

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

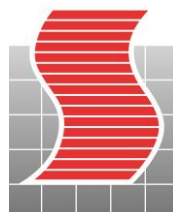
'0' HUMBER STATION ROAD
SITE PLAN

TOWN OF CALEDON

Project: 2025-5532

January 2026

Revision	Description	Prepared		Checked	
		By	Date	By	Date
0.0	FSR	S. Saini	Nov 2025	S. Katukurunde	Dec 2025



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1.0 INTRODUCTION

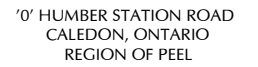
This Functional Servicing and Stormwater Management Report is provided in support of a proposed site plan located in the Town of Caledon. The objective of this report is to provide a servicing plan for the 2.6 ha property referred to as "0' Humber Station Road", located north of King Street and east of Humber Station Road. The subject site is registered as part of Lot 11, Concession 5, Town of Caledon within the Regional Municipality of Peel. Please refer to **Figure 1.1** for the location plan.

This document will summarize the proposed municipal servicing scheme in regards to potable water, sanitary flows, and stormwater management. The following sections provide information regarding the proposed services for the subject development while ensuring compatibility with the existing infrastructure and previous planning resolutions.

1.1 Reference Reports and Studies

The following studies were utilized in the preparation of this report.

- *“Development Standards Manual Ver 5.0”*, by the Town of Caledon, 2019
- *“Stormwater Planning and Design Manual (SWMP)”*, by Ministry of the Environment (MOE), March 2003.
- *“Stormwater Management Criteria”*, by Toronto and Region Conservation Authority, August 2012.
- *“Low Impact Development Stormwater Management Planning and Design Guide”*, Version 1.0, Prepared by Toronto Region and Conservation Authority (TRCA) and Credit Valley Conservation, 2010.
- *“Public Works Stormwater Design Criteria and Procedural Manual”*, June 2019, by the Region of Peel.
- *“Public Works Design, Specifications & Procedures Manual, Linear Infrastructure, Watermain Design Criteria”*, by the Region of Peel, June 2010.
- *“Linear Wastewater Standards”*, by the Region of Peel, March 2023.
- *“Water Supply for Public Fire Protection”*, by the Fire Underwriters Survey, 2020.
- *“Source Protection Information Atlas”*, by the Ontario Ministry of the Environment, Conservation and Parks (MECP), 2023.
- *“Stormwater Management Guideline”*, By Credit Valley Conservation, July 2022
- *“Erosion and Sediment Control Guideline”*, By Sustainable Technologies for TRCA, 2019
- *“Final Community-Wide Function Servicing Report – Caledon Sation Secondary Plan”*, by Urbantech for Caledon Community Partners, October 2024.



SUBJECT AREA

FIGURE 1.1
LOCATION PLAN

2.0 DEVELOPMENT PLAN

The proposed development covers 2.6 ha and will include both commercial buildings and apartment buildings. The architect plan, prepared by "n Architecture Inc." and dated October 10 2025 is provided in **Appendix A** for reference. **Figure 2.1** illustrates the proposed development plan.

Table 2-1: Population Estimate

Land Use Type	Population Density	Units	Estimated Population
Apartment - large	3.1 persons/unit	370 units	1,147
Apartment - small	1.7 persons/unit	290 units	493
Commercial	50 persons/ha	-	36
Total	-	-	1,676

Region of Peel Linear Wastewater Design Guidelines, 2023

'0' HUMBER STATION ROAD
CALEDON, ONTARIO
REGION OF PEEL

LEGEND

■ ■ SUBJECT AREA

■ PROPOSED SITE PLAN 1

■ PROPOSED SITE PLAN 2

■ PROPOSED
PUBLIC RIGHT OF WAY

Humber Station Rd

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FIGURE 1.2
DEVELOPMENT PLAN

3.0 WATER SUPPLY SERVICING

This section describes how the proposed water distribution plan is able to adequately supply potable drinking water for the proposed development.

3.1 Existing and Planned Water Supply Servicing

The subject site is located just outside of Pressure Zone 6 (PZ6). PZ6 is able to service elevations up to 262 masl. The *Caledon Station Secondary Plan (CSSP)* identifies that the proposed ground elevations of the Subject lands area too high for adequate long-term servicing by the PZ6 servicing system (Urbantech 2024). The ultimate servicing will be provided through a new Pressure Zone 7 (PZ7), which would service lands between elevations of 262 – 250 masl. Interim alternative water servicing arrangements are being investigated at the secondary plan level. Some of these alternatives include such a proposed booster station at King and Coleraine Drive as well as an elevated tank that would be located at the north west corner of the CCSP lands. Details of the external servicing approach will become available further along in the project design.

A 400 mm watermain along Humber Station is proposed to supply water to the subject lands (Urbantech 2024). **Figure 3.1** depicts the proposed future watermain along Humber Station Road.

3.2 Water Supply Servicing Design Criteria

The water servicing system was designed in accordance with the Region of Peel Public Works Watermain Design Criteria (June 2010). Table 3-1 and Table 3-2 summarize the applicable criteria.

Table 3-1: Typical Water Demand Criteria

Population Type	Avg. Consumption Rate Unit	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor
Residential	L/Capita*day	280	2.0	3.0
ICI	L/Employee*day	300	1.4	3.0

*ICI = Industrial, Commercial or Institutional
 Region of Peel Public Works Watermain Design Criteria, June 2010*

Table 3-2: Potential Short Term Water Demand Criteria for New Development

Population Type	Unit	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor
Residential	L/Capita * day	409	2.0	3.0
ICI	L/Employee * day	300	1.4	3.0

ICI = Industrial, Commercial or Institutional

Region of Peel Public Works Watermain Design Criteria, June 2010

Design criteria for pressure and fire protection is identified in the Region of Peel Public Works Watermain Design Criteria document (June 2010). The following summarizes the applicable criteria:

Pressure Design Criteria:

- Minimum pressure for Maximum Day and Fire Flow demand of 140 kPa (20 psi);
- Minimum pressure for Peak Hour Demand of 275 kPa (40 psi);
- Maximum pressure for Maximum Day and Fire Flow demand of 690 kPa (100 psi);

Fire Protection Demand Design Criteria:

- Fire flow demands for the proposed development have been estimated based on Fire Underwriters Survey (FUS) methods with preliminary building layout information.
- As additional design details become available, it is recommended that fire flow requirements be reassessed using the FUS methodology. The final design should accommodate the ultimate requirements to effectively support the proposed servicing needs.

3.3 Proposed Water Supply Servicing Plan

A network of watermains is proposed to service the units within the subject site. The network of watermains will connect to the future watermain along the continuation of the public Right-of-Way (ROW) along the north edge of the site within the adjacent property. The future transmission main along Humber Station Road will be designed in coordination with the Region of Peel at a later stage.

A summary of the water supply demands is presented in **Table 3-3**. For supporting calculations, refer to **Appendix B**. Please note that pressures within the watermains will be verified via hydrant tests once the infrastructure is constructed.

Table 3-3: Water Supply Servicing Demands

Expected Population	Average Demand (L/s)	Peak Hour Demand (L/s)	Maximum Day Demand (L/s)	Fire Flow (L/s)	Max Demand + Fire Flow (L/s)
1,676	11.28	5.44	10.80	200	210.8

As a part of the CSSP report, R.J. Burnside executed preliminary modelling to determine interim water servicing solutions. According to R.J. Burnside, the site can be serviced to provide water supply with the addition of the booster station at King and Coleraine Drive (Urbantech 2024). Detailed fire flow calculations are provided in **Appendix B**, and **Figure 3.1** presents the proposed water servicing.

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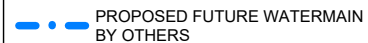
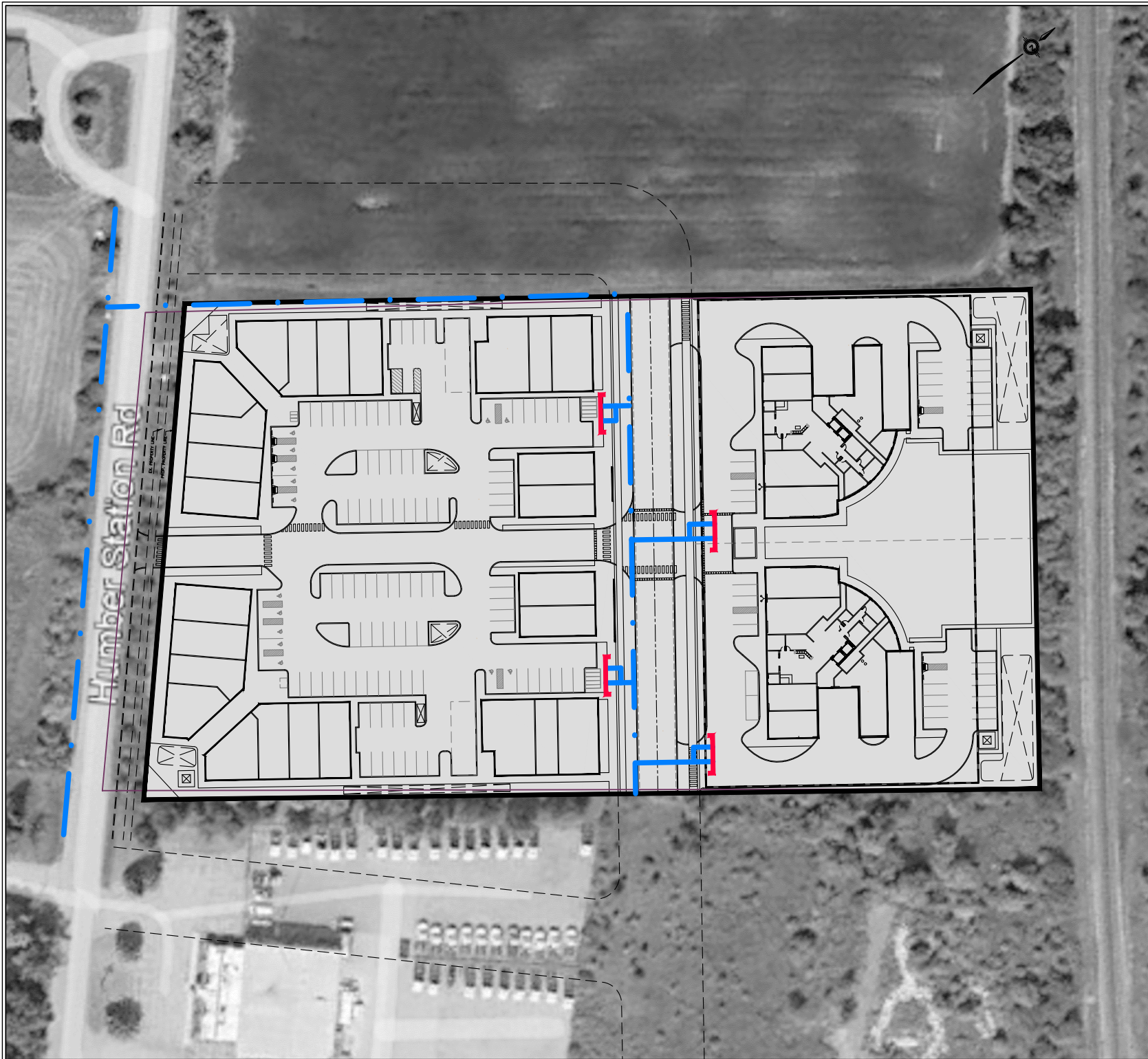
LEGEND



SUBJECT AREA



PROPOSED WATERMAIN

PROPOSED FUTURE WATERMAIN
BY OTHERS

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FIGURE 3.1
PROPOSED WATER SUPPLY SERVICING

4.0 SANITARY SERVICING

The following sections demonstrate that the municipal sanitary servicing plan can adequately service the proposed development.

4.1 Existing and Planned Sanitary Servicing

According to Volume 4 of the Region of Peel 2020 Water and Wastewater Master Plan, the subject property is located within the Region of Peel McVean Trunk system. The area is serviced by the Gore Road trunk, a 750 mm-1200 mm sewer running south along Gore Road, converging with the Brampton-Bolton trunk sewers and ultimately discharging to the G.E. Booth Wastewater Treatment Plant (WWT).

The CSSP identifies that the following sewers are or will be in service to service the subject property (Urbantech 2024):

- The extension of a new 1200 mm sewer along Humber Station Road from Mayfield Road to Healey Road

The design for a 1200 mm sewer extension along Humber Station Road from Healey Road to Humber Station Road is underway (Urbantech 2024). The sewer extension will be utilized as the main outlet for the subject lands. Refer to **Figure 4.1** for the proposed future servicing.

4.2 Sanitary Design Criteria

The proposed sanitary servicing of the subject site will be designed in accordance with Region of Peel design criteria for sanitary sewers. These criteria, where applicable to the proposed development, are summarized below.

- Applied 1.7 persons/unit for small apartments and 3.2 persons/unit for large apartments;
- Unit sewage flow of 290 L/capita/day for residential and 270 L/capita/day for commercial;
- Peak sanitary flow factor (M) is based on the Harmon formula, where P is population in thousands:

$$M = \frac{1 + 14}{4 + P^{0.5}}$$

- Infiltration allowance to be 0.26 L/s/ha for all types of land use;
- For residential areas, minimum pipe size shall be 200 mm in diameter;
- Maximum velocity shall not be greater than 3 m/s with the pipe flowing full, and minimum velocity shall not be less than 0.75 m/s at actual flow.

4.3 Proposed Sanitary Servicing Plan

The proposed site plans will be serviced by a sewer running along the internal ROW. It is proposed to construct a sanitary sewer along the future road proposed north of the site, extending west toward Humber Station Road. A 450 mm sewer is proposed along Humber Station Road to carry sewage flow south. The final design of the internal sanitary sewers will be confirmed during the detailed design stage. No capacity constraints are anticipated. Refer to **Figure 4.2** for the proposed sanitary servicing scheme and **Appendix E** for the engineering drawings.

Table 4-1 presents the sanitary servicing demands with supporting calculations presented in **Appendix C**.

Table 4-1: Sanitary Servicing Demands

Area (ha)	Expected Total Population	Average Flow (L/s)	Harmon's Peaking Factor (L/s)	Peak Flow (L/s)	Infiltration (L/s)	Total Flow (L/s)
2.63	1676	5.62	3.64	20.47	0.68	21.15

'0' HUMBER STATION ROAD
CALEDON, ONTARIO
REGION OF PEEL

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 SUBJECT AREA

 PROPOSED SANITARY SEWER

 PROPOSED FUTURE
SANITARY SEWER BY OTHERS

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FIGURE 4.1
PROPOSED SANITARY SERVICING

5.0 STORMWATER MANAGEMENT

The following sections provide details on the Stormwater Management (SWM) plan for the proposed site and is in accordance with applicable provincial guidelines, municipal and conservation authority criteria.

5.1 Existing Site Conditions

The site fronts Humber Station Road, north of King Road, and is bounded at the east by the Canada Pacific (CP) railway. The site is located within the Humber River watershed and drains east towards the main branch of the Humber River. There is an existing culvert under the CP rail which facilitates the drainage of the site. The capacity of the culvert was assessed within the CSSP which is summarized in **Table 5-1** below (Urbantech 2024). An existing drainage layout of the site is depicted in **Figure 5.1**.

Table 5-1: Existing External Culvert Summary

Culvert	Diameter (mm)	Drainage Area (ha)	Pre-development Peak Flow (m ³ /s) [100-year]
CP3	800	18.80	2.32

Excerpted from Table 6-17 of the *Caledon Station Secondary Plan* (Urbantech 2024)

A geotechnical borehole investigation conducted by Englobe revealed low permeability soils characterized as clayey silt to silt and clay glacial till with some sand. Groundwater levels were recorded where present and were found to be generally high. Further study is required to appropriately characterize the nature of groundwater at the subject site. The groundwater contour map is attached for reference in **Appendix A**.

5.2 Stormwater Management Criteria

As per the Town of Caledon's Design Criteria and the Toronto and Region Conservation Authority's Stormwater Management Criteria, the following guidelines will be used in the design of the site's stormwater management system:

Major and Minor System

- Storm sewers shall be designed to convey the 10-year return frequency storm without any surcharges;
- Storm sewers shall be designed as per the Town of Caledon's IDF curve rainfall intensities with a minimum time of concentration of 10 minutes;
- The minimum pipe diameter for storm sewers is 300 mmØ;

- Maximum full-bore velocity shall not be greater than 4 m/s, and minimum velocity shall not be less than 0.75 m/s.
- The major system shall be designed to convey the 100-year storm event;
- The maximum flow depth shall be the lesser of 10 cm above the crown of the road or the water level up to the ROW.
- Runoff coefficients shall be determined based on land use as follows:

○ Parks & Open Space (under 4 ha)	0.30
○ Apartments or Hi-Rise Residential	0.75
○ Commercial	0.90
○ Parking Lots & Asphalt	0.90

Quantity Control:

- The site is located within the Main Humber River watershed. Per TRCA Stormwater Design Guidelines, quantity control is not required within the Main Humber River watershed.
- Quantity control is provided to either site plan in order to meet the storm sewer requirement for conveying the 10-year storm.
- Storage will be provided on site up to the 100-year storm in order to meet the 10-year storm flow rate requirement through storm sewers.
- AES and Chicago design storms are assessed to size storage requirements.
- Town of Caledon Rainfall intensity curves are applied to determine site flows.

Quality Control

- Per the CSSP, quality control shall provide Level 1 Enhanced treatment through the long-term removal of 80% Total Suspended Solids (TSS) controlling the 90th percentile runoff event (Urbantech 2024).

Erosion Control

- Per the CSSP, erosion control is to be provided via 5 mm retention on site for the site plan area and 2 mm retention on site for the public ROW (Urbantech 2024).

Water Balance

- Requirement to meet pre-development water balance to the greatest extent feasible. Per the Source Protection Information Atlas (MECP) the site is not in a wellhead protection area (WHPA) or a Significant Groundwater Protection Area (SGRA). Refer to **Section 5.7** for the water balance discussion.

CLI-ECA Requirements

- Developments within the Town are required to comply with CLI-ECA requirements. The CLI-ECA mandates controlling at least 27 mm through retention methods (such as infiltration and reuse), followed by filtration for any remaining amount. Conventional water quality control measures are permitted only after maximizing retention and filtration.

5.3 Proposed SWM Plan

The following sections outline the proposed stormwater management solutions to be implemented on the subject site, ensuring compliance with the applicable stormwater management criteria detailed in **Section 5.2**. Stormwater will be managed using a dual drainage system. The minor system, consisting of sewers, will be designed to capture and convey flows from a 10-year storm event. The major system, comprising of overland flow routes, will handle excess flows beyond the capacity of the minor system.

Preliminary groundwater levels recorded from the borehole log results indicate that the groundwater table is relatively high (See the Groundwater Contour Map in **Appendix A**). High groundwater levels limit the feasibility for infiltration and retention technologies to be employed on site. It is possible that there may be seasonal lows in groundwater depth that may allow for the application of some technologies for parts of the year, however further investigation would be needed to confirm if such conditions exist. Upon further study, infiltration and retention technology applications may be revisited.

The CSSP outlines that drainage areas leading to the Main Humber River watershed do not require quantity controls (Urbantech 2024). The subject site is graded to maintain the existing topographic direction towards the northeast.

Quantity and quality control for Site Plan 1 would be provided through two underground storage tanks and storm filter unit. The tanks will store up to the 100-year volume to control to the 10-year storm sewer flow.

Quantity and quality for Site Plan 2 would be provided through two underground storage tanks and storm filter units. The tanks will store up to the 100-year to control to the 10-year storm sewer flow. Water re-use would also be implemented to meet the erosion control requirement.

Quantity control for the ROW is not required as per the conclusion in the CSSP. Quality control is provided through a proposed filter unit that will be located at the downstream end of the outlet culvert per the CSSP (Urbantech 2024).

The CLI-ECA volume control requirement is to retain 27 mm runoff volume through a hierarchal approach. High groundwater levels constrain the site for retention and filtration opportunities. Water re-use is to be implemented in Site Plan 2 to support the requirements. **Section 5.8** further discusses the CLI-ECA approach. Alternatives to achieve water balance criteria will be investigated at the detailed design stage.

Refer to **Figure 5.2** and **Figure 5.3** for the proposed storm drainage and servicing plans.

5.4 Site Plan 1

5.4.1 Site Plan 1 Quantity Control

The CSSP outlines that drainage areas leading to the Main Humber River watershed do not require quantity controls (Urbantech 2024). Site Plan 1 is proposed to store up to the 100-year in order to control to the 10-year storm sewer flow requirement. The 10-year proposed peak discharge is $0.424 \text{ m}^3/\text{s}$ with a total storage to be provided of 186.1 m^3 . The storage will be provided through two plastic or concrete modular tanks. See **Appendix D** for calculations.

5.4.2 Site Plan 1 Quality Control

Quality control for Site Plan 1 will be managed through a storm filter unit (or approved equivalent) to provide 80% TSS removal. Refer to a sizing report of the proposed unit in **Appendix D**.

5.4.3 Site Plan 1 Erosion Control

The preliminary groundwater results indicate that groundwater levels are high. Consequently, it is not technically feasible to provide erosion control for the site plan. As well, extended detention is not feasible as a result of the controlled release rate.

5.5 Site Plan 2

5.5.1 Site Plan 2 Quantity Control

The CSSP outlines that drainage areas leading to the Main Humber River watershed do not require

quantity controls (Urbantech 2024). Site Plan 2 is proposed to store up to the 100-year to control to the 10-year storm sewer flow requirement. The 10-year proposed peak discharge is $0.322 \text{ m}^3/\text{s}$ with a storage to be provided of 141.1 m^3 . Two tanks will be utilized based on the proposed development plan, located on the P1 level of the underground parking lot.

5.5.2 Site Plan 2 Quality Control

Quality control for Site Plan 2 will be managed through storm filter units (or approved equivalent) to provide 80% TSS removal. Two tanks will be utilized based on the proposed development plan. The filter units will be placed on the P1 level of the underground parking garage. The tank would discharge through a gravity outlet to the sewer system. A sizing report of the proposed unit in **Appendix D**.

5.5.3 Site Plan 2 Erosion Control

Erosion control will be achieved for Site Plan 2 via 5 mm on-site retention. The retention volume target is 43.1 m^3 ($1.02 \text{ ha} \times 0.85 \times 5 \text{ mm} \times 10$). Each storm filter tank is to be equipped with a rainwater harvesting tank to meet this requirement. The total storage to be provided, as well as the pump design for supplying the re-use water, will be conducted at the Site Plan Application stage.

5.6 Public ROW

5.6.1 ROW Quantity Control

The ROW is proposed to flow uncontrolled. Runoff from the ROW area will be directed through the pipe system to the outlet culvert at the CP railway. The CSSP outlines that drainage areas leading to the Main Humber River watershed do not require quantity controls (Urbantech 2024). Thus, this approach is in agreement with the overall SWM strategy for the area.

5.6.2 ROW Quality Control

Quality control for the public ROW will be managed by a filter unit to be designed and installed upstream of the discharge manhole to the CP Rail culverts (Urbantech 2024). This filter unit is to be designed and installed by other proponents.

5.6.3 ROW Erosion Control

Based on the preliminary groundwater results, it appears that on-site retention and infiltration will not be feasible due to high groundwater levels. Detailed plans for the ROW erosion controls will be finalized at the detailed design stage.

5.7 Water Balance

A water balance assessment was conducted to characterize the water entering and existing the site area. Through the Ontario Ministry of the Environment, Conservation and Parks (MECP) *Source Protection Information Atlas*, it is determined that the subject site is not located within a Well Head Protection Area (WHPA) or a Significant Groundwater Recharge Area (SGRA). As a result, the proponent is not required to maintain the existing water balance, however efforts to achieve it will be investigated.

Additional groundwater monitoring data is expected to support the design of the project at the detailed design phase. At present, the groundwater monitoring data shows high ground water levels relative to the site ground levels, reducing the feasibility for any infiltration efforts. As well, the site soils are comprised of silty clay material, which is unfavourable for infiltration. As more site-specific monitoring data is made available, the feasibility for infiltration may be revisited.

A site water balance analysis was completed and provided in **Appendix D**. Based on the analysis, the pre-development site conditions have a runoff of 4,501 m³/year, infiltration of 5,501 m³/year, and evapotranspiration of 12,445 m³/year.

In the post-development conditions (without mitigation), average annual volumes for runoff are 20,203 m³/year and evapotranspiration of 2,245 m³/year. **Table 5-2** summarizes the water balance assessment. Refer to **Appendix D** for detailed water balance calculations.

Table 5-2: Water Balance Summary

Water Balance Parameter	Pre-Development	Post-Development	Change (Pre to Post)
Inputs (m³/year)			
Precipitation	22,448	22,448	0
Total Inputs	22,448	22,448	0
Outputs (m³/year)			
Precipitation Surplus	10,003	20,203	10,200
Total Evapotranspiration	12,445	2,245	-10,200
Total Infiltration	5,501	0	-5,501
Total Runoff	4,501	20,203	15,702
Total Outputs	22,448	22,448	0

'0' HUMBER STATION ROAD
CALEDON, ONTARIO
REGION OF PEEI

LEGEND

-  SUBJECT AREA
-  EXISTING DRAINAGE
TO SUBJECT AREA
AREA = 2.60ha
-  EXISTING DRAINAGE
DRAINING NORTH
AREA = 0.99ha
-  EXISTING DRAINAGE
DRAINING SOUTH
AREA = 1.34ha

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FIGURE 5.1
PRE-DEVELOPMENT DRAINAGE AREAS

'0' HUMBER STATION ROAD
CALEDON, ONTARIO
REGION OF PEEI

LEGEND

-  SUBJECT AREA
-  PROPOSED STORM SEWER
-  PROPOSED FUTURE STORM SEWER BY OTHERS
-  EXISTING STORM SEWER
-  FILTER UNIT
-  FILTER UNIT
-  PROPOSED SWM TANK
-  PROPOSED SWM TANK WITH RWH TANK
-  PROPOSED DRAINAGE AREA

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FIGURE 5.2
PROPOSED STORM SERVICING

5.8 CLI-ECA Requirements

The new CLI-ECA program includes a 27 mm runoff volume retention requirement for stormwater management, which can be achieved through a hierarchical approach to provide flexibility in the implementation of measures to meet the runoff volume target. The runoff volume control target hierarchy has the following order:

- Control hierarchy priority 1 (Retention),
- Control hierarchy priority 2 (LID filtration), and
- Control hierarchy priority 3 (Conventional Treatment).

The subject site has underlying silty clay and high groundwater levels which limits the opportunity for infiltrating stormwater for retention and infiltration trenches. Instead, opportunities for site plan retention and filtration will be revisited later on in the design process.

Refer to **Table 5-3** below for a summary of the CLI-ECA requirements.

Table 5-3 Summary of CLI-ECA Requirements

Overall Volume Control Parameter	Value
Total Controlled Drainage Area	2.61 ha
Imperviousness (site area)	85%
Imperviousness (ROW)	75%
Required Volume Control	104 m³
Site Plan 1 Volume Control	0 m ³
Site Plan 2 Volume Control	0 m ³
ROW Volume Control	0 m ³
Total Provided Volume Control	0 m³

5.9 Erosion and Sediment Control Plan

In order to mitigate the effects of construction on site, a comprehensive ESC strategy following the *Erosion and Sediment Control Guideline for Urban Construction* by Sustainable Technologies is outlined for the project. This ESC Plan provides a framework to be further refined at a later stage of the design process.

Erosion Control Measures

- **Phasing:** It is advantageous to reduce the limit of construction during the topsoil stripping phase in order to limit areas with soil exposure.
- **Stabilization:** Grading for construction generally requires the removal of topsoil immediately. If piled or stored on site, it must be stabilized immediately. It is also recommended that areas left u-worked for longer than 30 days be stabilized. Possible measures are as follows:
 - Mechanical Seeding/Hydroseeding
 - Terra Seeding
 - Growth Media Blankets
- **Cut-off Swales:** To be designed as per ESC guidelines and stabilized accordingly.

Sediment Control Measures

- **Siltation control perimeter fencing**
 - Double Silt Fence with Straw Bales
 - Siltation Control Fence
- **Cut-off Swales:** To be designed as per ESC guidelines and stabilized accordingly.
- **Flow distributors:** Silt Socks have been proposed as they provide ponding opportunities and energy dissipation, helping to slow down flow velocity and promote sediment settling in swales.
- **Sediment Traps:** Have been sized in accordance with ESC guidelines.
- **Temporary Sediment Ponds:** Shall be sized as per MECP Quality control guidelines. A design drawdown time of 48 hours is required.

6.0 CLOSING REMARKS

This Functional Servicing Report has been prepared to demonstrate the conformance of the proposed storm, sanitary, and water supply servicing concept for the subject residential development with the Region of Peel, TRCA, and Town of Caledon Design Standards.

Water Supply Servicing

- The proposed development will ultimately be serviced by Pressure Zone 7 to ensure adequate water supply and pressure. The construction of a booster station at King Street and Coleraine Drive would be able to service the site as an interim solution for water supply.
- A 400 mm transmission watermain proposed along Humber Station Road will provide connectivity to the municipal system.

Sanitary Servicing

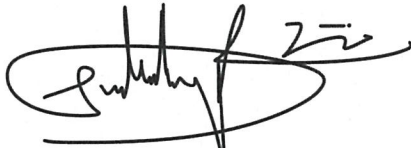
- Sanitary flows will be directed through a sewer along the public ROW and directed north and across to Humber Station Road.
- The ultimate servicing strategy will utilize the new proposed trunk sewer on Humber Station Road.

Storm Servicing

- Stormwater will be managed through a dual-drainage system, with minor flows conveyed via sewers and major flows through overland routes.
- High groundwater levels are noted which limits the feasibility for retention and infiltration on site. Further monitoring results will inform the project design.
- Site Plan 1 will achieve quantity and quality control through a storage tank and filter unit.
- The Public ROW will drain uncontrolled towards the outlet. Quality control is to be provided by a filter unit upstream of the outlet culvert, to be designed and implemented by others.
- Site Plan 2 will achieve quantity and quality through underground tanks and filter units located in the P1 level parking garage. The tanks will also be designed for rainwater re-use.

We trust that you will find this material satisfactory. Should you have any questions or comments, please do not hesitate to contact us.

SCHAEFFER & ASSOCIATES LTD.



Sukhpreet Saini, B.A.Sc., E.I.T.
Water Resources Analyst



Sadh Katukurunde, P.Eng.
Junior Associate



Appendix A

Background Information

Architect Plan

PROJECT STATISTICS		
ADDRESS: ZERO HUMBER STATION RD CALEDON		
PROPOSED ZONING: RMD		
	REQUIRED	PROPOSED
TOTAL LOT AREA (MINIMUM)	NIL	26328.55 SQ.M. (6.50 Acre)
ROAD WIDENING AREA (DEDUCTION)		365.79 SQ.M.
PROPOSED LOT AREA		25962.76 SQ.M. (6.41 Acre)
LOT FRONTAGE (MINIMUM)	NIL	121.92 M.
PHASE 3		
COMMERCIAL BUILDING -A		564.81 SQ.M.
COMMERCIAL BUILDING -B		597.51 SQ.M.
COMMERCIAL BUILDING -C		270.00 SQ.M.
COMMERCIAL BUILDING -D		486.00 SQ.M.
PHASE 3 TOTAL COVERAGE		1918.32 SQ.M.(7.39%)
PHASE 3 TOTAL GFA		2404.32 SQ.M.
PHASE 4		
COMMERCIAL BUILDING -E		587.56 SQ.M.
COMMERCIAL BUILDING -F		549.36 SQ.M.
COMMERCIAL BUILDING -G		486.00 SQ.M.
COMMERCIAL BUILDING -H		270.00 SQ.M.
PHASE 4 TOTAL COVERAGE		1892.92 SQ.M.(7.29%)
PHASE 4 TOTAL GFA		2378.92 SQ.M.
PHASE 1		
RETAIL		431.24 SQ.M.
APARTMENT BUILDING -1	NA	686.74 SQ.M.
PHASE 1 TOTAL COVERAGE		1047.09 SQ.M.(4.03%)
PHASE 1 TOTAL GFA		29089.24 SQ.M.
PHASE 2		
RETAIL		431.24 SQ.M.
APARTMENT BUILDING -2	NA	686.74 SQ.M.
PHASE 2 TOTAL COVERAGE		1047.09 SQ.M.(4.03%)
PHASE 2 TOTAL GFA		29089.24 SQ.M.
TOTAL LANDSCAPED AREA	15% OF LOT	4630.21 SQ.M. (17.83%)
TOTAL PAVED AREA		15427.13SQ.M. (59.42%)
BUILDING HEIGHT (MAX.)	20 STOREYS	20 STOREYS
NO. OF RESIDENTIAL UNITS		660
BASEMENT LEVELS		2
PARKING		587
EV READY PARKING SPACES (RESIDENTIAL PHASE 1 & 2)		92
EV READY PARKING SPACES (COMMERCIAL PHASE 3 & 4)		21
LOADING		4
PLANTING STRIP	3M ALONG A STREET	
AMENITY AREA (BUILDING 1 & 2) (GYM+PARTY HALL+CO SHARING OFFICE) (2M² PER UNIT)	1320 SQ.M.	1243.14 SQ.M.
OUTDOOR AMENITY AREA	2592.74 SQ.M. (10% OF SITE AREA)	1835.22 SQ.M. (6.97%)

BUILDING SETBACKS PHASE-1 (APARTMENT BUILDING-1)

	REQUIRED	PROPOSED
NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	12.90 M.
SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	67.12 M.
EAST SIDE (REAR LOT LINE)	3 M.	30.00 M.
WEST SIDE (FRONT LOT LINE)	NIL	135.70 M.

BUILDING SETBACKS PHASE-2 (APARTMENT BUILDING-2)

	REQUIRED	PROPOSED
NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	66.90 M.
SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	13.06 M.
EAST SIDE (REAR LOT LINE)	3 M.	30.17 M.
WEST SIDE (FRONT LOT LINE)	NIL	141.05 M.

BUILDING SETBACKS PHASE-3 (COMMERCIAL BUILDINGS-A,B,C,D)

	REQUIRED	PROPOSED
NORTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	4.80 M.
SOUTH SIDE (INTERIOR SIDE LOT LINE)	3 M.	68.39 M.
EAST SIDE (REAR LOT LINE)	3 M.	107.80 M.
WEST SIDE (FRONT LOT LINE)	NIL	3.80 M.

BUILDING SETBACKS PHASE-4 (COMMERCIAL BUILDINGS-E,F,G,H)

	REQUIRED	PROPOSED
NORTH SIDE (SIDE LOT LINE)	3 M.	67.96 M.
SOUTH SIDE (EXTERIOR SIDE LOT LINE)	3 M.	4.82 M.
EAST SIDE (INTERIOR REAR LOT LINE)	3 M.	108.87 M.
WEST SIDE (FRONT LOT LINE)	NIL	3.80 M.

PARKING CALCULATION PHASE-1(APARTMENT BUILDING-1)

	REQUIRED	PROPOSED
APARTMENT BASEMENT LEVEL PARKING - 2.6M X 5.8M SURFACE PARKING - 2.75M X 6.0M	231 (0.7 SPACES PER UNIT)	220 (INC. B.F + EV PARKING)
ACCESSIBLE PARKING (TYPE-A 3.4M X 6.0M) (TYPE-B 2.75M X 6.0M)		10
RETAIL(431.52 SQM)	22 (1 PER 20 SQ.M. OF GFA)	05
VISITOR PARKING (0.10 SPACES PER UNIT)	33	13(INC. B.F + EV PARKING)
TOTAL PARKING	264	238
BIKE PARKING		78

PARKING CALCULATION PHASE-2(APARTMENT BUILDING-2)

	REQUIRED	PROPOSED
APARTMENT BASEMENT LEVEL PARKING - 2.6M X 5.8M SURFACE PARKING - 2.75M X 6.0M	231 (0.7 SPACES PER UNIT)	220 (INC. B.F PARKING)
ACCESSIBLE PARKING (TYPE-A 3.4M X 6.0M) (TYPE-B 2.75M X 6.0M)		10
RETAIL(431.52 SQM)	22 (1 PER 20 SQ.M. OF GFA)	05
VISITOR PARKING (0.10 SPACES PER UNIT)	33	13(INC. B.F PARKING)
TOTAL PARKING	264	238
BIKE PARKING		78

PARKING CALCULATION PHASE-3(COMMERCIAL BUILDINGS-A,B,C,D)

	REQUIRED	PROPOSED
COMMERCIAL-2404.32 SQM. (2.75M X 6.0M)	120 (1 PER 20 SQ.M. OF GFA)	49 (INC. B.F + EV PARKING)
ACCESSIBLE PARKING (TYPE-A 3.4M X 6.0M) (TYPE-B 2.75M X 6.0M)		07
TOTAL PARKING	120	49
BIKE PARKING		22

PARKING CALCULATION PHASE-4(COMMERCIAL BUILDINGS-E,F,G,H)

	REQUIRED	PROPOSED
COMMERCIAL- 2378.92 SQM. (6.00M X 2.75M)	119 (1 PER 20 SQ.M. OF GFA)	60 (INC. B.F + EV PARKING)
ACCESSIBLE PARKING (TYPE-A 3.4M X 6.0M) (TYPE-B 2.75M X 6.0M)		07
TOTAL PARKING	119	60
BIKE PARKING		14

MUNICIPAL ADDRESS & LEGAL DESCRIPTION
PART OF LOT 11 CONCESSION 5
(FORMERLY TOWNSHIP OF ALBION,
COUNTY OF PEELE) TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEELE

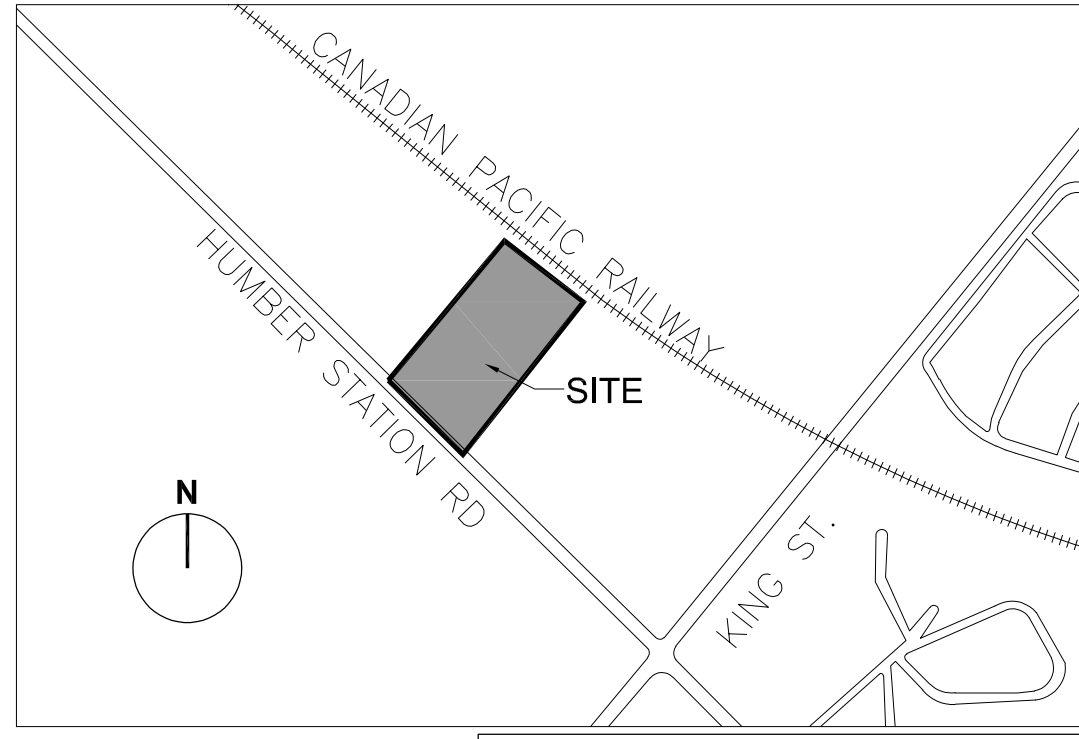
SURVEY INFORMATION TAKEN FROM:
2 HOLLAND DRIVE, UNIT 5, BOLTON,
ONTARIO L7E 1E1
PHONE 905.951.6000
FAX 905.857.4811
EMAIL-info@mauragroup.ca

OWNER:
SATWANT DEOL
188 Le Rocco Avenue
Woodbridge,Ontario
L4H 2M3

PHASING KEY MAP	
PHASE	AREA
PHASE-1	9033.42 SQ.M
PHASE-2	5079.88 SQ.M
PHASE-3	5714.38 SQ.M
PHASE-4	6099.70 SQ.M

PHASE-1		
UNIT	1B	PERCENTAGE
1B	145	43.94%
2B	179	54.24%
3B	6	1.82%
TOTAL	330	100%

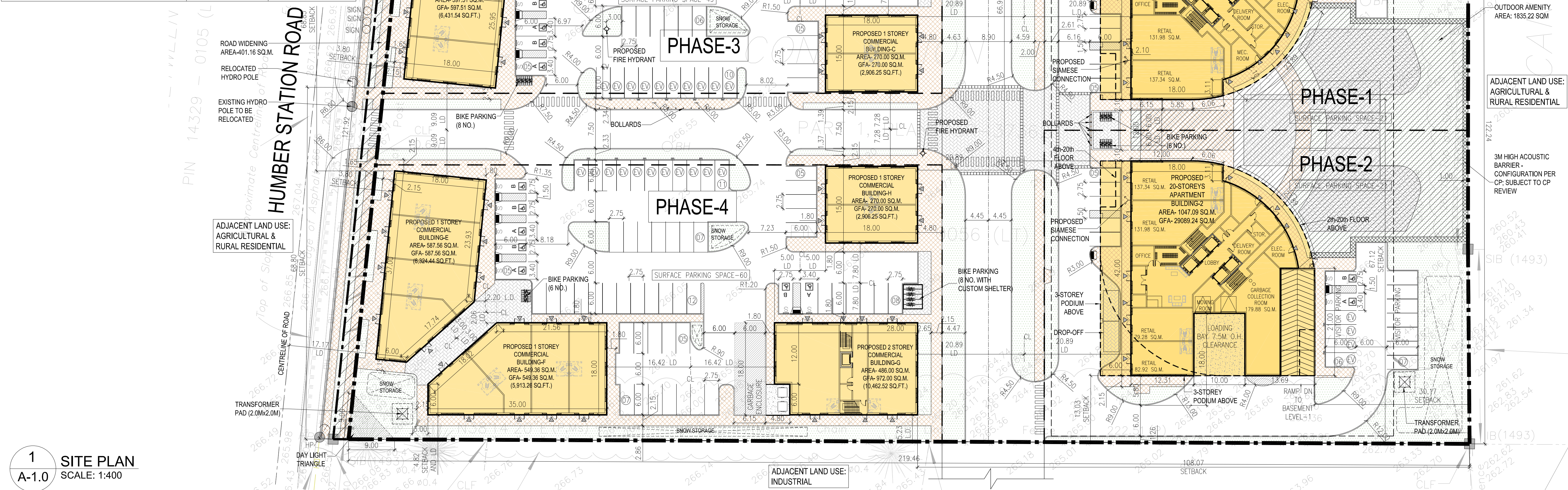
PHASE-2		
UNIT	1B	PERCENTAGE
1B	145	43.94%
2B	179	54.24%
3B	6	1.82%
TOTAL	330	100%



KEY PLAN

LEGEND

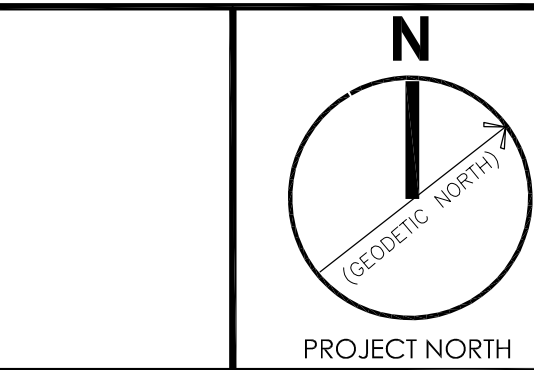
- PROPERTY LINE
- - - PHASING LINE
- NEW BUILDING
- EXISTING BUILDING
- LANDSCAPE
- CONC. PAVEMENT,150MM RAISED
- PRECAST CONC. PAVERS
- ASPHALT
- BARRIER FREE PARKING
- BARRIER FREE CURB
- BARRIER CURB
- MAIN DOOR ENTRANCE
- OVERHEAD DOOR
- LIGHT STANDARD
- EXISTING FIRE HYDRANT
- LIGHT STANDARD
- WALL MOUNTED LIGHT
- LIGHT BOLLARDS
- PROPOSED FIRE HYDRANT



1 SITE PLAN
A-1.0 SCALE: 1:400



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E: info@narchitecture.com
www.narchitecture.com



10th OCTOBER 2025
ISSUED FOR COORDINATION
NOT FOR CONSTRUCTION

8.	16 SEPT. 2025	ISSUED FOR COORDINATION	MB.
7.	19 AUG. 2025	ISSUED FOR COORDINATION	MB.
6.	22 JULY 2025	ISSUED FOR COORDINATION	MB.
5.	27 JUNE 2025	ISSUED FOR COORDINATION	MB.
4.	28 MAY 2025	ISSUED FOR COORDINATION	MB.
3.	22 APR. 2025	ISSUED FOR REVIEW	ZP.
2.	28 MAR. 2025	ISSUED FOR REVIEW	MB.
1.	31 JAN 2025	ISSUED FOR REVIEW	MB.
No.	Date	Version	Dwn.

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PROJECT:

**ZERO HUMBER
STATION RD
CALEDON, ON.**

DRAWING TITLE:

**SITE PLAN:
GROUND LEVEL**

DRAWN BY: MB	DATE: 08 JAN. 2025
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.:	DRAWING NO.:

24-66 A-1.0

Groundwater Contour Map

Y:\Shared\CA\Terraprobe\Brampton\1-Project Files\2024\02405205.000 - HYD, 0 Humber Station Road, Caledon\0100 - HYD Assessment\A. Dwgs, Logs\PDF



References:

Service Layer Credits: Map Data©Open Street Map Contributors,Microsoft, Facebook Inc. & its affiliates, Map layer by ESRI.

Key Map

Notes:

Legend:

- Approximate Monitoring Wells Location; Groundwater Elevations July 2025 (masl)
- Railway
- Interpreted Groundwater Flow Direction
- Interpreted Groundwater Contours
- Approximate Site Location

Project Title:

Hydrogeological Investigation

Site Location:

0 Humber Station Road
Caledon, Ontario

Figure Title:

Groundwater Flow Direction

Designed By:	AQ	File No.:	02405205.000
Drawn By:	HK	Scale:	As Shown
Reviewed By:	MS	Figure No.:	5
Date:	July 2025		

Appendix B

Water Supply Servicing

Population Estimate

Project No. 5532

Date: 06-Jan-26

Proposed Outlet to Humber Station Road:

Total Site Area: 2.63 ha

Item	Phase	Land Use Type	Residential Units		Population Density (pp/unit)	Population (Residential)	Commercial Area (ha)	Population Density (pp/ha)	Population (Commercial)	Population (Residential + Commercial)
1	Phase 1 & 2	Apartment Building 1 & 2	1 Bedroom	290	1.7	493	0.2106	50	11	1651
			2 & 3 Bedroom	370	3.1	1147				
2	Phase 3	Commercial Building -A B C D		-	-	0	0.2404	50	13	13
3	Phase 4	Commercial Building -E F G H		-	-	0	0.2379	50	12	12
Total						1640			36	1676

Area Taken from Draft Plan

Water Supply Calculations

Project No. 5532
December 2025

Proposed Site Plan Humber Station Road and King Road, Caledon

Water Supply Demand:	Residential [†]	280	L/capita/day
	ICI [‡]	300	L/capita/day

Population Summary

Drainage Area	Land Use	Number of Units	Pop. Density (persons/unit) [†]	Population
		290	1.7	493
1	Appartment Residential	370	3.1	1,147
2	Commercial	-	-	36

Water Demands

Land Use	Average Day Demand (L/s) [†]	Peak Hour Demand Peaking Factor [†]	Peak Hour Demand (L/s)	Max Day Demand Peaking Factor [‡]	Max Day Demand (L/s)	Fire Flow* (L/s)	Max Demand + Fire Flow (L/s)
Residential	5.31	3.0	15.94	2.0	10.63	200	210.63
ICI	0.13	3.0	0.38	1.4	0.18		0.18
Total	5.44	-	16.32	-	10.80	200	210.80

Notes

[†] As per Region of Peel Linear Wastewater Design Guidelines (2023)

[‡] Based on Region of Peel Public Works Watermain Design Criteria (2010)

*Fire demand calculated using the Fire Underwriters Survey (2020) guidelines

Required Fire Flow Calculations (FUS 2020) - Apartment 1

Project Title: Proposed Site Plan Humber Station Road and King Road
Project No.: 5532
Municipality: Town of Caledon
Building/Parcel: Apartment 1

Required Fire Flow

A - Construction Type

Type of Construction: Type I - Fire-resistive Construction (Fully protected frame, floor, roof)
Construction C Value: 0.6

B - Floor Area

If Construction C Value < 1.0:

Are the vertical openings and exterior vertical communications properly protected (1 hour rating)?

No

2,522.99 m²

Total floor area of 2 largest adjoining floors

11,807.22 m²

Total floor area of up to 8 floors immediately above 2 largest adjoining floors

8427 m²

Total Floor Area Considered for RFF Calculation (Fire-resistive construction)

C - Required Fire Flow (Rounded, Unadjusted)

12000 L/min Required Fire Flow (Unadjusted)

Adjustments

D - Fire Hazard Occupancy

Occupancy Group: C - Residential
Occupancy and Contents: Limited Combustible

-15% Total Adjustment for Fire Hazard Occupancy

10200 L/min Required Fire Flow (Unadjusted)

E - Sprinkler System

Is an automatic sprinkler system in accordance with NFPA 13 present?

Yes

Is the water supply standard for both the system and fire department hose required?

Yes

Is the system fully supervised?

No

-40% Total Adjustment for Sprinkler System

F - Building Exposure

North Side

13 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

15% Adjustment for North Side

East Side

30 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

10% Adjustment for East Side

South Side

12 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

15% Adjustment for South Side

West Side

35 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

0% Adjustment for West Side

40% Total Adjustment for Building Exposure

G - Net Required Fire Flow

10000 L/min

167 L/s

2642 USGPM

Required Fire Flow

Required Fire Flow Calculations (FUS 2020) - Apartment 2

Project Title: Proposed Site Plan Humber Station Road and King Road
Project No.: 5532
Municipality: Town of Caledon
Building/Parcel: Apartment 2

Required Fire Flow

A - Construction Type

Type of Construction: Type I - Fire-resistive Construction (Fully protected frame, floor, roof)
Construction C Value: 0.6

B - Floor Area

If Construction C Value < 1.0:

Are the vertical openings and exterior vertical communications properly protected (1 hour rating)?

No

2,522.99 m²

Total floor area of 2 largest adjoining floors

11,807.22 m²

Total floor area of up to 8 floors immediately above 2 largest adjoining floors

8427 m²

Total Floor Area Considered for RFF Calculation (Fire-resistive construction)

C - Required Fire Flow (Rounded, Unadjusted)

12000 L/min Required Fire Flow (Unadjusted)

Adjustments

D - Fire Hazard Occupancy

Occupancy Group: C - Residential
Occupancy and Contents: Limited Combustible

-15% Total Adjustment for Fire Hazard Occupancy

10200 L/min Required Fire Flow (Unadjusted)

E - Sprinkler System

Is an automatic sprinkler system in accordance with NFPA 13 present?

Yes

Is the water supply standard for both the system and fire department hose required?

Yes

Is the system fully supervised?

No

-40% Total Adjustment for Sprinkler System

F - Building Exposure

North Side

12 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

15% Adjustment for North Side

East Side

30 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

10% Adjustment for East Side

South Side

13 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

15% Adjustment for South Side

West Side

35 m

Building Separation

Apply corresponding maximum exposure charge?

Yes

0% Adjustment for West Side

40% Total Adjustment for Building Exposure

G - Net Required Fire Flow

10000 L/min

167 L/s

2642 USGPM

Required Fire Flow

FUS Calculation - Commercial Building A

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 565 square metres

C = Height (storeys)

Height: 1 Storeys

D = Fire Flow (000's)

GFA	565 square metres
Construction Type	1.5
Fire Flow	7,843 L/min.

-> Fire Flow 8,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 6,800 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20% N (4.8m) SW (6m)
10.1 to 20 m	15%
20.1 to 30 m	10% E(23m)
Greater than 30	0%

Exposure Factor 50.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	50%

10200 L/min.

Fire Flow: 10000 L/min.

167 L/s

2642 USGPM

FUS Calculation - Commercial Building B

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5**B = Largest Floor****Area:** 598 square metres**C = Height (storeys)****Height:** 1 Storeys**D = Fire Flow (000's)**

GFA 598 square metres
Construction Type 1.5
Fire Flow 8,067 L/min.

-> Fire Flow 8,000 L/min.**E = Occupancy Factor**

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%**Fire Flow** 6,800 L/min.**F = Sprinkler Factor**

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%**G = Exposure Factor**

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20% NE (6m)
10.1 to 20 m	15% S (18m) W (20m)
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 50.00% (no more than 75%)**H - Net Fire Flow Required**

F + G Factors	Charge
	50%

10200 L/min.

Fire Flow: 10000 L/min.

167 L/s

2642 USGPM

FUS Calculation - Commercial Building C

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 270 square metres

C = Height (storeys)

Height: 1 Storeys

D = Fire Flow (000's)

GFA	270 square metres
Construction Type	1.5
Fire Flow	5,422 L/min.

-> Fire Flow 5,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 4,250 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15% N (15.6m) S(14.5m)
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 30.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	30%

5525 L/min.

Fire Flow: 6000 L/min.

100 L/s

1585 USGPM

FUS Calculation - Commercial Building D

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 486 square metres

C = Height (storeys)

Height: 2 Storeys

D = Fire Flow (000's)

GFA 972 square metres
Construction Type 1.5
Fire Flow 10,288 L/min.

-> Fire Flow 10,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 8,500 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20% N(4.8m)
10.1 to 20 m	15% S(15.6m)
20.1 to 30 m	10% W(23m)
Greater than 30	0%

Exposure Factor 45.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	45%

12325 L/min.

Fire Flow: 12000 L/min.

200 L/s

3170 USGPM

FUS Calculation - Commercial Building E

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 588 square metres

C = Height (storeys)

Height: 1 Storeys

D = Fire Flow (000's)

GFA	588 square metres
Construction Type	1.5
Fire Flow	7,999 L/min.

-> Fire Flow 8,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 6,800 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20% SE(6M)
10.1 to 20 m	15% N(18m) W(20m)
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 50.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	50%

10200 L/min.

Fire Flow: 10000 L/min.

167 L/s

2642 USGPM

FUS Calculation - Commercial Building F

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 549 square metres

C = Height (storeys)

Height: 1 Storeys

D = Fire Flow (000's)

GFA 549 square metres
Construction Type 1.5
Fire Flow 7,735 L/min.

-> Fire Flow 8,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 6,800 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 40.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	40%

9520 L/min.

Fire Flow: 10000 L/min.

167 L/s

2642 USGPM

FUS Calculation - Commercial Building G

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 486 square metres

C = Height (storeys)

Height: 2 Storeys

D = Fire Flow (000's)

GFA 972 square metres
Construction Type 1.5
Fire Flow 10,288 L/min.

-> Fire Flow 10,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 8,500 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20% S(5M)
10.1 to 20 m	15% N(15.6)
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 35.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors	Charge
	35%

11475 L/min.

Fire Flow: 11000 L/min.

183 L/s

2906 USGPM

FUS Calculation - Commercial Building H

Project: 5532

Project Name: Proposed Site Plan Humber Station Road and King Road

Municipality: Town of Caledon

A = Type of Construction

Type of Construction:	C	Description
Type V Wood Frame	1.5	(essentially all combustible)
Type IV - A Encapsulated Mass Timber	0.8	
Type IV - B Rated Mass Timber	0.9	
Type IV - C Ordinary Mass Timber	1	
Type IV - D Un-rated Mass Timber	1.5	
Type III - Ordinary	1	(brick/masonry walls, combustible interior)
Type II - Non-Combustible	0.8	(unprotected metal structure, masonry/metal walls)
Type I - Fire-Resistive	0.6	(fully protected frame, roof, floors)

Construction Coefficient: 1.5

B = Largest Floor

Area: 270 square metres

C = Height (storeys)

Height: 1 Storeys

D = Fire Flow (000's)

GFA 270 square metres
Construction Type 1.5
Fire Flow 5,422 L/min.

-> Fire Flow 5,000 L/min.

E = Occupancy Factor

Fire Hazard of Contents	Charge
Non-Combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Occupancy Factor -15%

Fire Flow 4,250 L/min.

F = Sprinkler Factor

Sprinkler System	Charge
n/a	0%
NFPA 13 System	-30%
Water supply is standard for both the system and	
Fire Dep. Hose lines	-10%
Fully Supervised System	-10%

Sprinkler Factor: 0%

G = Exposure Factor

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15% N(14.5m) S(15.6m)
20.1 to 30 m	10%
Greater than 30	0%

Exposure Factor 30.00% (no more than 75%)

H - Net Fire Flow Required

F + G Factors 30%

5525 L/min.

Fire Flow: 6000 L/min.

100 L/s

1585 USGPM

Appendix C

Sanitary Servicing

Proposed Sanitary Flow Calculation

Project No. 5532

06-Jan-26

Infiltration Rate: 0.26 L/s/ha
Residential Generation Rate: 290 L/capita/day
ICI Generation Rate: 270 L/capita/day

Proposed Outlet to Columbia Way

Total Developable Land Area (ha): 2.63 ha

Summary of Sanitary Design Flow Calculation

Population Type	Total Population	Average Demand (L/s)	Harmon's Peaking Factor (M) *	Peak Flow (L/s)	Total Developable Land Area (ha)	Infiltration (L/ha/s)	Infiltration (L/s)	Total Peak Flow (L/s)
Residential	1640	5.62	3.64	20.47	2.63	0.26	0.68	21.15
Commerical	36							

$$M = 1 + 14 / (4 + (P/1000)^{0.5})$$

Maximum M=4

*Population Estimate based on the Region of Peel's Linear Wastewater Standards (March 2023)

Appendix D

Stormwater Management Calculations

Storage and Flow Calculations

Runoff Coefficient Calculations

Project No: 2025-5532
Date: January 2026
Project Name: "0" Humber Station Road, Caledon

Criteria:

The Runoff Coefficients were taken from the Township of King's Design Criteria

Calculations for Existing Subject Site

	Area (ha)	Runoff Coeff.	A x C
Site Plan 1	1.339	0.85	1.14
Site Plan 2	1.015	0.85	0.86
	2.354		2.00

Weighted Runoff Coefficient	0.85
------------------------------------	-------------

0.125 cms per hectare

Flow Calculations - Rational Method

Project No: 2025-5532
 Date: January 2026
 Project Name: "0" Humber Station Road, Caledon

Criteria:

The Runoff Coefficients were taken from City's Design Criteria.

Rainfall intensity

Design Storm Event	A	B	C	I (mm/hr)
2-Year	1070	7.85	0.8759	85.72
5-Year	1593	11.00	0.8789	109.68
10-Year	2221	12.00	0.9080	134.16
25-Year	3158	15.00	0.9335	156.47
50-Year	3886	16.00	0.9495	176.19
100-Year	4688	17.00	0.9624	196.54

Note:

T=10 minutes

$I=A(T+B)^{-C}$

Proposed Peak Discharge Rate - Site Plan 1

Runoff Coefficient, C	0.85	
Drainage Area	1.34	ha
2-Year Peak Flow, Q2	0.271	m ³ /s
5-Year Peak Flow, Q5	0.347	m ³ /s
10-Year Peak Flow, Q10	0.424	m ³ /s
25-Year Peak Flow, Q25	0.495	m ³ /s
50-Year Peak Flow, Q50	0.557	m ³ /s
100-Year Peak Flow, Q100	0.622	m ³ /s

Proposed Peak Discharge Rate - Site Plan 2

Runoff Coefficient, C	0.85	
Drainage Area	1.02	ha
2-Year Peak Flow, Q2	0.206	m ³ /s
5-Year Peak Flow, Q5	0.263	m ³ /s
10-Year Peak Flow, Q10	0.322	m ³ /s
25-Year Peak Flow, Q25	0.375	m ³ /s
50-Year Peak Flow, Q50	0.423	m ³ /s
100-Year Peak Flow, Q100	0.471	m ³ /s

Erosion Control

(5mm x imp. Area x C x 10)

Site Plan 1	56.91	m ³
Site Plan 2	43.14	m ³

ROW

C	0.75	
Area	0.2605	ha
Retention depth	2	mm
Volume	3.91	m ³

Flow Calculations - Rational Method

Project No: 2025-5532
 Date: January 2026
 Project Name: "0" Humber Station Road, Caledon

Criteria:

The Runoff Coefficients were taken from City's Design Criteria.

Rainfall intensity

Design Storm Event	A	B	C	I (mm/hr)
2-Year	1070	7.85	0.8759	85.72
5-Year	1593	11.00	0.8789	109.68
10-Year	2221	12.00	0.9080	134.16
25-Year	3158	15.00	0.9335	156.47
50-Year	3886	16.00	0.9495	176.19
100-Year	4688	17.00	0.9624	196.54

Note:

T=10 minutes

$$I=A(T+B)^{-C}$$

Proposed Peak Discharge Rate - Public ROW

Runoff Coefficient, C	0.75	
Drainage Area	3.26	ha
2-Year Peak Flow, Q2	0.583	m ³ /s
5-Year Peak Flow, Q5	0.745	m ³ /s
10-Year Peak Flow, Q10	0.912	m ³ /s
25-Year Peak Flow, Q25	1.064	m ³ /s
50-Year Peak Flow, Q50	1.198	m ³ /s
100-Year Peak Flow, Q100	1.336	m ³ /s

Storage Volume Calculation - Underground Storage Tank - Site Plan 1

Project No: 2025-5532
Date: January 2026
Project Name: "0" Humber Station Road, Caledon

Modified Rational Method

Area (ha) =	1.339
C =	0.85
C (100 year) =	1.00 *1.25 Adjustment Factor
Maximum Release Rate (l/s) =	424.5

100 Year Storm

Design Storm =	City of Toronto
A =	4688
B =	17.00
C =	0.9624

	100 Year			Total	Maximum	Required
Time	Intensity	Total	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
5	239.35	890.97	890.97	267.29	127.35	139.94
6	229.33	853.66	853.66	307.32	152.82	154.50
7	220.13	819.40	819.40	344.15	178.29	165.86
8	211.65	787.84	787.84	378.16	203.76	174.40
9	203.81	758.65	758.65	409.67	229.23	180.44
10	196.54	731.59	731.59	438.95	254.70	184.26
11	189.78	706.43	706.43	466.24	280.17	186.08
12	183.47	682.97	682.97	491.74	305.64	186.10
13	177.58	661.05	661.05	515.62	331.11	184.51
14	172.07	640.51	640.51	538.03	356.58	181.45
15	166.89	621.24	621.24	559.11	382.05	177.07
16	162.02	603.11	603.11	578.98	407.52	171.47
17	157.43	586.03	586.03	597.75	432.99	164.76
18	153.10	569.90	569.90	615.50	458.46	157.04
19	149.01	554.66	554.66	632.31	483.92	148.39
20	145.13	540.23	540.23	648.27	509.39	138.88
21	141.45	526.54	526.54	663.44	534.86	128.57
22	137.96	513.54	513.54	677.87	560.33	117.54
23	134.64	501.18	501.18	691.62	585.80	105.82
24	131.48	489.41	489.41	704.75	611.27	93.47

Required Storage (m³): 186.10

Storage Volume Calculation - Underground Storage Tank - Site Plan 2

Project No: 2025-5532
Date: January 2026
Project Name: "0" Humber Station Road, Caledon

Modified Rational Method

Area (ha) =	1.015
C =	0.85
C (100 year) =	1.00 *1.25 Adjustment Factor
Maximum Release Rate (l/s) =	321.8

100 Year Storm

Design Storm =	City of Toronto
A =	4688
B =	17.00
C =	0.9624

	100 Year			Total	Maximum	Required
Time	Intensity	Total	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(m ³)	(m ³)	(m ³)
5	239.35	675.38	675.38	202.62	96.53	106.08
6	229.33	647.10	647.10	232.96	115.84	117.12
7	220.13	621.13	621.13	260.87	135.15	125.73
8	211.65	597.20	597.20	286.66	154.45	132.20
9	203.81	575.08	575.08	310.54	173.76	136.78
10	196.54	554.57	554.57	332.74	193.07	139.67
11	189.78	535.49	535.49	353.43	212.37	141.05
12	183.47	517.71	517.71	372.75	231.68	141.07
13	177.58	501.09	501.09	390.85	250.99	139.86
14	172.07	485.53	485.53	407.84	270.29	137.55
15	166.89	470.91	470.91	423.82	289.60	134.22
16	162.02	457.17	457.17	438.89	308.91	129.98
17	157.43	444.23	444.23	453.11	328.22	124.89
18	153.10	432.00	432.00	466.56	347.52	119.04
19	149.01	420.45	420.45	479.31	366.83	112.48
20	145.13	409.51	409.51	491.41	386.14	105.27
21	141.45	399.13	399.13	502.90	405.44	97.46
22	137.96	389.28	389.28	513.84	424.75	89.10
23	134.64	379.91	379.91	524.27	444.06	80.21
24	131.48	370.98	370.98	534.22	463.36	70.85

Required Storage (m³): 141.07

Subdivision Water Balance

**TABLE 1: WATER BUDGET - PRE DEVELOPMENT
WATER BALANCE/WATER BUDGET ASSESSMENT**

Catchment Designation	Site	Total
	Landscape	
Pervious Area (m ²)	25981	25981
Impervious Area (m ²)	0	0
Total Area (m ²)	25981	25981
Infiltration Factors		
Topography Infiltration Factor (Flat Land)	0.30	
Soil Infiltration Factor (Silty Clay)	0.15	
Land Cover Infiltration Factor (Cultivated Land)	0.10	
MOE Infiltration Factor	0.55	
Inputs (mm/year)		
Precipitation*	864	864
Run-On	0	0
Other Inputs	0	0
Total Inputs	864	864
Outputs (mm/year)		
Precipitation Surplus	385	385
Net Surplus	385	385
Downspout Disconnection Retention	0	0
Evapotranpiration**	479	479
Roof Evapotranspiration	0	0
Rooftop Runoff Lawn Evaporation	0	0
Total Evapotranspiration	479	479
Infiltration	212	212
Rooftop Infiltration	0	0
Total Infiltration	212	212
Runoff Pervious Area	173	173
Runoff Impervious Area	0	0
Total Runoff	173	173
Total Outputs	864	864
Difference (Inputs - Outputs)	0	0
Inputs (m ³ /year)		
Precipitation	22448	22448
Run-On	0	0
Other Inputs	0	0
Total Inputs	22448	22448
Outputs (m ³ /year)		
Precipitation Surplus	10003	10003
Net Surplus	10003	10003
Downspout Disconnection Retention	0	0
Evapotranpiration	12445	12445
Roof Evapotranspiration	0	0
Rooftop Runoff Lawn Evaporation	0	0
Total Evapotranspiration	12445	12445
Infiltration	5501	5501
Rooftop Infiltration	0	0
Total Infiltration	5501	5501
Runoff Pervious Area	4501	4501
Runoff Impervious Area	0	0
Total Runoff	4501	4501
Total Outputs	22448	22448
Difference (Inputs - Outputs)	0	0

* From TRSPA Water Balance Tool

** Value Adjusted through balancing TRSPA Result

TABLE 2: WATER BUDGET - POST-DEVELOPMENT WITHOUT MITIGATION
WATER BALANCE/WATER BUDGET ASSESSMENT

Catchment Designation	Site			Total
	ROW	Commercial Block	Mid/High Rise Block	
Pervious Area (m ²)	0	0	0	0
Impervious Area (m ²)	2438	13392	10151	25981
Area (m ²)	2438	13392	10151	25981
Infiltration Factors				
Topography Infiltration Factor	N/A	N/A	N/A	
Soil Infiltration Factor	N/A	N/A	N/A	
Land Cover Infiltration Factor	N/A	N/A	N/A	
MOE Infiltration Factor	N/A	N/A	N/A	
Inputs (per unit area)				
Precipitation (mm/year)	864	864	864	864
Total Inputs (m ³ /year)	864	864	864	864
Outputs (per unit area)				
Precipitation Surplus (mm/year) ¹	778	778	778	778
Net Surplus (mm/year)	778	778	778	778
Downspout Disconnection Retention	0	0	0	0
Evapotranpiration (mm/year)	86	86	86	86
Roof Evapotranspiration (mm/year)	0	0	0	0
Rooftop Runoff Lawn Evaporation (mm/year)	0	0	0	0
Total Evapotranspiration (mm/yr)	86	86	86	86
Infiltration (mm/year)	0	0	0	0
Rooftop Infiltration (mm/year)	0	0	0	0
Total Infiltration (mm/year)	0	0	0	0
Runoff Pervious Area (mm/year)	0	0	0	0
Runoff Impervious Area (mm/year)	778	778	778	778
Total Runoff (mm/year)	778	778	778	778
Total Outputs (mm/year)	864	864	864	864
Difference (Inputs - Outputs)	0	0	0	0
Input Volumes				
Precipitation (m ³ /year)	2106	11571	8770	22448
Total Inputs (m ³ /year)	2106	11571	8770	22448
Outputs (Volumes)				
Precipitation Surplus (m ³ /year)	1896	10414	7893	20203
Net Surplus (m ³ /year)	1896	10414	7893	20203
Downspout Disconnection Retention (m ³ /year)	0	0	0	0
Evapotranspiration (m ³ /year)	211	1157	877	2245
Roof Evapotranspiration (m ³ /year)	0	0	0	0
Rooftop Runoff Lawn Evaporation (m ³ /year)	0	0	0	0
Total Evapotranspiration (m ³ /year)	211	1157	877	2245
Infiltration (m ³ /year)	0	0	0	0
Rooftop Infiltration (m ³ /year)	0	0	0	0
Total Infiltration (m ³ /year)	0	0	0	0
Runoff Pervious Area (m ³ /year)	0	0	0	0
Runoff Impervious Area (m ³ /year)	1896	10414	7893	20203
Total Runoff (m ³ /year)	1896	10414	7893	20203
Total Outputs (m ³ /year)	2106	11571	8770	22448
Difference (Inputs - Outputs)	0	0	0	0

1 - Assumes 10% Evaporation from Impervious Surfaces

Filter Sizing Reports



Hydroworks Sizing Summary

Humber Station Road & King Street - SP1

Caledon, ON

01-07-2026

Recommended Size: HydroFilter HF34

Hydroworks Sizing Program Version 5.8.5

A HydroFilter HF34 is recommended to provide 80 % annual TSS removal based on a drainage area of 1.34 (ha) with an imperviousness of 94 % and Toronto Central, Ontario rainfall for the ETV particle size distribution.

The recommended HydroFilter HF34 treats 90 % of the annual runoff and provides 82 % annual TSS removal for the Toronto Central rainfall records and ETV particle size distribution.

This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

The sizing program is for sizing purposes only and does not address any site specific parameters such as hydraulic gradeline, tailwater submergence, groundwater, soils bearing capacity, etc. Headloss calculations are not a hydraulic gradeline calculation since this requires a starting water level and an analysis of the entire system downstream of the HydroFilter .

TSS Removal Sizing Summary

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

Site Parameters

Area (ha) 1.34

Imperviousness (%) 94

Units

☐ U.S.

☒ Metric

Rainfall Station

Toronto Central

1982 To 1999

Ontario

Rainfall Timestep = 15 min.

Project Title

Humber Station Road & King Street - SP1

(2 lines)

Caledon, ON

ETV Lab Testing Results ☐ Post Treatment Recharge

HydroFilter Annual Sizing Results

Use HydroDome with HydroFilter ☐ Yes

Number of Cartridges 34 **Estimate**

Annual TSS Removal (%) 82

Annual Flow Treatment (%) 90

Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65

Note: Results vary significantly based on particle size distribution

Simulate

TSS Particle Size Distribution

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

TSS Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65
400	5	2.65
850	5	2.65
*		

Notes:

1. To change data just click a cell and type in the new value(s)
2. To add a row just go to the bottom of the table and start typing.
3. To delete a row, select the row by clicking on the first pointer column, then press delete
4. To sort the table click on one of the column headings

TSS Distributions

☒ ETV Canada

☐ Standard HDS Design

☐ Alden Laboratory

☐ OK110

☐ Toronto

☐ Ontario Fine

☐ ETV Canada (Calgary)

☐ Calgary Forebay

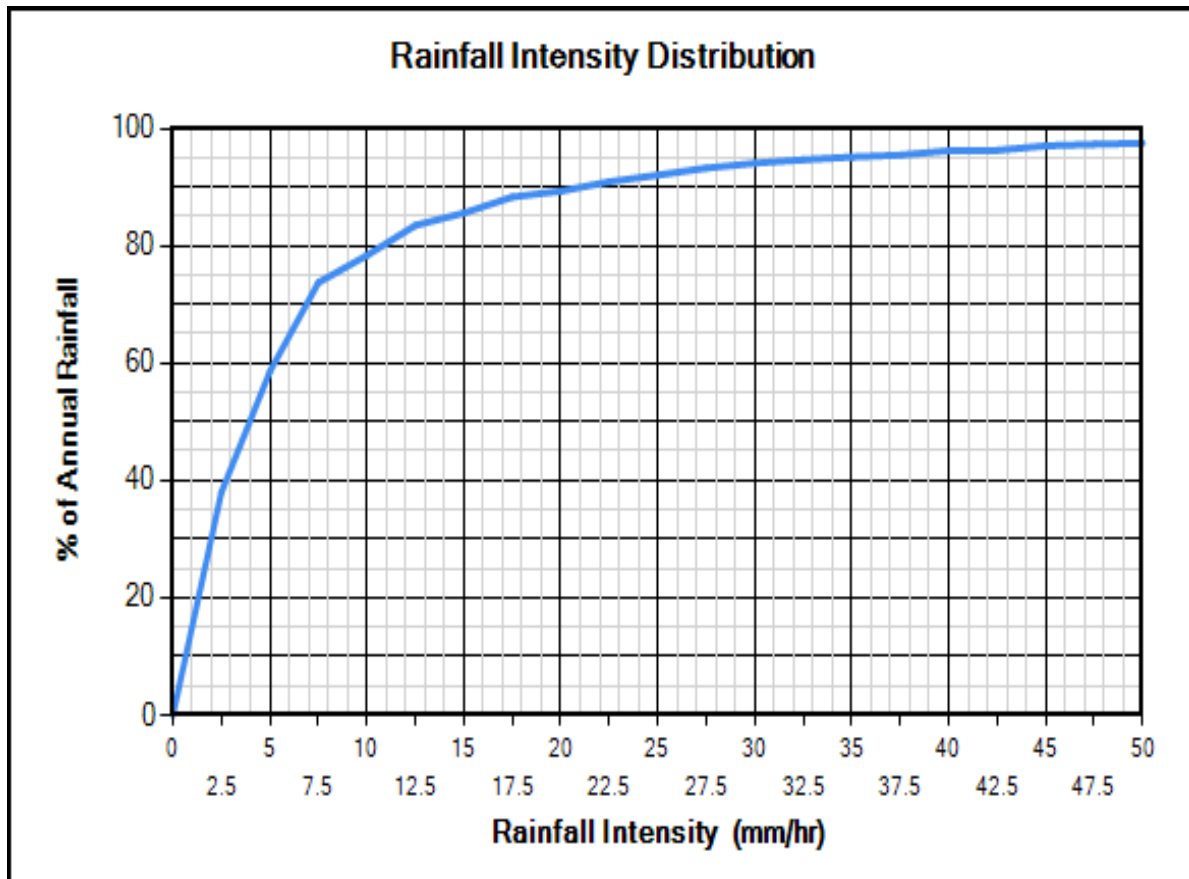
☐ Kitchener

☐ User Defined

Clear

You must select a particle size distribution for TSS to simulate TSS removal

Water Temp (C) 20



Site Physical Characteristics

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

Catchment Parameters

Width (m) Imperv. Mannings n Maintenance Frequency (months)

Perv Mannings n

Slope (%) Imp. Depress. Storage (mm)

Perv. Depress. Storage (mm)

Daily Evaporation (mm/day)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	2.54	2.54	3.81	3.81	3.81	2.54	2.54	0	0

Infiltration

Max. Infiltration Rate (mm/hr)

Min. Infiltration Rate (mm/hr)

Infiltration Decay Rate (1/s)

Infiltration Regen. Rate (1/s)

Catch Basins

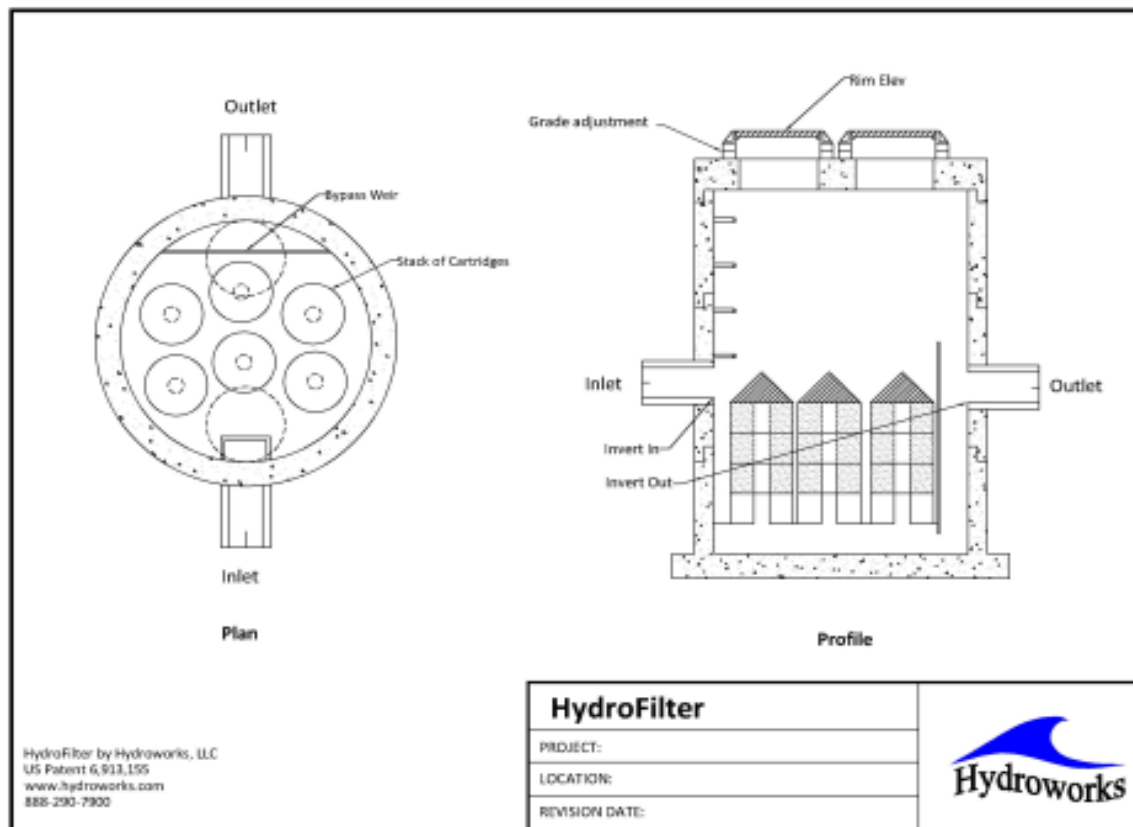
of Catch basins

Constant Baseflow

Roof Runoff (m3/s)

Resets all parameters excluding input catchment width.

Generic HF34 CAD Drawing



TSS Buildup And Washoff

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

TSS Buildup

☐ Power Linear
☒ Exponential
☐ Michaelis-Menton
☐ No Buildup Required

TSS Washoff

☒ Power-Exponential
☐ Rating Curve (no upper limit)
☐ Rating Curve (limited to buildup)
☐ Event Mean Concentration

Street Sweeping

Efficiency (%)
Start Month
Stop Month
Frequency (days)
Available Fraction

Soil Erosion

☐ Add Erosion to TSS

Reset to Default Values

TSS Buildup Parameters

Limit (kg/ha)
Coeff (kg/ha)
Exponent

TSS Washoff Parameters

Coefficient
Exponent

TSS Buildup

☒ Based on Area
☐ Based on Curb Length

Upstream Quantity Storage

The screenshot shows the 'Hydroworks HydroFilter Sizing Program' window. The 'Site Storage' tab is selected in the top navigation bar. Below the navigation bar, there is a table titled 'Quantity Control Storage'.

	Storage (m3)	Discharge (m3/s)
▶	0	0
*		

A 'Clear' button is located at the bottom right of the window.

Other Parameters

The screenshot shows the 'Hydroworks HydroFilter Sizing Program' window. The 'Other' tab is selected in the top navigation bar. The main area of the window is empty, indicating that no parameters have been entered in this section.

Flagged Issues

None

Hydroworks Sizing Program - Version 5.8.5

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1-800-290-7900

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Hydroworks Sizing Summary

Humber Station Road & King Street - SP2

Caledon, ON

01-07-2026

Recommended Size: HydroFilter HF14

Hydroworks Sizing Program Version 5.8.5

A HydroFilter HF14 is recommended to provide 80 % annual TSS removal based on a drainage area of 0.51 (ha) with an imperviousness of 94 % and Toronto Central, Ontario rainfall for the ETV particle size distribution.

The recommended HydroFilter HF14 treats 90 % of the annual runoff and provides 82 % annual TSS removal for the Toronto Central rainfall records and ETV particle size distribution.

This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

The sizing program is for sizing purposes only and does not address any site specific parameters such as hydraulic gradeline, tailwater submergence, groundwater, soils bearing capacity, etc. Headloss calculations are not a hydraulic gradeline calculation since this requires a starting water level and an analysis of the entire system downstream of the HydroFilter .

TSS Removal Sizing Summary

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

Site Parameters
 Area (ha) 0.51
 Imperviousness (%) 94

Units
☐ U.S.
☒ Metric

Rainfall Station
 Toronto Central
 1982 To 1999

Ontario
 Rainfall Timestep = 15 min.

Project Title
 (2 lines)
 Humber Station Road & King Street - SP2
 Caledon, ON

ETV Lab Testing Results ☐ Post Treatment Recharge

HydroFilter Annual Sizing Results

Use HydroDome with HydroFilter ☐ Yes

Number of Cartridges 14 **Estimate**

Annual TSS Removal (%) 82

Annual Flow Treatment (%) 90

Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65

Note: Results vary significantly based on particle size distribution

Simulate

TSS Particle Size Distribution

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

TSS Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65
400	5	2.65
850	5	2.65
*		

Notes:

1. To change data just click a cell and type in the new value(s)
2. To add a row just go to the bottom of the table and start typing.
3. To delete a row, select the row by clicking on the first pointer column, then press delete
4. To sort the table click on one of the column headings

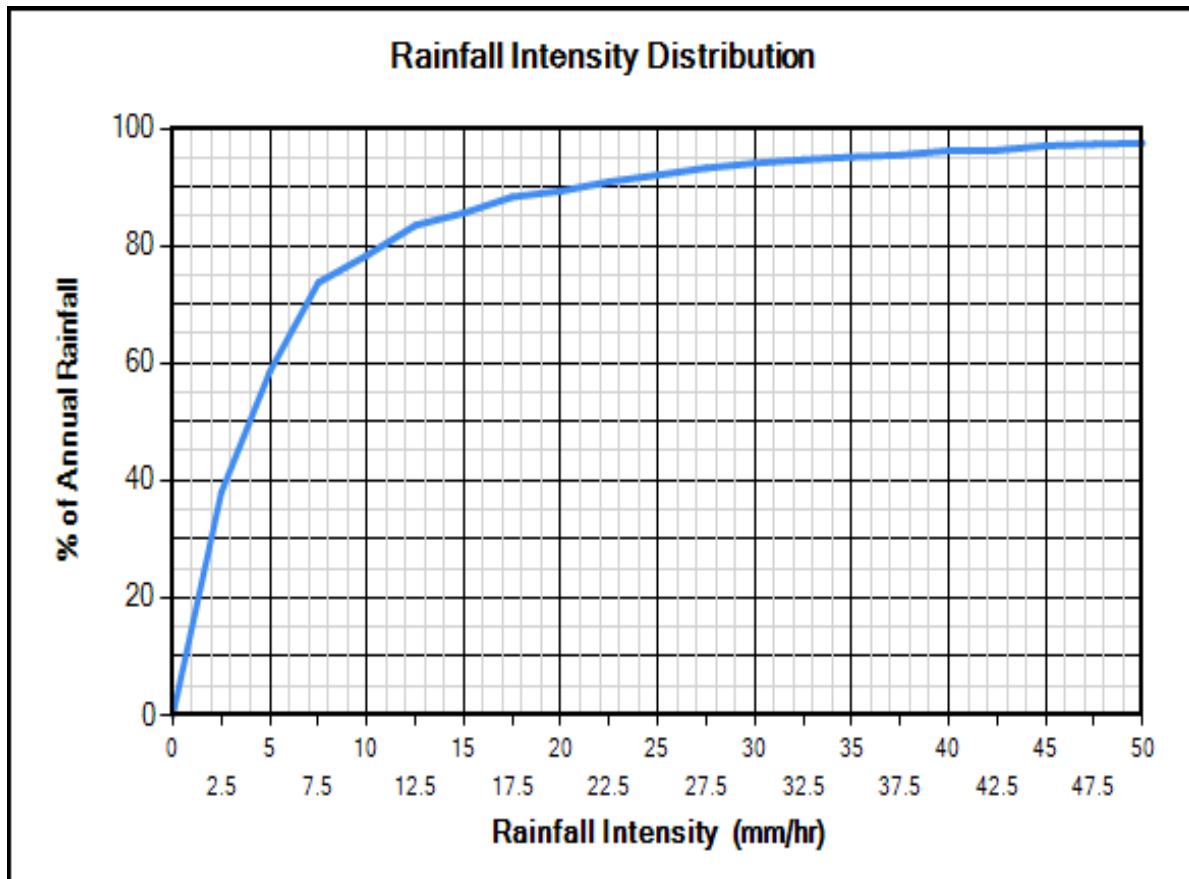
TSS Distributions

☒ ETV Canada
☐ Standard HDS Design
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☐ OK110
☐ Toronto
☐ Ontario Fine
☐ ETV Canada (Calgary)
☐ Calgary Forebay
☐ Kitchener
☐ User Defined

Clear

You must select a particle size distribution for TSS to simulate TSS removal

Water Temp (C) 20



Site Physical Characteristics

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

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Slope (%) Imp. Depress. Storage (mm)

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Daily Evaporation (mm/day)

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Infiltration

Max. Infiltration Rate (mm/hr)

Min. Infiltration Rate (mm/hr)

Infiltration Decay Rate (1/s)

Infiltration Regen. Rate (1/s)

Catch Basins

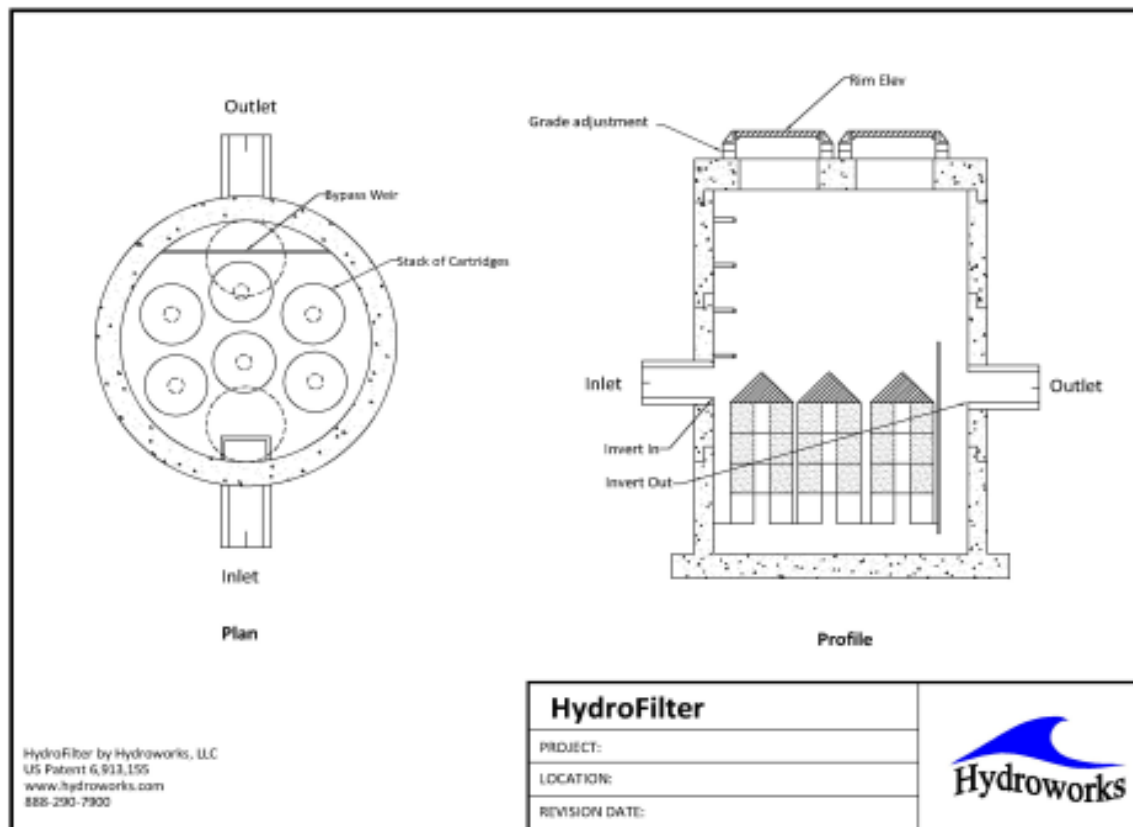
of Catch basins

Constant Baseflow

Roof Runoff (m3/s)

Resets all parameters excluding input catchment width.

Generic HF14 CAD Drawing



TSS Buildup And Washoff

Hydroworks HydroFilter Sizing Program

File Product Units CAD Video Help

Main Rainfall Site TSS PSD TSS Load Site Storage By-Pass CAD Video Other

TSS Buildup

☐ Power Linear
☒ Exponential
☐ Michaelis-Menton
☐ No Buildup Required

TSS Washoff

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☐ Rating Curve (no upper limit)
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☐ Event Mean Concentration

Street Sweeping

Efficiency (%)
Start Month
Stop Month
Frequency (days)
Available Fraction

Soil Erosion

☐ Add Erosion to TSS

Reset to Default Values

TSS Buildup Parameters

Limit (kg/ha)
Coeff (kg/ha)
Exponent

TSS Washoff Parameters

Coefficient
Exponent

TSS Buildup

☒ Based on Area
☐ Based on Curb Length

Upstream Quantity Storage

The screenshot shows the 'Hydroworks HydroFilter Sizing Program' window. The 'Site Storage' tab is selected in the top navigation bar. Below the navigation bar, there is a table titled 'Quantity Control Storage'.

	Storage (m3)	Discharge (m3/s)
▶	0	0
*		

A 'Clear' button is located at the bottom right of the window.

Other Parameters

The screenshot shows the 'Hydroworks HydroFilter Sizing Program' window. The 'Other' tab is selected in the top navigation bar. The main area of the window is empty, indicating that no parameters have been defined for this tab.

Flagged Issues

None

Hydroworks Sizing Program - Version 5.8.5

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Appendix E

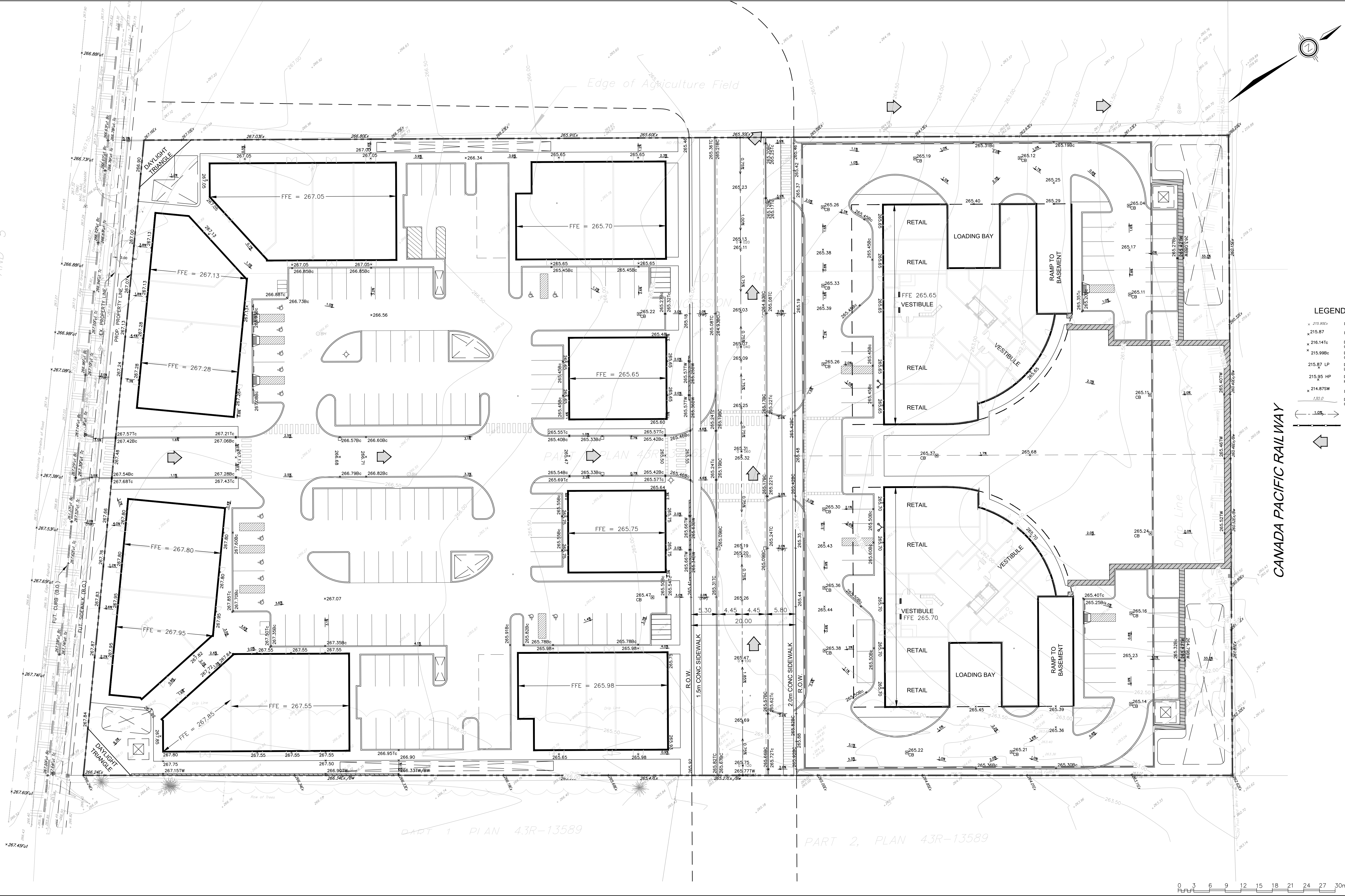
Engineering Drawings

SPECIAL NOTES FOR SIDEWALK/CONCRETE WALKWAYS AT BUILDING PERIMETER

IN ORDER TO AVOID FROST HEAVING AND RELATED PROBLEMS, THE FOLLOWING SHALL BE STRICTLY IMPLEMENTED:

1. COMPACTION OF SUB-GRADE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF THE GRANULAR BASE.
2. DEPTH OF GRANULAR BASE TO BE INCREASED IF RECOMMENDED BY THE GEOTECHNICAL ENGINEER AFTER INSPECTION OF THE SUB-GRADE.
3. SUB-DRAINS TO BE INSTALLED AROUND THE BUILDING WALL FOUNDATION. IF RECOMMENDED BY THE GEOTECHNICAL ENGINEER, ADDITIONAL SUB-DRAINS SHALL BE INSTALLED BELOW BARRIER CURBS. ALL SUB-DRAINS TO HAVE POSITIVE OUTLET TO STORM SERVICES.
4. ALTERNATIVE SOLUTIONS ENDORSED BY THE GEOTECHNICAL ENGINEER MAY BE IMPLEMENTED.

Known as HUMBER STATION ROAD
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 4 AND 5



KEY PLAN
N.T.S.

NOTES:

1. THE LOCATION OF ALL UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES ARE NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES PRIOR TO COMMENCING CONSTRUCTION AND SHALL ASSUME ALL LIABILITIES OF DAMAGE.
2. ALL AREAS DISTURBED AND DAMAGED DURING DEVELOPMENT OF DEVELOPER'S LAND SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF BRAMPTON AND REGION OF PEE. GRASSED AREA SHALL BE TOPPED WITH 100mm TOPSOIL AND SODDED AS PER CITY STANDARDS. ALL EXISTING SERVICES TO BE ADJUSTED TO SUIT NEW GRADES.

LEGEND

- DENOTES EXISTING ELEVATION
- DENOTES PROPOSED ELEVATION
- DENOTES PROPOSED TOP OF CURB ELEVATION
- DENOTES PROPOSED BOTTOM OF CURB ELEVATION
- DENOTES PROPOSED ELEVATION LOW POINT
- DENOTES PROPOSED ELEVATION HIGH POINT
- DENOTES SWALE ELEVATION
- DENOTES EXISTING CONTOUR ELEVATION
- DENOTES SWALE
- DENOTES TREE PROTECTION HOARDING
- DENOTES OVERLAND FLOW ROUTE
- DENOTES STORM MANHOLE MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES CATCHBASIN
- DENOTES DOUBLE CATCHBASIN
- DENOTES AREA DRAIN
- DENOTES HYDRANT
- DENOTES VALVE & CHAMBER
- DENOTES VALVE & BOX
- DENOTES PROPERTY LIMIT
- DENOTES PHASING LIMIT

NO.	DATE	ISSUED FOR	ISSUED FOR
1.	JAN/09/25	ISSUED FOR 2BA SUBMISSION	

BEARING NOTE
BEARINGS ARE UTM GRID, DERIVED FROM GPS OBSERVED BY REAL TIME NETWORK (SOKIA POWER NET) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010.0).

ELEVATION NOTE
ELEVATIONS HEREON ARE GEODETIC IN ORIGIN AND WERE DERIVED FROM GPS OBSERVATIONS USING THE "TOPNET" GPS NETWORK AND ARE REFERRED TO THE COVID-1975 DATUM.

Town of Caledon
APPROVED AS NOTED
This approval constitutes a general review and does not certify dimensional accuracy.
This approval is subject to further certification of the "as constructed" works by a registered Professional Engineer of the Province of Ontario.
Date: _____
Approved By: _____

**'O' HUMBER STATION ROAD
CALEDON, ONTARIO**

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.

6 Bonrose Drive, Concord,
Ontario L4K 4K3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail:
design@schaeffers.com

Region of Peel
Working for you

TOWN OF CALEDON

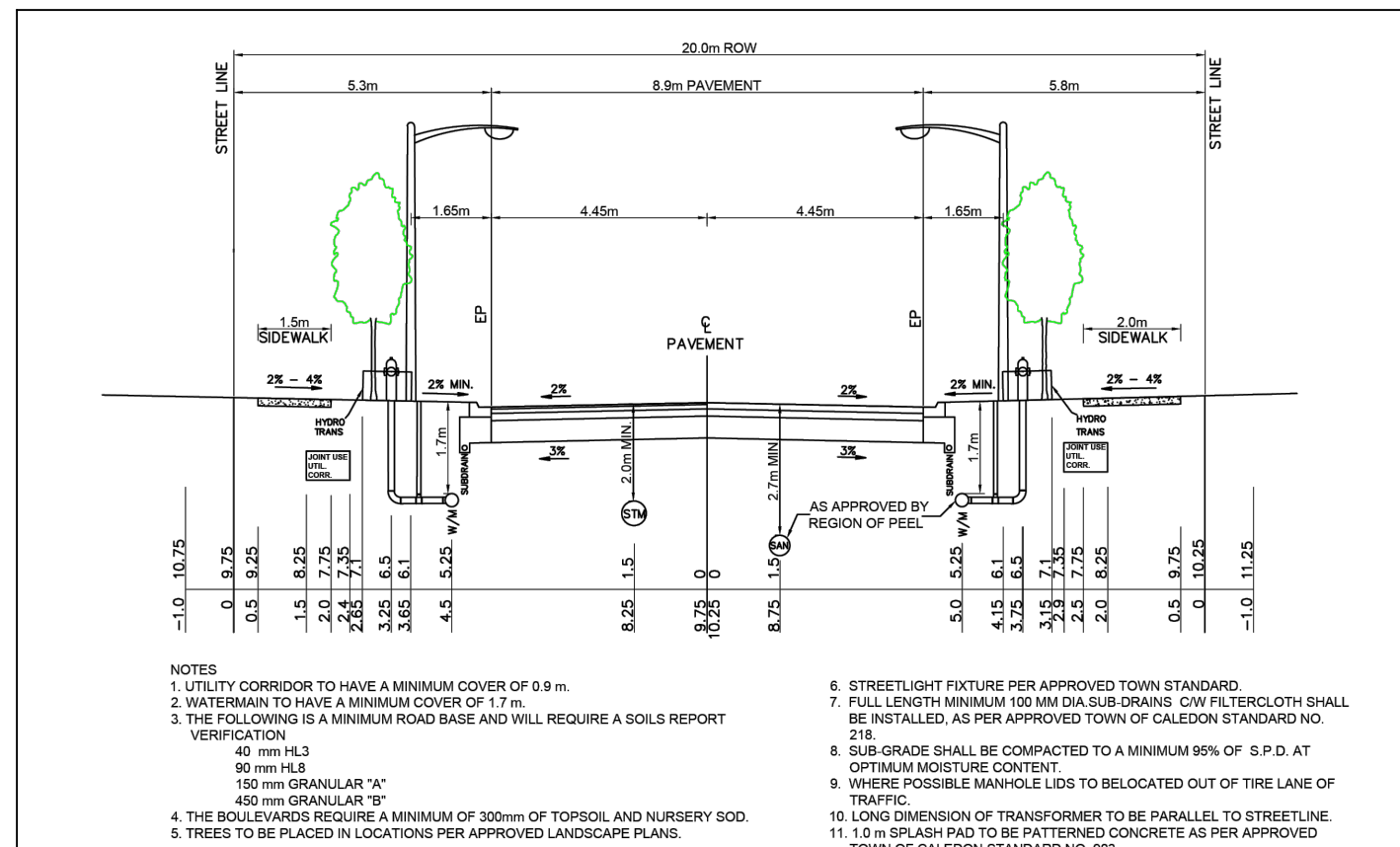
SITE GRADING PLAN

CITY FILE #	REGION FILE #
SCALE: 1:300	PROJECT No: 2025-5532
DESIGNED BY: D.W.	DRAWN BY: V.H.
CHECKED BY: H.S.	DATE: JUL 2025
	DRAWING No: SG-1

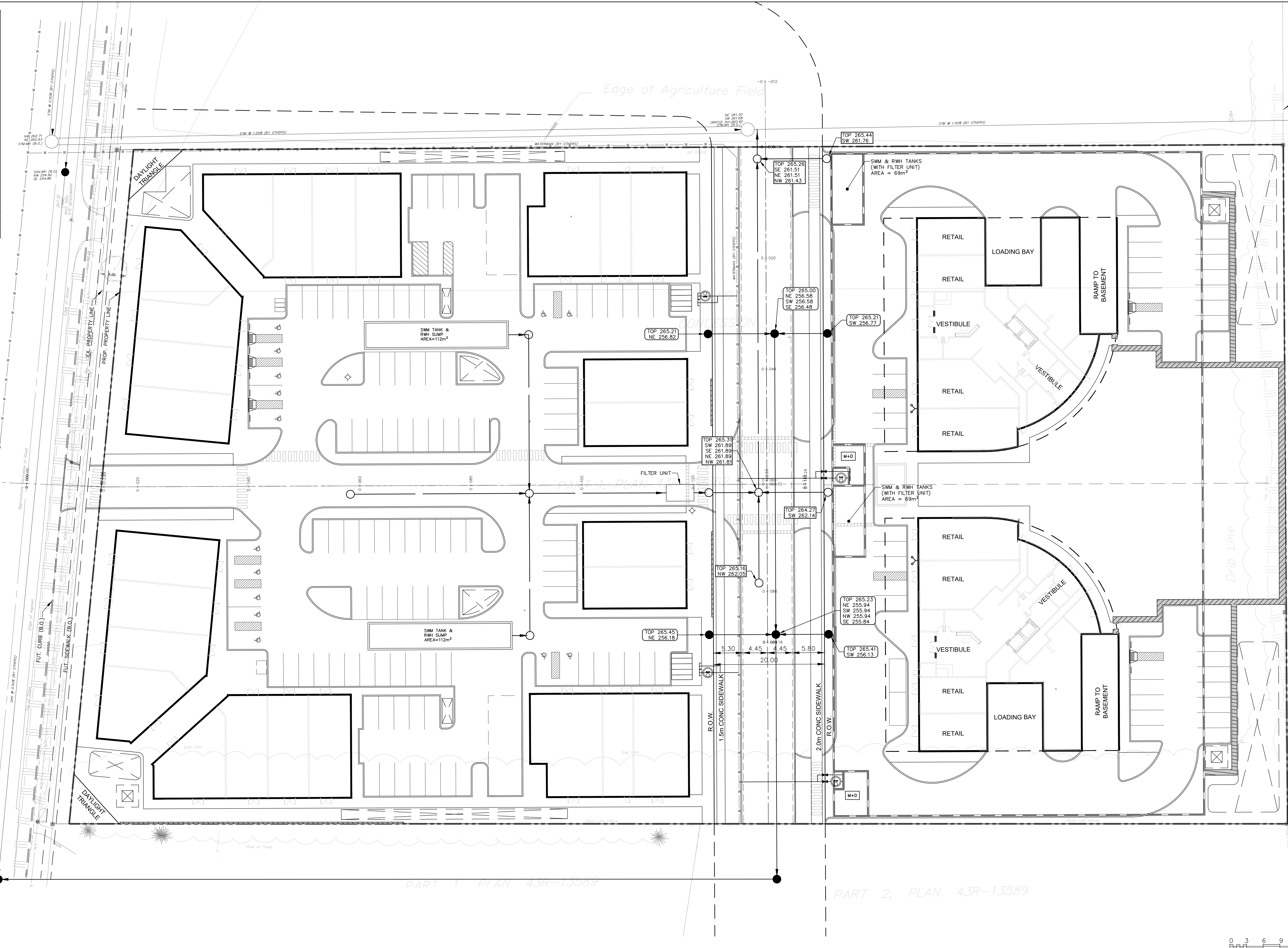
PLUMBING NOTES:

- ALL AD/CB/TRENCH DRAINS DESIGNED TO CAPTURE 100 YR STM. EVENT AND DIRECTED TO INTERNAL PLUMBING SYSTEM - PLUMBING TO BE DESIGNED BY MECHANICAL ENGINEER.
- SANITARY & STORM DRAINAGE PIPE/PLUMBING WITHIN/OVER THE BUILDING ENVELOPE SHALL BE DESIGNED BY THE MECHANICAL ENGINEER, TO BE ABLE TO OPERATE UNDER MUNICIPAL SEWER SURCHARGE CONDITIONS.
- AREA DRAINS, CATCH BASINS, AND TRENCH DRAINS DENOTED AS "AD", "TD" OR "CB", TO BE CONNECTED TO FILTRATION UNIT (STM.MH3). ALL OTHER AD/CB/TD TO BE CONNECTED TO RW/T TANK - PLUMBING TO BE DESIGNED BY MECHANICAL ENGINEER.
- ROOF DRAINS TO BE CONNECTED TO RW/T TANK - PLUMBING TO BE DESIGNED BY MECHANICAL ENGINEER.
- LANDSCAPE/MECHANICAL, TO ENSURE ALL PLANTER BOXES HAVE POSITIVE DRAINAGE TO A DRAIN, AND TO ENSURE ALL PATIOS AND STAIRWELLS TO HAVE AREA DRAINS CONNECTED TO THE PLUMBING SYSTEM.
- MECHANICAL TO ENSURE PLUMBING DESIGN IS COORDINATED WITH THE CIVIL DESIGN DRAWINGS.

TOWN OF CALEDON				20.0m NEIGHBOURHOOD COLLECTOR			
9.5m ROADWAY (8.9m PAVEMENT)							
NO.	REVISION	APPROVED	DATE	STANDARD No. 204			
4	TEXT AND SLOPE REVISION	JULY 08	C.C.	DATE: JUNE 08			
3	DIMENSION AND TEXT REVISION	JAN 09					
2	DIMENSION AND LAYOUT REVISION	JULY 08					
1	DIMENSION AND LAYOUT REVISION	JUNE 08					



Known as HUMBER STATION ROAD
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 4 AND 5



CANADA PACIFIC RAILWAY

LEGEND

- DENOTES PROPERTY LIMIT
- - - DENOTES PHASING LIMIT
- DENOTES STORM MANHOLE MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES CATCHBASIN
- AD DENOTES DOUBLE CATCHBASIN
- AD DENOTES AREA DRAIN
- ⋈ DENOTES HYDRANT
- ⊕ DENOTES VALVE & CHAMBER
- ⊕ DENOTES VALVE & BOX
- M+D DENOTES WATER METER IN ROOM (REFER TO MECHANICAL FOR DETAILS)
- DENOTES SWALE
- DENOTES TREE PROTECTION HOARDING
- DENOTES SANITARY SEWER OVERT
- DENOTES STORM SEWER OVERT

NO.	DATE	ISSUED FOR
1	JAN/09/26	ISSUED FOR ZBA SUBMISSION

BEARING NOTE
BEARINGS ARE UTM GRID, DERIVED FROM GPS OBSERVED BY REAL TIME NETWORK (SOKIA POWER NET) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010.1).

ELEVATION NOTE
ELEVATIONS HEREON ARE GEODEIC IN ORIGIN AND WERE DERIVED FROM GPS OBSERVATIONS USING THE "TORNET" GPS NETWORK AND ARE REFERRED TO THE CGVD-1978 DATUM.

Town of Caledon
APPROVED AS NOTED
This approval constitutes a general review and does not certify dimensional accuracy.
This approval is subject to further certification of the "as constructed" works by a registered Professional Engineer of the Province of Ontario.
Date: _____
Approved By: _____

'O' HUMBER STATION ROAD
CALEDON, ONTARIO

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.

6 Romrose Drive, Concord,
Ontario L4K 4B3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

Region of Peel
Working for you



SITE SERVICING PLAN

CITY FILE #		REGION FILE #	
SCALE: 1:300		PROJECT No. 2025-5532	
DESIGNED BY: D.W.	DRAWN BY: V.H.	DRAWING No. SS-1	
CHECKED BY: H.S.	DATE: JUL. 2025		

