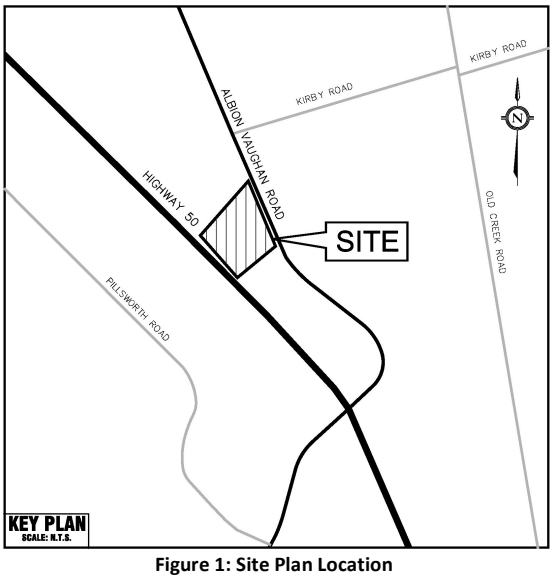


Figure 1: Site Plan Location

1. BACKGROUND

The subject property is approximately 1.3 ha (3.2 acres), bound by Highway 50 (a Peel Regional arterial roadway) to the west, and bound by Albion Vaughan Road (the designated "frontage") to the east. Directly to the north is existing rural residential and to the south is a commercial site with outdoor storage provisions. The legal description of the property is Part 1 of Lot 1, Concession 7 in the Town of Caledon. Refer to FIGURE 1 for the Site Plan Location.

2. HYDRAULIC MODELLING (GEOHEC-RAS) RESULTS

The hydraulic modelling results presented herein describes the channel hydraulics based on the details of the TRCA 2015 HEC RAS model, existing topography and site design where applicable. The following tasks were undertaken:

- Update the relevant cross sections for each modelling scenario based on available topographic data.
- Determine regulatory flood elevations for the pre-existing (PEX), existing (EX) and proposed (PR) scenarios
- Evaluate the results of the proposed (PR) channel re-alignment with the pre-existing (PEX) and existing (EX) scenarios

METHODOLOGY

To achieve the modelling objectives described in the preceding section, the U.S. Army Corps of Engineers' River Analysis System (HEC-RAS) was utilized. HEC-RAS is designed to perform one-dimensional steady and unsteady flow river hydraulics calculations, sediment transport-mobile bed modelling, and water temperature analysis. The HEC-RAS software supersedes the HEC-2 river hydraulics package.

The modelling system calculates water surface profiles for steady gradually varied flow. The system can handle a full network of channels, a dendritic system, or a single river reach. The steady flow component is capable of modelling subcritical, supercritical, and mixed flow regime water surface profiles.

The basic computational procedure is based on the solution of the one-dimensional energy equation. Energy losses are evaluated by friction (Manning's equation) and contraction/expansion (coefficient multiplied by the change in velocity head). The momentum equation is utilized in situations where the water surface profile is rapidly varied. These situations include mixed flow regime calculations (i.e., hydraulic jumps), hydraulics of bridges, and evaluating profiles at river confluences (stream junctions).

This model has the ability to consider the effects of various obstructions, such as bridges, culverts, dams, weirs, and other structures in the floodplain on water levels. The steady flow system is designed for application in floodplain management, estimation of floodplain storage, and for assessing the change in water surface profiles due to channel modifications.

The model requires the following input:

- Channel geometry (low flow centerline profile and cross-sections; culvert crossing details);
- Manning’s roughness for main channel and overbank areas;
- Cumulative flow; and,
- Downstream boundary conditions.

PRE-EXISTING CONDITIONS (PEX)

The Robinson Creek HEC-RAS was obtained from the TRCA and has been used to establish the original floodline conditions for our site, 12148 Albion Vaughan Road. The following outlines the measures taken when analyzing the pre-existing hydraulic model:

- Uses flow data from the provided TRCA HEC-RAS model (**Table 1**)

Table 1: TRCA Flows

Storm Event	XS 2223.18 Flow (m^3/s)	XS2223.12 Flow (m^3/s)
2-Year	5.47	5.69
5-Year	7.78	8.09
10-Year	9.36	9.73
25-Year	11.54	11.99
50-Year	13.25	13.77
100-Year	15.21	15.81
Regional	17.88	18.59

- Uses original geometry from the provided TRCA 2015 HEC-RAS model

The resultant water surface elevations (W.S.E.) for regulatory storm event in the pre-existing model are summarized in **Table 2**. The floodplain mapping complete with river station locations and flood line for this scenario can be found on **Drawing PEX**.

EXISTING CONDITIONS (EX)

The existing condition model was established by updating the relevant cross sections of the Robinson Creek HEC-RAS obtained from the TRCA. The update is based on the data from a topographic survey of the existing grades which were found to be significantly altered from the original geometry in the pre-existing (PEX) scenario above. The following outlines the measures taken when analyzing the existing hydraulic model:

- Uses flow data from the provided TRCA 2015 HEC-RAS model (**Table 1**)
- Uses existing geometry and sections from the provided TRCA 2015 HEC-RAS model and then updated with the topographical survey (see below):
  - Section 2223.15
  - Section 2223.14
  - Section 2223.134
  - Section 2223.133
  - Section 2223.132
  - Section 2223.131
  - Section 2223.112
  - Section 2223.11
- Additional cross sections have been provided to increase the accuracy across the site (see below):
  - Section 2223.156
  - Section 2223.152

- Section 2223.148
- Section 2223.146
- Section 2223.145
- Section 2223.143
- Section 2223.141
- Section 2223.125

The resultant water surface elevations (W.S.E.) for regulatory storm event in the existing model are summarized in **Table 2**. The floodplain mapping complete with river station locations and flood line for this scenario can be found on **Drawing EX**.

PROPOSED CONDITIONS (PR)

The proposed conditions model includes the projected grading for our site. The following outlines the measures taken when analyzing the proposed hydraulic model:

- Uses flow data from the provided TRCA 2013 HEC-RAS model (Table 1)
- Uses existing geometry from the Baseline Model HEC-RAS model with modifications which are as follows:
    - Section 2223.105 which represents a culvert structure has been removed from the model which as the existing culvert that serviced the driveway access is no longer required in the proposed condition.
- Uses existing geometry and sections from the provided TRCA 2015 HEC-RAS model and then updated with the proposed site grading design (see below):
    - Section 2223.15
    - Section 2223.14
    - Section 2223.134
    - Section 2223.133
    - Section 2223.132
    - Section 2223.131
    - Section 2223.112
    - Section 2223.11
- Additional cross sections have been provided to increase the accuracy across the site (see below):
    - Section 2223.156
    - Section 2223.152
    - Section 2223.148
    - Section 2223.146
    - Section 2223.145
    - Section 2223.143
    - Section 2223.141
    - Section 2223.125

The resultant water surface elevations (W.S.E.) for regulatory storm event in the proposed model are

summarized in **Table 2**. The floodplain mapping complete with river station locations and flood line for this scenario can be found on **Drawing PR**.

Table 2: Regulatory W.S.E. For Various Scenarios

River Station	Regulatory W.S.E. (m)		
	PEX	EX	PR
2223.16	230.20	230.20	230.20
2223.156		229.92	229.93
2223.152		229.76	229.68
2223.15	229.60	229.80	229.36
2223.148		229.78	229.33
2223.146		229.79	229.32
2223.145		229.79	229.32
2223.143		229.78	229.31
2223.141		229.77	229.19
2223.14	229.23	229.70	229.19
2223.134	229.20	229.56	229.01
2223.133	229.19	229.45	229.07
2223.132	229.18	229.44	229.07
2223.131	229.17	229.36	229.05
2223.13	229.09	228.87	229.02
2223.125		228.84	228.98
2223.12	229.05	228.94	228.97
2223.11	228.69	228.68	228.97
2223.105	CULVERT	CULVERT	REMOVED
2223.1	228.44	228.41	228.94
2223.09	228.60	228.56	228.50
2223.08	227.91	227.88	228.05
2223.075	CULVERT	CULVERT	CULVERT
2223.07	227.73	227.71	227.71
2223.06	227.63	227.61	227.61
2223.05	226.71	226.69	226.69
2223.04	226.27	226.24	226.24
2223.03	226.00	225.99	225.99
2223.025	CULVERT	CULVERT	CULVERT
2223.02	225.61	225.61	225.61

DISCUSSION

The regulatory water surface elevation for the pre-existing and the proposed condition is shown in **Table 3** below. The proposed channel re-alignment that only consists of site grading changes within the subject property restores and enhances the original (PEX) condition by significantly reducing the regulatory water surface elevation within this length of Robinson Creek

Table 3: Regulatory W.S.E. For Various Scenarios

River Station	Regulatory W.S.E. (m)		
	PEX	PR	Difference
2223.16	230.20	230.20	0.00
2223.15	229.60	229.36	-0.24
2223.14	229.23	229.19	-0.04
2223.134	229.20	229.01	-0.19
2223.133	229.19	229.07	-0.12
2223.132	229.18	229.07	-0.11
2223.131	229.17	228.05	-0.12
2223.13	229.09	228.02	-0.07
2223.12	229.05	228.97	-0.08
2223.11	228.69	228.97	0.28
2223.105	CULVERT	CULVERT REMOVED	-
2223.1	228.44	228.94	0.50
2223.09	228.60	228.50	-0.10
2223.08	227.91	228.05	0.14
2223.075	CULVERT	CULVERT	-
2223.07	227.73	227.71	-0.02
2223.06	227.63	227.61	-0.02
2223.05	226.71	226.69	-0.02
2223.04	226.27	226.24	-0.03
2223.03	226.00	225.99	-0.01
2223.025	CULVERT	CULVERT	-
2223.02	225.61	225.61	0.00

Based on **Table 3** above, the water surface elevations increase under proposed conditions at Station 2223.14 and Station 2223.1, both outliers are clarified as follows:

Station 2223.11 – The 0.28m increase in WSE is caused by different topographic data between the two conditions. Under the pre-existing condition, the channel is significantly wider at this cross section while the updated topographic survey under the proposed condition shows that this section and immediately upstream is steep and narrow. Therefore, the WSE in the pre-existing condition did not reflect actual ground conditions and does not provide an applicable comparison with the proposed model. Despite the 0.28m increase in WSE, the regulatory flood line is contained within the roadside ditch under the proposed condition as show in Drawing CP.

Station 2223.1 & 2223.08 – The increase in WSE is the result of the removal of the culvert that was facilitating the existing driveway access. Under the pre-existing condition, the low WSE at this station is caused by the

culvert changing the flow regime from subcritical to super critical as the water passes the driveway access. The WSE at the following station is higher which demonstrates that the flows transition from supercritical back to subcritical flows. Under the proposed conditions, with the culvert removed, the WSE remains constant or is lowers than the subsequent stations which illustrate that there the flow is not constricted along the creek. Therefore, an increase is negligible given an the WSE reduction between 0.01m to 0.24m across the subject area of study including the stations immediately upstream and downstream.

In addition, the increase in WSE is also caused by different topographic data between the two conditions. Under the pre-existing conditions, the WSE is shown to spill onto Highway 50 at the approximate centerline elevation of 228.51m. In the proposed conditions, an updated topographic survey shows an approximate centerline elevation of 228.79m. The 0.28m centerline elevation difference prevents any overland spill to occur on Highway 50 which would result in an increase of WSE. Despite the increase in WSE, the regulatory flood line is contained within the roadside ditch under the proposed condition as show in Drawing CP.

With the outliers clarified, there is no actual impacts caused by the proposed channel re-alignment. The detailed HEC-RAS summary output can be found as attached. The existing and proposed HEC-RAS cross-sections can be found in the appendix.

3. CONCLUSIONS

In summary, the proposed channel re-alignment will reduce the floodplain on the subject property without having any negative impact to the upstream or downstream water surface elevation. The newly re-alignment channel will be designed using BMP and erosion mitigation measures to maintain the meander belt and prevent negative effects to infrastructure and property limits. Erosion and sediment control strategies are in place to perform the channel re-alignment and satisfy both TRCA and the local municipal criteria. Details for the mitigation measures and the erosion and sediment control strategies are provided in the design package prepared by Palmer.

I trust that this memorandum is complete and to the satisfaction of the TRCA. If you have any questions or concerns, please do not hesitate to contact the undersigned at 905-944-0162 ext. 230.

Respectfully Submitted,
MASONGSONG ASSOCIATES ENGINEERING LIMITED

David Hoover, P.Eng
Senior Project Engineer
H:\PROJECTS\17\849\Design\17-849_Memo TRCA - Rainbow Creek Channel Re-Alignment - 20201123.doc

Attachments:
Pre-Existing Condition Plan (PEX)
Existing Condition Plan (EX)
Proposed Condition Plan (PR)
Composite Plan (CP)
Digital Model Output
Digital Modelling Files

ESC STAGE 1 NOTES:

1. INSTALL DOUBLE ROW HEAVY DUTY SEDIMENT CONTROL FENCE WITH STRAW BALES IN BETWEEN AROUND SITE WORK AREA AND THE PROPERTY LINE.

(1.a) THE TORONTO REGION CONSERVATION AUTHORITY, THE DEPARTMENT OF FISHERIES AND OCEANS, THE CITY OF MARKHAM, AND OTHER INTERESTED PUBLIC AGENCIES, WILL BE NOTIFIED OF SCHEDULED SITE MEETINGS. THE PROJECT TEAM WILL MAKE ITSELF AVAILABLE TO MEET ON SITE WITH THESE AGENCIES TO REVIEW CONSTRUCTION PROGRESS THROUGHOUT THE PROJECT.

(1.b) DETAILED PHOTOGRAPHIC RECORDS WILL BE KEPT THROUGHOUT THE CONSTRUCTION PROCESS.

2. INSTALL CONSTRUCTION MUD-MAT AND ESTABLISH ACCESS DRIVEWAY

3. INSTALL COFFER DAM WITH PUMP OR FLUME AND TIED-INTO THE SEDIMENT CONTROL FENCE IN THE EXISTING DITCH CHANNEL UPSTREAM OF THE CONFLUENCE WITH EXISTING RAINBOW CREEK TRIBUTARY

4. INSTALL COFFER DAM WITH PUMP OR FLUME AND TIED-INTO THE SEDIMENT CONTROL FENCE UPSTREAM OF THE PROPOSED CHANNEL RE-ALIGNMENT

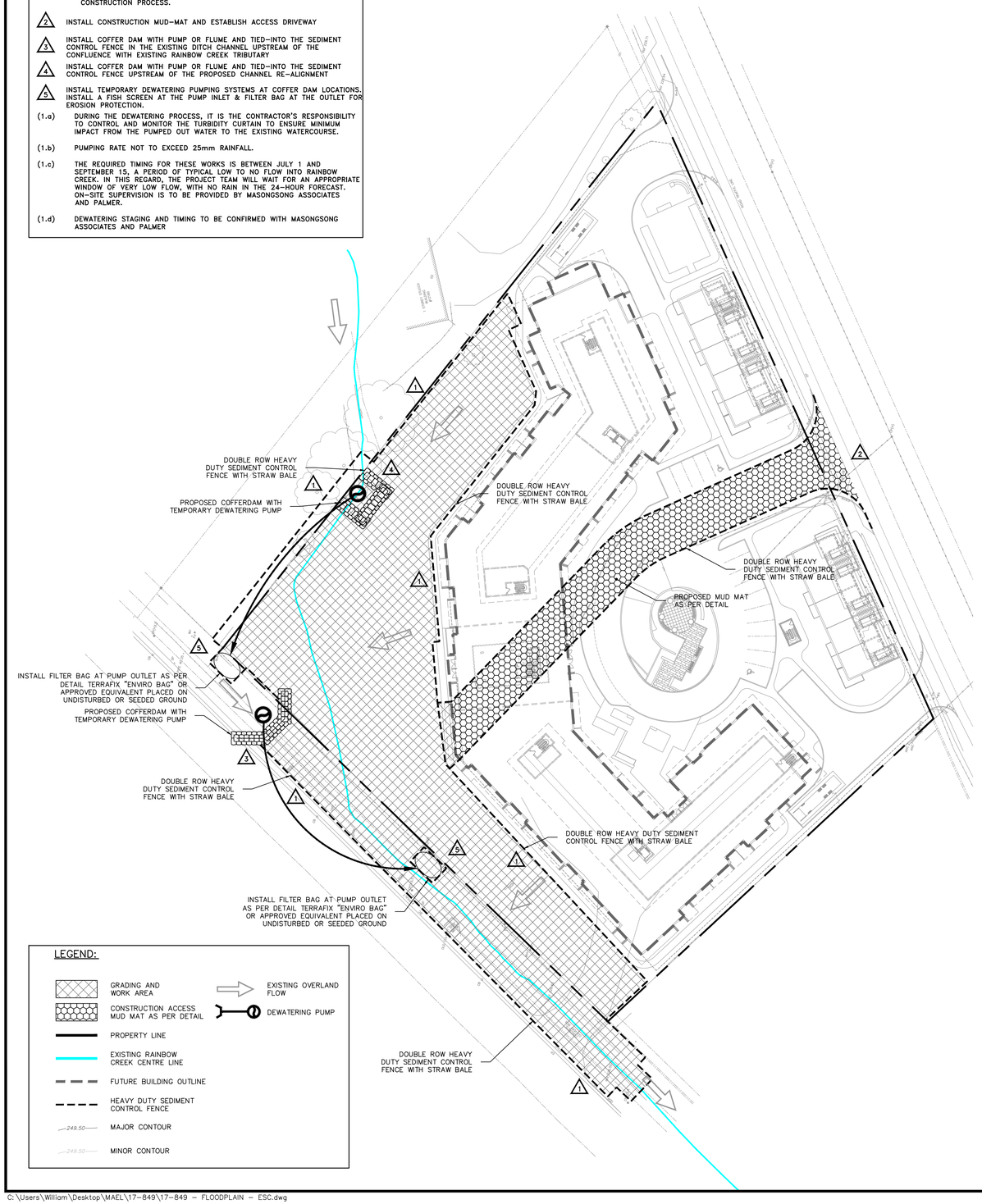
5. INSTALL TEMPORARY DEWATERING PUMPING SYSTEMS AT COFFER DAM LOCATIONS. INSTALL A FISH SCREEN AT THE PUMP INLET & FILTER BAG AT THE OUTLET FOR EROSION PROTECTION.

(1.a) DURING THE DEWATERING PROCESS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTROL AND MONITOR THE TURBIDITY CURTAIN TO ENSURE MINIMUM IMPACT FROM THE PUMPED OUT WATER TO THE EXISTING WATERCOURSE.

(1.b) PUMPING RATE NOT TO EXCEED 25mm RAINFALL.

(1.c) THE REQUIRED TIMING FOR THESE WORKS IS BETWEEN JULY 1 AND SEPTEMBER 15, A PERIOD OF TYPICAL LOW TO NO FLOW INTO RAINBOW CREEK. IN THIS REGARD, THE PROJECT TEAM WILL WAIT FOR AN APPROPRIATE WINDOW OF VERY LOW FLOW, WITH NO RAIN IN THE 24-HOUR FORECAST. ON-SITE SUPERVISION IS TO BE PROVIDED BY MASONGSONG ASSOCIATES AND PALMER.

(1.d) DEWATERING STAGING AND TIMING TO BE CONFIRMED WITH MASONGSONG ASSOCIATES AND PALMER



LEGEND:

- GRADING AND WORK AREA
- CONSTRUCTION ACCESS MUD MAT AS PER DETAIL
- PROPERTY LINE
- EXISTING RAINBOW CREEK CENTRE LINE
- FUTURE BUILDING OUTLINE
- HEAVY DUTY SEDIMENT CONTROL FENCE
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR
- EXISTING OVERLAND FLOW
- DEWATERING PUMP

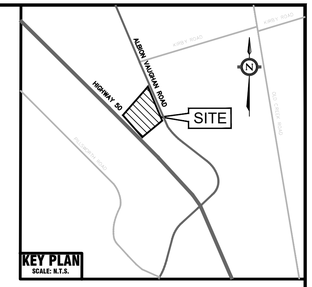
EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

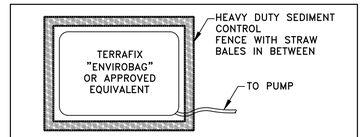
PRIOR TO CONSTRUCTION OR STRIPPING TOPSOIL, THE CONTRACTOR SHALL MAKE PROVISIONS TO PROVIDE "GOOD HOUSINGKEEPING" MEASURES TO MITIGATE THE TRANSPORTATION OF SILT FROM THE SITE. THESE MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

1. PROVIDE SILT FENCES AROUND THE PERIMETER OF THE SITE TO REDUCE SILT FROM LEAVING THE SITE.
2. PROVIDE SILT TRAPS AT CATCHBASINS UPON THEIR INSTALLATION TO REDUCE THE AMOUNT OF SILT ENTERING THE SEWER SYSTEM DURING CONSTRUCTION.
3. USE OF A "MUD MAT" OR TEMPORARY TRACKING CONTROL AT THE ENTRANCE OF THE SITE TO MINIMIZE MUD TRACKING FROM THE SITE. (OWNER SHALL CLEAN ADJACENT ROADS ON A REGULAR BASIS).
4. CONSTRUCT BULKHEADS IN THE DOWNSTREAM MANHOLE TO REDUCE SILT ENTERING THE STORM SEWER.
5. STABILIZE SITE AS SOON AS POSSIBLE BY RE-ESTABLISHING VEGETATIVE GROUND COVER AND AVOIDING BARE SOIL AREAS. ALL AREAS (INCLUDING STOCKPILES) WHILE SITE IMPROVEMENTS ARE NOT EXPECTED TO OCCUR IMMEDIATELY SHALL BE REVEGETATED WITH 100mm OF TOPSOIL AND HYDROSEEDED IN ACCORDANCE WITH O.P.S.D. 570 & 572
6. ALL DRAINAGE WORKS REQUIRE EROSION/SEDIMENT CONTROL SATISFACTORY TO THE APPROVAL AGENCIES DURING CONSTRUCTION PERIOD AND MUST BE MONITORED AND MAINTAINED ON A REGULAR BASIS TO ENSURE MAXIMUM BENEFIT AND MINIMUM SILT MIGRATION OFF-SITE.
7. ALL CONSTRUCTION VEHICLES TO ENTER AND LEAVE THE SITE AT APPROVED LOCATION ONLY AS INDICATED ON THIS PLAN.
8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED AND SHALL BE INSTALLED AS DETERMINED BY THE CONSULTANT.
9. THE CONSTRUCTION PROCESS WILL BE REVIEWED AND APPROVED BY DEVELOPMENT ENGINEERING & OPERATIONS CENTRE AS PART OF THE ROAD OCCUPANCY PERMIT.

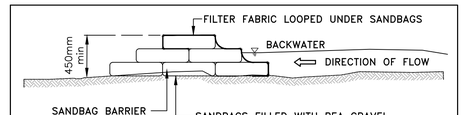
STANDARD ENVIRONMENTAL NOTES

1. SEDIMENT AND EROSION CONTROL MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER.
2. 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 PREVENT SEDIMENT RELEASES TO THE NATURAL ENVIRONMENT. THE TRCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED SHOULD THE EROSION AND SEDIMENT CONTROL PLANS CHANGE FRO THE APPROVED PLANS.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE INSPECTED WEEKLY, AFTER EVERY RAINFALL AND SIGNIFICANT SNOW MELT EVENT, AND DAILY DURING PERIODS OF EXTENDED RAIN OR SNOWMELT.
4. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
5. 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 30 METRES FROM THE WATER.
6. ALL DISTURBED AREAS WILL BE STABILIZED AND RESTORED WITH NATIVE/NON-INVASIVE SPECIFIES UPON COMPLETION OF THE WORK.
7. A REHABILITATION PLAN IS TO BE IMPLEMENTED TO RESTORE THE CONSTRUCTION SITE BACK TO ITS PRE-CONSTRUCTION STATE, OR BETTER.
8. ALL EXISTING GRADES WITHIN THE REGIONAL STORM FLOODPLAIN WILL BE MAINTAINED. ALL EXCESS FILL WILL BE REMOVED FROM THE REGIONAL STORM FLOODPLAIN.
9. THE 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 FLOODPLAIN AND SLOPE THAT WOULD HAVE THE POTENTIAL TO CAUSE A SPILL/POLLUTION (I.E., FUEL TANKS, PORTA-POTTIES, MACHINERY) OR AN OBSTRUCTION TO FLOW (I.E. MACHINERY, EQUIPMENT). PRIOR TO FORECASTED PRECIPITATION EVENT, ALL esc MEASURES TO BE INSPECTED AND CONFIRMED TO BE IN GOOD CONDITION.
10. 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 WORK. SHOULD CONCERNS ARISE ON SITE THE ENVIRONMENTAL MONITOR WILL CONTRACT THE TRCA ENFORCEMENT OFFICER AS WELL AS THE PROPONENT.
11. ALL DEWATERING/UNWATERING SHALL BE TREATED AND RELEASED TO THE ENVIRONMENT AT LEAST 30 METRES FROM A WATER COURSE OR WETLAND AND 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.





FILTER BAG PUMP OUTLET DETAIL
N.T.S.



COFFER DAM DETAIL
N.T.S.

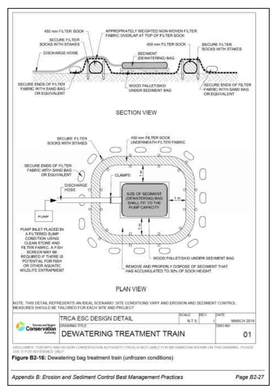


Figure B2-16: Dewatering bag treatment train (unfrozen conditions)

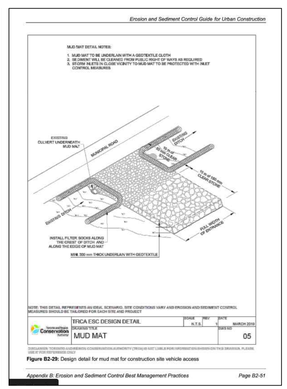
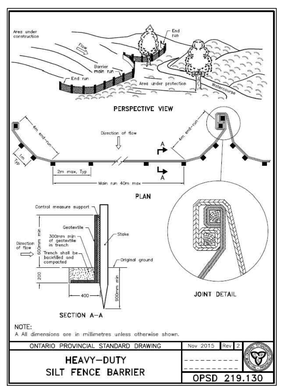
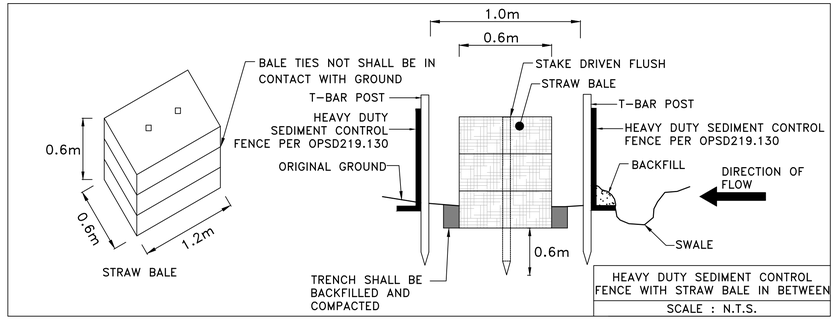


Figure B2-20: Design detail for mud mat for construction site vehicle access





HEAVY DUTY SEDIMENT CONTROL FENCE WITH STRAW BALE IN BETWEEN
SCALE : N.T.S.

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. 042010231, 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	D.H.
1	01/14/21	ISSUED TO TRCA	D.H.

STAMP:

STAMP:

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.msaeng.ca

CONSERVATION AUTHORITY:
TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:
STAGE 1: EROSION AND SEDIMENT CONTROL

DESIGN	W.A.	CHECKED	D.H.	CONTRACT No. 17-849
SCALE	1:500			PLAN No. ESC-1
DATE	JANUARY 2021			

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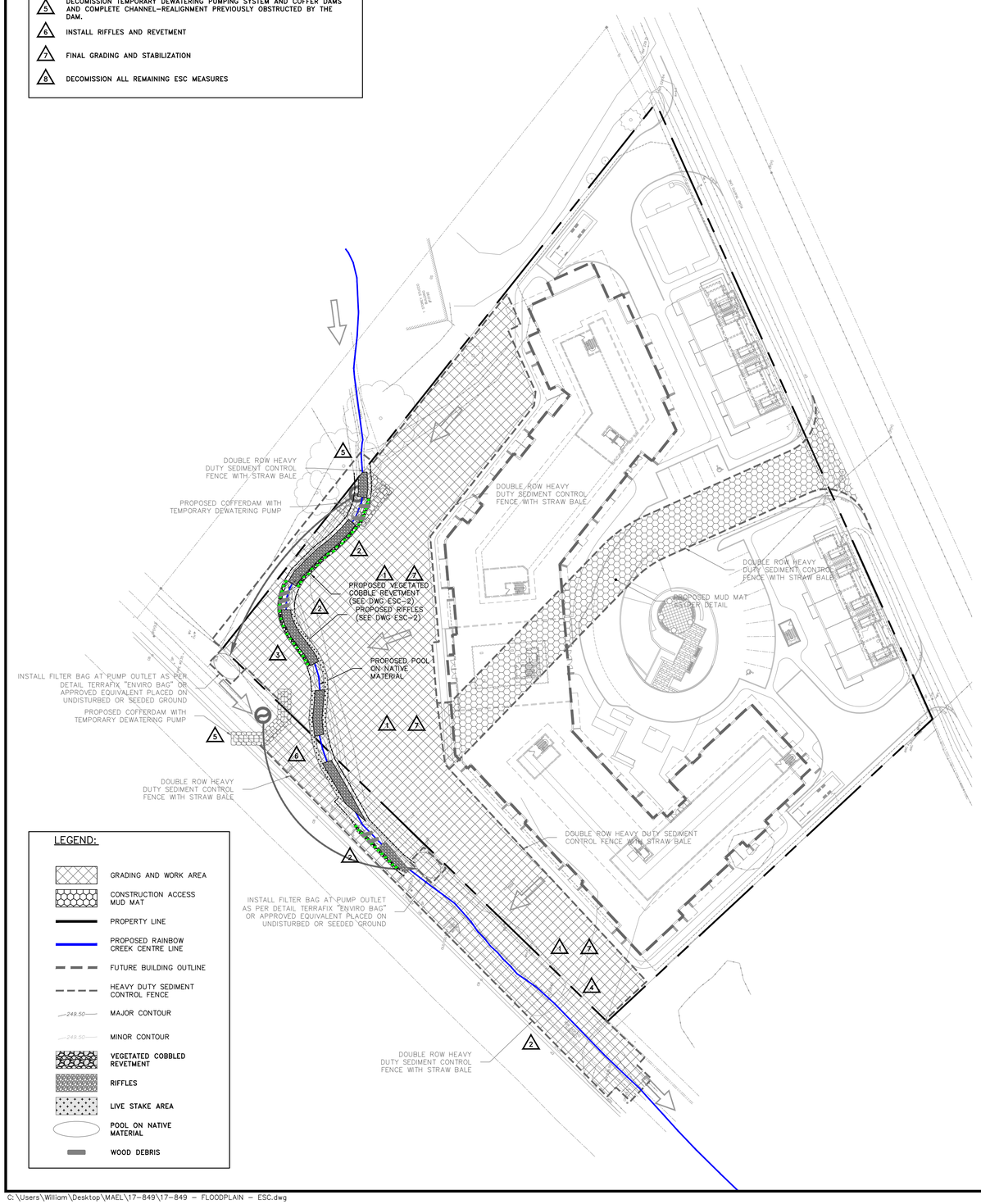
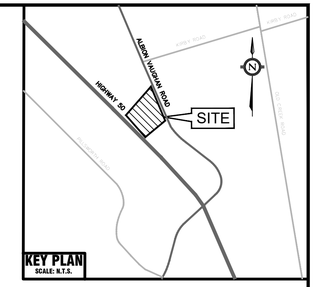
ESC STAGE 2 NOTES:

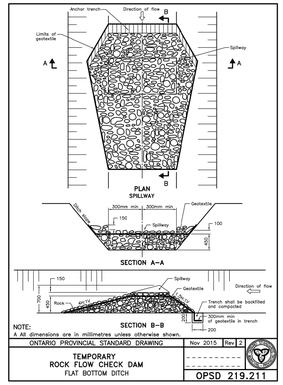
1. CONDUCT EARTHWORKS OPERATIONS
2. RE-ALIGN CHANNEL AND STABILIZE BANKS WITH TERRAFIX
3. INSTALL ROCK CHECK DAMS AND EXCAVATE POOLS IN LOCATIONS AS SHOWN
4. REMOVE EXISTING ACCESS AND CULVERT
5. DECOMISSION TEMPORARY DEWATERING PUMPING SYSTEM AND COFFER DAMS AND COMPLETE CHANNEL-REALIGNMENT PREVIOUSLY OBSTRUCTED BY THE DAM.
6. INSTALL RIFFLES AND REVETMENT
7. FINAL GRADING AND STABILIZATION
8. DECOMISSION ALL REMAINING ESC MEASURES

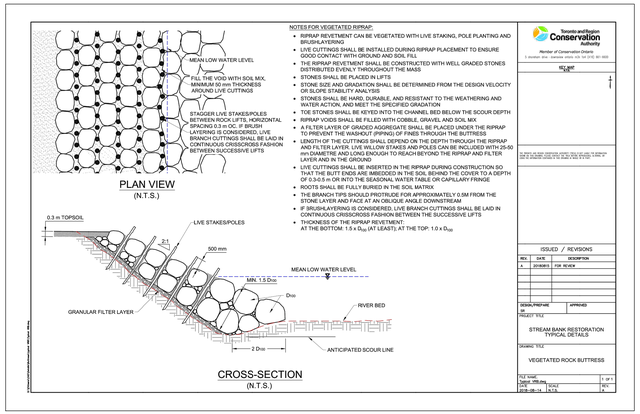


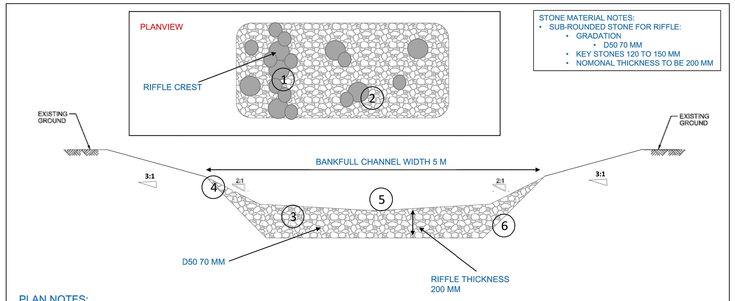
LEGEND:

- GRADING AND WORK AREA
- CONSTRUCTION ACCESS MUD MAT
- PROPERTY LINE
- PROPOSED RAINBOW CREEK CENTRE LINE
- FUTURE BUILDING OUTLINE
- HEAVY DUTY SEDIMENT CONTROL FENCE
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR
- VEGETATED COBBLED REVETMENT
- RIFFLES
- LIVE STAKE AREA
- POOL ON NATIVE MATERIAL
- WOOD DEBRIS



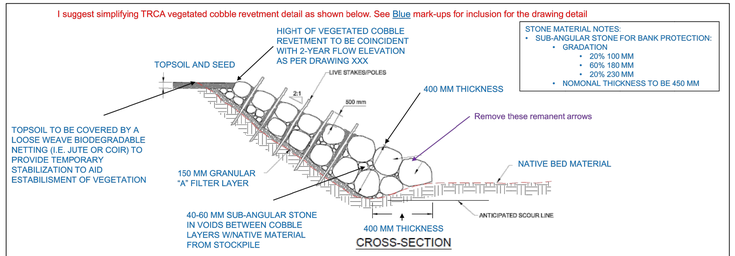






PLAN NOTES:
1. RIFFLE CREST FORMED WITH INTERLOCKED, 120-150 MM DIAMETER KEYSTONES FOR LONG-TERM STABILITY
2. UPSTREAM AND DOWNSTREAM FACES OF RIFFLES TO BE CONSTRUCTED WITH 40 TO 120 MM DIAMETER STONE WITH A MEDIAN DIAMETER OF 7 MM. ISOLATED 120-150 MM KEYSTONES TO BE EMBEDDED IN DOWNSTREAM FACE FOR FLOW/HABITAT DIVERSITY
3. KEYSTONES TO BE PARTLY EMBEDDED, AS NECESSARY, TO ACHIEVE DESIGNED RIFFLE CREST HEIGHT
4. RIVERSTONE TO EXTEND TO TOP OF BANK AT RIFFLES TO INHIBIT OUTFLANKING
5. CENTRE OF RIFFLE TO BE FORMED WITH SLIGHT (~5 CM) V-CREST TO MAXIMIZE LOW-FLOW DEPTH AND CONCENTRATE FLOW AWAY FROM BANKS
6. RIFFLE STONE IS TO BE THICKEST AT THE BASE OF THE BANK ALONG THE EXCAVATED CHANNEL BOTTOM AND STONE SHOULD BE TAPPED UP THE BANK

I suggest simplifying TRCA vegetated cobble revetment detail as shown below. See Blue mark-ups for inclusion for the drawing detail



VEGETATED COBBLE REVETMENT NOTES:
- SUB-ANGULAR REVETMENT TO BE VEGETATED WITH LIVE STANKING AND POLE PLANTING
- LIVE CUTTINGS SHALL BE INSTALLEDDURING COBBLE PLACEMENT TO ENSURE GOOD CONTACT WITH GROUND AND SOIL
- USE PLANTINGS BAR TO PRE-INSTALL HOLE FOR LIVE STAKES INSERTED THROUGH/VOIDS BETWEEN COBBLES
- THE COBBLE REVETMENT SHALL BE CONSTRUCTED WITH WELL GRADED STONES DISTRIBUTED EVENLY THROUGHOUT THE MASS
- STONES SHALL BE PLACED IN LIFTS
- STONES SHALL BE HARD, DURABLE, AND RESISTENT TO THE WATHERING AND WATER ACTION, AND MEET SPECIFIED GRADATION
- TOE STONES TO BE FOUNDED BELOW THE CHANNEL BED TO MITIGATATE AGAINST ANTICIPATED SCOUR
- COBBLE REVETMENT VOIDS SHALL BE FILLED WITH GRAVEL AND SOIL MIX (FROM STOCKPILE)
- A FILTER LAYER OF GRANULAR 'A' SHALL BE PLACED UNDER THE COBBLE REVETMENT TO PREVENT THE WASHOUT (PIPING) OF FINES THROUGH THE REVETMENT
- LENGTH OF THE CUTTINGS SHALL DEPEND ON THE DEPTH THROUGH THE RIPRAP AND FILTER LAYER. LIVE WILLOW STAKES AND POLES CAN BE INCLUDED WITH 25-50 mm DIAMETRE AND LONG ENOUGH TO REACH BEYOND THE RIPRAP AND FILTER
- LAYER AND IN THE GROUND
- LIVE CUTTINGS SHALL BE INSERTED IN THE RIPRAP DURING CONSTRUCTION SO THAT THE BUTT ENDS ARE IMBEDDED IN THE SOIL BEHIND THE COVER TO A DEPTH OF 0.3-0.5 m
- ROOTS SHALL BE FULLY BURIED IN THE SOIL MATRIX
- THE BRANCH TIPS SHOULD PROTRUDE FOR APPROXIMATELY 0.5M FROM THE STONE LAYER AND FACE AT AN OBLIQUE ANGLE DOWNSTREAM
- PLACE NATIVE MATERIAL OVERTOP AND WITHIN VOIDSS AND AROUND LIBVE STAKES
- SPREAD SEED MIX OVER FINISHED SLOPE AND PLACE EROSION CONTROL BLANKET (ECB) OVERTOP FINISHED SLOPE AND PINED IN PLACE (NO METAL OR PLACTIC). ECB TO BE 100% COCONUT FIBRE COIR MAT, FULLY BIODEGRADABLE)

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

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No.	DATE	REVISIONS		
1	01/14/21	ISSUED TO TRCA		D.H.

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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.msaeng.ca

CONSERVATION AUTHORITY:
TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

STAGE 2: EARTHWORKS AND CHANNEL RE-ALIGNMENT

DESIGN	W.A.	CHECKED	D.H.	CONTRACT No. 17-849
SCALE	1:500			PLAN No. ESC-2
DATE	JANUARY 2021			

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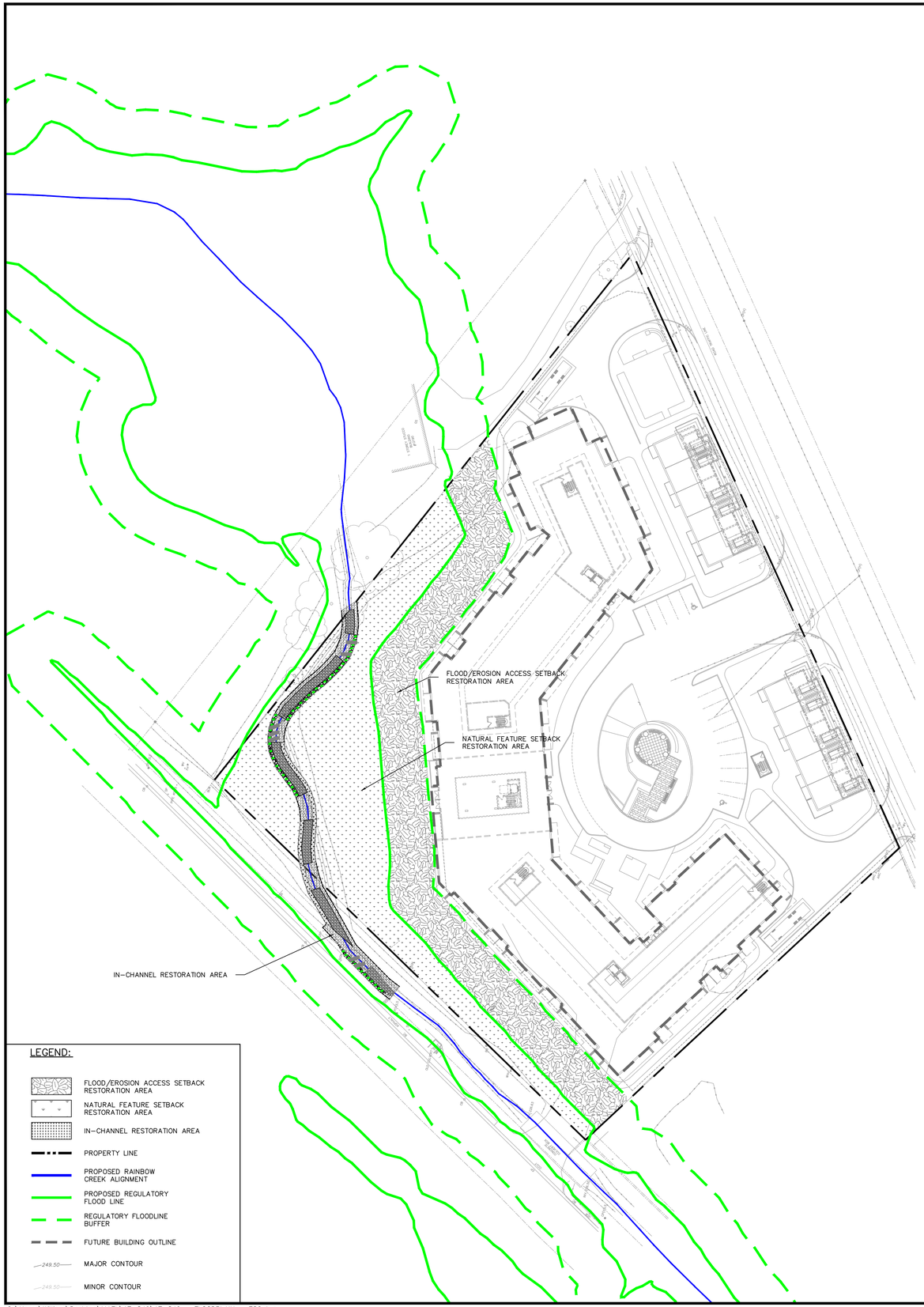


GENERAL ESC NOTES:

1. EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED OR REPLACED WITHIN 48 HOURS OF INSPECTION OR BOTH.
2. ALL DISTURBED AREAS WILL BE MINIMIZED TO THE EXTENT POSSIBLE, AND TEMPORARILY OR PERMANENTLY STABILIZED OR RESTORED AS THE WORK PROGRESSES.
3. 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 AREA. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS AND A TORONTO REGION CONSERVATION AUTHORITY ENFORCEMENT OFFICE SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES TO BE KEPT ON SITE AND USED AS NECESSARY.
4. 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 AND REFUELING

TRCA STANDARD NOTES:

1. ALL IN-WATER AND NEAR WATER WORKS WILL BE CONDUCTED IN THE DRY WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
2. 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.
3. 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.
4. 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.
5. 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 INTO 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.
6. 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.
7. IN ORDER TO COMPLY WITH THE MIGRATORY BIRDS CONVENTION ACT AND ENDANGERED SPECIES ACT, ALL VEGETATION REMOVAL (INCLUDING TREES) MUST BE COMPLETED BETWEEN JULY 1 TO SEPTEMBER 15.
8. TO PROTECT LOCAL FISH POPULATIONS DURING THEIR SPAWNING, NURSERY AND MIGRATORY PERIODS, IN- WATER/NEAR-WATER ACTIVITIES, MAY ONLY OCCUR DURING THE COLD WATER CONSTRUCTION TIMING WINDOW.
9. AN ENVIRONMENTAL MONITOR WILL BE ON SITE, AND PROVIDE ADVICE, TO ENSURE THAT ACTIVITIES THAT COULD HAVE A NEGATIVE IMPACT TO THE NATURAL ENVIRONMENT ARE EFFECTIVELY MITIGATED AS CONSTRUCTION PROCEEDS. THE ENVIRONMENTAL MONITOR SHALL NOTIFY THE TRCA ENFORCEMENT OFFICER AND PROJECT MANAGER IF AN ISSUE ARISES.

OTHER EROSION AND SEDIMENT CONTROL NOTES:

1. PLEASE REFER TO ESC GUIDELINE FOR URBAN CONSTRUCTION (DECEMBER 2006) FOR THE DESIGN AND DESIGN ALTERATION OF ESC MEASURES.
2. ANY SEDIMENT SPILL FROM THE SITE SHOULD BE REPORTED TO MINISTRY OF ENVIRONMENT (SPILL ACTION CENTER) AT 1-800-268-6060.
3. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS TO ENSURE THAT THE WORKS WILL BE CONDUCTED IN FAVOURABLE WEATHER. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL CONSTRUCTION EQUIPMENT AND MATERIALS THAT WOULD HAVE POTENTIAL TO CAUSE A SPILL OR OBSTRUCTION (I.E. FUEL TANKS, PORTABLE TOILETS, MACHINERY, ETC.), FROM THE 100 YEAR FLOODPLAIN IN THE CASE OF A LARGE STORM EVENT.
4. AN AFTER-HOURS CONTACT NUMBER IS TO BE VISIBLY POSTED ON-SITE FOR EMERGENCIES. ALL THE PLANS SHOULD HAVE NAME AND CONTACT INFO OF THE PERSON RESPONSIBLE FOR ESC MEASURES.
5. ALL NEAR OR IN-WATER WORKS SHALL BE COMPLETED WITHIN THE TIMING WINDOW SPECIFIED BY THE DFO, BETWEEN JULY 1 TO SEPTEMBER 15, UNLESS THE APPROPRIATE APPROVAL AGENCIES HAVE PROVIDED PRIOR WRITTEN APPROVAL TO EXTENSION OF THE TIMING WINDOW. THE CONTRACTOR SHALL PLAN AND IMPLEMENT THEIR ACTIVITIES TO ENSURE ADHERENCE TO THE TIMING WINDOW RESTRICTIONS.
6. TEMPORARY SEDIMENT CONTROL FENCE TO BE INSTALLED ON THE DOWN SLOPE SIDE OF PITS AND IN TRENCHING LOCATIONS WHERE GRADES SLOPE TOWARD THE NATURAL SYSTEMS OR CATCH BASINS TO ENSURE

GENERAL NOTES

- THE FOLLOWING RESTORATION RECOMMENDATIONS FOLLOW THE PRACTICAL OBJECTIVES FOR THE REVETMENT AND THE RESTORATION METHODS IN THE TRCA GUIDELINE FOR DETERMINING ECOSYSTEM COMPENSATION (TORONTO AND REGION CONSERVATION AUTHORITY, 2018).
- RESTORATION EFFORTS WILL AIM TO RESTORE THE REALIGNED ROBINSON CREEK AND THE REDESIGNED FLOODPLAIN.
- RESTORATION PLANTINGS WILL BE IMPLEMENTED FOLLOWING THE COMPLETION OF THE WATERCOURSE REALIGNMENT.
- THE SPECIES TO BE PLANTED AS PART OF THE RESTORATION EFFORTS ARE NATIVE TO THE REGION AND SUITABLE TO THE SITE CONDITIONS.
- ALL TREES AND WOODY DEBRIS FROM REMOVED DUE TO SITE DISTURBANCE SHOULD BE KEPT ON-SITE AND DISTRIBUTED THROUGHOUT THE SITE TO PROVIDE WILDLIFE HABITAT OPPORTUNITIES, AWAY FROM THE ACTIVE FLOW CHANNEL, AFTER TO COMPLETION OF RESTORATION PLANTINGS.
- IF OF SMALL ENOUGH DIAMETER, TREE MATERIAL REMOVED DURING SITE CLEARING COULD BE USED AS EMBEDDED WOODY DEBRIS TO BE INCORPORATED INTO THE CHANNEL REALIGNMENT DESIGN.

SOIL AMENDMENTS

WITHIN THE REDESIGNED FLOODPLAIN, INCLUDING THE NATURAL FEATURE SETBACK AND FLOOD/EROSION HAZARD ACCESS SETBACK, SOILS ARE TO BE IMPROVED AFTER CONSTRUCTION WORKS BY:

- DECOMPACTION OF SUBSOIL TO A DEPTH OF 25 CM, BY TILLING OR SCARIFYING THE SOIL IN A PERPENDICULAR DIRECTION TO THE REALIGNED WATERCOURSE.
- INCORPORATION OF 7 CM OF COMPOST INTO THE SOILS DURING TILLING.
- APPLICATION OF 20 - 30 CM OF UNCOMPACTED IMPORTED TOPSOIL WITH 15% ORGANIC MATTER BY DRY WEIGHT.

IN-CHANNEL RESTORATION

- LIVE STAKES (BRANCH CUTTINGS FROM LIVE SHRUBS) HAVE BEEN RECOMMENDED TO BE PLACED IN THE BENDS AND VEGETATED ROCK REVETMENT PORTIONS OF THE ROBINSON CREEK RE-ALIGNMENT.
- LIVE STAKES ARE TO BE PLANTED IN GROUPS OF 10/SPECIES AT 0.3 M ON-CENTRE SPACING.
- LIVE STAKES ARE RECOMMENDED TO BE 25 - 75 MM DIAMETER STAKES, TO BE HAND PLACED BETWEEN THE STONE REVETMENT/RIP-RAP.
- STAKES SHOULD BE BURIED >0.5 M BELOW THE RIP-RAP, ENSURING PLACEMENT WITHIN THE SOIL MATRIX AND SEASONAL WATER TABLE.
- CERTIFIED SOILS SHOULD BE USED TO FILL THE REMAINING SPACE IN EACH PLANTING HOLE.

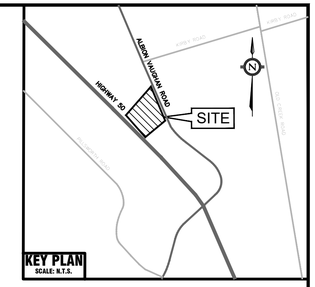
THE TIMING WINDOW FOR CONDUCTING ANY IN-WATER OR NEAR-WATER WORKS IS JULY 1 TO SEPTEMBER 15.

LIVE STAKE RESTORATION SPECIES

Common Name	Scientific Name	Density	Quantity
Alternate-leaved Dogwood	*Cornus alternifolia*	1 x 1 m	**50**
Red-osier Dogwood	*Cornus sericea*	1 x 1 m	**40**
Common Elderberry	*Sambucus canadensis*	1 x 1 m	**15**
Sandbar Willow	*Salix exigua*	1 x 1 m	**60**
Bebb's Willow	*Salix bebbiana*	1 x 1 m	**60**

NATURAL FEATURE SETBACK RESTORATION

- THE NATURAL FEATURE SETBACK IS TO BE SEEDED AND PLANTED TO BUFFER THE WATERCOURSE/NATURAL FEATURES FROM THE DEVELOPMENT.
- THE NATURAL FEATURE SETBACK IS TO BE SEEDED AT A RATE OF 25 KGS/HA WITH AN EARLY SUCCESSION WET MEADOWSEED MIX THAT ALIGNS WITH THE TRCA SEED MIX GUIDELINES (TORONTO AND REGION CONSERVATION AUTHORITY, 2004; CREDIT VALLEY CONSERVATION AUTHORITY, 2014).
- THE EARLY SUCCESSION WET MEADOW MIX (CVC 6) INCLUDES:
- BEBB'S SEDGE (CAREX BEBBII) 5%
- PURPLE STEMMED ASTER (ASTER PUNICEUS) 1%
- FOWL BLUEGRASS (POA PALUSTRIS) 25%
- FOX SEDGE (CAREX VULPINOIDEA) 25%
- GREAT BLUE LOBELIA (LOBELIA SIPHILITICA) 1%
- NEW ENGLAND ASTER (ASTER NOVAE-ANGLIAE) 1%
- PATH RUSH (JUNCUS TENUIS) 3%
- CANADA GOLDENROD (SOLIDAGO CANADENSIS) 2%
- SOFT RUSH (JUNCUS EFFUSUS) 5%
- STALK-GRAIN SEDGE (CAREX STIPATA) 4%
- TALL MANNA GRASS (GLYCERIA GRANDIS) 2%
- VIRGINIA WILD RYE (ELYMUS VIRGINICUS) 25%
- WILD BERGAMOT (MONARDA FISTULOSA) 1%
- TO ASSIST IN ESTABLISHMENT AND PROMOTE BIOMASS, THE PLANTING AREA SHOULD ALSO BE SEEDED WITH A NURSE CROP OF COMMON OATS (AVENA SATIVA) OR BUCKWHEAT (FAGOPYRUM ESCULENTU) AT A RATE OF 25 KGS/HA.
- SUBSEQUENTLY, THE NATURAL FEATURE SETBACK IS TO BE PLANTED WITH TREES AND SHRUBS ARE IN GROUPS OF APPROXIMATELY 10/SPECIES, AT A DENSITY OF 2.45 M X 2.45 M (6 M^2), AND SHRUBS AT A 1 M X 1 M (1 M^2) SPACING.
- REPLACEMENT TREE AND SPECIES ARE RECOMMENDED BE NATIVE TO TRCA'S WATERSHED, AND TARGETED TO PROVIDE NATURAL, SELF-SUSTAINING VEGETATION (TORONTO AND REGION CONSERVATION AUTHORITY, 2014).
- THE NATURAL FEATURE SETBACK AND FLOODPLAIN AREA TO BE RESTORED IS APPROXIMATELY 2,000 M^2 AND THE RECOMMENDED PLANTING SPACING WOULD ALLOW PLANTING OF ABOUT 330 TREES OR 2,000 SHRUBS, OR COMBINATION THEREOF.
- BASED ON THESE EXISTING SITE CONDITIONS, THE RECOMMENDED PLANTING PRESCRIPTION INCLUDES:



FLOOD/EROSION ACCESS SETBACK

- THE 10 M FLOOD/EROSION ACCESS SETBACK IS TO BE SEEDED AT A RATE OF 25 KGS/HA WITH A NATIVE GRASS SEED MIX THAT ALIGNS WITH THE TRCA SEED MIX GUIDELINES (TORONTO AND REGION CONSERVATION AUTHORITY, 2004). THE RECOMMENDED GRASS SEED MIX INCLUDES:
- CANADA WILD RYE (ELYMUS CANADENSIS) - 20%
- SWITCHGRASS (PANICUM VIRGATUM) - 20%
- FOWL BLUEGRASS (POA PALUSTRIS) - 20%
- BIG BLUESTEM (ANDROPOGON GERARDII) - 10%
- LITTLE BLUESTEM (ANDROPOGON SCOPARIUS) - 10%
- FOX SEDGE (CAREX VULPINOIDEA) - 10%
- SIMILAR TO THE NATURAL FEATURE SETBACK PLANTING AREA, THE 10 M FLOOD/EROSION ACCESS SETBACK SHOULD ALSO BE SEEDED WITH A NURSE CROP OF COMMON OATS OR BUCKWHEAT AT A RATE OF 25 KGS/HA.

TIMING

- PLANTING AND SEEDING SHOULD BE COMPLETED IN THE SPRING OR FALL. THE SPRING SEASON PLANTING WINDOW IS APRIL TO MID-MAY AND THE FALL SEASON WINDOW IS MID-SEPTEMBER TO LATE OCTOBER.
- THE ASSESSMENT OF PLANT STOCK SHOULD BE CONDUCTED UPON DELIVERY TO ENSURE THAT THE MATERIAL CONSISTS OF APPROPRIATE NATIVE SPECIES IN PROPER QUANTITIES.
- SEEDING SHOULD BE COMPLETED IMMEDIATELY AFTER THE PLANTING OF WOODY VEGETATION BUT NOT DURING DROUGHT-PRONE SUMMER MONTHS (TORONTO AND REGION CONSERVATION AUTHORITY, 2004).

TENDING FOR RESTORATION PLANTINGS

- RESTORATION PLANTINGS WILL REQUIRE REGULAR WATERING TO FACILITATE THE ESTABLISHMENT OF YOUNG TREES, WHICH ARE TYPICALLY HIGHLY SUSCEPTIBLE TO WATER STRESS.
- AT A MINIMUM, WATERING SHOULD OCCUR WHEN TREES SHOW SIGNS OF STRESS AND DURING PERIODS OF NATURAL DROUGHT CONDITIONS (E.G. IF THERE IS LESS THAN 25 MM OF RAIN OVER A 30-DAY PERIOD DURING LATE SPRING TO THE END OF SUMMER).

NATURAL FEATURE SETBACK TREE PLANTING PRESCRIPTION

Common Name	Scientific Name	Quantity	Size
Trees			
Silver Maple	*Acer saccharinum*	50	2 - 4 gallon pot
Paper Birch	*Betula papyrifera*	50	2 - 4 gallon pot
Hackberry	*Celtis occidentalis*	45	2 - 4 gallon pot
Tamarack	*Larix laricina*	40	100 – 150 cm (height)
Eastern Cottonwood	*Populus deltoides*	50	2 - 4 gallon pot
American Elm*	*Ulmus americana*	45	2 - 4 gallon pot
Shrubs			
Speckled Alder	*Alnus rugosa*	100	2 gallon pot
Red-osier Dogwood	*Cornus sericea*	100	2 gallon pot
Chokecherry	*Prunus virginiana*	50	2 gallon pot
Staghorn Sumac	*Rhus typhina*	50	2 gallon pot

* Note: Dutch Elm Disease resistant cultivars recommended.

UTILITY NOTES:

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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		
1	01/14/21	ISSUED TO TRCA	D.H.	

STAMP:

STAMP:

PROJECT:

MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES

7800 KENNEDY ROAD SUITE 201 MARKHAM, ONTARIO L3R 0C7 T. (905) 944-0182 www.masong.ca

CONSERVATION AUTHORITY:

TORONTO AND REGION Conservation for The Living City

5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

STAGE 3: RESTORATION

DESIGN	W.A.	CHECKED	D.H.	CONTRACT No. 17-849
SCALE	1:500			PLAN No. ESC-3
DATE	JANUARY 2021			

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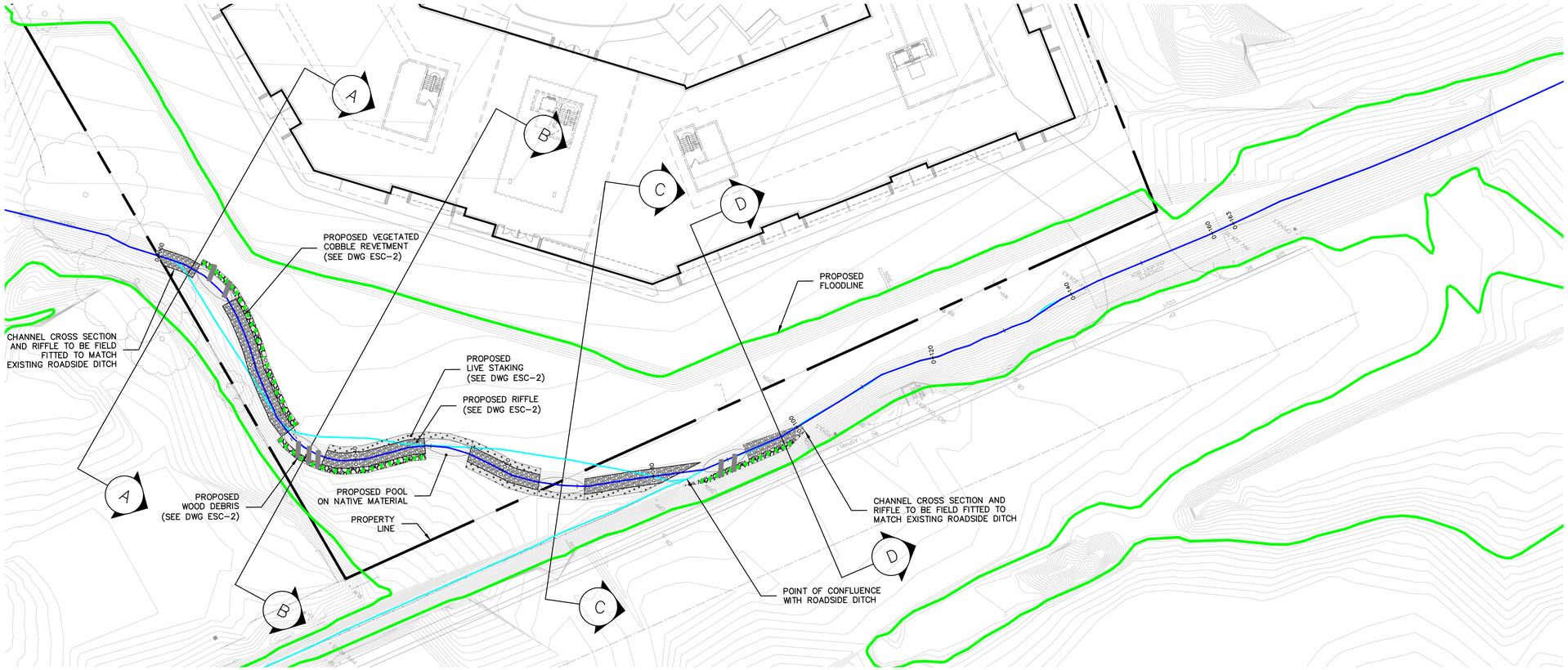
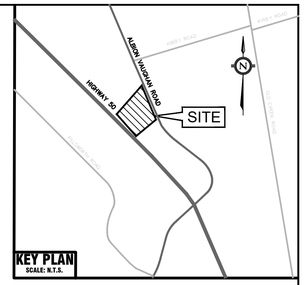
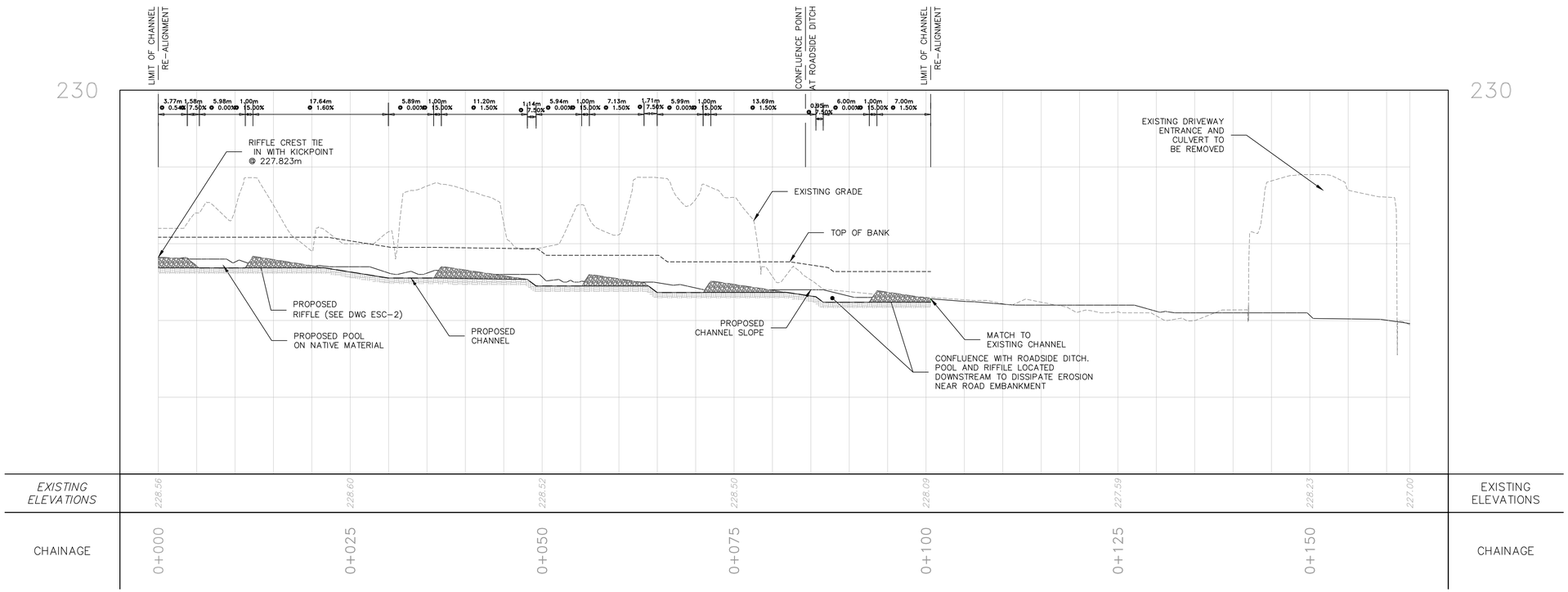




LEGEND:

- PROPERTY LINE
- BUILDING OUTLINE
- PROPOSED RAINBOW CREEK CENTRELINE
- EXISTING RAINBOW CREEK CENTRELINE
- PROPOSED REGULATORY FLOOD LINE
- CROSS SECTIONS
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR
- VEGETATED COBBLED REVETMENT
- RIFFLES
- LIVE STAKE AREA
- POOL ON NATIVE MATERIAL
- WOOD DEBRIS



UTILITY NOTES:

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1	01/14/21	ISSUED TO TRCA	D.H.

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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.masong.ca

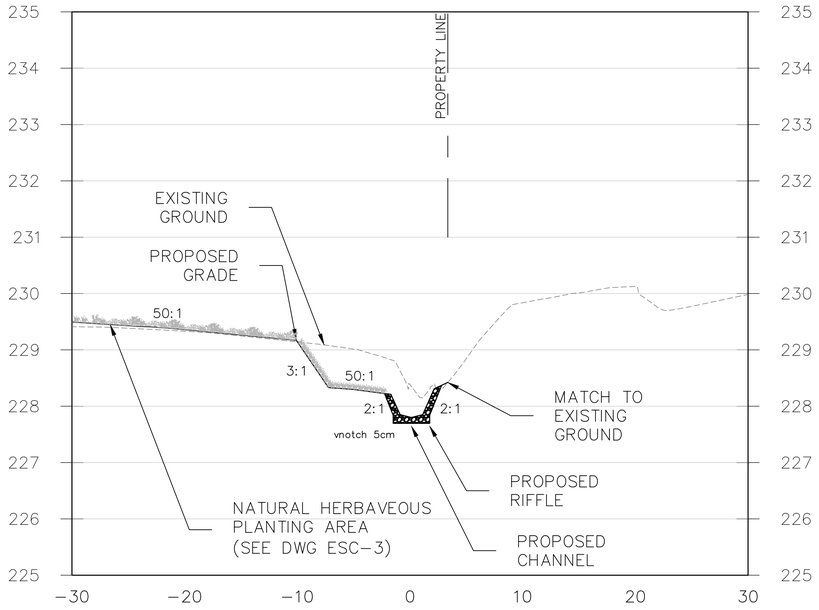
CONSERVATION AUTHORITY:

TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

PROPOSED CHANNEL PLAN AND PROFILE

DESIGN	W.A.	CHECKED	D.H.	CONTRACT No. 17-849
SCALE	H 1:300 V 1:30			PLAN No. P1
DATE	JANUARY 2021			



RIFFLE SECTION A–A

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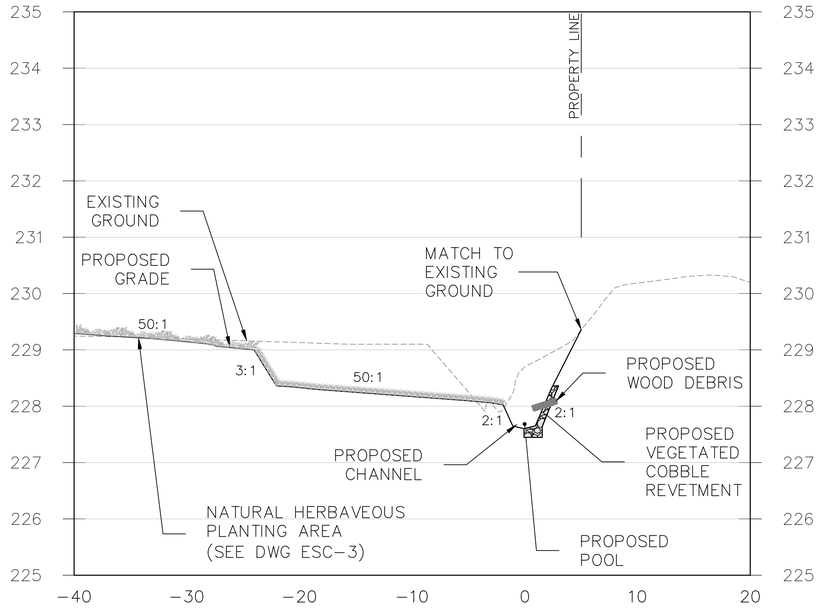

POOL SECTION B–B

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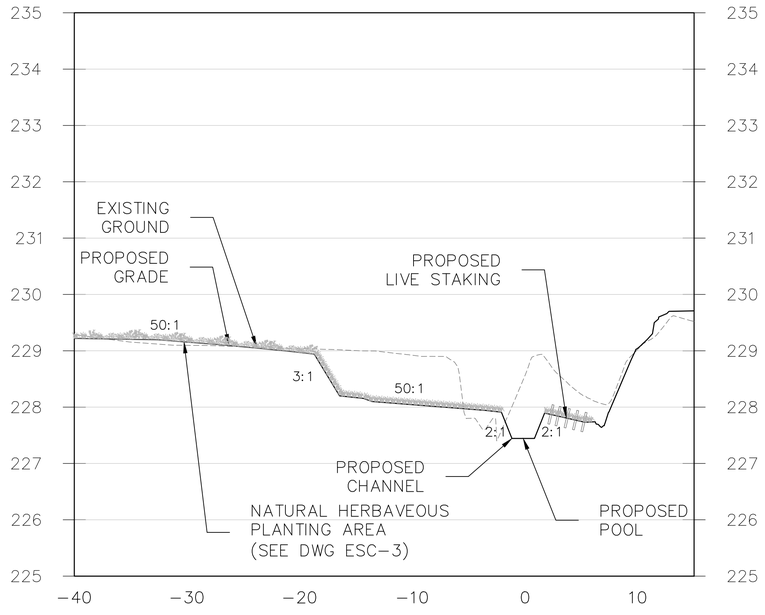
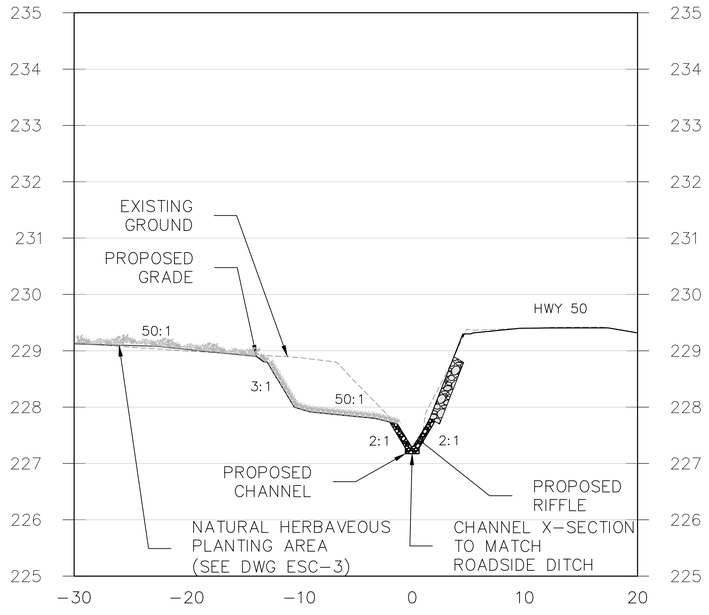


POOL SECTION C–C

H: 1:300 V 1:60



RIFFLE SECTION D–D

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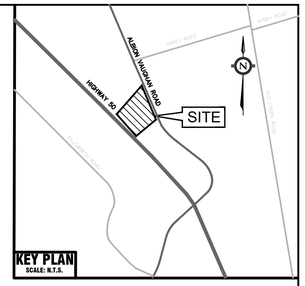

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ELEVATIONS ARE REFERRED TO THE CITY OF BRAMPTON BENCHMARK No. 040010221, BEING A BRASS CAP IN CONCRETE APPROX. 21 m SOUTH OF CENTRELINE OF NASHVILLE ROAD AND 11 m EAST OF CENTRELINE OF REGIONAL ROAD 50, IN FRONT OF GAS STATION/COFFEE SHOP. HAVING AN ELEVATION OF 220.967 m.

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1	01/14/21	ISSUED TO TRCA	D.H.

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PROJECT:

MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
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T (905) 944-0162
www.msaeng.ca

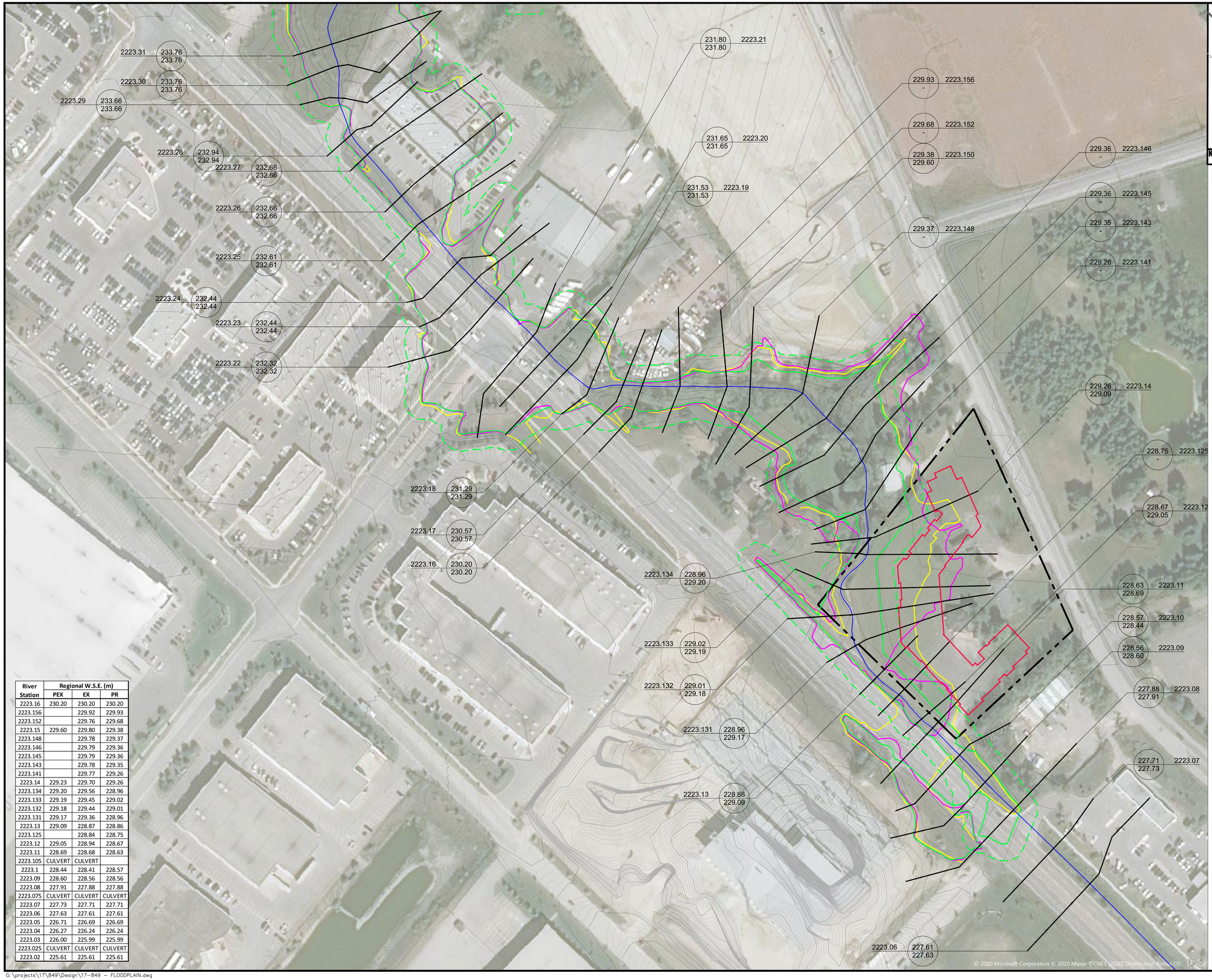
CONSERVATION AUTHORITY:

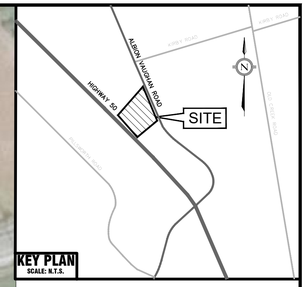
TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

PROPOSED CHANNEL CROSS-SECTIONS

DESIGN	W.A.	CHECKED	D.H.	CONTRACT No. 17-849
SCALE	H 1:500 V 1:100			PLAN No. XSEC
DATE	JANUARY 2021			





LEGEND:

- PROPERTY LINE
- BUILDING OUTLINE
- RAINBOW CREEK CENTRELINE
- REGULATORY FLOOD LINE (PEX)
- REGULATORY FLOOD LINE (EX)
- REGULATORY FLOOD LINE (PR)
- REGULATORY FLOOD LINE
- CROSS-SECTION LENGTH
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR

128.77 / 128.77 2223.111
- REGIONAL FLOOD ELEVATION (m)
- CROSS-SECTION STATION
- ORIGINAL FLOOD ELEVATION
- CROSS-SECTION LEADER LINE

River Station	Regional W.S.E. (m)		
	PEX	EX	PR
2223.16	230.20	230.20	230.20
2223.156		229.92	229.93
2223.152		229.76	229.68
2223.15	229.60	229.80	229.38
2223.148		229.78	229.37
2223.146		229.79	229.36
2223.145		229.79	229.36
2223.143		229.78	229.35
2223.141		229.77	229.26
2223.14	229.23	229.70	229.26
2223.134	229.20	229.56	228.96
2223.133	229.19	229.45	229.02
2223.132	229.18	229.44	229.01
2223.131	229.17	229.36	228.96
2223.13	229.09	228.87	228.86
2223.125		228.84	228.75
2223.12	229.05	228.94	228.67
2223.11	228.69	228.68	228.63
2223.105	CULVERT	CULVERT	
2223.1	228.44	228.41	228.57
2223.09	228.60	228.56	228.56
2223.08	227.91	227.88	227.88
2223.075	CULVERT	CULVERT	CULVERT
2223.07	227.73	227.71	227.71
2223.06	227.63	227.61	227.61
2223.05	226.71	226.69	226.69
2223.04	226.27	226.24	226.24
2223.03	226.00	225.99	225.99
2223.025	CULVERT	CULVERT	CULVERT
2223.02	225.61	225.61	225.61

UTILITY NOTES:

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BENCHMARK

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No.	DATE	REVISIONS		
1	11/20	ISSUED FOR TRCA	I.S.	

STAMP:

STAMP:

PROJECT:

MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD SUITE 201 MARKHAM, ONTARIO L3R 0C2
T. (905) 944-0162
www.masong.ca

CONSERVATION AUTHORITY:

TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

COMPOSITE PLAN

DESIGN	I.S	CHECKED	L.E.	CONTRACT No. 17-849
SCALE				PLAN No. CP
DATE	NOVEMBRE 2020			

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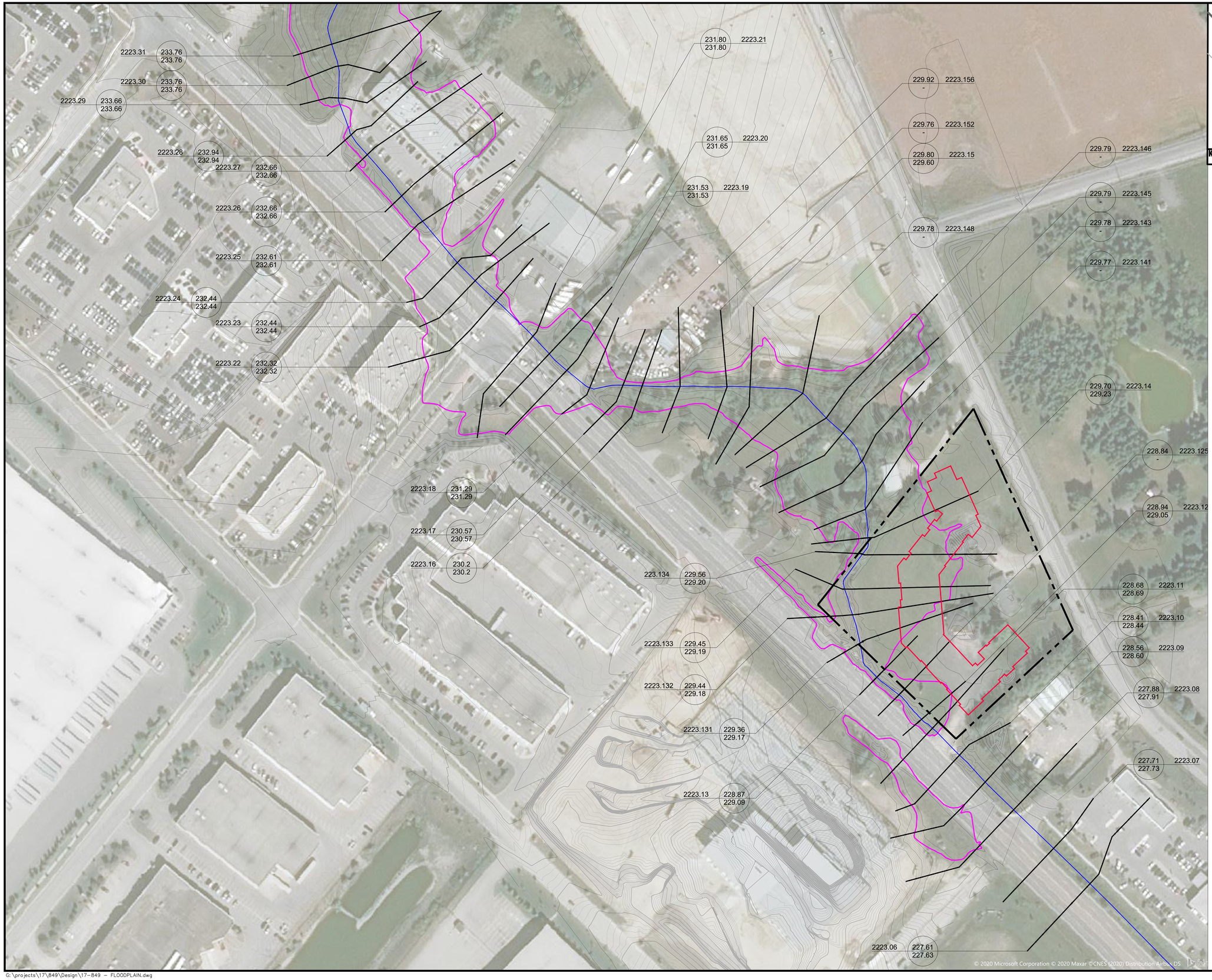

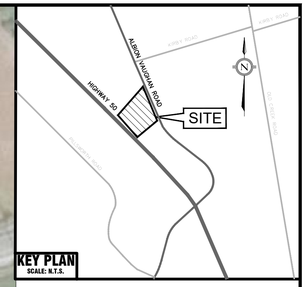

LEGEND:

- PROPERTY LINE
- BUILDING OUTLINE
- RAINBOW CREEK CENTRELINE
- REGULATORY FLOOD LINE
- CROSS-SECTION LENGTH
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR

128.77 / 128.77 — 2223.111

- REGIONAL FLOOD ELEVATION (m)
- CROSS-SECTION STATION
- ORIGINAL FLOOD ELEVATION
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UTILITY NOTES:

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MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
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www.msaeng.ca

CONSERVATION AUTHORITY:

TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

EXISTING CONDITION

DESIGN	I.S	CHECKED	L.E.	CONTRACT No. 17-849
SCALE				PLAN No. EX
DATE	NOVEMBRE 2020			

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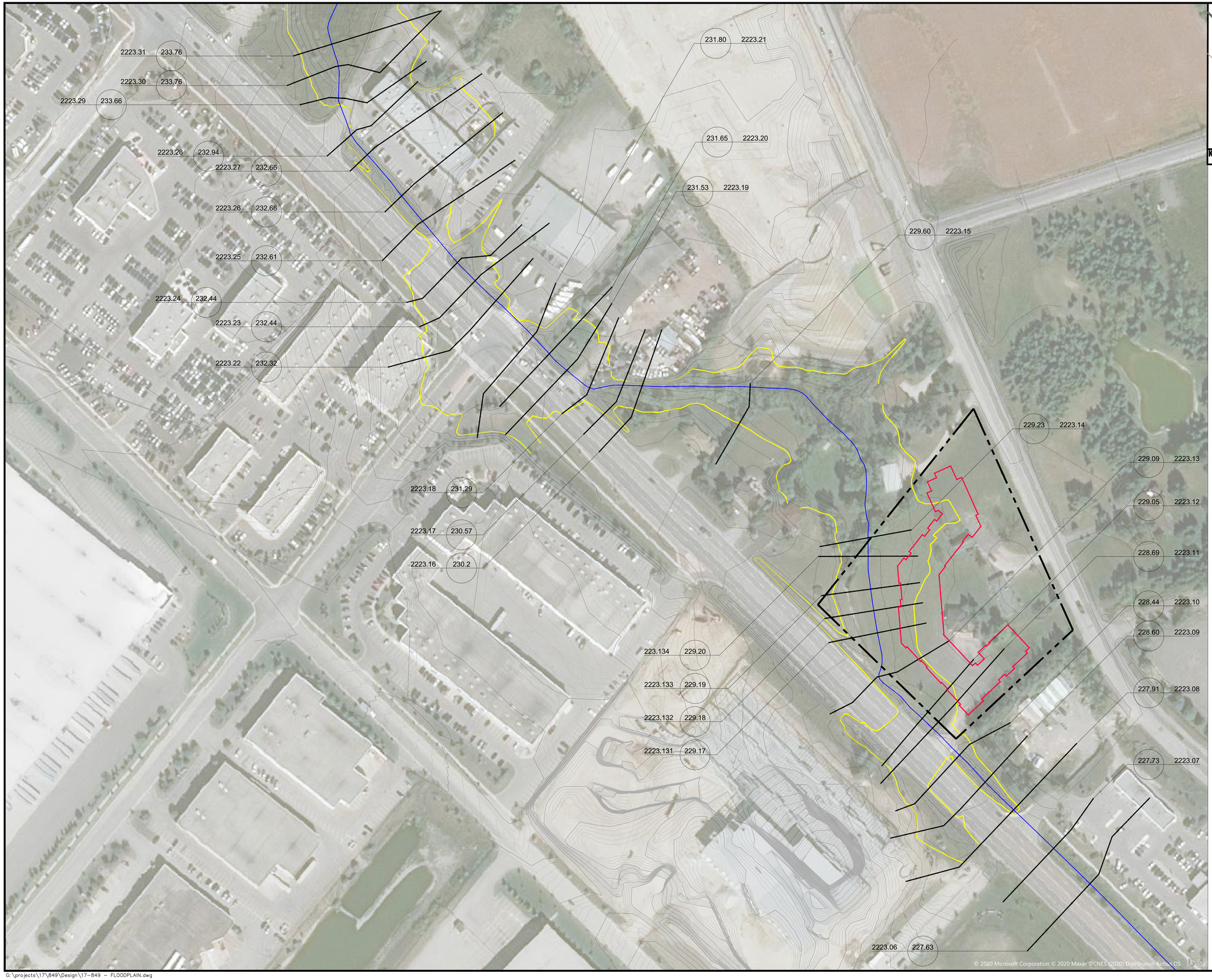

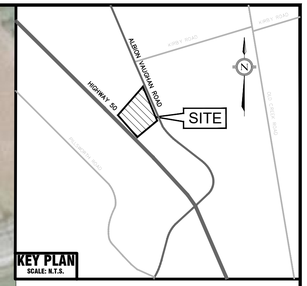

LEGEND:

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128.77 / 128.77 — 2223.111
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- CROSS-SECTION LEADER LINE

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		
1	11/20	ISSUED FOR TRCA	I.S.	

STAMP:

STAMP:

PROJECT:

MULTIPLE RESIDENTIAL CONDO DEVELOPMENT

12148 ALBION VAUGHAN ROAD, TOWN OF CALEDON

CONSULTANT:

MASONGSONG ASSOCIATES
7800 KENNEDY ROAD
SUITE 201
MARKHAM, ONTARIO
L3R 2C
T: (905) 944-0182
www.msaeng.ca

CONSERVATION AUTHORITY:

TORONTO AND REGION Conservation
for The Living City
5 Shoreham Drive Downsview Ontario M3N 1S4 (416) 661-6600

TITLE:

PRE-EXISTING CONDITION

DESIGN	I.S	CHECKED	L.E.
SCALE			
DATE	NOVEMBRE 2020		

CONTRACT No. 17-849

PLAN No. **PEX**

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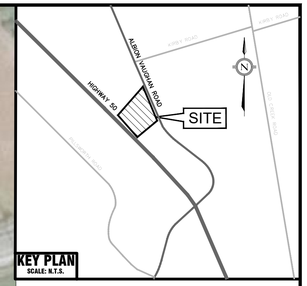
2223.31 — 233.76 / 233.76
2223.30 — 233.76 / 233.76
2223.29 — 233.66 / 233.66
2223.28 — 232.94 / 232.94
2223.27 — 232.66 / 232.66
2223.26 — 232.66 / 232.66
2223.25 — 232.61 / 232.61
2223.24 — 232.44 / 232.44
2223.23 — 232.44 / 232.44
2223.22 — 232.32 / 232.32
2223.21 — 231.80 / 231.80
2223.20 — 231.65 / 231.65
2223.19 — 231.53 / 231.53
2223.18 — 231.29 / 231.29
2223.17 — 230.57 / 230.57
2223.16 — 230.20 / 230.20
2223.156 — 229.93 / -
2223.152 — 229.68 / -
2223.150 — 229.38 / 229.60
2223.148 — 229.37 / -
2223.146 — 229.36 / -
2223.145 — 229.36 / -
2223.143 — 229.35 / -
2223.141 — 229.26 / -
2223.14 — 229.26 / 229.09
2223.134 — 228.96 / 229.20
2223.133 — 229.02 / 229.19
2223.132 — 229.01 / 229.18
2223.131 — 228.96 / 229.17
2223.13 — 228.86 / 229.09
2223.125 — 228.75 / -
2223.12 — 228.67 / 229.05
2223.11 — 228.63 / 228.69
2223.10 — 228.57 / 228.44
2223.09 — 228.56 / 228.60
2223.08 — 227.88 / 227.91
2223.07 — 227.71 / 227.73
2223.06 — 227.61 / 227.63



KEY PLAN
SCALE: N.T.S.

LEGEND:
- PROPERTY LINE
- BUILDING OUTLINE
- RAINBOW CREEK CENTRELINE
- REGULATORY FLOOD LINE
- REGULATORY FLOOD LINE
- CROSS-SECTION LENGTH
- 249.50 MAJOR CONTOUR
- 249.50 MINOR CONTOUR

128.77 / 128.77 — 2223.111
- REGIONAL FLOOD ELEVATION (m)
- CROSS-SECTION STATION
- ORIGINAL FLOOD ELEVATION
- CROSS-SECTION LEADER LINE

UTILITY NOTES:

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TITLE:
PROPOSED CONDITION

DESIGN	I.S	CHECKED	L.E.	CONTRACT No. 17-849
SCALE				PLAN No. PR
DATE	NOVEMBRE 2020			

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Appendix F

Engineering drawings