STORMWATER MANAGEMENT REPORT

Caledon HL Developments Inc.

Type of Document:
Final Report

Project Name:
12505 Heart Lake Road, Town of Caledon

Project Number:
ALL-22008701-A0

Prepared and Reviewed By:
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Approved By:
Scott Passmore

Date + Time Submitted:
2022-07-29

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1. Introduction

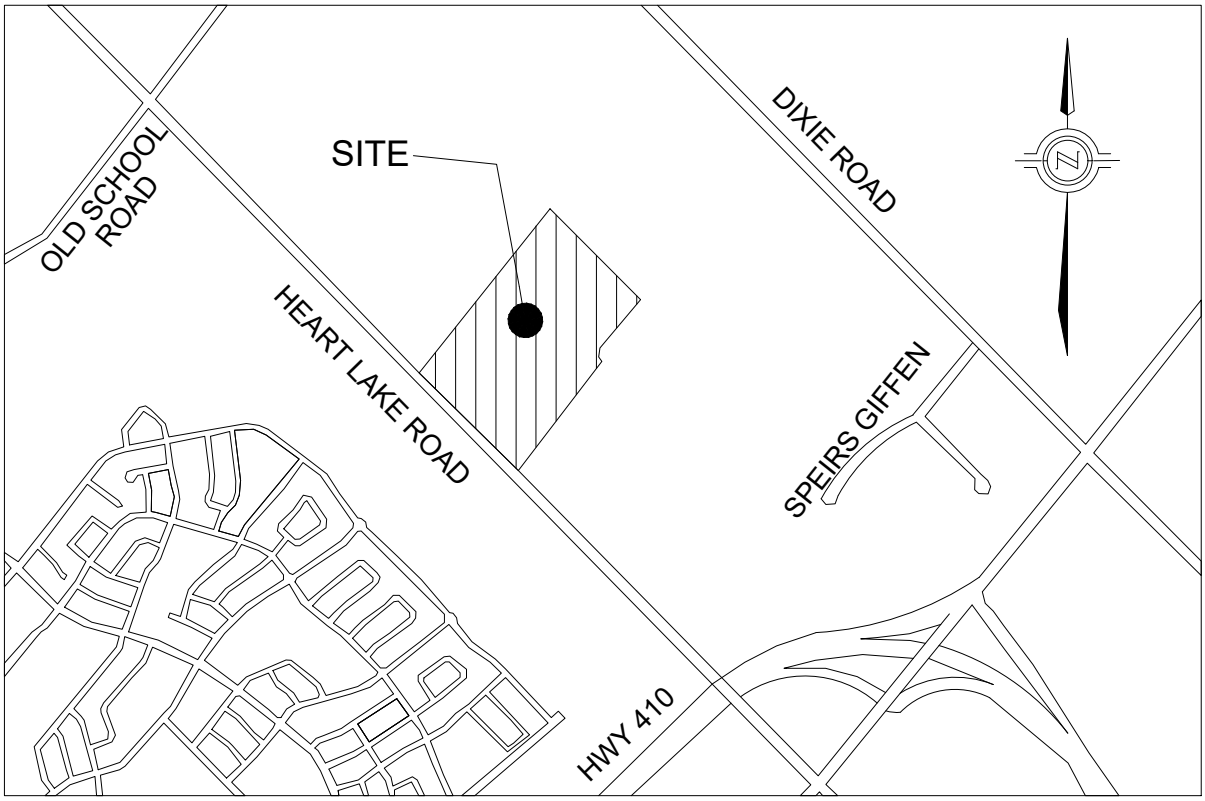
EXP Services Inc. has been retained by Caledon HL Developments Inc. ("Owner") to prepare a Stormwater Management (SWM) Report ("report") in support of an application for a Zoning By-Law Amendment of the proposed industrial development site ("Site") located at 12505 Heart Lake Road, in the Town of Caledon.

The objective of this report is to provide an overview of the proposed SWM strategy for the site to demonstrate conformance to the required SWM Standards outlined in the Town of Caledon's Engineering Standards and the Toronto and Region Conservation Authority (TRCA) requirements.

2. Site Description

The subject site is approximately 29.4 ha in size and bound by Heart Lake Road to the west, agricultural lands to the south and east, and an existing creek (Campbell Cross Creek) to the north regulated by TRCA. The subject site is currently occupied by a farm that has a single driveway access to Heart Lake Road. Refer to Figure 1 for the Site Location Plan.

Based on the Owner's current development concept, the proposed development is to include six (6) industrial style buildings with above ground parking including an allowance for the GTA West Transportation Corridor through the middle of the site. Should this corridor be utilized, the site would be split by the potential highway extension with corresponding MTO setbacks with road access required along the east parcel to Dixie Road. Refer to the Conceptual Site Plan (prepared by Ware Malcomb Architects) in Appendix A for additional details regarding the development plan.



Project:	12505 HEART LAKE ROAD, TOWN OF CALEDON		
Title:	LOCATION PLAN		
Approved by: S.P	Date: APR, 2022	Project No.: ALL-22008701-A0	
Drawn by: N.M	Scale: N.T.S.	Figure no.: FIG-01	

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3. Existing Drainage Conditions

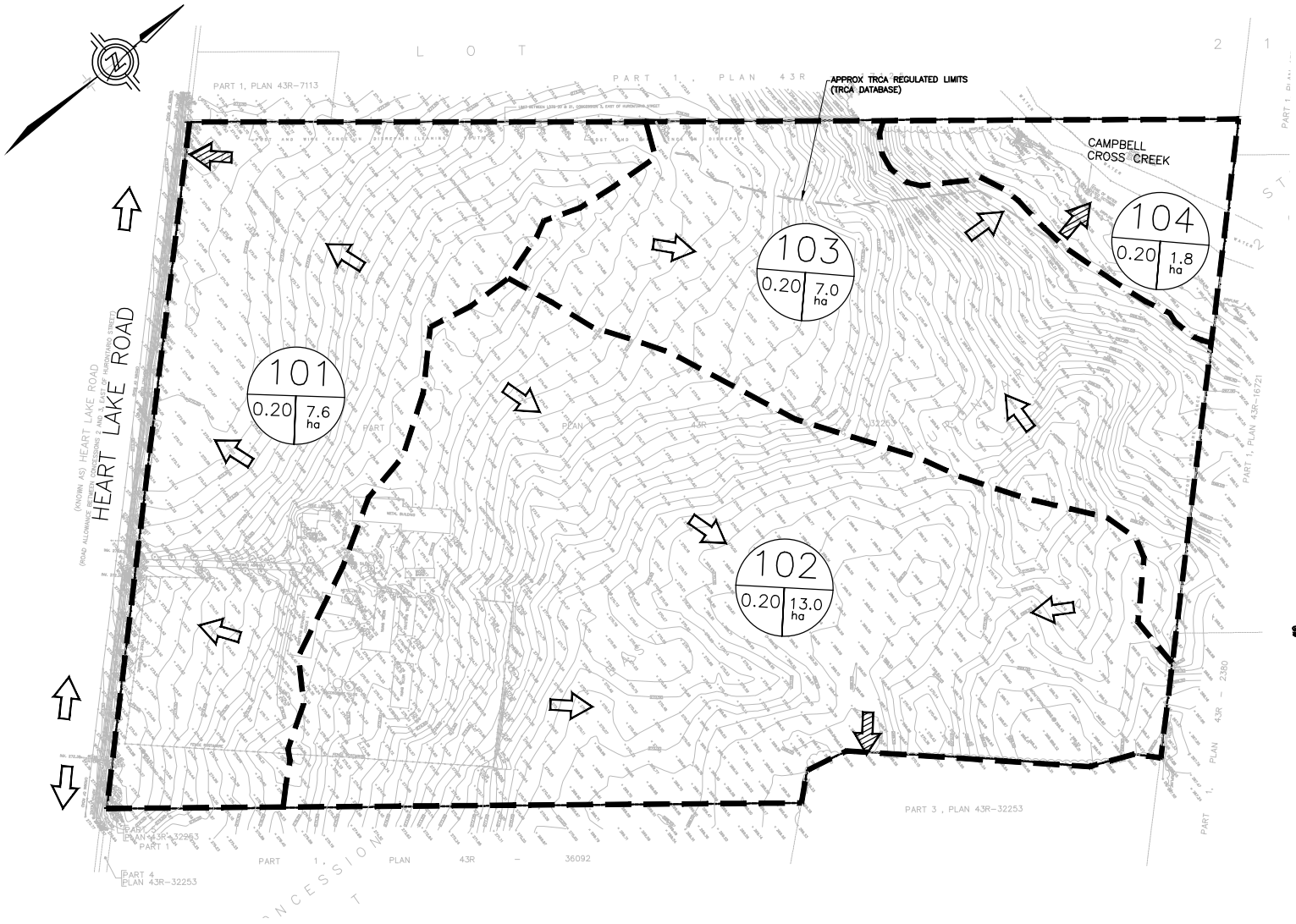
To assess the existing site topography within and surrounding the site, EXP staff reviewed the topographic surveys provided by the Owner including Town's record drawings. A site visit was then completed by EXP staff on May 5th 2022, to review the existing drainage conditions including the above ground utility furniture. The provided topographic surveys for the site shows that the site is split into three main sub-catchments with a high point in the middle of the site. From the high point, the drainage is shown to generally exit the site along west, northeast and southeast limits of the property. The topography for the Heart Lake Road, shows grades falling to the north and south with a high point adjacent to the site without any municipal storm system. The road then falls from that highpoint to the north within a range of 2m to the north limits of the site. For additional details refer to the topographic survey and the record drawings provided in Appendix A. For details regarding the existing drainage conditions refer to Figure 2.

In order to calculate the theoretical peak flow runoff rates for the site under existing conditions, the modified Rational Method was used with runoff coefficients of 0.2 and time of concentration value of 10 min as per the Town of Caledon's Design Criteria. The calculations showed the following results in Table 1 below:

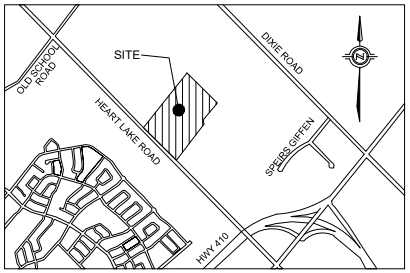
Table 1: Peak Flow Summary (Existing Conditions):

Contributing Area	ID#	Area (ha)	Peak Flow -2 Year (L/sec)	Peak Flow -5 Year (L/sec)	Peak Flow -100 Year (L/sec)
West Sub-catchment (Heart Lake Road)	101	7.6	364.8	466.8	836.5
Southeast Sub-catchment (Wooded Area)	102	13.0	624.0	798.5	1,430.8
Northeast Sub-catchment (Partially TRCA Regulated)	103	7.0	336.0	429.9	770.4
Sub-Total =		**27.6**	**1,324.8**	**1,695.2**	**3,037.7**
Undeveloped Area (Campbell Cross Creek)	*104*	*1.8*	*N/A*	*N/A*	*N/A*
Totals		**29.4**			

The results show that the 100-year peak flow to be 3,037.7 L/s for the entire site excluding the 1.8 ha of TRCA Regulated area. The peak flow runoff calculations can be found in Appendix B.



KEY PLAN



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LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m / 1.0m)
- EXISTING GRADE
- OVERLAND FLOW DIRECTION
- EMERGANCY FLOW DIRECTION (>100 YEAR EVENT)
- STORM DRAINAGE ID NUMBER
- AREA (ha)
- RUNOFF COEFFICIENT
- CATCHMENT BOUNDARY

Project:	12505 HEART LAKE ROAD CALEDON, ONTARIO		
Title:	EXISTING CONDITIONS DRAINAGE PLAN		
Approved by: S.P	Date: JULY 2022	Project No.: ALL-22008701-A0	
Drawn by: N.M	Scale: N.T.S.	Figure no.: FIG-02	

4. Proposed Drainage Conditions

4.1 Proposed Grading and Storm Servicing

The proposed grading design for the site follows a similar pattern to the existing drainage pattern that is present in the existing conditions of the site. The goal is to direct drainage away from the building entrances utilizing slopes within the paved areas between 1% and 3%. While ensure that the emergency major overland flows are safely conveyed towards their existing outlets. Due to the significant grade changes along the perimeter of the site there are two locations were retaining walls are proposed to optimize site development while maintaining the existing drainage patterns. Finally, the possible location of the GTA West Transportation corridor splitting the site will need to be accommodated within the site grading design. Therefore, as part of the preliminary design for the site, it is assumed that the corridor will split the drainage towards the west and east. For additional grading details refer to Preliminary Site Grading Plan prepared by EXP.

As previously mentioned, these is no storm servicing infrastructure adjacent to the site along Heart Lake Road. Based on the proposed preliminary site grading design, it is proposed that the site storm servicing design should incorporate an infiltration style stormwater management design within two (2) separate storm systems located on each side of the transportation corridor to meet the existing drainage patterns for the site. Therefore, the preliminary storm servicing design can be summarized as follows:

- A series of high and low points within the site grading and storm design to capture and attenuate all storm events up to and including the 100-year storm;
- Various orifice controls within the storm system to control flows to pre-development flow rates;
- Oil and grit separators positioned upstream of the proposed underground stormwater management infiltration facilities;
- Direct connections from building roof drains to the underground stormwater management infiltration facilities; and,
- Overflow outlet points from the underground stormwater management infiltration facilities to existing drainage outlet points throughout the site.

All six (6) buildings will be constructed under single ownership, therefore, the proposed site storm system is to be considered under single ownership as well. All proposed storm servicing is to be designed to convey the 5-year storm event as per Town of Caledon Standards. Overall, the proposed site storm servicing design includes a network of catchbasins, storm sewers and underground SWM storage/infiltration facilities where the storm servicing details can be shown on the Preliminary Site Servicing Plan prepared by EXP.

4.2 Background Information and Methodology

Some of the key documents that were referenced for completing the SWM design for the site can be summarized as follows:

- Town of Caledon Development Standards Manual – Version 5.0 dated 2019;
- As-Constructed Plan and Profile Drawings for Heart Lake Road;
- TRCA Regulated Mapping Database;
- TRCA SWM Criteria; and,
- TRCA Low Impact Development SWM Planning and Design Guidelines.

Finally, the modified Rational Method was used to calculate the post development runoff using current Town of Caledon's standards. Please note that due to the size of the proposed development, it is recommended that digitally SWM modelling be completed during the detailed design stage.

4.3 Proposed Conditions Peak Flows

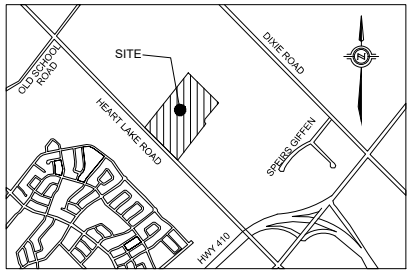
Once the proposed grading and storm servicing designs were confirmed for the site, the post development runoff was calculated using the Town of Caledon's Standards. The peak flow runoff rates were then calculated for the 2, 5 and 100-year storm event using the runoff coefficient of 0.9 and time of concentration of 10 min, as per the standards, where the results are summarized in Table 2 below:

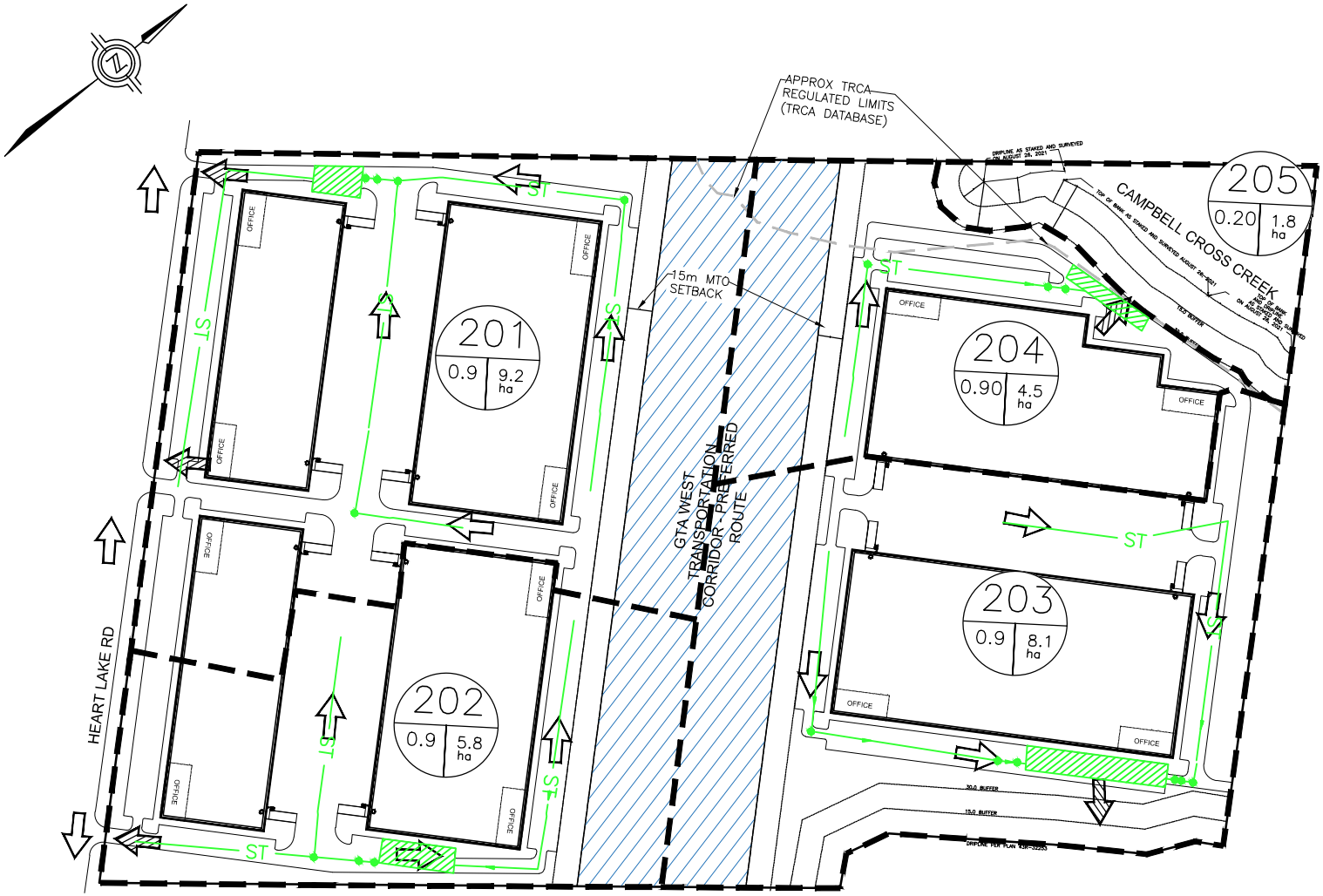
Table 2: Peak Flow Summary (Proposed Conditions – No SWM Controls)

Contributing Area	ID#	Runoff Coefficient	Catchment Area (ha)	Peak Flow - 2 Year (L/sec)	Peak Flow - 5 Year (L/sec)	Peak Flow - 100 Year (L/sec)
West Sub-Catchment						
Controlled Area	201, 202	0.90	9.4	2,024.1	2,589.7	4,640.7
Roof Area	201, 202	0.90	5.7	1,237.7	1,583.7	2,838.0
Southeast Sub-Catchment						
Controlled Area	203	0.9	6.0	1,296.1	1,658.3	2,971.6
Roof Area	203	0.90	2.1	445.0	569.4	1,020.3
Northeast Sub-Catchment						
Controlled Area	204	0.90	2.6	561.6	178.6	1,287.7
Roof Area	204	0.90	1.8	399.6	511.3	916.3
Totals =		**0.90**	**27.6**	**6,195.9**	**7,927.6**	**14,206.0**

For the runoff calculations please refer to Appendix C.

KEY PLAN





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LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m / 1.0m)
- EXISTING GRADE
- OVERLAND FLOW DIRECTION
- EMERGANCY FLOW DIRECTION (>100 YEAR EVENT)
- 101 — STORM DRAINAGE ID NUMBER
- 0.5 / 0.5 — AREA (ha) / RUNOFF COEFFICIENT
- CATCHMENT BOUNDARY

Project:	12505 HEART LAKE ROAD CALEDON, ONTARIO		
Title:	PROPOSED CONDITIONS DRAINAGE PLAN		
Approved by: SP	Date: JULY 2022		Project No.: ALL-22008701-A0
Drawn by: WK	Scale: N.T.S.		Figure no.: FIG-03

4.4 Proposed SWM Quantity Controls

As per Town of Caledon SWM requirements, the post development peak discharge rates from the site are not to exceed the pre-development flow rates for all storm events up to and including the 100-year storm event. After carefully assessing the site characteristics, the available drainage outlets, and the observed groundwater table elevations, EXP staff formulated a proposed SWM quantity control strategy which includes the following:

- Rooftop storage controls for all buildings using an average ponding depth of 0.05 m and a controlled release rate of 42 L/s/ha;
- Underground SWM storage facilities incorporated into the servicing design within the site's paved areas;
- Above ground storage within various paved areas with maximum ponding depths of 0.30 m; and,
- Low Impact Development (LID) measures incorporated into the landscape design such as infiltration swales.

In order to determine the required SWM quantity controls for the site, the previously calculated maximum release rates for each of the three sub-catchments were utilized taken from Table 1. All post development areas were then assumed to be controlled without any uncontrolled drainage leaving the site including the transportation corridor through the middle of the site for a conservative approach. Once the available roof storage volume was calculated, the resultant roof discharge rate was then subtracted from the allowable release rate for that sub-catchment, to then determine the remaining SWM storage required for the balance of the site. The SWM storage calculations are summarized in Table 3 below:

Table 3: SWM Storage Summary

Contributing Area	ID#	Catchment Area (ha)	Required Storage Volume (m^3)	Roof Storage Volume (m^3)	Underground/ Above ground SWM Storage Volume (m^3)
West Sub-Catchment					
Controlled Area	201, 202	15.0	6,830	2,850	3,980
Southeast Sub-Catchment					
Controlled Area	203	8.1	2,120	1,050	1,070
Northeast Sub-Catchment					
Controlled Area	204	4.4	1,320	950	370
Totals =		**27.6**	**10,270**	**4,850**	**5,420**

For the SWM quantity calculations refer to Appendix C.

4.5 Proposed SWM Quality Controls

The Town of Caledon SWM standards require the removal of the total suspended solids (TSS) from each site to meet the SWM quality requirements outlined in the MECP standards. Therefore, a TSS removal target of 80% is required based on an annual loading basis from all runoff leaving the proposed development site determined from the post development level of imperviousness. The long-term removal requirement average of 80% is consistent with the "enhanced protection" levels recommended in the MOE (MECP) SWM Planning and Design Manual, March 2003.

For the proposed SWM quality requirements, an oil grit separator (OGS) is recommended to be positioned downstream of all the drainage from the site impervious areas where the OGS is sized to meet the required TSS removal target. Based on the proposed site grading and storm system design, the site drainage is separated into four (4) drainage areas, where it is recommended that four (4) separate OGS units are placed immediately upstream of each SWM infiltration facility and downstream of the SWM quantity control orifice location. Finally, all roof drainage is proposed to be connected directly to each SWM infiltration facility with separate connections, by-passing the OGS units since treatment for roof drainage is not required. For additional details on the proposed site storm system design refer to Figure 3.

4.6 Water Balance

The objective of the water balance target is to preserve pre-development hydrology through the combination of various storm water management practices. Based on the proposed development concept, the significant amount of increased imperviousness will results in a water balance deficit for the site after development, driving the needs for infiltration measures such as Low Impact Development (LID) requirements. Through discussions with the Owner, it was confirmed that any stormwater reuse (such as rainwater harvesting for irrigation, or use within the building mechanical design) is not planned for the site. Therefore, the proposed SWM strategy proposed by EXP which consists of a primary infiltration design for all stormwater flows shall meet the water balance objectives for the site. Each underground SWM infiltration facility is to be positioned such that the underside of the facility is minimum 0.5 m above the highest observed groundwater elevation. EXP has been retained to complete the hydrogeological study for the development where the groundwater monitoring is ongoing at the time of preparing this report. Finally, as part of the detailed design process for the SWM infiltration facilities, additional percolation testing is recommended once the proposed SWM facility locations have been confirmed.

5. Erosion and Sediment Controls during Construction

During construction it is imperative that the contractor installs and maintains all the necessary erosion and sediment control measures to ensure there is no negative effects to the surrounding properties, the Heart Lake Road right-of-way, and the Campbell Cross Creek watercourse. Sediment controls such as silt fencing is to be installed and maintained around the perimeter of the property. Mud tracking from truck transport is to be mitigated through use of a proposed mud mat and any other maintenance requirements necessary by the contractor before driving back on municipal roads. Interceptor swales are to be installed directing drainage during construction to proposed sediment traps where erosion control blankets are to be installed to stabilize both swales and traps. Finally, based on the size of the proposed development various temporary erosion and sediment detention ponds are to be designed and implemented during construction that meet the standards set out by the TRCA.

6. Conclusions

In summary, our findings outlined in this report demonstrate that the proposed SWM strategy for the development can meet the required Town of Caledon and TRCA SWM criteria, where the key results can be summarized as follows:

- Based on the existing topography for the site, there are three (3) sub-catchments (7.6 ha - west, 7.0 ha - northeast and 13.0 ha - southeast) to be considered when calculating the allowable release rates for the proposed development without any incoming external drainage requirements
- The SWM calculations for the northeast sub-catchment should exclude the portion of the property located outside the proposed development limits (approx 1.8 ha) consisting of the Campbell Cross Creek which is regulated by the TRCA
- Using the Town of Caledon's SWM criteria and a pre-development runoff coefficient of C=0.20, the total maximum allowable release rate of 3,037.7 L/s (836.5 L/s - west, 770.4 L/s - northeast & 1,430.8 L/s - southeast) can be used for the site under the 100-year storm event
- Based on the proposed grading and servicing design for the site, the runoff from the 100-year storm event is to be captured and attenuated within the proposed SWM infiltration facility designs
- The required SWM quantity storage controls can be met with the combined use of underground and above ground SWM storage (approx 5,420 m^3) and roof storage (approx 4,850 m^3) using a roof control release rate of 42 L/s/ha and an average roof ponding depth of 0.05 m
- As a municipal storm system is not available for the site, it is proposed that all flows are to be infiltrated where additional field testing is recommended to verify available percolation rates as part of the detailed SWM design
- The required SWM quality and TSS removal objectives can be met through the use of various oil and grit separators within the storm system and LID design methods within the site grading design
- Water balance objectives can be met through the use of the proposed SWM infiltration facility design and the use of LID's within the proposed grading and landscaping design
- Emergency overland flows can be safely conveyed throughout the site with a proposed grading design and maintaining the various existing outlet points

Sincerely,

EXP Services Inc.

LICENSED PROFESSIONAL ENGINEER
S.W. PASSMORE
90539925
JULY 29/22
PROVINCE OF ONTARIO

Nicholas Melatti, B.Eng.
Project Coordinator, Land Development

Scott Passmore, P.Eng.
Vice President, Land Development

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Appendix A – Site Plan, Topographic Survey, and City's Record Drawing

PROJECT DATA:

TOTAL SITE AREA:		
GROSS:	72.64 AC	29.40 HA
	3,164,261 SF	293,970 m²

PARKING REQUIREMENTS:	
WAREHOUSE	
<7000 m²	1/90 m²
7000-20000 m²	1/145 m²
>20000 m²	1/170 m²
OFFICE	1/30 m²

SITE AREA 1:

GROSS:	31.62 AC	12.80 HA
	1,377,507 SF	127,975 m²
BUILDING 1	117,602 SF	10,926 m²
BUILDING 2	182,903 SF	16,992 m²
BUILDING 3	127,672 SF	11,861 m²
BUILDING 4	179,168 SF	16,645 m²
TOTAL:	607,345 SF	56,424 m²

FAR:	
GROSS:	0.44
NET:	0.44
COVERAGE:	
GROSS:	44%
NET:	44%

BUILDING 1

▲ DOCK-HIGH DOORS	30
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		3,379 m²	23 STALLS
OFFICE	@ 5%	546 m²	18 STALLS
TOTAL			119 STALLS
PARKING PROVIDED:			150 STALLS
		@1.28/1000 SF	@1.37/100 m²
REQ. ACCESSIBLE			*To be confimed by City*

BUILDING 2

▲ DOCK-HIGH DOORS	32
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		9,143 m²	63 STALLS
OFFICE	@ 5%	850 m²	28 STALLS
TOTAL			169 STALLS
PARKING PROVIDED:			200 STALLS
		@1.09/1000 SF	@1.18/100 m²
REQ. ACCESSIBLE			*To be confimed by City*

DEVELOPMENT STANDARDS:

ZONING:	MP
MAX. COVERAGE:	50%
MAX. HEIGHT:	18 m
BUILDING SETBACKS:	
FRONT:	9 m
SIDE:	7.5 m
REAR:	7.5 m
LANDSCAPE SETBACKS:	
FRONT:	6 m
SIDE:	3 m [3]
REAR:	3 m
LANDSCAPE REQ.:	10%
OFF-STREET PARKING:	
STANDARD:	2.75X6 m
DRIVE AISLE:	6 m
REQ. PARKING RATIO BY USE:	
WAREHOUSE:	1/90 sq m [1]
MANUF	1/60 sq m [2]
OFFICE:	1/30 sq m

NOTES:

1 a.) If accessory office use and retail net floor areas are 15% or less of the total net floor area: Up to 7000m2 - 1/90m2 net floor area; 7000-20000 - 78 spaces plus 1/145m2 of net floor area or portion thereof above 7000m2; Over 20000m2 - 168 spaces plus 1/170m2 or portion thereof over 20000m2;
b.) If associated office and retail net floor areas are more than 15% of the total net floor area: In addition to the standards contained in (a), the applicable net floor areas exceeding 15% shall be subject to the applicable office or retail parking requirements.

2 a.) IF accessory office and retail net floor areas are 15% of less of the total net floor area:
Up to 5,000 sq m - 1 parking space per 60 sq m net floor area or portion thereof
5,000 to 10,000 sq m - 83 spaces plus 1 space per 90 sq m of net floor area or portion thereof over 5,000 sq m
Over 10,000 sq m - 139 spaces plus 1 parking space per 170 sq m or portion thereof of net floor area or portion thereof over 10,000 sq m.
b.) If associate office and retail net floor area are more than 15% of the total net floor area: in additiona to the standards contained in (a), the applicable net floor areas exceeding 15% shall be subject to the applicable office or retail parking requirements.

3 3 m for all parking spaces.

This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design:
AVERAGE REGIONAL REQUIRED PROVIDED

Boundary Source:
CIVIL CAD FILE

BUILDING 3

▲ DOCK-HIGH DOORS	33
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		4,268 m²	29 STALLS
OFFICE	@ 5%	593 m²	20 STALLS
TOTAL			127 STALLS
PARKING PROVIDED:			180 STALLS
		@0.98/1000 SF	@1.06/100 m²
REQ. ACCESSIBLE			*To be confimed by City*

BUILDING 4

▲ DOCK-HIGH DOORS	32
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		8,813 m²	61 STALLS
OFFICE	@ 5%	832 m²	28 STALLS
TOTAL			166 STALLS
PARKING PROVIDED:			180 STALLS
		@0.98/1000 SF	@1.06/100 m²
REQ. ACCESSIBLE			*To be confimed by City*

SITE AREA 2:

GROSS:	29.79 AC	12.06 HA
	1,297,740 SF	120,564 m²
EASEMENT.:	@ 22%	26,358 m²
NET:	23.28 AC	9.42 HA
	1,014,028 SF	94,206 m²
BUILDING 5	210,067 SF	19,516 m²
BUILDING 6	227,370 SF	21,123 m²
TOTAL:	437,437 SF	40,639 m²

FAR:	
GROSS:	0.34
NET:	0.43
COVERAGE:	
GROSS:	34%
NET:	43%

BUILDING 5

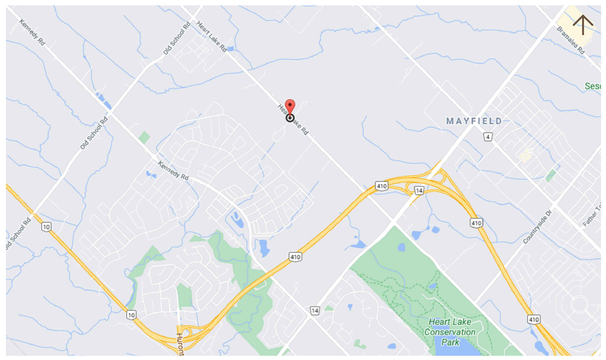
▲ DOCK-HIGH DOORS	39
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		12,516 m²	86 STALLS
OFFICE	@ 5%	976 m²	33 STALLS
TOTAL			194 STALLS
PARKING PROVIDED:			200 STALLS
		@0.95/1000 SF	@1.02/100 m²
REQ. ACCESSIBLE			*To be confimed by City*

BUILDING 6

▲ DOCK-HIGH DOORS	39
O GRADE-LEVEL DOORS	2

PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		13,000 m²	90 STALLS
>20000 m²		1,123 m²	7 STALLS
OFFICE	@ 5%	1,056 m²	35 STALLS
TOTAL			209 STALLS
PARKING PROVIDED:			260 STALLS
		@1.14/1000 SF	@1.23/100 m²
REQ. ACCESSIBLE			*To be confimed by City*



1:1500
0 20m 40m 75m 150m

NORTH

BERKSHIRE AXIS
Unlocking Opportunity™

scheme: 05

Conceptual Site Plan

Heart Lake Rd
Caledon, ON, Canadá

WARE MALCOMB

TOR21-0126-00
11.11.2021

SHEET
1

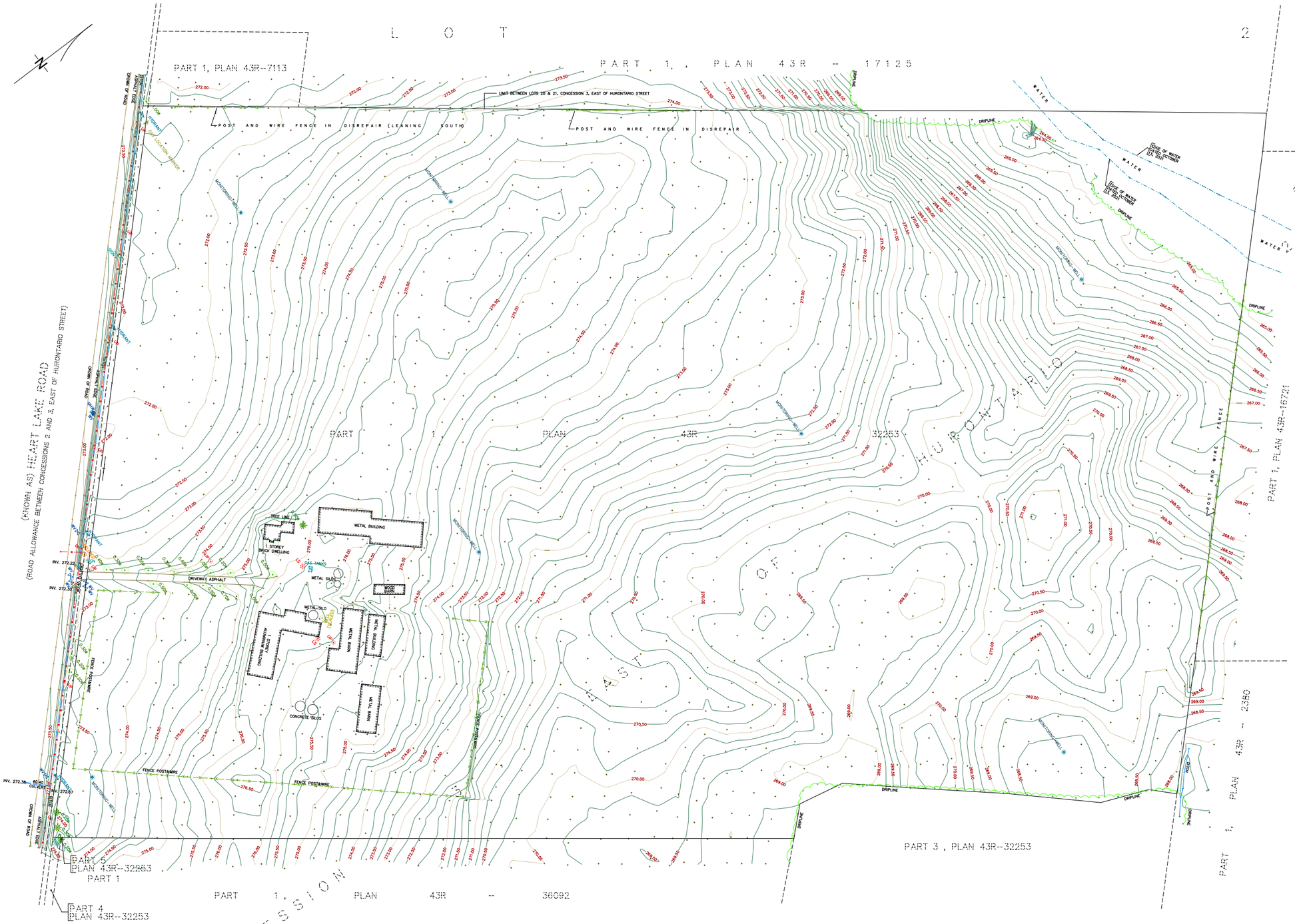
SKETCH SHOWING ELEVATIONS FOR CONSULTANT'S USE

SCALE 1:1000

10m 5m 0m 10m 20m 30m 40meters

R-PE SURVEYING LTD., O.L.S.

METRIC



LEGEND

BXB	DENOTES BELL BOX
MHW	DENOTES MANHOLE WATER
INV.	DENOTES INVERT ELEVATION
UP	DENOTES UTILITY POLE
WV	DENOTES WATER VALVE
—W—	DENOTES OVERHEAD WIRE
Ø	DENOTES DIAMETER
0.00m	DENOTES DECIDUOUS TREE
0.00m	DENOTES CONIFEROUS TREE

CAUTION

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT TO BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

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NOTES

BOUNDARY LINE-WORK TAKEN FROM PLAN OF SURVEY BY R-PE SURVEYING LTD., DATED OCTOBER 20, 2021 (R-PE CAD FILE No. 21-273-PL).

THIS SKETCH IS AN ORIGINAL COPY IF EMBOSSED BY THE SURVEYOR.

THE FIELD OBSERVATIONS REPRESENTED ON THIS PLAN WERE COMPLETED ON

THE 19th DAY OF MAY, 2022

BENCHMARK NOTE

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MTO VERTICAL BENCHMARK NUMBER 0081999991 HAVING AN ORTHOMETRIC ELEVATION OF 265.112 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BENCHMARK SET IN TWO STOREY RED BRICK HOUSE ON EAST SIDE OF HWY 10, 2.7 KM NORTH OF JUNCTION OF HWY 10 AND PEEL REGIONAL ROAD 14 IN THE HAMLET OF SNELGROVE, 0.4 KM SOUTH OF CALEDON SIDEROAD 22 AND 137.8 M EAST OF CENTRELINE OF HWY 10. TABLET IS SET HORIZONTALLY IN WEST FACE OF STONE FOUNDATION, 70 CM SOUTH OF N.W. CORNER AND 9 CM BELOW BRICKWORK.

R-PE SURVEYING LTD.
ONTARIO LAND SURVEYORS
643 Chrislea Road, Suite 7
Woodbridge, Ontario L4L 8A3
Tel.(416)635-5000 Fax (416)635-5001
Tel.(905)264-0881 Fax (905)264-2099
Website: www.r-pe.ca
DRAWN: S.G.
JOB No. 21-273 CAD FILE No. 21273tp01

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1200 FEEDERMAIN DATA

ITEM	DESCRIPTION	STATION	BASELINE OFFSET	STANDARD DRAWING	FEEDERMAIN INVERT	REMARKS / COORDINATES	
PVI-1214	0°08' VERT. DEFL.	7+600.00	6.18 RT.	-	268.20	N 4846005.166	E 595343.463

ALL COORDINATES SHOWN ARE GRID 6° UTM-17N, NAD 83

900 FEEDERMAIN DATA

ITEM	DESCRIPTION	STATION	BASELINE OFFSET	STANDARD DRAWING	FEEDERMAIN INVERT	REMARKS / COORDINATES	
PVI-914	0°08' VERT. DEFL.	7+600.00	6.18 RT.	-	268.20	N 4846006.533	E 595345.214

ALL COORDINATES SHOWN ARE GRID 6° UTM-17N, NAD 83

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
GAS (NATURAL)			CABLE TELEVISION	CONCRETE	N/A
TELEPHONE (BELL)			BELL LIGHTS/CABLE	-	-
ELECTRICAL (PL)			HYDRO LIGHTS/CABLE	-	-
TRAFFIC			OVERHEAD LINE	CONCRETE	N/A
CABLE (TV)			OTHER	CONCRETE	N/A
CITY / REGIONAL WATER			COMMUNICATIONS CABLE	CONCRETE	N/A

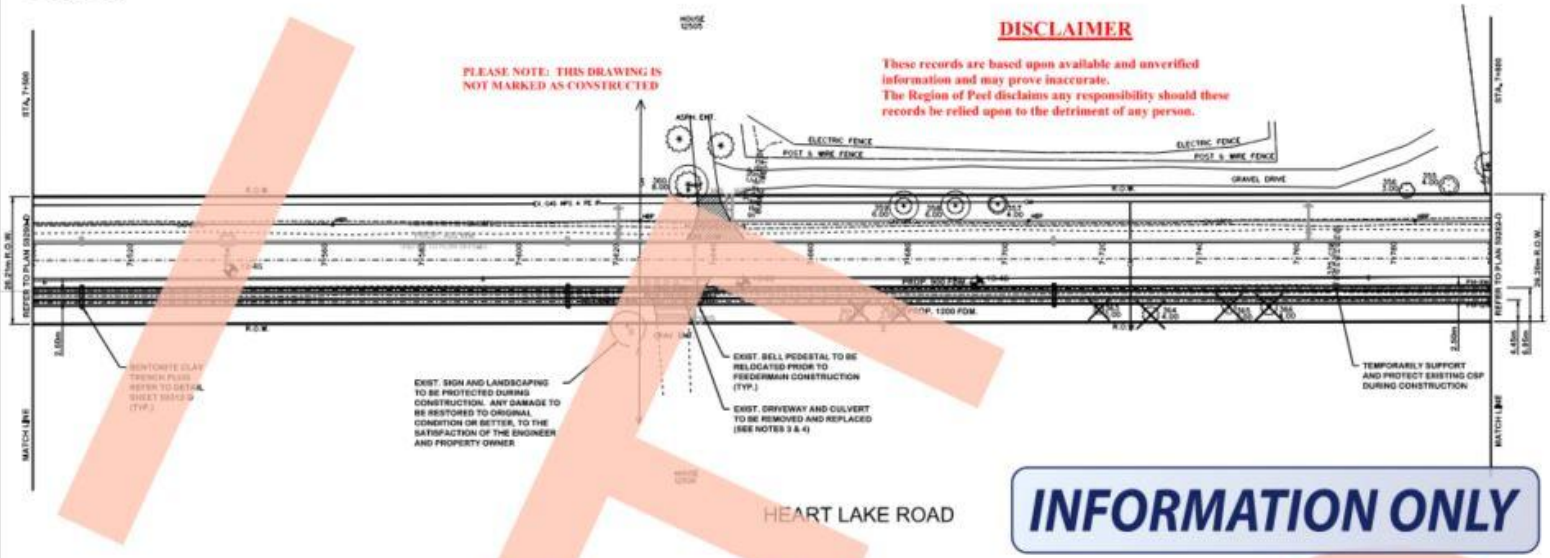
REVISIONS

DATE	DETAILS	INIT.
MAY 2007	ISSUED FOR TENDER	N/A
JULY 2007	ISSUED FOR CONSTRUCTION	N/A

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.

PLEASE NOTE: THIS DRAWING IS NOT MARKED AS CONSTRUCTED



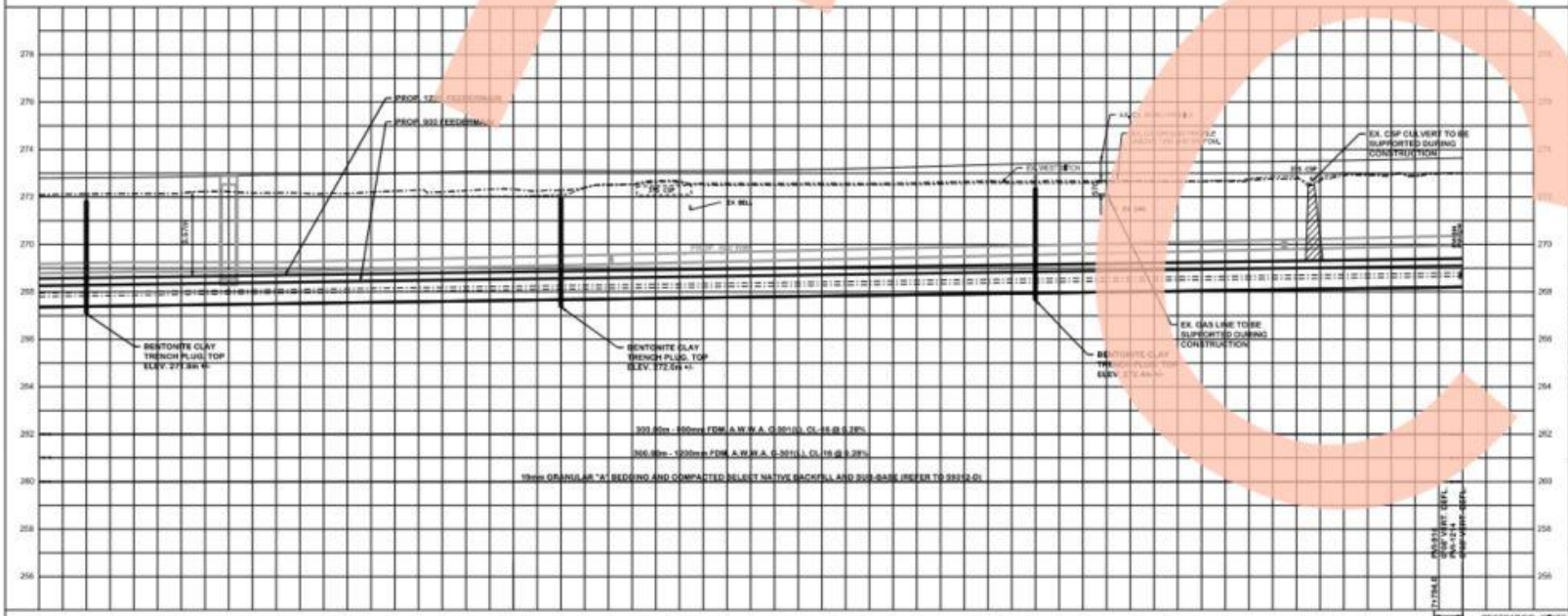
INFORMATION ONLY

NOTES:

1. FOR GENERAL NOTES, SEE PLAN 59279-A.
2. EXISTING UTILITIES TO BE LOCATED VIA DAYLIGHTING AT ALL PROPOSED WATER SERVICE LOCATIONS PRIOR TO CONSTRUCTION.
3. EXISTING DRIVEWAY CULVERTS TO BE REMOVED AND REPLACED WITH MINIMUM OF 375mm INTERNAL DIAMETER, OR WITH SAME INTERNAL DIAMETER IF THE EXISTING SIZE IS LARGER THAN 375mm INTERNAL DIAMETER. HDPE SMOOTH WALL (BOSS 2000) PIPE TO MATCH EXISTING INVERTS, GRADE AND WITH A MINIMUM LENGTH OF 7.0m, AS PER TOWN OF CALEDON REQUIREMENTS.
4. ALL DRIVEWAYS ARE TO BE RESTORED TO EXISTING CONDITION OR BETTER, WITH MATCHING MATERIAL (E.G. ASPHALT FOR ASPHALT, GRAVEL FOR GRAVEL), TO THE PROPERTY LINE. EXISTING DRIVEWAY RETAINING WALLS TO BE REMOVED AND REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.

HATCH

General Notes



NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE INCORPORATED GAS DISTRIBUTION
ONTARIO MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ONE NETWORKS
ENERGOUNCE, HYDRO MISSISSAUGA
HYDRO ONE BRAMPTON
CABLE TELEVISION PROVIDERS
BELL CANADA
ENERGOUNCE TELECOM
HYDRO ONE TELECOM
ROGERS CABLE
ALLSTREAM
PSN (PUBLIC SECTOR NETWORK)
FUTUREWAY (FUTUREBRAND)

1:500 — 0 5 10 15 20m — HORIZONTAL SCALE
1:100 — 0 1 2 3 4m — VERTICAL SCALE

Region of Peel
Working for you

HEART LAKE ROAD

(FROM OLD SCHOOL RD. TO NORTH BRAMPTON PL.)

VICTORIA FEEDERMAIN - CONTRACT 2
PROP. 1200MM AND 900MM FEEDERMAIN

STA. 7+500 TO STA. 7+800

CAD Area	-	Date	0-DEC-07
Checked by	N.L./M.M.	Drawn by	A.F.
Date	SEPTEMBER 2007	Sheet	11 of 143

Project No. 10-1210, 13-1392

Drawing No. 59281-D

SERVICE CONNECTION DATA

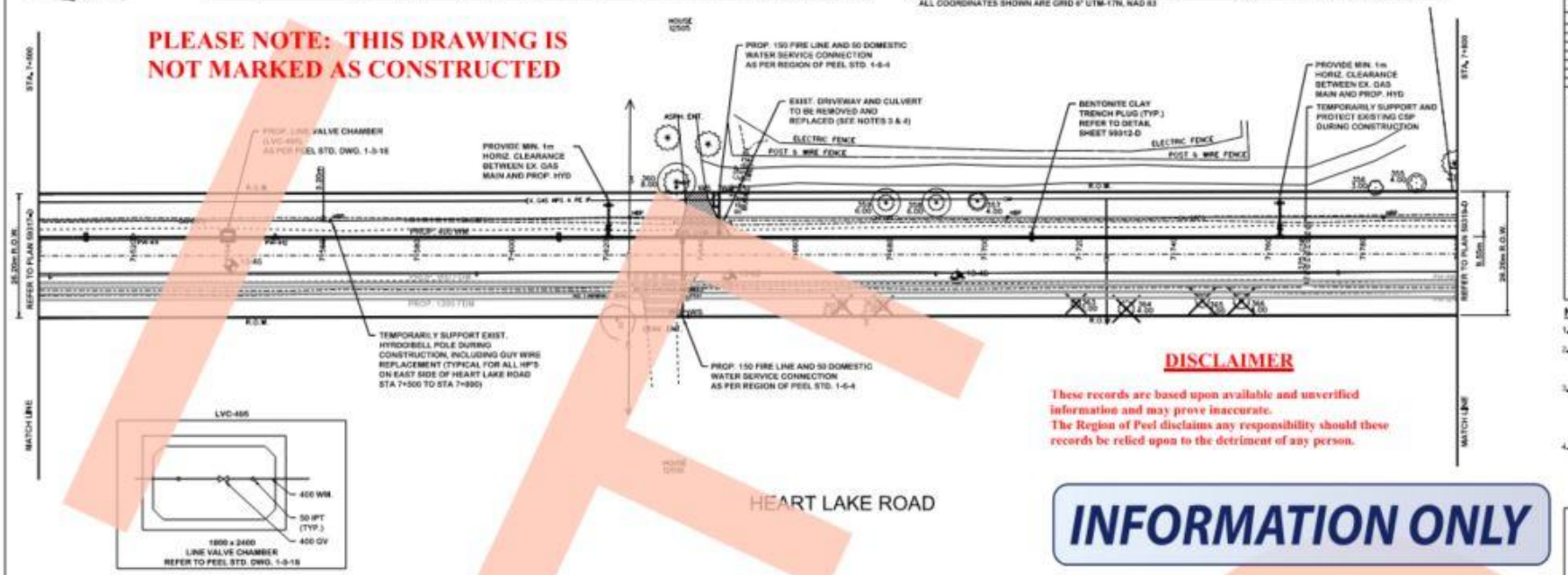
ROLL NUMBER	NAME	STATION	ADDRESS	SERVICE CONNECTION 19mm	25mm	50mm	150mm	LENGTH TO PROPERTY LINE (M) 19mm	25mm	50mm	150mm	COORDINATES @ P/L
-	-	7+636.13	12506	-	-	-	1	-	-	16.67	-	N 4846207.924, E 595223.646
-	-	7+643.91	12505	-	-	-	1	-	-	9.38	-	N 4846226.214, E 595247.610

400 WATERMAIN DATA

ITEM	DESCRIPTION	STATION	BASELINE OFFSET	STANDARD DRAWING	WATERMAIN INVERT	REMARKS / COORDINATES
PVI-411	0°11' VERT. DEFL.	7+520.00	3.93m LT	-	268.85	N 4846300.666 E 595152.993
LVC-405	LINE VALVE CHAMBER	7+540.00	3.91m LT	1-3-18	268.85	N 4846286.605 E 595167.129
PVI-412	0°13' VERT. DEFL.	7+550.00	3.90m LT	-	268.85	N 4846279.572 E 595174.244

ALL COORDINATES SHOWN ARE GRID 6° UTM-17N, NAD 83

PLEASE NOTE: THIS DRAWING IS NOT MARKED AS CONSTRUCTED



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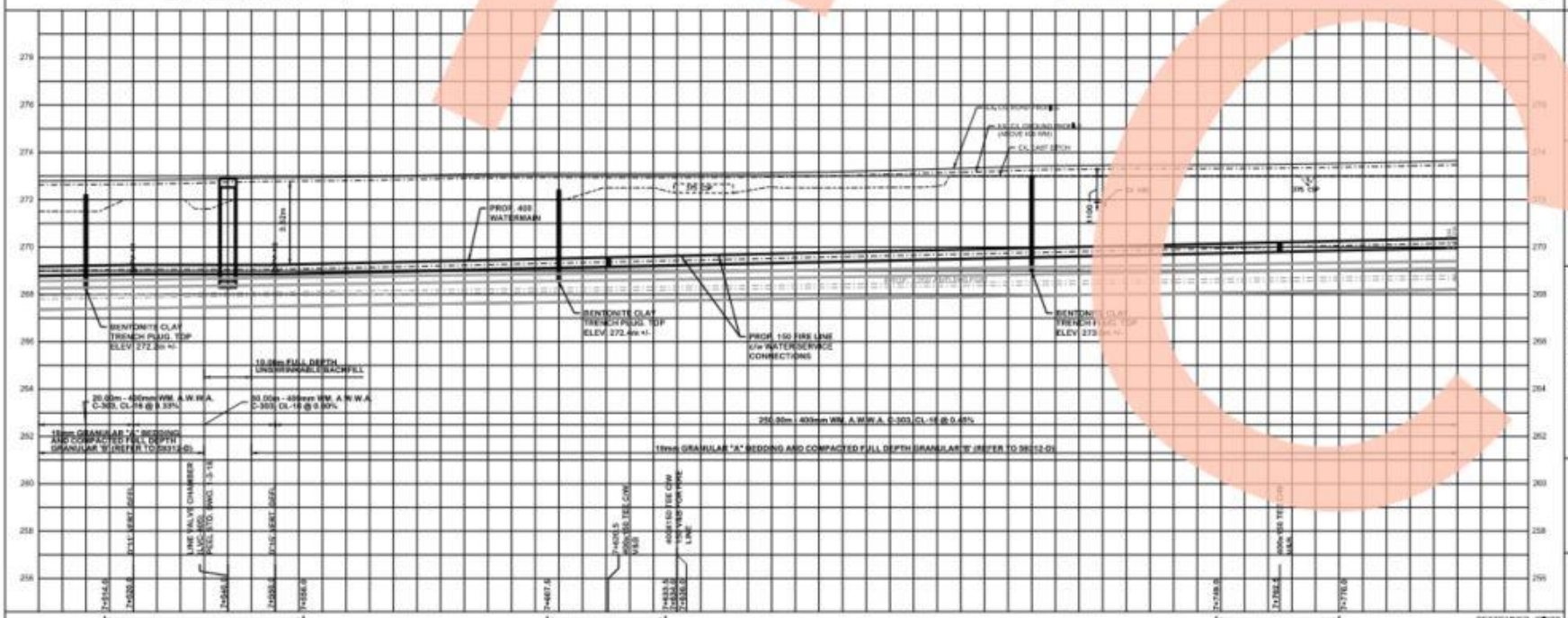
INFORMATION ONLY



269.79	269.85	269.90	269.90	269.88	269.87	269.76	269.25	269.34	269.43	269.52	269.61	269.70	269.79	269.88	269.97	BOT. EL. OF WM
272.79	273.02	273.20	272.95	273.02	273.16	273.10	273.10	273.15	273.34	273.38	273.46	273.47	273.49	273.55	273.64	EX. ROAD ELEV.
7+500	7+520	7+540	7+560	7+580	7+600	7+620	7+640	7+660	7+680	7+700	7+720	7+740	7+760	7+780	7+800	ROAD CHAINAGE

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
GAS SYSTEMS			CATV (TBD)	06/04/07	N/A
ELECTRIC (TENDER)			BELL (AT CURBS)	"	"
WATERMAIN (TBD)			BELL (AT CURBS) (TENDER)	"	"
SANITARY (TBD)			HYDRO ONE	06/04/07	N/A
PARKS & REC.			TELE	06/04/07	N/A
CNG, SUBWAYS/TRANSIT			CABLE (PLACELIST)	06/04/07	N/A

REVISIONS

DATE	DETAILS	INIT.
SEPT 2007	ISSUED FOR TENDER	N/A
SEPT 2007	ISSUED FOR CONSTRUCTION	N/A

NOTES:

1. FOR GENERAL NOTES, SEE PLAN 59724-L.
2. EXISTING UTILITIES TO BE LOCATED VIA DAYLIGHTING AT ALL PROPOSED WATER SERVICE LOCATIONS PRIOR TO CONSTRUCTION.
3. EXISTING DRIVEWAY CULVERTS TO BE REMOVED AND REPLACED WITH MINIMUM OF 375mm INTERNAL DIAMETER, OR WITH SAME INTERNAL DIAMETER IF THE EXISTING SIZE IS LARGER THAN 375mm INTERNAL DIAMETER. HDPE SMOOTH WALL (BOSS 2000) PIPE TO MATCH EXISTING INVERTS AND GRADE.
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HATCH

General Notes

N. L. J. LEGGO 100081710 PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

M. BLOASSAR 100065238 PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE DISTRIBUTION / EGADS DISTRIBUTION
ONTARIO MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ONE NETWORKS
ENERGY BRAMPTON
CABLE TELEVISION PROVIDERS
BELL CANADA
ENERGOUNCE TELECOM
HYDRO ONE TELECOM
ROGERS CABLE
ELECTRAM
PRA PUBLIC SECTOR NETWORKS
FUTUREWAY (FCS/ROADBAND)

1:500 0 5 10 15 20m HORIZONTAL SCALE

1:100 0 1 2 3 4m VERTICAL SCALE

Region of Peel
Working for you

HEART LAKE ROAD

(FROM OLD SCHOOL RD. TO NORTH BRAMPTON PL/N)

VICTORIA FEEDERMAIN - CONTRACT 2
PROP. 400MM WATERMAIN

STA. 7+500 TO STA. 7+800

CAD Area: -	Date: C-06/C-07	Project No. 10-1210, 13-1390	
Checked by: N/A/MAL	Drawn by: A/F		
Date: SEPTEMBER 2013	Sheet: 48 of 143	Dwg. No. 59318-D	

Appendix B – Existing Conditions Storm Runoff Calculations

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

Pre-Development Runoff Coefficient and Peak Flows
Town of Caledon

Contributing Area	ID#	Runoff Coefficient	AREA (Ha)
To Heart Lake Road	101	0.2	7.60
To Wooded Area	102	0.2	13.00
To Campbell Cross Creek	103	0.2	7.00
Campbell Cross Creek (TRCA Regulated Area)	104	0.2	1.80
Total		**0.20**	**29.40**

Pre-Development Flows for ID101

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	364.8 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	466.8 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	836.5 l/s

Pre-Development Flows for ID102

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	624.0 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	798.5 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1430.8 l/s

Pre-Development Flows for ID103

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	336.0 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	429.9 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	770.4 l/s

Pre-Development Flows for ID104

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	86.4 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	110.6 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	198.1 l/s

Pre-Development Flows for Site

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	1411.3 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	1805.7 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	3235.8 l/s

Appendix C – Proposed Conditions SWM Calculations & Supporting Information

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

Post-Development Runoff Coefficient and Peak Flows
Town of Caledon

Contributing Area	ID#	Runoff Coefficient	AREA (Ha)
Controlled Area	201	0.9	5.8
201 Rood Area	201	0.9	3.5
Controlled Area	202	0.9	3.6
202 Roof Area	202	0.9	2.2
Controlled Area	203	0.9	6.0
203 Roof Area	203	0.9	2.1
Controlled Area	204	0.9	2.6
204 Roof Area	204	0.9	1.9
Campbell Cross Creek (TRCA Regulated Area)	205	0.2	1.8
Total		**0.89**	**29.4**

Post-Development Flows Controlled Area ID201

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	1252.9 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	1603.0 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	2872.6 l/s

Post-Development Flows for Roof Area ID201

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	756.0 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	967.4 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1733.5 l/s

Post-Development Flows for ID202

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	771.2 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	986.7 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1768.1 l/s

Post-Development Flows for Roof Area ID202

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	481.7 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	616.3 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1104.5 l/s

Post-Development Flows for ID203

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	1296.1 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	1658.3 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	2971.6 l/s

Post-Development Flows for Roof Area ID203

Time of Concentration	10	minutes		
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	445.0 l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	569.4 l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1020.3 l/s

Post-Development Flows for ID204

Time of Concentration	10	minutes			
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	561.6	l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	718.6	l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	1287.7	l/s

Post-Development Flows for Roof Area ID204

Time of Concentration	10	minutes			
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	399.6	l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	511.3	l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	916.3	l/s

Post-Development Flows for ID205

Time of Concentration	10	minutes			
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	86.4	l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	110.6	l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	198.1	l/s

Post-Development Flows for Site

Time of Concentration	10	minutes			
2 Year Intensity	85.72	mm/hr	$Q_{(2year)}$	6282.3	l/s
5 Year Intensity	109.68	mm/hr	$Q_{(5year)}$	8038.2	l/s
100 Year Intensity	196.54	mm/hr	$Q_{(100year)}$	14404.1	l/s

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

SWM Storage Calculation - West Subcatchment (ID201 & ID202)
Town of Caledon

Control 100 year Post Development to 100 Year Pre Development

Controlled Site Area	9.3	ha
Allowable Release From Site (100 year)	597.1	l/s
Roof Control Release Rate	0.0	l/s
Net Allowable Release From Site	597.1	l/s
Orifice Allowable Release From Site	**597.1**	l/s
Composite Runoff Coefficient (Controlled Area)	0.9	
Time of Concentration	10	minutes

100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
5	239.354	5609.5	1503.7
10	196.536	4606.0	2405.4
15	166.890	3911.2	2982.7
20	145.128	3401.2	3364.9
25	128.461	3010.6	3620.3
30	115.282	2701.7	3788.4
35	104.594	2451.3	3893.7
40	95.749	2244.0	3952.5
45	88.306	2069.5	**3975.6**
50	81.955	1920.7	3970.8
55	76.470	1792.1	3943.7
60	71.685	1680.0	3898.5
65	67.473	1581.3	3838.4
70	63.737	1493.7	3765.9
3980m^3 of Storage is required			

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

Roof Quantity Control Storage Calculation - ID201 & ID202
Town of Caledon

Controlled Roof Drains will lmit the runoff discharge to 42.0L/s/Ha of Roof Area (Industry Typ.)

Controlled Roof Area	5.70	Ha
Controlled Roof Discharge	239.40	l/s
Net Allowable Release From Site	**239.0**	l/s
Runoff Coefficient (Controlled Area)	0.9	(Hardscape Roof)
Time of Concentration	10	minutes

100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
5	239.354	3438.1	959.7
10	196.536	2823.0	1550.4
15	166.890	2397.2	1942.4
20	145.128	2084.6	2214.7
25	128.461	1845.2	2409.3
30	115.282	1655.9	2550.4
35	104.594	1502.4	2653.1
40	95.749	1375.3	2727.2
45	88.306	1268.4	2779.5
50	81.955	1177.2	2814.6
55	76.470	1098.4	2836.1
60	71.685	1029.7	2846.5
65	67.473	969.2	**2847.7**
70	63.737	915.5	2841.4
75	60.400	867.6	2828.6
80	57.401	824.5	2810.4
85	54.690	785.6	2787.5
90	52.229	750.2	2760.5
2850m^3 of Storage is required			

Roof to be equipped with Zurn Control - Flo Roof Drains

Max Flow per 1 weir	5	GPM
	0.12	L/s per 1cm head of water
4.4cm * 0.124l/s/cm	0.55	l/s
Number of weirs	438.78	weirs
	438	
Controlled Roof Discharge	239.0	l/s

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

SWM Storage Calculation - Southeast Subcatchment (ID203)
Town of Caledon

Control 100 year Post Development to 100 Year Pre Development

Controlled Site Area	6	ha
Allowable Release From Site (100 year)	1343.0	l/s
Roof Control Release Rate	0.0	l/s
Net Allowable Release From Site	1343.0	l/s
Orifice Allowable Release From Site	**1340.0**	l/s
Composite Runoff Coefficient (Controlled Area)	0.9	
Time of Concentration	10	minutes

100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
2	275.623	4167.4	339.3
4	250.313	3784.7	586.7
6	229.330	3467.5	765.9
8	211.646	3200.1	892.8
10	196.536	2971.6	979.0
12	183.475	2774.1	1032.6
14	172.068	2601.7	1059.8
16	162.020	2449.7	**1065.4**
18	153.100	2314.9	1052.9
20	145.128	2194.3	1025.2
22	137.958	2085.9	984.6
24	131.475	1987.9	933.0
26	125.585	1898.8	871.8
28	120.209	1817.6	802.3
1070m^3 of Storage is required			

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

Roof Quantity Control Storage Calculation - ID203
Town of Caledon

Controlled Roof Drains will lmit the runoff discharge to 42.0L/s/Ha of Roof Area (Industry Typ.)

Controlled Roof Area	2.10	Ha
Controlled Roof Discharge	88.20	l/s
Net Allowable Release From Site	**87.8**	l/s
Runoff Coefficient (Controlled Area)	0.9	(Hardscape Roof)
Time of Concentration	10	minutes

100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
5	239.354	1266.7	353.7
10	196.536	1040.1	571.4
15	166.890	883.2	715.8
20	145.128	768.0	816.3
25	128.461	679.8	888.0
30	115.282	610.1	940.1
35	104.594	553.5	978.0
40	95.749	506.7	1005.4
45	88.306	467.3	1024.7
50	81.955	433.7	1037.7
55	76.470	404.7	1045.7
60	71.685	379.4	1049.6
65	67.473	357.1	**1050.2**
70	63.737	337.3	1047.9
75	60.400	319.6	1043.3
80	57.401	303.8	1036.6
85	54.690	289.4	1028.3
90	52.229	276.4	1018.4
1051m^3 of Storage is required			

Roof to be equipped with Zurn Control - Flo Roof Drains

Max Flow per 1 weir	5	GPM
	0.12	L/s per 1cm head of water
4.4cm * 0.124l/s/cm	0.55	l/s
Number of weirs	161.66	weirs
	161	
Controlled Roof Discharge	87.8	l/s

PROJECT: **12505 Heart Lake Road**
PROJECT No: **ALL-22008701-A0**
CREATED: **29-Jul-22**
PRINTED: **29-Jul-22**

SWM Storage Calculation -Northeast Subcatchment (ID204)
Town of Caledon

Control 100 year Post Development to 100 Year Pre Development

Controlled Site Area	2.6	ha
Allowable Release From Site (100 year)	690.7	l/s
Roof Control Release Rate	0.0	l/s
Net Allowable Release From Site	690.7	l/s
Orifice Allowable Release From Site	**690.7**	l/s
Composite Runoff Coefficient (Controlled Area)	0.9	
Time of Concentration	10	minutes

100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
2	275.623	1805.9	133.8
4	250.313	1640.1	227.8
6	229.330	1502.6	292.3
8	211.646	1386.7	334.1
10	196.536	1287.7	358.2
12	183.475	1202.1	**368.2**
14	172.068	1127.4	366.8
16	162.020	1061.6	356.0
18	153.100	1003.1	337.4
20	145.128	950.9	312.2
22	137.958	903.9	281.4
24	131.475	861.4	245.8
26	125.585	822.8	206.1
28	120.209	787.6	162.8
370m^3 of Storage is required			

PROJECT: **12505 Heart Lake Road**
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Roof Quantity Control Storage Calculation - ID204
Town of Caledon

Controlled Roof Drains will lmit the runoff discharge to 42.0L/s/Ha of Roof Area (Industry Typ.)

Controlled Roof Area	1.90	Ha
Controlled Roof Discharge	79.80	l/s
Net Allowable Release From Site	**79.7**	l/s
Runoff Coefficient (Controlled Area)	0.9	(Hardscape Roof)
Time of Concentration	10	minutes

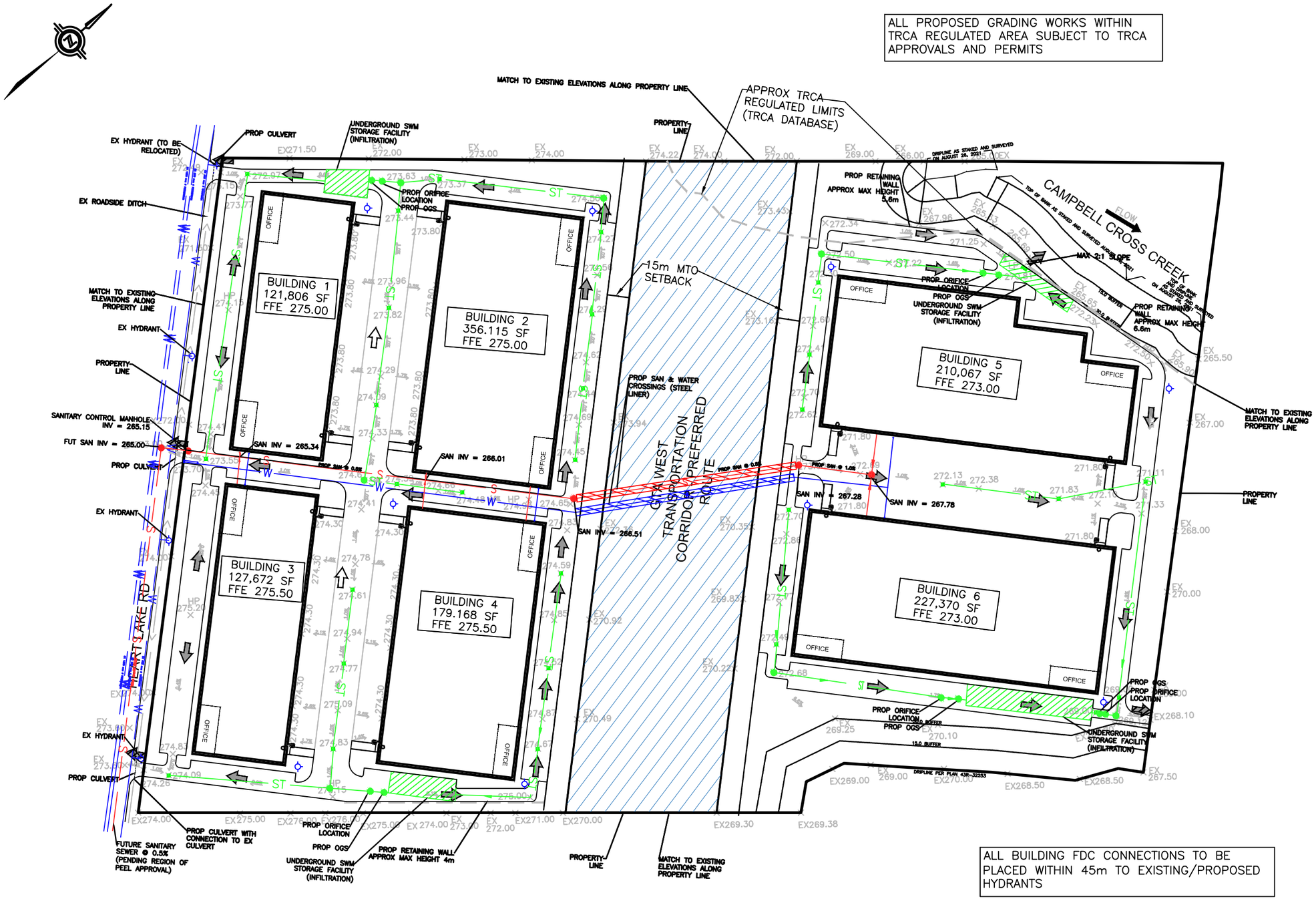
100 Year Storm I = 4688/(Tc+17)^0.9624

Storm Duration (minutes)	Rainfall Intensity (mm/hr)	Total Runoff Q (l/s)	Required Storage Volume (m^3)
5	239.354	1146.0	319.9
10	196.536	941.0	516.8
15	166.890	799.1	647.4
20	145.128	694.9	738.2
25	128.461	615.1	803.1
30	115.282	552.0	850.1
35	104.594	500.8	884.3
40	95.749	458.4	909.0
45	88.306	422.8	926.4
50	81.955	392.4	938.1
55	76.470	366.1	945.2
60	71.685	343.2	948.7
65	67.473	323.1	**949.1**
70	63.737	305.2	947.0
75	60.400	289.2	942.7
80	57.401	274.8	936.6
85	54.690	261.9	929.0
90	52.229	250.1	920.0
950m^3 of Storage is required			

Roof to be equipped with Zurn Control - Flo Roof Drains

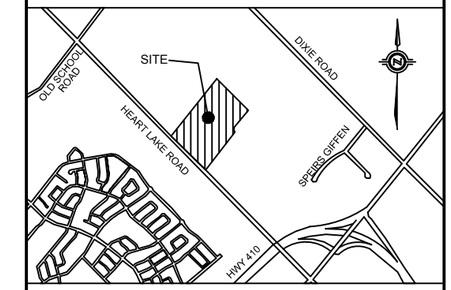
Max Flow per 1 weir	5	GPM
	0.12	L/s per 1cm head of water
4.4cm * 0.124l/s/cm	0.55	l/s
Number of weirs	146.26	weirs
	146	
Controlled Roof Discharge	79.7	l/s

ALL PROPOSED GRADING WORKS WITHIN TRCA REGULATED AREA SUBJECT TO TRCA APPROVALS AND PERMITS



ALL BUILDING FDC CONNECTIONS TO BE PLACED WITHIN 45m TO EXISTING/PROPOSED HYDRANTS

FOR GRADING DETAILS REFER TO PRELIMINARY SITE GRADING PLAN PREPARED BY EXP



LEGEND:

- EXISTING WATER VALVE
- EXISTING HYDRO POLE
- EXISTING TREE
- EXISTING TREE DRIPLINE
- EXISTING OVERHEAD HYDRO WIRES
- EXISTING FENCELINE
- EXISTING CURBS
- EX. VALVE CHAMBER
- EX. STORM/SANITARY M.H.
- EX. CATCH BASIN
- PROP. STORM M.H.
- PROP. SANITARY M.H.
- PROP. GW SAMPLING PORT
- PROP. AREA DRAIN
- PROPOSED CURBS
- PROP. STORM SEWER
- PROP. WATERMAIN
- PROP. SANITARY SEWER
- EX. SANITARY SEWER
- EX. WATERMAIN
- PROPERTY LINE
- EXISTING HYDRANT
- MAJOR OVERLAND FLOW ARROW
- EMERGENCY MAJOR OVERLAND FLOW ARROW
- APPROX TRCA REGULATED LIMITS (TRCA DATABASE)
- PROPOSED RETAINING WALL

NOTE:
- SITE PLAN INFORMATION TAKEN FROM WARE MALCOMB ARCHITECT
- TOPOGRAPHIC SURVEY INFORMATION PROVIDED BY R-PE SURVEYING LTD

CALEDON HL DEVELOPMENTS INC.

exp.

DRAWN BY	CHECKED BY
N.M	S.P.

PRELIMINARY SITE SERVICING PLAN

FIGURE 3

12505 HEART LAKE ROAD
TOWNSHIP OF CALEDON

PROJECT NUMBER: ALL-22008701-A0

DATE: JULY 2022

End of Document