SERVICING & STORMWATER MANAGEMENT REPORT

BROCCOLINI AIRPORT ROAD

TOWN OF CALEDON
REGION OF PEEL

PREPARED FOR:

BROCCOLINI AIRPORT ROAD LP

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC.
211 YONGE STREET, SUITE 600
TORONTO, ON M5B 1M4

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CROZIER

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1.0 Introduction

C.F. Crozier & Associated Inc. (Crozier) was retained by Broccolini Airport Road LP to prepare a Servicing and Stormwater Management Report in support of the Zoning Bylaw Amendment (ZBA) and Site Plan Application (SPA) for the property known as Broccolini Airport Road (the Site) in the Town of Caledon (Town). This report demonstrates how the proposed development's servicing and stormwater management will conform with the Tullamore North West Secondary Plan design prepared by Crozier (May 2025) as well as the requirements of the Town and Region of Peel (Region).

1.1 Site Description

The Site is bound by Airport Road to the east and agricultural lands to the north, west and south. The property consists of a total area of 24.25 ha, of which 13.44 ha is proposed to be redeveloped. The portion of the Site that is proposed to be redeveloped is the east portion of the property and currently consists of agricultural lands while the remainder of the Site is classified as an environmental zone. Salt Creek flows through the environmental zone within the Site.

1.2 Proposed Development

As shown in the Site Plan prepared by Powers Brown Architecture, the developable area is proposed to be severed into two parcels. Each parcel will have its own servicing and stormwater management and will be referred to as the North Parcel (4.87 ha) and the South Parcel (8.57 ha) in this report. The proposed development includes one (1) one-storey industrial building on each parcel. Building A on the North Parcel has a total area of 23,576 m^2 and Building B on the South Parcel has a total area of 47,809 m^2. Three (3) vehicular access points to the Site are proposed from Airport Road.

1.3 Referenced Documents

The following reports and design standards were referenced during the preparation of this report:

- Master Environmental Servicing Report, Tullamore North Secondary Plan (GEI, May 2025)
- Functional Servicing and Stormwater Management Report for Tullamore North West Secondary Plan (Crozier, May 2025)
- Hydrogeological Investigation Report (Crozier, October 2025)
- Environmental Impact Study, Broccolini Airport Road
- Region of Peel Public Works Design, Specifications & Procedures Manual (Region of Peel, 2010)
- Development Standards Manual (Town of Caledon, 2019)
- Stormwater Management Criteria (TRCA, August 2012)

2.0 Sanitary Servicing

2.1 Sanitary Design Criteria

The proposed sanitary sewer for the Site has been designed based on the Region of Peel – Linear Wastewater standards. The sanitary design criteria are as follows:

- Population Density – 70 persons/ha (industrial)
- Infiltration – 0.26 L/s/ha
- Non-Residential Sanitary Sewage Demand – 270 L/capita/day
- Harmon Peaking Factor

2.2 Existing Municipal Sanitary System

Review of the Region of Peel As-Constructed Drawings 21983-D, 21984-D, 21985-D and 21986-D shows an existing 600 mm diameter gravity sanitary sewer sloping between 0.25 – 0.35% on Airport Road across the entire frontage of the site. The existing sewer is located on the west side of the Airport Road ROW and currently services Caledon East.

2.3 Proposed Sanitary Sewer System

Sanitary servicing for Building A will be provided by a 250 mm diameter sanitary sewer connection to EX.MH31 on Airport Road with MH101A serving as the property line maintenance hole. Sanitary connections to Building A will be 200 mm in diameter and will be plugged at the face of the building.

Sanitary servicing for Building B will be provided by a 250 mm diameter sanitary sewer connection to EX.MH29 on Airport Road with MH201A serving as the property line maintenance hole. Sanitary connections to Building B will be 200 mm in diameter and will be plugged at the face of the building.

A sanitary sewer design sheet has been completed based on the Sanitary Drainage Area Plan (Figure 1) and is included in Appendix A. The proposed sanitary services are shown on Drawings C102-C102C.

The sanitary sewage design flows were calculated using the Region's standards and the Site Plan prepared by Powers Brown Architecture. Table 1 outlines the sanitary demands for the proposed development. Detailed calculations are included in Appendix A.

Table 1: Proposed Sanitary Demand Flows

Building	Equivalent Population	Peak Flow (L/s)	Infiltration Flow (L/s)	Total Flow (L/s)	Outlet
A	341	4.26	1.27	5.53	Airport Road
B	600	7.37	2.23	9.60	Airport Road

Sanitary flows from Building A & B will discharge to Airport Road and result in an increase of 5.53 L/s and 9.60 L/s, respectively.

3.0 Water Servicing

3.1 Sanitary Design Criteria

Water servicing for the Site has been designed in accordance with the Region of Peel standards and specifications to ensure that adequate pressures and flows are achieved. Watermain design flows are based on the following criteria:

- Average Day Demand – 300 L/employee/day
- Population Density – 70 persons/ha (industrial)
- Maximum Day Factor – 1.4
- Peak Hour Factor – 3.0
- Design Flow - greater of maximum daily demand plus fire flow or peak hourly demand

3.2 Existing Municipal Watermain System

Review of the Region of Peel As-Constructed Drawings 21983-D, 21984-D, 21985-D and 21986-D shows an existing 300 mm diameter watermain on Airport Road. The Site is in Pressure Zone 6 within the South Region of Peel Water Supply System.

3.3 Proposed Watermain System

Water servicing for Buildings A and B will be provided by separate 300 mm diameter water service connections to the existing 300 mm diameter watermain within Airport Road. At the property line, the 300 mm water services will split into 300 mm fire and 150 mm domestic water services. The 300mm fire services are set to be complete with detector check valves in chambers at the property line. The fire service for the North Parcel will enter Building A where the mechanical room is located, then it will exit the building and wrap around the parcel to service hydrants and individual fire connections to the building. The fire service for the South Parcel will enter Building B where the mechanical room is located, then it will exit the building and wrap around the parcel to service hydrants and individual fire connections to the building. Note, the fire service design will be detailed through coordination with the mechanical engineer and sprinkler consultant as part of upcoming submissions. The domestic service for each parcel will enter the building, where a water meter and backflow preventer will be provided per mechanical design and specifications. The proposed water servicing is shown on Drawings C102-C102C.

The domestic water demand has been calculated based on the Site Plan by Powers Brown Architecture. Table 2 below summarizes the domestic water demands for both buildings. The detailed calculations are included in Appendix B.

Table 2: Proposed Domestic Demand

Building	Equivalent Population	Average Daily Demand (L/s)	Maximum Daily Demand (L/s)	Peak hourly demand (L/s)
A	341	1.18	1.66	3.55
B	600	2.08	2.92	6.25

The fire flow requirements for Building A & B were calculated based on the Fire Underwriters Survey (FUS) requirements, as shown in Table 3 below. It has been assumed that a fire wall will be provided in the centre of Building B. The location of this fire wall will be further refined in a future submission.

Table 3: Fire Flow Demands – Fire Underwriter's Survey

Building	Required Fire Flow (L/s)
A	150.0
B	166.7

Note, a fire suppression consultant may be retained to calculate the building's specific fire flow demands based on the individual fire suppression tactics that are proposed.

A hydrant flow test was completed on October 28, 2025 for the 300 mm diameter watermain on Airport Road. It was determined that at 20 psi, a flow of 191 L/s (3024 USGPM) is available. As such, the municipal watermain has sufficient pressure and flow to service the proposed development. Refer to the hydrant flow test in Appendix B for reference.

4.0 Stormwater Management

The stormwater management strategy for the Site has been designed in accordance with the Secondary Plan for Tullamore North West (Crozier, May 2025). The stormwater management criteria are summarized below:

- Quantity Control: Control of the 2-year to 100-year storm events according to the unit flow relationships established by TRCA for Sub-Basin 63. Refer to Section 4.2 for more details on the design flow targets for each parcel. The Secondary Plan report (May 2025) indicates that further analysis is needed to determine Regional storm event control requirements. If Regional controls are deemed necessary for the Site, the stormwater management design will be updated as part of the next submission accordingly.

- Quality Control: Enhanced level of water quality protection (80% total suspended solids (TSS) removal).

- Site Water Balance: Water balance analysis is required using the average and more frequent precipitation events that comprise of the bulk volume of annual precipitation to ensure maintenance of pre-development water balance following development. Per the analysis completed in the Hydrogeological Investigation Report (October 2025) this results in an infiltration target of 44 mm/year, which equates to a volume of 157.9 m^3 and 210.3 m^3 for the North Parcel and the South Parcel, respectively.

- Feature-Base Water Balance: Candidate significant wetland has been identified within the lands owned by Broccolini by GEI. The wetland is located along the length of Salt Creek and is 2 m wide at the bottom of the valley. A feature-based water balance assessment was undertaken to estimate the potential impact of the proposed development on the wetland. Refer to Section 4.6 for more details.

- Erosion Control: At a minimum, TRCA requires on-site retention of the first 5 mm of runoff generated from the total impervious area.

4.1 Existing Drainage Conditions

According to aerial imagery, the portion of property proposed for redevelopment currently consists of agricultural land. A review of existing drainage patterns on Site and the surrounding area was completed based on the topographic survey completed by R-PE Surveying Ltd. (July 29, 2025) and the TRCA GTA_2023 data retrieved from the Government of Canada High Resolution Digital Elevation Model (HRDEM) – CanElevation Series on April 11, 2025.

Existing drainage is split within the Site, where approximately 67% drains towards Salt Creek and the other 33% drains towards Airport Road. There is also a 1.93 ha external area north of the Site that drains through the northwest corner for the property. Refer to Figure 3 for the pre-development drainage catchments and overland flow directions. Note, the catchments within the Site have been divided according to the proposed severance line since the two parcels will have separate stormwater management.

4.2 Proposed Drainage Conditions

The proposed grading on Site is designed to match the drainage patterns outlined in the Secondary Plan Report (May 2025). As part of the overall stormwater design described in the Secondary Plan Report (May 2025), drainage from the Site must be directed towards Salt Creek. The grading design ensures that drainage is contained within the individual parcels.

Stormwater for the proposed rooftops will be controlled to a release rate of 42 L/s/ha and conveyed to infiltration galleries. Overflow from the infiltration galleries will be directed to the internal storm sewer system and underground storage tanks. Drainage from the parking and paved surfaces surrounding the buildings will be captured through catchbasins and directed to the underground storage tanks. Majority of the landscaped areas will also be captured by catchbasins and directed to the underground tank. Some minor landscaping at the rear of the property will drain uncontrolled toward Salt Creek. The stormwater management systems within each parcel will be separate. The outlet for the tank on each parcel will be Salt Creek. Storm sewer design sheets based on the Catchbasin Drainage Area Plan (Figure 2) were used for internal pipe sizing for each parcel and are included in Appendix C. The storm sewers within the Site have been sized to convey the 5-year storm event to the control manhole and the 100-year controlled flow downstream of the control manhole.

The post-development catchments are summarized in Table 4. Refer to Figure 4 for the post-development drainage area plan.

Table 4: Post-Development Catchments

Catchment ID	Area (ha)	Runoff Coefficient	TIMP	XIMP	Curve Number (CN)	Time to Peak (hr)
201	2.40	0.73	0.74	0.74	81	-
202	2.36	0.90	0.99	0.99	81	-
UC1	0.11	0.25	-	-	81	0.17
North Parcel Total	**4.87**	**0.80**	**-**	**-**	**-**	**-**
203	3.65	0.74	0.76	0.76	81	-
204	4.78	0.90	0.99	0.99	81	-
UC2	0.14	0.25	-	-	81	0.17
South Parcel Total	**8.57**	**0.82**	**-**	**-**	**-**	**-**
EXT1	1.93	0.25	-	-	86	0.39

4.2.1 External Drainage

As shown in Figure 4, there is external drainage entering the Site at the northwest corner of the North Parcel. The external catchment (EXT1) is 1.93 ha and currently consists of agricultural land. A swale is proposed along the north boundary of the Site to convey external runoff towards Salt Creek, mimicking existing conditions. The swale is sized as a triangular channel, with the low point in line with the property line. The swale will convey the Regional storm event flow (0.264 m^3/s) with 0.3 m of freeboard. Refer to Appendix C for the FlowMaster calculations.

4.3 Stormwater Quantity Control

Visual Otthymo (VO), a hydrologic stormwater modeling software, was used to determine peak runoff within the Site. In accordance with Table 3-1 of the *Stormwater Management Criteria* (TRCA, 2012) calculation of return period peak flows within the Humber River Watershed shall be based on the 6-hour and 12- hour AES storm distributions.

Table 4 summarizes the Time of Peak (Tp) values and SCS Curve Numbers (CN), which are based on soil, land use and topographic conditions. It is noted that a minimum Tp value of 10 minutes has been implemented where the calculated value using the Airport Method was below 10 minutes.

The TIMP and XIMP values for each STANDHYD were determined based on the proposed land cover for each catchment. For catchments consisting only of rooftop, TIMP was assigned as 0.99, representing completely impervious cover. The XIMP values are equal to the TIMP for all catchments. The TIMP and XIMP values are also summarized in Table 4.

An initial abstraction (IA) value of 1 mm has been applied for catchments consisting of rooftops only and an IA of 2 mm was applied for parking lots.

As indicated in the Secondary Plan Report (May 2025), the allowable release rate for each parcel is dictated by the unit flow relationships for Sub-Basin 36 established by the TRCA. For the North Parcel, flows from Catchments 201 and 202 are controlled to ensure they do not exceed the allowable release rate, minus the uncontrolled flows from Catchment UC1. For the South Parcel, flows from Catchments 203 and 204 are controlled to ensure they do not exceed the allowable release rate, minus the uncontrolled flows from Catchment UC2.

The allowable release rates are determined using the pre-development area directed towards Salt Creek. Under existing conditions, runoff from 3.96 ha and 5.05 ha of the North and South Parcels, respectively, are directed towards Salt Creek. Refer to Table 5 for the allowable release rates for each parcel and Figure 3 for the pre-development drainage areas.

Table 5: Summary of Unit Flow Relationships and Allowable Release Rates for the Site

Storm Event	Unit Flow Equations (Sub-Basin 36)	Allowable Release Rate (m^3/s)	
		North Parcel	South Parcel
2-year	Q = 9.506 – 0.719 * ln (A)	0.034	0.042
5-year	Q = 14.652 – 1.136 * ln (A)	0.052	0.065
10-year	Q = 17.957 – 1.373 * ln (A)	0.064	0.079
25-year	Q = 22.639 – 1.741 * ln (A)	0.080	0.100
50-year	Q = 26.566 – 2.082 * ln (A)	0.094	0.117
100-year	Q = 29.912 – 2.316 * ln (A)	0.106	0.132

Notes: Q = unit flow (L/s/ha), A = area (ha)
Source: Stormwater Management Criteria prepared by TRCA (August 2012)

North Parcel

Rooftop control is provided on the North Parcel at a rate of 42 L/s/ha. This results in a total release rate of 0.099 m^3/s for Catchment 202, requiring rooftop storage of 928 m^3. Flows from the rooftop are also directed to the proposed underground infiltration galleries and storage tank for further control.

An outlet control manhole (MH101) with two (2) orifice controls is proposed to control the post-development peak stormwater flows from both Catchment 201 and 202. The first orifice is 100 mm diameter at an elevation of 246.75 and controls the 2-year storm event. The second orifice is 130 mm diameter at an elevation of 247.85. The combination of the two orifices controls the 5-year to 100-year storm events. Refer to Drawing C104C for the control manhole details.

Refer to Table 6 for a summary of the results and Appendix C for the VO model inputs.

Table 6: Summary of Peak Flow Rates from the North Parcel

Storm Event	6-hour AES Distribution				12-hour AES Distribution			
	Controlled (201+202)		Uncontrolled (UC1) Peak Flow (m^3/s)	Total Peak Flow (m^3/s)	Controlled (201+202)		Uncontrolled (UC1) Peak Flow (m^3/s)	Total Peak Flow (m^3/s)
	Peak Flow (m^3/s)	Storage Required (m^3)			Peak Flow (m^3/s)	Storage Required (m^3)		
2-year	0.025	987	0.003	**0.026**	0.027	1,043	0.003	**0.028**
5-year	0.046	1,393	0.006	**0.046**	0.046	1,403	0.004	**0.047**
10-year	0.054	1,627	0.007	**0.055**	0.056	1,674	0.005	**0.057**
25-year	0.065	1,893	0.010	**0.065**	0.069	1,985	0.007	**0.070**
50-year	0.092	2,033	0.011	**0.092**	0.093	2,121	0.008	**0.094**
100-year	0.093	2,093	0.013	**0.093**	0.094	2,272	0.009	**0.094**

1. Controlled flow for Catchment 201 and 202 represents the peak flow from the orifice per the VO results. Refer to Appendix C for the orifice control curve used in VO.
2. Addition of individual flows do not exactly equal the total flow indicated. The difference in peak flows occurs because the total flow to the outlet is calculated in VO, which accounts for time to peak values.

As shown in Table 6, the storage requirement is dictated by the 12- hour design storm. The maximum required storage volume in addition to the rooftop storage provided is 2,272 m^3. The proposed underground storage tank consists of MC-7200 StormTech Chambers, providing 2,006 m^3 of active storage, and is proposed within the paved area along the south side of Building A. In addition to the underground storage, there is also surface ponding, providing additional storage of 790 m^3, resulting in a total storage of 2,796 m^3 provided. Shop drawings for the storage tank will be provided with the next submission. The preliminary sizing sheet is included in Appendix C.

Emergency overland flow for the north parcel is provided through two curb cuts, one in the west end of the passenger vehicle parking area north of Building A and one in the northwest corner of the trailer parking area for Building A. The curb cuts were sized as weirs using the full curb height (0.3 m), a weir coefficient of 1.55, and the 100-year storm flow for the corresponding drainage area. The minimum curb cut widths for each curb cut are noted on Drawings C103-C103C, and curb cut sizing calculations are included in Appendix C.

South Parcel

Rooftop control is provided on the South Parcel at a rate of 42 L/s/ha. This results in a total release rate of 0.201 m^3/s for Catchment 204, requiring rooftop storage of 1,834 m^3. Flows from the rooftop are also directed to the proposed underground infiltration galleries and storage tank for further control.

An outlet control manhole (MH201) with two (2) orifice controls is proposed to control the post-development peak stormwater flows from both Catchment 203 and 204. The first orifice is 110 mm diameter at an elevation of 246.00 and controls the 2-year event. The second orifice is 120 mm diameter at an elevation of 247.85. The combination of the two orifices controls the 5-year to 100-year storm events. Refer to Drawing C104D for the control manhole details.

Refer to Table 7 for a summary of the results and Appendix C for the VO model inputs.

Table 7: Summary of Peak Flow Rates from the South Parcel

Storm Event	6-hour AES Distribution				12-hour AES Distribution			
	Controlled (203+204)		Uncontrolled (UC2) Peak Flow (m^3/s)	Total Peak Flow (m^3/s)	Controlled (203+204)		Uncontrolled (UC2) Peak Flow (m^3/s)	Total Peak Flow (m^3/s)
	Peak Flow (m^3/s)	Storage Required (m^3)			Peak Flow (m^3/s)	Storage Required (m^3)		
2-year	0.038	1,882	0.004	**0.038**	0.039	1,994	0.003	**0.040**
5-year	0.056	2,727	0.007	**0.056**	0.056	2,758	0.005	**0.057**
10-year	0.064	3,217	0.007	**0.064**	0.066	3,319	0.007	**0.067**
25-year	0.075	3,849	0.012	**0.075**	0.097	3,981	0.008	**0.098**
50-year	0.099	4,292	0.015	**0.092**	0.099	4,438	0.010	**0.100**
100-year	0.100	4,627	0.017	**0.100**	0.101	4,897	0.011	**0.102**

1. Controlled flow for Catchment 203 and 204 represents the peak flow from the orifice per the VO results. Refer to Appendix C for the orifice control curve used in VO.
2. Addition of individual flows do not exactly equal the total flow indicated. The difference in peak flows occurs because the total flow to the outlet is calculated in VO, which accounts for time to peak values.

As shown in Table 7, the storage requirement is dictated by the 12- hour design storm. The maximum required storage volume in addition to rooftop storage provided is 4,897 m^3. The proposed underground storage tank consists of MC-7200 StormTech Chambers, providing 3,943 m^3 of active storage, and is proposed within the paved area along the north side of Building B. In addition to the underground storage, there is also surface ponding, providing additional storage of 1,120 m^3, resulting in a total storage of 5,063 m^3 provided. Shop drawings for the storage tank will be provided with the next submission. The preliminary sizing sheet is included in Appendix C.

Emergency overland flow for the south parcel is provided through two curb cuts, one in the west end of the passenger vehicle parking area south of Building B and one in the northwest corner of the trailer parking area for Building B, at the far west side of the site. The curb cuts were sized as weirs using the full curb height (0.3 m), a weir coefficient of 1.55, and the 100-year storm flow for the corresponding drainage area. The minimum curb cut widths for each curb cut are noted on Drawings C103-C103C, and curb cut sizing calculations are included in Appendix C.

4.4 Stormwater Quality Control

An "Enhanced Level of Protection" of 80% TSS removal is required to treat runoff leaving the Site. Water quality for each parcel is achieved with a Jellyfish Filtration System. For the North Parcel, an offline Jellyfish model JF12-24-5 has been sized to treat all stormwater that is directed to the stormwater tank, to provide a total TSS removal of 80% for Catchments 201 and 202. For the South Parcel, two (2) Jellyfish model JF12-22-5 units in parallel with flow-splitting in the diversion manhole have been recommended to treat all stormwater that is directed to the stormwater tank, to provide a total TSS removal of 80% for Catchments 203 and 204. The Jellyfish Filtration Systems are certified with ISO 14034/ETV verification to provide the minimum 80% TSS removal requirement, as shown in the Jellyfish system specifications in Appendix C.

In addition to the proposed Jellyfish units, pre-treatment will be provided by the isolator rows that will be installed in the stormwater tanks at the inlet and outlet locations, providing a treatment train approach within both parcels.

4.5 Groundwater Condition

A Hydrogeological Investigation for the subject Site was completed by Crozier (October 2025), which details the groundwater conditions for the Site. The major conclusions of the Hydrogeological Investigation are summarized below:

- The seasonally high groundwater elevation varies across the Site. The groundwater contour figure included as part of the Hydrogeological Investigation Report was referenced when designing the proposed infiltration galleries. The groundwater elevations at the location of each infiltration gallery are indicated on Drawings C102 and C102C.

- An infiltration rate of 12.7 mm/hr was determined based on the grain size curves in the Geotechnical Investigation & Slope Assessment report prepared by MTE (May 15, 2025) for the Site as part of the work completed for the Secondary Plan Application. A safety factor of 1.5 was applied to this, to achieve an effective infiltration rate of 8.5 mm/hr. This infiltration rate was used when designing the exfiltration gallery.

4.6 Water Balance / Erosion Control

A water balance analysis is required using the average and more frequent precipitation events that comprise of the bulk volume of annual precipitation to ensure maintenance of pre-development water balance following development. Water balance calculations were completed using the Thornthwaite and Mather Method (1957) as part of the Hydrogeological Investigation. To mitigate the infiltration deficit within the entire Site, the Hydrogeological Investigation indicates that the infiltration target is 42 mm/year. Refer to the Hydrogeological Investigation Report prepared by Crozier under separate cover (October 2025) for more details.

In addition to the water balance requirement, TRCA has an erosion criterion that applies to the Site, which requires retention of 5 mm of runoff generated from the total impervious area. Therefore, the larger infiltration target between the water balance and erosion control requirements must be applied.

North Parcel

As indicated in the Hydrogeological Investigation Report (Crozier, October 2025), the infiltration target for the North Parcel is 6.7 mm of rainfall over the rooftop area (Building A) to match pre-development infiltration rates, which equates to a total volume of 158 m^3 (23,574 m^2 rooftop area x 6.7 mm). The erosion control infiltration target is 207 m^3 (4.14 ha impervious area x 5 mm). Therefore, the infiltration requirement for the North Parcel is dictated by the erosion control criteria, resulting in a target of 207 m^3.

South Parcel

As indicated in the Hydrogeological Investigation Report (Crozier, October 2025), the infiltration target for the South Parcel is 4.4 mm of rainfall over the rooftop area (Building B) to match pre-development infiltration rates, which equates to a total volume of 210 m^3 (47,803 m^2 rooftop area x 4.4 mm). The erosion control infiltration target is 378 m^3 (7.55 ha impervious area x 5 mm). Therefore, the infiltration requirement for the North Parcel is dictated by the erosion control criteria, resulting in a target of 378 m^3.

Two (2) infiltration galleries are proposed to satisfy the water balance and erosion control requirements for each parcel. One (1) gallery is located on southwest side of the proposed building, and the other is on the northwest side. The building roof leaders are routed to each gallery, designed to direct half of the roof runoff to each facility for infiltration of clean runoff. Overflow from the galleries is to the proposed storm sewer, which directs additional runoff to the underground storage tank for further control. The infiltration galleries have been designed using an infiltration rate of 8.5 mm/hr. A minimum 1.0 m clearance with the high groundwater elevation was provided for all galleries except for one given the high groundwater elevation in the southwest corner of the Site. It is noted that the groundwater elevation varies across the Site. Refer to Table 8 for more details on the design of the infiltration galleries and Appendix C for the sizing calculations.

Table 8: Summary of Proposed Infiltration Galleries

ID	Footprint (m^2)	Depth (m)	Volume (m^3)	Drawdown Time (hours)	Bottom of Gallery Elevation (masl)	Groundwater Elevation (masl)
North-1	400	0.72	115	34	249.50	248.50
North-2	650	0.40	104	19	248.19	247.19
South-1	475	1.00	190	47	248.00	247.00
South-2	735	0.65	191	31	249.68	249.18

4.7 Feature-Based Water Balance

A feature-based water balance assessment was undertaken by Crozier under separate cover to estimate the potential impact of the proposed development on Salt Creek and its surrounding wetland. A Thornthwaite and Mather assessment was conducted using the catchment areas directed to the wetland in the pre- and post-development scenarios. The results of the analysis show that pre-development flows to the wetland is maintained post-development. In fact, the proposed stormwater outlets ensure that flows continue to be directed towards Salt Creek and its wetland, maintain existing drainage conditions. Refer to the Hydrogeological Investigation Report prepared by Crozier (October 2025) for more details.

5.0 Erosion and Sediment Control

The following erosion and sediment control features will be implemented for the project.

5.1 Erosion Control Measures

Interceptor Swales – Interceptor swales have been designed with reduced slope gradients to reduce erosion potential during the construction period. The interceptor swales have been designed to convey the 100-year storm event. Refer to Appendix D for calculations related to the interceptor swale design.

5.2 Sediment Control Measures

Stone Mud Mat – A stone mud mat will be provided to minimize the migration of unwanted material on to the adjacent ROWs. The construction access must be maintained (cleaned, swept and flushed) to minimize any disruption to the Regional ROW. Construction access for the Site is provided through Airport Road.

Silt Fence – Sediment control fence will be installed in accordance with the drawings. The erosion and sediment control fencing will be monitored on a regular basis and repaired/replaced as required.

Temporary Sediment Basin – A temporary sediment basin has been designed to intercept sediment laden water and allow for settling of suspended soil particles. Refer to Appendix D for additional details and calculations related to the permanent pool, active storage, and outlet structure design.

Sediment Curtain – A sediment curtain will be installed in the temporary sediment basin and will be located between the swale inlets and basin outlet. The curtain keeps sediment contained to the area between the curtain and the pond bank and slows the movement of water in the isolated area, providing additional sediment control within the temporary sediment basins. The sediment curtains will be monitored on a regular basis and repaired/replaced as required.

6.0 Conclusions

Based on the conclusions and recommendations outlined in this report, the proposed development can be serviced for water, sanitary, and stormwater in general conformance with the servicing and stormwater management design outlined in the Secondary Plan prepared by Crozier (May 2025). The design is also in accordance with the Town of Caledon and Region of Peel requirements and standards.

Should you have any questions or require any further information, please do not hesitate to contact us.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Isabelle Forsyth, P.Eng.
Project Engineer

C.F. CROZIER & ASSOCIATES INC.

Julie Scott, P.Eng.
Manager, Land Development

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APPENDIX A

Sanitary Flow Calculations

Project: Broccolini Airport Rd
Project No.: 2278-7228
Design: A.H.
Check: K.W./J.S.
Date: 2025-10-30

Proposed Sanitary Design Flow - Building A

North Parcel Area	4.87	ha
Building A GFA	2.36	ha
Population Density	70	persons/ha
Population*	341	persons

Design Criteria

Total Peak Flow = Peak Daily Flow + Infiltration Allowance

Peak Factor =	4.0	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate

Average Daily Flow =	**1.07**	L/s
Peak Factor =	**4.0**	
Peak Daily Flow =	**4.26**	L/s
Infiltration Flow =	**1.27**	L/s
Total Peak Flow =	**5.53**	L/s

*Population calculation and is based on the Site Plan prepared by Powers Brown Architecture.

Proposed Sanitary Design Flow - Building B

South Parcel Area	8.57	ha
Building GFA	4.78	ha
Population Density	70	persons/ha
Population*	600	persons

Design Criteria

Total Peak Flow = Peak Daily Flow + Infiltration Allowance

Peak Factor =	3.9	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate

Average Daily Flow =	**1.87**	L/s
Peak Factor =	**3.9**	
Peak Daily Flow =	**7.37**	L/s
Infiltration Flow =	**2.23**	L/s
Total Peak Flow =	**9.60**	L/s

*Population calculation and is based on the Site Plan prepared by Powers Brown Architecture.

CROZIER & ASSOCIATES Consulting Engineers

2278-7228 Broccolini Airport Rd
Sanitary Demand Flows - Summary

Designed By: A.H.
Checked By: KW
Date: 2025-10-30

Phase	Block Area	Building GFA	Equivalent Population	Peak Flow	Infiltration Flow	Total Flow	Outlet
	ha	ha		(L/s)	(L/s)	(L/s)	
1	4.87	2.36	341	4.26	1.27	5.53	Airport Rd
2	8.57	4.78	600	7.37	2.23	9.60	Airport Rd
Total	**13.44**	**7.14**	**941**	**11.63**	**3.49**	**15.13**	

Note: Block Areas are based on Power Brown Architects
Note: Population estimates are based on building GFAs provided by Power Brown Site Plan

SANITARY SEWER DESIGN SHEET

Broccolini Site, Region of Peel, Town of Caledon

CROZIER CONSULTING ENGINEERS

Project #: 2200-7228
Updated Date: 2025.10.29
Designed: V.M.
Checked: J.S.

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.75 m/s
Max. Velocity = 3.50 m/s

Avg. Domestic Flow = 270.0 l/c/d
Infiltration = 0.260 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 1.50

Factor of Safety = 20 %

%

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	EXTERNAL / BLOCK AREA							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA						NOTES
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENISTY (P/ha)	DENSITY (P/unit)	EXT POP	ACCUM. EXT POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)	
BUILDING A																													
3A	PLUG103A	MH105A								0.39	0.39	70		28	28	0.10	28	4.00	0.35			0.45	2.00	200	46.38	1.48	0.47	1.0%	
101	MH105A	MH104A								0.27	0.66	70		19	47	0.17	47	4.00	0.59			0.76	0.50	200	23.19	0.74	0.34	3.3%	
2A	PLUG102A	MH104A								0.37	0.37	70		26	26	0.10	26	4.00	0.33			0.42	2.00	200	46.38	1.48	0.46	0.9%	
102	MH104A	MH103A								0.31	1.34	70		22	95	0.35	95	4.00	1.19			1.54	0.50	200	23.19	0.74	0.42	6.6%	
103	MH103A	MH102A								0.08	1.42	70		6	101	0.37	101	4.00	1.26			1.63	0.50	200	23.19	0.74	0.43	7.0%	
1A	PLUG101A	MH102A								0.40	0.40	70		28	28	0.10	28	4.00	0.35			0.45	2.00	200	46.38	1.48	0.47	1.0%	
5A	PLUG105A	MH109A								0.65	0.65	70		46	46	0.17	46	4.00	0.58			0.74	2.00	200	46.38	1.48	0.55	1.6%	
107	MH109A	MH108A								1.26	1.91	70		89	135	0.50	135	4.00	1.69			2.18	0.59	200	25.19	0.80	0.49	8.7%	
4A	PLUG104A	MH108A								0.55	0.55	70		39	39	0.14	39	4.00	0.49			0.63	2.00	200	46.38	1.48	0.52	1.4%	
106	MH108A	MH107A								0.43	2.89	70		31	205	0.75	205	4.00	2.56			3.31	0.50	200	23.19	0.74	0.52	14.3%	
105	MH107A	MH106A								0.10	2.99	70		7	212	0.78	212	4.00	2.65			3.43	0.50	200	23.19	0.74	0.53	14.8%	
104	MH106A	MH102A								0.09	3.08	70		7	219	0.80	219	4.00	2.74			3.54	0.50	200	23.19	0.74	0.53	15.3%	
	MH102A	MH101A									4.90				348	1.27	348	4.00	4.35			5.62	0.50	200	23.19	0.74	0.61	24.2%	
	MH101A	EX.MH31									4.90				348	1.27	348	4.00	4.35			5.62	2.00	200	46.38	1.48	1.00	12.1%	
																										0.00			
BUILDING B																										0.00			
3B	PLUG203A	MH208A								0.83	0.83	70		59	59	0.22	59	4.00	0.74			0.95	2.00	200	46.38	1.48		2.1%	
201	MH208A	MH207A								0.31	1.14	70		22	81	0.30	81	4.00	1.01			1.31	0.50	200	23.19	0.74	0.40	5.6%	
202	MH207A	MH206A								1.17	2.31	70		82	163	0.60	163	4.00	2.04			2.64	0.50	200	23.19	0.74	0.49	11.4%	
2B	PLUG202A	MH206A								0.88	0.88	70		62	62	0.23	62	4.00	0.78			1.00	2.00	200	46.38	1.48	0.60	2.2%	
203	MH206A	MH205A								0.48	3.67	70		34	259	0.95	259	4.00	3.24			4.19	0.50	200	23.19	0.74	0.56	18.1%	
1B	PLUG201A	MH205A								0.93	0.93	70		66	66	0.24	66	4.00	0.83			1.07	2.00	200	46.38	1.48	0.61	2.3%	
204	MH205A	MH204A								0.48	5.08	70		34	359	1.32	359	4.00	4.49			5.81	0.50	200	23.19	0.74	0.61	25.0%	
205	MH204A	MH203A								0.09	5.17	70		7	366	1.34	366	4.00	4.58			5.92	0.50	200	23.19	0.74	0.62	25.5%	
206	MH203A	MH202A								0.21	5.38	70		15	381	1.40	381	4.00	4.76			6.16	0.45	200	22.00	0.70	0.60	28.0%	
6B	PLUG206A	MH213A								0.69	0.69	70		49	49	0.18	49	4.00	0.61			0.79	2.00	200	46.38	1.48	0.56	1.7%	
211	MH213A	MH212A								0.47	1.16	70		33	82	0.30	82	4.00	1.03			1.33	0.50	200	23.19	0.74	0.40	5.7%	
5B	PLUG205A	MH212A								0.73	0.73	70		52	52	0.19	52	4.00	0.65			0.84	2.00	200	46.38	1.48	0.57	1.8%	
210	MH212A	MH111A								0.29	2.18	70		21	155	0.57	155	4.00	1.94			2.50	0.50	200	23.19	0.74	0.48	10.8%	
209	MH111A	MH210A								0.11	2.29	70		8	163	0.60	163	4.00	2.04			2.63	0.50	200	23.19	0.74	0.49	11.4%	
4B	PLUG204A	MH209A								0.72	0.72	70		51	51	0.19	51	4.00	0.64			0.82	2.00	200	46.38	1.48	0.56	1.8%	
208	MH210A	MH209A								0.09	2.38	70		7	170	0.62	170	4.00	2.13			2.74	0.50	200	23.19	0.74	0.50	11.8%	
207	MH209A	MH202A								0.07	3.17	70		5	226	0.82	226	4.00	2.83			3.65	0.35	200	19.40	0.62	0.00	18.8%	
	MH202A	MH201A									8.55				607	2.22	607	3.93	7.45			9.68	0.50	200	23.19	0.74	0.70	41.7%	
	MH201A	EX.MH29									8.55				607	2.22	607	3.93	7.45			9.68	2.00	200	46.38	1.48	1.17	20.9%	

APPENDIX B

Water Demand Calculations

Project: Broccolini Airport Rd **Design:** A.H. **Date:** 2025-10-30
Project No.: 2200-7228 **Check:** K.W./J.S.

Water Demand - Building A

North Parcel Area	4.87	ha
Population Density	70	persons/ha
Population	341	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.4	-
Peak Hourly Demand Peaking Factor:	3.0	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	102270	L/day
	1.18	L/s
Maximum Daily Demand:	143178	L/day
	1.66	L/s
Peak Hourly Demand:	306810	L/day
	3.55	L/s

*Population calculation and is based on the Site Plan prepared by Powers Brown Architecture.

Project: Broccolini Airport Rd **Design:** A.H. **Date:** 2025-10-30
Project No.: 2200-7228 **Check:** K.W./J.S.

Water Demand - Building B

South Parcel Area	8.57	ha
Population Density	70	persons/ha
Population	600	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.4	-
Peak Hourly Demand Peaking Factor:	3.0	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	179970	L/day
	2.08	L/s
Maximum Daily Demand:	251958	L/day
	2.92	L/s
Peak Hourly Demand:	539910	L/day
	6.25	L/s

*Population calculation and is based on the Site Plan prepared by Powers Brown Architecture.

CROZIER CONSULTING ENGINEERS

Broccolini Airport Rd. - Building A
Fire Protection Volume Calculation
CFCA File: 2200-7228

Date: 2025-11-12
Design: AH
Check: KW

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

RFF = 220 * C * sqrt A

where

RFF = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction (structure essentially all combustible)
=	0.8	for Type IV-A Mass Timber Construction (encapsulated mass timber)
=	0.9	for Type IV-B Mass Timber Construction (rated mass timber)
=	1.0	for Type IV-C Mass Timber Construction (ordinary mass timber)
=	1.5	for Type IV-D Mass Timber Construction (un-rated mass timber)
=	1.0	for Type III Ordinary Construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for Type II Non-combustible Construction (unprotected metal structural components)
=	0.6	for Type I Fire-resistive Construction (fully protected frame, floors, roof)

Proposed Buildings

Floor Area 23,576.1 sq.m

Area = 23,576 sq.m

C = 0.6 Assumes Type I Fire-resistive Construction (fully protected frame, floors, roof)

Therefore RFF = 20,268 L/min

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Limited Combustible	-15% reduction

-3,040 L/min reduction
17,228 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The initial credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, the building will have sprinkler protection: 50%

8,614 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 45 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

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

Exposed buildings

Name	Distance (m)	Charge (%)	Surcharge (L/min)
E	> 30	0%	-
W	> 30	0%	-
N	> 30	0%	-
S	> 30	0%	-

0 L/min Surcharge

Determine Required Fire Flow

No.1	20,268		
No. 2	-3,040 reduction		
No. 3	-8,614 reduction		
No. 4	0 surcharge		
Required Flow:	**8,614 L/min**		
Rounded to nearest 1000 L/min:	**9,000 L/min**	or	**150.0 L/s** 2,378 USGPM

CROZIER CONSULTING ENGINEERS

Broccolini Airport Rd. - Building B
Fire Protection Volume Calculation
CFCA File: 2200-7228

Date: 2025-11-12
Design: AH
Check: KW

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

RFF = 220 * C * sqrt A

where

RFF = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction (structure essentially all combustible)
=	0.8	for Type IV-A Mass Timber Construction (encapsulated mass timber)
=	0.9	for Type IV-B Mass Timber Construction (rated mass timber)
=	1.0	for Type IV-C Mass Timber Construction (ordinary mass timber)
=	1.5	for Type IV-D Mass Timber Construction (un-rated mass timber)
=	1.0	for Type III Ordinary Construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for Type II Non-combustible Construction (unprotected metal structural components)
=	0.6	for Type I Fire-resistive Construction (fully protected frame, floors, roof)

Proposed Buildings

Floor Area 23,904.4 sq.m

Note: A fire wall has been assumed in the middle of Building B.

Area = 23,904 sq.m

C = 0.6 Assumes Type I Fire-resistive Construction (fully protected frame, floors, roof)

Therefore RFF = 20,409 L/min

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Limited Combustible	-15% reduction

-3,061 L/min reduction
17,348 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The initial credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, the building will have sprinkler protection: 50%

8,674 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 45 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

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

Exposed buildings

Name	Distance (m)	Charge (%)	Surcharge (L/min)
E	Fire Wall	10%	1,735
W	> 30	0%	-
N	> 30	0%	-
S	> 30	0%	-
			1,735 L/min Surcharge

Determine Required Fire Flow

No.1	20,409		
No. 2	-3,061 reduction		
No. 3	-8,674 reduction		
No. 4	1,735 surcharge		
Required Flow:	**10,409 L/min**		
Rounded to nearest 1000 L/min:	**10,000 L/min**	or	**166.7 L/s** 2,642 USGPM

Hydrant Testing Ontario
Tel: 289-354-1942
Info@HTOntario.ca

REPORT
N°. 2592

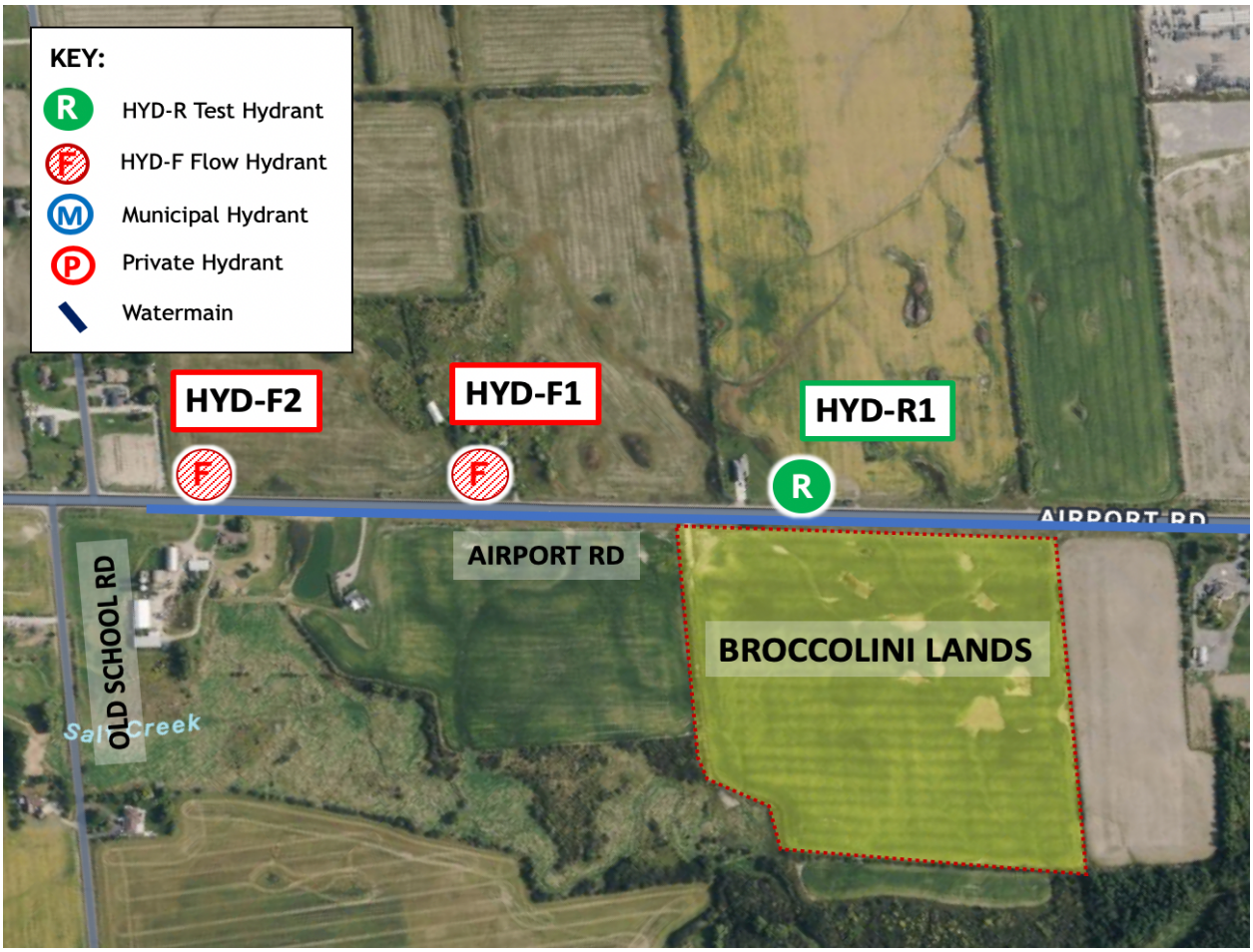
November 12, 2025

To: Alex Di Cesare
Development Manager
Broccolini Airport Road LP
2680 Skymark Avenue, Suite 800
Mississauga, Ontario, L4W 5L6

RE: Hydrant Flow Test – BROCCOLINI LANDS

Please find the Report for the following works

Scope: Conducted Hydrant Flow Test as per NFPA291 Recommended Practices for Water Flow Testing and Marking of Hydrants.



CALEDON

October 28, 2025 TIME: 12:40 PM

R -TEST HYDRANT	AIRPORT ROAD	HYDRANT No.	HYD-R1
HYDRANT MODEL:	CENTURY	COLOUR:	BLUE
STATIC PRESSURE psi (hr-20^0.54):	**65**	VARIANCE:	52%
Q - FLOW HYDRANT	AIRPORT ROAD	HYDRANT No.	HYD-F1/2
HYDRANT MODEL:	CENTURY	COLOUR:	BLUE

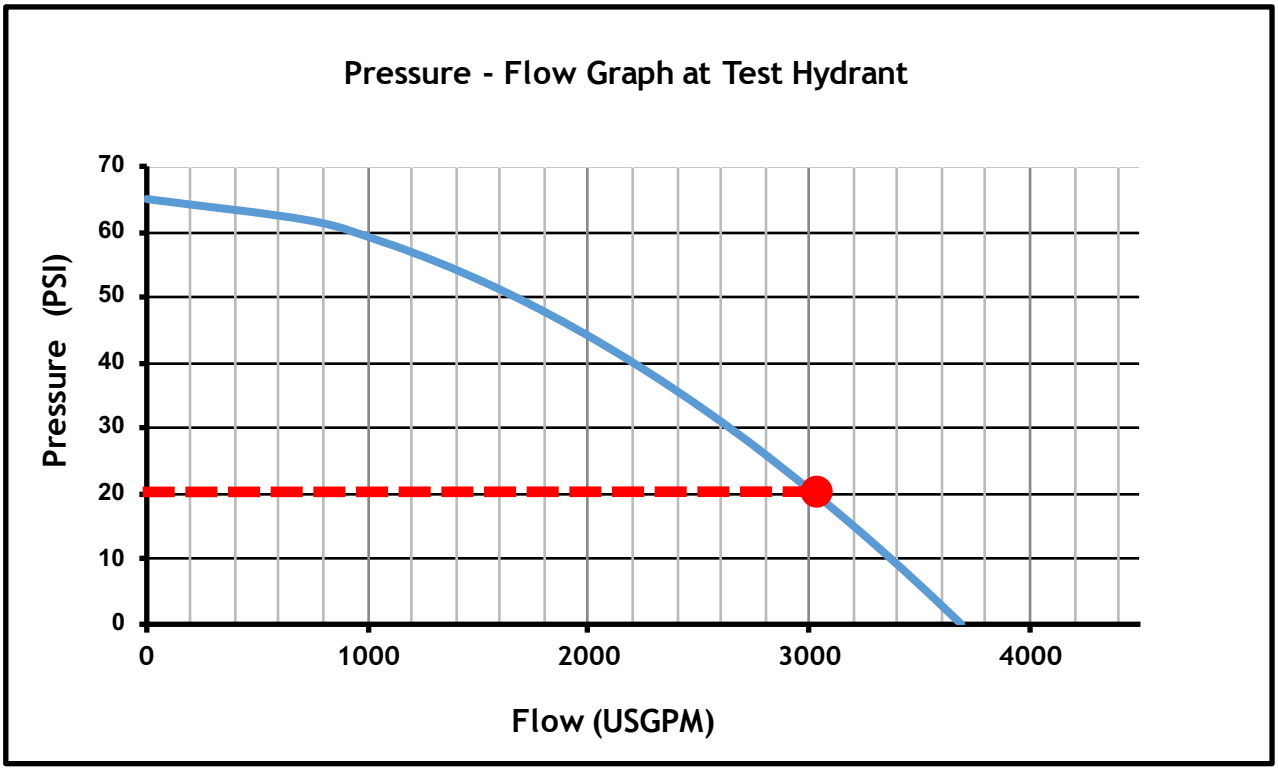
No. Outlets	Residual Pressure (hf-R^0.54)	Orifice Dia Dia. (in.) (d^2)	Coefficient	Nozzle PSI $(\sqrt{psi})$	Q = Flow (USGPM) $Q = 29.83\,(c)\,(d2)\,(\sqrt{psi})$
1	54	2.5	0.90	30	919
2	43	2.5	0.90	15	650
3	37	2.5	0.90	25	839
4	**31**	**2.5**	**0.90**	**15**	**650**
			Q_F = Total Flow (USGPM)		**2599**

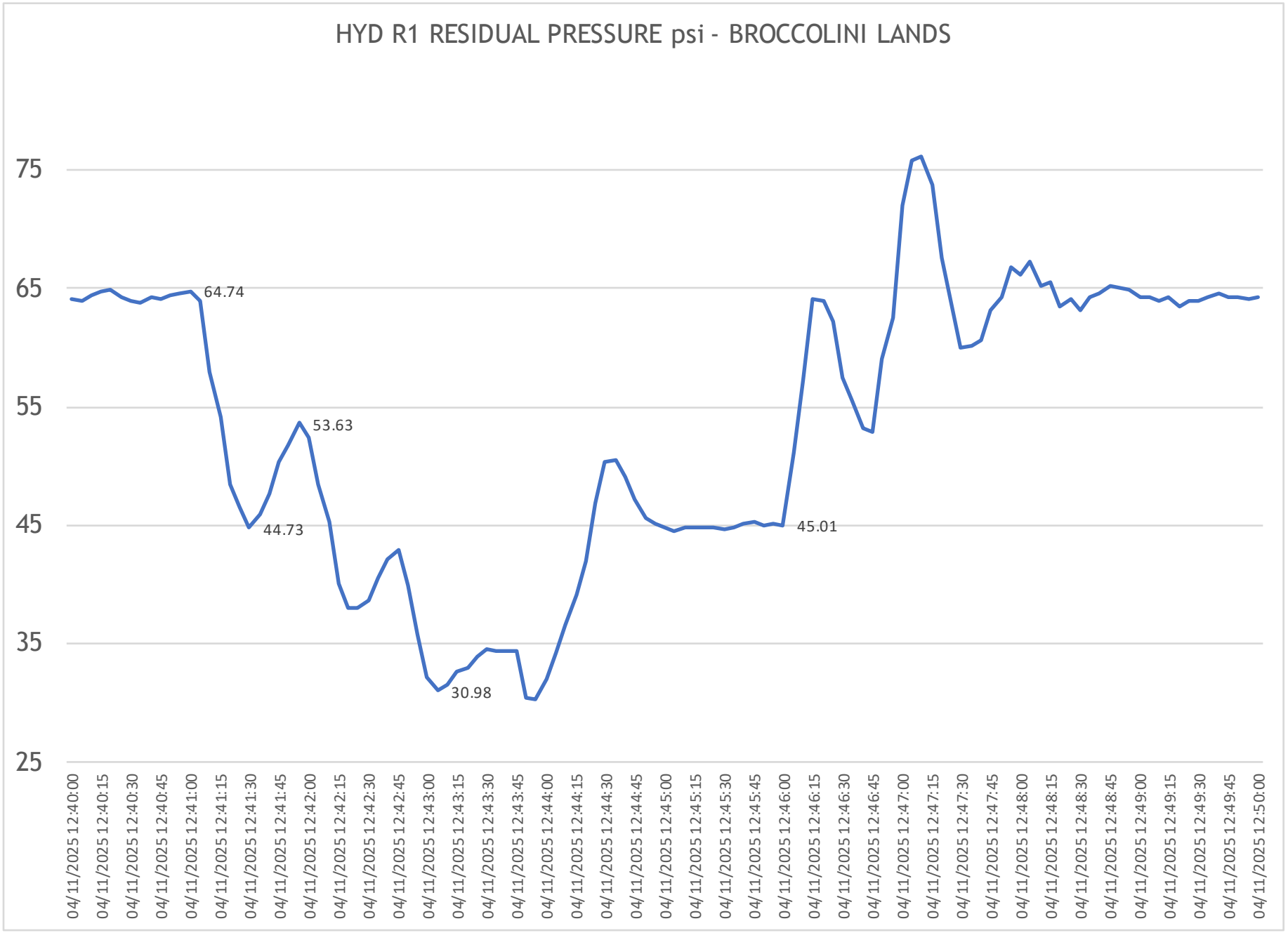
Q_R = flow predicted @ 20 psi

$Q_R = Q_F * (H_r - 20^{^{0.54}}) / (H_f - R^{^{0.54}})$

3024	USGPM
191	L/s

NFPA Rating: **CLASS AA - BLUE**




HYD R1 RESIDUAL PRESSURE psi - BROCCOLINI LANDS
75
65
55
45
35
25
64.74
53.63
44.73
30.98
45.01
04/11/2025 12:40:00
04/11/2025 12:40:15
04/11/2025 12:40:30
04/11/2025 12:40:45
04/11/2025 12:41:00
04/11/2025 12:41:15
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04/11/2025 12:49:00
04/11/2025 12:49:15
04/11/2025 12:49:30
04/11/2025 12:49:45
04/11/2025 12:50:00

Test Conclusion

The system at the time of testing produced a theorectical projected flow rate of:

LOCATION	Total USGPM	USGPM at 20 psi	lps at 20 psi	Test #
AIRPORT ROAD	2599	3024	191	1

Hydrants are classified in accordance with their rated capacities as per NFPA291.

COLOUR	CLASS	Available Flow @ 20psi
BLUE	AA	1500 GPM or more
GREEN	A	1000 – 1499 GPM
ORANGE	B	500 – 999 GPM
RED	C	Below 500 GPM

We strongly feel that all attempts have been made to ensure that the required data as stipulated was captured, stored and presented in an accurate, efficient and timely manner for the required period.

We look forward to working with you in the future.

Please feel free to contact the undersigned should you require any further information.

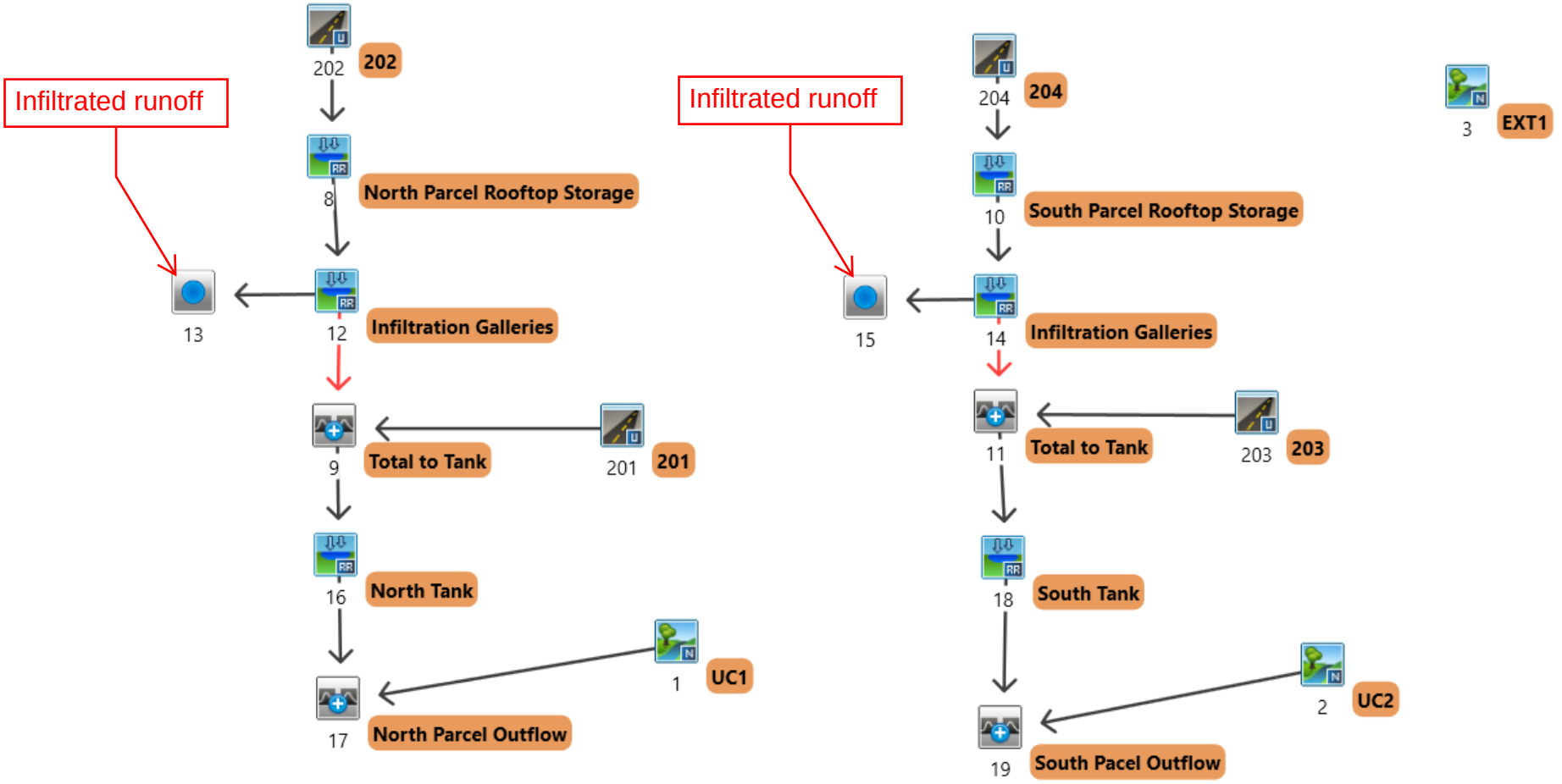
Best Regards

Rob Gamache E.P
Manager of Operations
Hydrant Testing Ontario
Info@HTOntario.ca

APPENDIX C

Stormwater Management Calculations

Proposed Conditions VO Model Schematic



Prepared by: IF
Date: 2025-10-22

CROZIER
CONSULTING ENGINEERS

Project Name: Broccolini Airport Road
Project Number: 2278-7228
Date: 2025-10-07
By: IF
Checked by: JS

NASHYD - CN & IA Values

Parameter	Hydrologic Soil Group	Soil Category	Landuse							
			Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape	Gravel	Paved / Concrete	Building
CN Values	D	Clay Loam/Clay	77	50	78	86	81	98	98	98
	N/A									
IA Values			10	10	8	7	5	2	2	1

*Note these values are taken from the MTO manual, check against municipal standards for CN values to be used

Catchment ID	Hydrologic Soil Group	Soil Category	Area (ha) for each land use and soil group								Subtotal Area (ha)	Weighted CN	Weighted IA
			Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape	Gravel	Paved / Concrete	Building			
UC1	D	Clay Loam/Clay					0.11				0.11	81	5.0
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.11***	***0.00***	***0.00***	***0.00***	***0.11***		
UC2	D	Clay Loam/Clay					0.14				0.14	81	5.0
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.14***	***0.00***	***0.00***	***0.00***	***0.14***		
EXT1	D	Clay Loam/Clay				1.93					1.93	86	7.0
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***1.93***	***0.00***	***0.00***	***0.00***	***0.00***	***1.93***		

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Time to Peak - Bransby Williams & Airport Methods

Airport Method

$$T_c = \frac{3.26 * (1.1 - C) * L^{0.5}}{S_w^{0.33}}$$

Bransby William

$$Tc = \frac{0.057 * L}{S_w^{0.2} * A^{0.1}}$$

Equation from MTO Drainage Management Manual 1997

Catchment ID	Subtotal Area (ha)	Runoff Coefficient	Method	Flow Path Length (m)	US Elev	DS Elev	Flow Path Drop (m)	Slope (%)	Tc (hr)	Tp (hr)
UC1	0.11	0.25	AIRPORT	11	250.45	249.77	0.68	6.18	0.084	**0.17**
UC2	0.14	0.25	AIRPORT	17	249.00	244.60	4.40	25.88	0.065	**0.17**
EXT1	1.93	0.25	AIRPORT	229	253.50	249.50	4.00	1.75	0.581	**0.39**

*Note: A minimum Tp of 0.17hrs (10 minutes) has been applied

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Project Number: 2278-7228
Date: 2025-10-07
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NASHYD Summary

Catchment ID	Area (ha)	DT (min)	CN Value	CN*	IA (mm)	N	Tp (hr)
UC1	0.11	5	81	81	5.0	3	0.17
UC2	0.14	5	81	81	5.0	3	0.17
EXT1	1.93	5	86	89	7.0	3	0.39

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Project Name: Broccolini Airport Road
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Date: 2025-10-07
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STANDHYD - TIMP, XIMP & CN Values

Parameter	Hydrologic Soil Group	Landuse				
		Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape
CN Values	D	77	50	78	86	81
	N/A					
IA Values		10	10	8	7	5

*Note these values are taken from the MTO manual, check against municipal standards for CN values to be used

Catchment ID	Hydrologic Soil Group	Pervious Areas (ha)						Impervious Areas (ha)				Results					
		Woodland	SWMF (Landscaped)	Meadow	Crops	Lawn / Landscape	Pervious Total Area (ha)	Paved / Concrete / Building		SWMF (Permanent pool)	Impervious Total Area (ha)	Subcatchment Total Area (ha)	TIMP (Fraction)	XIMP (Fraction)	Weighted RC	Weighted Pervious CN	Weighted Pervious IA
		N/A	N/A	N/A	N/A	N/A		To Outlet	To Pervious	To Outlet							
201	D					0.62	0.62	1.78			1.78	2.40	0.74	0.74	**0.73**	**81**	**5**
	N/A						0.00				0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.62***	0.62	***1.78***	***0.00***	***0.00***	1.78	**2.40**					
202	D						0.00	2.36			2.36	2.36	0.99	0.99	**0.90**	**81**	**5**
	N/A						0.00				0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	0.00	***2.36***	***0.00***	***0.00***	2.36	**2.36**					
203	D					0.88	0.88	2.77			2.77	3.65	0.76	0.76	**0.74**	**81**	**5**
	N/A						0.00				0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.88***	0.88	***2.77***	***0.00***	***0.00***	2.77	**3.65**					
204	D						0.00	4.78			4.78	4.78	0.99	0.99	**0.90**	**81**	**5**
	N/A						0.00				0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	0.00	***4.78***	***0.00***	***0.00***	4.78	**4.78**					

* Assuming all industrial blocks are10% landscaped per miniumum requiremed by Town of Caledon zoning for Industrial land

CROZIER
CONSULTING ENGINEERS

Project Name: Broccolini Airport Road
Project Number: 2278-7228
Date: 2025-10-07
By: IF
Checked by: JS

STANDHYD Summary

Catchment ID	Area (ha)	DT (min)	TIMP	XIMP	*Pervious Area*						*Impervious Area*			
					CN Value	CN*	IA (mm)	SLPP (%)	LGP (m)	MNI	DPSI	SLPI (%)	LGI (m)	MNI
201	2.40	5	0.74	0.74	81	81	5	2.0	40	0.25	2	1	AUTO	0.013
202	2.36	5	0.99	0.99	81	81	5	2.0	40	0.25	1	1	AUTO	0.013
203	3.65	5	0.76	0.76	81	81	5	2.0	40	0.25	2	1	AUTO	0.013
204	4.78	5	0.99	0.99	81	81	5	2.0	40	0.25	1	1	AUTO	0.013

North Property Line Swale

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	m/m
Left Side Slope	3.00	m/m (H:V)
Right Side Slope	3.00	m/m (H:V)
Discharge	0.264	m³/s

Results

Normal Depth	0.39	m
Flow Area	0.45	m²
Wetted Perimeter	2.44	m
Hydraulic Radius	0.18	m
Top Width	2.32	m
Critical Depth	0.28	m
Critical Slope	0.01834	m/m
Velocity	0.59	m/s
Velocity Head	0.02	m
Specific Energy	0.40	m
Froude Number	0.43	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Downstream Velocity	Infinity	m/s
Upstream Velocity	Infinity	m/s
Normal Depth	0.39	m
Critical Depth	0.28	m
Channel Slope	0.00300	m/m
Critical Slope	0.01834	m/m

CROZIER CONSULTING ENGINEERS

Project Name: Broccolini Site Plan
Project No.: 2278-7228

Design: IF
Date: 2025-10-09

Underground Storage + Surface Ponding Operation Levels - North Parcel

Orifice 1

Orifice 1 Coefficient:	0.62
Orifice 1 Diameter:	0.100 m
Orifice 1 Invert Elevation:	246.75 m
Orifice 1 Centroid Elevation:	246.80 m

Orifice 2

Orifice 2 Coefficient:	0.62
Orifice 2 Diameter:	0.130 m
Orifice 2 Invert Elevation:	247.85 m
Orifice 2 Centroid Elevation:	247.92 m

Operating Level	Elev.	Depth Above Bottom of Tank	Depth Above Orifice	Total Storage Volume	Discharge Orifice 1	Discharge Orifice 2	Total Discharge	Storage
	(m)	(m)	(m)	(cu.m)	(cu.m/s)	(cu.m/s)	(cu.m/s)	(ha-m)
Lowest Invert of Tank	247.17	0.00	0.00	0	0.000	0.000	**0.000**	**0.000**
	247.19	0.03	0.44	36	0.014	0.000	**0.014**	**0.004**
	247.30	0.13	0.55	180	0.015	0.000	**0.015**	**0.018**
	247.40	0.23	0.65	322	0.017	0.000	**0.017**	**0.032**
	247.50	0.33	0.75	463	0.018	0.000	**0.018**	**0.046**
	247.60	0.43	0.85	602	0.019	0.000	**0.019**	**0.060**
	247.70	0.53	0.95	739	0.020	0.000	**0.020**	**0.074**
	247.80	0.63	1.05	872	0.022	0.000	**0.022**	**0.087**
	247.91	0.74	1.16	1,003	0.023	0.000	**0.023**	**0.100**
2-Year Water Level	247.94	0.77	1.19	1,043	0.023	0.005	**0.028**	**0.104**
	248.01	0.84	1.26	1,130	0.024	0.011	**0.035**	**0.113**
	248.11	0.94	1.36	1,253	0.025	0.016	**0.041**	**0.125**
	248.21	1.04	1.46	1,371	0.026	0.020	**0.045**	**0.137**
5-Year Water Level	248.24	1.07	1.49	1,403	0.026	0.022	**0.047**	**0.140**
	248.31	1.14	1.56	1,483	0.027	0.023	**0.049**	**0.148**
	248.41	1.24	1.66	1,587	0.027	0.026	**0.053**	**0.159**
10-Year Water Level	248.51	1.35	1.76	1,674	0.028	0.029	**0.057**	**0.167**
	248.59	1.42	1.84	1,741	0.029	0.030	**0.059**	**0.174**
	248.69	1.52	1.94	1,811	0.030	0.032	**0.062**	**0.181**
	248.79	1.63	2.04	1,876	0.030	0.034	**0.065**	**0.188**
	248.90	1.73	2.15	1,941	0.031	0.036	**0.067**	**0.194**
50-Year Water Level	248.97	1.80	2.22	1,985	0.032	0.038	**0.070**	**0.199**
Top of Tank	249.00	1.83	2.25	2,006	0.032	0.038	**0.070**	**0.201**
	250.02	2.85	3.27	2,006	0.039	0.053	**0.092**	**0.201**
50-Year Water Level	250.06	2.89	3.31	2,121	0.039	0.055	**0.094**	**0.212**
100-Year Water Level	250.12	2.95	3.37	2,272	0.039	0.055	**0.094**	**0.227**
Surface Ponding Spill @ 250.32	250.32	3.15	3.57	2,796	0.040	0.057	**0.097**	**0.280**

Project: North Parcel - SWM Tank

Chamber Model -	MC-7200	
Units -	Metric	
Number of Chambers -	275	
Number of End Caps -	20	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	246.94	m
Amount of Stone Above Chambers -	305	mm
Amount of Stone Below Chambers -	229	mm
Area of System-	1600	sq.meters

Min. Area - 1593.59 sq.meters

☑ Include Perimeter Stone in Calculations

☐ Click for Stage Area Data

☐ Click to Invert Stage Area Data

Click Here for Imperial

StormTech MC-7200 Cumulative Storage Volumes

Height of System (mm)	Incremental Single Chamber (cubic meters)	Incremental Single End Cap (cubic meters)	Incremental Chambers (cubic meters)	Incremental End Cap (cubic meters)	Incremental Stone (cubic meters)	Incremental Ch, EC and Stone (cubic meters)	Cumulative System (cubic meters)	Elevation (meters)
2057	0.000	0.000	0.00	0.00	16.26	16.26	2152.03	249.00
2032	0.000	0.000	0.00	0.00	16.26	16.26	2135.77	248.97
2007	0.000	0.000	0.00	0.00	16.26	16.26	2119.52	248.95
1981	0.000	0.000	0.00	0.00	16.26	16.26	2103.26	248.92
1956	0.000	0.000	0.00	0.00	16.26	16.26	2087.00	248.90
1930	0.000	0.000	0.00	0.00	16.26	16.26	2070.75	248.87
1905	0.000	0.000	0.00	0.00	16.26	16.26	2054.49	248.85
1880	0.000	0.000	0.00	0.00	16.26	16.26	2038.24	248.82
1854	0.000	0.000	0.00	0.00	16.26	16.26	2021.98	248.79
1829	0.000	0.000	0.00	0.00	16.26	16.26	2005.72	248.77
1803	0.000	0.000	0.00	0.00	16.26	16.26	1989.47	248.74
1778	0.000	0.000	0.00	0.00	16.26	16.26	1973.21	248.72
1753	0.002	0.000	0.46	0.01	16.07	16.54	1956.96	248.69
1727	0.005	0.001	1.48	0.02	15.66	17.16	1940.42	248.67
1702	0.008	0.001	2.14	0.03	15.39	17.56	1923.26	248.64
1676	0.010	0.002	2.78	0.04	15.13	17.95	1905.70	248.62
1651	0.013	0.002	3.57	0.05	14.81	18.43	1887.76	248.59
1626	0.021	0.003	5.78	0.06	13.92	19.76	1869.33	248.57
1600	0.031	0.004	8.54	0.07	12.81	21.42	1849.57	248.54
1575	0.037	0.005	10.27	0.09	12.11	22.47	1828.15	248.51
1549	0.042	0.005	11.67	0.11	11.55	23.32	1805.68	248.49
1524	0.047	0.006	12.88	0.12	11.05	24.06	1782.36	248.46
1499	0.051	0.007	13.97	0.14	10.61	24.72	1758.30	248.44
1473	0.054	0.008	14.95	0.16	10.21	25.32	1733.58	248.41
1448	0.058	0.009	15.87	0.17	9.84	25.88	1708.26	248.39
1422	0.061	0.009	16.71	0.19	9.50	26.39	1682.38	248.36
1397	0.064	0.010	17.50	0.20	9.17	26.88	1655.99	248.34
1372	0.066	0.011	18.25	0.22	8.87	27.33	1629.11	248.31
1346	0.069	0.012	18.95	0.23	8.58	27.76	1601.78	248.29
1321	0.071	0.012	19.62	0.25	8.31	28.18	1574.01	248.26
1295	0.074	0.013	20.25	0.27	8.05	28.57	1545.84	248.24
1270	0.076	0.014	20.86	0.28	7.80	28.94	1517.27	248.21
1245	0.078	0.015	21.43	0.29	7.56	29.29	1488.33	248.18
1219	0.080	0.015	21.99	0.31	7.34	29.63	1459.04	248.16
1194	0.082	0.016	22.52	0.32	7.12	29.96	1429.41	248.13
1168	0.084	0.017	23.02	0.33	6.91	30.27	1399.45	248.11
1143	0.085	0.017	23.51	0.35	6.71	30.57	1369.18	248.08
1118	0.087	0.018	23.97	0.36	6.52	30.85	1338.61	248.06
1092	0.089	0.018	24.42	0.36	6.34	31.13	1307.76	248.03
1067	0.090	0.019	24.85	0.38	6.16	31.40	1276.63	248.01
1041	0.092	0.020	25.27	0.40	5.99	31.66	1245.23	247.98
1016	0.093	0.020	25.67	0.41	5.82	31.90	1213.57	247.96
991	0.095	0.021	26.05	0.42	5.67	32.14	1181.67	247.93
965	0.096	0.022	26.42	0.43	5.51	32.37	1149.53	247.91
940	0.097	0.022	26.78	0.44	5.37	32.59	1117.16	247.88
914	0.099	0.023	27.12	0.45	5.23	32.80	1084.57	247.85
889	0.100	0.023	27.45	0.46	5.09	33.01	1051.77	247.83
864	0.101	0.024	27.77	0.47	4.96	33.20	1018.76	247.80
838	0.102	0.024	28.08	0.48	4.83	33.39	985.56	247.78
813	0.103	0.024	28.37	0.49	4.71	33.57	952.17	247.75
787	0.104	0.025	28.66	0.50	4.59	33.75	918.60	247.73
762	0.105	0.026	28.93	0.51	4.48	33.92	884.85	247.70
737	0.106	0.026	29.19	0.52	4.37	34.08	850.93	247.68
711	0.107	0.026	29.44	0.52	4.27	34.23	816.84	247.65
686	0.108	0.027	29.68	0.53	4.17	34.39	782.61	247.63
660	0.109	0.027	29.92	0.54	4.07	34.53	748.22	247.60
635	0.110	0.027	30.14	0.55	3.98	34.67	713.69	247.58
610	0.110	0.028	30.35	0.56	3.89	34.80	679.02	247.55
584	0.111	0.027	30.55	0.55	3.82	34.92	644.23	247.52
559	0.112	0.028	30.75	0.57	3.73	35.04	609.31	247.50
533	0.112	0.029	30.93	0.57	3.66	35.16	574.26	247.47
508	0.113	0.029	31.11	0.58	3.58	35.27	539.11	247.45
483	0.114	0.029	31.27	0.58	3.51	35.37	503.84	247.42
457	0.114	0.029	31.43	0.59	3.45	35.47	468.47	247.40
432	0.115	0.030	31.58	0.59	3.39	35.56	433.00	247.37
406	0.115	0.030	31.72	0.60	3.33	35.65	397.44	247.35
381	0.116	0.030	31.85	0.59	3.28	35.72	361.80	247.32
356	0.116	0.030	31.98	0.60	3.23	35.80	326.07	247.30
330	0.117	0.030	32.10	0.61	3.17	35.88	290.27	247.27
305	0.117	0.031	32.21	0.61	3.13	35.95	254.39	247.24
279	0.118	0.031	32.32	0.62	3.08	36.02	218.44	247.22
254	0.118	0.031	32.48	0.63	3.01	36.12	182.42	247.19
229	0.000	0.000	0.00	0.00	16.26	16.26	146.30	247.17
203	0.000	0.000	0.00	0.00	16.26	16.26	130.05	247.14
178	0.000	0.000	0.00	0.00	16.26	16.26	113.79	247.12
152	0.000	0.000	0.00	0.00	16.26	16.26	97.54	247.09
127	0.000	0.000	0.00	0.00	16.26	16.26	81.28	247.07
102	0.000	0.000	0.00	0.00	16.26	16.26	65.02	247.04
76	0.000	0.000	0.00	0.00	16.26	16.26	48.77	247.02
51	0.000	0.000	0.00	0.00	16.26	16.26	32.51	246.99
25	0.000	0.000	0.00	0.00	16.26	16.26	16.26	246.97

CROZIER CONSULTING ENGINEERS

Project Name: Broccolini Site Plan
Project No.: 2278-7228

Design: IF
Date: 2025-10-09

Underground Storage + Surface Ponding Operation Levels - South Parcel

Orifice 1

Orifice 1 Coefficient:	0.62
Orifice 1 Diameter:	0.110 m
Orifice 1 Invert Elevation:	246.00 m
Orifice 1 Centroid Elevation:	246.06 m

Orifice 2

Orifice 2 Coefficient:	0.62
Orifice 2 Diameter:	0.120 m
Orifice 2 Invert Elevation:	247.85 m
Orifice 2 Centroid Elevation:	247.91 m

Operating Level	Elev.	Depth Above Bottom of Tank	Depth Above Orifice	Total Storage Volume	Discharge Orifice 1	Discharge Orifice 2	Total Discharge	Storage
	(m)	(m)	(m)	(cu.m)	(cu.m/s)	(cu.m/s)	(cu.m/s)	(ha-m)
Lowest Invert of Tank	247.17	0.00	0.00	0	0.000	0.000	**0.000**	**0.000**
	247.19	0.03	1.19	71	0.028	0.000	**0.028**	**0.007**
	247.30	0.13	1.30	354	0.029	0.000	**0.029**	**0.035**
	247.40	0.23	1.40	634	0.030	0.000	**0.030**	**0.063**
	247.50	0.33	1.50	911	0.031	0.000	**0.031**	**0.091**
	247.60	0.43	1.60	1,185	0.032	0.000	**0.032**	**0.118**
	247.70	0.53	1.70	1,454	0.033	0.000	**0.033**	**0.145**
	247.80	0.63	1.80	1,717	0.035	0.000	**0.035**	**0.172**
2-Year Water Level	247.91	0.74	1.91	1,994	0.036	0.004	**0.040**	**0.199**
	248.01	0.84	2.01	2,225	0.036	0.010	**0.046**	**0.223**
	248.11	0.94	2.11	2,467	0.037	0.014	**0.051**	**0.247**
	248.21	1.04	2.21	2,699	0.038	0.017	**0.055**	**0.270**
5-Year Water Level	248.24	1.07	2.24	2,758	0.039	0.018	**0.057**	**0.276**
	248.31	1.14	2.31	2,919	0.039	0.020	**0.059**	**0.292**
	248.41	1.24	2.41	3,124	0.040	0.022	**0.062**	**0.312**
10-Year Water Level	248.51	1.34	2.51	3,319	0.042	0.025	**0.067**	**0.332**
	248.59	1.42	2.59	3,427	0.042	0.026	**0.067**	**0.343**
	248.69	1.52	2.69	3,562	0.042	0.027	**0.070**	**0.356**
	248.79	1.63	2.79	3,689	0.043	0.029	**0.072**	**0.369**
	248.90	1.73	2.90	3,816	0.044	0.031	**0.075**	**0.382**
Top of Tank	249.00	1.83	3.00	3,943	0.045	0.032	**0.077**	**0.394**
	250.02	2.85	4.02	3,943	0.052	0.045	**0.097**	**0.394**
25-Year Water Level	250.03	2.86	4.03	3,981	0.052	0.046	**0.098**	**0.398**
50-Year Water Level	250.15	2.98	4.15	4,438	0.053	0.047	**0.100**	**0.444**
100-Year Water Level	250.28	3.11	4.28	4,897	0.054	0.048	**0.102**	**0.490**
Surface Ponding Spill @ 250.32	250.32	3.15	4.32	5,063	0.054	0.048	**0.102**	**0.506**

Project: South Parcel - SWM Tank

Chamber Model -	MC-7200	
Units -	**Metric**	
Number of Chambers -	550	
Number of End Caps -	20	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	246.94	m
Amount of Stone Above Chambers -	305	mm
Amount of Stone Below Chambers -	229	mm
Area of System-	3125	sq.meters

Min. Area - 3124.15 sq.meters

☑ Include Perimeter Stone in Calculations

☐ Click for Stage Area Data

☐ Click to Invert Stage Area Data

Click Here for Imperial

StormTech MC-7200 Cumulative Storage Volumes

Height of System (mm)	Incremental Single Chamber (cubic meters)	Incremental Single End Cap (cubic meters)	Incremental Chambers (cubic meters)	Incremental End Cap (cubic meters)	Incremental Stone (cubic meters)	Incremental Ch, EC and Stone (cubic meters)	Cumulative System (cubic meters)	Elevation (meters)
2057	0.000	0.000	0.00	0.00	31.75	31.75	4228.90	249.00
2032	0.000	0.000	0.00	0.00	31.75	31.75	4197.15	248.97
2007	0.000	0.000	0.00	0.00	31.75	31.75	4165.40	248.95
1981	0.000	0.000	0.00	0.00	31.75	31.75	4133.65	248.92
1956	0.000	0.000	0.00	0.00	31.75	31.75	4101.90	248.90
1930	0.000	0.000	0.00	0.00	31.75	31.75	4070.15	248.87
1905	0.000	0.000	0.00	0.00	31.75	31.75	4038.40	248.85
1880	0.000	0.000	0.00	0.00	31.75	31.75	4006.65	248.82
1854	0.000	0.000	0.00	0.00	31.75	31.75	3974.90	248.79
1829	0.000	0.000	0.00	0.00	31.75	31.75	3943.15	248.77
1803	0.000	0.000	0.00	0.00	31.75	31.75	3911.40	248.74
1778	0.000	0.000	0.00	0.00	31.75	31.75	3879.65	248.72
1753	0.002	0.000	0.92	0.01	31.38	32.31	3847.90	248.69
1727	0.005	0.001	2.96	0.02	30.56	33.54	3815.59	248.67
1702	0.008	0.001	4.29	0.03	30.02	34.34	3782.05	248.64
1676	0.010	0.002	5.56	0.04	29.51	35.11	3747.71	248.62
1651	0.013	0.002	7.14	0.05	28.88	36.06	3712.60	248.59
1626	0.021	0.003	11.55	0.06	27.11	38.72	3676.54	248.57
1600	0.031	0.004	17.08	0.07	24.89	42.04	3637.82	248.54
1575	0.037	0.005	20.53	0.09	23.50	44.13	3595.78	248.51
1549	0.042	0.005	23.33	0.11	22.37	45.81	3551.66	248.49
1524	0.047	0.006	25.77	0.12	21.39	47.28	3505.84	248.46
1499	0.051	0.007	27.94	0.14	20.52	48.60	3458.56	248.44
1473	0.054	0.008	29.90	0.16	19.73	49.78	3409.96	248.41
1448	0.058	0.009	31.73	0.17	18.99	50.89	3360.18	248.39
1422	0.061	0.009	33.41	0.19	18.31	51.91	3309.29	248.36
1397	0.064	0.010	35.01	0.20	17.67	52.87	3257.38	248.34
1372	0.066	0.011	36.49	0.22	17.07	53.78	3204.51	248.31
1346	0.069	0.012	37.90	0.23	16.50	54.63	3150.73	248.29
1321	0.071	0.012	39.23	0.25	15.96	55.44	3096.10	248.26
1295	0.074	0.013	40.50	0.27	15.44	56.21	3040.66	248.24
1270	0.076	0.014	41.71	0.28	14.95	56.95	2984.45	248.21
1245	0.078	0.015	42.87	0.29	14.48	57.65	2927.51	248.18
1219	0.080	0.015	43.97	0.31	14.04	58.32	2869.86	248.16
1194	0.082	0.016	45.03	0.32	13.61	58.96	2811.54	248.13
1168	0.084	0.017	46.04	0.33	13.20	59.58	2752.58	248.11
1143	0.085	0.017	47.01	0.35	12.81	60.17	2693.00	248.08
1118	0.087	0.018	47.95	0.36	12.43	60.73	2632.84	248.06
1092	0.089	0.018	48.84	0.36	12.07	61.28	2572.10	248.03
1067	0.090	0.019	49.71	0.38	11.71	61.81	2510.83	248.01
1041	0.092	0.020	50.54	0.40	11.38	62.31	2449.02	247.98
1016	0.093	0.020	51.34	0.41	11.05	62.80	2386.71	247.96
991	0.095	0.021	52.11	0.42	10.74	63.27	2323.91	247.93
965	0.096	0.022	52.84	0.43	10.44	63.72	2260.65	247.91
940	0.097	0.022	53.56	0.44	10.15	64.15	2196.93	247.88
914	0.099	0.023	54.24	0.45	9.87	64.57	2132.78	247.85
889	0.100	0.023	54.90	0.46	9.60	64.97	2068.21	247.83
864	0.101	0.024	55.54	0.47	9.34	65.36	2003.24	247.80
838	0.102	0.024	56.15	0.48	9.10	65.73	1937.88	247.78
813	0.103	0.024	56.74	0.49	8.86	66.09	1872.15	247.75
787	0.104	0.025	57.31	0.50	8.62	66.44	1806.06	247.73
762	0.105	0.026	57.86	0.51	8.40	66.77	1739.62	247.70
737	0.106	0.026	58.38	0.52	8.19	67.09	1672.85	247.68
711	0.107	0.026	58.89	0.52	7.99	67.39	1605.76	247.65
686	0.108	0.027	59.37	0.53	7.79	67.69	1538.36	247.63
660	0.109	0.027	59.83	0.54	7.60	67.97	1470.67	247.60
635	0.110	0.027	60.27	0.55	7.42	68.24	1402.70	247.58
610	0.110	0.028	60.70	0.56	7.25	68.50	1334.46	247.55
584	0.111	0.027	61.10	0.55	7.09	68.74	1265.95	247.52
559	0.112	0.028	61.49	0.57	6.93	68.99	1197.21	247.50
533	0.112	0.029	61.86	0.57	6.78	69.21	1128.22	247.47
508	0.113	0.029	62.21	0.58	6.63	69.42	1059.02	247.45
483	0.114	0.029	62.54	0.58	6.50	69.63	989.59	247.42
457	0.114	0.029	62.86	0.59	6.37	69.82	919.97	247.40
432	0.115	0.030	63.16	0.59	6.25	70.00	850.15	247.37
406	0.115	0.030	63.44	0.60	6.13	70.17	780.14	247.35
381	0.116	0.030	63.71	0.59	6.03	70.33	709.97	247.32
356	0.116	0.030	63.96	0.60	5.93	70.48	639.64	247.30
330	0.117	0.030	64.20	0.61	5.83	70.63	569.16	247.27
305	0.117	0.031	64.42	0.61	5.74	70.77	498.52	247.24
279	0.118	0.031	64.63	0.62	5.65	70.90	427.75	247.22
254	0.118	0.031	64.96	0.63	5.52	71.10	356.85	247.19
229	0.000	0.000	0.00	0.00	31.75	31.75	285.75	247.17
203	0.000	0.000	0.00	0.00	31.75	31.75	254.00	247.14
178	0.000	0.000	0.00	0.00	31.75	31.75	222.25	247.12
152	0.000	0.000	0.00	0.00	31.75	31.75	190.50	247.09
127	0.000	0.000	0.00	0.00	31.75	31.75	158.75	247.07
102	0.000	0.000	0.00	0.00	31.75	31.75	127.00	247.04
76	0.000	0.000	0.00	0.00	31.75	31.75	95.25	247.02
51	0.000	0.000	0.00	0.00	31.75	31.75	63.50	246.99
25	0.000	0.000	0.00	0.00	31.75	31.75	31.75	246.97

CROZIER CONSULTING ENGINEERS

Project: Broccolini Airport Road
Project No.: 2278-7228
Date: 2025-10-22

Created By: IF
Revised:
Checked By:

Stone Sizing Calculations - North Outlet

Actual Shear Stress Based on Outflow Velocity

Input:

Pipe Diameter	=	450	mm	
Pipe Slope	=	0.005	m/m	
Hydraulic Radius, R	=	0.11	m	(From FlowMaster model output)
$Q_{100\text{-year}}$	=	0.095	m^3/s	(From VO model output)
Velocity	=	1.25	m/s	(From FlowMaster model output)

Output:

1/R	=	9.09		
Tractive force, T	=	2.2	kg/m^2	(From MTO Design Chart 2.24)

Critical Shear Stress Resistance of Stone

Input:

Stone Size, D_{50}	=	100	mm	

Output:

Critical Shear Stress Resistance, T_{cb}	=	0.0642 x D50		(MTO, Equation 5.31)
	=	6.42	kg/m^2	

Conclusion

Since the critical shear stress capacity of the stone is greater than the tractive force of the flow, the proposed stone size is appropriate.

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Stone Sizing Calculations - South Outlet

Actual Shear Stress Based on Outflow Velocity

Input:

Pipe Diameter	=	450	mm	
Pipe Slope	=	0.005	m/m	
Hydraulic Radius, R	=	0.11	m	(From FlowMaster model output)
$Q_{100\text{-year}}$	=	0.101	m^3/s	(From VO model output)
Velocity	=	1.27	m/s	(From FlowMaster model output)

Output:

1/R	=	9.09		
Tractive force, T	=	2.3	kg/m^2	(From MTO Design Chart 2.24)

Critical Shear Stress Resistance of Stone

Input:

Stone Size, D_{50}	=	100	mm	

Output:

Critical Shear Stress Resistance, T_{cb}	=	0.0642 x D50		(MTO, Equation 5.31)
	=	6.42	kg/m^2	

Conclusion

Since the critical shear stress capacity of the stone is greater than the tractive force of the flow, the proposed stone size is appropriate.

Worksheet for North Outlet

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	m/m
Diameter	0.45	m
Discharge	0.095	m³/s

Results

Normal Depth	0.22	m
Flow Area	0.08	m²
Wetted Perimeter	0.69	m
Hydraulic Radius	0.11	m
Top Width	0.45	m
Critical Depth	0.21	m
Percent Full	48.3	%
Critical Slope	0.00529	m/m
Velocity	1.25	m/s
Velocity Head	0.08	m
Specific Energy	0.30	m
Froude Number	0.97	
Maximum Discharge	0.22	m³/s
Discharge Full	0.20	m³/s
Slope Full	0.00111	m/m
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	48.28	%
Downstream Velocity	Infinity	m/s

Worksheet for North Outlet

GVF Output Data

Upstream Velocity	Infinity	m/s
Normal Depth	0.22	m
Critical Depth	0.21	m
Channel Slope	0.00500	m/m
Critical Slope	0.00529	m/m

Worksheet for South Outlet

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	m/m
Diameter	0.45	m
Discharge	0.101	m³/s

Results

Normal Depth	0.23	m
Flow Area	0.08	m²
Wetted Perimeter	0.71	m
Hydraulic Radius	0.11	m
Top Width	0.45	m
Critical Depth	0.22	m
Percent Full	50.0	%
Critical Slope	0.00535	m/m
Velocity	1.27	m/s
Velocity Head	0.08	m
Specific Energy	0.31	m
Froude Number	0.96	
Maximum Discharge	0.22	m³/s
Discharge Full	0.20	m³/s
Slope Full	0.00125	m/m
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.04	%
Downstream Velocity	Infinity	m/s

Worksheet for South Outlet

GVF Output Data

Upstream Velocity	Infinity	m/s
Normal Depth	0.23	m
Critical Depth	0.22	m
Channel Slope	0.00500	m/m
Critical Slope	0.00535	m/m

BROCCOLLINI SITEPLAN
Town Of Caledon, Region of Peel
PROJECT NUMBER - 2278-7228
5-YEAR STORM SEWER DESIGN SHEET

CROZIER CONSULTING ENGINEERS

FREQUENCY - 5 YEAR - TOWN OF CALEDON					
Coef. A=	1593	Coef. B=	11	Coef. C=	0.8789

MATERIAL	MANNINGS "n"
PVC	0.013
CONC.	0.013
CSP	0.024

DESIGNED BY: VM
CHECKED BY: JS
DATE: 2025-10-30
ISSUED FOR: SPA

INITIAL TIME OF CONCENTRATION 10.00

CATCHMENT I.D.	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF (C_5)	DESIGN STORM	A x C	5 YEAR CUMUL. A x C_5	TIME OF CONC. (min.)	5 YEAR I (mm/hr)	CONTROLLED ROOF FLOW (L/sec)	CONTROLLED FLOW CUMUL. (L/sec)	Q (RUNOFF) (L/sec)	DESIGN FLOW (L/sec)	SLOPE (%)	PIPE DIA. (mm)	MANNING'S "n"	VELOCITY (m/sec)	LENGTH (m)	TIME OF FLOW (min)	PIPE CAPACITY (L/sec)	CAPACITY (%)
BUILDING A																					
	PLUG101	MH101R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**24.75**	**24.75**	**0.00**	**24.75**	1.00%	200	0.013	1.0	9.4	0.15	**32.80**	**75%**
	MH101R	CBMH101	0.00	0.00	5 year	0.00	0.00	10.15	191.03		**24.75**	**0.00**	**24.75**	2.00%	250	0.013	1.7	4.3	0.04	**84.10**	**29%**
C101	CBMH101	DCBMH101	0.04	0.82	5 year	0.03	0.03	10.19	191.02		**24.75**	**17.42**	**42.17**	0.50%	300	0.013	1.0	39.9	0.69	**68.38**	**62%**
	PLUG102	MH102R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**24.75**	**24.75**	**0.00**	**24.75**	1.00%	200	0.013	1.0	8.6	0.14	**32.80**	**75%**
	MH102R	MH102T	0.00	0.00	5 year	0.00	0.00	10.14	191.04		**24.75**	**0.00**	**24.75**	0.50%	250	0.013	0.9	8.1	0.16	**42.05**	**59%**
	MH102T	MH101	0.00	0.00	5 year	0.00	0.00	10.29	191.00		**24.75**	**0.00**	**24.75**	2.00%	250	0.013	1.7	4.3	0.04	**84.10**	**29%**
C102	DCBMH101	MH101	0.14	0.82	5 year	0.11	0.15	10.88	190.85		**24.75**	**78.31**	**103.06**	0.40%	450	0.013	1.1	32.8	0.48	**180.32**	**57%**
	MH101	DCBMH102	0.00	0.00	5 year	0.00	0.15	11.36	190.73		**49.50**	**78.26**	**127.76**	0.40%	450	0.013	1.1	27.8	0.41	**180.32**	**71%**
C103	DCBMH102	DCBMH103	0.15	0.82	5 year	0.12	0.27	11.77	190.63		**49.50**	**143.40**	**192.90**	0.35%	525	0.013	1.2	55.2	0.78	**254.43**	**76%**
C104	DCBMH103	MH102	0.21	0.74	5 year	0.16	0.43	12.55	190.43		**49.50**	**225.53**	**275.03**	0.35%	600	0.013	1.3	57.3	0.74	**363.25**	**76%**
	MH102	MH103	0.00	0.00	5 year	0.00	0.43	13.30	190.25		**49.50**	**225.31**	**274.81**	0.35%	600	0.013	1.3	37.3	0.48	**363.25**	**76%**
C105	DCB101	MH103	0.15	0.58	5 year	0.09	0.09	10.00	191.07		**0.00**	**46.21**	**46.21**	2.00%	375	0.013	2.2	1.8	0.01	**247.95**	**19%**
	MH103	MH104	0.00	0.00	5 year	0.00	0.55	13.78	190.13		**49.50**	**290.39**	**339.89**	0.50%	600	0.013	1.5	95.7	1.04	**434.17**	**78%**
C106	DCB102	MH103	0.07	0.52	5 year	0.04	0.04	10.00	191.07		**0.00**	**19.33**	**19.33**	2.00%	375	0.013	2.2	1.5	0.01	**247.95**	**8%**
	MH104	TANK A	0.00	0.00	5 year	0.00	0.55	14.82	189.87		**49.50**	**290.00**	**339.50**	0.50%	600	0.013	1.5	19.7	0.21	**434.17**	**78%**
C107	DCB103	TANK A	0.26	0.57	5 year	0.15	0.15	10.00	191.07		**0.00**	**78.72**	**78.72**								
C108	DCB104	TANK A	0.20	0.90	5 year	0.18	0.18	10.00	191.07		**0.00**	**95.61**	**95.61**								
C109	DCB105	TANK A	0.24	0.90	5 year	0.22	0.22	10.00	191.07		**0.00**	**114.73**	**114.73**								
C110	DCB106	TANK A	0.24	0.90	5 year	0.22	0.22	10.00	191.07		**0.00**	**114.73**	**114.73**								
C111	DCB107	TANK A	0.22	0.90	5 year	0.20	0.20	10.00	191.07		**0.00**	**105.17**	**105.17**								
	PLUG103	MH103R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**24.75**	**24.75**	**0.00**	**24.75**	1.00%	200	0.013	1.0	4.5	0.07	**32.80**	**75%**
	MH103R	MH104R	0.00	0.00	5 year	0.00	0.00	10.07	191.05		**24.75**	**0.00**	**24.75**	0.35%	250	0.013	0.72	90.0	2.09	**35.18**	**70%**
	PLUG104	MH104R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**24.75**	**24.75**	**0.00**	**24.75**	1.00%	200	0.013	1.0	4.5	0.07	**32.80**	**75%**
	MH104R	MH101T	0.00	0.00	5 year	0.00	0.00	12.16	190.53		**49.50**	**0.00**	**49.50**	0.45%	300	0.013	0.9	47.8	0.87	**64.87**	**76%**
	MH101T	TANK A	0.00	0.00	5 year	0.00	0.00	13.03	190.31		**49.50**	**0.00**	**49.50**	2.00%	300	0.013	1.9	19.0	0.16	**136.76**	**36%**
	TANK A	MH105	0.00	0.00	5 year	0.00	1.51	15.03	189.82		**99.00**	**795.56**	**894.56**	0.25%	975	0.013	1.5	25.1	0.28	**1120.53**	**80%**
C112	DCB108	MH105	0.18	0.90	5 year	0.16	0.16	10.00	191.07		**0.00**	**86.05**	**86.05**	5.39%	300	0.013	3.2	12.3	0.06	**224.50**	**38%**
C113	DCB109	MH105	0.17	0.25	5 year	0.04	0.04	10.00	191.07		**0.00**	**22.58**	**22.58**	2.00%	375	0.013	2.2	27.5	0.20	**247.95**	**9%**
C114	DCB110	MH105	0.17	0.25	5 year	0.04	0.04	10.00	191.07		**0.00**	**22.58**	**22.58**	2.00%	375	0.013	2.2	7.7	0.06	**247.95**	**9%**
	MH105	CONTROL MH101	0.00	0.00	5 year	0.00	1.75	15.31	189.75		**99.00**	**925.56**	**1024.56**	0.25%	1050	0.013	1.6	90.0	0.95	**1365.36**	**75%**
	CONTROL MH101.	DIVERSION MH100	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**106.00**	**106.00**	**0.00**	**106.00**	1.00%	450	0.013	1.8	4.2	0.04	**285.11**	**37%**
	DIVERSION MH100	RETURN MH100	0.00	0.00	5 year	0.00	0.00	10.04	191.06		**106.00**	**0.00**	**106.00**	1.00%	450	0.013	1.8	3.5	0.03	**285.11**	**37%**
	RETURN MH100	MH107	0.00	0.00	5 year	0.00	0.00	10.07	191.05		**106.00**	**0.00**	**106.00**	0.30%	450	0.013	1.0	11.5	0.20	**156.16**	**68%**
	MH107	HW100	0.00	0.00	5 year	0.00	0.00	10.27	191.00		**106.00**	**0.00**	**106.00**	0.30%	450	0.013	1.0	41.9	0.71	**156.16**	**68%**

BROCCOLLINI SITEPLAN
Town Of Caledon, Region of Peel
PROJECT NUMBER - 2278-7228
5-YEAR STORM SEWER DESIGN SHEET

CROZIER CONSULTING ENGINEERS

FREQUENCY - 5 YEAR - TOWN OF CALEDON					
Coef. A=	1593	Coef. B=	11	Coef. C=	0.8789

MATERIAL	MANNINGS "n"
PVC	0.013
CONC.	0.013
CSP	0.024

DESIGNED BY: VM
CHECKED BY: JS
DATE: 2025-10-30
ISSUED FOR: SPA

INITIAL TIME OF CONCENTRATION 10.00

CATCHMENT I.D.	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF (C_5)	DESIGN STORM	A x C	5 YEAR CUMUL. A x C_5	TIME OF CONC. (min.)	5 YEAR I (mm/hr)	CONTROLLED ROOF FLOW (L/sec)	CONTROLLED FLOW CUMUL. (L/sec)	Q (RUNOFF) (L/sec)	DESIGN FLOW (L/sec)	SLOPE (%)	PIPE DIA. (mm)	MANNING'S "n"	VELOCITY (m/sec)	LENGTH (m)	TIME OF FLOW (min)	PIPE CAPACITY (L/sec)	CAPACITY (%)
BUILDING B																					
	PLUG201	MH201R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**40.20**	**40.20**	**0.00**	**40.20**	2.00%	250	0.013	1.7	1.5	0.01	**84.10**	**48%**
	MH201R	MH202R	0.00	0.00	5 year	0.00	0.00	10.01	191.07		**40.20**	**0.00**	**40.20**	0.35%	300	0.013	0.8	90.0	1.85	**57.21**	**70%**
	PLUG202	MH202R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**40.20**	**40.20**	**0.00**	**40.20**	2.00%	250	0.013	1.7	1.5	0.01	**84.10**	**48%**
	MH202R	MH201T	0.00	0.00	5 year	0.00	0.00	11.87	190.60		**80.40**	**0.00**	**80.40**	0.35%	375	0.013	0.9	9.5	0.17	**103.73**	**78%**
	MH201T	DCBMH201	0.00	0.00	5 year	0.00	0.00	12.04	190.56		**80.40**	**0.00**	**80.40**	3.00%	250	0.013	2.1	5.8	0.05	**103.00**	**78%**
C201	DCBMH201	DCBMH202	0.15	0.82	5 year	0.12	0.12	12.08	190.55		**80.40**	**65.16**	**145.56**	0.55%	450	0.013	1.3	53.1	0.67	**211.44**	**69%**
C202	DCBMH202	DCBMH203	0.14	0.82	5 year	0.11	0.24	12.75	190.39		**80.40**	**125.86**	**206.26**	0.40%	525	0.013	1.3	60.4	0.80	**272.00**	**76%**
C203	DCBMH203	DCBMH204	0.15	0.82	5 year	0.12	0.36	13.55	190.19		**80.40**	**190.76**	**271.16**	0.35%	600	0.013	1.3	60.4	0.78	**363.25**	**75%**
C204	DCBMH204	DCBMH205	0.15	0.82	5 year	0.12	0.48	14.33	189.99		**80.40**	**255.53**	**335.93**	0.50%	600	0.013	1.5	60.0	0.65	**434.17**	**77%**
C206	DCB201	DCBMH205	0.02	0.25	5 year	0.01	0.01	10.00	191.07		**0.00**	**2.66**	**2.66**	2.00%	300	0.013	1.9	6.9	0.06	**136.76**	**2%**
C205	DCBMH205	MH201	0.17	0.82	5 year	0.14	0.63	14.98	189.83		**80.40**	**331.52**	**411.92**	0.40%	675	0.013	1.5	51.8	0.58	**531.63**	**77%**
C207a	DCB202	MH201	0.04	0.25	5 year	0.01	0.01	10.00	191.07		**0.00**	**5.31**	**5.31**	2.00%	300	0.013	1.9	2.3	0.02	**136.76**	**4%**
C207	DCB203	MH201	0.16	0.77	5 year	0.12	0.12	10.00	191.07		**0.00**	**65.44**	**65.44**	2.00%	375	0.013	2.2	1.8	0.01	**247.95**	**26%**
	MH201	MH202	0.00	0.00	5 year	0.00	0.76	15.57	189.69		**80.40**	**401.51**	**481.91**	0.35%	750	0.013	1.5	90.0	1.01	**658.62**	**73%**
C208	DCB204	MH202	0.13	0.53	5 year	0.07	0.07	10.00	191.07		**0.00**	**36.60**	**36.60**	2.00%	375	0.013	2.2	1.5	0.01	**247.95**	**15%**
C209	DCB205	MH202	0.19	0.43	5 year	0.08	0.08	10.00	191.07		**0.00**	**43.40**	**43.40**	2.00%	375	0.013	2.2	1.3	0.01	**247.95**	**18%**
	MH202	MH203	0.00	0.00	5 year	0.00	0.91	16.57	189.44		**80.40**	**480.30**	**560.70**	0.45%	750	0.013	1.7	73.5	0.72	**746.81**	**75%**
	MH203	TANK B	0.00	0.00	5 year	0.00	0.91	17.30	189.26		**80.40**	**479.85**	**560.25**	0.45%	750	0.013	1.7	25.0	0.25	**746.81**	**75%**
C210	DCB206	TANK B	0.14	0.64	5 year	0.09	0.09	10.00	191.07		**0.00**	**47.59**	**47.59**								
C211	DCB207	TANK B	0.20	0.90	5 year	0.18	0.18	10.00	191.07		**0.00**	**95.61**	**95.61**								
C212	DCB208	TANK B	0.24	0.90	5 year	0.22	0.22	10.00	191.07		**0.00**	**114.73**	**114.73**								
C213	DCB209	TANK B	0.24	0.90	5 year	0.22	0.22	10.00	191.07		**0.00**	**114.73**	**114.73**								
C214	DCB210	TANK B	0.23	0.90	5 year	0.21	0.21	10.00	191.07		**0.00**	**109.95**	**109.95**								
C215	DCB211	TANK B	0.43	0.90	5 year	0.39	0.39	10.00	191.07		**0.00**	**205.57**	**205.57**								
	PLUG203	MH203R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**40.20**	**40.20**	**0.00**	**40.20**	1.00%	250	0.013	1.2	19.3	0.27	**59.47**	**68%**
	MH203R	MH204R	0.00	0.00	5 year	0.00	0.00	10.27	191.00		**40.20**	**0.00**	**40.20**	0.35%	300	0.013	0.8	71.4	1.47	**57.21**	**70%**
	PLUG204	MH204R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**40.20**	**40.20**	**0.00**	**40.20**	1.00%	250	0.013	1.2	19.3	0.27	**59.47**	**68%**
	MH204R	MH205R	0.00	0.00	5 year	0.00	0.00	11.74	190.64		**80.40**	**0.00**	**80.40**	0.35%	375	0.013	0.9	90.0	1.60	**103.73**	**78%**
	PLUG205	MH205R	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**40.20**	**40.20**	**0.00**	**40.20**	2.00%	250	0.013	1.7	19.3	0.19	**84.10**	**48%**
	MH205R	TANK B	0.00	0.00	5 year	0.00	0.00	13.33	190.24		**120.60**	**0.00**	**120.60**	3.00%	300	0.013	2.4	5.6	0.04	**167.49**	**72%**
C216	DCB212	TANK B	0.33	0.90	5 year	0.30	0.30	10.00	191.07		**0.00**	**157.76**	**157.76**								
C217	DCB213	TANK B	0.18	0.90	5 year	0.16	0.16	10.00	191.07		**0.00**	**86.05**	**86.05**								
C218	DCB214	TANK B	0.06	0.25	5 year	0.02	0.02	10.00	191.07		**0.00**	**7.97**	**7.97**	2.00%	375	0.013	2.2	21.3	0.16	**247.95**	**3%**
C219	DCB215	TANK B	0.09	0.25	5 year	0.02	0.02	10.00	191.07		**0.00**	**11.95**	**11.95**	2.00%	375	0.013	2.2	30.3	0.22	**247.95**	**5%**
	TANK B	MH204	0.00	0.00	5 year	0.00	2.70	17.54	189.20		**201.00**	**1422.30**	**1623.30**	1.55%	975	0.013	3.7	28.7	0.13	**2790.09**	**58%**
C221	DCB216	DCBMH206	0.09	0.25	5 year	0.02	0.02	10.00	191.07		**0.00**	**11.95**	**11.95**	2.00%	300	0.013	1.9	33.2	0.29	**136.76**	**9%**
C220	DCBMH206	MH204	0.18	0.25	5 year	0.05	0.07	10.29	191.00		**0.00**	**35.84**	**35.84**	1.73%	300	0.013	1.8	19.1	0.18	**127.19**	**28%**
	MH204	CONTROL MH201	0.00	0.00	5 year	0.00	2.77	17.67	189.17		**201.00**	**1457.56**	**1658.56**	1.00%	1050	0.013	3.2	7.5	0.04	**2730.73**	**61%**
	CONTROL MH201.	DIVERSION MH200	0.00	0.00	5 year	0.00	0.00	10.00	191.07	**132.00**	**132.00**	**0.00**	**132.00**	1.00%	450	0.013	1.8	2.5	0.02	**285.11**	**46%**
	DIVERSION MH200	RETURN MH200	0.00	0.00	5 year	0.00	0.00	10.02	191.07		**132.00**	**0.00**	**132.00**	1.13%	450	0.013	1.9	3.5	0.03	**303.07**	**44%**
	RETURN MH200	MH205	0.00	0.00	5 year	0.00	0.00	10.05	191.06		**132.00**	**0.00**	**132.00**	1.00%	450	0.013	1.8	2.5	0.02	**285.11**	**46%**
	MH205	HW200	0.00	0.00	5 year	0.00	0.00	10.08	191.05		**132.00**	**0.00**	**132.00**	0.50%	450	0.013	1.3	62.3	0.82	**201.60**	**65%**

CROZIER CONSULTING ENGINEERS

Project: Broccolini Airport Road
Project No.: 2278-7228
Created By: IF
Checked By: JS
Date: 2025-10-22

Infiltration Gallery - North Parcel

Infiltration Rate

12.70 mm/hr

Infiltration rate at the proposed bottom elevation of the infiltration gallery must be divided by a safety correction factor:

Safety Factor = 1.5

Design infiltration Rate determined by dividing mean infiltration rate at bottom of infiltration trench by the safety correction factor:

Design Infiltration Rate = 8.5 mm/hr

$$d_{r\,max} = i * t_s / V_r$$

Where:

$d_{r\,max}$ = Maximum stone reservoir depth (mm)
i = Infiltration rate for native soils (mm/hr)
V_r = Void space ratio for aggregate used (typically 0.4 for 50 mm clear stone)
t_s = Time to drain (design for 48 hour time to drain is recommended)

equation from TRCA LID Manual (2010) page 4-58

Size Infiltration Gallery Area

Required Volume in Trench (m^3)	Design Depth of Tank (m)	Void Ratio	Surface Area (m^2)	Volume Provided (m^3)	Drawdown Time (hours)
207	0.72	0.40	400	115	34
	0.40	0.40	650	104	19
				219	

CROZIER CONSULTING ENGINEERS

Project: Broccolini Airport Road
Project No.: 2278-7228
Created By: IF
Checked By: JS
Date: 2025-10-22

Infiltration Gallery - South Parcel

Infiltration Rate

12.70 mm/hr

Infiltration rate at the proposed bottom elevation of the infiltration gallery must be divided by a safety correction factor:

Safety Factor = 1.5

Design infiltration Rate determined by dividing mean infiltration rate at bottom of infiltration trench by the safety correction factor:

Design Infiltration Rate = 8.5 mm/hr

$$d_{r\,max} = i * t_s / V_r$$

Where:

$d_{r\,max}$ = Maximum stone reservoir depth (mm)
i = Infiltration rate for native soils (mm/hr)
V_r = Void space ratio for aggregate used (typically 0.4 for 50 mm clear stone)
t_s = Time to drain (design for 48 hour time to drain is recommended)

equation from TRCA LID Manual (2010) page 4-58

Size Infiltration Gallery Area

Required Volume in Trench (m^3)	Design Depth of Tank (m)	Void Ratio	Surface Area (m^2)	Volume Provided (m^3)	Drawdown Time (hours)
378	1.00	0.40	475	190	47
	0.65	0.40	735	191	31
				381	

Project: Broccolini Airport Rd
Project No.: 2278-7228

Design: K.W.
Check: J.S.
Date: 2025-10-30

Curb Cut Sizing

Required Curb Cut Length = 2-year Flow Rate / Weir Coefficient*(Head^1.5)
- Where the Weir Coefficient is equal to 1.55
- Where the Head is equal to 0.30m

LID #	Q (100yr) (m^3/yr)	Required Curb Cut Length (m)
Curb Cut 1	0.349	1.4
Curb Cut 2	0.564	2.2
Curb Cut 3	0.984	3.9
Curb Cut 4	0.654	2.6

DRAWINGS

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.0m)
- ×240.00 EXISTING MATCH GRADE
- ×EX. 250.44 EXISTING MATCH GRADE (PER LIDAR)
- ×240.00 PROPOSED GRADE
- 2.0% TEMPORARY DRAINAGE DITCH
- PROPOSED SLOPE (3:1 MAX.)
- EXISTING OVERLAND FLOW DIRECTION
- SF — SF — PROPOSED SILT FENCE

PR. MUD-MAT PER TOWN OF CALEDON DEVELOPMENT STANDARDS MANUAL STD 1.13.7

PART 2, PLAN 43R-40586
SUBJECT TO AN EASEMENT IN GROSS AS SET OUT IN INST. No. PR4365691

PART 2, PLAN 43R-40360
SUBJECT TO AN EASEMENT IN GROSS AS SET OUT IN INST. No. PR4365691

AIRPORT ROAD

PR. FLAT BOTTOM SWALE A
WITH 3:1 SIDE SLOPES
LENGTH = 625.7m
BOTTOM WIDTH = 2.5m
MAX PONDING DEPTH = 0.46m
MIN SLOPE = 0.4%

PR. SEDIMENT BASIN
AREA = 2,894.4m
TOP OF BASIN = 246.00m
TOP OF ACTIVE STORAGE = 245.70m
TOP OF PERMANENT POOL = 244.90m
BOTTOM OF BASIN = 242.90m

MAX INTERNAL SIDE SLOPES 4:1
MAX EXTERNAL SIDE SLOPES 2:1

REQUIRED ACTIVE STORAGE = 1,680m³
PROVIDED ACTIVE STORAGE = 1,859m³

REQUIRED PERMANENT POOL VOLUME = 2,486m³
PROVIDED PERMANENT POOL VOLUME = 2,738m³

PR. 125mm HICKENBOTTOM WITH 24–25mm HOLES PER 0.305m ABOVE NWL (244.90m)

PR. 14.0m – 150mmø PVC PIPE @ 1.00%

INV 244.76

PR. TURBIDITY CURTAIN PER OPSD 219.260 & 219.261

PR. FLAT BOTTOM SWALE B
WITH 3:1 SIDE SLOPES
LENGTH = 625.8m
BOTTOM WIDTH = 2.5m
NORMAL PONDING DEPTH = 0.39m
MIN SLOPE = 0.8%

MAX 3:1

POST & WIRE FENCE

RAIL FENCE

CREEK

WIDENING

SCALE: 1:1000

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4. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
6. DO NOT SCALE DRAWINGS.

BENCHMARKS

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF BRAMPTON VERTICAL BENCHMARK NUMBER 042200365 HAVING AN ORTHOMETRIC ELEVATION OF 242.135 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978 ADJ.).

BRASS CAP SET IN CONCRETE, 72.80 METERS SOUTH OF THE CENTRELINE OF MAYFIELD ROAD AND 19.81 METERS EAST OF THE CENTRELINE OF TORBRAM ROAD.

SURVEY COMPLETED BY R-PE SURVEYING LTD. (2022/DEC/12)
REFERENCE NO. 22-317

SITE PLAN NOTES

DESIGN ELEMENTS ARE BASED ON SITE PLAN PROVIDED BY POWERS BROWN ARCHITECTURE PROJECT NO: 255025, DRAWING NO: AS101 (2025/09/09)

Town: TOWN OF CALEDON

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR FIRST ZBA/SPA SUBMISSION	2025/10/30

Engineer: LICENSED PROFESSIONAL ENGINEER — J. M. SCOTT — 100214964 — OCT 30 2025 — 2278-7228 — PROVINCE OF ONTARIO

Engineer: LICENSED PROFESSIONAL ENGINEER — K. L. WEEL — 100547824 — Oct 30, 2025 — 2278-7228 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: EROSION & SEDIMENT CONTROL PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:1000	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	01 OF 21	C101

TOPSOIL AND EROSION AND SEDIMENT CONTROL (ESC) MANAGEMENT STRATEGY

THE EROSION AND SEDIMENT CONTROLS SHALL BE A MULTI BARRIER APPROACH TO PREVENT EROSION DURING CONSTRUCTION TO DEAL WITH SEDIMENT TRANSPORT AT SOURCE AND TO MINIMIZE SEDIMENT TRANSPORT FROM LEAVING THE SITE. THE MITIGATION MEASURES OUTLINED BELOW SHALL BE MAINTAINED BY THE CONTRACTOR THROUGH REGULAR INSPECTIONS, MONITORING AND MAINTENANCE UNTIL THE SOIL HAS BEEN STABILIZED. THE CONTRACTOR SHALL KEEP A COPY OF THE ESC PLANS AND THE TORONTO AND REGION CONSERVATION AUTHORITY, EROSION AND SEDIMENT CONTROL GUIDELINE, DECEMBER 2006, ON SITE AT ALL TIMES.

GENERAL NOTES

EROSION AND SEDIMENT CONTROL (ESC) MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES TO PREVENT ENTRY OF SEDIMENT INTO THE WATER. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.

1. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED / AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, INCLUDING SEDIMENT, THEN ALTERNATIVE MEASURES MUST BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS. TRCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED. ADDITIONAL ESC MEASURES ARE TO BE KEPT ON SITE AND USED AS NECESSARY.
2. AN ENVIRONMENTAL MONITOR WILL ATTEND THE SITE TO INSPECT ALL NEW CONTROLS, AS WELL AS ON A REGULAR BASIS, OR FOLLOWING RAIN/SNOWMELT EVENT, TO MONITOR ALL WORKS, AND IN PARTICULAR WORKS RELATED TO EROSION AND SEDIMENT CONTROLS. SHOULD CONCERNS ARISE ON SITE THE ENVIRONMENTAL MONITOR WILL CONTACT THE TRCA ENFORCEMENT OFFICER AS WELL AS THE CONTRACTOR.
3. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED A MINIMUM OF 30M FROM THE WATER.

STANDARD NOTES

THE FOLLOWING STANDARD NOTES ARE TO APPEAR ON THE EROSION AND SEDIMENT CONTROL PLANS FOR SITE PLAN SUBMISSIONS:

1. ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES MUST BE INSTALLED PRIOR TO THE COMMENCEMENT OF WORKS ON SITE AND SHALL BE MAINTAINED DURING ALL CONSTRUCTION PHASES OF THE WORKS.
2. THE ESC STRATEGIES OUTLINED ON THIS PLAN ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO PREVENT SEDIMENT RELEASE OUTSIDE THE WORK AREA. THE TOWN IS TO BE ADVISED OF ANY CHANGES TO ESC MEASURES, AND AT THE DISCRETION OF THE TOWN, UPDATED PLANS MAY BE REQUIRED.
3. THE CONTRACTOR IS TO ASSIGN AN ENVIRONMENTAL MONITOR (EM) TO ASSURE CONSTRUCTION ACTIVITIES COMPLY WITH THE ENVIRONMENTAL PROVISIONS AND AGENCY PERMITS. THE EM WILL BE A QUALIFIED PERSON AS DETERMINED BY THE TOWN AND/OR CONSERVATION AUTHORITY. THE EM SHOULD SUBMIT INSPECTION FORMS ELECTRONICALLY TO THE TOWN AND CONSERVATION AUTHORITY UPON REQUEST.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ESC MEASURES IN WORKING CONDITION AT ALL TIMES TO THE SATISFACTION OF THE TOWN AND/OR CONSERVATION AUTHORITY. ALL DAMAGED ESC MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
5. THE CONTRACTOR SHALL ROUTINELY INSPECT ALL ESC DEVICES TO ENSURE PROPERTY WORKING ORDER. FREQUENCY OF INSPECTIONS OF ESC MEASURES IS AS FOLLOWS: DURING EARTHWORKS ACTIVITIES:
6. ALL CONSTRUCTION VEHICLES MUST ENTER AND EXIT THE SITE ONLY FROM THE APPROVED ACCESS ROUTE(S) AS SHOWN ON THE PLANS. CONSTRUCTION ACCESS WILL BE MAINTAINED TO THE SATISFACTION OF THE TOWN/REGION. STREET SWEEPING IS REQUIRED AS NEEDED.

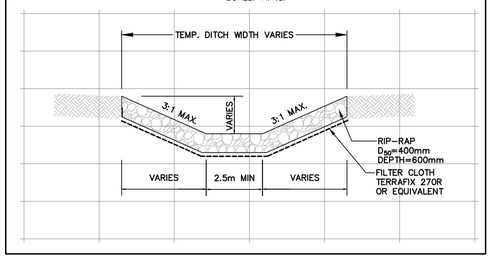
TOWN OF CALEDON EROSION AND SEDIMENT CONTROL NOTES:

THE FOLLOWING STANDARD NOTES ARE TO APPEAR ON THE EROSION AND SEDIMENT CONTROL PLANS FOR SITE PLAN SUBMISSIONS:

1. ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES MUST BE INSTALLED PRIOR TO THE COMMENCEMENT OF WORKS ON SITE AND SHALL BE MAINTAINED DURING ALL CONSTRUCTION PHASES OF THE WORKS.
2. MANAGE CONSTRUCTION EROSION AND SEDIMENT CONTROL THROUGH DEVELOPMENT AND IMPLEMENTATION OF AN EROSION AND SEDIMENT CONTROL (ESC) PLAN. THE ESC PLAN SHALL HAVE REGARD TO:
   - CANADIAN STANDARDS ASSOCIATION (CSA) W202 EROSION AND SEDIMENT CONTROL INSPECTION AND MONITORING STANDARD (AS AMENDED); OR
   - EROSION AND SEDIMENT CONTROL GUIDELINE FOR URBAN CONSTRUCTION 2019 BY TRCA (AS AMENDED).
3. INSTALLATION AND MAINTENANCE OF THE ESC MEASURES SPECIFIED IN THE ESC PLAN SHALL HAVE REGARD TO CSA W208:20 EROSION AND SEDIMENT CONTROL INSTALLATION AND MAINTENANCE (AS AMENDED).
4. THE ESC STRATEGIES OUTLINED ON THIS PLAN ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO PREVENT SEDIMENT RELEASE OUTSIDE THE WORK AREA. THE TOWN IS TO BE ADVISED OF ANY CHANGES TO ESC MEASURES, AND AT THE DISCRETION OF THE TOWN, UPDATED PLANS MAY BE REQUIRED.
5. THE CONTRACTOR IS TO ASSIGN AN ENVIRONMENTAL MONITOR (EM) TO ASSURE CONSTRUCTION ACTIVITIES COMPLY WITH THE ENVIRONMENTAL PROVISIONS AND AGENCY PERMITS. THE EM WILL BE A QUALIFIED PERSON AS DETERMINED BY THE TOWN AND/OR CONSERVATION AUTHORITY. THE EM SHOULD SUBMIT INSPECTION FORMS ELECTRONICALLY TO THE TOWN AND CONSERVATION AUTHORITY UPON REQUEST.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ESC MEASURES IN WORKING CONDITION AT ALL TIMES TO THE SATISFACTION OF THE TOWN AND/OR CONSERVATION AUTHORITY. ALL DAMAGED ESC MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
7. THE CONTRACTOR SHALL ROUTINELY INSPECT ALL ESC DEVICES TO ENSURE PROPER WORKING ORDER. FREQUENCY OF INSPECTIONS OF ESC MEASURES IS AS FOLLOWS:
   - ONCE PER WEEK DURING EARTHWORKS ACTIVITIES
   - ONCE EVERY TWO WEEKS DURING TIMES OF NO EARTHWORKS
   - PRIOR TO PREDICTED RAINFALL EVENTS OF 10 MM OR MORE OVER 12 HOURS
   - WITHIN 48 HOURS OF EVERY RAINFALL EVENT OF 10 MM OR MORE OVER 12 HOURS
   - PRIOR TO SIGNIFICANT SNOWMELT EVENTS
   - WITHIN 48 HOURS OF SIGNIFICANT SNOWMELT EVENTS; AND
   - DAILY DURING EXTENDED RAIN OR SNOWMELT PERIODS
   - AFTER EXTREME WEATHER EVENTS (FOR EXAMPLE: WIND)
8. RECORD OF ESC INSPECTIONS SHALL BE ROUTINELY SUBMITTED TO THE TOWN AND INCLUDE AT MINIMUM: THE NAME OF THE INSPECTOR, DATE OF INSPECTION, VISUAL OBSERVATIONS, AND THE REMEDIAL MEASURES, IF ANY, UNDERTAKEN TO MAINTAIN THE TEMPORARY ESC MEASURES.
9. ALL CONSTRUCTION VEHICLES MUST ENTER AND EXIT THE SITE ONLY FROM THE APPROVED ACCESS ROUTE(S) AS SHOWN ON THE PLANS. CONSTRUCTION ACCESS WILL BE MAINTAINED TO THE SATISFACTION OF THE TOWN/REGION. STREET SWEEPING IS REQUIRED AS NEEDED.
10. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL BE ALLOWED BEYOND THE SILT FENCE OR LIMITS OF THE SITE WORKS.
11. THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT DUST CONTROL MEASURES AND CONSTRUCTION BEST PRACTICE GUIDELINES AS APPROVED BY THE TOWN AND/OR CONSERVATION AUTHORITY.
12. ALL DISTURBED GROUND LEFT INACTIVE FOR 30 DAYS SHALL BE VEGETATED, SUBJECT TO WEATHER CONDITIONS. DISTURBED AREAS ARE TO BE HYDROSEEDED (OR APPROVED EQUIVALENT) TO THE SATISFACTION OF THE TOWN
13. ALL TOPSOIL STOCKPILES SHALL BE SURROUNDED WITH SEDIMENT CONTROL FENCE. THE MAXIMUM SIDE SLOPE SHALL BE 2:1 (H:V). ONCE TOPSOIL STRIPPING IS COMPLETED THE STOCKPILE SHALL BE VEGETATED, SUBJECT TO WEATHER CONDITIONS, BY HYDROSEEDED, OR AN APPROVED EQUIVALENT, TO THE SATISFACTION OF THE TOWN.
14. CONTRACTOR SHALL TAKE CARE AND CONTROL SPILLS, FLUIDS AND MATERIALS DURING CONSTRUCTION TO MINIMIZE RISK TO THE ENVIRONMENT.

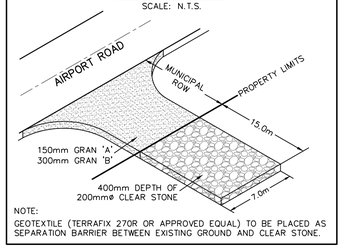
TYPICAL TEMPORARY DRAINAGE DITCH

SCALE: N.T.S.

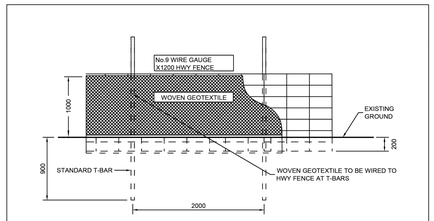


MUD MAT DETAIL

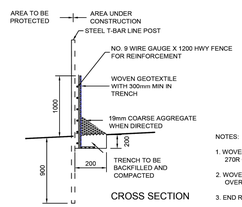
SCALE: N.T.S.



NOTE:
GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUAL) TO BE PLACED AS SEPARATION BARRIER BETWEEN EXISTING GROUND AND CLEAR STONE.



ELEVATION



CROSS SECTION

NOTES:
1. WOVEN GEOTEXTILE TO HAVE A WEAVE DENSITY OF 270R OR EQUIVALENT
2. WOVEN GEOTEXTILE TO HAVE A HORIZONTAL OVERLAP OF 1000mm AT JOINTS.
3. END RUNS SHALL BE TURNED UPSTREAM AT 30°

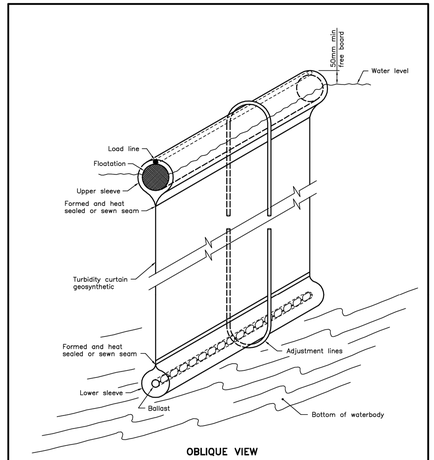
NO.	REVISION	APR'D	DATE
2	NAME CHANGED, STANDARD No. 325.01 NOW 304		JUNE 08
1	SUPPORT FENCING CHANGED TO HWY FENCE		Oct 02

TOWN OF CALEDON

SEDIMENT CONTROL FENCE

APR'D: C.C. DATE: APRIL 2000
DRAWN: BJM SCALE: N.T.S.

STANDARD No. 304



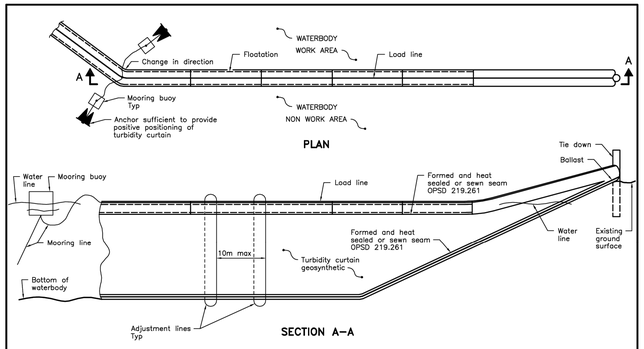
OBLIQUE VIEW

NOTES:
A All dimensions are in millimeters.

ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2015 | Rev 2

TURBIDITY CURTAIN
SEAM DETAIL

OPSD 219.261



SECTION A–A

NOTES:
A All dimensions are in millimeters unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2015 | Rev 2

TURBIDITY CURTAIN

OPSD 219.260

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6. DO NOT SCALE DRAWINGS.

BENCHMARKS

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BRASS CAP SET IN CONCRETE, 72.80 METERS SOUTH OF THE CENTRELINE OF MAYFIELD ROAD AND 19.81 METERS EAST OF THE CENTRELINE OF TORBRAM ROAD.

SURVEY COMPLETED BY R-PE SURVEYING LTD. (2022/DEC/12)
REFERENCE NO. 22-317

SITE PLAN NOTES

DESIGN ELEMENTS ARE BASED ON SITE PLAN PROVIDED BY POWERS BROWN ARCHITECTURE
PROJECT NO: 255025, DRAWING NO: AS101 (2025/09/09)

Town: TOWN OF CALEDON

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR FIRST ZBA/SPA SUBMISSION	2025/10/30

Engineer: LICENSED PROFESSIONAL ENGINEER — J. M. SCOTT — 100214964 — OCT 30 2025 — 2278-7228 — PROVINCE OF ONTARIO

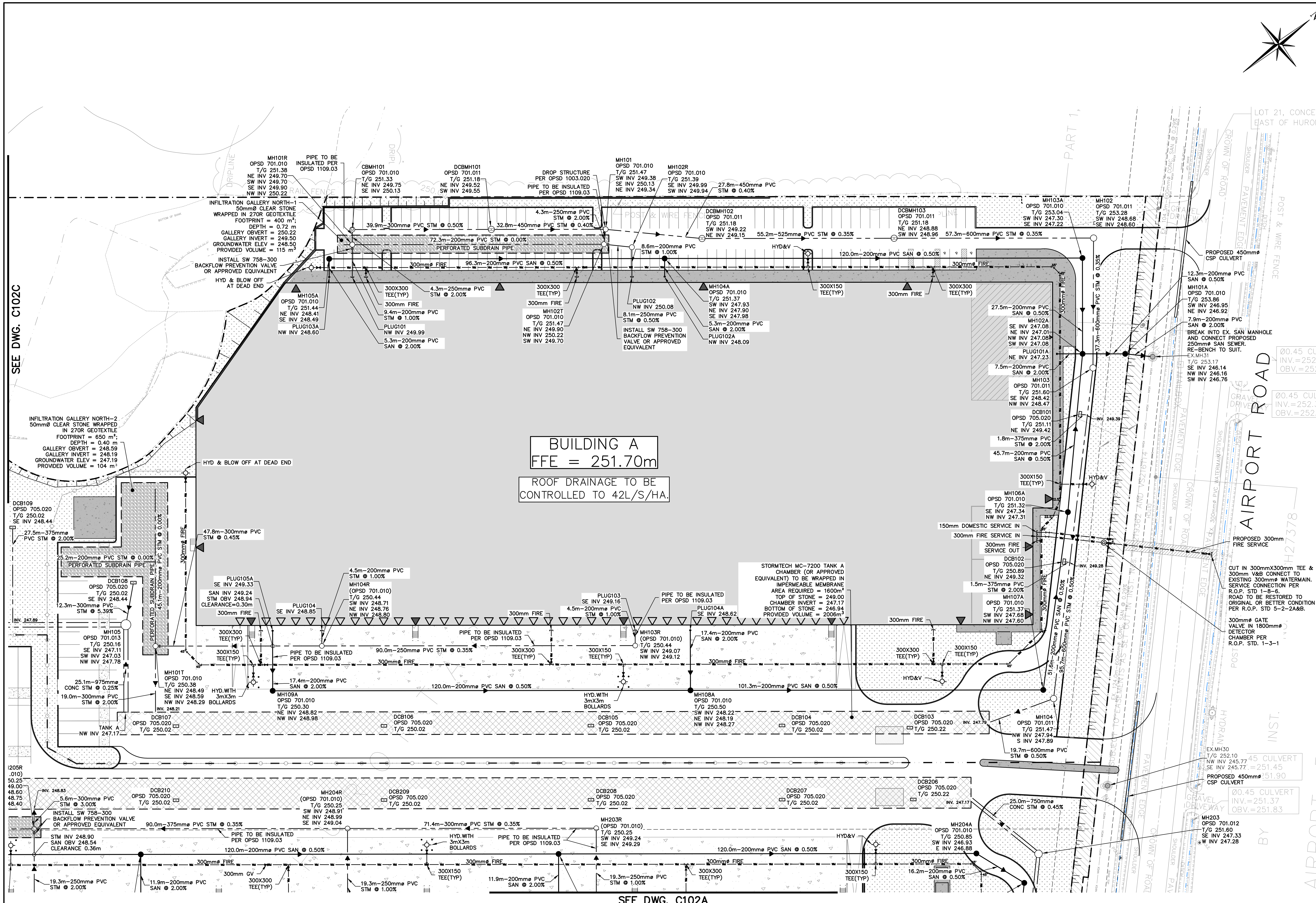
Engineer: LICENSED PROFESSIONAL ENGINEER — K. L. WEEL — 100547824 — Oct 30, 2025 — 2278-7228 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: EROSION & SEDIMENT CONTROL DETAILS

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	NA	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	02 OF 21	C101A



LEGEND

- PROPERTY LINE
- SEVERANCE LINE
- TREE PROTECTION ZONE
- EXISTING WATERMAIN & VALVE CHAMBER
- EXISTING STORM SEWER & MANHOLE
- EXISTING SINGLE / DOUBLE CATCHBASIN
- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED RETAINING WALL
- PROPOSED WATERMAIN & GATE VALVE
- PROPOSED FIRE HYDRANT & GATE VALVE
- PROPOSED SIAMESE CONNECTION
- PROPOSED WATER METER
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- PROPOSED STORMWATER MANAGEMENT TANK
- PROPOSED CONCRETE APRON
- ROAD WIDENING
- ROAD RESTORATION

NOTE: WHERE SEWER AND WATERMAIN CROSSINGS DO NOT ACHIEVE MINIMUM 0.50m VERTICAL SEPARATION, WATERMAIN SHALL BE LOWERED TO MEET MINIMUM 0.50m CLEARANCE REFER TO DRAWING C104 FOR WATERMAIN LOWERING DETAIL.

NOTE: WHERE SITE SEWERS OR WATERMAIN DO NOT MEET MINIMUM 1.2m FROST COVER, THE PIPE MUST BE INSULATED AND CONCRETE ENCASED FROM JUNCTION TO JUNCTION. FROST PROTECTION SHALL BE PROVIDED PER OPSD 1109.030 AND CONCRETE ENCASEMENT PER DETAIL ON DWG. C104B.

NOTE: WHERE ELEVATION BETWEEN INLET AND OUTLET INVERT EXCEEDS 0.60m A DROP STRUCTURE SHALL BE INSTALLED PER OPSD 1003.010.

10 0m 10 20 30 40
SCALE: 1:500

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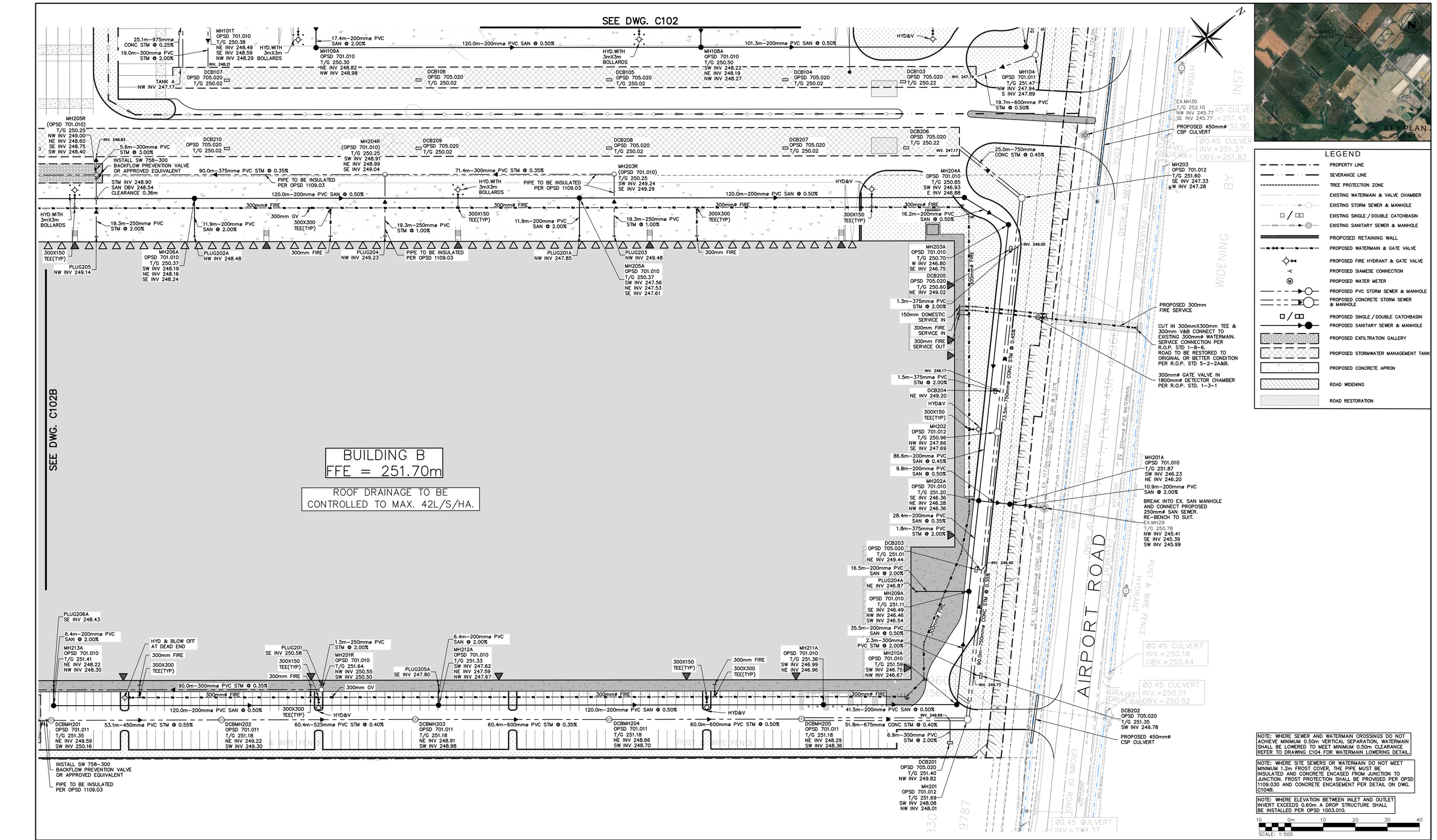
Engineer: LICENSED PROFESSIONAL ENGINEER — I. A. FORSYTH — 100544006 — Oct 30/25 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE SERVICING PLAN

CROZIER

Drawn By	K.W./V.M.	Design By	K.W./V.M.	Scale	1:500	Project	2278-7228
Check By	J.S.	Check By	J.S.	Sheet	04 OF 21	Drawing	C102



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10 0m 10 20 30 40
SCALE: 1:500

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REFERENCE NO. 22–317

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Engineer: LICENSED PROFESSIONAL ENGINEER J. M. SCOTT 100214954 OCT 30 2025 PROVINCE OF ONTARIO

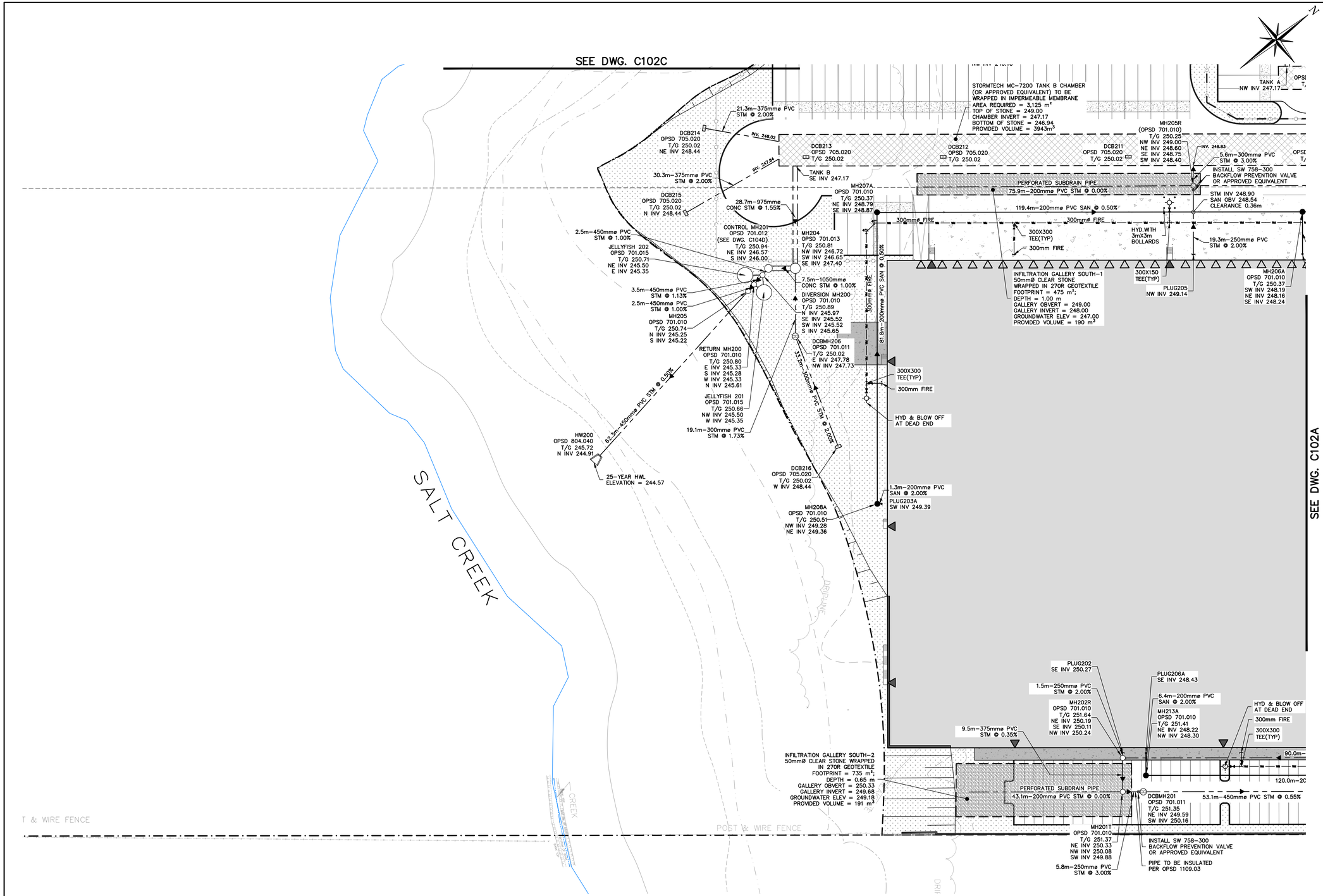
Engineer: LICENSED PROFESSIONAL ENGINEER I. A. FORSYTH 100544006 Oct 30/25 PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE SERVICING PLAN

C CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278–7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	05 OF 21	C102 A



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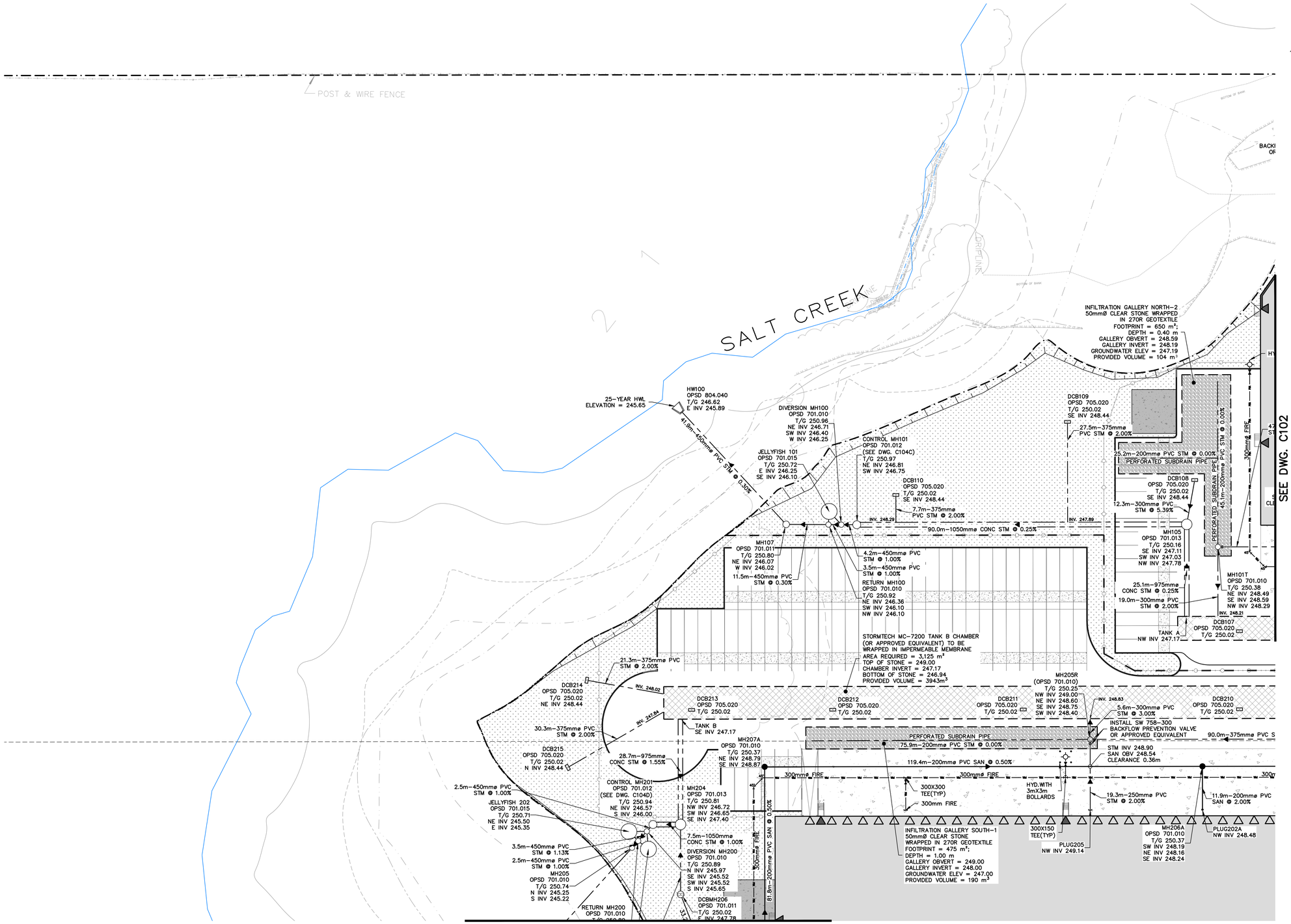
Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE SERVICING PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By: J.S.	Check By: J.S.	Sheet: 06 OF 21	Drawing: C102 B



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SCALE: 1:500

BENCHMARKS

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BRASS CAP SET IN CONCRETE, 72.80 METERS SOUTH OF THE CENTRELINE OF MAYFIELD ROAD AND 19.81 METERS EAST OF THE CENTRELINE OF TORBRAM ROAD.

SURVEY COMPLETED BY R-PE SURVEYING LTD. (2022/DEC/12)
REFERENCE NO. 22-317

SITE PLAN NOTES

DESIGN ELEMENTS ARE BASED ON SITE PLAN PROVIDED BY POWERS BROWN ARCHITECTURE
PROJECT NO: 255025, DRAWING NO: AS101 (2025/09/09)

Town: TOWN OF CALEDON

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR FIRST ZBA/SPA SUBMISSION	2025/10/30

Engineer: LICENSED PROFESSIONAL ENGINEER — J. M. SCOTT — 100214964 — OCT 30 2025 — PROVINCE OF ONTARIO

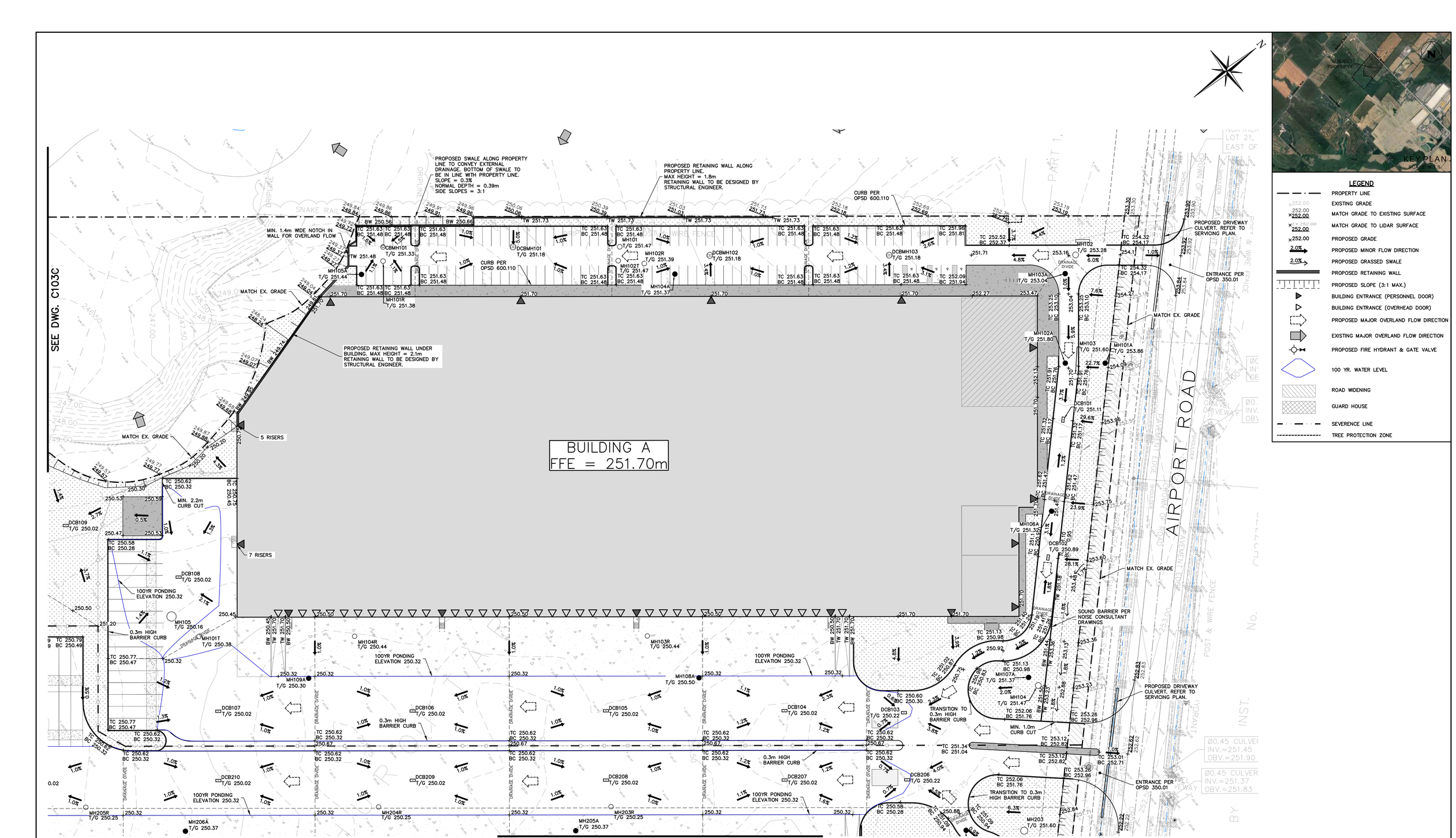
Engineer: LICENSED PROFESSIONAL ENGINEER — I. A. FORSYTH — 100544006 — Oct 30/25 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE SERVICING PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	07 OF 21	C102 C



LEGEND

- PROPERTY LINE
- EXISTING GRADE
- MATCH GRADE TO EXISTING SURFACE
- MATCH GRADE TO LIDAR SURFACE
- PROPOSED GRADE
- PROPOSED MINOR FLOW DIRECTION
- PROPOSED GRASSED SWALE
- PROPOSED RETAINING WALL
- PROPOSED SLOPE (3:1 MAX.)
- BUILDING ENTRANCE (PERSONNEL DOOR)
- BUILDING ENTRANCE (OVERHEAD DOOR)
- PROPOSED MAJOR OVERLAND FLOW DIRECTION
- EXISTING MAJOR OVERLAND FLOW DIRECTION
- PROPOSED FIRE HYDRANT & GATE VALVE
- 100 YR. WATER LEVEL
- ROAD WIDENING
- GUARD HOUSE
- SEVERENCE LINE
- TREE PROTECTION ZONE

SCALE: 1:500

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Engineer: LICENSED PROFESSIONAL ENGINEER — K. L. WEEL — 100547824 — Oct 30, 2025 — 2278-7229 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE GRADING PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	08 OF 21	C103

SEE DWG. C103

SEE DWG. C103B

BUILDING B
FFE = 251.70m

AIRPORT ROAD

WIDENING BY INST.

LEGEND

- PROPERTY LINE
- EXISTING GRADE
- MATCH GRADE TO EXISTING SURFACE
- MATCH GRADE TO LIDAR SURFACE
- PROPOSED GRADE
- PROPOSED MINOR FLOW DIRECTION
- PROPOSED GRASSED SWALE
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- SEVERENCE LINE
- TREE PROTECTION ZONE

SCALE: 1:500

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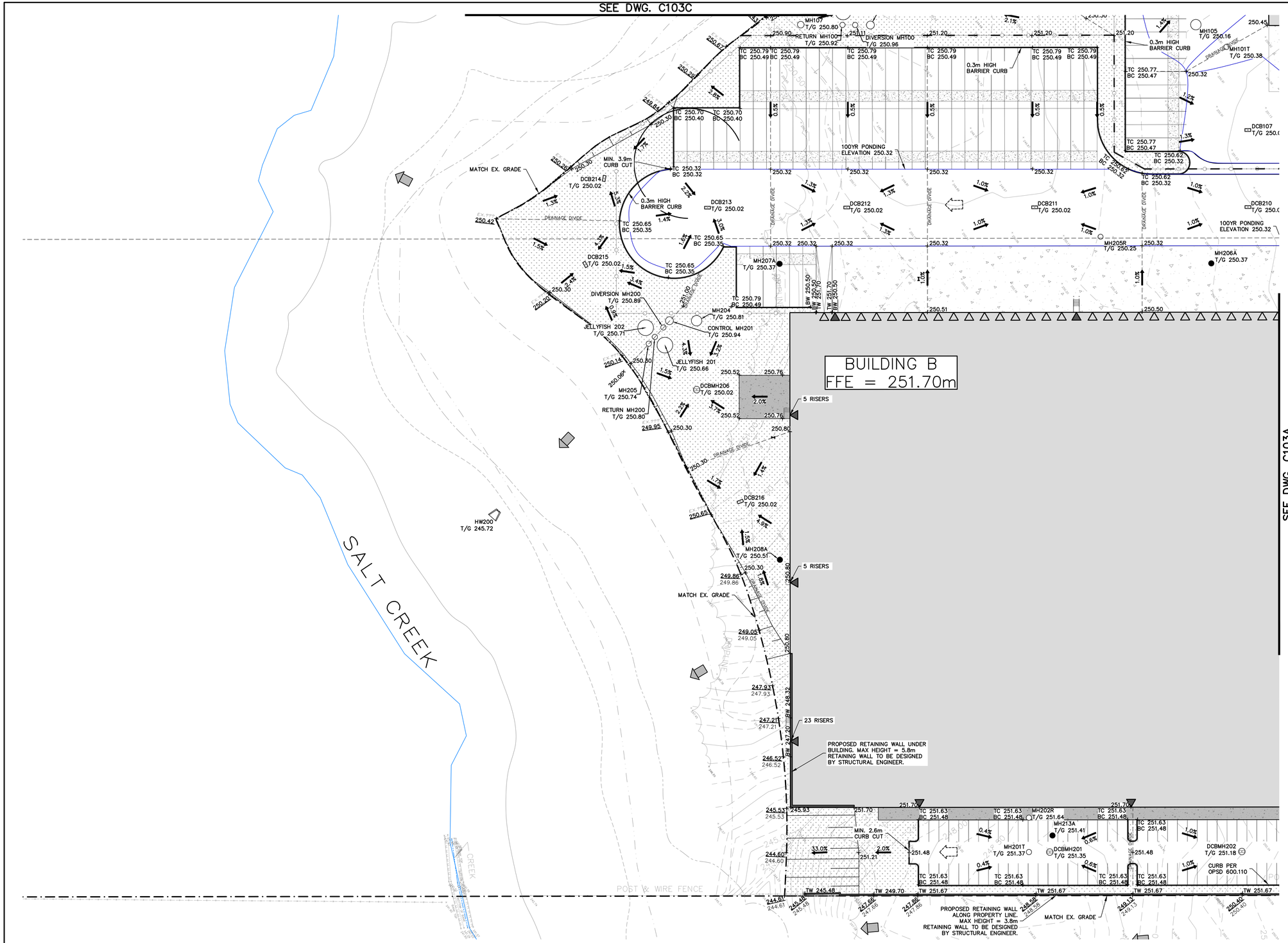
Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE GRADING PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	09 OF 21	C103 A



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10 0m 10 20 30 40
SCALE: 1:500

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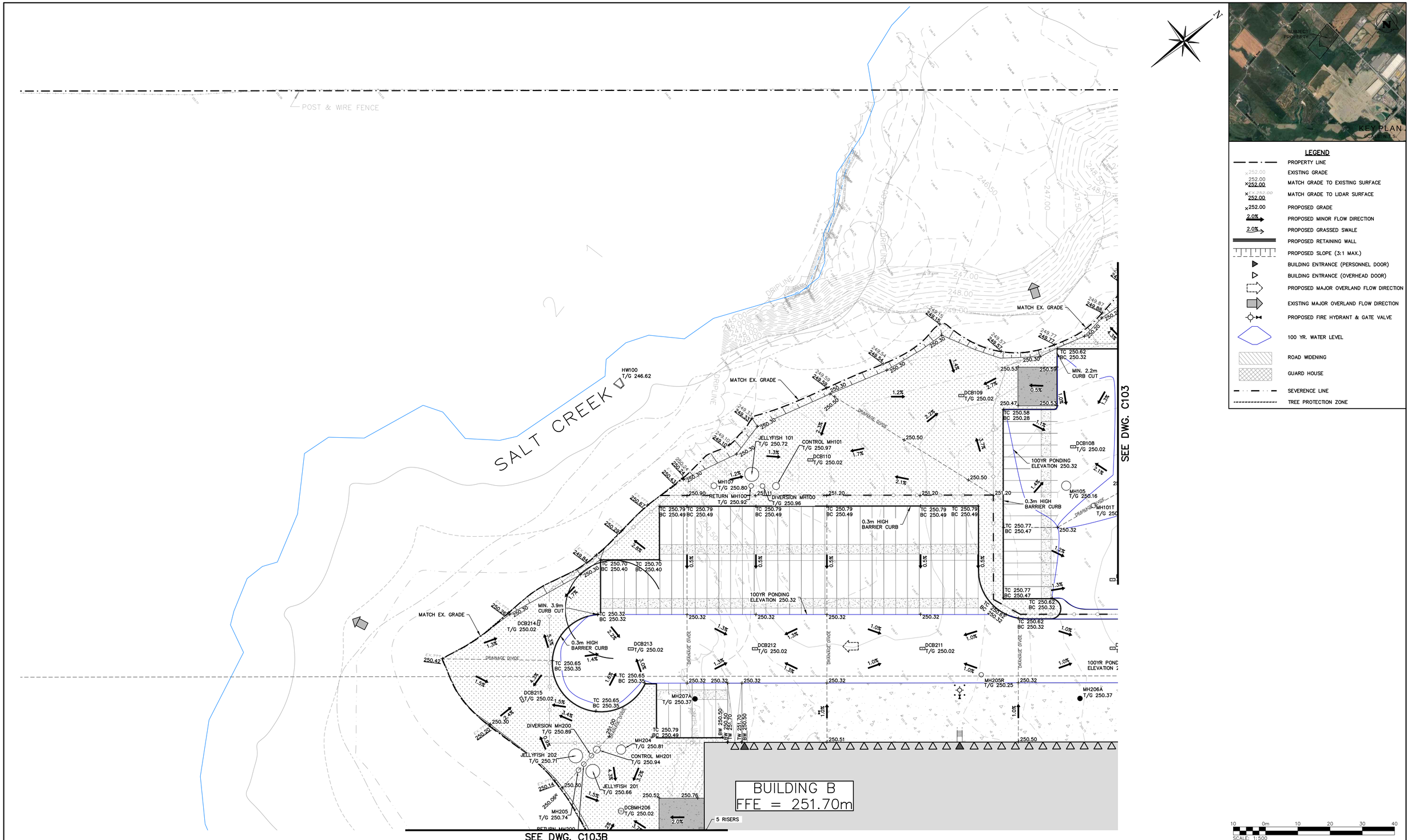
Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE GRADING PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By: J.S.	Check By: J.S.	Sheet: 10 OF 21	Drawing: C103 B



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10 0m 10 20 30 40
SCALE: 1:500

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Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SITE GRADING PLAN

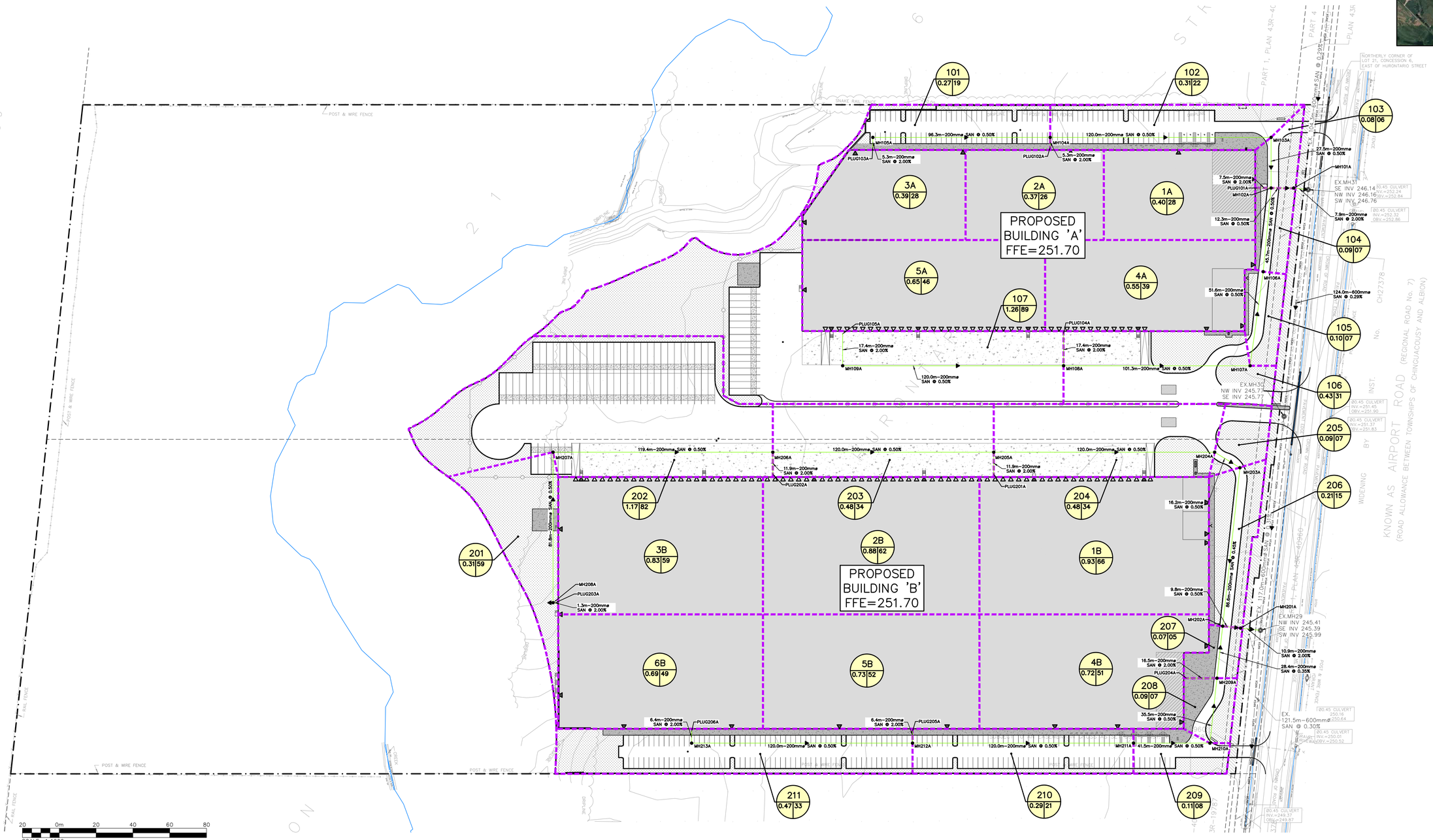
CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:500	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	11 OF 21	C103 C

FIGURES

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER & MANHOLE
- PROPOSED SANITARY SEWER & MANHOLE
- PROPOSED SANITARY DRAINAGE CATCHMENT
- ID / A|P — CATCHMENT I.D. / AREA (ha)/POPULATION



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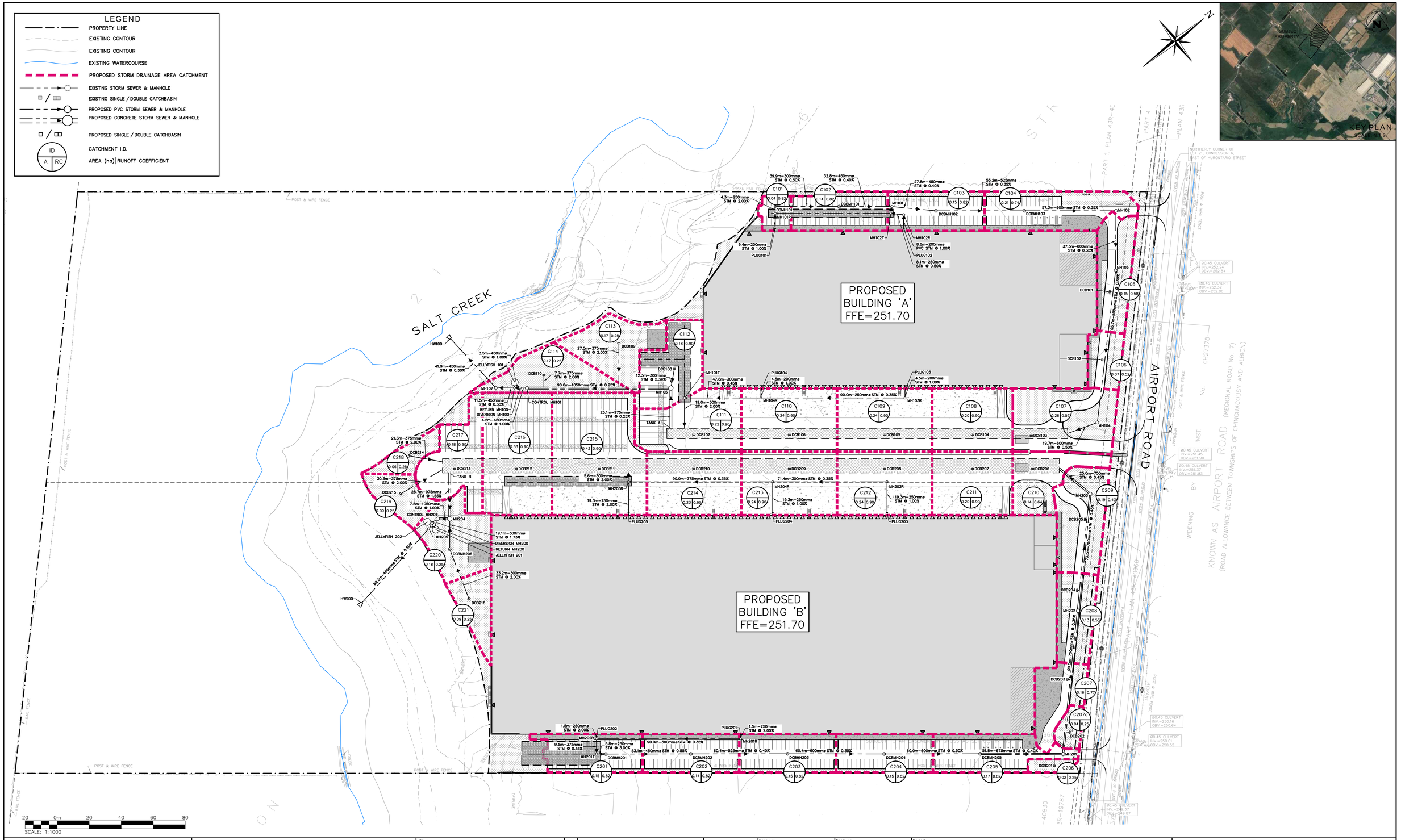
Engineer: LICENSED PROFESSIONAL ENGINEER — K. L. WEEL — 100547824 — Oct 30, 2025 — 2278-7228 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: SANITARY DRAINAGE AREA PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:1000	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	18 OF 21	FIG 04



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Engineer: LICENSED PROFESSIONAL ENGINEER — K. L. WEEL — 100547824 — Oct 30, 2025 — 2278-7228 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: STORM DRAINAGE AREA PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:1000	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	19 OF 21	FIG 2

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Engineer: LICENSED PROFESSIONAL ENGINEER, I. A. FORSYTH, 100544006, Oct.30/25, 2278-7228, PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: PRE-DEVELOPMENT DRAINAGE AREA PLAN

CROZIER

Drawn By	K.W./V.M.	Design By	K.W./V.M.	Scale	1:1000	Project	2278-7228
Check By	J.S.	Check By	J.S.	Sheet	20 OF 21	Drawing	FIG 3

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- EXISTING CONTOUR
- EXISTING WATERCOURSE
- x 160.00 EXISTING GRADE
- EXISTING STORM DRAINAGE AREA CATCHMENT
- PROPOSED STORM DRAINAGE AREA CATCHMENT
- PROPOSED MAJOR OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPE

ID		
A	CN	RC

CATCHMENT I.D.

AREA (ha) | SCS CURVE NUMBER | RUNOFF COEFFICIENT

NOTE: CN VALUES FOR STANDHYDs ARE CALCULATED FOR THE PERVIOUS AREAS OF THE CATCHMENTS

EXT1
1.93 | 86 | 0.25

UC1
0.11 | 81 | 0.25

UC2
0.14 | 81 | 0.25

PROPOSED BUILDING 'A'
FFE=251.70

202
2.36 | 81 | 0.90

ROOFTOP RELEASE RATE = 42 L/s/ha (0.099 m^3/s)
STORAGE REQUIRED (100-YEAR STORM) = 928 m^3

201
2.40 | 81 | 0.73

203
3.65 | 81 | 0.74

ROOFTOP RELEASE RATE = 42 L/s/ha (0.201 m^3/s)
STORAGE REQUIRED (100-YEAR STORM) = 1,834 m^3

204
4.78 | 81 | 0.90

PROPOSED BUILDING 'B'
FFE=251.70

SALT CREEK

AIRPORT ROAD

SCALE: 1:1000

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5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
6. DO NOT SCALE DRAWINGS.

BENCHMARKS

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF BRAMPTON VERTICAL BENCHMARK NUMBER 042200365 HAVING AN ORTHOMETRIC ELEVATION OF 242.135 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978 ADJ.).

BRASS CAP SET IN CONCRETE, 72.80 METERS SOUTH OF THE CENTRELINE OF MAYFIELD ROAD AND 19.81 METERS EAST OF THE CENTRELINE OF TORBRAM ROAD.

SURVEY COMPLETED BY R-PE SURVEYING LTD. (2022/DEC/12)
REFERENCE NO. 22-317

SITE PLAN NOTES

DESIGN ELEMENTS ARE BASED ON SITE PLAN PROVIDED BY POWERS BROWN ARCHITECTURE PROJECT NO: 255025, DRAWING NO: AS101 (2025/09/09)

Town: TOWN OF CALEDON

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR FIRST ZBA/SPA SUBMISSION	2025/10/30

Engineer: LICENSED PROFESSIONAL ENGINEER — J. M. SCOTT — 100214964 — OCT 30 2025 — PROVINCE OF ONTARIO

Engineer: LICENSED PROFESSIONAL ENGINEER — I. A. FORSYTH — 100540O6 — Oct 30/25 — PROVINCE OF ONTARIO

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: POST-DEVELOPMENT DRAINAGE AREA PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:1000	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	21 OF 21	FIG 4