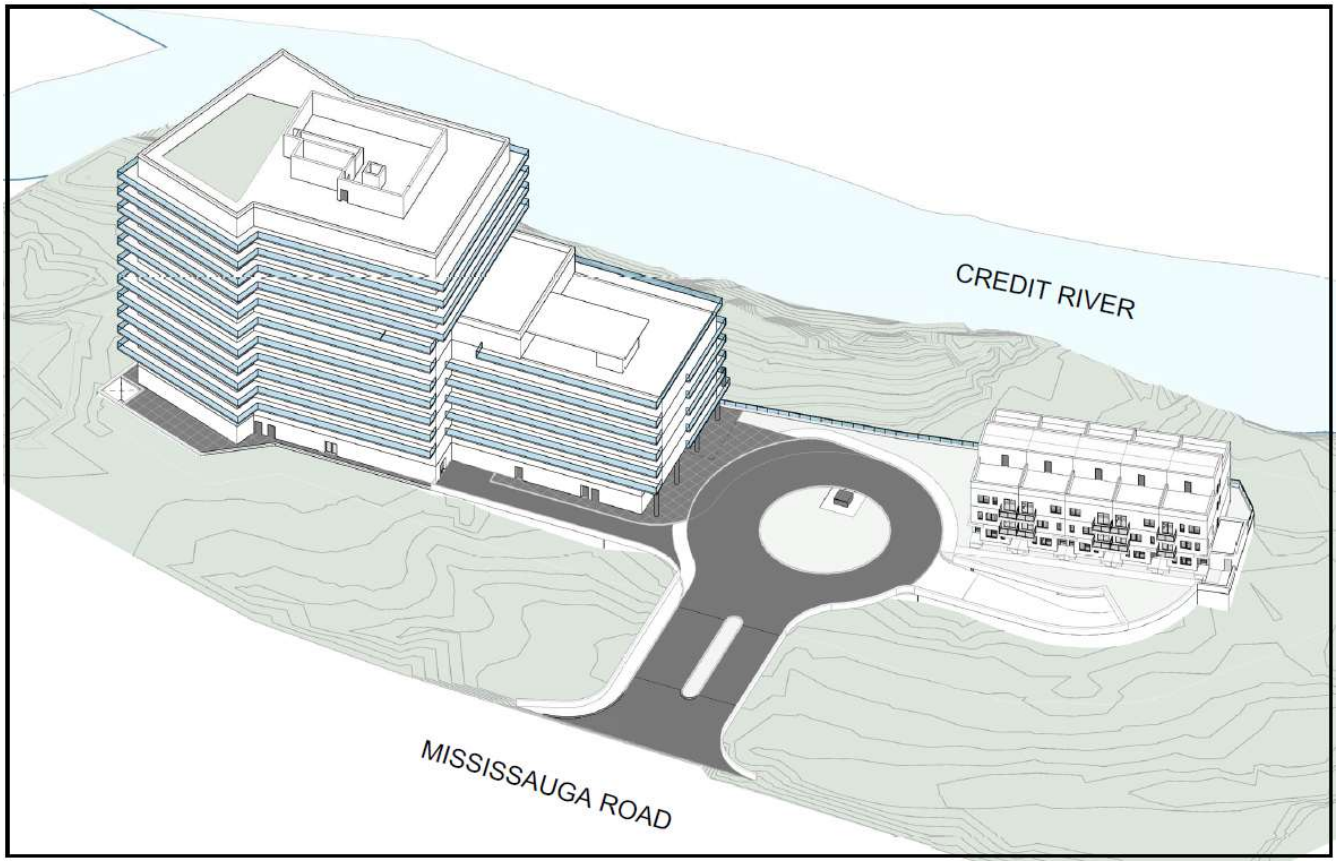
2935 & 2955 MISSISSAUGA ROAD

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

APRIL 24, 2026

PROJECT 20-697



PREPARED BY
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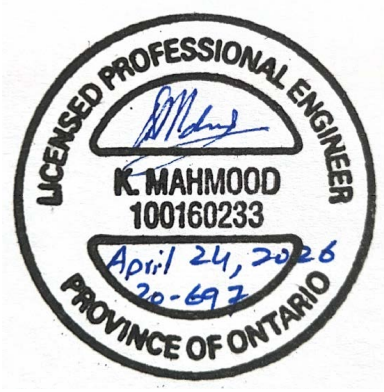

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Limitations

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2935 & 2955 MISSISSAUGA ROAD
FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

1.0 INTRODUCTION

Greck and Associates Limited has been retained by 590816 Ontario Inc. (The Client) to prepare a Functional Servicing Report (FSR) for 2935 & 2955 Mississauga Road in Mississauga, Ontario (Subject Property) in support of the proposed site plan application.

This report provides an overview of the current proposed development plan and examines their functional serviceability, including requirements and proposed conceptual design works related to:

- General site grading
- Water Supply
- Sanitary sewer servicing
- Stormwater management; and
- Construction erosion and sediment control

This functional servicing report has been prepared in accordance with accepted engineering practices and criteria from the governing approval agencies including the City of Mississauga (City), Region of Peel (Region), Credit Valley Conservation (CVC), and applicable provincial policy and guidelines. Following the submission and review of this document, detailed design plans, including supporting reports and drawings, will be prepared and submitted to the above noted agencies for review and approval, as required.

1.1 BACKGROUND

1.1.1 SITE LOCATION AND DESCRIPTION

The subject property comprises of two properties, 2935 & 2955 Mississauga Road, and is located in the City of Mississauga, east of the Dundas Street West and Mississauga Road intersection, see **Figure 1**. The subject property is 2.13ha in size and consists of undeveloped/unimproved, vegetated land. The property is bound by Mississauga Road to the south, a residential estate lot to the east, Sawmill Creek to the west, and Credit River to the north. Two topographic surveys were conducted: the survey of the subject property was completed by Tarasick Mcmillan Kubicki Limited on December 10th 2019, and an additional survey of the sanitary trunk infrastructure and surrounding topography located east of Dundas Road and north of the Sawmill Creek outfall was completed by

Calder Engineering Limited on March 8th 2021. The information from both surveys have been combined into the topographic survey plan by Tarasick Mcmillan Kubicki Limited and provided in **Appendix A**. The existing property slopes southeast, with an average slope of 4.7%.

The historical alignment of Sawmill Creek was conveyed from the intersection of Dundas Street and Mississauga Road east across the subject property, then directed north to discharge into the Credit River. This alignment has now been altered so that Sawmill Creek is no longer conveyed through the subject property, and discharges into the Credit River near the north limit of the subject property via an extensive outfall. A ditch was also constructed during this time that runs parallel to Mississauga Road to service local drainage from the subject property and Mississauga Road. This ditch wraps around the south and east limits of the subject property and discharges into the Credit River near the east corner of the subject property.

1.1.2 SOIL CONDITIONS

A geotechnical investigation report was completed by Terraprobe on September 4, 2008, and an addendum was completed on March 30, 2010. The work included drilling and sampling a total of four (4) boreholes near the north valley slope, and ten (10) boreholes near the east and south slopes. The soil conditions consist primarily of the following:

- A surficial topsoil layer varying in thickness from 150mm to 200mm, encountered at seven (7) boreholes.
- A surficial Earth Fill layer varying in thickness from 0.8m to 1m, encountered at five (5) boreholes.
- Native Soils was encountered at the surface at two (2) boreholes, and encountered beneath the Earth Fill or Topsoil layer for the other boreholes. The native soils consist of clayey to sandy silt, to sand and silt to silty sand till. This layer extended to the bottom of all boreholes at depths varying from about 1.2m to 3.0m below grade.

Groundwater levels were measured at all boreholes during their respective studies on August 28, 2008 and March 17, 2010. The groundwater measurements taken on August 28, 2008 were taken on site two weeks after the completion of drilling, and the measurements taken on March 17, 2010 were taken onsite immediately after the completion of drilling. A maximum groundwater elevation of 97.6m, was measured at a depth of 0.5m below surface, at Borehole 1603 located at the south limit of the site, and a minimum groundwater elevation of 96.0m, was measured at a depth of 6.1m below surface, at Borehole 1 located at the north limit of the site.

A test pit investigation was also conducted by Terraprobe on July 22 and 27, 2015 to determine soil percolation rates. Four (4) test pits were dug within the subject property, and the percolation rates determined ranged from 20 min/cm to 35 min/cm.

For more details, see the geotechnical investigation report, the addendum, and the test pit investigation memo prepared by Terraprobe provided under a separate cover.

1.1.3 FLOOD AND EROSION HAZARDS, AND ECOLOGICAL CONSIDERATIONS

Several studies have been completed to determine the development limits pertaining to flood and erosion hazards, and natural habitat with respect to the requirements, guidelines and polices of CVC. The following studies have been completed to date and can be found under a separate cover:

- 2-D hydraulic assessment of Sawmill Creek completed on February 12 2024 by Greck
- The geotechnical investigation report and the addendum were completed on September 4 2008 and March 30 2010, respectively, by Terraprobe
- The EIS completed by Palmer, dated May 6, 2021, and updated by SLR, dated October 2025.

The valley feature and the woodland govern the development limits of the property. The Credit River regulatory floodplain of 98.18m with 0.3m of vertical freeboard was found to be smaller than the valley feature and the woodland governed development limits. It was also found that the Sawmill Creek spill area will not affect the proposed development. In accordance with the studies, a 6m hazard setback is provided from the long-term stable top of slope (LTSTOS), which define the north and west development limits, and a variable buffer from the delineated woodland dripline is provided, ranging from 1.8m to 13.7m, which define the south and east development limits.

Considering all development setbacks, the total development area is 1.03ha, which was used for the purposes of watermain and sanitary servicing design for the proposed development.

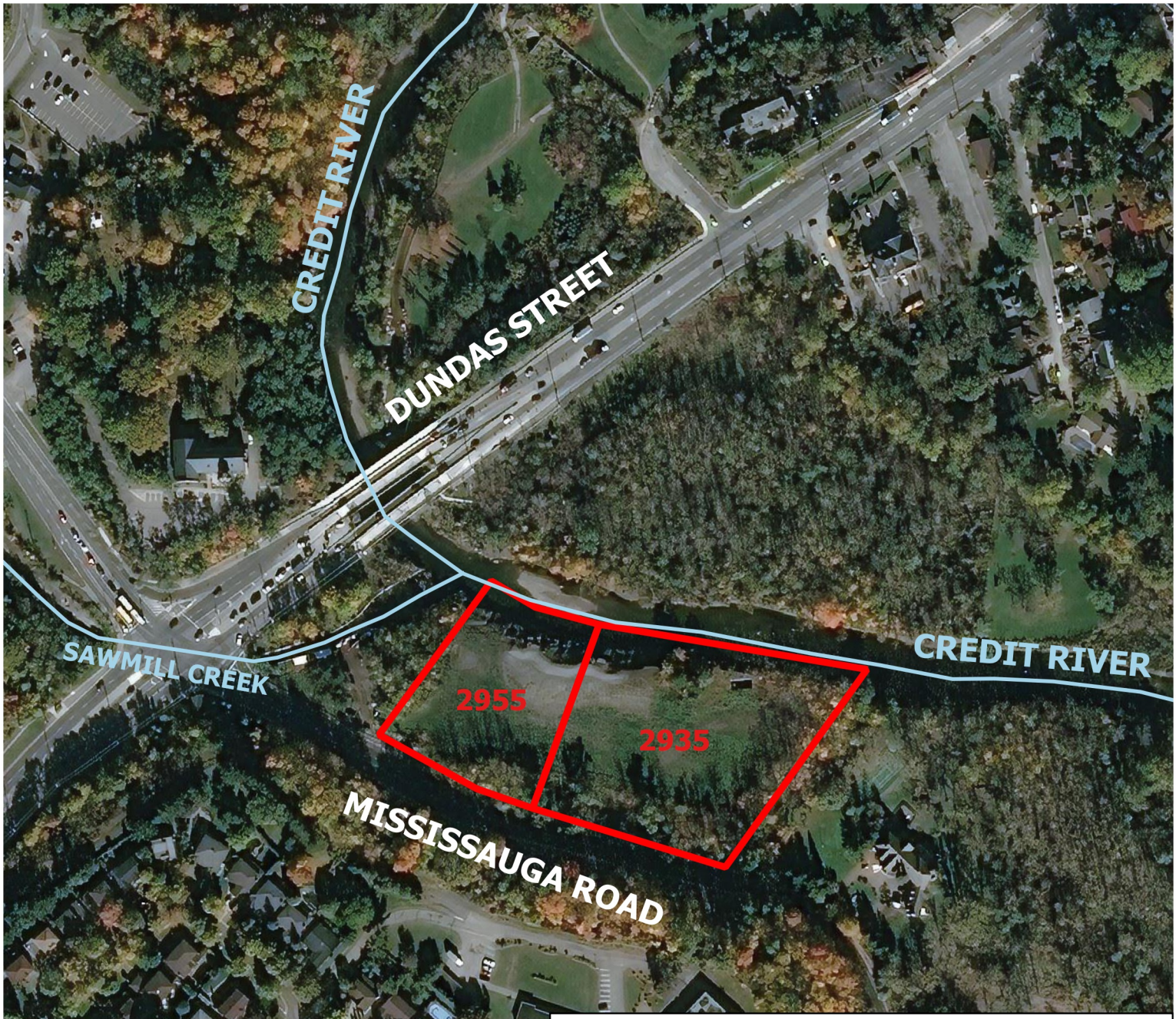


Figure 1: Site Location Plan

2935, 2955 Mississauga Road, City of Mississauga
Project No.20-697

0 50 100 m

N

NAD 1983 UTM Zone 17N

Legend

- 2935, 2955 Mississauga Road - Approximate Property Limits
- Watercourse

Greck

April 2021

Basemap Image Bing Maps 2021

2.0 PROPOSED DEVELOPMENT

The proposed development is a mixed-use residential complex consisting of a 12-storey condo building, fifteen 3-storey stacked townhouses, and a driveway with a roundabout providing access to the buildings. The subject site encompasses a total development area of 1.03ha. A site plan, prepared by Caricari Lee Architects, of the proposed development can be found in **Appendix A** and the proposed development population statistics can be found in **Table 2-1**.

TABLE 2-1: PROPOSED DEVELOPMENT POPULATION BREAKDOWN

Type of Development	Population Density *	Number of Units	Equivalent Population
Condo	3.0 persons per unit	196	588
Townhouses	3.3 persons per unit	15	50

* As per Region of Peel, Development Charges Background Study, December 2020

The proposed development will be serviced by extending and utilizing existing municipal sanitary and water services. Water services laterals will be provided by upgrading a section of existing 150mm diameter watermain on Mississauga Road and connecting it to the existing 400mm diameter watermain on Dundas Street. Sanitary servicing will be provided by tapping into the 1050mm diameter sanitary trunk sewer via manhole no. SA M2T (SMH 1787895) located, south of Dundas Street West and northwest of the development site.

3.0 SITE GRADING

In general, after review of the topographic survey, the proposed grading is to generally maintain positive drainage from the proposed building towards the existing and proposed ditches. The majority of the proposed development will drain to the existing ditch that wraps around the south and east limits of the property, while landscaping and grassed areas on the north and west side of the building will drain towards a swale that drains to the west limit of the property. Earthmoving is required, to varying degrees, in order to achieve the municipal design criteria and accommodate the development form. Given existing topography and the proposed development plan, an overall fill is required. Only minor earth works are proposed within the provided setback buffers.

A grading plan has been provided in **Drawing GP1**, see **Appendix G**. The plan will follow municipal design standards, as required considering the following key design factors:

- Provide positive drainage from above ground structures/buildings,
- Match external grades,

- Meet minimum and maximum grades for landscape, roadways and swales,
- Achieve municipal lot grading criteria,
- Provide safe overland flow relief,
- Provide sufficient cover for underground infrastructure,
- Minimize requirements for retaining walls and
- Minimize grading and earthworks where necessary.

4.0 ROAD ACCESS

Road access to the proposed condo and townhouses will be facilitated by a singular 15.5m wide private roadway via Mississauga Road. In accordance with the City of Mississauga Standard 2220.010, Pavement and Road Base Design Requirements, the minimum pavement structure for the proposed road will be as follows in **Table 4-1**:

TABLE 4-1: PAVEMENT STRUCTURE

Material	***Thickness (mm)***
Asphalt	
Surface Course (HL3)	40
Basecourse (HL8)	85
Total Asphalt Depth	125
Base	
Granular A Base (OPSS 1010)	200
Granular B Type 1 Sub-Base (OPSS 1010)	235
Total Driveway Depth	**560**

The proposed road access will require the removal of an existing double inlet catchbasin on Mississauga Road. This will be replaced by a new double inlet catchbasin, DCB1, on east side of the proposed driveway. Drainage collected by DCB1 will discharge uncontrolled into the ditch to the north via a 300mm diameter catchbasin outlet.

The details of the pavement structure is to be confirmed by the geotechnical consultant during detailed design, and detailed traffic planning will be provided by others as required.

5.0 WATER SERVICING

This section serves to provide anticipated water demands and required fire flow calculations in support of functional servicing.

5.1 WATER SUPPLY AND APPURTENANCES

As-built records as per the External Peel Asset Locator (EPAL) from the Region of Peel indicate that an existing 150mm diameter and 400mm diameter watermains are located

on Mississauga Road and Dundas Street West respectively. Email correspondence with the Region (provided in **Appendix B**) confirmed the following:

- As the development is classified as a high-density residential area, a minimum 300mm diameter watermain is required according to sizing standards from the Region of Peel;
- The development is not permitted to connect to the existing 150 mm diameter watermain on Mississauga Road. However, the Region has confirmed that a domestic water service connection from the existing 150 mm watermain on Mississauga Road may be allowed for the stacked townhouse units only, subject to verification through hydraulic modelling that the 150 mm municipal watermain can adequately meet their domestic water demands.
- The Region of Peel has confirmed that the existing 400mm diameter watermain on Dundas Street has sufficient capacity to service the proposed development.

To service the proposed development, approximately 121m length of the existing 150mm diameter watermain, from the subject property to the 400mm diameter watermain on Dundas Street connection, will be replaced by a new 300mm diameter watermain. A single 200mm diameter watermain will provide the fire water service for the condominium development for fire protection. A tee and secondary 150mm diameter supply line branched at the property line will provide a domestic water supply for the condominium building. Both lines will include valves located at the property. The fire water service will have a backflow preventer per Region of Peel standards and a water meter will be located in the mechanical room on the domestic line within the building's basement level.

The Region of Peel has completed the watermain modelling based on the anticipated water demand from the development. The watermain modelling results note "*This site located within SGU 2105-1245 with 265 residential and 143 jobs growths forecasted in 2051 (SGU Scenario 2). The estimated population exceeds the forecasted population within the SGU.*" However, the Region has confirmed that a population of 638 is acceptable. Refer to **Appendix B** for Region's correspondence, and **Appendix C** for the watermain modelling results**.**

The Region has permitted a second water service connection for fire and domestic water supply to the stacked townhouse component. Similar to the condominium development, A 200mm diameter watermain will provide the fire water service from existing 150mm watermain for the townhouse development for fire protection. A tee and secondary 150mm diameter supply line branched at the property line will provide a domestic water supply for the townhouse building. Both lines will include valves located at the property. The fire water service will have a backflow preventer per Region of Peel standards, and a water meter will be located in the mechanical room on the domestic line within the

building's basement level. An updated servicing concept was submitted on March 9, 2026, for review provided in **Appendix C**. Both the Region and the City are satisfied with the proposed approach. Correspondence with the Region and the City is included in **Appendix B.**

Hydrants shall be located within 90m horizontally of any portion of a building perimeter that is required to face a street. The fire department connection for an automatic sprinkler system shall be located so that the distance from the fire department connection to a hydrant is not more than 45m and located on the outside of a building adjacent to a street or an access route, not less than 300mm and not more than 900mm above ground level, and provided with two 65mm hose connections with female swivel hose couplings (as per Ontario Building Code Section 3.2.5.16).

The nearest existing hydrant is located on Mississauga Road, across the subject property approximately 270m southeast of Mississauga Road and Dundas Street intersection. This hydrant is located farther than 45m from the proposed building fire department connection as required by the Ontario Building Code Section 3.2.5.16. Therefore, a new private hydrant is proposed within the development near the driveway access, as per Region of Peel Standard Drawing 1-8-3. Please see **Drawing SP1** for the Servicing Plan provided in **Appendix G**, for the proposed watermain and hydrant layout.

A detailed fire protection plan for the building will be undertaken during detailed design and supplemented by the building's mechanical engineer or fire system design consultant.

5.1.1 DOMESTIC WATER DEMANDS

The design criteria used to determine water demands were based on Region of Peel *Watermain Design Criteria - June 2010, Development Charges Background Study- December 2010,* and the Fire Underwriters Survey, as required. The proposed development includes a mixed-use residential complex consisting of a 12-storey condo building, fifteen 3-storey stacked townhouses, and a driveway with a roundabout providing access to the building. Average Day Demand (ADD), Maximum Day Demand (MDD), and Peak Hour Demand (PHD) factors were calculated using demand peaking factors and population values as per Table 2 in Section 2.3 of the Region of Peel *Watermain Design Criteria*.

Based on the 12-story condominium building consisting of 196 units, and fifteen 3-storey stack townhouses, the proposed development has a theoretical design population of 638.

The estimated domestic water system demands for the proposed development of the subject property is summarized below in Table 5-1.

TABLE 5-1: PROJECT DOMESTIC WATER DEMANDS

Water Demand Rate	280 L/capita/day
Population Density	15 Units @ 3.3 persons/unit – Townhouses 196 Units @ 3.0 person per unit - Condo
Theoretical Population	638
Maximum Day Factor	2.0
Peak Hour Factor	3.0
Average Daily Demand (ADD)	123.96 L/min (2.07 L/s)
Maximum Daily Demand (MDD)	247.92 L/min (4.14 L/s)
Peak Hour Daily Demand (PHD)	371.88 L/min (6.20 L/s)

A detailed breakdown of the calculated demands can be found in **Appendix E**.

5.1.2 FIRE FLOW DEMANDS

Fire demands have been calculated using the *Water Supply for Public Fire Protection* (2020) prepared by Fire Underwriters survey (FUS). Detailed fire flow calculations are provided in **Appendix C**, and the results are summarized below in **Table 5-2**.

TABLE 5-2: RECOMMENDED FIRE FLOW

Proposed Building	Recommended Fire Flow (L/s)
Stacked Townhouses (Residential)	83.33
Twelve Storey Condo Building	183.33

From the fire flow calculations, it was determined that the recommended fire flow of 183.33 L/s is required for the proposed development.

5.1.3 HYDRANT FLOW TEST

A hydrant flow test was conducted by BA Fire Safety on March 4, 2025, at 1:00 PM at the fire hydrant located within the Dundas Street West right-of-way, on the north side of Dundas Street West and west of Mississauga Road, to assess the capacity of the existing 400 mm watermain. The test results indicated an available maximum flow of 4346 GPM (274.19 L/s) at a residual pressure of 20 psi, which exceeds the calculated total water demand of 187.47L/s. Therefore, sufficient water supply is available to meet fire flow demand for the proposed development.

A second hydrant flow test was conducted by BA Fire Safety on the same date and time at the fire hydrant located within the Mississauga Road right-of-way, on the south side of Dundas Street West, near the southeast corner of the subject property, to evaluate the capacity of the existing 150 mm watermain. The results indicated an available maximum flow of 2994 GPM (188.89 L/s) at a residual pressure of 20 psi, which is greater than the

calculated domestic demand of 0.49 L/s for the stacked townhouses. Therefore, sufficient water supply is available to meet domestic water demands from the existing 150mm watermain for the proposed stacked Townhouse.

5.1.4 TOTAL WATER DEMAND

Based on the total commercial water demand and the fire flow requirements, the fire flow plus MDD is 187.47L/s (183.33L/s + 4.14L/s).

Based on the assessment of the calculated water demand and the hydrant flow test report, it has been determined that the existing 400mm diameter watermain on Dundas Street West and 150mm watermain on Mississauga Road have sufficient pressure and flow to service the development.

6.0 SANITARY SERVICING

This section serves to provide anticipated sanitary demands and an overview of the proposed sanitary servicing in support of functional servicing.

There is currently no existing sanitary sewer infrastructure servicing Mississauga Road. The Region of Peel did not support a connection to the existing 2250 mm diameter sanitary trunk sewer located along the east side of Mississauga Road, due to the non-standard nature of the proposed connection as well as associated safety and accessibility concerns.

Greck has engaged in extensive discussions and consultations with the Region of Peel to determine an appropriate sanitary servicing strategy for the proposed development. Following these consultations, the Region recommended the construction of a municipal gravity sanitary sewer, beneath the Sawmill Creek outfall structure, connecting to the existing 1050 mm diameter trunk sanitary sewer via manhole EX. SA MH2T (Region reference SMH 1787895), located, south of Dundas Street West and northwest of the development site. Correspondence with the Region confirming this direction is included in **Appendix B.**

The Region of Peel has completed the sanitary modelling based on the anticipated flows from the development. The sanitary modelling results note "*This site located within SGU 2105-1245 with 265 residential and 143 jobs growths forecasted in 2051 (SGU Scenario 2). The estimated population exceeds the forecasted population within the SGU.*" However, the Region has confirmed that a population of 638 is acceptable. Refer to **Appendix B** for Region's correspondence, and **Appendix D** for the sanitary modelling results**.**

The proposed development will be serviced by a 200 mm diameter sanitary sewer. However, a 250 mm diameter sanitary sewer will be constructed from the future property limit to the existing 1050 mm diameter trunk sanitary sewer in accordance with Region of Peel design guidelines, utilizing the jack and bore method. An updated servicing concept was submitted on March 9, 2026, for review provided in **Appendix D**. Both the Region and the City are satisfied with the proposed approach. Correspondence with the Region and the City is included in **Appendix B.**

A sampling sanitary maintenance manhole MH1A has been proposed at the future property line as per Region of Peel standard STD 2-4-3. Detailed cross sections and profiles showing the proposed sanitary sewer connection from existing sanitary manhole EX. SA MH2T (SMH 1787895) to the proposed building are provided in **Drawing SP1**, see **Appendix G**.

6.1.1 SANITARY DESIGN PARAMETERS

The sanitary design parameters, as outlined in **Table 6-1,** for the proposed development are based on the municipal design criteria from the Region of Peel *Sanitary Sewer Design Criteria:*

TABLE 6-1 : SANITARY DESIGN PARAMETERS

Population Densities	Townhouses -15 Units @ 3.3 persons/unit Condo – 196 Units @ 3.0 person per unit
Area	Townhouses – 0.55ha Condo – 0.51ha
Population	638
Unit Domestic Sewage Flows	302.8 L/cap/day
Infiltration Rate (General Allowance)	0.00020 $m^3/s/ha$
Infiltration Rate (Manhole)	0.00028 $m^3/s/ha$
Minimum Flow Velocity	0.75 m/s
Maximum Flow Velocity	3.5 m/s
Minimum Sewer Pipe	250 mm dia.
Minimum Sewer Pipe Grade	0.5%
Minimum Sewer Depth of Cover (road)	2.50 m (min)
Minimum Sewer Depth of Cover (valley)	1.40 m (min)

6.1.2 SANITARY DEVELOPMENT DEMANDS

The sanitary demand has been calculated using the design parameters as described in **Section 6.1.1** and the results are summarized in **Table 6-2** below.

TABLE 6-2: PROPOSED RE-DEVELOPMENT SANITARY DEMAND SUMMARY

Area (ha)	Population (persons)	Average Daily Flow (L/s)	Harmon Peaking Factor	Peak Daily Flow* (L/s)	Infiltration Rate (L/s)	Total Design Flow (L/s)
1.06	638	2.24	3.92	8.8	0.21	9.0

The proposed development will produce a total sanitary demand of 9.0 L/s. Detailed sanitary development calculations can be found in the sanitary sewer design sheet provided in **Appendix D**.

7.0 DRAINAGE

Provided in this section is an outline of the preliminary drainage strategy for the proposed site plan and areas affected by the development. The proposed design will be in accordance with the City, Region, CVC, and MOECP standards and guidelines.

7.1 EXISTING DRAINAGE

The existing drainage patterns are characterized by five (5) drainage areas: Area A1, B1, C2, D1, and E1. Please see **Figure 2** below for the pre-development drainage area plan. Area D1 and E1 consists of the future development limits, while Area A1, B1, and C2 represents external drainage areas, that drain towards the proposed development.

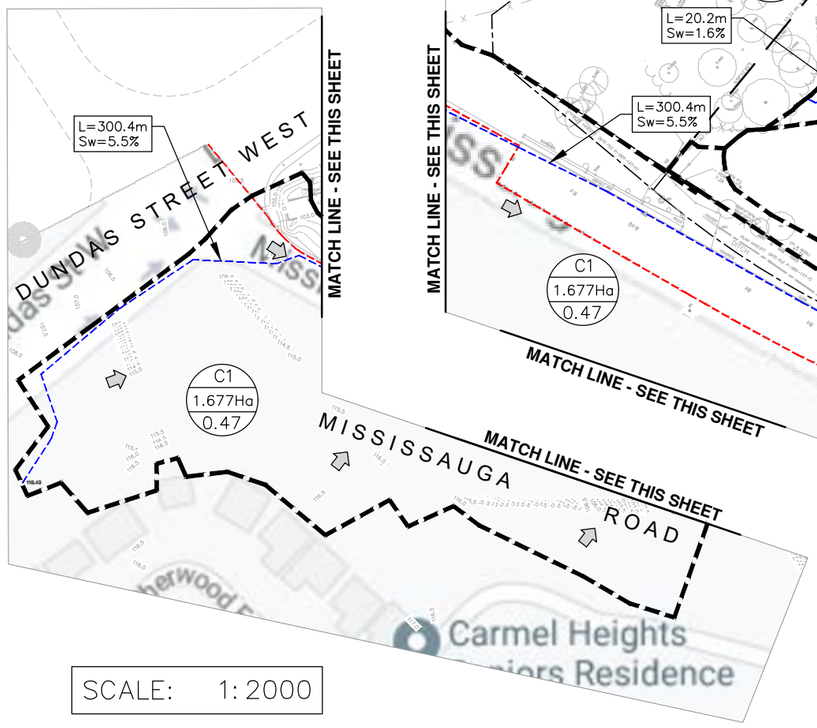
Area A1, B1, C2 and D1 is currently undeveloped/unimproved, vegetated land which currently drains in the southeast direction towards a ditch that wraps around the south and east limits of the property, ultimately directing runoff to the Credit River. Area C1 represents a portion of external drainage via Mississauga Road draining towards the proposed access apron. Area E1 represents a portion of the future development limits that currently drains west towards an existing 1.1m diameter concrete culvert outlet at the west limit of the site, which discharges into the Sawmill Creek outfall.

A summary of the pre-development land cover is provided below in **Table 7-1**.

TABLE 7-1: PRE-DEVELOPMENT LAND-USE SUMMARY

Surface	Runoff Coeff.	Area A1 (m^2)	Area B1 (m^2)	Area C2 (m^2)	Area D1 (m^2)	Area E1 (m^2)	Coverage
Vegetated-Lawn	0.25	582	485	2170	7978	233	100%

The overall runoff coefficient of Area A1, B1, C2, D1, and E1 was calculated to be 0.25 based on the City of Mississauga Development Requirements Manual, dated November 2020. For more details, please see **Appendix E**.



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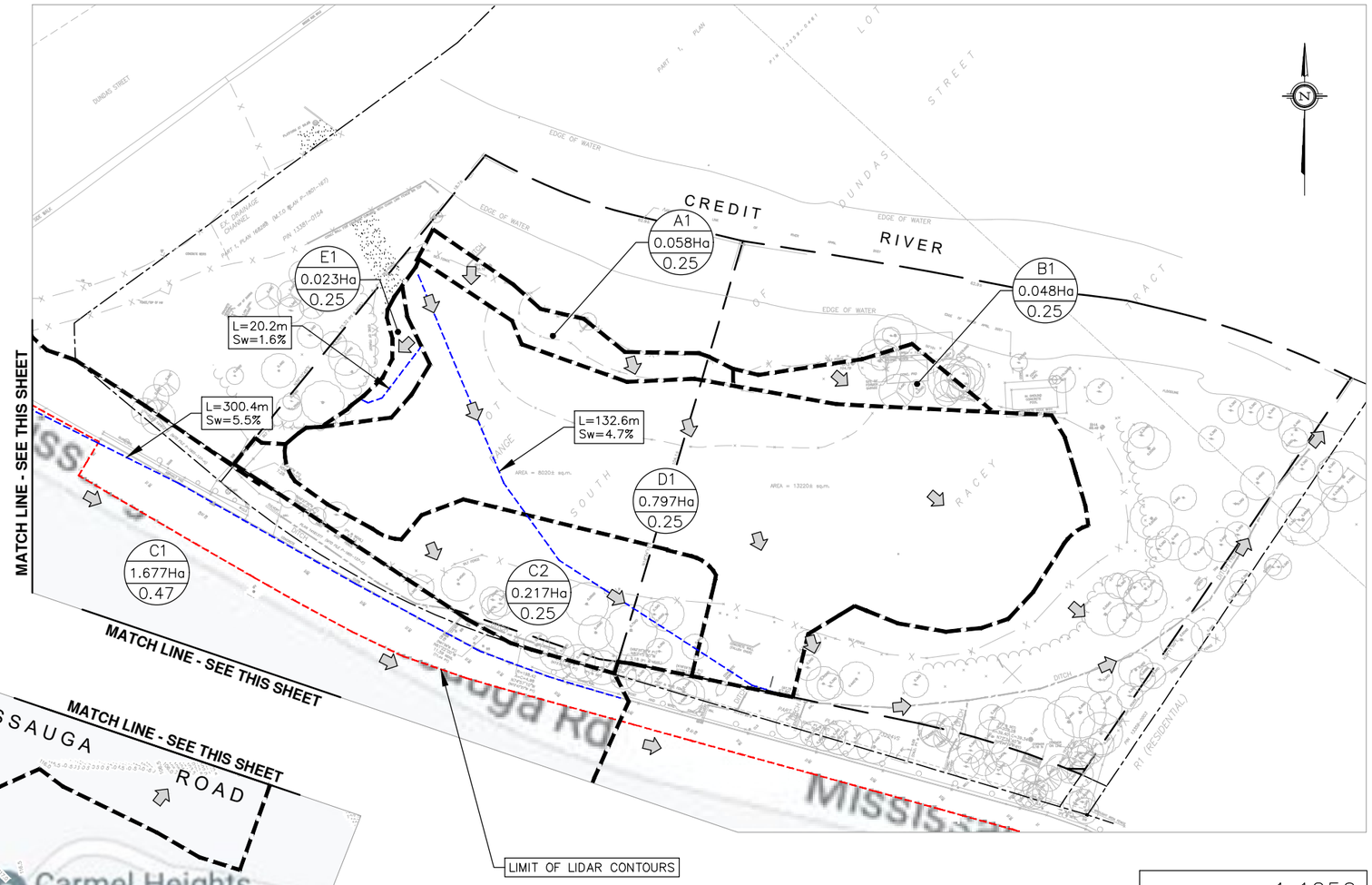

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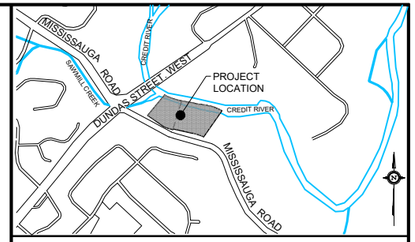


KEY PLAN
N.T.S.

- MAJOR OVERLAND FLOW DIRECTION
- MAJOR CONTOUR LABEL – EXISTING
- MINOR CONTOUR LABEL – EXISTING
- STORM DRAINAGE BOUNDARY/LIMIT OF DEVELOPMENT
- LIMIT OF RIGHT-OF-WAY
- EDGE OF WATER
- PROPERTY LINE
- FUTURE PROPERTY LINE
- LOT LINE
- LONGEST TRAVEL PATH
- FOREST DRIP LINE
- EXISTING DITCH

A1 / 0.676Ha / 0 — DENOTES AREA NUMBER; DENOTES AREA IN HECTARES; DENOTES PERCENT IMPERVIOUS

EXISTING CONDITIONS

	ROOF (m^2)	DRIVEWAY (m^2)	HARDSCAPE (m^2)	GRASSED (m^2)	TOTAL (m^2)
AREA A1	0	0	0	582	582
AREA B1	0	0	0	485	485
AREA C1	0	0	5595	11180	16775
AREA C2	0	0	0	2170	2170
AREA D1	0	0	0	7978	7978
AREA E1	0	0	0	233	233

BENCHMARK

BENCHMARK: CITY OF MISSISSIAUAGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019

COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569-8849

Greck
5770 Highway 7, Woodbridge, Ontario, L4L 1T8 www.greck.ca

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

EXISTING STORM DRAINAGE AREAS

DESIGNED BY: E.P.	SCALES:	PROJECT No.	20-697
CHECKED BY: E.G.	HORIZONTAL: AS SHOWN	DRAWING No.	FIG-2
DRAWN BY: K.M.	VERTICAL: N/A	SHEET No.	1
DATE: OCT 10, 2023	SHEET SIZE: 11"x17"		

D:\CloudStation\Projects\2020\20-697 - 2935, 2955 Mississauga Road\05_Drawings\CAD\DRAINAGE\20-697 FIGURES 2-3 (Pre & Post).dwg Date Plotted: Apr 22, 2026 - 6:24pm

7.1.1 EXTERNAL DRAINAGE AREA

LiDAR topographic information titled LiDAR DTM GTA 2015 Package B was obtained from Land Information Ontario to conduct an external drainage assessment. The subject property receives external drainage from the southwest side of the subject property. The external drainage area is delineated as Area C1 as illustrated in the pre-development drainage area plan provided in **Figure 2.** Area C1 consists of forested areas and the Mississauga Road right of way. Mississauga Road is superelevated, directing runoff from the forested areas and the Mississauga Road right of way northeast towards catchbasins placed along the east side of Mississauga Road. The catchbasin leads discharge directly towards the ditch that wraps around the south and east limits of the subject property.

A summary of the external drainage area land cover is provided below in **Table 7-2**. External land-use areas were estimated using aerial topography via Google Earth.

TABLE 7-2: EXTERNAL DRAINAGE AREA LAND-USE SUMMARY

Surface	Runoff Coeff.	Area C1 (m^2)	Coverage
Asphalt/Hardscape	0.90	6215	31%
Vegetated-Lawn	0.25	13695	69%
Total	0.45	19910	100%

7.2 PROPOSED DRAINAGE

Under proposed conditions, the subject site has been delineated into nine (9) drainage areas: Area A1, A2, A3, B1, B2, C2, D1, D2, and E1. Please see **Figure 3** below for the post-development drainage area plan.

Area D1 and D2 consists of the proposed development. Area D1 consists of a mixed-use residential complex consisting of a 12-storey condo building, fifteen 3-storey stack townhouses, and the majority of the driveway with a roundabout providing access to the building. Runoff from Area D1 is collected by roof drains and floor drains which will drain to the building's internal storm sewer system and connects to the external storm sewer system at the south side of the proposed condo building. Runoff from the storm sewers ultimately discharge overland onto a rip-rap apron spreader near the south limit of the site and sheet flows through vegetated areas towards the existing ditch that wraps around the south and east limits of the property. Area D2 consists of the remaining portion of the driveway which is serviced by catchbasins and outlets to the existing ditch that wraps around the south and east limits of the property.

Area A1 and B1 consists of the drainage area outside of the development limits, and Area A2, A3, B2, and E1 represents the drainage area located between the proposed residential complex and the erosion or ecological hazard limits, designated as a "buffer" zone. The land cover for Area A1, A2, A3, B1, B2, and E1 consists of vegetated and landscaped areas which drain south towards the proposed development. A summary of how each area drains is provided below:

- Runoff generated from Area A1, A2, and A3 are intercepted by proposed swales that runs along the north to west perimeter of the development, conveying drainage to a series of floor drains which collect runoff and convey it into the building's internal storm sewer system. The runoff outlets to the external storm sewer system at the south side of the proposed condo building.
- The runoff from Area B1 and B2 is conveyed along the north to east limit of development, which naturally drains overland to the east towards the existing ditch that wraps around the south and east limits of the property, ultimately directing runoff to the Credit River.
- As per existing conditions, runoff generated from Area E1 drains to the west towards an existing 1.1m diameter concrete culvert outlet at the west limit of the site, which discharges into the Sawmill Creek outfall. Under proposed conditions, less runoff is directed to the Sawmill Creek outfall.

Area C2 is to remain mostly unchanged under proposed conditions, with only minor grading proposed. Area C2 consists of forested area which drains southeast towards the culvert under the proposed driveway. The proposed culvert is sized to accommodate runoff from both drainage areas C1, C2, D1, and D2. For culvert sizing calculations please see **Section 7.2.3** below.

A summary of the post-development land cover is provided below in **Table 7-3.**

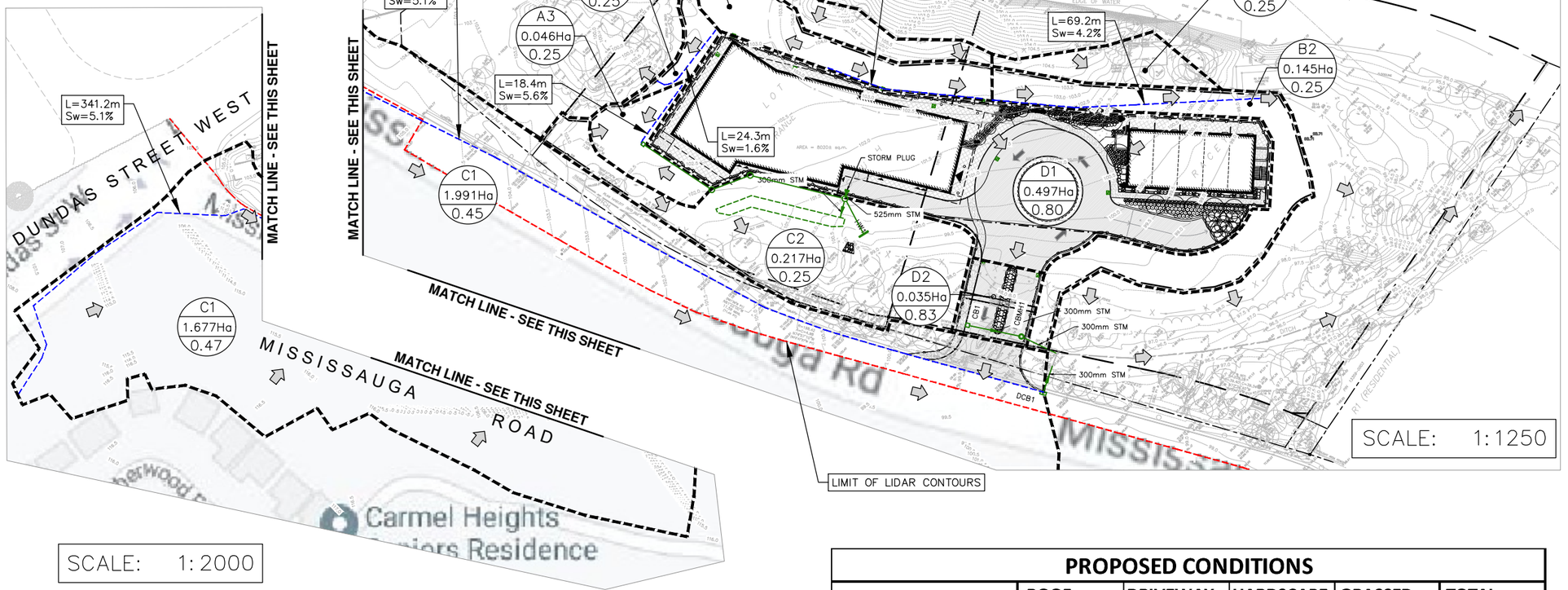
TABLE 7-3: POST-DEVELOPMENT LAND-USE SUMMARY

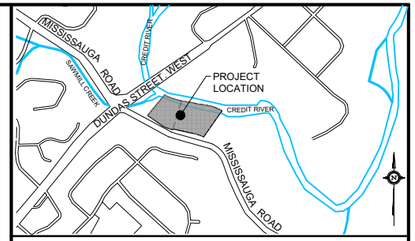
Surface	Runoff Coeff.	A1 (m^2)	A2 (m^2)	A3 (m^2)	B1 (m^2)	B2 (m^2)	C2 (m^2)	D1 (m^2)	D2 (m^2)	E1 (m^2)	% Cover
Roof	0.90	0	0	0	0	0	0	2144	0	0	19%
Asphalt	0.90	0	0	0	0	0	0	765	309	0	9%
Hardscape	0.90	0	0	0	0	0	0	1328	0	0	12%
Vegetated-Lawn	0.25	582	807	458	485	1446	2170	734	38	182	60%
Total	0.51	582	807	458	485	1446	2170	4972	347	182	100%

The overall runoff coefficient of the proposed site was calculated to be 0.51 based on the City of Mississauga Development Requirements Manual dated November 2020. For more details, please see **Appendix E**.

The proposed storm sewers and swales are sized for the 100-year event, the storm sewer design sheet and swale capacity calculations are provided in **Appendix E**.

The proposed storm sewer outfall servicing all impervious development area is to be protected with two layers of 150mm diameter rip-rap apron which has been sized for the 100-year runoff generated from Area D1. For more rip-rap sizing details please see **Appendix E**.





KEY PLAN
N.T.S.

- MAJOR OVERLAND FLOW DIRECTION
- MAJOR CONTOUR LABEL – EXISTING
- MINOR CONTOUR LABEL – EXISTING
- STORM DRAINAGE BOUNDARY/LIMIT OF DEVELOPMENT
- LIMIT OF RIGHT-OF-WAY
- EDGE OF WATER
- PROPERTY LINE
- FUTURE PROPERTY LINE
- LOT LINE
- LONGEST TRAVEL PATH
- PROP. CONCRETE RETAINING WALL
- PARKING GARAGE / CONCRETE WALL
- FOREST DRIP LINE
- EXISTING DITCH
- MH1 STORM MANHOLE
- FD FLOOR DRAIN
- CB SINGLE CATCHBASIN
- DCB DOUBLE CATCHBASIN
- A1 / 0.676Ha / 0 — DENOTES AREA NUMBER / DENOTES AREA IN HECTARES / DENOTES PERCENT IMPERVIOUS

PROPOSED CONDITIONS

	ROOF (m^2)	DRIVEWAY (m^2)	HARDSCAPE (m^2)	GRASSED (m^2)	TOTAL (m^2)
AREA A1	0	0	0	582	582
AREA A2	0	0	0	807	807
AREA A3	0	0	0	458	458
AREA B1	0	0	0	485	485
AREA B2	0	0	0	1446	1446
AREA C1	0	0	6215	13695	19910
AREA C2	0	0	0	2170	2170
AREA D1	2144	765	1328	734	4972
AREA D2	0	309	0	38	347
AREA E1	0	0	0	182	182

BENCHMARK
BENCHMARK: CITY OF MISSISSIAUAGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019

COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569-8849

Greck
5770 Highway 7, Woodbridge, Ontario, L4L 1T8 www.greck.ca

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

PROPOSED STORM DRAINAGE AREAS

DESIGNED BY: E.P.	SCALES:	PROJECT No.	20-697
CHECKED BY: E.G.	HORIZONTAL: AS SHOWN	DRAWING No.	FIG-3
DRAWN BY: K.M.	VERTICAL: N/A	SHEET No.	2
DATE: OCT 10, 2023	SHEET SIZE: 11"x17"		

7.2.1 EXTERNAL DRAINAGE

The land cover and drainage path of external drainage Area C1 remains unchanged under post-development conditions. The external drainage area is delineated as Area C1 as illustrated in the post-development drainage area plan provided in **Figure 3**. The runoff generated from Area C1 is collected by the proposed double ditch inlet catchbasin (DCB1) located on Mississauga Road at the east side of the new driveway. The catchbasin lead discharges directly to the existing ditch, towards Area C2. Drainage from Area C1 and C2 is then conveyed underneath the new driveway via a proposed 1350mm diameter concrete culvert. For culvert sizing calculations please see **Section 7.2.3** below.

7.2.2 PRE AND POST DEVELOPMENT FLOW COMPARISON

In accordance with the City of Mississauga Design Requirements, runoff flows are to be calculated using the Rational Method. The equation is as follows: Q = 0.0028 C I A. The rational method equation is based on the runoff coefficient (C), drainage area in hectares (A), and rainfall intensity in mm/hr (I).

IDF values were used from the City of Mississauga Development Requirements to generate the rainfall intensity for the 2-year and 100-year storm event. These IDF curves are a function of the time of concentration, therefore, in order to determine rainfall intensity, the time of concentration is required to be calculated. Depending on the runoff coefficient of the drainage area, Bransby or the Airport method is used to calculate the time of concentration. Detailed calculations are provided in **Appendix E**.

Calculated pre-development and post-development flows are summarized below in **Table 7-4**.

TABLE 7-4: PRE-DEVELOPMENT AND POST-DEVELOPMENT FLOW COMPARISON

Existing			Proposed		
Drainage Area	**2- year (L/s)**	**100-year (L/s)**	**Drainage Area**	**2- year (L/s)**	**100-year (L/s)**
A1+B1+D1	32.4	95.3	**A1 + A2**	5.4	15.9
			A3	2.9	8.5
			B1 + B2	8.2	24.2
			D1 + D2	71.3	209.3
C1 + C2	187.7	549.7	**C1 + C2**	173.2	507.9
E1	1.1	3.3	**E1**	0.9	2.6
Total	**233.8**	**682.6**	**Total**	**289.0**	**844.6**

Table 7-4 shows that there is a net increase in peak runoff due to the increase in impervious area (building area).

Capacity calculations were completed to ensure all proposed swales can convey the 100-year flow generated from their respective drainage areas. See **Appendix E** for capacity calculations.

7.2.3 DRIVEWAY CULVERT

A driveway is proposed to provide access to the proposed development from Mississauga Road. Fill works are required in the existing ditch to accommodate the proposed driveway. To provide safe conveyance of flows underneath the driveway, a culvert was sized to convey the following:

- The 100-year flow from Area A1, A2, A3, C1, C2, D1, and D2. The 100-year flow was calculated using the Modified Rational Method, and a hydraulic assessment was conducted on PCSWMM to determine an appropriate culvert size. The above analyses assume that the entirety of runoff from 100-year storm event is conveyed towards the proposed culvert. This is conservative, as discharge from Drainage Area C1 would be conveyed via major overland flow in a southeast direction down Mississauga Road. See **Appendix E** for the proposed driveway culvert sizing calculations.
- The flows from the Sawmill Creek spill during the Regional Storm event (Hurricane Hazel). The Sawmill Creek spill 2-D hydraulic assessment was conducted on HEC-RAS to determine an appropriate culvert size to ensure safe access to the proposed development. The 2-D Hydraulic Assessment of Sawmill Creek by Greck is provided under a separate cover.

The summary of the culvert sizing assessment is provided in **Table 7-5** below, and the PCSWMM and the 2-D HEC-RAS model can be provided upon request.

TABLE 7-5: DRIVEWAY CULVERT SIZING SUMMARY

Hydraulic Analyses	Peak Flow (L/s)	Freeboard Provided (m)
100-year PCSWMM Analysis	741.7	1.68
Sawmill Creek Regional Spill	3679.0	0.67

The proposed culvert is a 19.8m long 1350mm diameter concrete pipe with a slope of 0.4%, an upstream invert elevation of 97.77m, and a downstream invert elevation of 97.70m. The 100-year flow and the Sawmill Creek spill during the Regional Storm event will not overtop the proposed driveway.

8.0 STORMWATER MANAGEMENT

The following SWM criteria is to be addressed in accordance with regulatory policy:

- Water quality
- Water quantity
- Erosion control
- Water balance

The proposed SWM strategy includes considerations for water quality control, erosion control, and water balance for the site. The proposed SWM strategy includes a treatment train approach featuring the following SWM controls:

- OGS unit
- Underground stormwater chambers
- Rip-rap flow spreader, and a vegetated filter strip

Runoff generated from the building, and the driveway will be collected by the building's internal storm sewer system where runoff is treated by a proposed Oil and Grit Separator (OGS) unit, then conveyed to the external storm sewer system connection at the south side of the building, which drains to underground infiltration chambers. When the chambers are at capacity, the stormwater is redirected to the storm sewer outlet, where runoff discharges overland onto a rip-rap apron spreader and sheet flows through vegetated areas towards the existing ditch that wraps around the south and east limits of the property, which ultimately discharges into Credit River. This process is discussed in greater detail in the following sections below.

8.1 WATER QUALITY

The required suspended solids removal treatment is MOE Enhanced Protection Level (Level 1). This corresponds to a long-term average removal of 80% of total suspended solids (TSS). Water quality volumes (WQV) were determined from Table 3.2 of the Ministry of Environment Stormwater Management Planning and Design Manual. The required WQV is a function of percent imperviousness of the drainage area, see **Table 8-1**.

Stormwater from the development will be characterized by runoff from roofs, hardscape areas, landscape areas, and the driveway. The main contaminants of concern being:

- Suspended sediments
- Phosphorous
- Other (oil, grease, gas, temperature)

Roof drainage and other hardscape areas other than a driveway or roadway are considered clean and therefore, require no quality controls. Runoff from the driveway and areas with vehicular traffic contribute the most contaminants including oils and grit. Most notably during a rainfall's first flush. As such, water quality controls are only required for the driveway areas within Area D1 and D2. However, to be conservative, the entirety of the drainage area directed towards the building's internal storm sewer system including Area A1, A2, A3, and D1, in addition to the driveway area in Area D2, were considered for the water quality volume calculation summarized in **Table 8-1**.

TABLE 8-1: WATER QUALITY VOLUME SUMMARY

Drainage Area (Area A1, A2, A3, D1, D2)	7165m^2
Imperviousness	63%
Unitary Volume (to achieve 80% TSS removal)	33.2m^3/ha
Required Water Quality Volume	23.8m^3

A treatment train approach is proposed for capturing and treating contaminated runoff from Area D1:

- First, driveway runoff is captured by floor drains which is conveyed to the building's internal storm sewer system and treated by a Stormceptor EF5 OGS unit (or approved equivalent) proposed within the building, which will provide stormwater treatment by trapping free oils and floatable solids and settling any captured sediment, prior to discharge towards the external storm sewer system. The OGS has been sized to provide 60% TSS removal based on the CA ETV Size Distribution. To be conservative, it is assumed that the OGS will only provide 50% TSS removal.
- Secondly, the CULTEC Recharger 330XLHD underground infiltration chambers (or approved equivalent) will capture and retain stormwater, from the internal building storm sewer system for infiltration. The infiltration chambers have been designed with a sump such that the WQV is retained and infiltrated. A total volume of 24.1m^3 is infiltrated within 48 hours, exceeding the WQV requirement of 23.8m^3. The infiltration chamber only services Area A1, A2, A3, and D1, but is conservatively sized to account for Area D2. Once the infiltration chamber is at capacity, stormwater is redirected towards the storm sewer outlet. More details on the infiltration chambers are provided in **Section 8.3**.
- Thirdly, the storm sewer system discharges into the existing ditch that wraps around the south and east limits of the property via a rip-rap flow spreader. The existing ditch is vegetated, which acts as vegetated filter strip which will provide a

tertiary opportunity for sediment capture and deposition before discharging into the Credit River.

The OGS, infiltration chamber, and vegetated filter strip will provide a total of 95% TSS removal for Area D1.

Runoff generated from Area D2 will be collected by catchbasins, and outlet into the existing ditch that wraps around the south and east limits of the property. A debris/sediment trap is proposed in CB1 and CBMH1 to prevent suspended solids from entering the outlet pipe and allow it to settle within the sump of the catchbasin. A 600mm deep sump is proposed at CB1 and CBMH1 to allow for the settling of debris and sediment. If maintained, sediment traps and catchbasin filters can provide 50% TSS removal. Details regarding the catchbasin filters and sediment traps will be provided in detailed design.

The proposed water quality controls for Area D1 and D2 will provide an average % TSS removal of 92% which exceeds the required 80% TSS removal.

Specific details regarding the OGS sizing report, infiltration chambers, and water quality calculations are provided in **Appendix E** and the drawings located in **Appendix G**.

8.2 WATER QUANTITY

As per the Credit Valley Conservation Stormwater Management Criteria dated August 2012, the subject property ultimately drains to a segment of the Credit River, where quantity controls are not required, and therefore is not proposed on site.

8.3 EROSION CONTROL

The City's and CVC's Erosion Control Criteria requires that 5mm of on-site retention be provided for impervious surfaces. Based on a total development impervious area of 4547m^2, this equates to a required retention volume of 22.7m^3. Erosion controls will be provided for D1 by the proposed infiltration chambers. No erosion controls are proposed for Area D2, however, to compensate for this, the proposed infiltration chambers are oversized.

See **Table 8-2** below for a summary of erosion control volume requirements and the storage provided by the infiltration chambers during the 5mm storm event.

TABLE 8-2: EROSION CONTROL VOLUME SUMMARY

Total Impervious Area (m^2)	Required Volume (m^3)	Provided Volume (m^3)
4547	22.7	24.1

The proposed infiltration chambers will provide a total of 24.1m^3 of subsurface storage. This is greater than the required retention volume of 22.7m^3.

24 units of the CULTEC Recharger 330XLHD chambers (or approved equivalent) occupying an area of 90.8m^2, are proposed on the southwest corner of the development, which provides 24.1m^3 of subsurface storage. Erosion control and infiltration chamber sizing calculations are provided in **Appendix E**.

Based on the test pit investigation conducted by Terraprobe on July 22 and 27, 2015, the percolation rates determined on site ranged from 20 min/cm to 35 min/cm. To be conservative, a 35 min/cm (17mm/hr) percolation rate was used for drawdown calculations. In addition to this, a 2.5 factor of safety was applied to the percolation rate which resulted in a design percolation rate of 7mm/hr. The underground infiltration chambers will infiltrate the 24.1m^3 in 46 hours which meets the maximum drawdown time of 48 hours required by CVC. Drawdown time calculations are provided in **Appendix E**.

The infiltration chambers' bottom of stone elevation is at 99.16m, which is 1.56m higher than the highest groundwater measurement of 97.60m measured on site as per the Terraprobe studies on August 28, 2008 and March 17, 2010. As such, the minimum groundwater separation requirement of 1m is exceeded.

8.4 WATER BALANCE

Urbanization increases impervious cover which, if left unmitigated, results in a decrease in infiltration. This infiltration reduces groundwater recharge and soil moisture replenishment. It also reduces stream baseflow needed for sustaining aquatic life. Therefore, it is important to maintain the natural hydrologic cycle. Groundwater recharge helps maintain aquifer water levels and supports significant watershed features that are necessary components to the maintenance of a healthy watershed. As a result, a water balance analysis is required to estimate the pre-development and post-development infiltration and runoff.

The subject property is located within an Environmentally Sensitive Area as classified by the City, and CVC. Therefore, according to CVC SWM Water Balance criteria, the pre-development groundwater recharge rates are to be maintained. As such, a site-specific water balance assessment is required.

A site-specific water balance was completed for the development area delineated by Area A2, A3, B2, D1, D2, and E1 using the MOE's "Stormwater Management Planning and Design Manual", March 2003. This approach uses the method developed by Thornthwaite and Mather.

A summary of the pervious and impervious areas is provided below in **Table 8-3**

TABLE 8-3: EXISTING AND PROPOSED LAND COVER

Area	Existing (m^2)	Proposed (m^2)
Pervious	8211	3665
Impervious	0	4547

The parameters used for the water balance analysis are provided in **Table 8-4**.

TABLE 8-4: MOE WATER BALANCE INFILTRATION PARAMETERS

	Comment	Factor
Topography	Hilly Land	0.1
Soils	Open Sandy Loam	0.2
Cover	Cultivated Land	0.1

A total deficit volume of 366.4m^3/year will not be infiltrated into the ground given the proposed development plan and resulting change in pervious cover. As such, this annual volume must be balanced and infiltrated back into the ground under proposed conditions.

The water balance target of 366.4m^3/year will be provided through the subsurface infiltration chambers throughout the property.

The infiltration chambers have been sized to capture 5mm of rainfall to meet erosion control requirements, which represents approximately 55% of all rainfall events in a given year (City of Toronto Wet Weather Flow Management Guidelines Figure 1b, November 2006).

An impervious annual surplus of 726mm was applied due to the lack of evapotranspiration on impervious areas such as roofs or driveways, however, it is assumed 10% of the precipitation is evaporated.

Based on an annual impervious surplus factor of 726mm per year, the annual infiltration volume towards the infiltration chambers equates to 1914m^3 per year with a total site-wide infiltration of 2209m^3. However, a factor of safety of 1.5 was applied to the total

infiltrated chamber volume, in the event that infiltration does not occur as efficiently, due to soil saturation, partially full chambers from previous rainfall events, or unexpected in-situ soil conditions. This equates to an annual chamber infiltration volume of 1276m^3 for a total site-wide infiltration of 1571m^3, therefore exceeding pre-development conditions.

A summary of the infiltration volumes is provided in **Figure 8.1**.

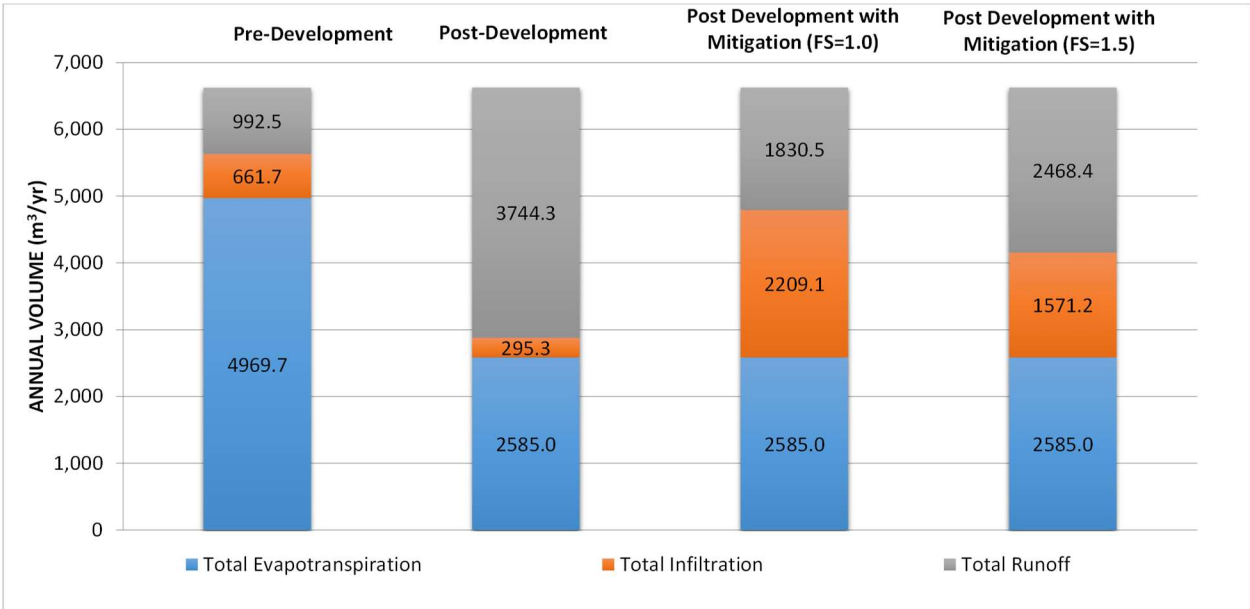


FIGURE 8.1: WATER BALANCE SUMMARY

As such, the application of the infiltration chambers achieves a net increase in overall infiltration, which meets CVC's criteria of maintaining pre-development infiltration levels. For water balance calculations, please see **Appendix E**.

8.5 OPERATIONS AND MAINTENANCE

The rate at which sediments enter the system will determine the longevity and performance of the proposed treatment train. Overtime, sediment will fill the sumps of the catchbasins, catchbasin manholes, storm manholes, and with improper maintenance and care, can overflow and clog the storm sewer system. The OGS unit will also have to be maintained in order to prevent a reduction in performance. Therefore, regularly scheduled inspection and maintenance is recommended in order to prolong the longevity and performance of the treatment train. The following items are recommended:

- The driveway, hardscaped areas, and riprap apron spreaders should be regularly inspected for debris and trash accumulation on the surface and disposed of as necessary.

- The sumps of the catchbasins, catchbasin manholes, storm manhole, and the OGS unit should be inspected every six months for the first year to determine the pollutant accumulation rate. In subsequent years, inspections can be based on observations. The sumps are recommended to be cleaned using a vacuum truck annually.
- Maintenance for the underground chambers should be minimal if the upstream OGS is inspected and cleaned regularly. Therefore, maintenance for the underground chambers should not be required. However, scheduled inspections are still recommended to assess the underground chambers for any sediment build up. Visual inspections can be done by accessing upstream OGS or the proposed chamber inspection ports. If the depth of sediment within the chambers is in excess of 3 inches, the chambers must be cleaned out. This can be done by backflushing and vacuuming the chambers with high pressure water using a culvert cleaning nozzle from upstream OGS.

If maintenance is required, the maintenance of the catchbasin, catchbasin manhole, storm manhole, and OGS unit should be coordinated and scheduled at the same time. After the first year, it is recommended to inspect all the above items on an annual basis (rip rap apron, catchbasin manholes, catchbasins, storm manholes, OGS unit, and underground chambers).

See **Appendix F** for operation and maintenance guides, checklists and recommendations provided by the suppliers for additional information.

9.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls (ESC) will be implemented for all construction activities, including topsoil striping, material stockpiling, pavement construction, and grading operations. Design details will include a phased approach to minimize disturbance including considerations for restoration. Significant site excavation is anticipated during construction due to the 2 levels of proposed underground parking. During this time, a combination of sediment traps and pumping to silt sacks are proposed to dewater the site accounting for clean groundwater seepage and rainfall. Considering the size of the building footprint, during building construction, heavy duty silt fencing and local dewatering will be the main controls for sediment control as exposed earth will be minimal, if not contained within the excavation pit. The groundwater seepage rate and the required pumping rate will be determined in detailed design by consulting with the hydrogeological engineer.

An Erosion and Sediment Control Plan will be provided during detailed design.

10.0 CONCLUSIONS

As presented in this report, the proposed development will meet the following municipal and provincial standards and regulations specified for:

- General site grading;
- Water distribution
- Sanitary sewer servicing;
- Utilities
- Stormwater management; and
- Construction erosion and sediment controls

In summary, it has been determined that the development can be serviced with existing and proposed infrastructure that is in accordance with policies and guidelines required by the City of Mississauga and other regulating agencies.

11.0 REFERENCES

City of Mississauga – Development Requirements Manual – November 2020

Credit Valley Conservation – Stormwater Management Criteria- August 2012

Fire Underwriters Survey – Water Supply for Public Fire Protection - 1999

Ministry of the Environment – Stormwater Management Planning and Design Manual – March 2003

Ministry of the Environment – Design Guidelines for Drinking Water Systems – 2008

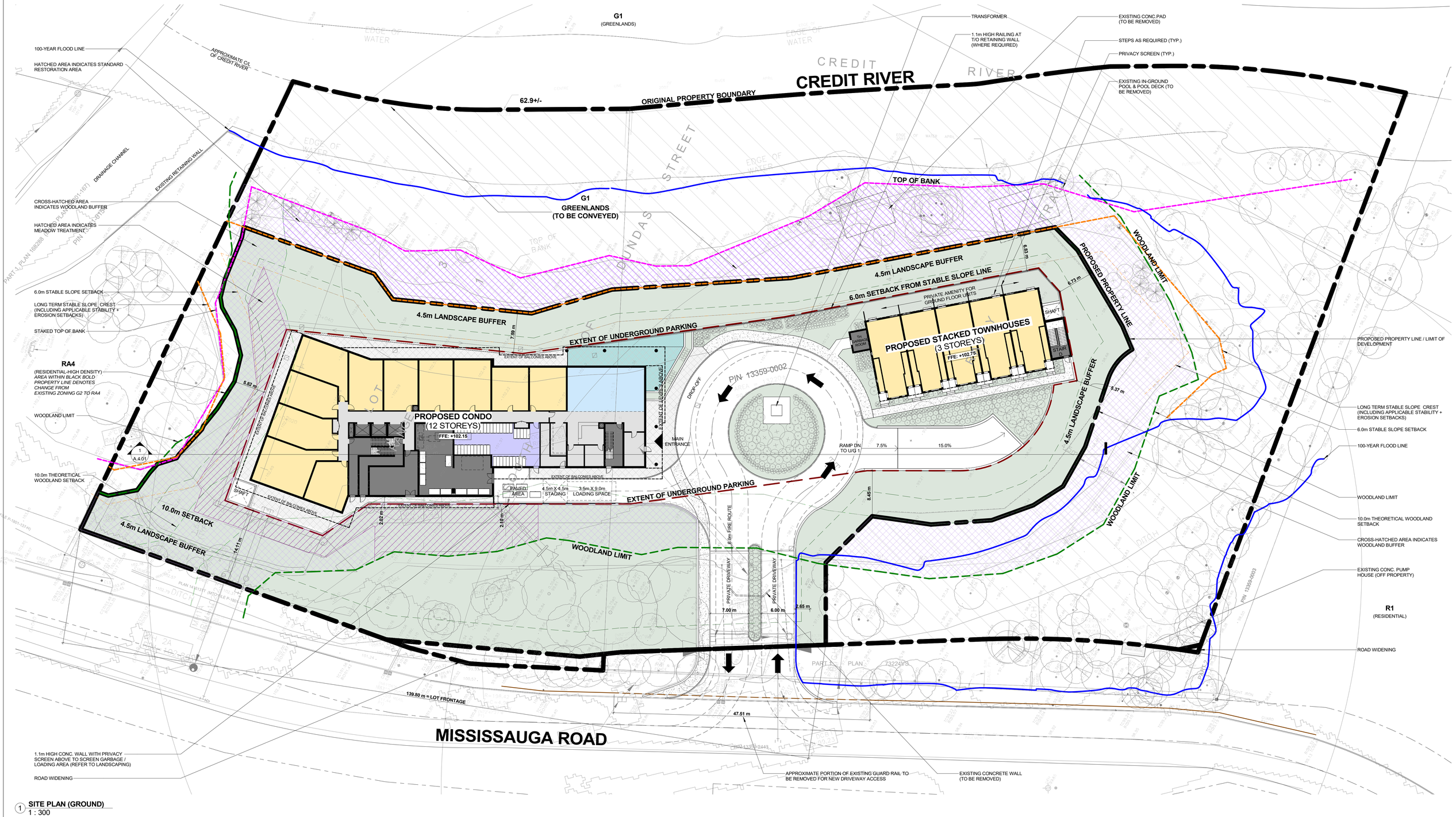
Ministry of the Environment – Design Guidelines for Sewage Works – 2008

Region of Peel – Sanitary Sewer Design Criteria – March 2017

Region of Peel – Watermain Design Criteria – June 2010

APPENDIX A

Site Plan and Topographic Survey



1 **SITE PLAN (GROUND)**
1 : 300

SITE CONSTRAINTS LEGEND:

WOODLAND LIMIT		**VARIABLE WOODLAND BUFFER FEATURE:**	
10.0m THEORETICAL WOODLAND SETBACK		WOODLAND BUFFER	
LONG-TERM STABLE SLOPE CREST		MEADOW TREATMENT	
6.0m STABLE SLOPE SETBACK		STANDARD RESTORATION AREA	
STAKED TOP OF BANK			
100-YEAR FLOOD LINE			

NOTE: ALL SITE CONSTRAINTS INFORMATION NOTED ABOVE AS PER CONSTRAINTS AND OPPORTUNITIES PLAN PREPARED BY SLR DATED OCTOBER 7TH, 2025.

CARICARI LEE ARCHITECTS
113 Miranda Avenue
Toronto, ON M6B 3W8
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PROJECT NAME
Mississauga Condo Development
2935 & 2955 Mississauga Road, Mississauga, Ontario

DRAWING TITLE
SITE PLAN (GROUND)

No.	Date:	Issued / Revision:	By:
1	2021-06-10	ISSUED FOR ZONING/OPA	MNG
2	2023-10-19	RE-ISSUED FOR ZONING/OPA #2	MNG
3	2025-10-23	RE-ISSUED FOR ZONING/OPA #3	MNG

SCALE	1 : 300
PROJECT NO.	20001
DATE	APR 2026
DRAWN BY	MNG
CHECKED BY	CLA

NORTH:

DRAWING NO.
A 1.31

SITE STATISTICS:

	EXISTING:	PROPOSED:
ZONING	G1 & G2	RA3-XX
OFFICIAL PLAN DESIGNATION	GREENLANDS	RESIDENTIAL: HIGH DENSITY
BUILDING TYPE	n/a	RESIDENTIAL CONDO + STACKED TOWNS
LOT FRONTAGE	30.0 m (MIN.)	139.80 m

SITE AREA	
TOTAL SITE AREA	21,273.0 m²
GREENLANDS	10,897.5 m²
ROAD WIDENING	97.0 m²
NET SITE AREA	**(1.02785 ha) 10,278.5 m²**

	REQUIRED / PERMITTED:	PROPOSED:
LOT COVERAGE	n/a	2,353.4 m² = 22.9%
LANDSCAPED AREA	40% (MIN.) = 4,111.40 m²	5,499.4 m² = 53.5%
PAVED AREA	n/a	2,425.7 m² = 23.6%

SETBACKS:

SETBACKS	**REQUIRED / PERMITTED:**	**PROPOSED:**
BUILDING SETBACKS	REFER TO BUILDING HEIGHT AND SETBACK DIAGRAM	
BALCONY ENCROACHMENT	1.0 m (MAX.) INTO ANY REQUIRED YARD	2.10 m
ABOVE GRADE PARKING STRUCTURE	7.5 m (MIN.)	5.37 m
BELOW GRADE PARKING STRUCTURE	3.0 m (MIN.)	5.37 m
WASTE ENCLOSURE / LOADING AREA	10.0 m (MIN.) TO A STREET LINE	27.42 m

LANDSCAPE BUFFERS		
ABUTTING A STREET LINE	4.5 m (MIN.)	4.5 m
ABUTTING GREENLANDS	4.5 m (MIN.)	4.5 m
ALONG ANY OTHER LOT LINES	3.0 m (MIN.)	3.0 m
LOADING	1 SPACE (3.5m x 9.0m)	1 SPACE (3.5m x 9.0m)

BUILDING STATISTICS:

	REQUIRED / PERMITTED:	PROPOSED:
FLOOR SPACE INDEX (FSI)	0.5 (MIN.) TO 1.0 (MAX.)	CONDO FSI = 1.62
		STACKED TH FSI = 0.16
		TOTAL FSI = 1.78
GROSS FLOOR AREA (GFA)	5,139.25 m² (MIN.) to 10,278.5 m² (MAX.)	CONDO GFA = 16,626.70 m²
		STACKED TH GFA = 1,648.00 m²
		TOTAL GFA = 18,274.70 m²
BUILDING HEIGHT	12 STOREYS or 38.0m (MAX.)	CONDO = 12 STOREYS (41.59 m)
		STACKED THS = 3 STOREYS (12.19 m)

***NOTES:**
REQUIRED / PERMITTED IS BASED ON THE PROPOSED (RA3) ZONING, AND NOT THE CURRENT (G1 & G2) ZONING.

AMENITY AREA:

AMENITY AREA	**REQUIRED:**	**PROPOSED:**
TOTAL AMENITY AREA	5.6 m² / UNIT = 1,097.6 m² (MIN.)	6.44 m² / UNIT = 1,262.7 m²
AMENITY IN ONE CONTIGUOUS AREA	50% OF REQUIRED = 548.8 m² (MIN.)	634.2 m²
OUTDOOR AT-GRADE AMENITY AREA	55.0 m² (MIN.)	112.3 m²

PARKING REQUIRED:

PARKING REQUIRED	**UNITS**	**RATIO**	**SPACES REQUIRED**
CONDO VISITOR PARKING	196	0.20 / UNIT	39 VISITOR SPACES
CONDO RESIDENT PARKING	121 (1B / 1B+D)	1.10 / 1B UNIT	133 SPACES
	56 (2B / 2B+D)	1.10 / 2B UNIT	62 SPACES
	19 (3B / 3B+D)	1.10 / 3B UNIT	21 SPACES
	196 TOTAL UNITS		**216 RESIDENT SPACES**
SUB-TOTAL CONDO PARKING REQUIRED			**255 SPACES**
STACKED TH VISITOR PARKING	15	0.25 / UNIT	4 VISITOR SPACES
STACKED TH RESIDENT PARKING	15 (2B)	1.50 / 2B UNIT	23 RESIDENT SPACES
SUB-TOTAL STACKED TH PARKING REQUIRED			**27 SPACES**
TOTAL VISITOR PARKING			43 VISITOR SPACES
TOTAL RESIDENT PARKING			239 RESIDENT SPACES
TOTAL (CONDO + STACKED TH COMBINED) PARKING REQUIRED			**282 SPACES**

BARRIER-FREE SPACES REQUIRED	4% OF REQUIRED VISITOR PARKING	2 B/F SPACES

PARKING PROVIDED:

	STANDARD SPACES	**BARRIER-FREE SPACES**	**TOTAL SPACES**
U/G LEVEL P1	102	2	104
U/G LEVEL P2	107	0	107
U/G LEVEL P3	107	0	107
TOTAL PARKING PROVIDED	**316**	**2**	**318**

NOTE: 43 OF THE SPACES ON P1 ARE DEDICATED VISITOR PARKING SPACES.

EV READY PARKING SPACES REQUIRED:

	RATIO	**SPACES**
CONDO VISITOR	10.0% OF REQUIRED OR 1 SPACE (WHICHEVER GREATER)	4
CONDO RESIDENT	20.0% OF REQUIRED OR 1 SPACE (WHICHEVER GREATER)	44
STACKED TH	20.0% OF REQUIRED OR 1 SPACE (WHICHEVER GREATER)	6
TOTAL EV PARKING SPACES REQUIRED		**54**

EV READY PARKING SPACES PROVIDED:

	SPACES
CONDO VISITOR	4
CONDO RESIDENT	44
STACKED TH	6
TOTAL EV PARKING SPACES PROVIDED	**54**

UNIT BREAKDOWN:

CONDO UNIT BREAKDOWN	**1B**	**1B+D**	**2B**	**2B+D**	**3B**	**3B+D**	**TOTAL**	
LEVEL 1	0	0	8	0	3	0	11	
LEVEL 2	2	12	3	2	2	0	21	
LEVEL 3	2	12	3	2	2	0	21	
LEVEL 4	2	12	3	2	2	0	21	
LEVEL 5	2	12	3	2	2	0	21	
LEVEL 6	2	12	3	2	2	0	21	
LEVEL 7	2	6	2	2	1	0	13	
LEVEL 8	3	4	3	0	1	0	11	
LEVEL 9	3	6	4	0	1	0	14	
LEVEL 10	3	6	4	0	1	0	14	
LEVEL 11	3	6	4	0	1	0	14	
LEVEL 12	3	6	4	0	1	0	14	
TOTAL CONDO UNITS (BY TYPE)	**27**	**94**	**44**	**12**	**19**	**0**	**196 UNITS**	**UNITS / HECTARE**
TOTAL CONDO UNITS (BY BEDROOMS)	**121**		**56**		**19**			190.69
TOTAL STACKED TOWNHOUSE UNITS (2 BEDROOMS)							**15 UNITS**	14.60
TOTAL (CONDO + STACKED TH COMBINED) UNITS							**211 UNITS**	**205.29**

BICYCLE PARKING REQUIRED:

	RATIO	**SPACES**
LONG-TERM SPACES	0.60 SPACES / UNIT	127
SHORT-TERM SPACES	0.05 SPACES / UNIT	11
TOTAL BICYCLE PARKING SPACES REQUIRED		**138**

BICYCLE PARKING PROVIDED:

LEVEL	**SPACES**
LEVEL 1	44
U/G LEVEL P1	14
U/G LEVEL P2	40
U/G LEVEL P3	40
TOTAL BICYCLE PARKING SPACES PROVIDED	**138**

STORAGE LOCKERS PROVIDED:

LEVEL	**SPACES**
U/G LEVEL P1	26
U/G LEVEL P2	31
U/G LEVEL P3	55
TOTAL STORAGE LOCKERS PROVIDED	**112**

CONDO GROSS FLOOR AREA (GFA)

Level	Area
U/G LEVEL P3	69.1 m²
U/G LEVEL P2	69.1 m²
U/G LEVEL P1	119.2 m²
LEVEL 1 (102.15)	1,073.8 m²
LEVEL 1A (MEZZ)	980.8 m²
LEVEL 2	1,631.6 m²
LEVEL 3	1,631.6 m²
LEVEL 4	1,631.6 m²
LEVEL 5	1,631.6 m²
LEVEL 6	1,631.6 m²
LEVEL 7	1,074.1 m²
LEVEL 8	858.5 m²
LEVEL 9	1,056.0 m²
LEVEL 10	1,056.0 m²
LEVEL 11	1,056.0 m²
LEVEL 12	1,056.0 m²
TOTAL GFA (CONDO)	16,626.7 m²

CONDO TOTAL FLOOR AREA (TFA)

Level	Area
U/G LEVEL P3	4,701.0 m²
U/G LEVEL P2	4,701.0 m²
U/G LEVEL P1	4,701.0 m²
LEVEL 1 (102.15)	1,685.9 m²
LEVEL 1A (MEZZ)	1,059.2 m²
LEVEL 2	1,701.4 m²
LEVEL 3	1,701.4 m²
LEVEL 4	1,701.4 m²
LEVEL 5	1,701.4 m²
LEVEL 6	1,701.4 m²
LEVEL 7	1,325.6 m²
LEVEL 8	1,108.6 m²
LEVEL 9	1,108.6 m²
LEVEL 10	1,108.6 m²
LEVEL 11	1,108.6 m²
LEVEL 12	1,108.6 m²
MECH P/H	273.4 m²
TOTAL TFA (CONDO)	32,497.1 m²

TH BLOCK AREA (TFA + GFA)

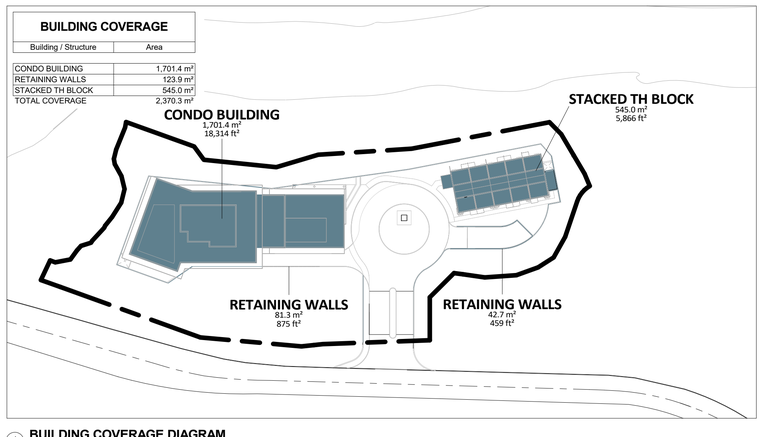
TH Level	Area
TH LEVEL 1	482.3 m²
TH LEVEL 2	500.1 m²
TH LEVEL 3	500.1 m²
TH ROOF DECK	165.5 m²
TOTAL TFA + GFA (TH BLOCK)	1,648.0 m²

CONDO AMENITY AREA

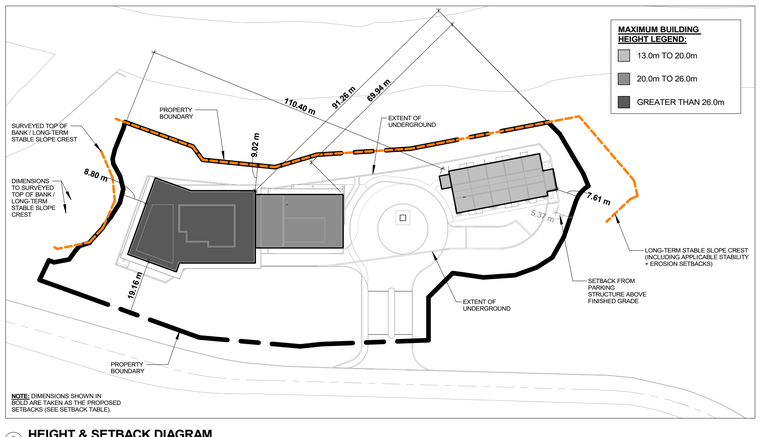
Level	Area
INDOOR AMENITY	
LEVEL 1 (102.15)	123.7 m²
LEVEL 7	175.7 m²
LEVEL 8	197.5 m²
	496.9 m²
OUTDOOR AMENITY	
LEVEL 1 (102.15)	112.3 m²
LEVEL 7	458.5 m²
LEVEL 8	195.0 m²
	765.8 m²
TOTAL AMENITY	1,262.7 m²

STACKED TH PRIVATE ROOF DECKS

TH Level	Area
OUTDOOR AMENITY	
TH ROOF DECK	334.6 m²
	334.6 m²



1 **BUILDING COVERAGE DIAGRAM**
1 : 1000



2 **HEIGHT & SETBACK DIAGRAM**
1 : 1000

REQUIRED AND PROPOSED BUILDING SETBACKS:

FRONT YARD SETBACK	**REQUIRED / PERMITTED:**	**PROPOSED MINIMUM:**
EQUAL OR LESS THAN 13.0m IN HEIGHT	7.5 m (MIN.)	19.16 m
13.0m TO 20.0m IN HEIGHT	8.5 m (MIN.)	
20.0m TO 26.0m IN HEIGHT	9.5 m (MIN.)	
GREATER THAN 26.0m IN HEIGHT	10.5 m (MIN.)	

EXTERIOR SIDE YARD SETBACK	**REQUIRED / PERMITTED:**	**PROPOSED MINIMUM:**
EQUAL OR LESS THAN 13.0m IN HEIGHT	7.5 m (MIN.)	8.80 m
13.0m TO 20.0m IN HEIGHT	8.5 m (MIN.)	
20.0m TO 26.0m IN HEIGHT	9.5 m (MIN.)	
GREATER THAN 26.0m IN HEIGHT	10.5 m (MIN.)	

INTERIOR SIDE YARD SETBACK	**REQUIRED / PERMITTED:**	**PROPOSED MINIMUM:**
EQUAL OR LESS THAN 13.0m IN HEIGHT	4.5 m (MIN.)	7.61 m
13.0m TO 20.0m IN HEIGHT	6.0 m (MIN.)	
20.0m TO 26.0m IN HEIGHT	7.5 m (MIN.)	
GREATER THAN 26.0m IN HEIGHT	9.0 m (MIN.)	

REAR YARD SETBACK	**REQUIRED / PERMITTED:**	**PROPOSED MINIMUM:**
EQUAL OR LESS THAN 13.0m IN HEIGHT	7.5 m (MIN.)	9.02 m
13.0m TO 20.0m IN HEIGHT	10.0 m (MIN.)	
20.0m TO 26.0m IN HEIGHT	12.5 m (MIN.)	
GREATER THAN 26.0m IN HEIGHT	15.0 m (MIN.)	

CARICARI LEE ARCHITECTS
113 Miranda Avenue
Toronto, ON M6B 3W8
t/ 416 962 9670 f/ 416 962 9671
e/ info@caricarilee.com
www.caricarilee.com

PROJECT NAME
Mississauga Condo Development
2935 & 2955 Mississauga Road, Mississauga, Ontario

DRAWING TITLE
PROJECT STATISTICS

No.	Date:	Issued / Revision:	By:
1	2021-06-10	ISSUED FOR ZONING/OPA	MNG
2	2023-10-19	RE-ISSUED FOR ZONING/OPA #2	MNG
3	2025-10-23	RE-ISSUED FOR ZONING/OPA #3	MNG
4	2025-12-10	RE-ISSUED FOR ZONING/OPA #4	HKN

SCALE	As indicated
PROJECT NO.	20001
DATE	APR 2026
DRAWN BY	MNG
CHECKED BY	CLA

NORTH:

DRAWING NO.
A 0.01

PLAN OF TOPOGRAPHY OF

PART OF LOTS 3 AND 4, RANGE 1, SOUTH OF DUNDAS STREET RACEY TRACT

ONTARIO LAND SURVEYORS

CITY OF MISSISSAUGA

REGIONAL MUNICIPALITY OF PEEL

SCALE 1 : 300

5 0 5 10 15 20 metres

TARASICK McMILLAN KUBICKI LIMITED
ONTARIO LAND SURVEYORS

METRIC

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

ELEVATION NOTE

ELEVATIONS ARE REFERRED TO CITY OF MISSISSAUGA DATUM AND WERE DERIVED FROM CITY OF MISSISSAUGA BENCHMARK NO. 58, HAVING A PUBLISHED ELEVATION OF 108.293 METRES.

CAUTION: TO OBTAIN GEODETIC ELEVATIONS (1978 RE-ADJUSTMENT), SUBTRACT 0.12 M FROM THE VALUES SHOWN HEREON.

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE NORTHWESTERLY LIMIT OF SURVEY BY RADY-PENTEK & EDWARD SURVEYING LTD., DATED NOV. 1, 1999, HAVING A BEARING OF N39°10'45"E.

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
TC	DENOTES	TOP OF CURB
BC	DENOTES	BOTTOM OF CURB
CDT	DENOTES	CURB CUT
MH	DENOTES	MANHOLE
CB	DENOTES	CATCH BASIN
WUP	DENOTES	WOOD UTILITY POLE
WV	DENOTES	WATER VALVE
INV.	DENOTES	INVERT
EB	DENOTES	ELEC. BOX
P1	DENOTES	PLAN 73224VS
P2	DENOTES	PLAN BY RADY-PENTEK & EDWARD SURVEYING LTD. DATED NOV. 1, 1999
0.20ⓓ	DENOTES	DECIDUOUS TREE WITH TRUNK DIAMETER
0.20ⓒ	DENOTES	CONIFEROUS TREE WITH TRUNK DIAMETER

TREE CANOPIES ARE DRAWN TO SCALE.

FOREST DRIPLINE AND TOP OF BANK STAKED OUT BY CREDIT VALLEY CONSERVATION ON JANUARY 24, 2020.

PLAN UPDATED DECEMBER 20, 2022.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THE FIELD SURVEY REPRESENTED ON THIS PLAN WAS COMPLETED ON DECEMBER 9, 2019.

DECEMBER 10, 2019
DATE

BORYS KUBICKI
ONTARIO LAND SURVEYOR

TARASICK McMILLAN KUBICKI LIMITED
ONTARIO LAND SURVEYORS
4181 SLADEVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 5R2
TEL: (905) 569-8849 FAX: (905) 569-3160
E-MAIL: office@tmksurveyors.com

DRAWN BY: Z.N./A.W. | FILE No. 4871-08-T-E

PLAN OF TOPOGRAPHY OF

PART OF LOTS 3 AND 4, RANGE 1, SOUTH OF DUNDAS STREET RACEY TRACT

ONTARIO LAND SURVEYORS

CITY OF MISSISSAUGA

REGIONAL MUNICIPALITY OF PEEL

SCALE 1 : 300

5 0 5 10 15 20 metres

TARASICK McMILLAN KUBICKI LIMITED
ONTARIO LAND SURVEYORS

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LEGEND

⊕	DENOTES	SURVEY MONUMENT FOUND
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
TC	DENOTES	TOP OF CURB
BC	DENOTES	BOTTOM OF CURB
CCT	DENOTES	CURB CUT
MH	DENOTES	MANHOLE
CB	DENOTES	CATCH BASIN
WUP	DENOTES	WOOD UTILITY POLE
WV	DENOTES	WATER VALVE
INV.	DENOTES	INVERT
BB	DENOTES	BELL BOX
P1	DENOTES	PLAN 7322AWS
P2	DENOTES	PLAN BY RADY-PENTEK & EDWARD SURVEYING LTD. DATED NOV. 1, 1999
0.20ø	DENOTES	DECIDUOUS TREE WITH TRUNK DIAMETER
0.20ø	DENOTES	CONIFEROUS TREE WITH TRUNK DIAMETER

TREE CANOPIES ARE DRAWN TO SCALE.

SITE CONSTRAINTS LEGEND

	DENOTES	WOODLAND LIMIT
	DENOTES	10m THEORETICAL WOODLAND SETBACK
	DENOTES	LONG TERM STABLE SLOPE CREST
	DENOTES	6m STABLE SLOPE SETBACK
	DENOTES	STAKED TOP OF BANK
	DENOTES	100-YEAR FLOOD LINE
	DENOTES	PROPOSED PROPERTY LINE
	DENOTES	EXTENT OF UNDERGROUND PARKING (PROPOSED)
	DENOTES	4.5m LANDSCAPE SETBACK
	DENOTES	MEADOW TREATMENT

FOREST DRIPLINE AND TOP OF BANK STAKED OUT BY CREDIT VALLEY CONSERVATION ON JANUARY 24, 2020.

PLAN UPDATED DECEMBER 20, 2022.

CONSTRAINTS UPDATED OCT. 17, 2025

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THE FIELD SURVEY REPRESENTED ON THIS PLAN WAS COMPLETED ON DECEMBER 9, 2019.

DECEMBER 10, 2019
DATE

BORYS KUBICKI
ONTARIO LAND SURVEYOR

TARASICK McMILLAN KUBICKI LIMITED
ONTARIO LAND SURVEYORS
4181 SLADEVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 5R2
TEL: (905) 569-8849 FAX: (905) 569-3160
E-MAIL: office@tmksurveyors.com

DRAWN BY: Z.N./A.W. | FILE No. 4871-08-T-E

SHEET: CONSTRAINTS

K:\4801-4900\4871\dwg\4871-21-GROUND_2025.dwg

LAST SAVED: 2025-10-17

C (36"=48")

APPENDIX B

Region of Peel Correspondence

From: Melnyk, Brian <brian.melnyk@peelregion.ca>
Sent: April 22, 2026 10:58 AM
To: Khalid Mahmood <kmahmood@greck.ca>
Cc: Marczuk, Camila <camila.marczuk@peelregion.ca>
Subject: RE: Modeling Results OZ-22-006M

Good morning, Khalid you for the chat.

I have confirmed with our Program Planning team that your proposed population of 638 people is acceptable.
Our Program Planning team would like to re-review the updated FSR and Servicing plan as discussed.

Best regards,

Brian Melnyk, C. Tech
Specialist (Acting) – Servicing Connections

Water & Wastewater
Public Works, Region of Peel
10 Peel Centre Drive, 4th Floor
Brampton, Ontario L6T 4B9

Email: brian.melnyk@peelregion.ca
Direct Line: (289)305-7797

Region of Peel
working with you

Please be advised that the 2026 Fees by-law update will include an increase in some Engineering Fees. All fees may be subject to change on annual basis pending Council approval

We have recently updated our website to better serve your needs. For information on Planning and Engineering matters of Regional interest, please visit this link : Request a water or wastewater service connection - Region of Peel (peelregion.ca) *.Let us know how we can serve you better.*

Our working hours may be different. Please do not feel obligated to reply outside of your working hours. Let's work together to help foster healthy work-life boundaries.

From: Melnyk, Brian <brian.melnyk@peelregion.ca>
Sent: April 17, 2026 2:43 PM
To: Khalid Mahmood <kmahmood@greck.ca>
Cc: Eric Greck <egreck@greck.ca>; Frank Merulla <frankmerulla@aol.com>; Ardeleanu, Bogdan <bogdan.ardeleanu@peelregion.ca>; Lauren Pettapiece <lpettapiece@mgp.ca>; Rohan Sovig <rsovig@mgp.ca>; Marczuk, Camila <camila.marczuk@peelregion.ca>
Subject: RE: OZ-22-006 M - Design Discussion - (Amended date and time.)

Khalid, we do not issue the requested letter in advance of the works being approved / constructed.

Our approval / assumption process for the sanitary portion of this miscellaneous project is as follows:

- Once all inspections including a mandrel test and review of the required CCTV report of the newly constructed sanitary connection are deemed satisfactory, preliminary acceptance is granted by Region of Peel ETS group.
- Once Preliminary Acceptance is granted, a preliminary acceptance letter is sent to consultant.
- The 2 year maintenance period will then commence from the date of Preliminary Acceptance.
- Nearing the end of the 2 year maintenance period, the consultant contacts Region of Peel ETS team and requests a final inspection.
- Once all inspections including a mandrel test and CCTV report review are deemed satisfactory, final acceptance is granted by Region of Peel ETS group.
- Once Final Acceptance is granted, a final acceptance letter is sent to consultant.
- The Region of Peel then assumes the newly constructed sanitary service connection.

I hope this helps, should you need anything further from us, please let us know.

I would also like to take this opportunity to mention that I have enjoyed working on this file with your team, however, I was covering for Camila while she was away, now that she is back, she will be taking the lead on the Planning portion (OZA/ZBA approval) of this file and Bogdan is assigned to the miscellaneous portion of these works.

I am available for support, if need be, but Camila and Bogdan are now your lead reviewers.
Take care.

Best regards,

Brian Melnyk, C. Tech
Specialist (Acting) – Servicing Connections

Water & Wastewater
Public Works, Region of Peel
10 Peel Centre Drive, 4th Floor
Brampton, Ontario L6T 4B9

Email: brian.melnyk@peelregion.ca
Direct Line: (289)305-7797

Region of Peel
working with you

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Our working hours may be different. Please do not feel obligated to reply outside of your working hours. Let's work together to help foster healthy work-life boundaries.

From: Lucas Petricca <Lucas.Petricca@mississauga.ca>
Sent: April 14, 2026 9:54 AM
To: Khalid Mahmood <kmahmood@greck.ca>; Rohan Sovig <rsovig@mgp.ca>
Cc: Melnyk, Brian <brian.melnyk@peelregion.ca>; Eric Greck <egreck@greck.ca>; Frank Merulla <frankmerulla@aol.com>; Ardeleanu, Bogdan <bogdan.ardeleanu@peelregion.ca>; Lauren Pettapiece <lpettapiece@mgp.ca>; Lincoln Lo <LLo@mgp.ca>; Ayoola, Ayooluwa <ayooluwa.ayoola@peelregion.ca>; Marczuk, Camila <camila.marczuk@peelregion.ca>
Subject: RE: OZ-22-006 M - Design Discussion - (Amended date and time.)

Good morning,

Hope everyone had a great weekend.

I received comments back from our Storm Section and they are satisfied with the proposed approach.

Detailed review of an engineering submission and securities can be completed as part of the Development Agreement process through a future Holding Provision application.

As part of the resubmission, other than updated drawings and the FSR, we would require a letter from the Region confirming they will be taking ownership and maintenance responsibilities for the sanitary connection following construction. Additionally, if a receiving pit is not required, the consulting engineer must provide detailed cross-sections and engineering drawings demonstrating how the connection to MH17 will be completed without a receiving pit. A letter signed by a P.Eng. confirming that a receiving pit will not be required must also be provided.

If a receiving pit is required, the engineering submission can be deferred to the future Holding application. If you have any additional questions, you can reach out to Allan (Allan.Noona@mississauga.ca), our storm reviewer for this file.

Regards,
Lucas

From: Marczuk, Camila <camila.marczuk@peelregion.ca>
Sent: April 9, 2026 1:43 PM
To: Khalid Mahmood <kmahmood@greck.ca>; Rohan Sovig <rsovig@mgp.ca>
Cc: Melnyk, Brian <brian.melnyk@peelregion.ca>; Eric Greck <egreck@greck.ca>; Frank Merulla <frankmerulla@aol.com>; Lucas Petricca <lucas.petricca@mississauga.ca>; Ardeleanu, Bogdan <bogdan.ardeleanu@peelregion.ca>; Lauren Pettapiece <lpettapiece@mgp.ca>; Lincoln Lo <LLo@mgp.ca>; Ayoola, Ayooluwa <ayooluwa.ayoola@peelregion.ca>
Subject: RE: OZ-22-006 M - Design Discussion - (Amended date and time.)

HI Khalid & Rohan,

From the servicing perspective, our OZ conditions have been met, and servicing can clear the OZ. I've cc'd the Regional Planner, Ayooluwa Ayoola, who can advise if any other teams have outstanding OZ conditions.

With the next formal submission I will provide updated milestones.

Regards,
Camila Marczuk

Specialist - Servicing Connections
Water & Wastewater Division
Public Works, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9

camila.marczuk@peelregion.ca
289-305-7962

Khalid Mahmood

From: Marczuk, Camila <camila.marczuk@peelregion.ca>
Sent: July 18, 2024 10:45 AM
To: Nick Dell
Cc: Khalid Mahmood; Frank Merulla; Eric Greck; Lucas Petricca
Subject: Sanitary Connection: OZ/OPZ 22-6 W8: 2935 & 2955 Mississauga Rd. - Follow Up

Hello Everyone,

This email is a follow up to our meeting on June 26th, 2024, in which we discussed the sanitary servicing options for the proposed development at 2955 & 2935 Mississauga Road being investigated. I've included a little summary of the servicing options we had discussed and the Region's comments following internal discussions:

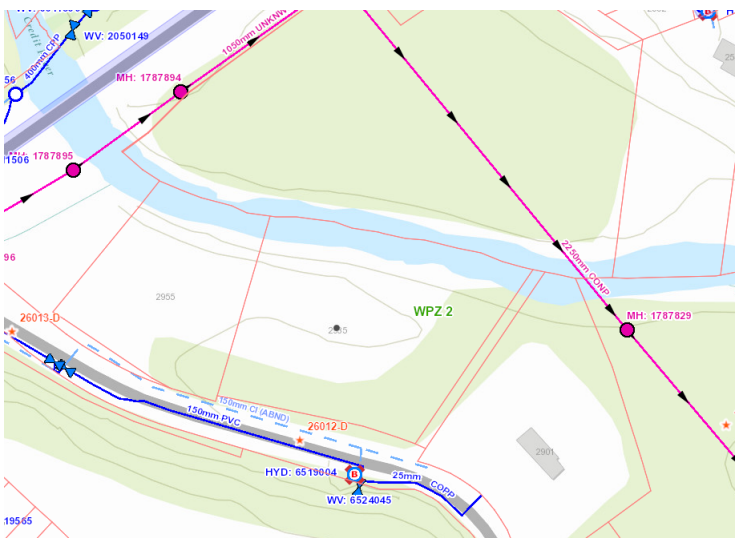
Option 1: It was suggested to investigate a connection of a private service into MH 1787829 through a private servicing easement for the sanitary connection and would also require obtaining a municipal access easement from the landowners to the satisfaction of the operations staff. All works associated with the servicing of this site will be at the applicant's expense. Upon further review, the Region determined this option not viable due to the below concerns:

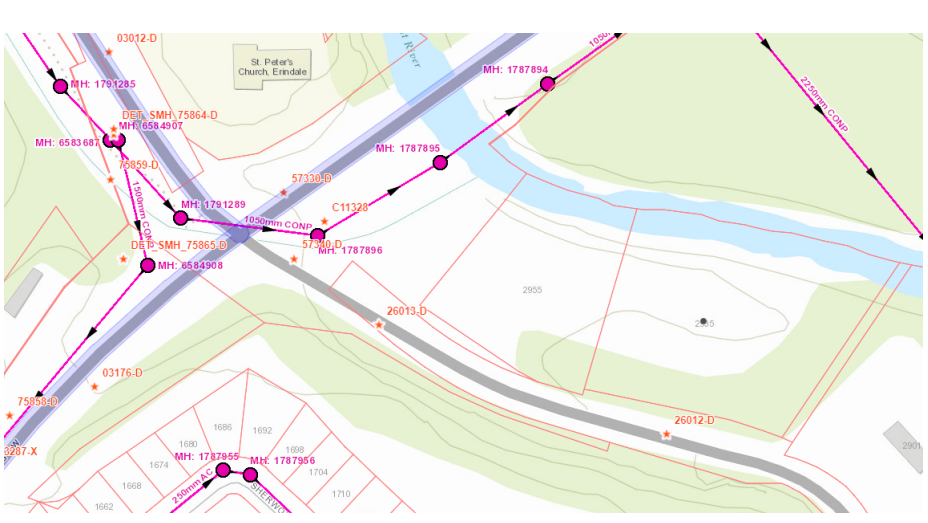
- Safety concerns the with serviceability and maintenance of the sanitary lateral for the operations staff.
    - Safety concerns of flushing this lateral connection. To clear a potential blockage, we would require access to the line at the discharge point. Working at the connection to a Trunk Sewer is a safety concern of very high risk.
    - Driveable access: we see access become difficult over years in location such as the proposed. "permission" and/or physical access are a concern.
- As this sanitary service would be crossing through existing floodplain area, there is a further concern of surcharging into the proposed development due to special weather events.
- This is a non-standard connection.

Option 2: Recent suggestion to construct a municipal gravity sewer within Mississauga Road , connecting into the MH 6584908 within Dundas Road, as low as possible. This option was not available when this file started in 2019 as this sewer was not completed, and at that time the servicing scenario proposed was to construct a forcemain all the way up Mississauga Road, which was not preferrable, therefore the Region is please to share that there is now a gravity solution. This option requires an engineering submission for review and approval to the Servicing Connections team. All works associated with the servicing of this site will be at the applicant's expense. The applicant will also be responsible for the payment of applicable fees, DC charges, consulting, contracting, legal costs and all other costs associated with the servicing of this site. The sewer will be required to be installed at the lowest elevation possible to ensure the municipal is accessible for others to connect.

- This option provides the development a standard connection, and therefore maintenance and accessibility are no longer a concern.
- This servicing option provides a more sustainable and reliable service to the development.

For all records, please contact PWServiceRequests@peelregion.ca. I've also included a couple of screenshots of the subject property and the infrastructure around.





Regards,
Camila Marczuk

Specialist - Servicing Connections
Planning & Development Services
Public Works, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, On L6T 4B9

camila.marczuk@peelregion.ca
905-791-7800, ext.8230

Our working hours may be different. Please do not feel obligated to reply outside of your working hours. Let's work together to help foster healthy work-life boundaries.

Khalid Mahmood

From: Sniatenchuk, Bernadette <bernadette.sniatenchuk@peelregion.ca>
Sent: November 27, 2023 8:13 AM
To: Khalid Mahmood
Cc: Nick Dell; Farouque, Althaf; Maria, Alexandra
Subject: RE: OZ-22-006M - FSR revision - 2935 and 2955 Mississauga

Follow Up Flag: Follow up
Flag Status: Flagged

Hi there Khalid, firstly I confirmed with Region Planning (Manager, Althaf Farouque, copied above) that this submission should go through the formal channels and be circulated to the City, who will then distribute it to the relevant agencies.

I took a look at the revised FSR dated Oct 23 2023 and accompanying servicing drawings you sent and there are some items that need to be redesigned/revised.

Non-standard Sanitary connection
For the sanitary sewer, I'm sorry I didn't get to speak with Wastewater Operations yet about the maintenance hole on the 2250mm trunk sewer. I've contacted them this morning regarding the accessibility of that MH and if there are any issues that we need to be aware of. Keep in mind that trunk connections are not generally permitted and this connection will require a lengthy investigation.

Before I can send it through a formal circulation to the wastewater division there are some issues that need to be addressed:

1. The connection appears to be shown on the drawing as a municipal sewer in a municipal easement. This is a private connection, therefore the service would go through a private servicing easement, which requires an application to the committee of adjustment. We won't accept a municipal sewer here since it's a sewer that's only benefitting this development. With private servicing you can look into reducing the size of the sewer and the easement. We don't have these types of standard for private side.
   The FSR and servicing drawing will need to be revised to reflect the new design. The easement of the trunk should be shown as well. I will have to verify if a MH will be required at the easement limit.
2. Have there been any discussions with the property owners that the easement would cross through?
3. There are lot of trees in the vicinity of the trunk maintenance hole and through the properties. We would need input from the City/conservation authority that there are no concerns should some of these trees be impacted. I'm assuming that trenchless installation would be required to save as many trees as possible (from what I've seen on other files).
4. Depending on what responses I receive back on the items above, I can then approach wastewater with a formal request for connection. It will require a formal review of the wastewater team and sign off from the Director of Engineering and/or Operations. Since we last spoke in 2022 Wastewater has raised concerns about non-standard connections so this is why there is a more detailed review required.

Water connections
For water servicing, the private side design needs to be revised so that no source of domestic water is coming from a dedicated fire line. This proposal shows the domestic services for the stacked Towns coming off of the condo building's fire line. If a second connection is required to fulfill this requirement, we will accept another connection to the watermain in Mississauga Road and I can verify through the additional modelling if the 150mm municipal watermain can provide enough domestic supply to the stacked Towns.

Please confirm with the City if the Towns require fire protection.

Modelling
Modelling for the additional units is still required. However the design needs to be revisited based on the above. When the design is closer to an acceptable proposal, I will send it for modelling.

In conclusion, please circulate the revised document to the City formally and look into the required changes noted above. We can meet if you want to and if you have any questions let us know. I will be reassigning this file to Alexandra Maria.

Thanks,
Bernadette Sniatenchuk
Manager – Servicing Connections
Planning & Development Services
Public Works, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, On L6T 4B9
Mobile: 647-285-5919

From: Khalid Mahmood <kmahmood@greck.ca>
Sent: November 1, 2023 11:41 AM
To: Sniatenchuk, Bernadette <bernadette.sniatenchuk@peelregion.ca>
Cc: Nick Dell <nick@harperdell.ca>
Subject: RE: OZ-22-006M - FSR revision - 2935 and 2955 Mississauga

Morning Bernadette:
I hope all is well. Please see the updated FSR in the following 2nd Submission package for 2935, 2955 Mississauga Road provided in the link below.

Khalid Mahmood

From: Sniatenchuk, Bernadette <bernadette.sniatenchuk@peelregion.ca>
Sent: June 7, 2022 8:03 PM
To: Khalid Mahmood
Subject: OZ-22-006M - FSR revision - 2935 and 2955 Mississauga

Hi Khalid, nice to speak with you today. I noticed a discrepancy with the number of units. The Project Statistics plan states that there are 196 units and 20 units in the stacked Towns, with a total of 216 units. The FSR indicates in table 2-1, appendix E and the design sheet that there are 187 units in the building. Can you please revise the calculations to reflect the correct unit count.

Since you'll be revising the flows, we also recommend, for the design flow calculations, please consider the following PPU's, which are found in the Region of Peel 2020 DC Background Study:

- ☒Large Apartments (larger than 750 square feet) – 3.0
- ☒Small Apartments (equal to or less than 750 square feet) – 1.6

If you use these PPU's you'll have a smaller population and less flow. Using the person/ha is in our design criteria but your proposal does not take up all the space on the property. Analyzing a flow closer to the actual flow would be beneficial for the design of the connections.

The DARC proposal was slightly different, this proposal has been revised to include stacked towns which calls for our standard 1-8-2, looping. Please also include this standard in your design moving forward.

I requested hydrant flow tests with my comments to Deven on the DARC, however I know there are no hydrants (off the 400mm) near by. When I send the report for modelling will ask which hydrants they would prefer to have the tests done.

I will also ask about drainage to the manhole on the 2250mm sanitary sewer located on private property to the back.

Once you update the flows as per the correct units, please send the revised FSR back to me and I'll send it for modelling.
Thanks!

Bernadette Sniatenchuk, B.Sc.
Project Manager – Servicing Connections

Planning & Development Services
Public Works, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, On L6T 4B9
Mobile: 647-285-5919

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

Elliot Pai

From: Sniatenchuk, Bernadette <bernadette.sniatenchuk@peelregion.ca>
Sent: December 23, 2020 3:40 PM
To: Deven Verma
Cc: Razao, Ricardo
Subject: DI-19-078M modelling results

Hi Deven, Here are the modelling results for the proposal associated with DI-19-078M:

Wastewater:
There is no existing municipal sanitary sewer on Mississauga Road. You inquired about a forcemain proposal however, so I'm just going to reiterate that we do not have any standards for forcemains within the road allowance and therefore we will not accept a forcemain. We will accept gravity only. The transition from forcemain to gravity shall occur on private side so that the sampling maintenance hole at the property does not experience the velocities from the forcemain. The property line sampling maintenance hole will accept flow by gravity. The Region only permits connections to sanitary trunk sewer maintenance holes where there is no other option available.

There are no future wastewater capital and masterplan projects planned in the vicinity of the proposed development. The calculated peak wet weather flow if 9.8L/s. The demand table submitted indicated that connection point is Existing MH 3T and it appears to be existing manhole on the 1050mm sanitary trunk along Mississauga Road, shown on as-constructed drawing C11328. The existing wastewater system has sufficient capacity to receive the proposed flows and we recommend connection to maintenance hole SA MH2T on the 1050mm Trunk Sewer along Mississauga Road instead of SAMH3T.

I found some emails in the system that you sent to Wastewater inquiring about the inverts for the manholes on the 1050mm trunk sewer around the time I had sent this site for modelling. I saw that my colleague, Bogdan, referred you to our Operations staff. What was the outcome of that? Please keep me in the loop regarding this. In future, if you have any questions related to the servicing of this site, please let me know.

Water:
As I mentioned previously, this type of development requires connection to a minimum size municipal watermain of 300mm and there is currently a 150mm watermain within Mississauga Road. This development would not be permitted to connect to the 150mm watermain on Mississauga Road. There are no future water capital and masterplan projects planned in the vicinity of the proposed development. The closest existing municipal watermain is the 400mm watermain on Dundas Street and modelling has confirmed that there is capacity in this watermain to service the proposed development. The 150mm watermain cannot be removed as it is servicing an existing resident. We recommend that you investigate connection to the 400mm watermain on Dundas. I suggest pulling the records for the intersection of Mississauga Road and Dundas and investigating the ownership/status of the lands between the subject site and the Roads. PUCC may be required.

When this proposal is submitted under a formal planning application, we will require a complete FSR (I sent the link earlier this year) which should include a servicing plan and a hydrant flow test. We will analyse the servicing proposal in further detail.

Thanks and I hope you have a happy holiday!
Bernadette Sniatenchuk, B.Sc.
Project Manager – Servicing Connections

Development Services, Public Works, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, On L6T 4B9
e-mail: bernadette.sniatenchuk@peelregion.ca
Phone: 905-791-7800, ext.8589
Mobile: 647-285-5919

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APPENDIX C

Watermain Calculations

FIRE FLOW CALCULATIONS - PROPOSED APARTMENTS

PROJECT: 2935, 2955 Mississauga Road
LOCATION: Mississauga
DATE: April 21, 2026

DESIGNED BY: Khalid Mahmood, P.Eng.
REVIEWED BY: Eric Greck, P.Eng.

Greck

$$F = 220C\sqrt{A}$$

NOTE Table based on procedures and figures from the Water Supply for Public Fire Protection - Fire Underwriters Survey of Canada, 2020.

Exposure distance factor max adjustment is 75%

Type of building construction is non combustible as confirmed by architect.

Floor Area for Ground Floor to 12th Floor (m2) 16369.2

Total Floor Area considered for fire flow (A) (m2) 16369.2
A = 100% of all Floor Areas (excluding below ground)

C = Coefficient related to type of construction 1 (Wood Frame Construction)

Manual Input

PROPOSED RESIDENTIAL UNIT

Step	Description	Term	Options		Multiplier Associated with Option	Value used	Unit	Total Fire Flow (L/min)
		Building Material						
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C) (Note: C value is based on ordinary types of construction as confirmed by the architect)	Wood Frame		1.5	1.0*	N/A	N/A
			Ordinary Construction		1			
			Non-Combustible Construction		0.8			
			Fire Resistive materials		0.6			
2	Number of Storeys	Total number of floors				12	N/A	N/A
3	Floor Area (A)	Total Floor Area (A) for all floors				16,369.2*	(m²)	N/A
		Average Floor Measurements	Square Feet (ft²)		0.093	1,364.1*		
			Square Metres (m²)		1			
			Hectares (ha)		10,000			
4	Fire Flow	Required fire flow without reductions or increases (rounded to the nearest 1000 L/min:					L/min	28,000
		Reductions / Increases From Factors Affecting Burning						
5	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge Factor	Non-Combustible		-0.25	-0.15	N/A	-4,200
			Limited Combustible		-0.15			
			Combustible		0.00			
			Free Burning		0.15			
			Rapid Burning		0.25			
6	Building Equipped with Sprinklers	Sprinkler Reduction Factor	Complete Automatic Sprinklers		-0.50	-0.50	N/A	-14,000
			Adequate Automatic Sprinklers		-0.30			
			None		0.00			
7	Separation Distance Between Buildings	Exposure Distance Factor *	North Separation	45m+	0.00	0.05	N/A	1,400
			South Separation	45m+	0.00			
			East Separation	30.1 to 45m	0.05			
			West Separation	45m+	0.00			
8	Required Fire Flow					**Total Required Fire Flow Rounded to the Nearest 1000 L/min:**		**11,000**
						Total Required Fire Flow in L/s:		183.33
						Duration of Fire Flow (hrs):		2.25
						Required Volume of Fire Flow (m³):		1,485

*Floor areas confirmed with the architect (Architecture Unfolded.). Coefficient for type of construciton (C) is for wood frame construction as confimred by the architect.

Separation Distance Factor as per Fire Underwriters Survey of Canada, 2020

Seperation	*Charge*	*Seperation*	*Charge*
0 to 3m	*25%*	*20.1 to 30m*	*10%*
3.1 to 10m	*20%*	*30.1 to 45m*	*5%*
10.1m to 20m	*15%*		

Acceptable Fire Flow ranges as per Fire Underwriters Survey of Canada, 2020

2,000 Lpm < F < 45,000 Lpm; therefore acceptable

Note: For types of construction that do not fall within the categories given, coefficients shall not be greater than 1.5 nor less than 0.6 and may be determined by interpolation between consecutive construction types as listed above. Construction types are defined in the Appendix.

NOTE: THIS IS ONLY PRELIMINARY AND SUBJECT TO CHANGE BASED ON ARCHITECTURAL AND MECHANICAL DESIGN. THIS IS ONLY FOR AN ESTIMATE AS WE DO NOT CLAIM TO BE FIRE PROTECTION EXPERTS.

FIRE FLOW CALCULATIONS - PROPOSED STACKED TOWNHOUSES

PROJECT: 2935, 2955 Mississauga Road
LOCATION: Mississauga
DATE: April 21, 2026

DESIGNED BY: Khalid Mahmood, P.Eng.
REVIEWED BY: Eric Greck, P.Eng.

$$F = 220C\sqrt{A}$$

NOTE Table based on procedures and figures from the Water Supply for Public Fire Protection - Fire Underwriters Survey of Canada, 2020.

Exposure distance factor max adjustment is 75%

Type of building construction is wood frame as confirmed by architect.

Floor Area for Ground Floor to 3rd Floor (m2) 1482.5

Total Floor Area considered for fire flow (A) (m2) 1482.5
A = 100% of all Floor Areas (excluding below ground)

C = Coefficient related to type of construction 1.5 (Wood Frame Construction) Manual Input

PROPOSED RESIDENTIAL UNIT

Step	Description	Term	Options		Multiplier Associated with Option	Value used	Unit	Total Fire Flow (L/min)
		Building Material						
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C) (Note: C value is based on the wood frame types of construction as confirmed by the architect)	Wood Frame		1.5	1.5*	N/A	N/A
			Ordinary Construction		1			
			Non-Combustible Construction		0.8			
			Fire Resistive materials		0.6			
2	Number of Storeys	Total number of floors				3	N/A	N/A
3	Floor Area (A)	Total Floor Area (A) for all floors				1,482.5*	(m²)	N/A
		Average Floor Measurements	Square Feet (ft²)		0.093	494.2*		
			Square Metres (m²)		1			
			Hectares (ha)		10,000			
4	Fire Flow	Required fire flow without reductions or increases (rounded to the nearest 1000 L/min:					L/min	13,000
		Reductions / Increases From Factors Affecting Burning						
5	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge Factor	Non-Combustible		-0.25	-0.15	N/A	-1,950
			Limited Combustible		-0.15			
			Combustible		0.00			
			Free Burning		0.15			
			Rapid Burning		0.25			
6	Building Equipped with Sprinklers	Sprinkler Reduction Factor	Complete Automatic Sprinklers		-0.50	-0.50	N/A	-6,500
			Adequate Automatic Sprinklers		-0.30			
			None		0.00			
7	Separation Distance Between Buildings	Exposure Distance Factor *	North Separation	45m+	0.00	0.05	N/A	650
			South Separation	45m+	0.00			
			East Separation	45m+	0.00			
			West Separation	30.1 to 45m	0.05			
8	Required Fire Flow					**Total Required Fire Flow Rounded to the Nearest 1000 L/min:**		**5,000**
						Total Required Fire Flow in L/s:		83.33
						Duration of Fire Flow (hrs):		1.75
						Required Volume of Fire Flow (m³):		525

*Floor areas confirmed with the architect (Architecture Unfolded.). Coefficient for type of construciton (C) is for wood frame construction as confimred by the architect.

Separation Distance Factor as per Fire Underwriters Survey of Canada, 2020

Seperation	*Charge*	*Seperation*	*Charge*
0 to 3m	*25%*	*20.1 to 30m*	*10%*
3.1 to 10m	*20%*	*30.1 to 45m*	*5%*
10.1m to 20m	*15%*		

Acceptable Fire Flow ranges as per Fire Underwriters Survey of Canada, 2020

2,000 Lpm < F < 45,000 Lpm; therefore acceptable

Note: For types of construction that do not fall within the categories given, coefficients shall not be greater than 1.5 nor less than 0.6 and may be determined by interpolation between consecutive construction types as listed above. Construction types are defined in the Appendix.

NOTE: THIS IS ONLY PRELIMINARY AND SUBJECT TO CHANGE BASED ON ARCHITECTURAL AND MECHANICAL DESIGN. THIS IS ONLY FOR AN ESTIMATE AS WE DO NOT CLAIM TO BE FIRE PROTECTION EXPERTS.

DOMESTIC WATER DEMAND CALCULATIONS (TOWNHOUSES)

PROJECT: 2935, 2955 Mississauga Road
LOCATION: Mississauga
DATE: April 21, 2026

DESIGNED BY: Khalid Mahmood, P.Eng.
REVIEWED BY: Eric Greck, P.Eng.

Greck

Manual Input
Automatic Output
Total Demand

Design Parameters

Residential		
Townhouse Units	15	(Architect)
Person per Unit (Townhouse)	3.3	(Region of Peel, Development Charges Background Study, December 2020, Chapter 3, Section 4)
Total Population	50	
Average Daily flow (L/cap/day):	280	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)
Maximum Day Factor:	2.00	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)
Peak Hour Factor:	3.00	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)

Total Water Demand - Proposed Building

Total Population	Average Daily Demand (ADD)		Max. Daily Demand (MDD)		Peak Hour Demand (PHD)		Total Domestic Water Demand	
#	(L/day)	(L/min)	(L/day)	(L/min)	(L/day)	(L/min)	(L/min)	(L/s)
50	**13,860.00**	**9.63**	**27,720.00**	**19.25**	**41,580.00**	**28.88**	**28.88**	**0.49**

TOTAL WATER DEMAND CALCULATIONS

PROJECT: 2935, 2955 Mississauga Road
LOCATION: Mississauga
DATE: April 21, 2026

DESIGNED BY: Khalid Mahmood, P.Eng.
REVIEWED BY: Eric Greck, P.Eng.

Greck

Manual Input
Automatic Output
Total Demand

Design Parameters

Residential		
Townhouse Units	15	(Architect)
Number of Condo Units	196	(Architect)
Person per Unit (Townhouse)	3.3	(Region of Peel, Development Charges Background Study, December 2020, Chapter 3, Section 4)
Person per Unit (Apartment)	3.0	(Region of Peel, Development Charges Background Study, December 2020, Chapter 3, Section 4)
Total Population	638	
Average Daily flow (L/cap/day):	280	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)
Maximum Day Factor:	2.00	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)
Peak Hour Factor:	3.00	(Region of Peel, Watermain Design Criteria Section 2.3 Table 1)
Fire Flow Demand - Proposed Apartment Building (L/min)	11,000	Calculated (Fire underwriters survey, 2020)
Fire Flow Demand - Proposed Stacked Townhouses) (L/min)	5,000	Calculated (Fire underwriters survey, 2020)
Fire Flow Demand - Considered for Development (L/min)	11000	Calculated (Fire underwriters survey, 2020)
Fire Flow Demand - Considered for Development (L/sec)	183.33	Calculated (Fire underwriters survey, 2020)

Notes: Fire Flow calculated based on Fire Underwriters Survey (2020), calculations attached.

Total Water Demand - Proposed Building

Total Population	Average Daily Demand (ADD)		Max. Daily Demand (MDD)		Peak Hour Demand (PHD)		Fire Flow Demand (FFD)		MDD +FFD	Total Water Demand*	
#	(L/day)	(L/min)	(L/day)	(L/min)	(L/day)	(L/min)	(L/Min)	(L/s)	(L/min)	(L/min)	(L/s)
638	**178,500.00**	**123.96**	**357,000.00**	**247.92**	**535,500.00**	**371.88**	**11,000.00**	**183.33**	**11,247.92**	**11,247.92**	**187.47**

* Total water demand is the higher of MDD+Fire flow or Peak Hour Demand

HYDRANT FLOW TEST REPORT

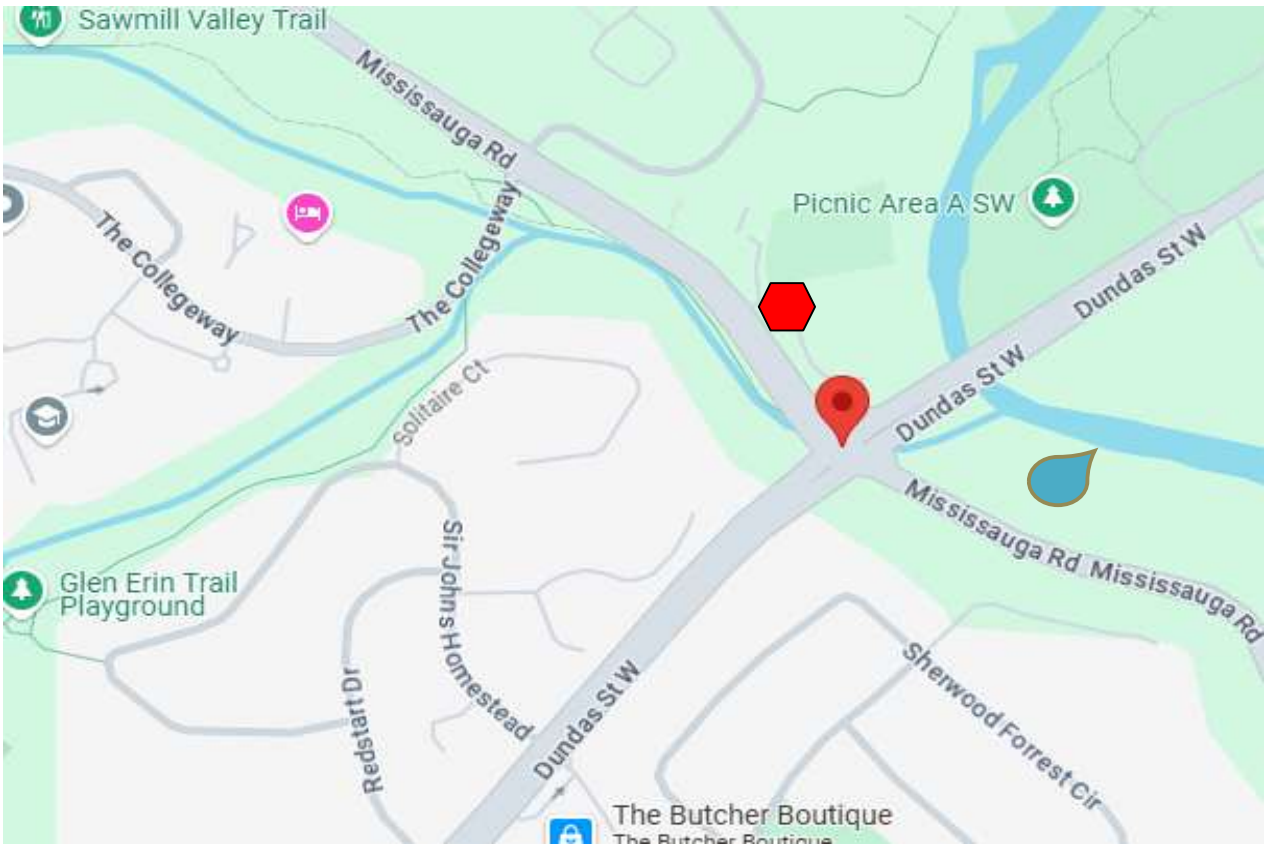
GENERAL INFORMATION:

PROJECT ID	**MR1**	TESTED BY:	AA
CLIENT NAME	**Khalid Mahmood**	DATE	**03/04/25**
BUILDING ADDRESS	**Mississauga Road and Dundas Street West** **Mississauga, Ontario**	TIME	**1:00:00 PM**

WATER MAIN INFORMATION:

MAIN SIZE / MATERIAL	**150PVC**
CONFIGURATION	**Looped**

HYDRANT LOCATION:



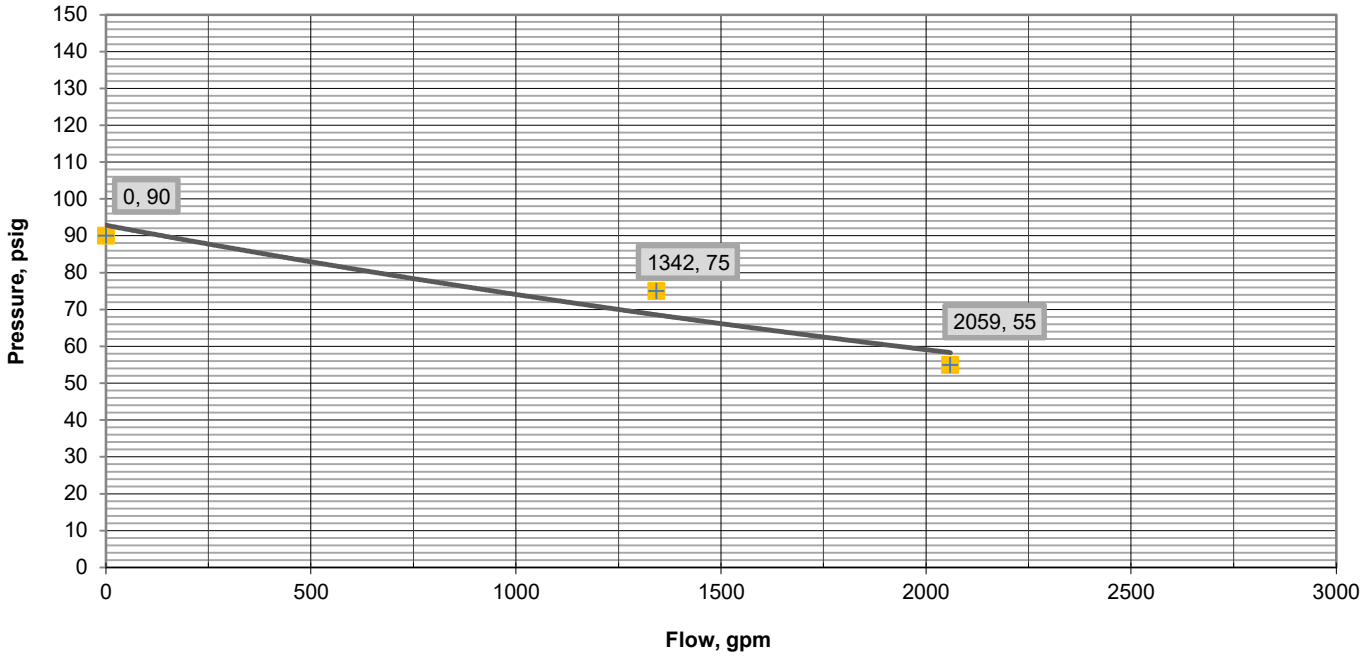
LEGEND: STATIC HYDRANT RESIDUAL HYDRANT

FINAL RESULTS:

Test #	Number of Outlets	Orifice Size (in)	Pitot Reading (psig)	EquivInt Flow (usgpm)	Total Flow (usgpm)	Projected flow at 20psi (usgpm)	Gauge Pressure (psig)	Discharge Coef'nt
Static	N/A	N/A	N/A	N/A	**0**	N/A	**90**	N/A
1	1	2.47	85	1342	**1342**	3084	**75**	0.8
2	2	2.47	50	1029	**2059**	2994	**55**	0.8

PROJECTED FLOW AT 20PSI (140kPa) :

SINGLE OUTLET	**3084 GPM (1 1/2 NOZZLE)**
DOUBLE OUTLET	**2994 GPM (2 1/2 NOZZLE)**



Note: Report is in accordance with applicable bylaw standards and NFPA 291 Recommended Practice for Water Flow Testing and Marking of Hydrants

HYDRANT FLOW TEST REPORT

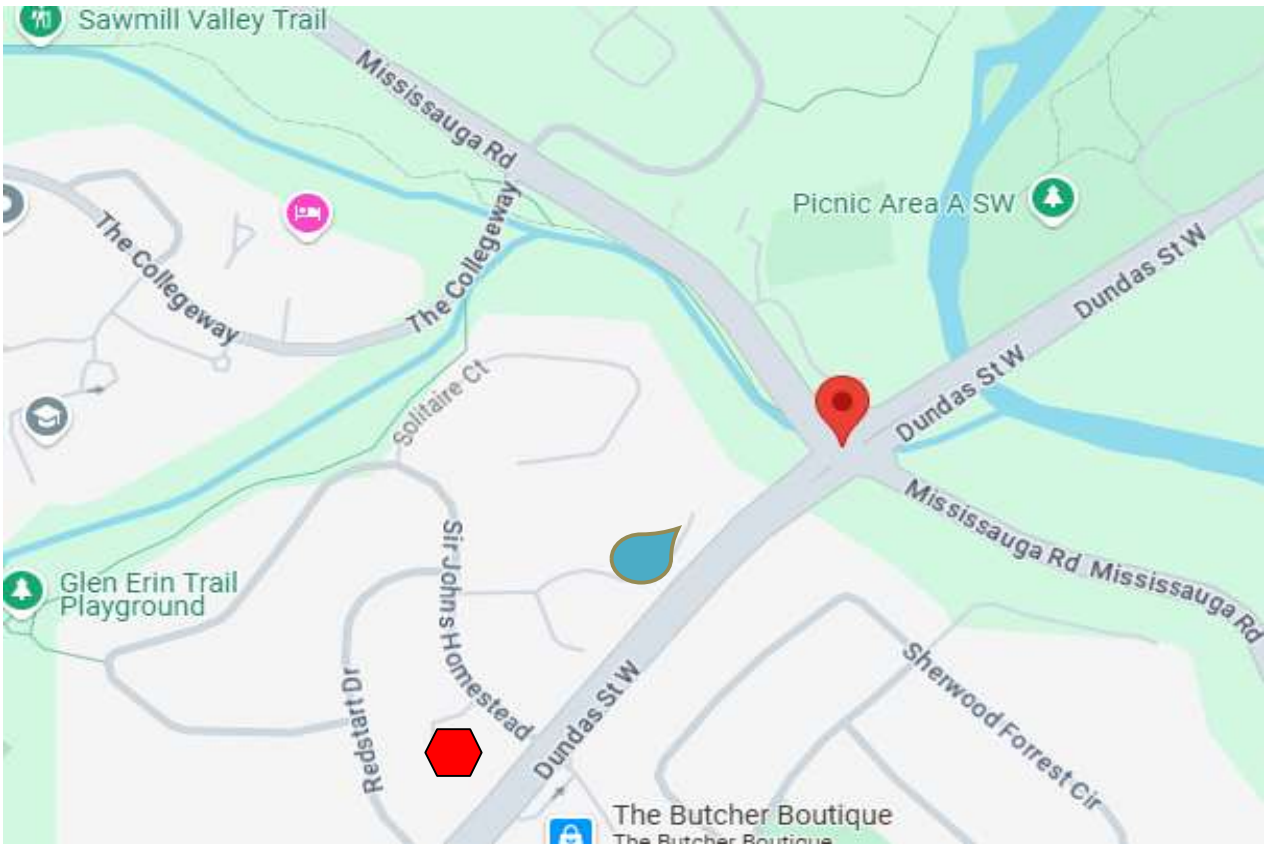
GENERAL INFORMATION:

PROJECT ID	**DSW2**	TESTED BY:	AA
CLIENT NAME	**Khalid Mahmood**	DATE	**03/04/25**
BUILDING ADDRESS	**Mississauga Road and Dundas Street West** **Mississauga, Ontario**	TIME	**1:00:00 PM**

WATER MAIN INFORMATION:

MAIN SIZE / MATERIAL	**400mm CI**
CONFIGURATION	**Looped**

HYDRANT LOCATION:



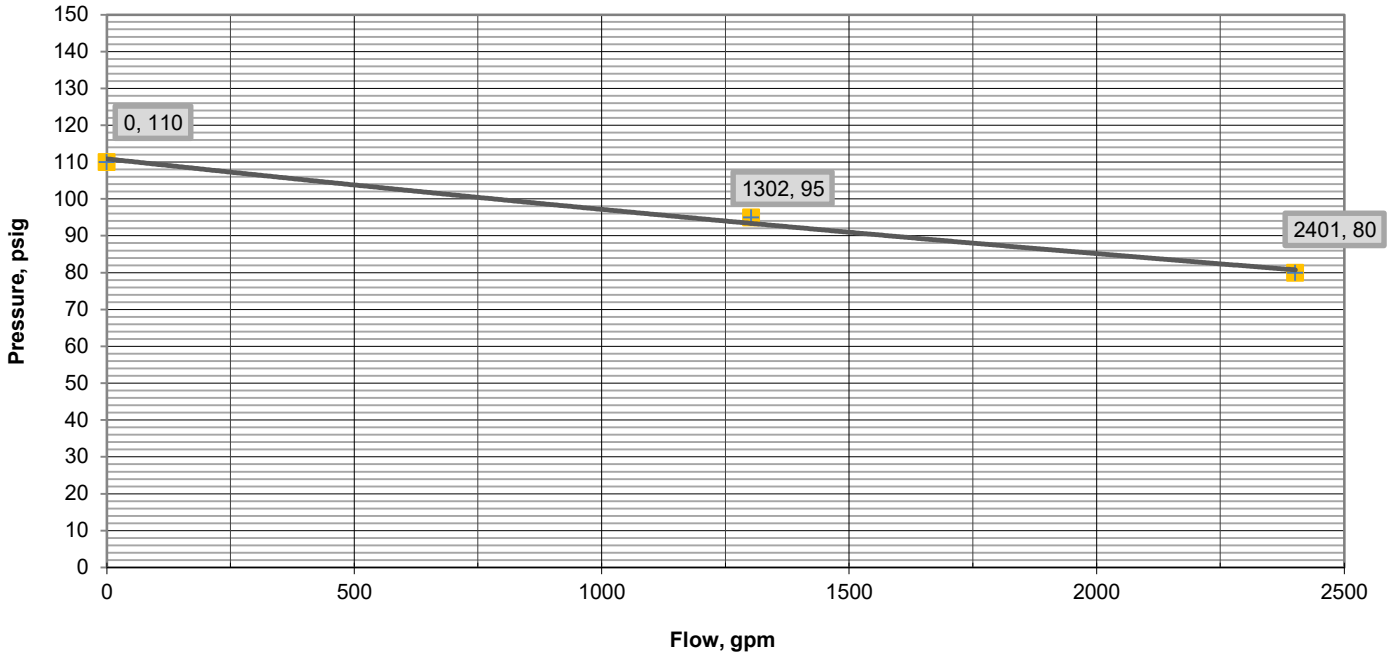
LEGEND: STATIC HYDRANT RESIDUAL HYDRANT

FINAL RESULTS:

Test #	Number of Outlets	Orifice Size (in)	Pitot Reading (psig)	Equivlnt Flow (usgpm)	Total Flow (usgpm)	Projected flow at 20psi (usgpm)	Gauge Pressure (psig)	Discharg e Coef'nt
Static	N/A	N/A	N/A	N/A	**0**	N/A	**110**	N/A
1	1	2.47	80	1302	**1302**	3427	**95**	0.8
2	2	2.47	68	1201	**2401**	4346	**80**	0.8

PROJECTED FLOW AT 20PSI (140kPa) :

SINGLE OUTLET	**3427 GPM (1 1/2 NOZZLE)**
DOUBLE OUTLET	**4346 GPM (2 1/2 NOZZLE)**



Note: Report is in accordance with applicable bylaw standards and NFPA 291 Recommended Practice for Water Flow Testing and Marking of Hydrants

From: Ayoola, Ayooluwa <ayooluwa.ayoola@peelregion.ca>
Sent: Friday, March 6, 2026 3:19 PM
To: Khalid Mahmood <kmahmood@greck.ca>; Eric Greck <egreck@greck.ca>; Frank Merulla <frankmerulla@aol.com>
Cc: Lucas Petricca <Lucas.Petricca@mississauga.ca>
Subject: [EXTERNAL] OZ-22-006M - 2935 & 2955 Mississauga Rd. - Water/Water Modelling Result

---

Hello Frank,

The Region originally provided 3rd submission comments through ePlans on February 4, 2026, indicating that engineering submissions would be required for the proposed connection to the 1500 mm diameter trunk sewer (see Comment #173).

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The proposed development consists of a **mixed-use residential complex**, including:
• **12-storey condominium building:**
196 units × 3.0 persons/unit = **588 people**
• **Stacked townhouses:**
15 units × 3.3 persons/unit = **50 people**

Total estimated population: 638 people

This site located within SGU 2105-1245 with 265 residential and 143 jobs growths forecasted in 2051 (SGU Scenario 2). The estimated population exceeds the forecasted population within the SGU.

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Sanitary demand calculations were completed as part of the FSR submission (refer to **Table 6-1 – Sanitary Design Parameters** and **Table 6-2 – Proposed Redevelopment Sanitary Demand Summary**).

Using an I/I rate of 0.20 L/s/ha and 302.8 L/cap/day for a 1.03 ha site, the estimated flows are:
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The existing 1500 mm trunk sewer is intended to function as a system redundancy. When the gate directing flow to the 1500 mm trunk at manhole SMH-6583687 is closed, the development's wastewater discharge will be unable to achieve the minimum self-cleaning velocity within the 1500 mm trunk sewer. Further, because the 1500 mm trunk sewer connects at the invert of the 3000 mm trunk sewer, there is an increased potential for backup from the 3000 mm system into the 1500 mm trunk. For these reasons, a local connection to the existing 1500 mm trunk sewer on Mississauga Road, as proposed in the submitted servicing plan (manhole 6584908), is not recommended.

Recommendations – Wastewater
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The Region's preference is to maintain a gravity connection to the Regional wastewater system. Accordingly, the Consultant should evaluate the feasibility of a gravity connection to existing manhole SA MH2T (SMH1787895).
A revised FSR and servicing plan reflecting the updated servicing strategy will be required for further review.

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The domestic water demand is estimated based on average demand of 280 L/cap/day, the max. day peaking factor of 2.0 and peak hour factor of 3.0 for residential population. The Water Demand (Domestic) and fire flows are as follows (refer- Table 5-1 Projected domestic water demand and Appendix E in FSR):

	Water Demand
Average Day Demand (L/s)	2.07
Max Day Demand (L/s)	4.14
Peak Hour Demand (L/s)	6.20
Fire Flow Demand (L/s)	183.3
MDD + Fire Flow (L/s)	187.4

Fire demand is 183.3 L/s which is calculated using the Water Supply for Public Fire Protection (2020) prepared by Fire Underwriters survey (FUS) (refer - Detailed fire flow calculations in Appendix C, and the results are summarized below in Table 5-2).

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Review Outcome: No objections with conditions

Conclusions - Water

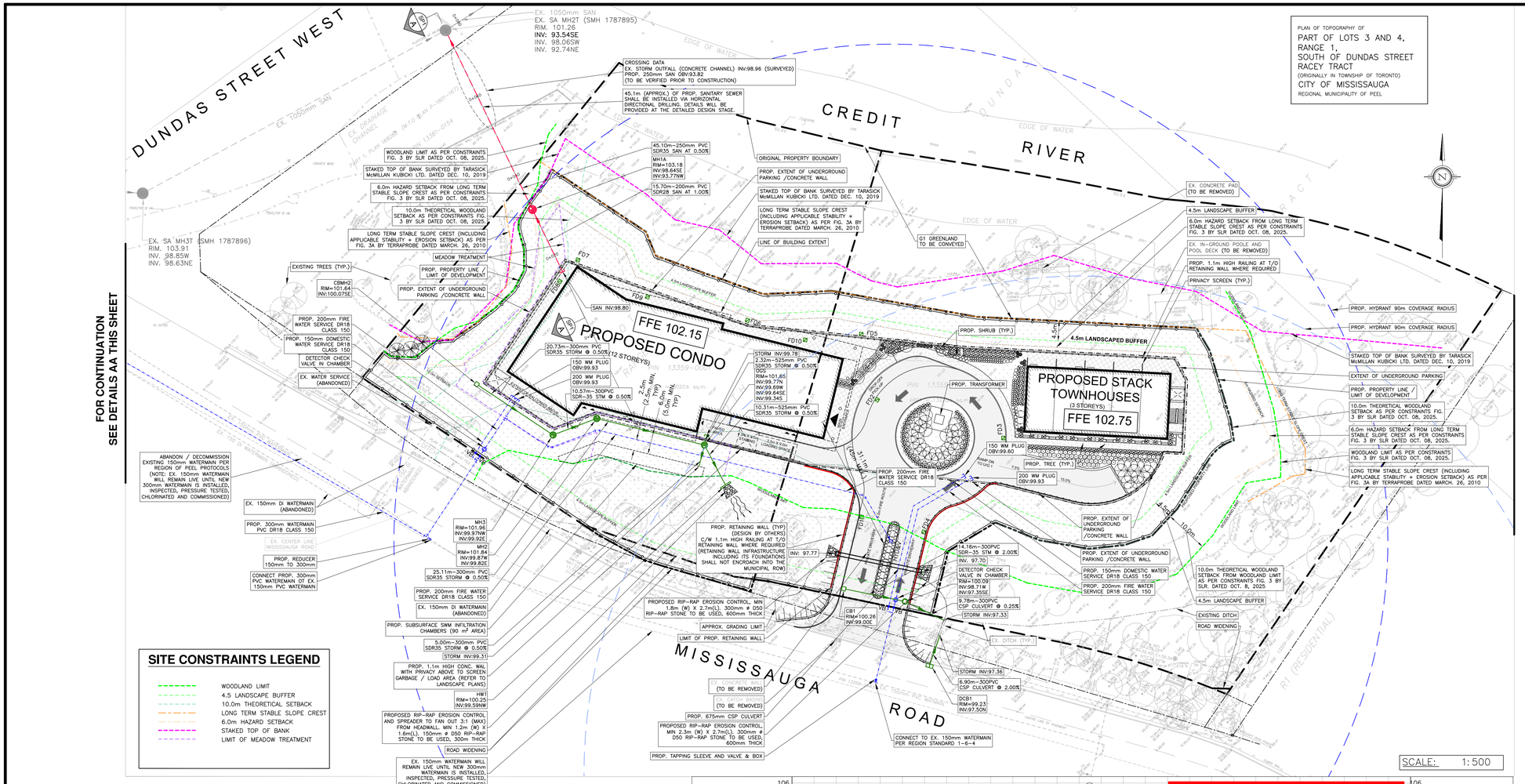
The Region has no objections to the proposed water demand (provided below) and the connection to the existing 300 mm watermain (Pressure Zone 2) on Mississauga Road at this time. However, the proposed upgrade of the existing 150 mm watermain to a 300 mm diameter watermain on Mississauga Road must be completed prior to water servicing. This upgrade is the responsibility of the developer.

- Approximate total population (people + jobs): 638 people
- Maximum Day Demand (MDD): 4.14 L/s
- Required fire flow: 183.3 L/s
- Water model results indicate sufficient capacity to service the proposed development

Please note that should the proposed population or water demand be revised the Region may have additional comments/requirements prior to approval of the OPA/OZ application.

Thank you,
Ayo

Ayooluwa Ayoola
Planner | Development Services | Public Works
10 Peel Centre Drive, Suite B, Brampton, Ontario, L6T 4B9
Tel 905-791-7800 x 8787 | Email *ayooluwa.ayoola@peelregion.ca*



FOR CONTINUATION
SEE DETAILS AA THIS SHEET

SITE CONSTRAINTS LEGEND

- WOODLAND LIMIT
- 4.5 LANDSCAPE BUFFER
- 10.0m THEORETICAL SETBACK
- LONG TERM STABLE SLOPE CREST
- 6.0m HAZARD SETBACK
- STAKED TOP OF BANK
- LIMIT OF MEADOW TREATMENT

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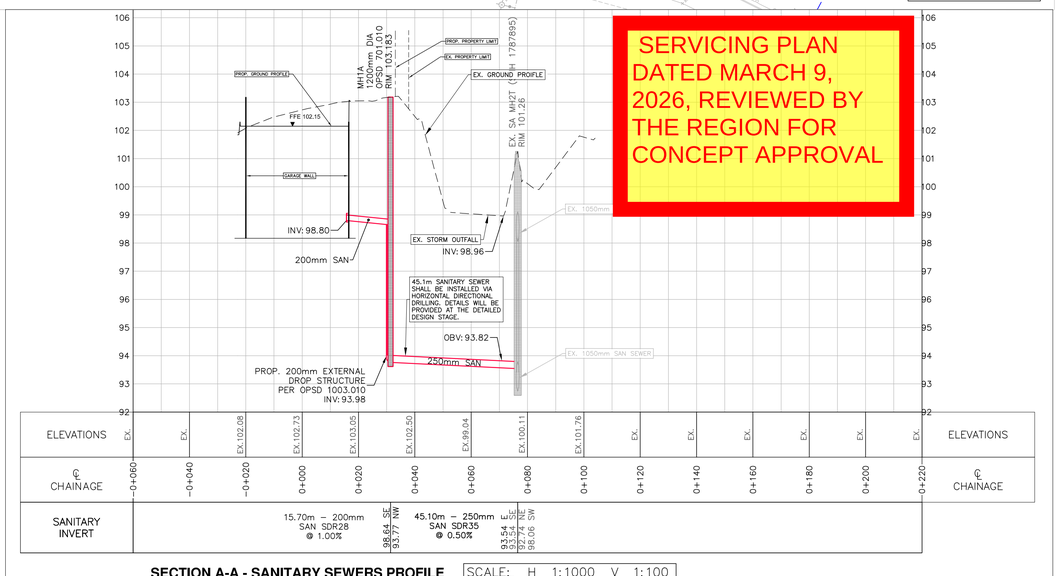
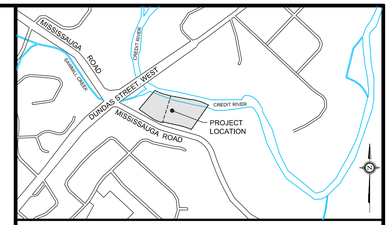
NOTE:

ALL CONSTRAINTS ARE DELINEATED ON THIS DRAWING AS REQUIRED BY CVC. DUE TO NUMBER OF CONSTRAINTS, THIS DRAWING SHALL BE PRINTED IN COLOR.

NOTE:

ALL PROPOSED FLOOR DRAINS (FD) TO BE CONNECTED TO INTERNAL PLUMBING SYSTEM.





KEY PLAN
N.T.S.

LEGEND

EXISTING	PROPOSED	
MH1	MH1	STORM MANHOLE
MH1A	MH1A	SANITARY MANHOLE
	FD	FLOOR DRAIN TO INTERNAL OGS
CB	CB	SINGLE CATCHBASIN
DCB	DCB	DOUBLE CATCHBASIN
HYD&V	HYD&V	FIRE HYDRANT
VB	VB	VALVE & BOX
		SLOPE LINE (3:1 MAX)
		ORIGINAL PROPERTY BOUNDARY
		PROPOSED PROPERTY LIMIT
		SWALE
		RIGHT OF WAY
		LOT LINE
		CHAIN LINK FENCE
		CURB/SIDEWALK
		CONCRETE RETAINING WALL
		PARKING GARAGE / CONCRETE WALL
		STORM SEWER
		SANITARY SEWER
		WATERMAIN
		PROP. GRASSED SURFACE
		PROP. PAVERS SURFACE
		PROP. ASPHALT SURFACE
		PROP. CONCRETE SURFACE

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
3. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF MISSISSAUGA STANDARD SPECIFICATIONS AND DRAWINGS UNLESS OTHERWISE NOTED HEREIN.
4. ORDER OF PRECEDENCE OF STANDARDS DRAWINGS IS FIRSTLY CITY OF MISSISSAUGA, AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
5. THE CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G AND OVERHEAD UTILITIES. CONTRACTOR IS REQUIRED TO OBTAIN ALL LOCATIONS & NOTIFY THE VARIOUS UTILITY COMPANIES 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CITY OF MISSISSAUGA AND CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATIONS OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

BENCHMARK

BENCHMARK: CITY OF MISSISSAUGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019
DESCRIPTION: ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTER#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD, 198m +/– NORTH OF DUNDAS ST.
COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569–8849

NO.	REVISION	DATE	BY	APPROVED
01	ISSUED FOR FIRST SUBMISSION	2021/04/26	K.M.	
02	ISSUED FOR SECOND SUBMISSION	2023/10/23	K.M.	
03	ISSUED FOR THIRD SUBMISSION	2025/10/23	K.M.	
04	RE–ISSUED FOR THIRD SUBMISSION	2025/12/02	K.M.	
05	RE–ISSUED FOR THIRD SUBMISSION	2026/02/13	K.M.	
06	ISSUED FOR REVIEW	2026/03/09	K.M.	

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

Greck
5770 Highway 7
Woodbridge, Ontario
L4L 1T8

DRAFT

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

SERVICING PLAN

DESIGNED BY: E.P./K.M.	SCALES:	PROJECT No.	20-697
CHECKED BY: E.G.	HORIZONTAL: AS NOTED	DRAWING No.	SP1
DRAWN BY: K.M.	VERTICAL: AS NOTED	SHEET No.	02
DATE: APR 26, 2021	SHEET SIZE: 24"x36"		

D:\CloudStation\Projects\2020\20-697 – 2935, 2955 Mississauga Road\05_Drawings\CAD\SERVICING\20-697 SERVICING PLAN.dwg
Date Plotted: 10/23/2023 10:09:23 AM

APPENDIX D

Sanitary Calculations

Region of Peel
SANITARY SEWER DESIGN SHEET

Project / Subdivision : 2935, 2955 Mississauga Road
Prepared by: Khalid Mahmood, P. Eng
Last Revised: April 22, 2026

Consulting Engineer : Greck and Associates Limited
Checked by: Eric Greck, P. Eng

Project No.: 20-697

Design Parameters

			Residential Sanitary Demand =	302.8 L/cap/day (Region STD DWG 2-9-2)
Residential Density (Townhouse) =	3.3	person/unit	Region DC Study Dec 2020, Ch 3, Sect 4	0.0035 L/cap/s
Residential Density (Apartments) =	3.0	person/unit	Region DC Study Dec 2020, Ch 3, Sect 4	
Manning 'n' =	0.013			
Extran. Flow (general allowance)	0.20	l/s/ha	Region Sect 2.3	
Extran. Flow (manhole)	0.28	l/s/mh	Region Sect 2.3	
Uncertaintity Factor=	1			

Design Equations

Q(p) = peak population flow (L/s)
Q(i) = i x A = peak extraneous flow (L/s)
Q(c) = c x A / 86.4 = peak commercial flow (L/s)
Q(li)= li x A / 86.4 =peak light industrial flow (L/s)
Q(d) = Q(p) + Q(I)+Q(m) = peak design flow (L/s)

P = population
M = peaking factor (Harmon) M (Min) = 2
P = p x # units / 1000
$M = 1 + 14 / (4 + P^{1/2})$
Manning's Equation
$Qcap = 1/n*A*R^{0.67}S^{0.5}$
Q = (P x q x M) / 86.4

Notes/Comments: Minimum Allowable Actual Velocity 0.6 m/s, Max 3 m/s.

References: Region of Peel Sanitary Sewer Design Criteria (Region), March 2017 REV (0.9 (CS)

Location			Individual Values				Cumulative Values					Cumulative Flow Data			Sewer Data (TBD)							
Area ID	From	To	Residential Stacked Townhouses Area	Residential Apartment Building Area	Residential Units (Apartments)	Residential Population	Residential Townhouse Area (Ha)	Residential Apartment Area (Ha)	Residential Units (Apartments)	Total Population	Residential P.F.	Population Peak Flow (L/s)	Peak Extran. Flow (General Allowance) (L/s)	Total Design Flow (L/s)	Length	Pipe Size	Type of Pipe	Grade	Full Flow Capacity (Qcap)	Full Flow Velocity	Actual Velocity	%Full
	MH #	MH #	(ha)	(ha)	#	cap.		A(a)	#	P	M(r)	Q(P)	Q(I)	Q(d)	(m)	(mm)		(%)	(L/s)	(m/s)	(m/s)	%
PRIVATE : Stacked Townhomes	BLDG	SAN PLUG	0.52		15	50	0.52			50	4.31	0.8	0.10	0.9								
PRIVATE : CONDOMINIUM BUILDING "A"	BLDG	SAN PLUG		0.51	196	588	0.55	0.51	196	638	3.92	8.8	0.10	8.9								
PRIVATE	SAN PLUG	MH1A					0.55	0.51	196	638	3.92	8.8	0.21	9.0	15.70	200	PVC	2.00	46.38	1.48	1.14	19.3
REGION	MH1A	EX SA MH2T (SMH 1787895)					0.55	0.51	196	638	3.92	8.8	0.21	9.0	45.10	250	PVC	3.00	103.00	2.10	1.28	8.7

NOTE: The sanitary flows have been prepared based on the Region's modelling results by 'Program Planning'. Refer to the modelling resuslts dated March 6, 2026 and Region's correspondence appended to the Functional Servicing Report.

From: Ayoola, Ayooluwa <ayooluwa.ayoola@peelregion.ca>
Sent: Friday, March 6, 2026 3:19 PM
To: Khalid Mahmood <kmahmood@greck.ca>; Eric Greck <egreck@greck.ca>; Frank Merulla <frankmerulla@aol.com>
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Planner | Development Services | Public Works
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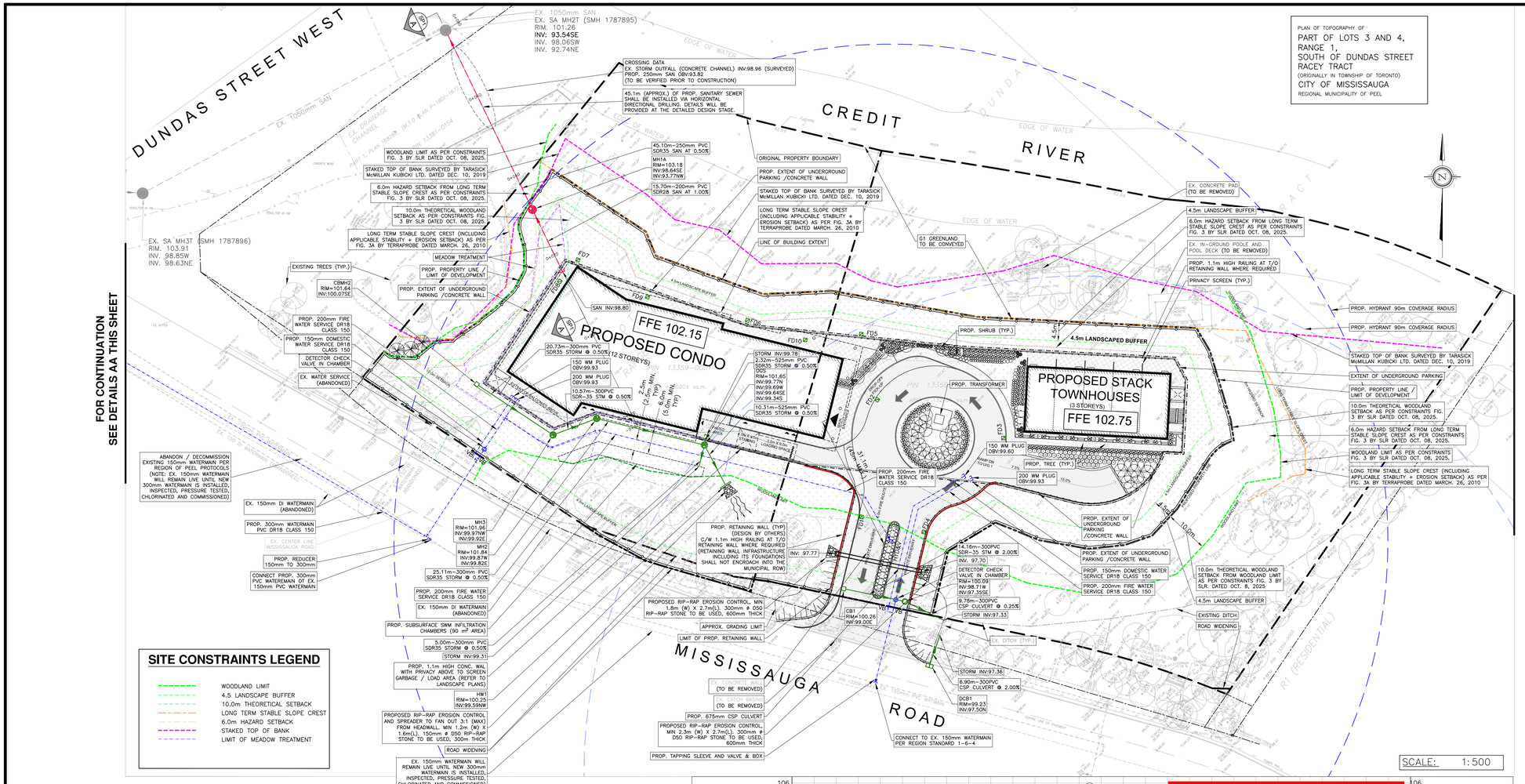
Tel 905-791-7800 x 8787 | Email *ayooluwa.ayoola@peelregion.ca*



FOR CONTINUATION
SEE DETAILS AA THIS SHEET

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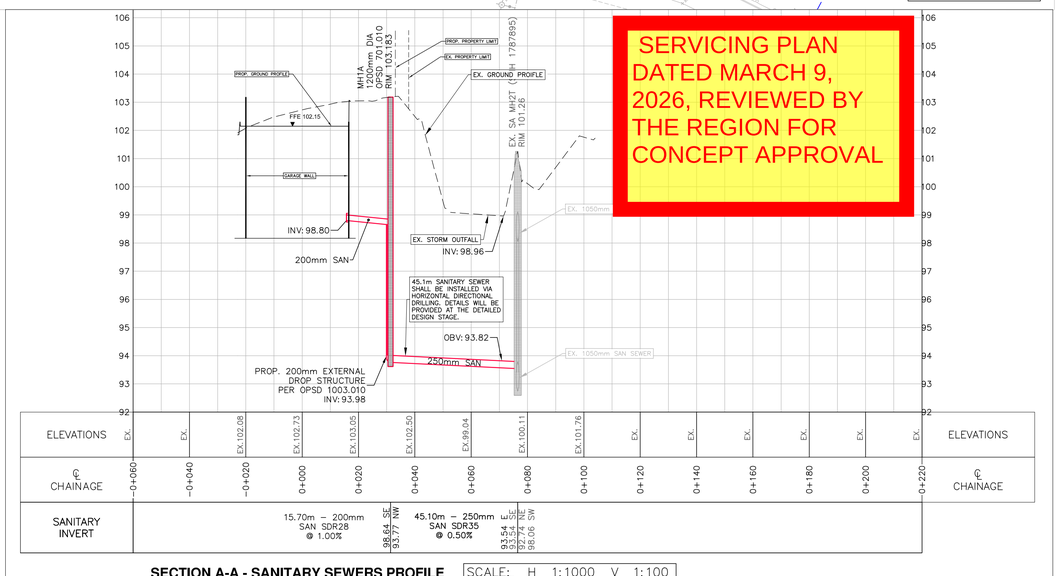

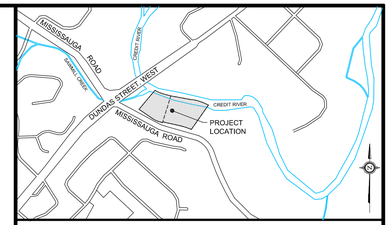

KEY PLAN
N.T.S.

LEGEND

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DCB	DCB	DOUBLE CATCHBASIN
HYD&V	HYD&V	FIRE HYDRANT
VB	VB	VALVE & BOX
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		PROPOSED PROPERTY LIMIT
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		RIGHT OF WAY
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		WATERMAIN
		PROP. GRASSED SURFACE
		PROP. PAVERS SURFACE
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NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
3. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF MISSISSAUGA STANDARD SPECIFICATIONS AND DRAWINGS UNLESS OTHERWISE NOTED HEREIN.
4. ORDER OF PRECEDENCE OF STANDARDS DRAWINGS IS FIRSTLY CITY OF MISSISSAUGA, AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
5. THE CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G AND OVERHEAD UTILITIES. CONTRACTOR IS REQUIRED TO OBTAIN ALL LOCATIONS & NOTIFY THE VARIOUS UTILITY COMPANIES 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CITY OF MISSISSAUGA AND CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATIONS OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

BENCHMARK

BENCHMARK: CITY OF MISSISSAUGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019
DESCRIPTION: ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTER#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD, 198m +/– NORTH OF DUNDAS ST.
COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569–8849

NO.	REVISION	DATE	BY	APPROVED
01	ISSUED FOR FIRST SUBMISSION	2021/04/26	K.M.	
02	ISSUED FOR SECOND SUBMISSION	2023/10/23	K.M.	
03	ISSUED FOR THIRD SUBMISSION	2025/10/23	K.M.	
04	RE–ISSUED FOR THIRD SUBMISSION	2025/12/02	K.M.	
05	RE–ISSUED FOR THIRD SUBMISSION	2026/02/13	K.M.	
06	ISSUED FOR REVIEW	2026/03/09	K.M.	

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

Greck
5770 Highway 7
Woodbridge, Ontario
L4L 1T8

DRAFT

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

SERVICING PLAN

DESIGNED BY: E.P./K.M.	SCALES:	PROJECT No.	20-697
CHECKED BY: E.G.	HORIZONTAL: AS NOTED	DRAWING No.	SP1
DRAWN BY: K.M.	VERTICAL: AS NOTED	SHEET No.	02
DATE: APR 26, 2021	SHEET SIZE: 24"x36"		

D:\CloudStation\Projects\2020\20-697 – 2935, 2955 Mississauga Road\05_Drawings\CAD\SERVICING\20-697 SERVICING PLAN.dwg
Date Plotted: 10/23/2023 10:09:23 AM

APPENDIX E

Stormwater Management Calculations

CITY OF MISSISSAUGA
STORM SEWER DESIGN SHEET

Project / Subdivision : 2935 & 2955 Mississauga Road, Mississauga

Consulting Engineer : Greck and Associates Limited

Project No.: 20-704

Prepared by: Elliot Pai

Checked by: Khalid Mahmood, P.Eng

Last Revised: April 22, 2026

Design Parameters (5 Year Storm)

A = drainage area (ha)	T_{init}(hr)= 0.167
C = runoff coefficient	A= 820
T_c = time of concentration	B= 4.600
	C= 0.780

Design Parameters (100 Year Storm)

A = drainage area (ha)	T_{init}(hr)= 0.167
C = runoff coefficient	A= 1450
T_c = time of concentration	B= 4.900
	C= 0.780

Manning's (n): 0.013

System to be Designed for: 100 Year Storm

Design Equations

$$I = \frac{A}{(t + B)^C}$$

$$Q = 2.78 \times A \times C \times I$$

Location				Drainage Area Characteristics						Rainfall / Runoff			Sewer Data							
Street	Area ID	From	To	Area	Area	Cum. Area	Runoff Coeff. R	AR in Section	Cum. AR	Time of Concentratio	Rainfall Intensity	Runoff Q	Pipe Diameter	Pipe Length	Grade	Total Flow (Q Max)	% FULL	Full Flow Velocity	V (Actual)	Sect. Time	Accum. Time
		MH #	MH #	(m2)	(ha)	(ha)				(min)	(mm/hr)	m3/sec	(mm)	(m)	(%)	(m3/s)	%	(m/s)	(m/s)	(Min)	(Min)
	A1, A2, D1	Building	OGS	6,361	0.64	0.64	0.68	0.43	0.43	15.00	140.69	0.211	525	2.3	0.50	0.30	69.5%	1.40	1.52	0.03	15.03
	A3	CBMH2	MH3	450	0.05	0.05	0.25	0.01	0.01	15.00	175.39	0.007	300	20.7	0.50	0.07	10.0%	0.97	0.62	0.56	15.56
		MH3	MH2		0.00	0.05	0.00	0.00	0.01	15.56	170.45	0.007	300	10.6	0.50	0.07	9.7%	0.97	0.61	0.29	15.85
		MH2	OGS		0.00	0.05	0.00	0.00	0.01	15.85	168.03	0.007	300	25.1	0.50	0.07	9.6%	0.97	0.61	0.69	16.54
		OGS	HW1		0.00	0.64	0.00	0.00	0.44	16.54	132.76	0.205	525	10.3	0.50	0.30	67.3%	1.40	1.51	0.11	16.65
	D2	CB1	CBMH1	348	0.03	0.03	0.83	0.03	0.03	15.00	140.69	0.014	300	14.2	2.00	0.14	10.3%	1.93	1.24	0.19	15.19
		CBMH1	EXISTING DITCH		0.00	0.03	0.00	0.00	0.03	15.19	139.65	0.011	300	9.8	0.50	0.07	16.2%	0.98	0.72	0.23	15.42

Site Characteristics
Site: 2935, 2955 Mississauga Road
April 22, 2026

Pre-Development

Land-Use	Impervious Ratio	Area A1 (m^2)	Area B1 (m^2)	Area C2 (m^2)	Area D1 (m^2)	Area E1 (m^2)	Total (m^2)
Roof	1.00	0	0	0	0	0	0
Asphalt Driveway	1.00	0	0	0	0	0	0
Hardscape	1.00	0	0	0	0	0	0
Grassed area	0.00	582	485	2170	7978	233	11448
Total		582	485	2170	7978	233	11448
	% Impervious =	0%	0%	0%	0%	0%	0%
	Runoff Coefficient* =	0.25	0.25	0.25	0.25	0.25	0.25

Post-Development

Land-Use	Impervious Ratio	Area A1 (m^2)	Area A2 (m^2)	Area A3 (m^2)	Area B1 (m^2)	Area B2 (m^2)	Area C2 (m^2)	Area D1 (m^2)	Area D2 (m^2)	Area E1 (m^2)	Total (m^2)
Roof	1.00	0	0	0	0	0	0	2144	0	0	2144
Asphalt Driveway	1.00	0	0	0	0	0	0	765	309	0	1074
Hardscape	1.00	0	0	0	0	0	0	1328	0	0	1328
Grassed area	0.00	582	807	458	485	1446	2170	734	38	182	6902
Total		582	807	458	485	1446	2170	4972	347	182	11448
	% Impervious =	0%	0%	0%	0%	0%	0%	85%	89%	0%	40%
	Runoff Coefficient* =	0.25	0.25	0.25	0.25	0.25	0.25	0.80	0.83	0.25	0.51

Drainage Area to Proposed Driveway Culvert (External Drainage Area C1 + Area C2 + Area D1 + Area D2)

Land-Use	Impervious Ratio	Area C1 (m^2)	Area C2 (m^2)	Area D1 (m^2)	Area D2 (m^2)	Total (m^2)
Roof	1.00	0	0	2144	0	2144
Asphalt Driveway	1.00	0	0	765	309	1074
Hardscape	1.00	6215	0	1328	0	7543
Grassed area	0.00	13695	2170	734	38	16637
Total		19910	2170	4972	347	27399
	% Impervious =	31%	0%	85%	89%	39%
	Runoff Coefficient* =	0.45	0.25	0.80	0.83	0.51

* Total Imperviouness (TIMP) Conversion Equation: $TIMP = \frac{C - 0.25}{0.65}$ linearly Interpolated based on a 0.25 runoff for pervious areas and 0.9 runoff for impervious areas

Peak Runoff Assessment
Site: 2935, 2955 Mississauga Road
April 22, 2026

Time of Concentration Calculations

Time of Concentration

Airport

If Runoff Coefficient < 0.4

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

where, L = Flow length (m)
Sw = slope (%)
C = Runoff Coefficient

Bransby

If Runoff Coefficient > 0.4

$$T_c = \frac{0.057\,L}{S_w^{0.2}\,A^{0.1}}$$

where, L = Flow length (m)
Sw = slope (%)
A = Area (ha)

Existing

Area	Runoff Coefficient	Method	Length (m)	Area (ha)	S (%)	T (min)
Area A1 + B1 + D1	0.25	Airport	132.6	0.904	4.70	19.15
Area C1 + C2	0.43	Bransby	300.4	2.208	5.50	11.25
Area E1	0.25	Airport	20.2	0.023	1.60	10.66

Proposed

Area	Runoff Coefficient	Method	Length (m)	Area (ha)	S (%)	T (min)
Area A1 + A2	0.25	Airport	40.7	0.139	1.20	16.65
Area A3	0.25	Airport	18.4	0.046	5.60	6.73
Area B1 + B2	0.25	Airport	69.2	0.193	4.20	14.36
Area C1 + C2	0.43	Bransby	341.2	2.208	5.10	12.97
Area D1 + D2	0.81	Bransby	-	0.532	-	15.00
Area E1	0.25	Airport	24.3	0.018	1.60	11.70

* Majority of Area D1 is roof or driveway area, which is serviced by floor drains. Therefore, the post-development time of concentration was assumed to be the minimum inlet time of 15 minutes as per City of Mississauga Design Criteria

Peak Runoff Assessment

2 year Rainfall Intensity, I = $610 (T+4.6)^{0.78}$

100 year Rainfall Intensity, I = $1450 (T+4.9)^{0.78}$

T = Time of Concentration

Peak Runoff, Q = 2.78 ACI / 1000

C = Runoff Coefficient

A = Area (ha)

I = Rainfall Intensity (mm/hr)

a correctional factor of 1.25 as been applied to the 100 year peak runoff calculation

Existing

Drainage Area	Area (ha)	Intensity (mm/hr)		Runoff Coefficient		Peak Runoff (L/s)	
		2 Year	100 Year	2 Year	100 Year	2 Year	100 Year
Area A1 + B1 + D1	0.904	52	121	0.25	0.25	32.4	95.3
Area C1 + C2	2.208	71	166	0.43	0.43	187.7	549.7
Area E1	0.023	69	162	0.25	0.25	1.1	3.3
					Total	221.2	648.3

Proposed

Drainage Area	Area (ha)	Intensity (mm/hr)		Runoff Coefficient		Peak Runoff (L/s)	
		2 Year	100 Year	2 Year	100 Year	2 Year	100 Year
Area A1 + A2	0.139	56	132	0.25	0.25	5.4	15.9
Area A3	0.046	92	214	0.25	0.25	2.9	8.5
Area B1 + B2	0.193	61	144	0.25	0.25	8.2	24.2
Area D1 + D2	0.532	60	141	0.81	0.81	71.3	209.3
Area C1 + C2	2.208	65	153	0.43	0.43	173.2	507.9
Area E1	0.018	69	162	0.25	0.25	0.9	2.6
					Total	262.0	768.5

Capacity calculations for storm sewer directing runoff to the underground storage chambers

The stormsewers directing runoff to the underground storage chambers are to be sized for the water quality storm event, the 25mm storm event

MOE SWM Planning & Design Manual Equation 4.9: 25mm Storm Intensity

i =	43C + 5.9	
Area A1, A2, A3, D1 Runoff Coefficient =	0.65	
Intensity =	34.0	mm/hr

MOE SWM Planning & Design Manual Equation 4.8: 25mm Storm Intensity

Q =	CiA/360	
Runoff Coefficient =	0.65	
Intensity =	34.02	mm/hr
Drainage Area (Area A1, A2, A3, D1) =	0.68	ha
Q =	0.04	m^3/s
Q =	42.14	L/s

Stormsewer Sizing to underground storage chambers

Pipe Size =	300.00	mm
Slope =	0.50%	
Manning's roughness =	0.013	
Area =	0.071	m^2
Perimeter =	0.942	m
Hydraulic Radius =	0.075	m
Capacity =	0.07	m^3/s

Erosion Control/Infiltration Targets
Site: 2935, 2955 Mississauga Road
April 22, 2026

Erosion Control / Infiltration Target Volume Calculations

The 5mm volume is required to be infiltrated throughout the development (Area D1+D2).
Runoff from Area D1 directed to the underground infiltration chambers.
Runoff from Area D2 are uncontrolled

Impervious Development Area (Area D1 + D2) =	4546.68	m^2	
Erosion Control Volume Required =	Total Drainage Area X 5mm		as per CVC erosion control criteria
Erosion Control Volume Required =	**22.73**	**m^3**	
Total Volume Infiltrated =	LID Storage		
Storage provided by LIDs (Infiltration Chambers) =	24.1	m^3	
Total Volume Infiltrated =	**24.1**	m^3	

Infiltration Chamber Storage
Site: 2935, 2955 Mississauga Road
April 22, 2026

CULTEC underground chamber depth-storage-drawdown time table

Infiltration Rate* =	17	mm/hr
Infiltration Rate (2.5 Factor of Safety) =	7	mm/hr

*The minimum percolation rate reported from the Test Pit Investigation completed by Terraprobe dated September 22, 2015
**Obtained from the Recharger 330XLHD Incremental Storage Volumes

Depth (m)	Water Surface Elevation (m)	Cum. Volume (m^3)**	Drawdown Time (hr)	
1.08	100.24	60.89	133	Top of Stone Eelvation
1.05	100.21	59.97	131	
1.03	100.19	59.05	130	
1.00	100.16	58.12	129	
0.98	100.14	57.20	127	
0.95	100.11	56.28	126	
0.93	100.08	55.36	122	Top of Chamber Elevation
0.91	100.07	54.90	120	
0.89	100.05	53.92	116	
0.86	100.02	52.85	113	
0.84	100.00	51.68	109	
0.81	99.97	50.40	105	
0.79	99.95	49.04	101	
0.76	99.92	47.62	98	
0.74	99.89	46.14	94	
0.71	99.87	44.61	90	
0.69	99.84	43.05	87	
0.66	99.82	41.45	83	
0.64	99.79	39.82	79	
0.61	99.77	38.16	76	
0.58	99.74	36.47	72	
0.56	99.72	34.76	68	
0.53	99.69	33.02	64	
0.51	99.67	31.24	61	
0.48	99.64	29.46	57	*MAXIMUM WSEL BEFORE STORMWATER IS REDIRECTED TO OUTLET
0.46	99.61	27.67	53	
0.43	99.59	25.87	50	
0.41	99.56	24.06	46	*maximum storage provided
0.38	99.54	22.25	42	
0.36	99.51	20.44	39	
0.33	99.49	18.61	35	
0.30	99.46	16.75	31	
0.28	99.44	14.89	27	
0.25	99.41	13.03	24	
0.23	99.39	11.16	20	
0.20	99.36	9.29	16	
0.18	99.34	7.42	13	
0.15	99.31	5.53	9	Bottom of Chamber Elevation
0.13	99.28	4.61	7	
0.10	99.26	3.69	6	
0.08	99.23	2.77	4	
0.05	99.21	1.84	3	
0.03	99.18	0.92	1	
0.00	99.16	0.00	0	Bottom of Stone Elevation

Area D1 Treatment Train TSS Removal Calculations

Site: 2935, 2955 Mississauga Road

April 22, 2026

Area D1

LID	Initial Loading	TSS Removal Efficiency	Remaining TSS Loading
OGS	1.00	50.00%	0.50
Infiltration Chambers	0.50	80.00%	0.10
Vegetated Filter Strip	0.10	50.00%	0.05

Total Removal Efficiency = 95.00%

The OGS unit was sized for 50% TSS removal (see OGS Sizing Report)

The Low Impact Development Stormwater Management Planning and Design Guide by TRCA and CVC reports a TSS removal of 70% - 90% provided by infiltration trench. Therefore a median value of 80% was used

The Low Impact Development Stormwater Management Planning and Design Guide by TRCA and CVC reports a TSS removal of 20% - 80% provided by vegetated filter strips. Therefore a median value of 50% was used

Riprap Sizing
Site: 2935, 2955 Mississauga Road
April 22, 2026

Riprap Sizing and Storm and Culvert Outlets

Riprap sizing calculations for the proposed storm sewer outlet and the driveway culvert outlet
Riprap sizing calculations were sized based on the Catchments & Creeks Rock Sizing Equations

HW1 Storm sewer outlet diameter =	525	mm	
Outlet flow velocity* =	1.40	m/s	*100-year full flow velocity
Proposed d_{50} riprap =	100	mm	
Proposed d_{50} riprap (1.5 SF)=	150	mm	
Apron Length =	1.6	m	
Apron Beginning Width =	1.1	m	
Apron End Width =	1.2	m	
CBMH1 Storm sewer outlet diameter =	300	mm	
Outlet flow velocity =	0.98	m/s	*100-year full flow velocity
Proposed d_{50} riprap =	100	mm	
Proposed d_{50} riprap (1.5 SF)=	150	mm	
Apron Length =	0.9	m	
Apron Beginning Width =	0.9	m	
Apron End Width =	0.9	m	
Driveway culvert outlet diameter =	1350	mm	
Cuvlert Flow* =	0.74	m^3/s	*100-year flow from A1+A2+A3+C1+C2+D1+D2
Culvert Velocity =	1.68	m/s	
Proposed d_{50} riprap =	200	mm	
Proposed d_{50} riprap (1.5 SF)=	300	mm	
Apron Length =	4.1	m	
Apron Beginning Width =	2.0	m	
Apron End Width =	3.0	m	

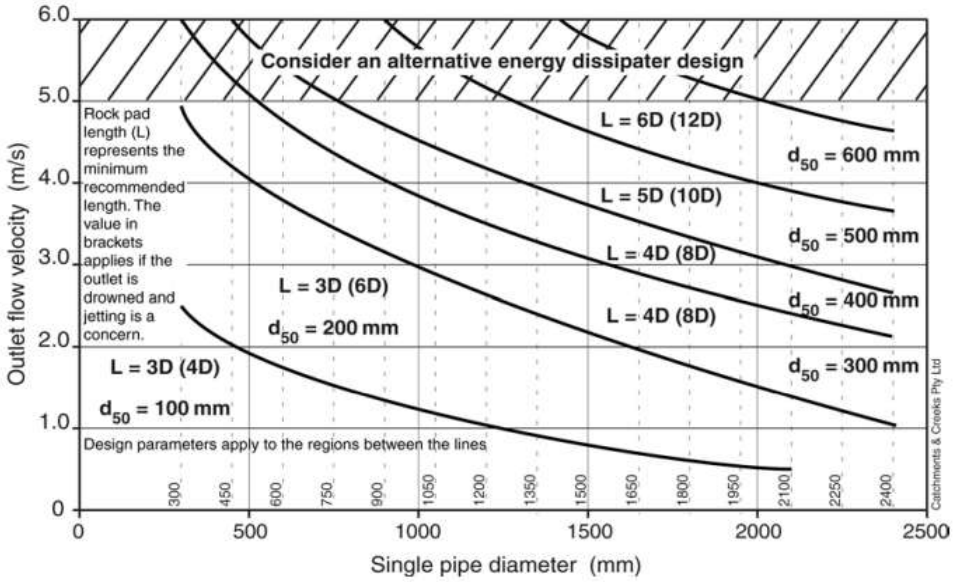


Figure 1 – Sizing of rock pad outlet structures for single pipe outlets

Quality Control
Site: 2935, 2955 Mississauga Road
April 22, 2026

Provide Enhanced Treatment (80% TSS)

Water Quality Volume

Area	Total Area (m^2)	Runoff Coefficient	% Impervious = (C-0.25) / 0.65	Water Quality Volume* (m^3/ha)	Water Quality Volume* (m^3)
Area A1, A2, A3, D1, D2	7165	0.66	63%	33.2	23.8

*as per Table 3.2 of MOE SWM Planning and Design Manual for infiltration

Overall TSS Removal Provided for Area D1 and D2

Area	Drainage Area	% TSS Removal
D1	4971.9	95%
D2	346.9	50%
Averaged % TSS Removal =		92%

Irregular Shaped Channel Rating Curve Design Sheet

Site : 2935, 2955 Mississauga Road, Mississauga

-INPUT -

CHANNEL SLOPE =	0.0090	(m/m)
Left Slope Low Channel =	3	# of horiz/vert [x]
Right Slope Low Channel =	3	# of horiz/vert [y]
Left Slope High Channel =	3.000	# of horiz/vert [w]
Right Slope High Channel =	3.000	# of horiz/vert [z]
Elev. Top of Left Bank Low Channel =	0	
Elev. Top of Right Bank Low Channel =	0	
'n' Channel Base =	0.035	
'n' Left Low Channel Wall =	0.035	
'n' Right Low Channel Wall =	0.035	
'n' Left High Channel Wall =	0.035	
'n' Right High Channel Wall=	0.035	
Width of Low Channel Base (m) =	0	

Notes:
- V-Swale Conveying Major Drainage from Area A1 and A2
- The v-swale has a minimum slope of 0.9%, 3:1 side slopes and a min. depth of 0.15m
- Area A1 + A2 = 100-year flow of 15.9L/s
- The proposed V-swale has a capacity of 0.031m^3/s
- Therefore, the proposed v-swale has sufficient capacity to convey major flows

FLOW DEPTH INCRIMENT 0.01

Flow Depth (m)	Flow Area (sq m)	Wetted Perimeter (m)	Equiv. 'n'	Hydr. Radius (m)	Velocity (m/s)	Q (cms)	Area Calculations					Wetted Perimeter				
							Base (sq.m)	Low Left (sq.m)	Low Righ (sq.m)	High Left (sq.m)	High Righ (sq.m)	Base (m)	Low Left (m)	Low Righ (m)	High Left (m)	High Right (m)
0.000	0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00
0.010	0.00	0.06	0.035	0.005	0.08	0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.03	0.03
0.020	0.00	0.13	0.035	0.009	0.12	0.000	0.00	0.000	0.000	0.001	0.001	0.00	0.00	0.00	0.06	0.06
0.030	0.00	0.19	0.035	0.014	0.16	0.000	0.00	0.000	0.000	0.001	0.001	0.00	0.00	0.00	0.09	0.09
0.040	0.00	0.25	0.035	0.019	0.19	0.001	0.00	0.000	0.000	0.002	0.002	0.00	0.00	0.00	0.13	0.13
0.050	0.01	0.32	0.035	0.024	0.22	0.002	0.00	0.000	0.000	0.004	0.004	0.00	0.00	0.00	0.16	0.16
0.060	0.01	0.38	0.035	0.028	0.25	0.003	0.00	0.000	0.000	0.005	0.005	0.00	0.00	0.00	0.19	0.19
0.070	0.01	0.44	0.035	0.033	0.28	0.004	0.00	0.000	0.000	0.007	0.007	0.00	0.00	0.00	0.22	0.22
0.080	0.02	0.51	0.035	0.038	0.31	0.006	0.00	0.000	0.000	0.010	0.010	0.00	0.00	0.00	0.25	0.25
0.090	0.02	0.57	0.035	0.043	0.33	0.008	0.00	0.000	0.000	0.012	0.012	0.00	0.00	0.00	0.28	0.28
0.100	0.03	0.63	0.035	0.047	0.36	0.011	0.00	0.000	0.000	0.015	0.015	0.00	0.00	0.00	0.32	0.32
0.110	0.04	0.70	0.035	0.052	0.38	0.014	0.00	0.000	0.000	0.018	0.018	0.00	0.00	0.00	0.35	0.35
0.120	0.04	0.76	0.035	0.057	0.40	0.017	0.00	0.000	0.000	0.022	0.022	0.00	0.00	0.00	0.38	0.38
0.130	0.05	0.82	0.035	0.062	0.42	0.021	0.00	0.000	0.000	0.025	0.025	0.00	0.00	0.00	0.41	0.41
0.140	0.06	0.89	0.035	0.066	0.44	0.026	0.00	0.000	0.000	0.029	0.029	0.00	0.00	0.00	0.44	0.44
0.150	0.07	0.95	0.035	0.071	0.47	0.031	0.00	0.000	0.000	0.034	0.034	0.00	0.00	0.00	0.47	0.47
0.160	0.08	1.01	0.035	0.076	0.49	0.037	0.00	0.000	0.000	0.038	0.038	0.00	0.00	0.00	0.51	0.51
0.170	0.09	1.08	0.035	0.081	0.51	0.044	0.00	0.000	0.000	0.043	0.043	0.00	0.00	0.00	0.54	0.54
0.180	0.10	1.14	0.035	0.085	0.53	0.051	0.00	0.000	0.000	0.049	0.049	0.00	0.00	0.00	0.57	0.57
0.190	0.11	1.20	0.035	0.090	0.54	0.059	0.00	0.000	0.000	0.054	0.054	0.00	0.00	0.00	0.60	0.60
0.200	0.12	1.26	0.035	0.095	0.56	0.068	0.00	0.000	0.000	0.060	0.060	0.00	0.00	0.00	0.63	0.63
0.210	0.13	1.33	0.035	0.100	0.58	0.077	0.00	0.000	0.000	0.066	0.066	0.00	0.00	0.00	0.66	0.66
0.220	0.15	1.39	0.035	0.104	0.60	0.087	0.00	0.000	0.000	0.073	0.073	0.00	0.00	0.00	0.70	0.70
0.230	0.16	1.45	0.035	0.109	0.62	0.098	0.00	0.000	0.000	0.079	0.079	0.00	0.00	0.00	0.73	0.73
0.240	0.17	1.52	0.035	0.114	0.64	0.110	0.00	0.000	0.000	0.086	0.086	0.00	0.00	0.00	0.76	0.76
0.250	0.19	1.58	0.035	0.119	0.65	0.123	0.00	0.000	0.000	0.094	0.094	0.00	0.00	0.00	0.79	0.79
0.260	0.20	1.64	0.035	0.123	0.67	0.136	0.00	0.000	0.000	0.101	0.101	0.00	0.00	0.00	0.82	0.82
0.270	0.22	1.71	0.035	0.128	0.69	0.151	0.00	0.000	0.000	0.109	0.109	0.00	0.00	0.00	0.85	0.85
0.280	0.24	1.77	0.035	0.133	0.71	0.166	0.00	0.000	0.000	0.118	0.118	0.00	0.00	0.00	0.89	0.89
0.290	0.25	1.83	0.035	0.138	0.72	0.182	0.00	0.000	0.000	0.126	0.126	0.00	0.00	0.00	0.92	0.92
0.300	0.27	1.90	0.035	0.142	0.74	0.199	0.00	0.000	0.000	0.135	0.135	0.00	0.00	0.00	0.95	0.95
0.310	0.29	1.96	0.035	0.147	0.76	0.218	0.00	0.000	0.000	0.144	0.144	0.00	0.00	0.00	0.98	0.98
0.320	0.31	2.02	0.035	0.152	0.77	0.237	0.00	0.000	0.000	0.154	0.154	0.00	0.00	0.00	1.01	1.01

Climate Data								Pervious Area			Impervious Area		
Month	**Days in the month**	**Hours of Sunlight*** **	**Mean Temperature****	**Heat Index**	**Potential Evapo-transpiration ***	**Daylight Correction Value**	**Total Precipitation** ***	**Adjusted Potential Evapo-transpiration ##**	**Surplus**	**Deficit**	**Evaporation**	**Surplus**	**Deficit**
			(T) #	**I**	**mm/month**		**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**
January	31	9.3	-4.7	0.00	0.0	0.80	59.8	0.00	59.8	0.0	6.0	53.8	0.0
February	28	10.5	-3.9	0.00	0.0	0.82	46.7	0.00	46.7	0.0	4.7	42.0	0.0
March	31	12.1	0.1	0.00	0.3	1.04	54.4	0.31	54.1	0.0	5.4	49.0	0.0
April	30	13.6	6.4	1.45	28.4	1.13	65.2	32.19	33.0	0.0	6.5	58.7	0.0
May	31	14.7	12.3	3.91	58.2	1.27	73.9	73.69	0.2	0.0	7.4	66.5	0.0
June	30	15	17.7	6.78	86.8	1.25	71.0	108.53	0.0	37.5	7.1	63.9	0.0
July	31	14.8	20.9	8.72	104.2	1.27	75.8	132.80	0.0	57.0	7.6	68.2	0.0
August	31	14.2	20.1	8.22	99.8	1.22	78.3	122.07	0.0	43.8	7.8	70.5	0.0
September	30	13.1	15.6	5.60	75.6	1.09	73.5	82.50	0.0	9.0	7.4	66.2	0.0
October	31	10.7	9.3	2.56	42.8	0.92	70.0	39.45	30.5	0.0	7.0	63.0	0.0
November	30	9.7	4.0	0.71	17.0	0.81	79.3	13.70	65.6	0.0	7.9	71.4	0.0
December	31	8.8	-1.3	0.00	0.0	0.76	58.8	0.00	58.8	0.0	5.88	52.9	0.0
TOTAL	365			38.0	513.1		**807**	**605**	**348.8**	**147**	**80.7**	**726.0**	**0**

Notes

* PET = 16 [10 T / I]^{a}

where, $\alpha = (675 * 10^{-9} * I^3) - (771 * 10^{-7} * I^2) + (1792 * 10^{-5} * I) + 0.49239 = 1.077$

**Canadian Climate Normals 1981-2010 Station Data - Oakville Southeast WPCP - located 6.84km southwest of the site, https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProx&txtRadius=25&selCity=&selPark=&optProxType=custom&txtCentralLatDeg=43&txtCentralLatMin=32&txtCentralLatSec=32.85&txtCentralLongDeg=79&txtCentralLongMin=39&txtCentralLongSec=24.81&txtLatDecDeg=&txtLongDecDeg=&stnID=4846&dispBack=0

***Canadian Climate Normals 1981-2010 Station Data - Toronto Lester B. Pearson Int'l A - located 15.13km southwest of the site, https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProx&txtRadius=25&selCity=&selPark=&optProxType=custom&txtCentralLatDeg=43&txtCentralLatMin=32&txtCentralLatSec=32.85&txtCentralLongDeg=79&txtCentralLongMin=39&txtCentralLongSec=24.81&txtLatDecDeg=&txtLongDecDeg=&stnID=5097&dispBack=0

Pervious Surplus: **201.5** **mm**

Impervious Surplus: **726.0** **mm**

Assumes 10% of rainfall is evaporated (no evapotranspiration occurs)

Impervious Factor = 0.10

Water Balance Design Sheet — **Pre-Development**

Site : 2935, 2955 Mississauga Road
Mississauga, Ontario

October 23, 2025

Existing Drainage Area
Area D1, E1

Catchment Parameter	Units	Perv	Imperv	Total
Area	m^2	8211.0	0.0	8211.0
Pervious Area	m^2	8211.0	0.0	8211.0
Impervious Area	m^2	0.0	0.0	0.0
Infiltration Factors				
Topography		0.1	0.1	0.10
Soil		0.2	0.2	0.20
Land Cover		0.1	0.1	0.10
MOE Infiltration Factor		0.40	0.40	0.40
Actual Infiltration Factor		0.40	0.00	0.40
Runoff Coefficient		0.25	0.90	0.25
Runoff from Impervious Surfaces*		0%	0%	0%
Inputs (per Unit Area)				
Precipitation	mm/yr	807	807	807
Run- on	mm/yr	0	0	0
Other	mm/yr	0	0	0
Total Inputs	mm/yr	807	807	807
Outputs (per Unit Area)				
Precipitation Surplus	mm/yr	201	726	
Net Surplus	mm/yr	0	0	
Total Evapotranspiration	**mm/yr**	**605**	**81**	
Infiltration	mm/yr	81	0	
Rooftop Infiltration	mm/yr	0	0	
Total Infiltration	**mm/yr**	**81**	**0**	
Runoff Pervious Areas	mm/yr	121	726	
Runoff Impervious Areas	mm/yr	0	0	
Total Runoff	**mm/yr**	**121**	**726**	
Total Outputs	**mm/yr**	**807**	**807**	
Difference (input - output)	mm/yr	0	0	
Inputs (Volumes)				
Precipitation	m^3/yr	6624	0	6624
Run-on	m^3/yr	0	0	0
Other Inputs	m^3/yr	0	0	0
Total Inputs	m^3/yr	6624	0	6624
Outputs (Volumes)				
Precipitation Surplus	m^3/yr	1654	0	1654
Net Surplus	m^3/yr	0	0	0
Total Evapotranspiration	**m^3/yr**	**4970**	**0**	**4970**
Infiltration	m^3/yr	662	0	662
Rooftop Infiltration	m^3/yr	0	0	0
Total Infiltration	**m^3/yr**	**662**	**0**	**662**
Runoff Pervious Areas	m^3/yr	992	0	992
Runoff Impervious Areas	m^3/yr	0	0	0
Total Runoff	**m^3/yr**	**992**	**0**	**992**
Total Outputs	**m^3/yr**	**6624**	**0**	**6624**
Difference (input - output)	m^3/yr	0	0	0

Water Balance Design Sheet — **Post Development**

Site : 2935, 2955 Mississauga Road
Mississauga, Ontario

October 23, 2025

		Proposed Drainage Area				
		Area B2, D2, E1		Area A2, A3, D1		
Catchment Parameter	**Units**	**Perv**	**Imperv**	**Perv**	**Imperv**	**Total**
Area	m^2	1666.0	309.0	1999.0	4238.0	8212.0
Pervious Area	m^2	1666.0	0.0	1999.0	0.0	3665.0
Impervious Area	m^2	0.0	309.0	0.0	4238.0	4547.0
Infiltration Factors						
Topography		0.1	0.1	0.1	0.1	0.10
Soil		0.2	0.2	0.2	0.2	0.20
Land Cover		0.1	0.1	0.1	0.1	0.10
MOE Infiltration Factor		0.40	0.40	0.40	0.40	0.40
% Impervious		0%	100%	0%	100%	55%
Actual Imperv Factor		0.40	0.00	0.40	0.00	0.18
Inputs (per Unit Area)						
Precipitation	mm/yr	807	807	807	807	
Run- on	mm/yr	0	0	0	0	
Other	mm/yr	0	0	0	0	
Total Inputs	mm/yr	807	807	807	807	
Outputs (per Unit Area)						
Precipitation Surplus	mm/yr	201	726	201	726	
Net Surplus	mm/yr	201	726	201	726	
Total Evapotranspiration	**mm/yr**	**605**	**81**	**605**	**81**	
Infiltration	mm/yr	81	0	81	0	
LID Infiltration	mm/yr	0	0	0	0	
Total Infiltration	**mm/yr**	**81**	**0**	**81**	**0**	
Runoff Pervious Areas	mm/yr	121	0	121	0	
Runoff Impervious Areas	mm/yr	0	726	0	726	
Total Runoff	**mm/yr**	**121**	**726**	**121**	**726**	
Total Outputs	**mm/yr**	**807**	**807**	**807**	**807**	
Difference (input - output)	mm/yr	0	0	0	0	
Inputs (Volumes)						
Precipitation	m^3/yr	1344	249	1613	3419	6625
Run-on	m^3/yr	0	0	0	0	0
Other Inputs	m^3/yr	0	0	0	0	0
Total Inputs	m^3/yr	1344	249	1613	3419	6625
Outputs (Volumes)						
Precipitation Surplus	m^3/yr	336	224	403	3077	4040
Net Surplus	m^3/yr	336	224	403	3077	4040
Total Evapotranspiration	**m^3/yr**	**1008**	**25**	**1210**	**342**	**2585**
Infiltration	m^3/yr	134	0	161	0	295
Rooftop Infiltration	m^3/yr	0	0	0	0	0
Total Infiltration	**m^3/yr**	**134**	**0**	**161**	**0**	**295**
Runoff Pervious Areas	m^3/yr	201	0	242	0	443
Runoff Impervious Areas	m^3/yr	0	224	0	3077	3301
Total Runoff	**m^3/yr**	**201**	**224**	**242**	**3077**	**3744**
Total Outputs	**m^3/yr**	**1344**	**249**	**1613**	**3419**	**6625**
Difference (input - output)	m^3/yr	0	0	0	0	0

Water Balance Design Sheet — **Post Development with SWM, FS = 1.0**

Site : 2935, 2955 Mississauga Road
Mississauga, Ontario

October 23, 2025

		Proposed Drainage Area				
		Area B2, D2, E1		Area A2, A3, D1		
Catchment Parameter	**Units**	**Perv**	**Imperv**	**Perv**	**Imperv**	**Total**
Area	m^2	1666.0	309.0	1999.0	4238.0	8212.0
Pervious Area	m^2	1666.0	0.0	1999.0	0.0	3665.0
Impervious Area	m^2	0.0	309.0	0.0	4238.0	4547.0
Infiltration Factors						
Topography		0.1	0.1	0.1	0.1	0.10
Soil		0.2	0.2	0.2	0.2	0.20
Land Cover		0.1	0.1	0.1	0.1	0.10
MOE Infiltration Factor		0.40	0.40	0.40	0.40	0.40
% Impervious		0%	100%	0%	100%	55%
Actual Imperv Factor		0.40	0.00	0.40	0.00	0.18
Inputs (per Unit Area)						
Precipitation	mm/yr	807	807	807	807	
Run- on	mm/yr	0	0	0	0	
Other	mm/yr	0	0	0	0	
Total Inputs	mm/yr	807	807	807	807	
Outputs (per Unit Area)						
Precipitation Surplus	mm/yr	201	726	201	726	
Net Surplus	mm/yr	201	726	201	726	
Total Evapotranspiration	**mm/yr**	**605**	**81**	**605**	**81**	
Infiltration	mm/yr	81	0	81	0	
LID Infiltration	mm/yr	0	0	111	399	
Total Infiltration	**mm/yr**	**81**	**0**	**191**	**399**	
Runoff Pervious Areas	mm/yr	121	0	10	0	
Runoff Impervious Areas	mm/yr	0	726	0	327	
Total Runoff	**mm/yr**	**121**	**726**	**10**	**327**	
Total Outputs	**mm/yr**	**807**	**807**	**807**	**807**	
Difference (input - output)	mm/yr	0	0	0	0	
Inputs (Volumes)						
Precipitation	m^3/yr	1344	249	1613	3419	6625
Run-on	m^3/yr	0	0	0	0	0
Other Inputs	m^3/yr	0	0	0	0	0
Total Inputs	m^3/yr	1344	249	1613	3419	6625
Outputs (Volumes)						
Precipitation Surplus	m^3/yr	336	224	403	3077	4040
Net Surplus	m^3/yr	336	224	403	3077	4040
Total Evapotranspiration	**m^3/yr**	**1008**	**25**	**1210**	**342**	**2585**
Infiltration	m^3/yr	134	0	161	0	295
LID Infiltration	m3/yr	0	0	221	1692	1914
Total Infiltration	**m^3/yr**	**134**	**0**	**383**	**1692**	**2209**
Runoff Pervious Areas	m^3/yr	201	0	20	0	222
Runoff Impervious Areas	m^3/yr	0	224	0	1385	1609
Total Runoff	**m^3/yr**	**201**	**224**	**20**	**1385**	**1830**
Total Outputs	**m^3/yr**	**1344**	**249**	**1613**	**3419**	**6625**
Difference (input - output)	m^3/yr	0	0	0	0	0

**55% of rainfall events are less than 5mm - FS = 1.0

Water Balance Design Sheet — **Post Development with SWM, FS = 1.5**

Site : 2935, 2955 Mississauga Road
Mississauga, Ontario

October 23, 2025

		Proposed Drainage Area				
		Area B2, D2, E1		Area A2, A3, D1		
Catchment Parameter	**Units**	**Perv**	**Imperv**	**Perv**	**Imperv**	**Total**
Area	m^2	1666.0	309.0	1999.0	4238.0	8212.0
Pervious Area	m^2	1666.0	0.0	1999.0	0.0	3665.0
Impervious Area	m^2	0.0	309.0	0.0	4238.0	4547.0
Infiltration Factors						
Topography		0.1	0.1	0.1	0.1	0.10
Soil		0.2	0.2	0.2	0.2	0.20
Land Cover		0.1	0.1	0.1	0.1	0.10
MOE Infiltration Factor		0.40	0.40	0.40	0.40	0.40
% Impervious		0%	100%	0%	100%	55%
Actual Imperv Factor		0.40	0.00	0.40	0.00	0.18
Inputs (per Unit Area)						
Precipitation	mm/yr	807	807	807	807	
Run- on	mm/yr	0	0	0	0	
Other	mm/yr	0	0	0	0	
Total Inputs	mm/yr	807	807	807	807	
Outputs (per Unit Area)						
Precipitation Surplus	mm/yr	201	726	201	726	
Net Surplus	mm/yr	201	726	201	726	
Total Evapotranspiration	**mm/yr**	**605**	**81**	**605**	**81**	
Infiltration	mm/yr	81	0	81	0	
LID Infiltration	mm/yr	0	0	74	266	
Total Infiltration	**mm/yr**	**81**	**0**	**154**	**266**	
Runoff Pervious Areas	mm/yr	121	0	47	0	
Runoff Impervious Areas	mm/yr	0	726	0	460	
Total Runoff	**mm/yr**	**121**	**726**	**47**	**460**	
Total Outputs	**mm/yr**	**807**	**807**	**807**	**807**	
Difference (input - output)	mm/yr	0	0	0	0	
Inputs (Volumes)						
Precipitation	m^3/yr	1344	249	1613	3419	6625
Run-on	m^3/yr	0	0	0	0	0
Other Inputs	m^3/yr	0	0	0	0	0
Total Inputs	m^3/yr	1344	249	1613	3419	6625
Outputs (Volumes)						
Precipitation Surplus	m^3/yr	336	224	403	3077	4040
Net Surplus	m^3/yr	336	224	403	3077	4040
Total Evapotranspiration	**m^3/yr**	**1008**	**25**	**1210**	**342**	**2585**
Infiltration	m^3/yr	134	0	161	0	295
LID Infiltration	m3/yr	0	0	148	1128	1276
Total Infiltration	**m^3/yr**	**134**	**0**	**309**	**1128**	**1571**
Runoff Pervious Areas	m^3/yr	201	0	94	0	295
Runoff Impervious Areas	m^3/yr	0	224	0	1949	2173
Total Runoff	**m^3/yr**	**201**	**224**	**94**	**1949**	**2468**
Total Outputs	**m^3/yr**	**1344**	**249**	**1613**	**3419**	**6625**
Difference (input - output)	m^3/yr	0	0	0	0	0

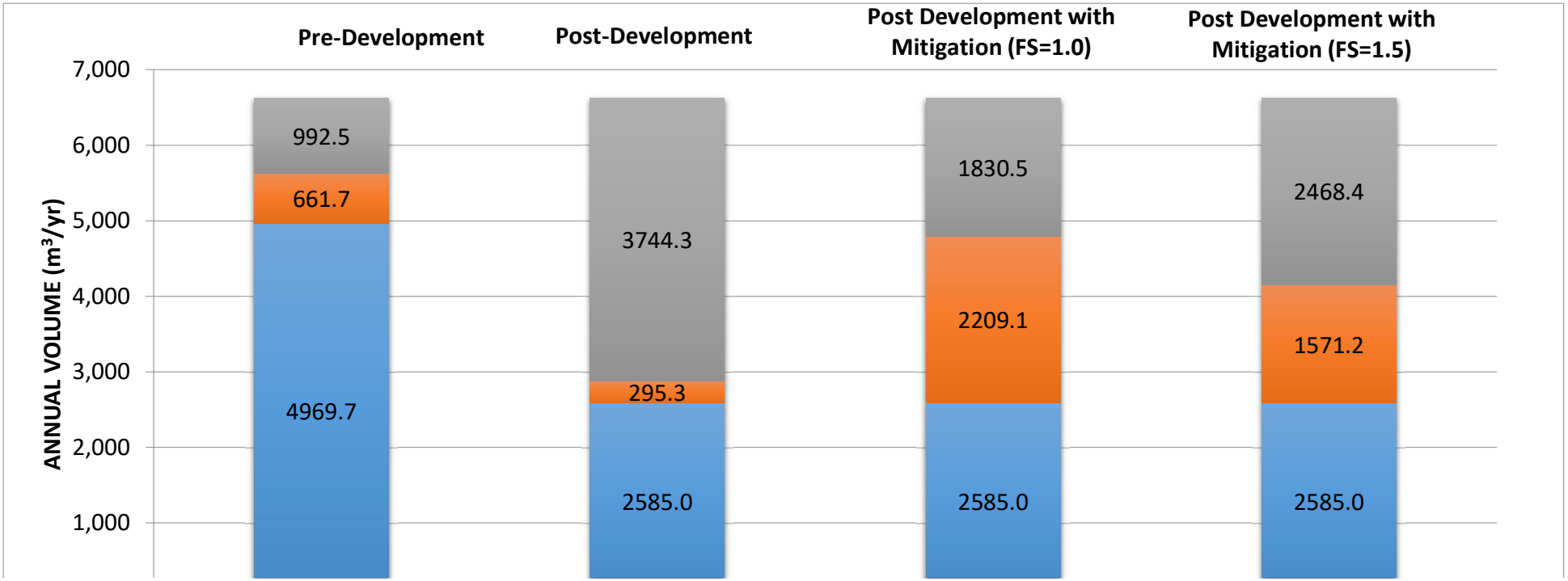
**55% of rainfall events are less than 5mm - FS = 1.5

Water Balance Summary Sheet

Site : 2935, 2955 Mississauga Road
Mississauga, Ontario

October 23, 2025

	Units	Pre-Development	Post-Development	Change (Pre- to Post-)	Post Development with Mitigation (FS=1.0)	Post Development with Mitigation (FS=1.5)	Change (Pre- to Post-Mitigation)
Inputs (Volumes)							
Precipitation	m^3/yr	6623.8	6624.6	0%	6624.6	6624.6	0%
Run-on	m^3/yr	0.0	0.0	0%	0.0	0.0	0%
Other Inputs	m^3/yr	0.0	0.0	0%	0.0	0.0	0%
Total Inputs		**6624**	**6625**	0%	**6625**	**6625**	0%
Outputs (Volumes)							
Precipitation Surplus	m^3/yr	1654.1	4039.6	144%	4039.6	4039.6	144%
Net Surplus	m^3/yr	0.0	4039.6	0%	4039.6	4039.6	0%
Total Evapotranspiration	**m^3/yr**	4969.7	2585.0	-48%	2585.0	2585.0	-48%
Infiltration	m^3/yr	661.7	295.3	-55%	295.3	295.3	-55%
LID Infiltration	m^3/yr	0.0	0.0	0%	1913.8	1275.9	0%
Total Infiltration	**m^3/yr**	**661.7**	**295.3**	-55%	**2209.1**	**1571.2**	234%
Runoff Pervious Areas	m^3/yr	992.5	443.0	-55%	221.5	295.3	-78%
Runoff Impervious Areas	m^3/yr	0.0	3301.3	0%	1609.0	2173.1	0%
Total Runoff	**m^3/yr**	**992.5**	**3744.3**	277%	**1830.5**	**2468.4**	84%
Total Outputs	**m^3/yr**	6623.8	6624.6	0%	6624.6	6624.6	0%



CULTEC Stormwater Design Calculator

Date:	October 13, 2023

Project Number:	20-697

Project Information:

2935, 2955 Mississauga Road
2935, 2955 Mississauga Road
Mississauga
Ontario
Canada

Calculations Performed By:

Elliot Pai
Greck and Associates Limited
Unit 3, 5770 Highway 7
Woodbridge Ontario
L4L 1T8
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289-657-9797
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RECHARGER 330XLHD

Recharger 330XLHD Chamber Specifications

Height	**775**	mm
Width	**1321**	mm
Length	**2.59**	meters
Installed Length	**2.13**	meters
Bare Chamber Volume	**1.48**	cu. meters
Installed Chamber Volume	**2.24**	cu. meters

Breakdown of Storage Provided by Recharger 330XLHD Stormwater System

Within Chambers	**36.12**	cu. meters
Within Feed Connectors	**-**	cu. meters
Within Stone	**24.75**	cu. meters
Total Storage Provided	**60.9**	**cu. meters**
Total Storage Required	60.00	cu. meters

Materials List

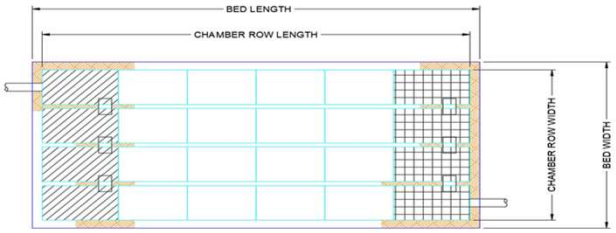
Recharger 330XLHD

Total Number of Chambers Required	**24**	**pieces**
Separator Row Chambers	**12**	pieces
Starter Chambers	**2**	pieces
Intermediate Chambers	**20**	pieces
End Chambers	**2**	pieces
HVLV FC-24 Feed Connectors	**2**	pieces
CULTEC No. 410 Non-Woven Geotextile	**308**	sq. meters
CULTEC No. 4800 Woven Geotextile	**34**	meters
Stone	**62**	cu. meters

Separator Row Qty Included in Total

Based on 2 Internal Manifolds

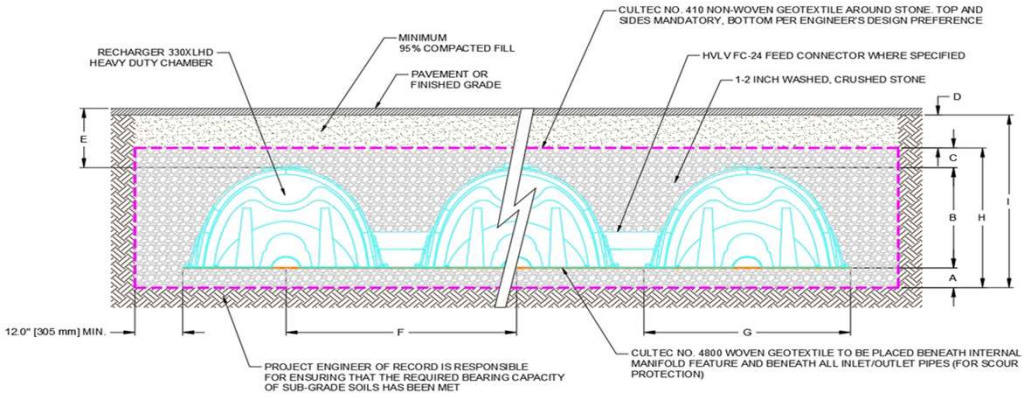
Bed Detail



Bed Layout Information

Number of Rows Wide	**2**	pieces
Number of Chambers Long	**12**	pieces
Chamber Row Width	**2.79**	meters
Chamber Row Length	**26.06**	meters
Bed Width	**3.40**	meters
Bed Length	**26.67**	meters
Bed Area Required	**90.77**	sq. meters
Length of Separator Row	**26.06**	meters

Bed detail for reference only. Not project specific. Not to scale.



Conceptual graphic only. Not job specific.

Cross Section Table Reference

A	Depth of Stone Base	**152**	mm
B	Chamber Height	**775**	mm
C	Depth of Stone Above Units	**152**	mm
D	Depth of 95% Compacted Fill	**254**	mm
E	Max. Depth Allowed Above the Chamber	**3.66**	meters
F	Chamber Width	**1321**	mm
G	Center to Center Spacing	**1.47**	meters
H	Effective Depth	**1.08**	meters
I	Bed Depth	**1.33**	meters

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/22/2026

Province:	Ontario
City:	Mississauga
Nearest Rainfall Station:	TORONTO CITY
Climate Station Id:	6158355
Years of Rainfall Data:	20

Project Name:	2935, 2955 Mississauga Road
Project Number:	20-697
Designer Name:	Elliot Pai
Designer Company:	Greck and Associates Ltd.
Designer Email:	epai@greck.ca
Designer Phone:	289-657-9797
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	

Drainage Area (ha):	0.62
% Imperviousness:	68.00

Runoff Coefficient 'c': 0.70

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	14.18
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	100
Estimated Average Annual Sediment Load (kg/yr):	163
Estimated Average Annual Sediment Volume (L/yr):	132

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	57
EF5	60
EF6	63
EF8	66
EF10	68

Recommended Stormceptor EF Model: EF5

Estimated Net Annual Sediment (TSS) Load Reduction (%): 60

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

PARTICLE SIZE DISTRIBUTION (PSD)

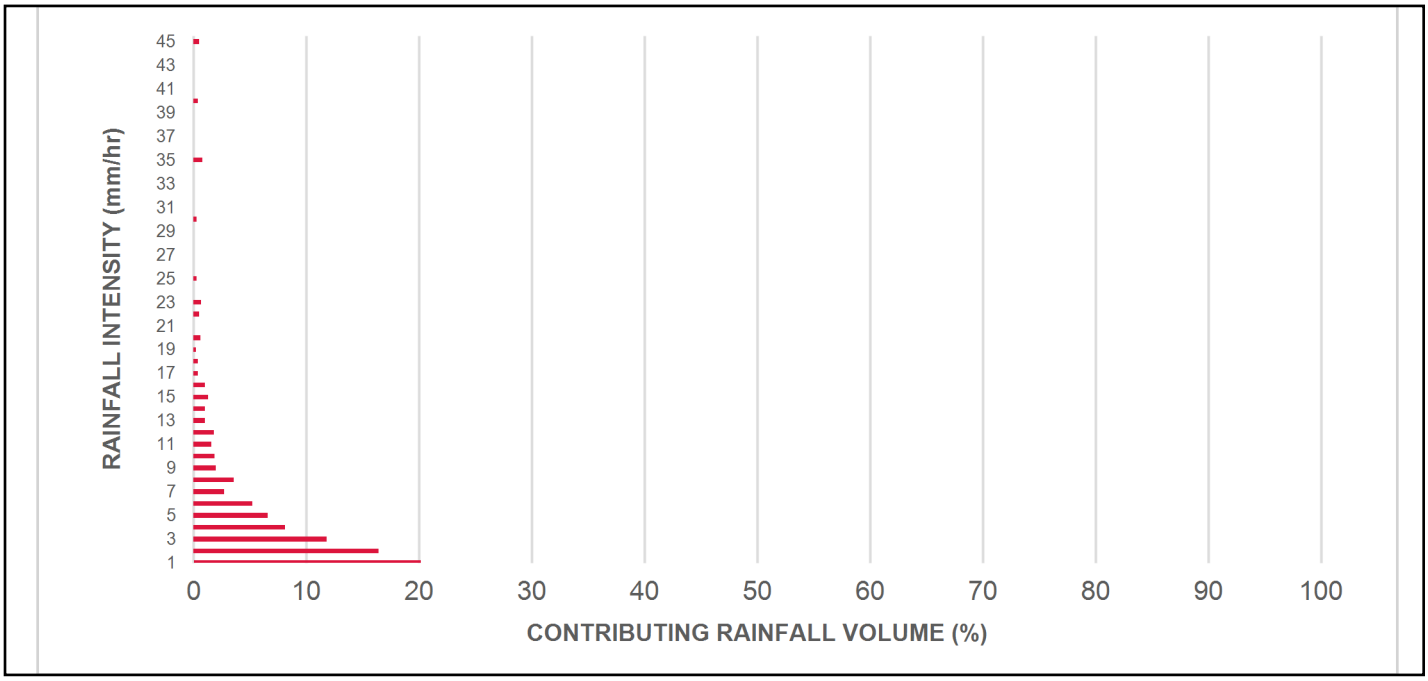
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a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

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

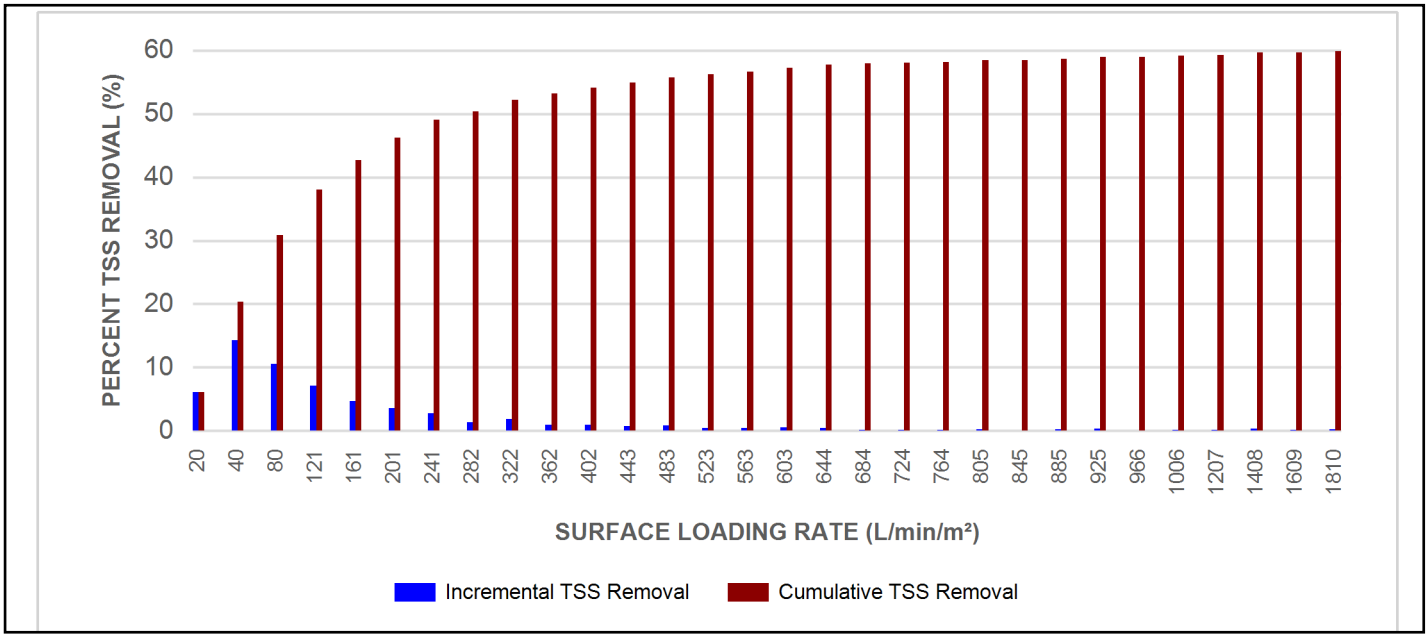
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.7	8.7	0.61	37.0	20.0	70	6.1	6.1
1.00	20.2	28.9	1.22	73.0	40.0	70	14.2	20.4
2.00	16.4	45.3	2.44	146.0	80.0	64	10.5	30.9
3.00	11.8	57.1	3.66	220.0	121.0	61	7.1	38.0
4.00	8.1	65.2	4.88	293.0	161.0	57	4.7	42.7
5.00	6.6	71.9	6.10	366.0	201.0	54	3.6	46.2
6.00	5.2	77.1	7.32	439.0	241.0	53	2.8	49.0
7.00	2.7	79.8	8.54	513.0	282.0	52	1.4	50.4
8.00	3.6	83.4	9.76	586.0	322.0	50	1.8	52.2
9.00	2.0	85.4	10.98	659.0	362.0	49	1.0	53.2
10.00	1.9	87.3	12.20	732.0	402.0	48	0.9	54.1
11.00	1.6	88.9	13.42	805.0	443.0	48	0.8	54.9
12.00	1.8	90.7	14.64	879.0	483.0	47	0.8	55.7
13.00	1.0	91.6	15.86	952.0	523.0	47	0.5	56.2
14.00	1.0	92.7	17.08	1025.0	563.0	46	0.5	56.6
15.00	1.3	93.9	18.30	1098.0	603.0	46	0.6	57.2
16.00	1.0	95.0	19.52	1171.0	644.0	46	0.5	57.7
17.00	0.4	95.3	20.75	1245.0	684.0	46	0.2	57.9
18.00	0.4	95.7	21.97	1318.0	724.0	45	0.2	58.0
19.00	0.2	95.9	23.19	1391.0	764.0	45	0.1	58.1
20.00	0.6	96.5	24.41	1464.0	805.0	45	0.3	58.4
21.00	0.0	96.5	25.63	1538.0	845.0	45	0.0	58.4
22.00	0.5	97.0	26.85	1611.0	885.0	45	0.2	58.6
23.00	0.7	97.7	28.07	1684.0	925.0	44	0.3	58.9
24.00	0.0	97.7	29.29	1757.0	966.0	44	0.0	58.9
25.00	0.3	98.0	30.51	1830.0	1006.0	44	0.1	59.1
30.00	0.3	98.3	36.61	2197.0	1207.0	47	0.1	59.2
35.00	0.8	99.1	42.71	2563.0	1408.0	49	0.4	59.6
40.00	0.4	99.5	48.81	2929.0	1609.0	43	0.2	59.7
45.00	0.5	100.0	54.91	3295.0	1810.0	38	0.2	59.9
Estimated Net Annual Sediment (TSS) Load Reduction =								**60 %**

Climate Station ID: 6158355 *Years of Rainfall Data*: 20

RAINFALL DATA FROM TORONTO CITY RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

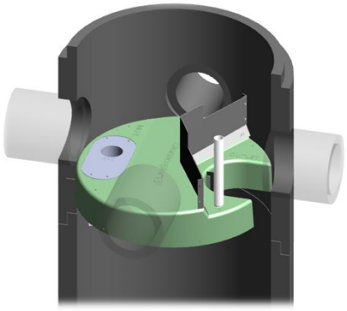
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

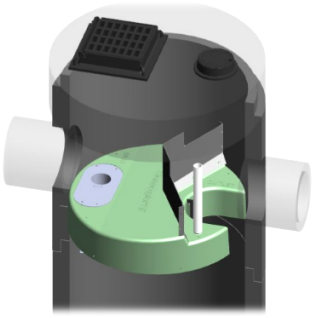
DESIGN FLEXIBILITY

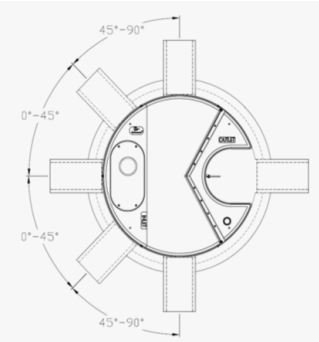
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

OIL CAPTURE AND RETENTION

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







INLET-TO-OUTLET DROP

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

HEAD LOSS

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

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

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

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EF

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	46	1320	48	1980	35
30	70	690	46	1350	48	2010	34
60	67	720	45	1380	49	2040	34
90	63	750	45	1410	49	2070	33
120	61	780	45	1440	48	2100	33
150	58	810	45	1470	47	2130	32
180	56	840	45	1500	46	2160	32
210	54	870	45	1530	45	2190	31
240	53	900	45	1560	44	2220	31
270	52	930	44	1590	43	2250	30
300	51	960	44	1620	42	2280	30
330	50	990	44	1650	42	2310	30
360	49	1020	44	1680	41	2340	29
390	48	1050	45	1710	40	2370	29
420	48	1080	45	1740	39	2400	29
450	48	1110	45	1770	39	2430	28
480	47	1140	46	1800	38	2460	28
510	47	1170	46	1830	37	2490	28
540	47	1200	47	1860	37	2520	27
570	46	1230	47	1890	36	2550	27
600	46	1260	47	1920	36	2580	27
630	46	1290	48	1950	35	2600	26

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m^3 sediment / 420L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

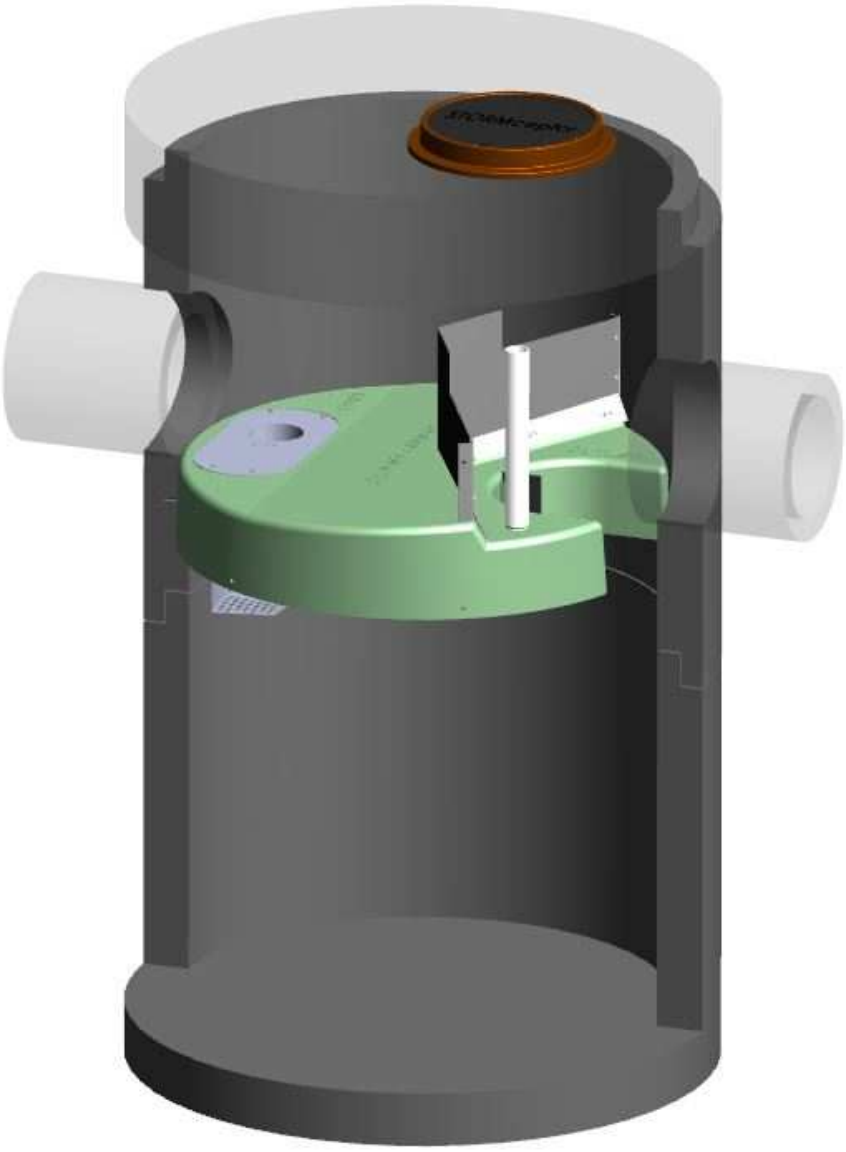
3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

APPENDIX F

Operation and Maintenance Guidelines

Stormceptor® EF

Owner's Manual



Stormceptor is protected by one or more of the following patents:

Canadian Patent No. 2,137,942
Canadian Patent No. 2,180,305
Canadian Patent No. 2,327,768
Canadian Patent No. 2,694,159
Canadian Patent No. 2,697,287
U.S. Patent No. 6,068,765
U.S. Patent No. 6,371,690
U.S. Patent No. 7,582,216
U.S. Patent No. 7,666,303
Australia Patent No. 693.164
Australia Patent No. 729,096
Australia Patent No. 2008,279,378
Australia Patent No. 2008,288,900
Japanese Patent No. 5,997,750
Japanese Patent No. 5,555,160
Korean Patent No. 0519212
Korean Patent No. 1451593
New Zealand Patent No. 583,008
New Zealand Patent No. 583,583
South African Patent No. 2010/00682
South African Patent No. 2010/01796
Patent pending

Table of Contents:

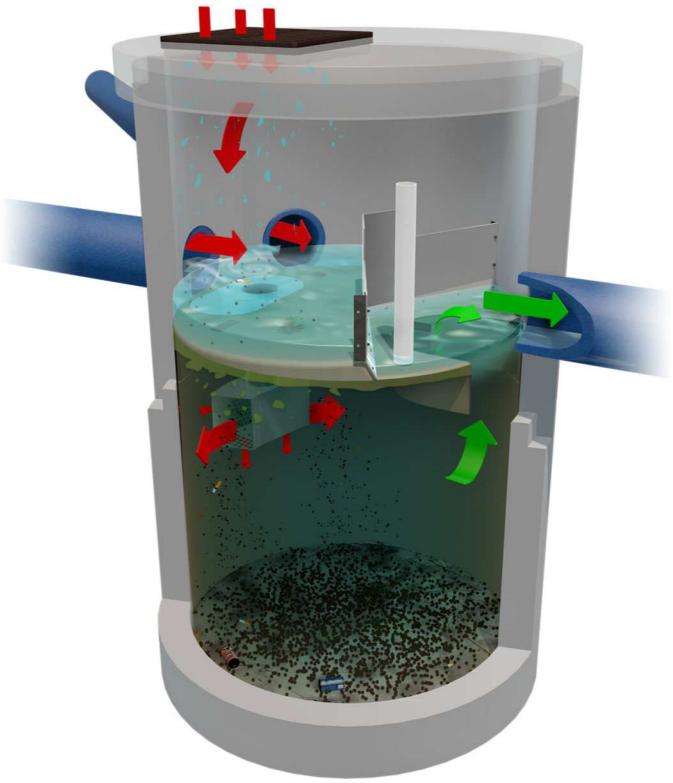
OVERVIEW

Stormceptor® EF is a continuation and evolution of the most globally recognized oil grit separator (OGS) stormwater treatment technology - ***Stormceptor®***. Also known as a hydrodynamic separator, the enhanced flow Stormceptor EF is a high performing oil grit separator that effectively removes a wide variety of pollutants from stormwater and snowmelt runoff at flow rates higher than the original Stormceptor. Stormceptor EF captures and retains sediment (TSS), free oils, gross pollutants and other pollutants that attach to particles, such as nutrients and metals. Stormceptor EF's patent-pending treatment and scour prevention platform ensures sediment is retained during all rainfall events.

Stormceptor EF offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe, multiple inlet pipes, and/or from the surface through an inlet grate. Stormceptor EF can also serve as a junction structure, accommodate a 90-degree inlet to outlet bend angle, and be modified to ensure performance in submerged conditions. With its scour prevention and internal bypass, Stormceptor EF can be installed online, eliminating the need for costly additional bypass structures.

OPERATION

- Stormwater enters the Stormceptor upper chamber through the inlet pipe(s) or a surface inlet grate. A specially designed insert reduces the influent velocity by creating a pond upstream of the insert's weir. Sediment particles immediately begin to settle. Swirling flow sweeps water, sediment, and floatables across the sloped surface of the insert to the inlet opening of the drop pipe, where a strong vortex draws water, sediment, oil, and debris down the drop pipe cone.
- Influent exits the cone into the drop pipe duct. The duct has two large rectangular outlet openings as well as perforations in the backside and floor of the duct. Influent is diffused through these various opening in multiple directions and at low velocity into the lower chamber.
- Free oils and other floatables rise up within the channel surrounding the central riser pipe and are trapped beneath the insert, while sediment settles to the sump. Pollutants are retained for later removal during maintenance cleaning.
- Treated effluent enters the outlet riser, moves upward, and discharges to the top side of the insert downstream of the weir, where it flows out the outlet pipe.
- During intense storm events with very high influent flow rates, the pond height on the upstream side of the weir may exceed the height of the weir, and the excess flow passes over the top of the weir to the downstream side of the insert, and exits through the outlet pipe. This internal bypass feature allows for in-line installation, avoiding the cost of additional bypass structures. During bypass, the pond separates sediment from all incoming flows, while full treatment in the lower chamber continues at the maximum flow rate.
- Stormceptor EF's patent-pending enhanced flow and scour prevention technology ensures pollutants are captured and retained, allowing excess flows to bypass during infrequent, high intensity storms.



COMPONENTS

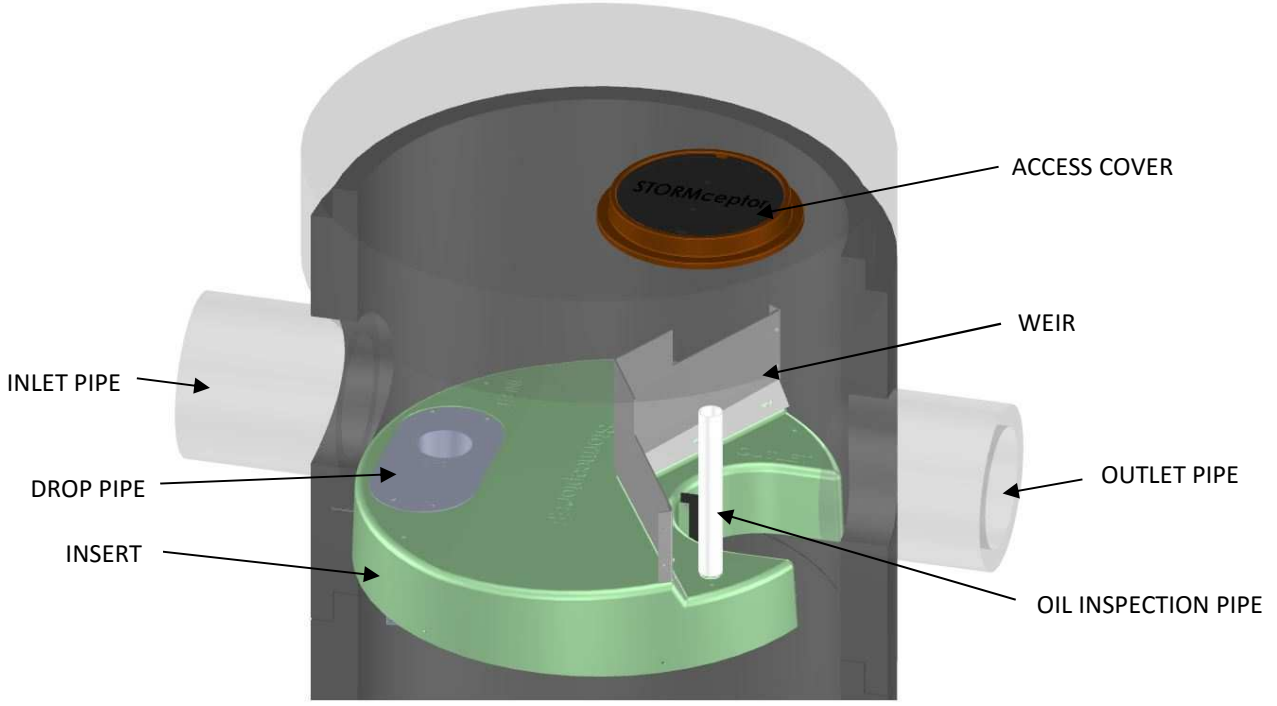


Figure 1

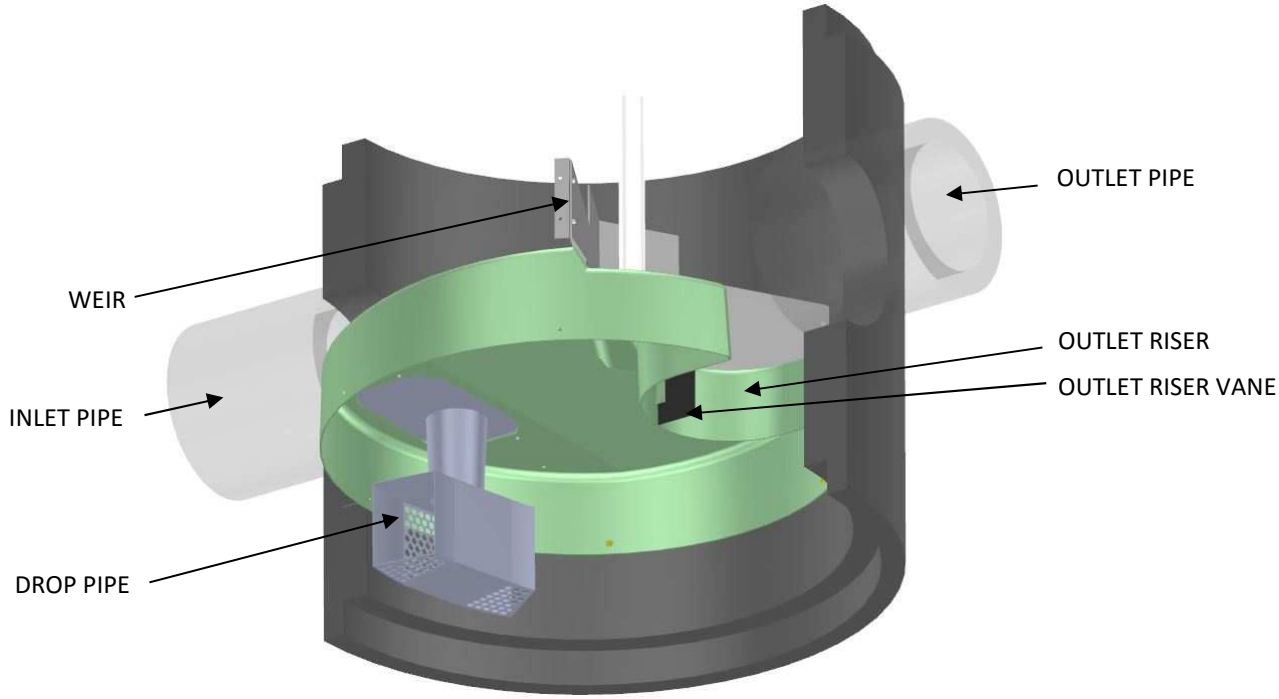


Figure 2

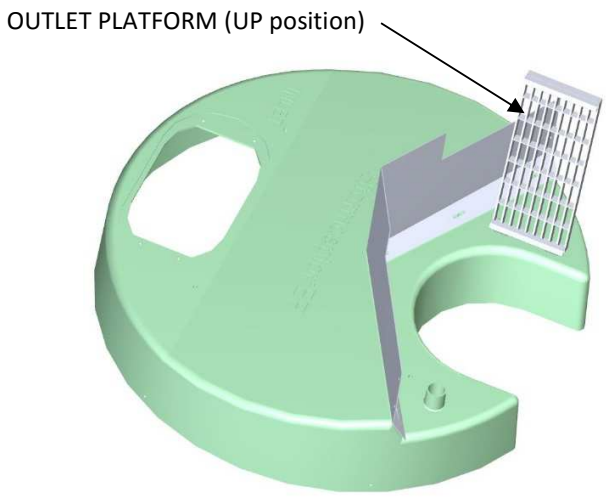


Figure 3A

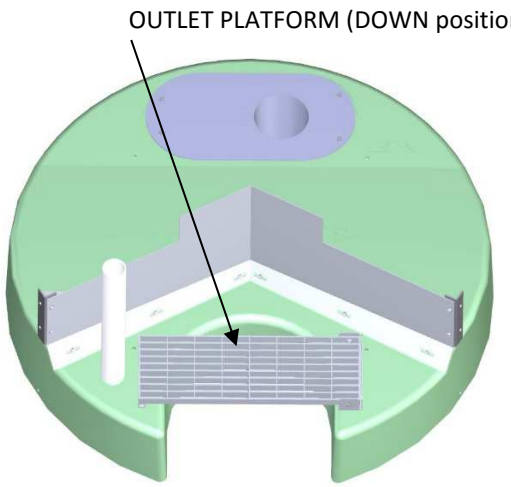


Figure 3B

- **Insert** – separates vessel into upper and lower chambers, and provides double-wall containment of hydrocarbons
- **Weir** – creates stormwater ponding and driving head on top side of insert
- **Drop pipe** – conveys stormwater and pollutants into the lower chamber
- **Outlet riser** – conveys treated stormwater from the lower chamber to the outlet pipe, and provides primary inspection and maintenance access into the lower chamber
- **Outlet riser vane** – prevents formation of a vortex in the outlet riser during high flow rate conditions
- **Outlet platform (optional)** – safety platform in the event of manned entry into the unit
- **Oil inspection pipe** – primary access for measuring oil depth

PRODUCT DETAILS

METRIC DIMENSIONS AND CAPACITIES

Table 1

Stormceptor Model	Inside Diameter (m)	Minimum Surface to Outlet Invert Depth (mm)	Depth Below Outlet Pipe Invert (mm)	Wet Volume (L)	Sediment Capacity [1] (m^3)	Hydrocarbon Storage Capacity [2] (L)	Maximum Flow Rate into Lower Chamber [3] (L/s)	Peak Conveyance Flow Rate [4] (L/s)
EF4 / EFO4	1.22	915	1524	1780	1.19	265	22.1 / 10.4	425
EF6 / EFO6	1.83	915	1930	5070	3.47	610	49.6 / 23.4	990
EF8 / EFO8	2.44	1219	2591	12090	8.78	1070	88.3 / 41.6	1700
EF10 / EFO10	3.05	1219	3251	23700	17.79	1670	138 / 65	2830
EF12 / EFO12	3.66	1524	3886	40800	31.22	2475	198.7 / 93.7	2830

[1] Sediment Capacity is measured from the floor to the bottom of the drop pipe cone. Sediment Capacity can be increased to accommodate specific site designs and pollutant loads. Contact your local representative for assistance.
[2] Hydrocarbon Storage Capacity is measured from the bottom of the outlet riser to the underside of the insert. Hydrocarbon Storage Capacity can be increased to accommodate specific site designs and pollutant loads. Contact your local representative for assistance.
[3] EF Maximum Flow Rate into Lower Chamber is based on a maximum surface loading rate (SLR) into the lower chamber of 1135 L/min/m^2.
EFO Maximum Flow Rate into Lower Chamber is based on a maximum surface loading rate (SLR) into the lower chamber of 535 L/min/m^2.
[4] Peak Conveyance Flow Rate is limited by a maximum velocity of 1.5 m/s.

U.S. DIMENSIONS AND CAPACITIES

Table 2

Stormceptor Model	Inside Diameter (ft)	Minimum Surface to Outlet Invert Depth (in)	Depth Below Outlet Pipe Invert (in)	Wet Volume (gal)	Sediment Capacity [1] (ft^3)	Hydrocarbon Storage Capacity [2] (gal)	Maximum Flow Rate into Lower Chamber [3] (cfs)	Peak Conveyance Flow Rate [4] (cfs)
EF4 / EFO4	4	36	60	471	42	70	0.78 / 0.37	15
EF6 / EFO6	6	36	76	1339	123	160	1.75 / 0.83	35
EF8 / EFO8	8	48	102	3194	310	280	3.12 / 1.47	60
EF10 / EFO10	10	48	128	6261	628	440	4.87 / 2.30	100
EF12 / EFO12	12	60	153	10779	1103	655	7.02 / 3.31	100

[1] Sediment Capacity is measured from the floor to the bottom of the drop pipe cone. Sediment Capacity can be increased to accommodate specific site designs and pollutant loads. Contact your local representative for assistance.
[2] Hydrocarbon Storage Capacity is measured from the bottom of the outlet riser to the underside of the insert. Hydrocarbon Storage Capacity can be increased to accommodate specific site designs and pollutant loads. Contact your local representative for assistance.
[3] EF Maximum Flow Rate into Lower Chamber is based on a maximum surface loading rate (SLR) into the lower chamber of 27.9 gpm/ft^2.
EFO Maximum Flow Rate into Lower Chamber is based on a maximum surface loading rate (SLR) into the lower chamber of 13.1 gpm/ft^2.
[4] Peak Conveyance Flow Rate is limited by a maximum velocity of 5 fps.

IDENTIFICATION

Each Stormceptor EF/EFO unit is easily identifiable by the trade name ***Stormceptor***® embossed on the access cover at grade as shown in **Figure 3**. The tradename ***Stormceptor***® is also embossed on the top of the insert upstream of the weir as shown in **Figure 3**.

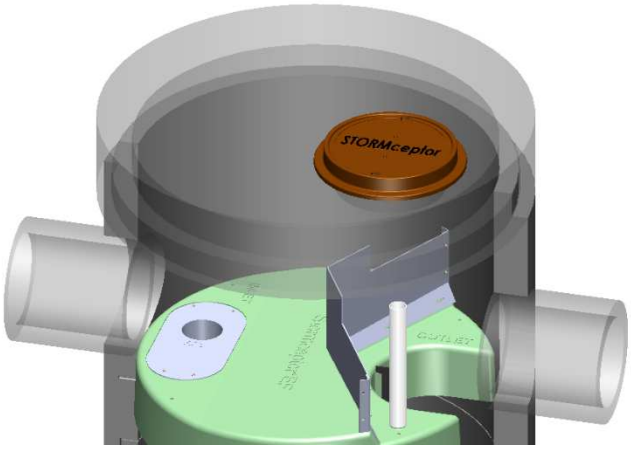


Figure 4

The specific Stormceptor EF/EFO model number is identified on the top of the aluminum Drop Pipe as shown in **Figure 4**. The unit serial number is identified on the top of the insert upstream of the weir as shown in **Figure 4**.

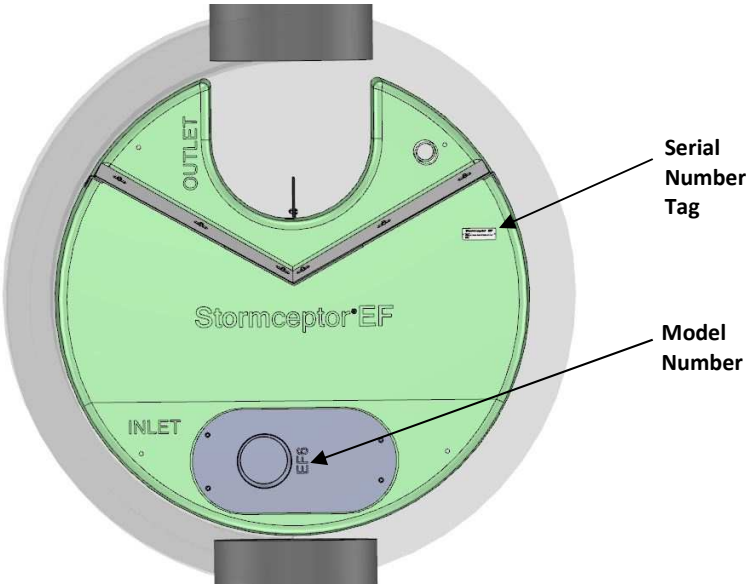


Figure 5

INSPECTION AND MAINTENANCE

It is very important to perform regular inspection and maintenance. Regular inspection and maintenance ensures maximum operation efficiency, keeps maintenance costs low, and provides continued of natural waterways.

Quick Reference

- Typical inspection and maintenance is performed from grade
- Remove manhole **cover(s)** or **inlet grate** to access insert and lower chamber
  NOTE: EF4/EFO4 requires the removal of a **flow deflector** beneath inlet grate
- Use Sludge Judge® or similar sediment probe to check sediment depth through the **outlet riser**
- Oil dipstick can be inserted through the **oil inspection pipe**
- Visually inspect the **insert** for debris, remove debris if present
- Visually inspect the **drop pipe** opening for blockage, remove blockage if present
- Visually inspect **insert** and **weir** for damage, schedule repair if needed
- Insert vacuum hose and jetting wand through the outlet riser and extract sediment and floatables
- Replace flow deflector (EF4/EFO4), inlet grate, and cover(s)
- **NOTE:** If the unit has an **outlet platform**, the outlet platform is typically in the UP position (see Figure 3A) for normal treatment conditions, and for inspection and maintenance. If manned entry into the unit is required, the outlet platform must first be placed in the DOWN position (see Figure 3B). After manned entry is completed, return the outlet platform to the UP position for treatment.

When is inspection needed?

- Post-construction inspection is required prior to putting the Stormceptor into service.
- Routine inspections are recommended during the first year of operation to accurately assess pollutant accumulation.
- Inspection frequency in subsequent years is based on the maintenance plan developed in the first year.
- Inspections should also be performed immediately after oil, fuel, or other chemical spills.

What equipment is typically required for inspection?

- Manhole access cover lifting tool
- Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
- Flashlight
- Camera
- Data log / Inspection Report
- Safety cones and caution tape
- Hard hat, safety shoes, safety glasses, and chemical-resistant gloves

When is maintenance cleaning needed?

- If the post-construction inspection indicates presence of construction sediment of a depth greater than a few inches, maintenance is recommended at that time.
- For optimum performance and normal operation the unit should be cleaned out once the sediment depth reaches the recommended maintenance sediment depth, see **Table 3**.
- Maintain immediately after an oil, fuel, or other chemical spill.

Table 3

Recommended Sediment Depths for Maintenance Service*	
MODEL	Sediment Depth (in/mm)
EF4 / EFO4	8 / 203
EF6 / EFO6	12 /305
EF8 / EFO8	24 / 610
EF10 / EFO10	24 / 610
EF12 / EFO12	24 / 610

* Based on a minimum distance of 40 inches (1,016 mm) from bottom of outlet riser to top of sediment bed

The frequency of inspection and maintenance may need to be adjusted based on site conditions to ensure the unit is operating and performing as intended. Maintenance costs will vary based on the size of the unit, site conditions, local requirements, disposal costs, and transportation distance.

What equipment is typically required for maintenance?

- Vacuum truck equipped with water hose and jet nozzle
- Small pump and tubing for oil removal
- Manhole access cover lifting tool
- Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
- Flashlight
- Camera
- Data log / Inspection Report
- Safety cones
- Hard hats, safety shoes, safety glasses, chemical-resistant gloves, and hearing protection for service providers
- Gas analyzer, respiratory gear, and safety harness for specially trained personnel if confined space entry is required (adhere to all OSHA / CCOSH standards)

What conditions can compromise Stormceptor performance?

- Presence of construction sediment and debris in the unit prior to activation
- Excessive sediment depth beyond the recommended maintenance depth
- Oil spill in excess of the oil storage capacity
- Clogging or restriction of the drop pipe inlet opening with debris
- Downstream blockage that results in a backwater condition

Maintenance Procedures

- Maintenance should be conducted during dry weather conditions when no flow is entering the unit.
- Stormceptor is maintained from grade through a standard surface manhole access cover or inlet grate.
- In the case of submerged or tailwater conditions, extra measures are likely required, such as plugging the inlet and outlet pipes prior to conducting maintenance.
- Inspection and maintenance of upstream catch basins and other stormwater conveyance structures is also recommended to extend the time between future maintenance cycles.

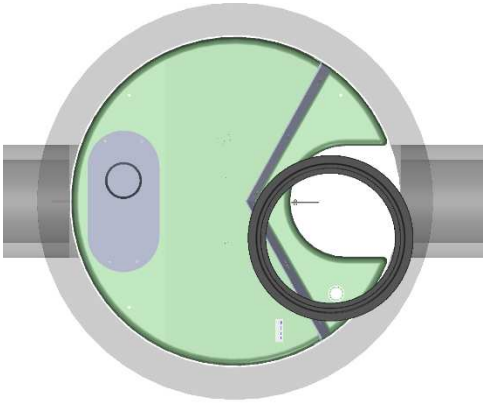


Figure 6

- Sediment depth inspections are performed through the **Outlet Riser** and oil presence can be determined through the **Oil Inspection Pipe**.
- Oil presence and sediment depth are determined by inserting a Sludge Judge® or measuring stick to quantify the pollutant depths.

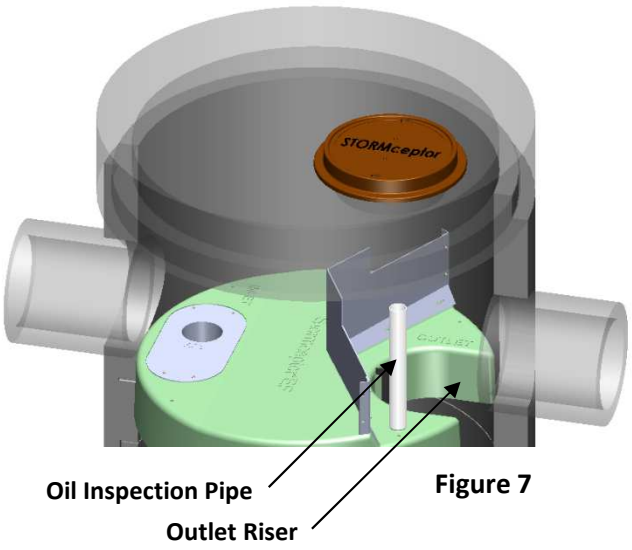


Figure 7

Figure 8

- Visually inspect the insert, weir, and drop pipe inlet opening to ensure there is no damage or blockage.
- **NOTE:** If the unit has an **outlet platform**, the outlet platform is typically in the UP position (see Figure 3A) for normal treatment conditions, and for inspection and maintenance. If manned entry into the unit is required, the outlet platform must first be placed in the DOWN position (see Figure 3B). After manned entry is completed, return the outlet platform to the UP position for treatment.

- When maintenance is required, a standard vacuum truck is used to remove the pollutants from the lower chamber of the unit through the **Outlet Riser**.

Figure 9

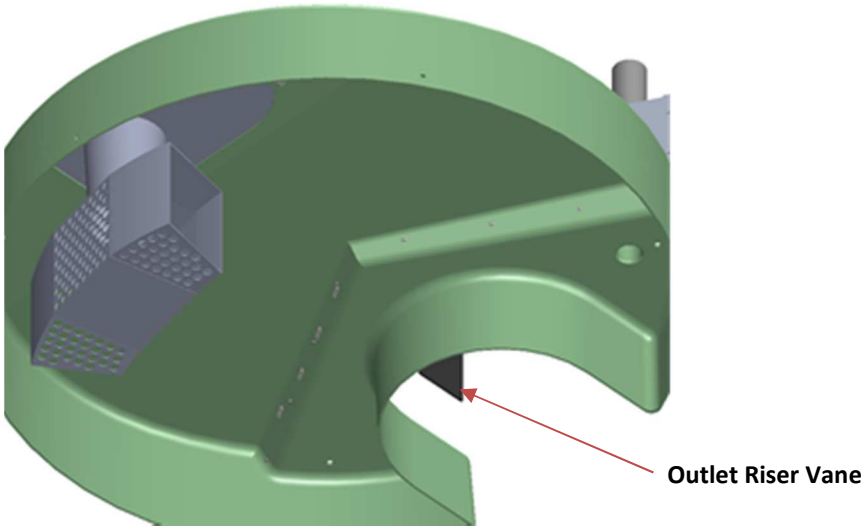
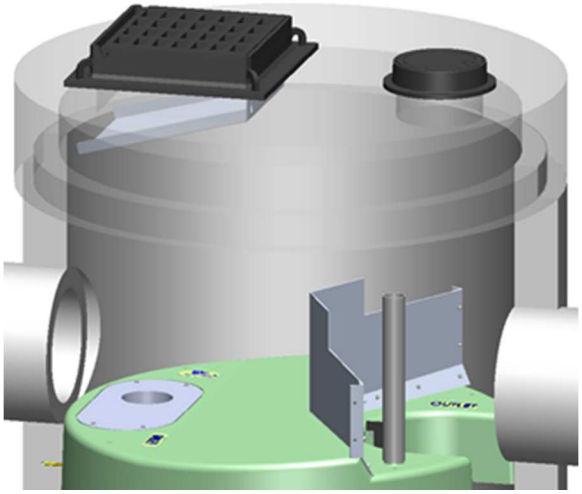


Figure 10

NOTE: The Outlet Riser Vane is durable and flexible and designed to allow maintenance activities with minimal, if any, interference.

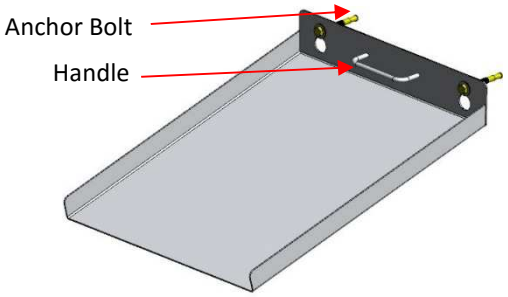
Removable Flow Deflector

- Top grated inlets for the Stormceptor EF4/EFO4 model requires a removable flow deflector staged underneath a 24-inch x 24-inch (600 mm x 600 mm) square inlet grate to direct flow towards the inlet side of the insert, and avoid flow and pollutants from entering the outlet side of the insert from grade. The EF6/EFO6 and larger models do not require the flow deflector.



How to Remove:

1. Loosen anchor bolts
2. Pull up and out using the handle



Removable Flow Deflector

Figure 11

Hydrocarbon Spills

Stormceptor is often installed on high pollutant load hotspot sites with vehicular traffic where hydrocarbon spill potential exists. Should a spill occur, or presence of oil be identified within a Stormceptor EF/EFO, it should be cleaned immediately by a licensed liquid waste hauler.

Disposal

Maintenance providers are to follow all federal, state/ provincial, and local requirements for disposal of material.

Oil Sheens

When oil is present in stormwater runoff, a sheen may be noticeable at the Stormceptor outlet. An oil rainbow or sheen can be noticeable at very low oil concentrations (< 10 mg/L). Despite the appearance of a sheen, Stormceptor EF/EFO may still be functioning as intended.

Oil Level Alarm

To mitigate spill liability with 24/7 detection, an electronic monitoring system can be employed to trigger a visual and audible alarm when a pre-set level of oil is captured within the lower chamber or when an oil spill occurs. The oil level alarm is available as an optional feature to include with Stormceptor EF/EFO as shown in **Figure 11**. For additional details about the Oil Level Alarm please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-systems.

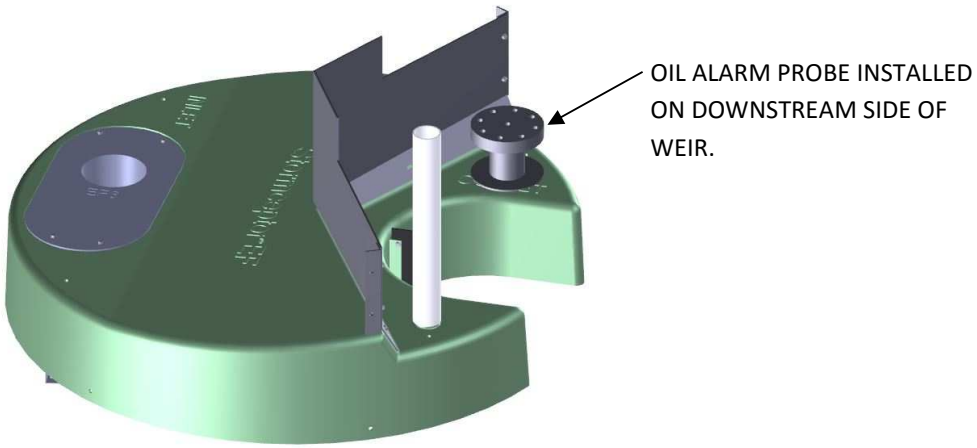


Figure 12

Replacement Parts

Stormceptor has no moving parts to wear out. Therefore inspection and maintenance activities are generally focused on pollutant removal. Since there are no moving parts during operation in a Stormceptor, broken, damaged, or worn parts are not typically encountered. However, if replacement parts are necessary, they may be purchased by contacting your local Stormceptor representative.

Stormceptor Inspection and Maintenance Log

Stormceptor Model No: _____

Serial Number: _____

Installation Date: _____

Location Description of Unit: _____

Recommended Sediment Maintenance Depth: _____

DATE	SEDIMENT DEPTH (inch or mm)	OIL DEPTH (inch or mm)	SERVICE REQUIRED (Yes / No)	MAINTENANCE PERFORMED	MAINTENANCE PROVIDER	COMMENTS

Other Comments:

Contact Information

Questions regarding Stormceptor EF/EFO can be addressed by contacting your local Stormceptor representative or by visiting our website at **www.stormceptor.com.**

Imbrium Systems Inc. & Imbrium Systems LLC

Canada	1-416-960-9900 / 1-800-565-4801
United States	1-301-279-8827 / 1-888-279-8826
International	+1-416-960-9900 / +1-301-279-8827

www.imbriumsystems.com
www.stormceptor.com
info@imbriumsystems.com

Inspection and Maintenance

CULTEC recommends inspection of the Separator Row to be performed every six months for the first year of service. Future inspection frequency can be adjusted based upon previous inspection observations. However annual inspections are recommended. Inspection of the Separator Row can be achieved via an inspection port riser installed during construction. This inspection port riser will connect the top of the Separator Row chambers to finished grade with a removable lid. Alternatively the Separator Row may be inspected via the manhole(s) located at the end(s) of the Separator Row. However this method of inspection requires confined space entry. If entry into the manhole is required, all local and OSHA rules for confined space entries must be strictly followed.

To inspect:

- Remove the inspection port lid from the floor box frame.
- Remove the riser pipe cap.
- With a flashlight and stadia rod, measure the depth of sediment.
- Record results in a maintenance log.
- When depth of sediment exceeds 3” (76 mm), use the JetVac procedure described below.

The JetVac process utilizes a high pressure water nozzle controlled from the surface. The high pressure nozzle is introduced down the Separator Row via the access manhole(s). The high pressure water cleans all sediment and debris from the Separator Row as the nozzle is retrieved. Captured pollutants are flushed into the sumped access manhole for vacuuming. This process is repeated until the Separator Row is completely free of sediment and debris. A small diameter culvert cleaning nozzle is recommended for this procedure.

High pressure water nozzle

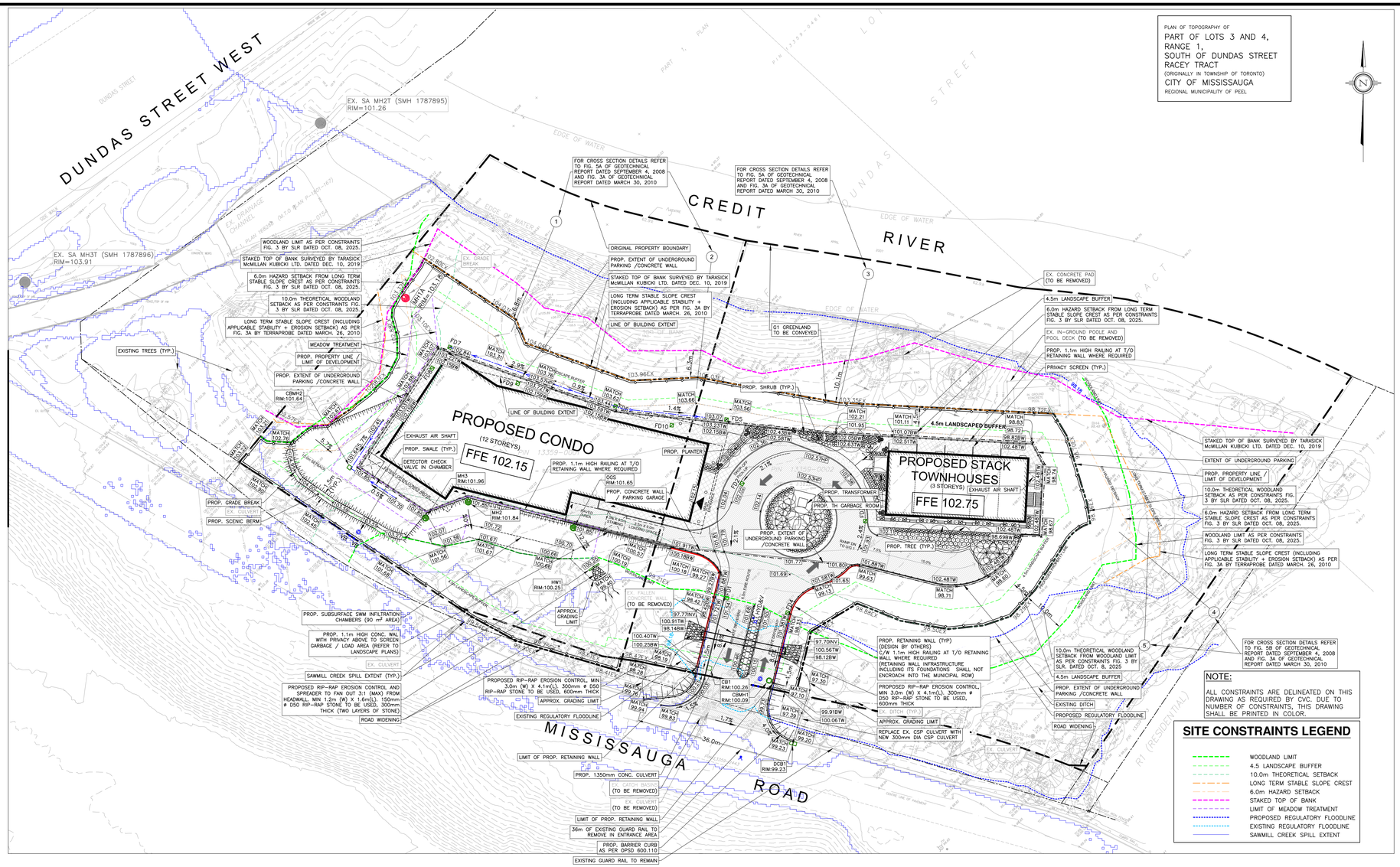
Cleaning Separator Row and pipes with high pressure water nozzle

SEPARATOR ROW: Separator Row prior to cleaning

ADJACENT ROW: When the Separator Row is working properly, the adjacent rows will not show signs of sediment.

APPENDIX G

Engineering Drawings



KEY PLAN

N.T.S.

LEGEND

EXISTING	PROPOSED	
MH1	MH1	SANITARY MANHOLE
MH1A	MH1A	STORM MANHOLE
	FD	FLOOR DRAIN TO INTERNAL OGS
CB	CB	SINGLE CATCHBASIN
DCB	DCB	DOUBLE CATCHBASIN
HYD&V	HYD&V	FIRE HYDRANT
VB	VB	VALVE & BOX
		SLOPE LINE (3:1 MAX)
		CURRENT PROPERTY LIMIT
		FUTURE PROPERTY LIMIT
		SWALE
		LIMIT OF BUILDING EXTENT
		RIGHT OF WAY
		LOT LINE
		CHAIN LINK FENCE
		CURB/SIDEWALK
		CONCRETE RETAINING WALL
		PARKING GARAGE / CONCRETE WALL
		PROP. GRASSED SURFACE
		PROP. PAVERS SURFACE
		PROP. ASPHALT SURFACE
		PROP. CONCRETE SURFACE
		TREE

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
3. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF MISSISSAUGA STANDARD SPECIFICATIONS AND DRAWINGS UNLESS OTHERWISE NOTED HEREIN.
4. ORDER OF PRECEDENCE OF STANDARDS DRAWINGS IS FIRSTLY CITY OF MISSISSAUGA, AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
5. THE CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G AND OVERHEAD UTILITIES. CONTRACTOR IS REQUIRED TO OBTAIN ALL LOCATIONS & NOTIFY THE VARIOUS UTILITY COMPANIES 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CITY OF MISSISSAUGA AND CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATIONS OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

BENCHMARK

BENCHMARK: CITY OF MISSISSAUGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019
DESCRIPTION: ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTER#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD, 198m +/- NORTH OF DUNDAS ST.
COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569-8849

NO.	REVISION	DATE	BY	APPROVED
01	ISSUED FOR FIRST SUBMISSION	2021/04/26	K.M.	
02	ISSUED FOR SECOND SUBMISSION	2023/10/23	K.M.	
03	ISSUED FOR THIRD SUBMISSION	2025/10/23	K.M.	
04	RE-ISSUED FOR THIRD SUBMISSION	2025/12/02	K.M.	
05	RE-ISSUED FOR REVIEW	2026/01/30	K.M.	
06	RE-ISSUED FOR THIRD SUBMISSION	2026/02/13	K.M.	
07	ISSUED FOR FOURTH SUBMISSION	2026/02/24	K.M.	

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

Greck
5770 Highway 7
Woodbridge, Ontario
L4L 1T8

LICENSED PROFESSIONAL ENGINEER
K. MAHMOOD
100160233
April 24, 2026
PROVINCE OF ONTARIO

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

GRADING PLAN

DESIGNED BY:	E.P./K.M.	SCALES:	
CHECKED BY:	E.G.	HORIZONTAL:	1:500
DRAWN BY:	K.M.	VERTICAL:	N/A
DATE:	APR 26, 2021	SHEET SIZE:	24"x36"

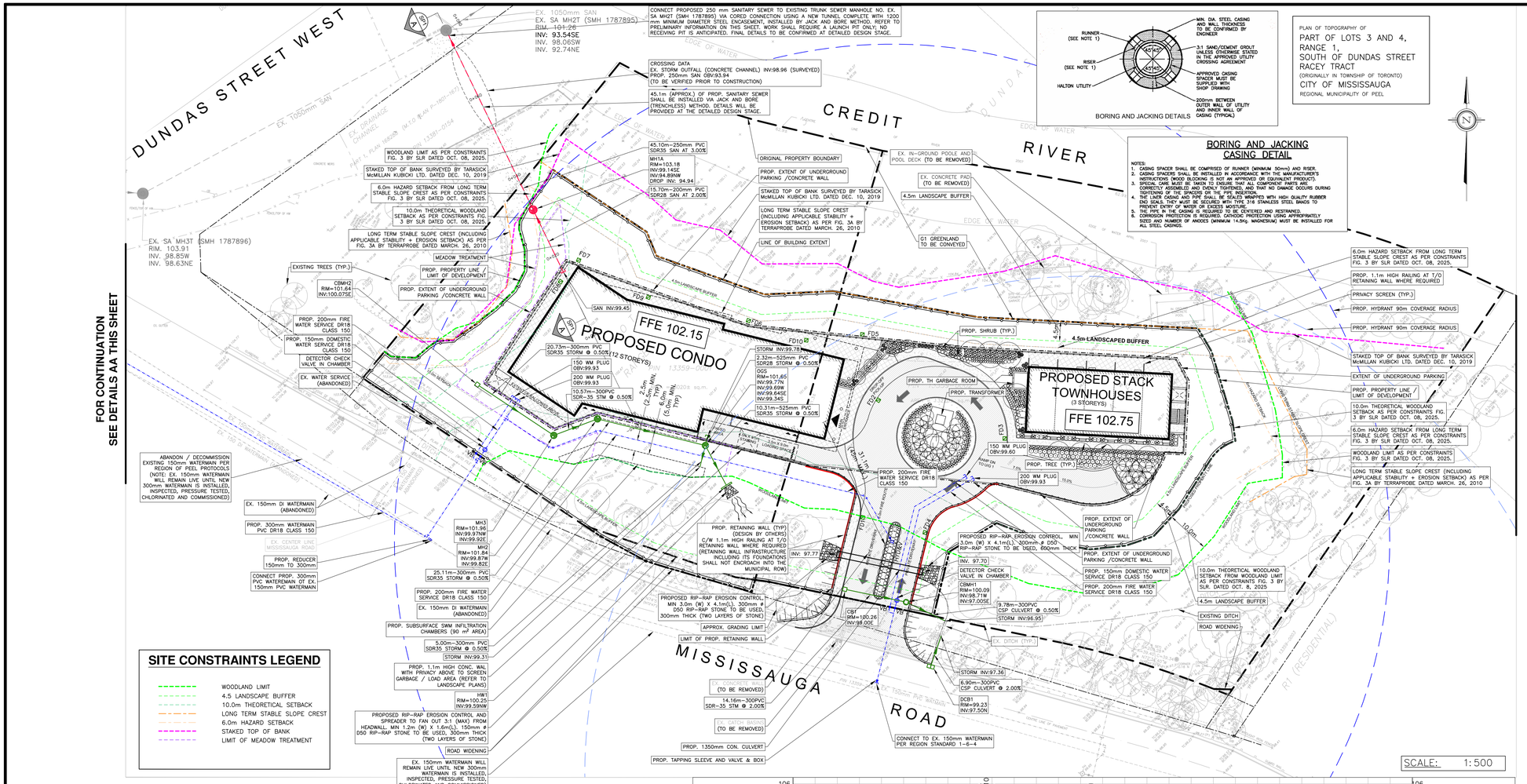
PROJECT No. 20-697
DRAWING No. GP1
SHEET No. 01

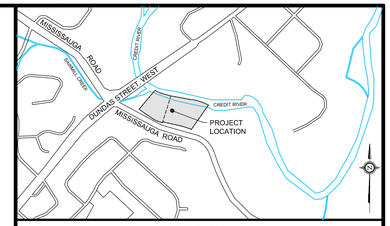
NOTE:
ALL PROPOSED FLOOR DRAINS (FD) TO BE CONNECTED TO INTERNAL PLUMBING SYSTEM.

NOTE:
THE ENGINEER'S PROFESSIONAL SEAL APPLIES SOLELY TO THE GRADING DESIGN AS SHOWN ON THIS PLAN. ALL OTHER DESIGN ELEMENTS AND DISCIPLINES ARE OUTSIDE THE ENGINEER'S SCOPE OF RESPONSIBILITY.

NOTE:
THE EXISTING (NOT DESTROYED) CITY OF MISSISSAUGA BENCH MARK NUMBER, ELEVATION, AND LOCATION/DESCRIPTION USED TO ESTABLISH THE ELEVATION ON THE PLAN IS AS FOLLOWS:
"ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK NO. 58 LOCATED ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTRE#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD,198M +/- NORTH OF DUNDAS STREET WEST HAVING A PUBLISHED ELEVATION OF 108.293m.

NOTE:
THE CONTRACTOR IS CAUTIONED THAT ALL EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES, INCLUDING THOSE NOT INCLUDED ON THIS DRAWING. GRECK AND ASSOCIATES LIMITED CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY, OR MAY NOT BE INDICATED ON THIS DRAWING.





KEY PLAN
N.T.S.

LEGEND

EXISTING	PROPOSED	
MH1	MH1	STORM MANHOLE
MH1A	MH1A	SANITARY MANHOLE
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CB	CB	SINGLE CATCHBASIN
DCB	DCB	DOUBLE CATCHBASIN
HYD&V	HYD&V	FIRE HYDRANT
VB	VB	VALVE & BOX
		SLOPE LINE (3:1 MAX)
		ORIGINAL PROPERTY BOUNDARY
		PROPOSED PROPERTY LIMIT
		SWALE
		RIGHT OF WAY
		LOT LINE
		CHAIN LINK FENCE
		CURB/SIDEWALK
		CONCRETE RETAINING WALL
		PARKING GARAGE / CONCRETE WALL
		STORM SEWER
		SANITARY SEWER
		WATERMAIN
		PROP. GRASSED SURFACE
		PROP. PAVERS SURFACE
		PROP. ASPHALT SURFACE
		PROP. CONCRETE SURFACE

SITE CONSTRAINTS LEGEND

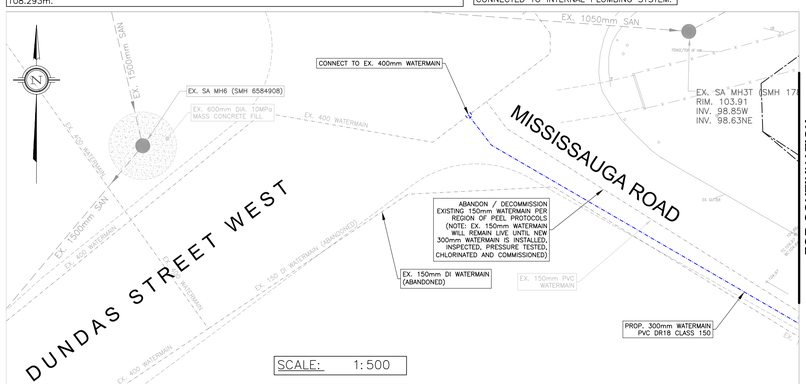
- WOODLAND LIMIT
- 4.5 LANDSCAPE BUFFER
- 10.0m THEORETICAL SETBACK
- LONG TERM STABLE SLOPE CREST
- 6.0m HAZARD SETBACK
- STAKED TOP OF BANK
- LIMIT OF MEADOW TREATMENT

NOTE:
THE CONTRACTOR IS CAUTIONED THAT ALL EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES, INCLUDING THOSE NOT INCLUDED ON THIS DRAWING. GRECK AND ASSOCIATES LIMITED CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY, OR MAY NOT BE INDICATED ON THIS DRAWING.

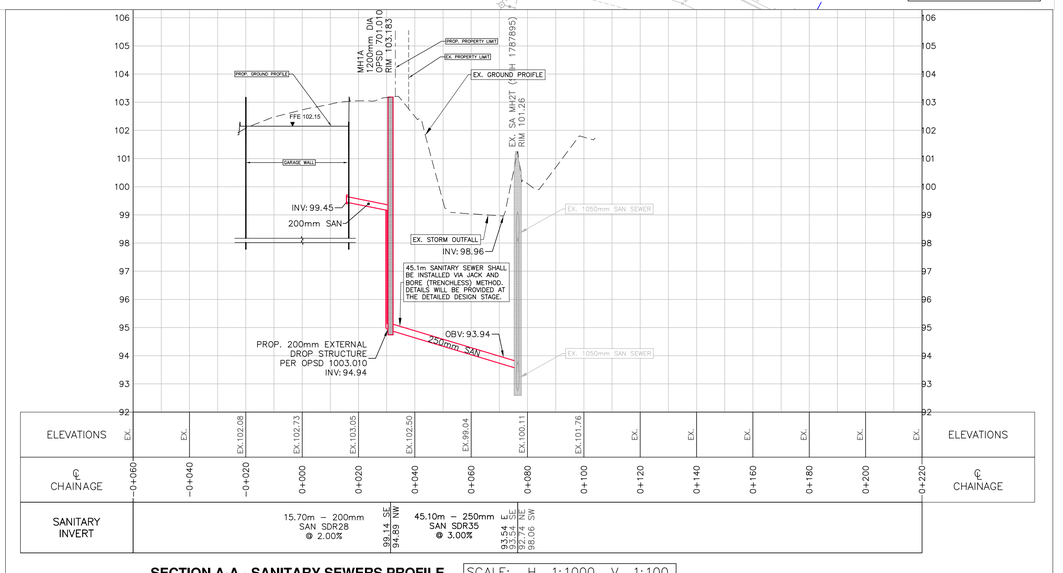
NOTE:
THE EXISTING (NOT DESTROYED) CITY OF MISSISSAUGA BENCH MARK NUMBER, ELEVATION, AND LOCATION/DESCRIPTION USED TO ESTABLISH THE ELEVATION ON THE PLAN IS AS FOLLOWS:
'ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK NO. 58 LOCATED ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTRE#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD,198M +/– NORTH OF DUNDAS STREET WEST HAVING A PUBLISHED ELEVATION OF 108.293m.

NOTE:
ALL CONSTRAINTS ARE DELINEATED ON THIS DRAWING AS REQUIRED BY CVC. DUE TO NUMBER OF CONSTRAINTS, THIS DRAWING SHALL BE PRINTED IN COLOR.

NOTE:
ALL PROPOSED FLOOR DRAINS (FD) TO BE CONNECTED TO INTERNAL PLUMBING SYSTEM.



FOR CONTINUATION SEE DETAILS AA THIS SHEET



SECTION A-A - SANITARY SEWERS PROFILE
SCALE: H 1:1000 V 1:100

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
3. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CITY OF MISSISSAUGA STANDARD SPECIFICATIONS AND DRAWINGS UNLESS OTHERWISE NOTED HEREIN.
4. ORDER OF PRECEDENCE OF STANDARDS DRAWINGS IS FIRSTLY CITY OF MISSISSAUGA, AND SECONDLY ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
5. THE CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G AND OVERHEAD UTILITIES. CONTRACTOR IS REQUIRED TO OBTAIN ALL LOCATIONS & NOTIFY THE VARIOUS UTILITY COMPANIES 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CITY OF MISSISSAUGA AND CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATIONS OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

BENCHMARK

BENCHMARK: CITY OF MISSISSAUGA No. 58
ELEVATION = 108.293m
LOCATION: CITY OF MISSISSAUGA
DATED: DEC 10, 2019
DESCRIPTION: ON THE WEST FACE AT THE NORTH CORNER OF A SPRINGBANK ARTS CENTER#3057 ON THE EAST SIDE OF MISSISSAUGA ROAD, 198m +/– NORTH OF DUNDAS ST.
COMPLETED BY:
TARASICK McMILLAN KUBICKI LTD.
ONTARIO LAND SURVEYORS
4181 SLADVIEW CRESCENT, UNIT 42, MISSISSAUGA, ONTARIO L5L 2R2
(905) 569–8849

NO.	REVISION	DATE	BY	APPROVED
01	ISSUED FOR FIRST SUBMISSION	2021/04/26	K.M.	
02	ISSUED FOR SECOND SUBMISSION	2023/10/23	K.M.	
03	ISSUED FOR THIRD SUBMISSION	2025/10/23	K.M.	
04	RE–ISSUED FOR THIRD SUBMISSION	2025/12/02	K.M.	
05	RE–ISSUED FOR THIRD SUBMISSION	2026/02/13	K.M.	
06	ISSUED FOR FOURTH SUBMISSION	2026/04/24	K.M.	

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

Greck
5770 Highway 7
Woodbridge, Ontario
L4L 1T8

LICENSED PROFESSIONAL ENGINEER
K.MAHMOOD
100160233
April 24, 2026
PROVINCE OF ONTARIO

CLIENT NAME:
590816 ONTARIO INC.
2616 CYNARA ROAD
MISSISSAUGA, ON L5B 2R7

PROJECT NAME:
2935 & 2955 MISSISSAUGA ROAD
MISSISSAUGA, ON

SERVICING PLAN

DESIGNED BY: E.P./K.M.	SCALES:	PROJECT No.	20-697
CHECKED BY: E.G.	HORIZONTAL: AS NOTED	DRAWING No.	SP1
DRAWN BY: K.M.	VERTICAL: AS NOTED	SHEET No.	02
DATE: APR 26, 2021	SHEET SIZE: 24"x36"		

D:\CloudStation\Projects\2020\20-697 – 2935, 2955 Mississauga Road\05_Drawings\CAD\SERVICING\20-697 SERVICING PLAN.dwg
Date Plotted: 10/23/2023 10:09:23 AM