

1000293648 Ontario Inc. o/a Dunpar Developments

Functional Servicing and Stormwater Management Report (FSR/SWM)

Residential Development

2155 Leanne Boulevard, Mississauga

April 2026

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1 Introduction

1.1 Background

Arcadis Professional Services (Canada) Inc. (ARCADIS) was retained by Dunpar Developments (the "Owner") to prepare a Functional Servicing and Stormwater Management (FSR/SWM) Report for the proposed residential development located at 2155 Leanne Boulevard, in the City of Mississauga (the "City"), Regional Municipality of Peel (the "Region").

The purpose of this report is to provide detailed design information for the Region's and City's review with respect to the infrastructure required to support the proposed development regarding storm drainage, sanitary sewers, and water supply.

A request to the Region's engineering records department was carried out to obtain existing information in preparation of this report.

Several documents were available for our review for the preparation of this report, with the following the most important:

- Drawing No. 25081-D — Plan and Profile of Erin Mills Parkway, Storm Sewers and Watermain, Sta. 8+430 to Sta. 8+700, Regional Municipality of Peel, dated May 1997 (as-built March 1999).
- Drawing No. 25080-D — Plan and Profile of Erin Mills Parkway, Storm Sewers and Watermain, Sta. 8+201 to Sta. 8+430, Regional Municipality of Peel, dated May 1997 (as-built March 1999).
- Drawing No. 06184-D — Plan and Profile of Sanitary Sewer Easement Block B, J.D.S. Monro Farm, City of Mississauga Engineering Department, prepared by Fred Schaeffer & Associates Inc., dated December 1978.

In addition, ARCADIS was also provided with the following information from the applicant:

- Topographic Survey prepared by Salna Surveying Inc., dated August 29, 2016;
- Existing Services Plan (Figure 2), 2155 Leanne Boulevard, Mississauga, Ontario, dated April 2017; and
- 2155 Leanne Boulevard Site Plan prepared by Dunpar, dated March 30, 2026.

1.2 Existing Site Description

The existing 2.302 ha site is located in the City of Mississauga at the northwest quadrant of the intersection of Leanne Boulevard and Erin Mills Parkway, in the Erin Mills community. The legal description is as follows: Part of Block B and Part of Block C, Registered Plan M-234, City of Mississauga. The site's municipal address is 2155 Leanne Boulevard, Mississauga, Ontario. The site falls within the Loyalist Creek subwatershed. Please refer to Figure FIG-1 and Figure FIG-2 (Appendix A) for the Site Location Plan and Aerial Plan, respectively.

The existing site is currently occupied by a surface commercial retail plaza, consisting of a two-storey retail building and an expansive asphalt surface parking lot with associated landscaped islands. The site is predominantly impervious. Site grades generally slope from northwest to southeast, ranging from approximately 134.2 m in the northwest corner to approximately 128.9 m along the Erin Mills Parkway frontage. Stormwater runoff is collected by a series of catch basins located throughout the surface parking lot and along the Leanne Boulevard and Erin Mills Parkway frontages, and directed to the municipal storm sewer system.

The site is located in an area of the City that is serviced by a network of municipal infrastructure including roads, sewers, watermains, and other services and utilities. Locations and conditions of all utilities should be verified at the time of construction.

2 Site Proposal

The proposed development will consist of nine (9) back-to-back townhouse blocks containing a total of 164 residential units, and one (1) eight-storey mid-rise residential building containing **203** units, for a combined total of **367** residential units. The townhouse blocks range in size from 12 to 24 units per block (Blocks A through I) and are arranged in rows accessed by an internal private road network. Unit parking is accommodated via private driveways, with visitor parking provided along the internal private road. The mid-rise building is located along the Erin Mills Parkway frontage and is served by an underground parking structure accessed via a ramp on the north side of the building, as well as a dedicated garbage loading and truck manoeuvre area. Pedestrian connectivity throughout the site is provided via 1.8 m wide internal sidewalks. Landscaped open amenity space of approximately 1,470 m² is provided centrally within the site, while a public park is proposed at the northwest corner of the site.. Site access is proposed via Leanne Boulevard. Please refer to Appendix A for the proposed site plan along with development statistics as prepared by Dunpar (March 2026).

3 Terms of Reference and Methodology

3.1 Terms of Reference

The Terms of Reference used for the scope of this report were based on the Region's Linear Wastewater Standards (2023), Region's Development Charges Background Study (2020) and the City's Transportation and Works Development Requirements Manual and Standard Drawings.

3.2 Methodology: Sanitary Discharge

The sanitary sewage discharge from the site will be determined by using sanitary sewer design sheets that consider the land use and building statistics as supplied by the design team. The calculated values provide peak sanitary flow discharge with infiltration considerations. The estimated sanitary discharge flows from the proposed site will be calculated based on the Region’s criteria shown in **Table 3-1** below.

Table 3-1 Sanitary Demand Criteria

USAGE	DESIGN FLOW	UNITS	PERSONS
Non-Residential Flow Generation	270	Litres/Person/Day	Commercial = 50 pp/ha
Residential Flow Generation	290	Litres/Person/Day	1BD or smaller = 1.7 ppu Larger than 1BD = 3.1 ppu
Extraneous Flow (Infiltration)	0.26	Litres/Second/Hectare	
Peaking Factor*	$M=1+14/[4+(P/1000)^{0.5}]$	Where P is Population in Thousands	Townhouse Unit = 3.4 ppu

Based on the calculated peak flows, the adequacy of the existing infrastructure to support the proposed development will be discussed in the subsequent **Section 6**.

3.3 Methodology: Water Usage

The domestic water usage will be calculated based on the Region’s design criteria as outlined in **Table 3-2** below.

Table 3-2 Water Usage Criteria

USAGE	WATER DEMAND	UNITS
Residential	270	Litres/Capita/Day
Institutional	250	Litres/Capita/Day

Pressure and flow testing to determine the adequacy of the existing watermain to support the development with fire suppression in accordance with the Fire Underwriters Survey (FUS) Guidelines (2020) will be discussed in the subsequent **Section 7**.

3.4 Methodology: Stormwater Drainage and Management

The following report provides a review of the pre- and post-development site conditions and comments on opportunities to reduce post-development peak flows. Requirements set by the City of Mississauga, Ministry of the Environment Conservation and Parks (MECP) were reviewed. The site being a part of the Loyalist Creek subwatershed, the following SWM criteria are to be applied:

Water Quantity

Post development peak flows for the 10-year event should be controlled to the 10-year pre-development release rates.

Water Quality

Enhanced Level 1 Protection, with a long-term average removal of 80% of the Total Suspended Solids (TSS) must be achieved on an annual loading basis.

Water Balance

Best efforts where possible to retain runoff resulting from a 5 mm rainfall event on-site using Low Impact Development (LID) practices including infiltration, evapotranspiration and/or water reuse measures.

4 Stormwater Management and Drainage

4.1 Design Criteria

Based on a review of the City of Mississauga Guidelines, the Stormwater Management (SWM) Criteria applicable to the site are as outlined in **Table 4-1** below.

Table 4-1 Stormwater Management Criteria

CRITERIA	REQUIREMENT
Quantity Control	10-Year Post to 10-Year Pre-development Control
Water Balance	Best efforts to retain 5mm for the sites total impervious area (excluding initial abstraction)
Quality Control	80% TSS Removal

4.2 Existing Conditions

The total pre-development drainage area is 2.30 ha. According to available records, there is an existing 1,050 mm storm sewer on Leanne Boulevard, and an existing 300 mm storm sewer collection system within Erin Mills Parkway fronting the site. Split drainage (one system going east; other going west) occurs on site. Site flows along the Erin Mills Parkway frontage drains into the existing 300 mm storm sewer collection system on Erin Mills Parkway going east. While site controlled flows connect to the existing 1,050 mm storm sewer along Leanne Boulevard ultimately connects to an existing 1,200 mm storm sewer along Erin Mills Parkway downstream of the site

The pre-development drainage area has been divided into four (4) catchments (listed below) per existing drainage conditions to Leanne Boulevard and Erin Mills Parkway.

- The majority of the site (93%) drains to catchment A1PRE. A1PRE drains via catchbasins and building connections to the existing 1,050 mm storm sewer along Leanne Boulevard. Collected drainage flows west.
- A2PRE (3%) drains uncontrolled to the north perimeter of the site and discharges directly to the municipal storm sewer along Erin Mills Parkway. Collected drainage flows east.
- A3PRE (1.8%) drains uncontrolled to the east and south of the site and discharges directly to the municipal storm sewer along Leanne Boulevard and the adjacent south property respectively.
- A4PRE (2.5%) drains uncontrolled to the west perimeter of the site and discharges directly to the municipal storm sewer along Leanne Boulevard.

Table 4-2 summarizes the pre-development drainage areas and their corresponding parameters. The existing drainage areas are also illustrated on **Figure DAP-01** in **Appendix B**. Per City of Mississauga standards, a runoff coefficient of 0.50 was applied for areas with greater than 0.50 runoff coefficients (**Table 4-2**).

Table 4-2 Existing Conditions Input Parameters

CATCHMENT	DRAINAGE AREA(Ha)	COMPOSITE COEFFICIENT	APPLIED RUNOFF COEFFICIENT (C)
A1PRE (controlled)	2.133	0.83	0.50
A2PRE (uncontrolled)	0.068	0.25	0.25
A3PRE (uncontrolled)	0.042	0.25	0.25
A4PRE (uncontrolled)	0.059	0.25	0.25
TOTAL	2.302	-	-

The 10-year post-development flow will need to be controlled to the 10-year pre-development level. **Table 4-3** below summarizes the allowable site release rate.

Table 4-3 Target 10-Year Peak Flows

CATCHMENT	Peak Flow Rational Method (L/s)	Tc (min)	Collection System
A1PRE (controlled)	293.7	15	Leanne Boulevard
A2PRE (uncontrolled)	4.7	15	Erin Mills Parkway East System
A3PRE (uncontrolled)	2.9	15	Leanne Boulevard
A4PRE (uncontrolled)	4.0	15	Leanne Boulevard

As shown above, the post-development 10-year flow to the existing Leanne Boulevard collection system will need to be controlled to **300.7 L/s** (A1PRE + A3PRE + A4PRE), while the post-development 10-year flow to the existing Erin Mills Parkway system will need to be limited to **4.7 L/s** Please refer to **Appendix B** for detailed calculations.

4.3 Stormwater Management

4.3.1 Proposed Conditions

Under proposed conditions storm drainage from majority (90%) of the site, identified as A1POST, will be controlled via a gravity network within the property to collect surface runoff from private roadways. The remaining (1%) area, identified as A2POST, will drain uncontrolled to Erin Mills Parkway East System from the north-east corner of the property. The following drainage conditions will prevail under post-development conditions:

- A1POST (99%) drains controlled to Leanne Boulevard;
- A2POST (1%) drains uncontrolled to Erin Mills Parkway East System; and
- There will be no uncontrolled drainage towards Leanne Boulevard.

Table 4-4 below summarizes the proposed conditions drainage parameters. Please refer to **Appendix B** for calculations and **Figure DAP-02** for proposed drainage areas.

Table 4-4 Proposed Condition Drainage Parameters

CATCHMENT	DRAINAGE AREA (Ha)	C	TC (MIN)
A1POST (controlled)	2.227	0.79	15
A2POST (uncontrolled)	0.019	0.90	15
TOTAL	2.302	-	-

4.3.2 Stormwater Quantity Control

Post development 10-year storm flows from A2POST were calculated as follows:

$$Q_{A2POST} = \frac{(A \times R) \times I_2}{360} = \frac{(0.079\text{ha} \times 0.90) \times 99.2 \text{ mm / hr}}{360} \times \left(\frac{1000 \text{ L}}{\text{m}^3}\right) = 4.7 \text{ L/s}$$

Therefore, the proposed uncontrolled flows from the site to the Erin Mills Parkway east system will match the pre-development flows to the same system.

Post development 10-year storm flows from A1POST will be controlled by utilizing rooftop storage, an underground stormwater storage tank and pumps to meet the allowable flow of 300.7 L/s. The proposed underground SWM tank and pumps will be located on the north-west boundary adjacent the proposed underground parking structure at the mid-rise building. A summary of the 10-year post development flows to Erin Mills Parkway west system is shown below in **Table 4-5**.

Table 4-5 10-Year Post Development Flows to Erin Mills Parkway West System

Storage Facility	Storage Volume Required (m ³)	Storage Volume Provided (m ³)	A2POST Target Flow (L/s)	Pump Controlled Release Rate (L/s)	Uncontrolled Release Rate (L/s)	Total Site Release Rate (L/s)
Roof	214.2	394.6	293.7	150.0	0	150.0
SWM Tank	156.3	180.0				

As can be seen from Table 4-5, will be overcontrolled to 150 L/s via the pumped system from the proposed underground SWM tank. Flows from the site will therefore be significantly lower than the allowable 300.7 L/s. The maximum storage required is 156.3 m³ and will be provided (180.0 m³) via a 120 m² underground SWM tank. Detailed roof storage, tank storage and pump rate calculations are shown in **Appendix B**. Please refer to **Drawing C101** in **Appendix E** for the storm sewer layout as well as the location of the storage tank.

4.3.3 Stormwater Balance

As recommended by the City, a rainfall depth of 5 mm should be retained where possible over the total site impervious areas, excluding initial abstraction. The total impervious area of the site is 19,075 m² (1.91 ha), which equates to a required water re-use volume of **95.4** m³. Rainwater reuse for irrigation will be the primary means used to meet the site 5 mm retention requirement..

4.3.4 Stormwater Quality

Quality control will be provided by a combination of Oil Grit Separators (OGS), and inherent treatment from rooftops and landscaping. For MECP Enhanced Level (80%) protection, two (2) OGS units (OGS 1 and OGS 2) will be installed to treat the drainage collected from the site via roof drains, area drains, and catchbasins. The proposed OGS 1 and OGS 2 units sized for the site are the Rinker/Imbrium Systems’ Stormceptor Model EFO8 and EFO10 respectively. 47% of the site will be collected by OGS 1, while another 53% as well as flows from OGS 1 will flow into OGS 2. Flows from OGS 1 will outlet into the proposed underground SWM tank. Please refer to **Drawing C101** in **Appendix E** for the location of the OGS unit and proposed storm sewer layout. Based on water quality calculations, the TSS removal rate under post-development conditions is 80%. Therefore, the minimum TSS removal of 80% will be achieved. Detailed quality control calculations are provided in **Appendix B**.

4.3.5 Proposed Storm Connection

The proposed site connection will be made to the existing 1,050 mm diameter storm sewer on Leanne Boulevard. The connection will be made via a 450 mm PVC storm sewer service connection with a minimum grade of 0.55%. The 450 mm storm pipe will have a full flow capacity of approximately 211.4 L/s, which will be adequate to convey the site discharge of 150.0 L/s from the site during the 10-yr storm event.

Please refer to **Drawing C101** in **Appendix E** for the layout of the proposed storm service connections.

5 Sanitary Drainage System

5.1 Existing Sanitary Drainage System

According to the reviewed information as stated in **Section 1.1**, there is an existing 250 mm diameter sanitary sewer along Erin Mills Pkwy that terminates at a manhole at the site access. There is also an existing Peel Region 200 mm diameter sanitary sewer running through the site along the main driveway and parking area, between Leanne Blvd and Erin Mills Pkwy. This sanitary sewer is to be re-routed to be within proposed Lane A.

5.1.1 Pre-Development Sanitary Flow

The site is currently occupied by a two-storey commercial plaza with a total gross floor area of 9,550 m², comprising approximately 2,900 m² of retail space and 6,650 m² of office space. Using the Region of Peel’s criteria for commercial (Table 3-1) the calculated pre-development sanitary flow contribution is:

- Pre-Development Flow = (Employment Population × 270 L/emp/day × Peaking Factor) / 86,400 s + Infiltration Allowance
- Pre-Development Flow = (115 employees × 270 L/emp/day × 4.23) / 86,400 s + (2.302 ha × 0.26 L/s/ha)
- Pre-Development Flow = 1.52 L/s + 0.60 L/s
- Pre-Development Flow = **2.10 L/s**

The existing sanitary discharge flow calculated above was calculated using the Region of Peel Sanitary Sewer Design Criteria of 270 litres per employee per day for non-residential uses, and an infiltration rate of 0.26 L/s/ha. Please refer to **Appendix C** for detailed calculations.

5.1.2 Post-Development Sanitary Flow

The anticipated sanitary discharge flows for the proposed site were calculated based on the Region’s design criteria outlined in **Table 3-1** per **Section 3.3**, along with the proposed site statistics found in **Appendix A**. The GFA of the townhouses along with peaking factors were considered in the analysis to evaluate the adequacy of the existing municipal infrastructure. The design inputs for the site are shown in **Table 5-1** below.

Table 5-1 Equivalent Population Calculations

Land Use	Units	Population Density (pp/unit)	Total Population (Capita)
Townhouse	164	3.4	558
Midrise 1 Bed / 1 Bed + D	58	1.7	99
Midrise 2 Bed / 2 Bed + D	133	3.1	412
Midrise 3 Bed / 3 Bed + D	12	3.1	37

The calculated post-development flow contribution is:

- Post-Development Flow = $(\text{Population} \times 290 \text{ L/cap/day} \times \text{Peaking Factor}) / 86,400 \text{ s} + \text{Infiltration Allowance}$
- Post-Development Flow = $(1,106 \text{ people} \times 290 \text{ L/cap/day} \times 3.77) / 86,400 \text{ s} + (2.302 \text{ ha} \times 0.26 \text{ L/s/ha})$
- Post-Development Flow = $14.00 \text{ L/s} + 0.60 \text{ L/s}$
- Post-Development Flow = **14.60 L/s**

The sanitary discharge flow calculated above was calculated using the Region of Peel Sanitary Sewer Design Criteria of 290 litres/capita/day, and an infiltration rate of 0.26 L/s/ha. Based on the above criteria, a peak design flow of 14.60 L/s was calculated for the subject property. Please refer to **Appendix C** for detailed calculations.

The post development sanitary flows calculated and identified above were used to size and design the sanitary sewers within the development site.

5.1.3 Proposed Sanitary Connection

The proposed development will connect with a series of block service laterals and main line sanitary sewers to the re-aligned 200 mm diameter sanitary sewer within Lane A. The proposed-realigned sanitary system will connect to the existing 250 mm sanitary sewer within Lane A which outlets the site to the existing sanitary manhole on Erin Mills Parkway at the north-east corner of the site. The connection to the existing 250 mm sanitary sewer on Lane A will be made via a 200 mm PVC sanitary sewer with a minimum grade of 1.0 % from the proposed sanitary manhole (MH4A) the north-east boundary of the site. Please refer to **Appendix C** for calculations and **Drawing C101** in **Appendix E** for the layout of the proposed sanitary service connections.

6 Water Supply System

6.1 Existing System

A 400 mm diameter watermain is located within the Erin Mills Parkway right-of-way, and a 200 mm diameter watermain is located within the Leanne Boulevard right-of-way, both of which front the subject site. A hydrant flow test for the existing watermain system in the vicinity of the site has not yet been conducted, as the testing window has not opened due to winter weather conditions. The hydrant flow test will be carried out in accordance with NFPA standards and the results will be incorporated into this report prior to final submission. The available fire flow and system pressure will be confirmed at that time to demonstrate that the existing watermain system meets the requirements for domestic demand and fire suppression as outlined in the FUS guidelines for the proposed development. Please refer to Appendix E for detailed calculations.

6.2 Proposed Water Supply

The estimated water consumption for the proposed development was calculated based on the water demand shown in **Table 3-2** per **Section 3.3**, along with the proposed site statistics found in **Appendix A**.

The water supply for public fire protection was calculated based on the guidelines provided by the FUS (2020), to demonstrate that the existing flows and pressure are adequate to meet the minimum requirement for fire suppression outlined in the FUS (2020).

6.2.1 Pre-Development Water Demand

The assessed water consumption for the existing commercial plaza at 2155 Leanne Boulevard was calculated based on the water demand criteria outlined in Peel's 2020 Development Charges Background Study, as shown in Table 3-2 per Section 3.3. Using an employment population of 115 employees and an average consumption rate of 250 litres per employee per day for Institutional/Commercial/Industrial uses, it is estimated that an Average Daily Demand (ADD) of approximately 0.33 L/s, a Maximum Daily Demand (MDD) of approximately 0.47 L/s, and a Peak Hourly Demand (PHD) of approximately 1.0 L/s was required to service the existing development with domestic water.

Fire demand calculations for the existing commercial plaza were based on the building footprint and construction type in accordance with the FUS guidelines. The existing plaza is a two-storey Type 2 (ordinary/masonry) construction with a maximum floor plate of 2,900 m², partially sprinklered, with no adjacent exposures. The minimum fire suppression flow requirement for the existing development at 2155 Leanne Boulevard is approximately 19,200 L/min (320 L/s) at a minimum residual pressure of 140 kPa (20 psi). Please refer to Appendix E for detailed pre-development domestic demand and fire flow calculations.

6.2.2 Proposed Water Demand Requirements

The estimated proposed water consumption was calculated based on the water demand criteria outlined in Peel's 2020 Development Charges Background Study, as shown in **Table 3-2** per **Section 3.3**. It is anticipated that an ADD of 1.71 L/s, a MDD of 3.08 L/s, and a PHD of 5.14 L/s will be required to service the proposed development midrise. An ADD of 1.74 L/s, a MDD of 3.14 L/s, and a PHD of 5.23 L/s will be required to service the proposed townhouse blocks collectively with domestic water.

The Region requires that the Water Supply for Public Fire Protection calculations, as provided by FUS (2020), be undertaken to determine the water pressure and flow required to service the proposed development with adequate fire suppression. ARCADIS has prepared fire flow calculations based on the proposed building footprints for the proposed development. The governing fire flow is determined by the townhouse blocks. According to calculations, a minimum fire flow of approximately 15,000 L/min (250 L/s) will be required from the nearest hydrant with at least 140 kPa (20 psi) of residual pressure. Please refer to the detailed domestic demand and fire flow calculations found in **Appendix D**.

6.3 Proposed Watermain Connection

The proposed midrise development will connect to the existing 400 mm diameter watermain on Erin Mills Parkway via a 200 mm diameter watermain to service both fire and water demands. The watermain servicing the midrise will be metered. The proposed townhouse blocks will connect to the existing 200 mm diameter watermain on Leanne Boulevard via a 200 mm diameter watermain to service both fire and water demands. The watermain within the site will service each block with individual connections and be metered collectively. A bulk water meter, backflow preventer and detector check valve will be provided for the two connection points at the site property line.

Please refer to **Drawings C101 and C103** for Site Servicing Plan and Cross-Sections of the watermain and service connection in **Appendix F** respectively.

6.4 Hydrant Coverage

There are existing fire hydrants located adjacent to the site, on Erin Mills Parkway and Leanne Boulevard. Due to the proposed development size, additional hydrants are proposed within the site limits to ensure there is adequate hydrant coverage. The proposed hydrants have been positioned such that the minimum coverage requirement of 70 m is satisfied. Please refer to **Drawing C101** in **Appendix F** for the locations of the existing and proposed hydrants.

7 Site Grading

7.1 Existing Grades

Site existing grades slope from northwest to southeast, ranging from approximately 134.2 m in the northwest corner to approximately 128.9 m along the Erin Mills Parkway frontage. Stormwater runoff is collected by a series of catch basins located throughout the surface parking lot and along the Leanne Boulevard and Erin Mills Parkway frontages, and directed to the municipal storm sewer system. Please refer to **Appendix A** for the topographical survey of the existing property.

7.2 Proposed Grades and Emergency Overland Flow Routes

The proposed grades will match current drainage patterns wherever feasible, and grades will be maintained along the property lines to the extent practical. In the proposed conditions, majority of the site flows west to east via private roadways, towards Erin Mills Parkway. The site's proposed grades range from 132.73 to 129.24 m. Due to the proximity of the proposed buildings and the property lines; in order to maintain consistent elevations through the structures a retaining wall has been proposed along the northwest and northeast corners of the site. Overland flow for events, up to and including the 100-yr storm design event, will be captured within the site. Overland flow for events exceeding the 100-yr design event, will be directed to Chalkwell Close. Please refer to **Drawing SG-01** for site Grading Plan in **Appendix E**.

8 Site Access

According to the architectural plans provided, vehicular access to the site will be provided via a series of private laneways that connect west to Leanne Boulevard and east to Erin Mills Parkway. Pedestrian access for the residential units will be located off of Leanne Boulevard and Erin Mills Parkway.

9 Utilities

As this development is within an urbanized area of the City, all utilities, including telephone, cable, electricity and gas are assumed to be readily available to service the proposed development at 2155 Leanne Boulevard.

10 Conclusions and Recommendations

Based on our investigations, we conclude the following:

Storm Drainage

To satisfy stormwater management requirements to the City of Mississauga municipal system the following has been provided:

- Quantity control is to be provided using a pump to control flows from a stormwater storage tank.
- 5 mm retention for water balance be provided via irrigation.
- The storm flows from the site will ultimately connect to the existing 1,200 mm storm sewer along Erin Mills Parkway.
- A summary of the SWM for the site is follows in **Table 10-1**.

Table 10-1 Stormwater Drainage Summary

ALLOWABLE RELEASE RATE (10-YR STORM):	300.7 L/s
TOTAL SITE RELEASE RATE (10-YR STORM):	150.0 L/s
REQUIRED STORAGE:	156.3 m ³
PROVIDED STORAGE:	180.0 m ³
PUMP CONTROLLED RELEASE RATE:	150.0 L/s
PROJECTED QUALITY CONTROL:	87%

Sanitary Sewers

The expected sanitary discharge flow under post development conditions from the site is **14.6 L/s**. The sanitary flows will be directed to the re-aligned sanitary sewer within Lane A and connect the existing 250 mm sanitary sewer on Lane A at the north-east corner of the site which connects to Erin Mills Parkway.

Water Supply

Water supply for the site will be provided by connections made to the existing 400 mm and 200 mm watermain system fronting the subject site on Erin Mills Parkway and Leanne Boulevard respectively. The average domestic water consumption anticipated is 1.71 L/s and 1.38 L/s, a maximum daily demand of 3.08 and 2.49 L/s, and a peak hourly demand of 5.14 L/s and 4.15 L/s for the proposed mid-rise and townhouse developments respectively. The site requires a minimum fire flow of approximately 15,000 L/min (250 L/s) at a residual pressure of at least 140 kPa (20 psi). A hydrant flow test will be conducted in accordance with NFPA standards once the winter weather window has passed to confirm that the existing watermain system can accommodate the required domestic and fire suppression demands.

Site Grading

The proposed grading of the site will match the existing grades where possible. To a practical extent, site flows will be accommodated by the SWM system up to and including the 100-year design event. Emergency overland flow will be directed to the site access at Erin Mills Parkway. A small portion of the site will flow uncontrolled to Erin Mills Parkway, similar to existing conditions.

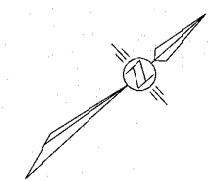
Recommendations

In summary, the site and the proposed re-development can be adequately serviced in respect to stormwater drainage, and SWM. The stormwater quantity and quality controls can be implemented in accordance with the City, Region and MECP.

Accordingly, we hereby recommend the adoption of this report as it relates to the provision of servicing works, and for the purposes of re-zoning and Site Plan application approval.

Appendix A

Background Information

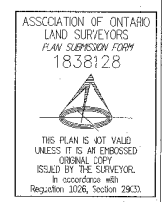


SURVEYOR'S REAL PROPERTY REPORT
 PART 1) PLAN AND TOPOGRAPHIC DETAIL OF
 BLOCK B AND PART OF BLOCK C
 REGISTERED PLAN M-234
 CITY OF MISSISSAUGA
 REGIONAL MUNICIPALITY OF PEEL
 SCALE 1:400
 © COPYRIGHT
Salma Surveying
 Ontario Land Surveyors

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

NOTES AND LEGEND

D	DENOTES SURVEY MONUMENT PLANTED
■	DENOTES SURVEY MONUMENT FOUND
SIB	DENOTES STANDARD IRON BAR
SPB	DENOTES SHORT STANDARD IRON BAR
IP	DENOTES IRON PIPE
IB	DENOTES IRON BAR
IC	DENOTES CUT CROSS
M	DENOTES MEASURED
S	DENOTES SET
WIT	DENOTES WITNESS
C	DENOTES CALCULATED
OU	DENOTES ORIGIN UNKNOWN
P1	DENOTES REGISTERED PLAN M-234
P2	DENOTES PLAN BY P.SALMA Co. LTD., O.L.S.
P3	DENOTES PLAN 43R-11386
P4	DENOTES 43R-23923
P5	DENOTES 43R-6058
CF	DENOTES CONCRETE FOUNDATION
922	DENOTES SCHAEFFER & REINTHALER LTD., C.L.S.
HYD	DENOTES FIRE HYDRANT
CB	DENOTES CATCH BASIN
MH	DENOTES MANHOLE
MH(SAN)	DENOTES MANHOLE(SANITARY)
MH(STM)	DENOTES MANHOLE(STORM)
MH(SEW)	DENOTES MANHOLE(SEWER)
HP	DENOTES HYDROPOLE
N	DENOTES NORTH
WV	DENOTES WATER VALVE
HW	DENOTES HAND WELL
Ø	DENOTES DIAMETER
153.27	DENOTES EXISTING ELEVATION
⊙	DENOTES DECIDUOUS TREE
⊙*	DENOTES CONIFEROUS TREE
BH	DENOTES BOREHOLE
MW	DENOTES MONITORING WELL
N	DENOTES NORTH
S	DENOTES SOUTH
E	DENOTES EAST
W	DENOTES WEST



THIS REPORT WAS PREPARED FOR VANDIK GROUP OF COMPANIES
 AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY
 FOR USE BY OTHER PARTIES.

BEARING NOTE
 BEARINGS SHOWN ARE MAGNETIC AND ARE REFERRED TO THE
 SOUTHEASTERLY LIMB OF BLOCK B AS SHOWN ON REGISTERED PLAN M-234
 HAVING A BEARING OF N66°17'50"E

BENCHMARK
 ELEVATION SHOWN HEREON ARE MISSISSAUGA DATUM AND ARE DERIVED FROM
 CITY OF MISSISSAUGA BENCHMARK 16401
 HAVING AN ELEVATION OF 157.665

PART 2) SURVEY REPORT
 REGISTERED EASEMENTS AND/OR RIGHT OF WAYS:
 BLOCK B IS SUBJECT TO AN EASEMENT AS IN REG. NO. L12135498
 BLOCK C IS SUBJECT TO AN EASEMENT OVER PART 2, PLAN 43R-27355
 AS IN REG. NO. P1467222
 BLOCK C IS SUBJECT TO AN EASEMENT OVER PART 1, PLAN 43R-27355
 AS IN REG. NO. L12135498
 COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS:
 THIS PLAN DOES NOT CERTIFY COMPLIANCE WITH ZONING
 BY-LAWS.

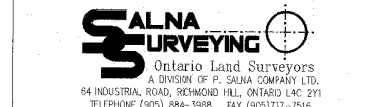
SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
 1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE
 WITH THE SURVEY ACT, THE SURVEYORS ACT AND THE
 REGULATIONS THERE UNDER THEREIN.
 2. THE SURVEY WAS COMPLETED ON JULY 5, 2012.

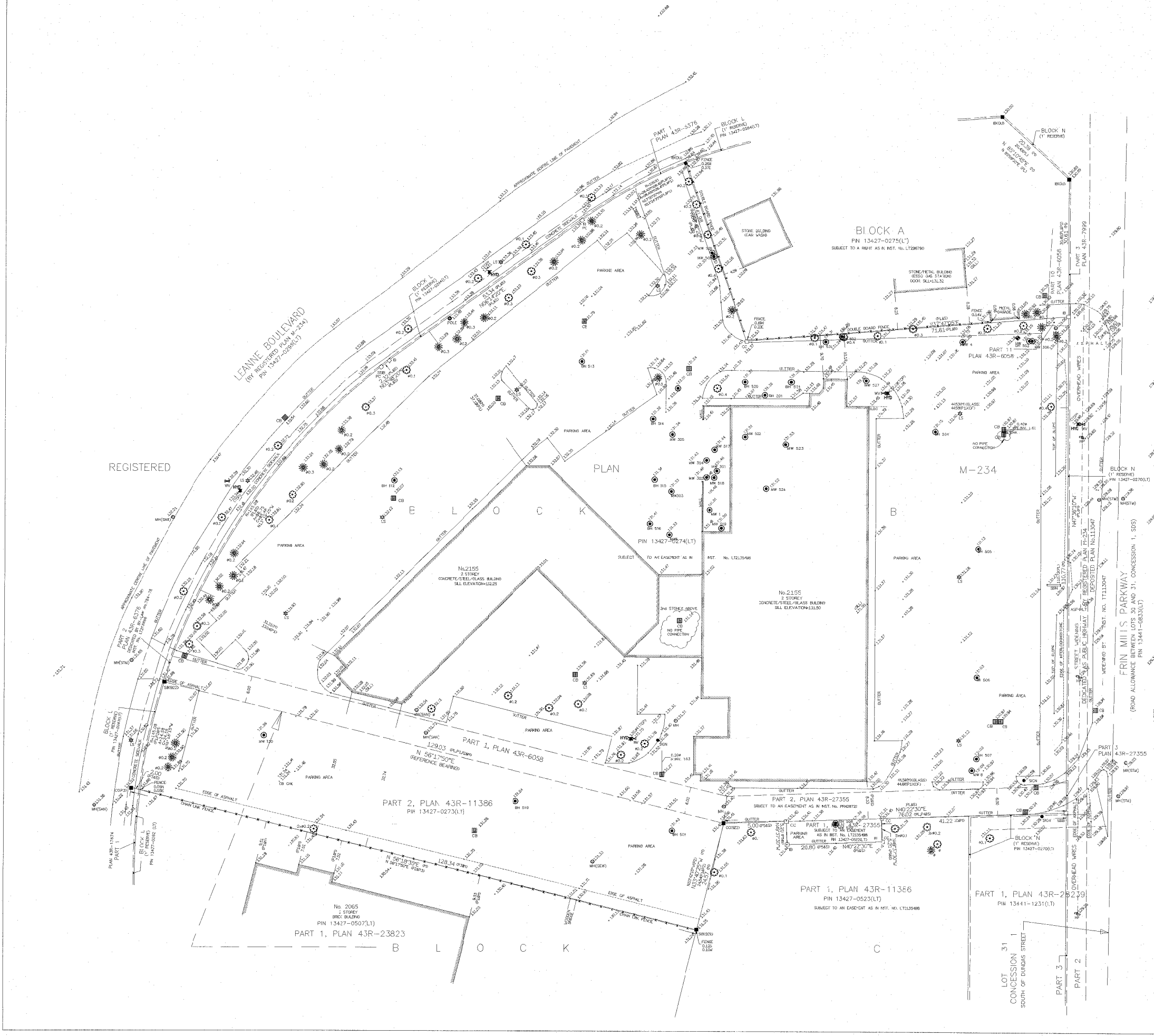
REVISED ON AUGUST 29, 2016
 TO SHOW NEW BOREHOLE & MONITORING WELL LOCATIONS
 WITH ELEVATION & CATCH BASIN INVERTS

AUGUST 29, 2016
 Date
 ROBERT SALMA
 Ontario Land Surveyor

JULY 12, 2012
 Date
 SAI RAJAPANDJ
 Ontario Land Surveyor



DRAWN BY: NATHAN FIELD BY: NELSON JOB #
 CHECKED BY: B.B.R. CAD FILE: LEANNE BVD.2155





D
DUN PAR
BETTER BY DESIGN

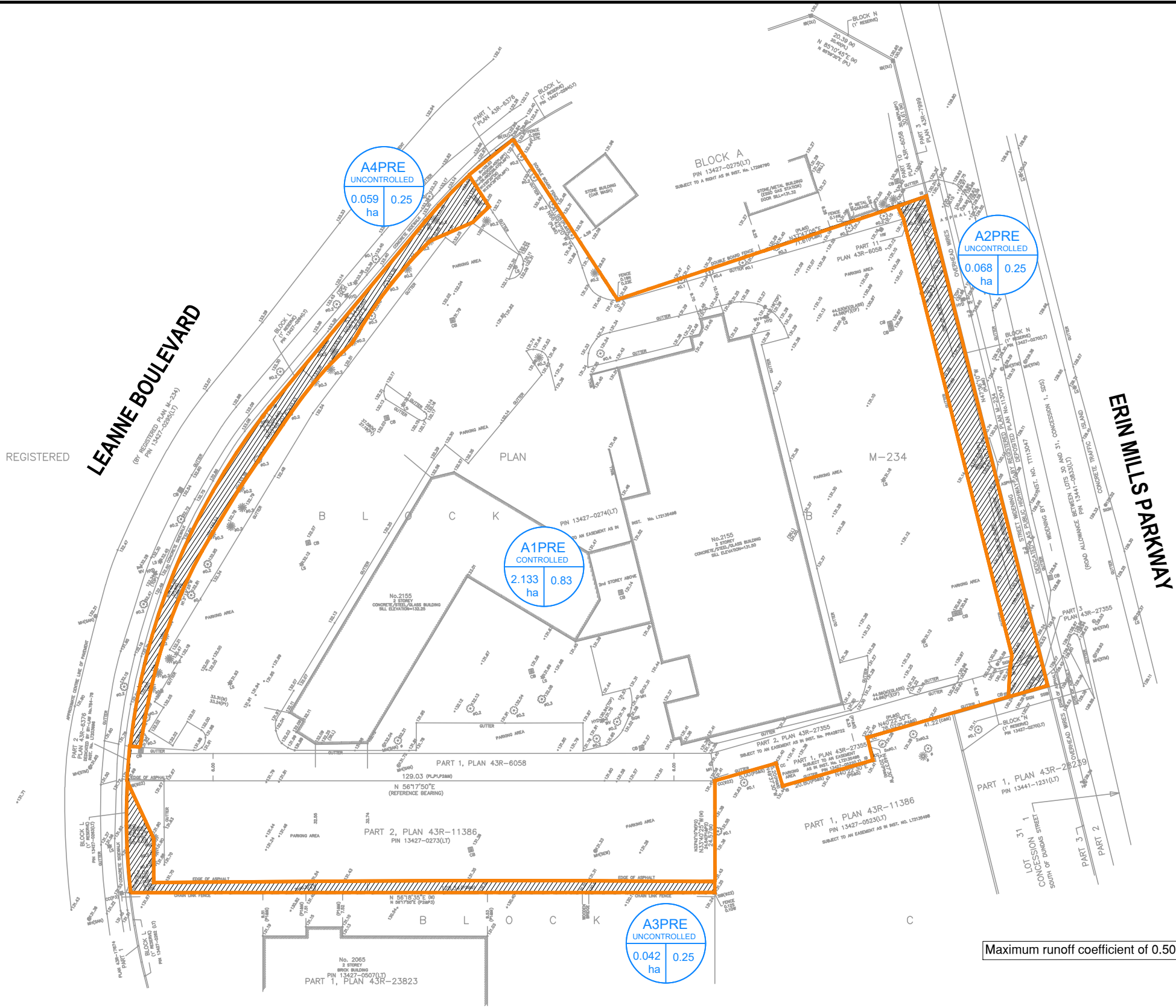
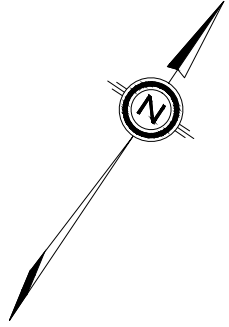
2155 LEANNE BLVD., MISSISSAUGA ON

Drawing Title
SITE PLAN

Date Page No.
02/23/26 A-100

Appendix B

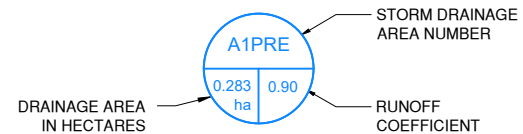
Stormwater Data Analysis



Maximum runoff coefficient of 0.50 used for pre-development conditions as per City standards.

LEGEND

- PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- MAJOR SYSTEM DIRECTION
- MINOR SYSTEM DIRECTION



PRIME CONSULTANT 8133 Warden Avenue - Unit 300 Markham ON L6G 1B3 Canada tel 905 763 2322 www.arcadis.com	CLIENT 1000293648 ONTARIO INC. O/A DUNPAR DEVELOPMENTS 105 SIX POINT ROAD ETOBICOKE, ON M8Z 2X3 CANADA	PROJECT NAME 2155 LEANNE BOULEVARD 2155 LEANNE BOULEVARD, CITY OF MISSISSAUGA	This drawing has been prepared solely for the intended use, thus any reproduction or distribution for any purpose other than authorized by Arcadis is forbidden. Written dimensions shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job, and Arcadis shall be informed of any variations from the dimensions and conditions shown on the drawing. Shop drawings shall be submitted to Arcadis for general conformance before proceeding with fabrication.
		SCALE: 1:1000 PROJECT ENG: NG CHECKED BY: MZ PROJECT NO: 30327174	
Arcadis Professional Services (Canada) Inc. <small>Formerly B3 Group Professional Services (Canada) Inc.</small>			FIGURE NAME: PRE-DEVELOPMENT DRAINAGE PLAN FIGURE NO.: DAP-01 REVISION: 01



Prepared By: SN

**Pre-Development Composite Runoff
Coefficient**

2155 Leanne Blvd, Mississauga

30327178

April 2026

A1PRE (Controlled to Erin Mills Parkway West System)

	(ha)		
Total Area:	2.133		
Impervious:	1.90	Coefficient:	0.90
Landscaping:	0.23	Coefficient:	0.25
Percent Impervious	89%		
Composite C:	0.83		
Applied Coeff C:	0.50		

A2PRE (Uncontrolled to Erin Mills Parkway East)

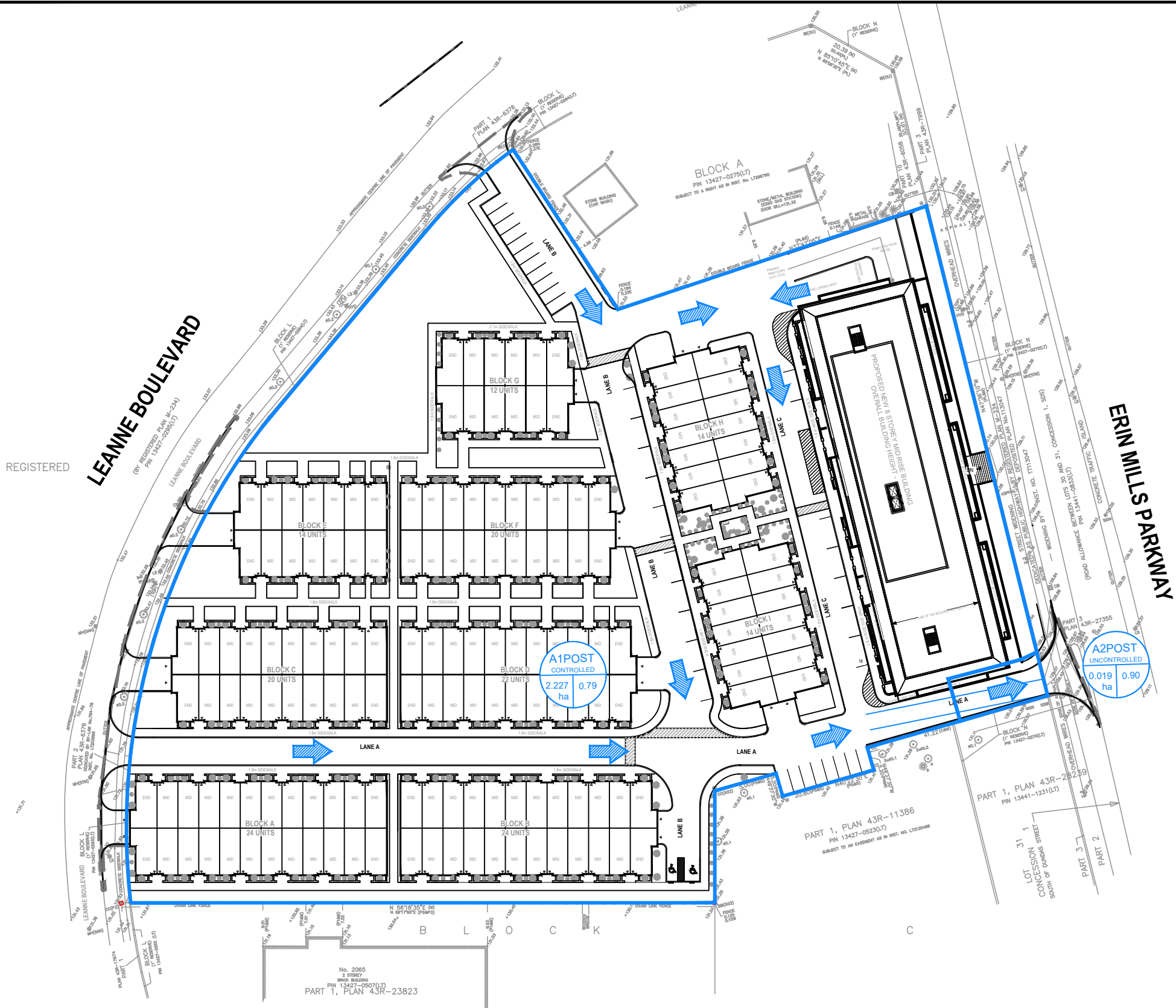
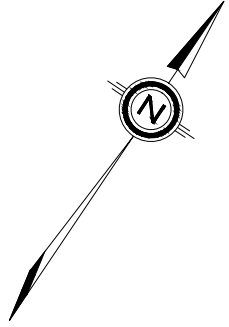
	(ha)		
Total Area:	0.068		
Impervious:	0.00	Coefficient:	0.90
Landscaping:	0.07	Coefficient:	0.25
Percent Impervious	0%		
Composite C:	0.25		

A3PRE (Uncontrolled South & East to Leanne Blvd)

	(ha)		
Total Area:	0.042		
Impervious:	0.00	Coefficient:	0.90
Landscaping:	0.04	Coefficient:	0.25
Percent Impervious	0%		
Composite C:	0.25		

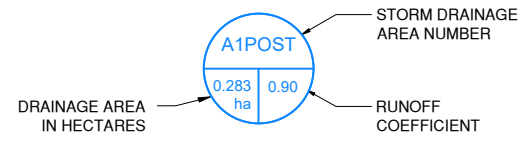
A4PRE (Uncontrolled to West to Leanne Blvd System)

	(ha)		
Total Area:	0.059		
Impervious:	0.00	Coefficient:	0.90
Landscaping:	0.06	Coefficient:	0.25
Percent Impervious	0%		
Composite C:	0.25		



LEGEND

- PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- MAJOR SYSTEM DIRECTION



PRIME CONSULTANT 8133 Warden Avenue - Unit 300 Markham ON L6G 1B3 Canada Tel 905 763 2322 www.arcadis.com	CLIENT 1000293648 ONTARIO INC. O/A DUNPAR DEVELOPMENTS 105 SIX POINT ROAD ETOBICOKE, ON M8Z 2X3 CANADA	PROJECT NAME 2155 LEANNE BOULEVARD 2155 LEANNE BOULEVARD, CITY OF MISSISSAUGA	This drawing has been prepared solely for the intended use, thus any reproduction or distribution for any purpose other than authorized by Arcadis is forbidden. Written dimensions shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job, and Arcadis shall be informed of any variations from the dimensions and conditions shown on the drawing. Shop drawings shall be submitted to Arcadis for general conformance before proceeding with fabrication.	
		SCALE: 1:1000 PROJECT ENG: NG CHECKED BY: SN PROJECT NO: 30327174		DATE: APRIL 2026 DRAWN BY: GEC APPROVED BY: NG



**Post-Development Composite Runoff
Coefficient**

2155 Leanne Blvd, Mississauga

30327178

April 2026

Prepared By: SN

A1POST (Controlled to Erin Mills Parkway West System)

	(ha)		
Total Area:	2.28		
Roof:	1.01	Coefficient:	0.90
Landscaping:	0.39	Coefficient:	0.25
Paved:	0.88	Coefficient:	0.90
Composite C:	0.79		
Percent Impervious	83%		

A2POST (Uncontrolled to Erin Mills Parkway North System)

	(ha)		
Total Area:	0.019		
Roof:	0.00	Coefficient:	0.90
Landscaping:	0.00	Coefficient:	0.25
Paved:	0.02	Coefficient:	0.90
Composite C:	0.90		
Percent Impervious	100%		

$$I_{10\text{-year}} = \frac{1010.0}{(T.C.+4.6)^{0.78}} = 99.17 \text{ mm/hr}$$

Project Name: 2155 Leanne Blvd, Mississauga
Project Number: 30327178
Date: April 2026
Prepared by: SN

	From MH	To MH	DESIGN FLOW CALCULATIONS							SEWER DESIGN & ANALYSIS										Notes			
			A (ha)	R	A x R	Accum. x R	A (min)	T _c (min)	I (mm/hr)	Q _{act} (L/s)	Pipe Size (mm)	Slope (%)	Nominal Capacity Q _{cap} (L/s)	Full Flow Velocity (m/s)	Actual Velocity (m/s)	Length (m)	Time in Sect. (min)	Time (min)	Percent of Full Flow (%)				
Pre-Development 10-Year Flows																							
A1PRE (Controlled to Erin Mills Parkway West System)			2.1326	0.50	1.066	1.066	15.0	99.2	293.7														
A2PRE (Uncontrolled to Erin Mills Parkway East)			0.0684	0.25	0.017	0.017	15.0	99.2	4.7														
A3PRE (Uncontrolled South & East to Leanne Blvd)			0.0422	0.25	0.011	0.011	15.0	99.2	2.9														
A4PRE (Uncontrolled to West to Leanne Blvd System)			0.0586	0.25	0.015	0.015	15.0	99.2	4.0														
Post-Development 10-Year Flows																							
A1POST (Controlled to Erin Mills Parkway West System)			2.2796	0.79	1.797	1.797	15.0	99.2	495.1														
A2POST (Uncontrolled to Erin Mills Parkway North System)			0.0190	0.90	0.017	0.017	15.0	99.2	4.7														
Allowable Release Rate																							
To Erin Mills Parkway West System									300.7											(A1Pre)			
To Erin Mills Parkway East System									4.7											(A2 Pre)			
Tank Pumped System																							
Storm Connection										450	0.15904	1.50	150.0	450	0.55%	211.4	1.3	1.4	22.5	0.3	10.3	70.9%	Storm Service
Post-Development Summary																							
10-Year (Controlled to Erin Mills Parkway West System)									150.0												Post-Development Controlled is less than the allowable of 300.7 L/s to Erin Mills Parkway West System		
10-Year (Uncontrolled to Erin Mills Parkway East System)									4.7													Post-Development Controlled equals the allowable of 4.7 L/s to Erin Mills Parkway East System	

2155 Leanne Blvd, Mississauga

Mixed Residential



**Rational Method - 10 Year Storm
Site Flow and Storage Summary**

$$I_{10\text{-year}} = \frac{1010}{(15+4.6)^{0.78}} = 99.17 \text{ mm/hr}$$

Project Name:	2155 Leanne Blvd, Mississauga	A1POST Controlled Area of Site =	1.490 ha
Project Number:	30327178	Weighed Runoff Coefficient =	0.79
Date:	April 2026	Orifice Discharge (L/s) =	150.0
		No. of Townhouse Roofs =	9.00
		Roof Release Rate (L/s/Roof) =	2.0
		Roof Discharge (L/s) =	18.0

Time (min)	Intensity (mm/hr)	Surface Runoff + Roof Runoff (L/s)	Runoff-stored (L/s)	Required Storage Vol. (m ³)
0	0.0	0.00	0.00	0.00
5	173.0	582.82	414.82	124.44
10	124.8	425.27	257.27	154.36
15	99.2	341.68	173.68	156.31
20	83.1	289.11	121.11	145.33
25	71.9	252.68	84.68	127.02
30	63.7	225.78	57.78	104.00
35	57.3	205.01	37.01	77.73
40	52.2	188.45	20.45	49.08
45	48.1	174.89	6.89	18.61
50	44.6	163.57	0.00	0.00
55	41.7	153.95	0.00	0.00
60	39.1	145.67	0.00	0.00
65	36.9	138.46	0.00	0.00
70	35.0	132.11	0.00	0.00
75	33.2	126.48	0.00	0.00
80	31.7	121.45	0.00	0.00
85	30.3	116.92	0.00	0.00
90	29.0	112.82	0.00	0.00
95	27.9	109.08	0.00	0.00
100	26.9	105.67	0.00	0.00
105	25.9	102.53	0.00	0.00
110	25.0	99.64	0.00	0.00
115	24.2	96.97	0.00	0.00
120	23.4	94.48	0.00	0.00
125	22.7	92.17	0.00	0.00
130	22.1	90.01	0.00	0.00
135	21.4	88.00	0.00	0.00
140	20.9	86.10	0.00	0.00
145	20.3	84.32	0.00	0.00
150	19.8	82.64	0.00	0.00
155	19.3	81.05	0.00	0.00
160	18.9	79.55	0.00	0.00
165	18.4	78.13	0.00	0.00
170	18.0	76.79	0.00	0.00
175	17.6	75.51	0.00	0.00
180	17.2	74.29	0.00	0.00

Tank Storage Volume Required (cu.m) =	156.3
Tank Storage Volume Provided (cu.m) =	180.0
HGL Depth (m) =	1.94
Orifice Diameter (mm) =	0

2155 Leanne Blvd, Mississauga

Mixed Residential



Rational Method - 10 Year Storm

Townhouse Roof Storage

$$I_{10\text{-year}} = \frac{1010}{(15+4.6)^{0.78}} = 99.17 \text{ mm/hr}$$

Project Name:	2155 Leanne Blvd, Mississauga	Area of Controlled Roof Top =	0.789 ha
Project Number:	30327178	Weighed Runoff Coefficient =	0.90
Date:	April 2026	No. of Roofs =	9.00
		Roof Release Rate (L/s/Roof) =	2.0
		Roof Discharge (L/s) =	18.0

Time (min)	Intensity (mm/hr)	Roof Runoff (L/s)	Roof Runoff-Stored (L/s)	Required Storage Vol. (m ³)
0	0.0	0.00	0.00	0.00
5	173.0	341.45	323.45	97.04
10	124.8	246.21	228.21	136.93
15	99.2	195.68	177.68	159.91
20	83.1	163.90	145.90	175.08
25	71.9	141.87	123.87	185.81
30	63.7	125.61	107.61	193.70
35	57.3	113.06	95.06	199.62
40	52.2	103.04	85.04	204.11
45	48.1	94.85	76.85	207.49
50	44.6	88.00	70.00	210.01
55	41.7	82.19	64.19	211.82
60	39.1	77.18	59.18	213.06
65	36.9	72.82	54.82	213.81
70	35.0	68.99	50.99	214.15
75	33.2	65.58	47.58	214.12
80	31.7	62.54	44.54	213.79
85	30.3	59.80	41.80	213.18
90	29.0	57.32	39.32	212.33
95	27.9	55.06	37.06	211.26
100	26.9	53.00	35.00	209.99
105	25.9	51.10	33.10	208.55
110	25.0	49.36	31.36	206.95
115	24.2	47.74	29.74	205.20
120	23.4	46.24	28.24	203.31
125	22.7	44.84	26.84	201.30
130	22.1	43.54	25.54	199.18
135	21.4	42.31	24.31	196.95
140	20.9	41.17	23.17	194.62
145	20.3	40.09	22.09	192.20
150	19.8	39.08	21.08	189.69
155	19.3	38.12	20.12	187.10
160	18.9	37.21	19.21	184.44
165	18.4	36.35	18.35	181.70
170	18.0	35.54	17.54	178.90
175	17.6	34.77	16.77	176.03
180	17.2	34.03	16.03	173.11

Roof Storage Volume Required (cu.m) =	214.1
Roof Storage Volume Provided (cu.m) =	394.6
HGL Depth (m) =	1.94
Orifice Diameter (mm) =	0



Prepared By: SN

Pump Control in SWM Tank

2155 Leanne Blvd, Mississauga

30327178

April 2026

Storm Event	Bottom of Tank	Pump Invert	Headwater Elevation	Total Head	Pump Rate*
		(m)	(m)	(m)	(L/s)
10-Year	126.25	126.65	127.75	1.50	150.00

*The SWM tank flows will be controlled by pumps



10-Year Storage Calculations

2155 Leanne Blvd, Mississauga

30327178

Prepared by SN

April 2026

Tank Storage

Ceiling of Tank	Bottom of Tank	Base Area (m ²)	Pump Invert
130.08	126.25	120.00	126.65

Storm	Water Level (m)	Active Depth used for Storage (m)	Volume Provided (m ³)	Volume Required (m ³)
10-Year	127.75	1.50	180.00	156.31

Roof Storage

Storm	Area (m ²)	Storage Depth (m)	Volume Provided (m ³)	Volume Required (m ³)
10-Year	7893.00	0.15	394.65	214.15



Water Quality Calculations

Project Name: 2155 Leanne Blvd, Mississauga

Project Number: 30327178

Date: April 2026

Prepared by: SN

To OGS 1					
Surface	Method	Area (m ²)	% Area of Site	Effective TSS Removal	Overall TSS Removal
Conventional Roof	Inherent	4,975	46.4%	80%	37.1%
Green Roof:	Inherent	0	0.0%	80%	0.0%
Landscaped:	Inherent	1,208	11.3%	80%	9.0%
Permeable Pavers	Inherent	0	0.0%	80%	0.0%
Impervious:	Inherent	4,538	42.3%	0%	0.0%
Sub-Total					46.1%
OGS 1 - EFO8 provides 62% TSS removal to the Remainder of TSS collected upstream of the Unit ($TSS_{remaining} = TSS_{initial} - TSS_{removed}$)					
Downstream Mitigation	OGS 2 - EFO8			62%	33.4%
Total OGS 2		10,720	100%		80%
To OGS 1					
Surface	Method	Area (m ²)	% Area of Site	Effective TSS Removal	Overall TSS Removal
Conventional Roof	Inherent	5,094	22.3%	80%	17.8%
Green Roof:	Inherent	0	0.0%	80%	0.0%
Landscaped:	Inherent	2,703	11.8%	80%	9.5%
Permeable Pavers	Inherent	0	0.0%	80%	0.0%
Impervious:	Inherent	4,331	19.0%	0%	0.0%
OGS 2 Captured	Treated	10,720	46.9%	80%	37.3%
Sub-Total					64.6%
OGS 1 - EFO10 provides 62% TSS removal to the Remainder of TSS collected upstream of the Unit ($TSS_{remaining} = TSS_{initial} - TSS_{removed}$)					
Downstream Mitigation	OGS 1 - EFO10			62%	21.9%
Total OGS 1		22,848	100%		87%
Cumulative TSS Removal =					87%

Imbrium® Systems

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/23/2026

Province:	Ontario
City:	Mississauga
Nearest Rainfall Station:	TORONTO INTL AP
Climate Station Id:	6158731
Years of Rainfall Data:	20

Project Name:	2155 Leanne Boulevard - OGS
Project Number:	30317178
Designer Name:	Shazia Nishat
Designer Company:	Arcadis
Designer Email:	shazia.nishat@arcadis.com
Designer Phone:	647-700-0302
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	2155 Leanne Blvd OGS 1
------------	------------------------

Drainage Area (ha):	1.072
---------------------	-------

% Imperviousness:	89.00
-------------------	-------

Runoff Coefficient 'c': 0.83

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):	27.80
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	726
Estimated Average Annual Sediment Volume (L/yr):	590

Net Annual Sediment (TSS) Load Reduction Sizing Summary	
Stormceptor Model	TSS Removal Provided (%)
EFO4	49
EFO5	53
EFO6	57
EFO8	62
EFO10	65
EFO12	67

Recommended Stormceptor EFO Model: EFO8

Estimated Net Annual Sediment (TSS) Load Reduction (%): 62

Water Quality Runoff Volume Capture (%): > 90



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 waterways.

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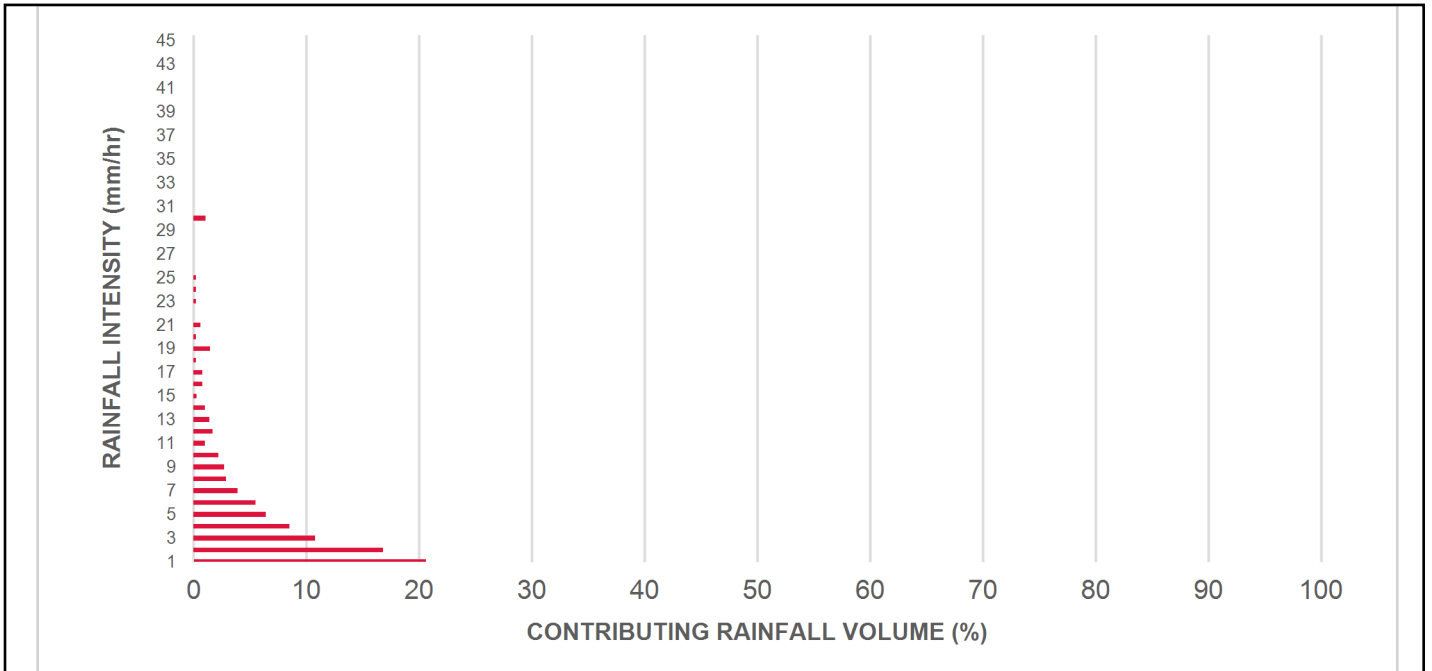
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

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	8.5	8.5	1.24	75.0	16.0	70	6.0	6.0
1.00	20.6	29.1	2.49	149.0	32.0	70	14.5	20.5
2.00	16.8	45.9	4.97	298.0	63.0	67	11.3	31.8
3.00	10.8	56.7	7.46	447.0	95.0	63	6.8	38.6
4.00	8.5	65.2	9.94	597.0	127.0	61	5.1	43.7
5.00	6.4	71.6	12.43	746.0	159.0	58	3.7	47.5
6.00	5.5	77.0	14.91	895.0	190.0	55	3.0	50.5
7.00	3.9	81.0	17.40	1044.0	222.0	53	2.1	52.6
8.00	2.9	83.9	19.88	1193.0	254.0	53	1.5	54.1
9.00	2.7	86.5	22.37	1342.0	286.0	52	1.4	55.5
10.00	2.2	88.7	24.85	1491.0	317.0	51	1.1	56.6
11.00	1.0	89.7	27.34	1640.0	349.0	50	0.5	57.0
12.00	1.7	91.3	29.83	1790.0	381.0	49	0.8	57.9
13.00	1.4	92.8	32.31	1939.0	412.0	48	0.7	58.5
14.00	1.0	93.7	34.80	2088.0	444.0	47	0.5	59.0
15.00	0.3	94.0	37.28	2237.0	476.0	46	0.1	59.1
16.00	0.8	94.8	39.77	2386.0	508.0	45	0.4	59.5
17.00	0.8	95.7	42.25	2535.0	539.0	44	0.4	59.8
18.00	0.2	95.8	44.74	2684.0	571.0	43	0.1	59.9
19.00	1.5	97.3	47.22	2833.0	603.0	42	0.6	60.5
20.00	0.2	97.5	49.71	2983.0	635.0	42	0.1	60.6
21.00	0.6	98.2	52.19	3132.0	666.0	42	0.3	60.9
22.00	0.0	98.2	54.68	3281.0	698.0	42	0.0	60.9
23.00	0.2	98.4	57.17	3430.0	730.0	41	0.1	61.0
24.00	0.2	98.6	59.65	3579.0	762.0	41	0.1	61.1
25.00	0.2	98.9	62.14	3728.0	793.0	41	0.1	61.2
30.00	1.1	100.0	74.56	4474.0	952.0	40	0.5	61.6
35.00	0.0	100.0	86.99	5219.0	1111.0	38	0.0	61.6
40.00	0.0	100.0	99.42	5965.0	1269.0	36	0.0	61.6
45.00	0.0	100.0	111.85	6711.0	1428.0	34	0.0	61.6
Estimated Net Annual Sediment (TSS) Load Reduction =								62 %

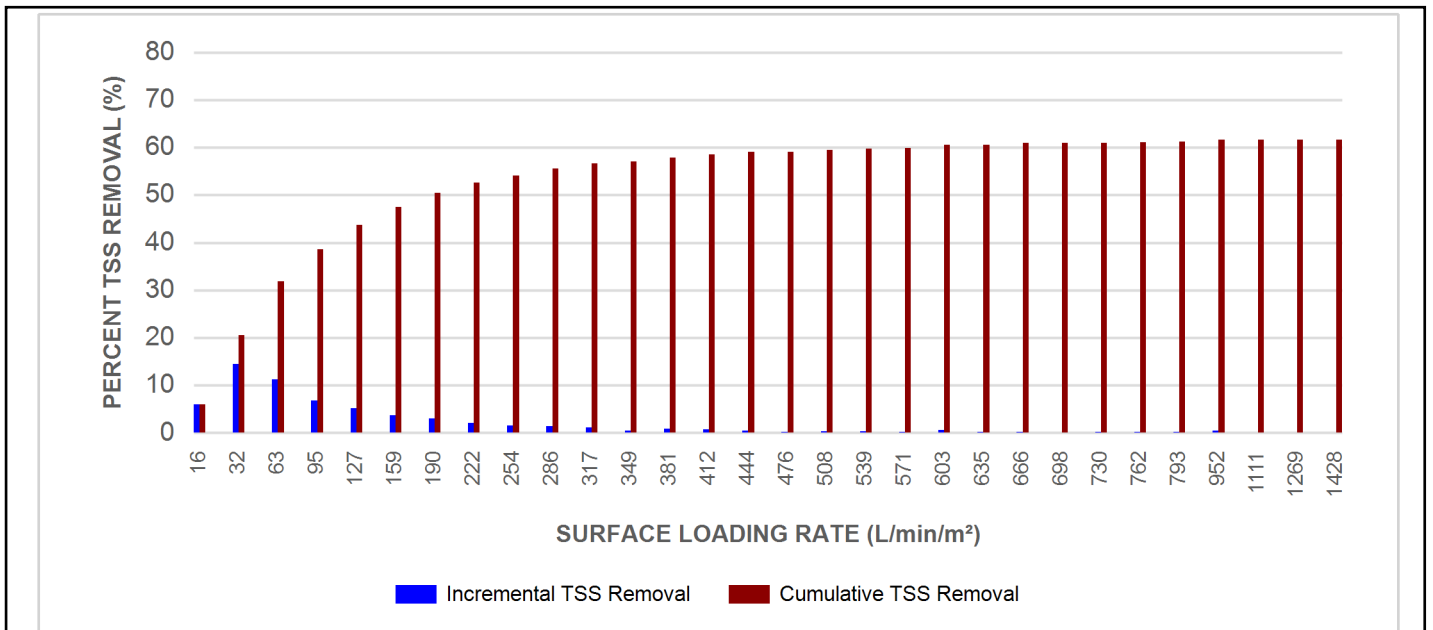
Climate Station ID: 6158731 Years of Rainfall Data: 20



RAINFALL DATA FROM TORONTO INTL AP 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

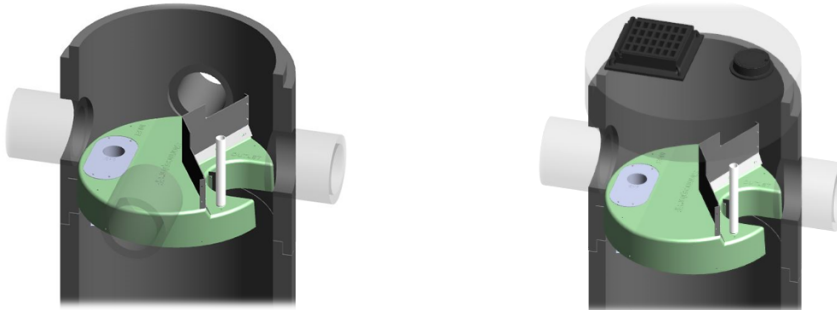
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators, and the exceptional scour test performance 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.

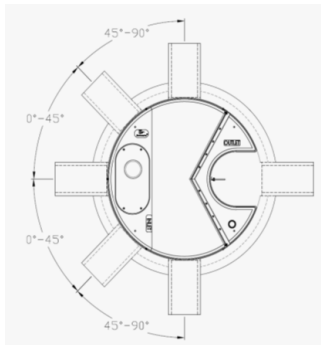
DESIGN FLEXIBILITY

► 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)	(ft³)	(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/ft³)

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

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

SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL
1	70	660	42	1320	35	1980	24
30	70	690	42	1350	35	2010	24
60	67	720	41	1380	34	2040	23
90	63	750	41	1410	34	2070	23
120	61	780	41	1440	33	2100	23
150	58	810	41	1470	32	2130	22
180	56	840	41	1500	32	2160	22
210	54	870	41	1530	31	2190	22
240	53	900	41	1560	31	2220	21
270	52	930	40	1590	30	2250	21
300	51	960	40	1620	29	2280	21
330	50	990	40	1650	29	2310	21
360	49	1020	40	1680	28	2340	20
390	48	1050	39	1710	28	2370	20
420	47	1080	39	1740	27	2400	20
450	47	1110	38	1770	27	2430	20
480	46	1140	38	1800	26	2460	19
510	45	1170	37	1830	26	2490	19
540	44	1200	37	1860	26	2520	19
570	43	1230	37	1890	25	2550	19
600	42	1260	36	1920	25	2580	18
630	42	1290	36	1950	24	2600	26

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT 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 / 420 L 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/m² to 1400 L/min/m², 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/m² and 1400 L/min/m² 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/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² 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/m².

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/m².

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-

entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

Imbrium® Systems

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/23/2026

Province:	Ontario
City:	Mississauga
Nearest Rainfall Station:	TORONTO INTL AP
Climate Station Id:	6158731
Years of Rainfall Data:	20

Project Name:	2155 Leanne Boulevard - OGS
Project Number:	30317178
Designer Name:	Shazia Nishat
Designer Company:	Arcadis
Designer Email:	shazia.nishat@arcadis.com
Designer Phone:	647-700-0302
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	2155 Leanne Blvd OGS 2
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Drainage Area (ha):	2.285
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% Imperviousness:	41.00
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Runoff Coefficient 'c': 0.54

Particle Size Distribution:	CA ETV
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Target TSS Removal (%):	60.0
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Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	38.80
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	713
Estimated Average Annual Sediment Volume (L/yr):	580

Net Annual Sediment (TSS) Load Reduction Sizing Summary	
Stormceptor Model	TSS Removal Provided (%)
EFO4	44
EFO5	50
EFO6	53
EFO8	59
EFO10	62
EFO12	65

Recommended Stormceptor EFO Model: EFO10

Estimated Net Annual Sediment (TSS) Load Reduction (%): 62

Water Quality Runoff Volume Capture (%): > 90



THIRD-PARTY TESTING AND VERIFICATION

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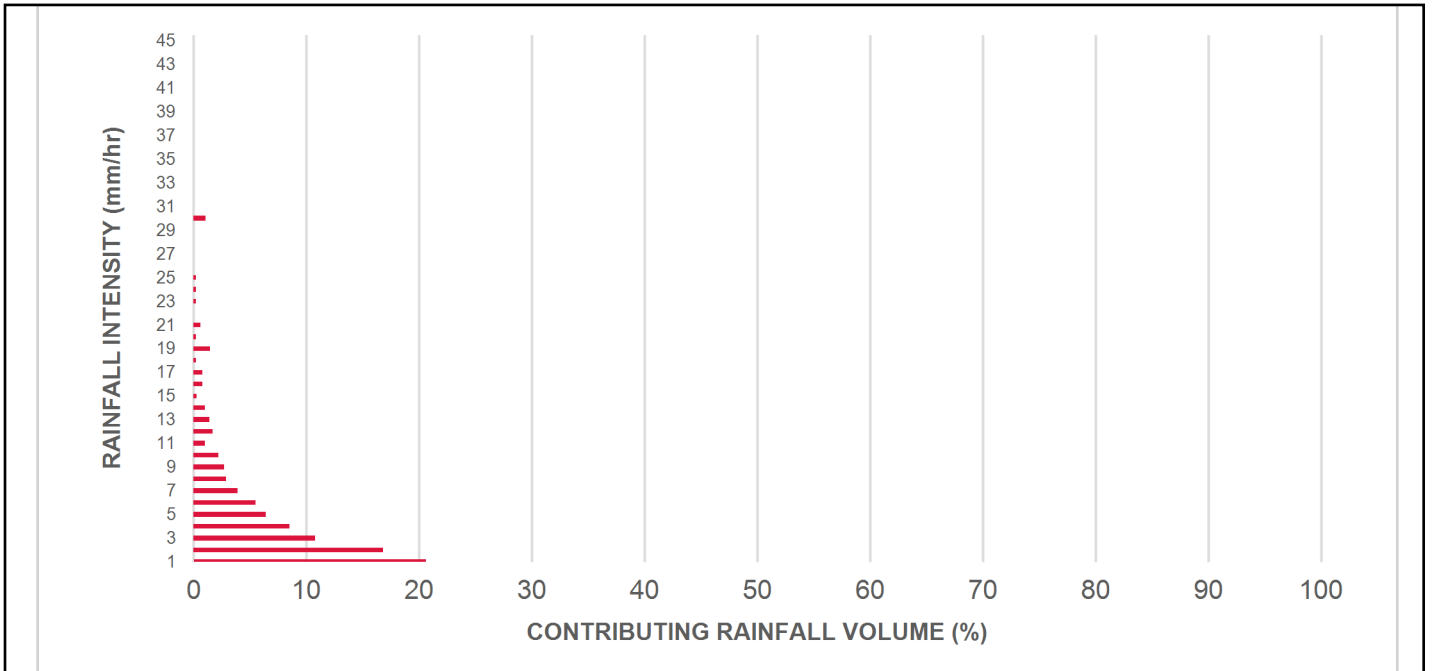
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m ²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.5	8.5	1.73	104.0	14.0	70	6.0	6.0
1.00	20.6	29.1	3.47	208.0	29.0	70	14.5	20.5
2.00	16.8	45.9	6.94	416.0	57.0	69	11.6	32.1
3.00	10.8	56.7	10.41	624.0	86.0	64	6.9	39.0
4.00	8.5	65.2	13.87	832.0	114.0	62	5.2	44.2
5.00	6.4	71.6	17.34	1041.0	143.0	59	3.8	47.9
6.00	5.5	77.0	20.81	1249.0	171.0	57	3.1	51.0
7.00	3.9	81.0	24.28	1457.0	200.0	54	2.1	53.2
8.00	2.9	83.9	27.75	1665.0	228.0	53	1.5	54.7
9.00	2.7	86.5	31.22	1873.0	257.0	53	1.4	56.1
10.00	2.2	88.7	34.68	2081.0	285.0	52	1.1	57.2
11.00	1.0	89.7	38.15	2289.0	314.0	51	0.5	57.7
12.00	1.7	91.3	41.62	2497.0	342.0	50	0.8	58.5
13.00	1.4	92.8	45.09	2705.0	371.0	49	0.7	59.2
14.00	1.0	93.7	48.56	2913.0	399.0	48	0.5	59.7
15.00	0.3	94.0	52.03	3122.0	428.0	47	0.1	59.8
16.00	0.8	94.8	55.49	3330.0	456.0	47	0.4	60.2
17.00	0.8	95.7	58.96	3538.0	485.0	46	0.4	60.6
18.00	0.2	95.8	62.43	3746.0	513.0	45	0.1	60.7
19.00	1.5	97.3	65.90	3954.0	542.0	44	0.7	61.3
20.00	0.2	97.5	69.37	4162.0	570.0	43	0.1	61.4
21.00	0.6	98.2	72.84	4370.0	599.0	42	0.3	61.7
22.00	0.0	98.2	76.30	4578.0	627.0	42	0.0	61.7
23.00	0.2	98.4	79.77	4786.0	656.0	42	0.1	61.8
24.00	0.2	98.6	83.24	4994.0	684.0	42	0.1	61.9
25.00	0.2	98.9	86.71	5203.0	713.0	41	0.1	62.0
30.00	1.1	100.0	104.05	6243.0	855.0	41	0.5	62.4
35.00	0.0	100.0	121.39	7284.0	998.0	40	0.0	62.4
40.00	0.0	100.0	138.73	8324.0	1140.0	38	0.0	62.4
45.00	0.0	100.0	156.08	9365.0	1283.0	36	0.0	62.4
Estimated Net Annual Sediment (TSS) Load Reduction =								62 %

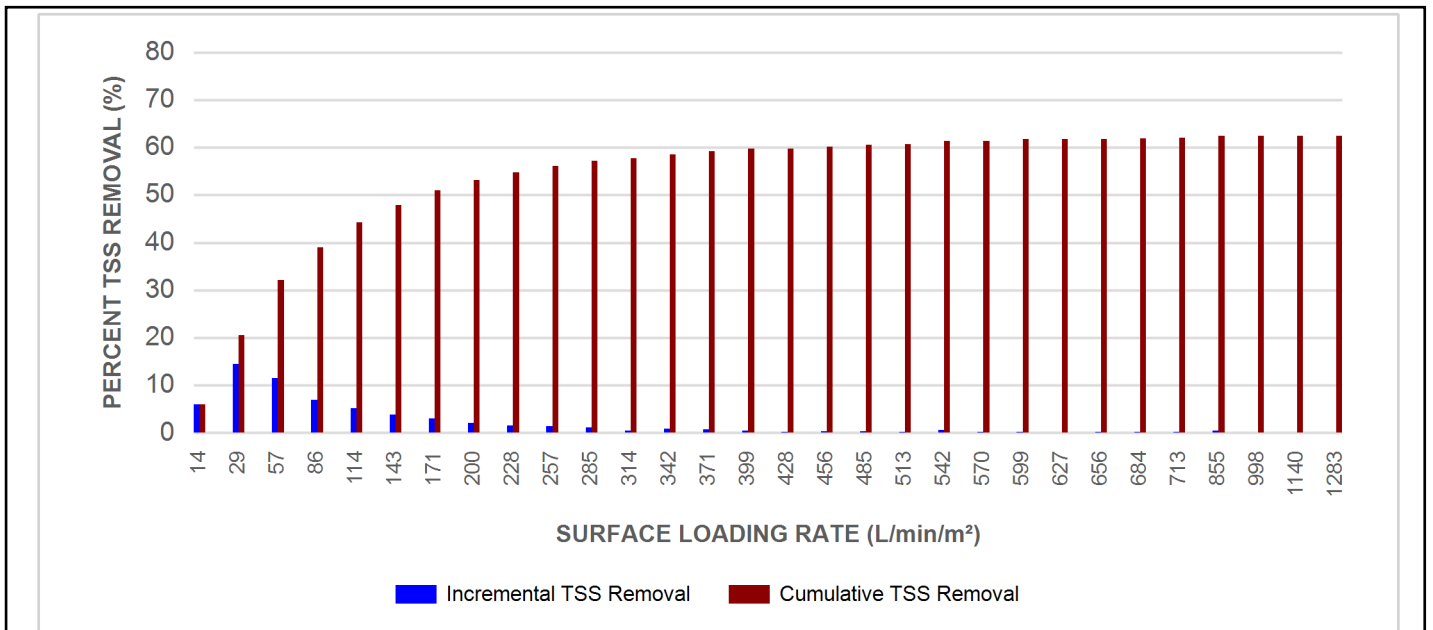
Climate Station ID: 6158731 Years of Rainfall Data: 20



RAINFALL DATA FROM TORONTO INTL AP 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

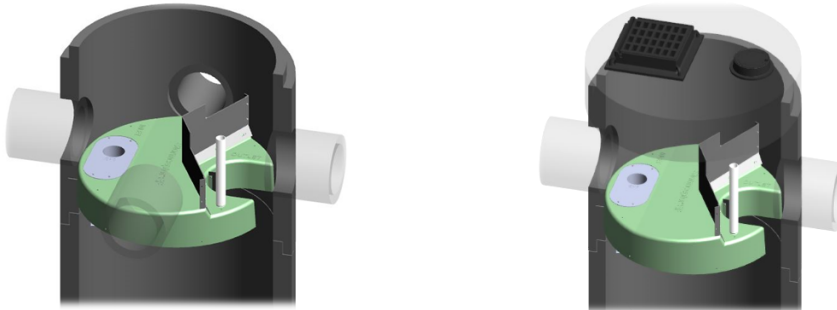
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators, and the exceptional scour test performance 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.

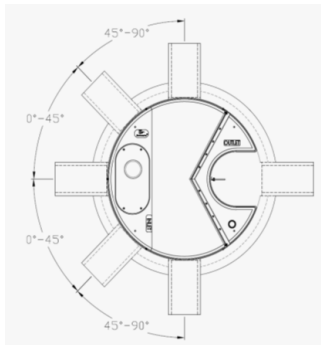
DESIGN FLEXIBILITY

► 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)	(ft³)	(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/ft³)

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® EFO**

SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL	SLR (L/min/m ²)	TSS % REMOVAL
1	70	660	42	1320	35	1980	24
30	70	690	42	1350	35	2010	24
60	67	720	41	1380	34	2040	23
90	63	750	41	1410	34	2070	23
120	61	780	41	1440	33	2100	23
150	58	810	41	1470	32	2130	22
180	56	840	41	1500	32	2160	22
210	54	870	41	1530	31	2190	22
240	53	900	41	1560	31	2220	21
270	52	930	40	1590	30	2250	21
300	51	960	40	1620	29	2280	21
330	50	990	40	1650	29	2310	21
360	49	1020	40	1680	28	2340	20
390	48	1050	39	1710	28	2370	20
420	47	1080	39	1740	27	2400	20
450	47	1110	38	1770	27	2430	20
480	46	1140	38	1800	26	2460	19
510	45	1170	37	1830	26	2490	19
540	44	1200	37	1860	26	2520	19
570	43	1230	37	1890	25	2550	19
600	42	1260	36	1920	25	2580	18
630	42	1290	36	1950	24	2600	26

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT 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 / 420 L 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/m² to 1400 L/min/m², 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/m² and 1400 L/min/m² 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/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² 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/m².

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/m².

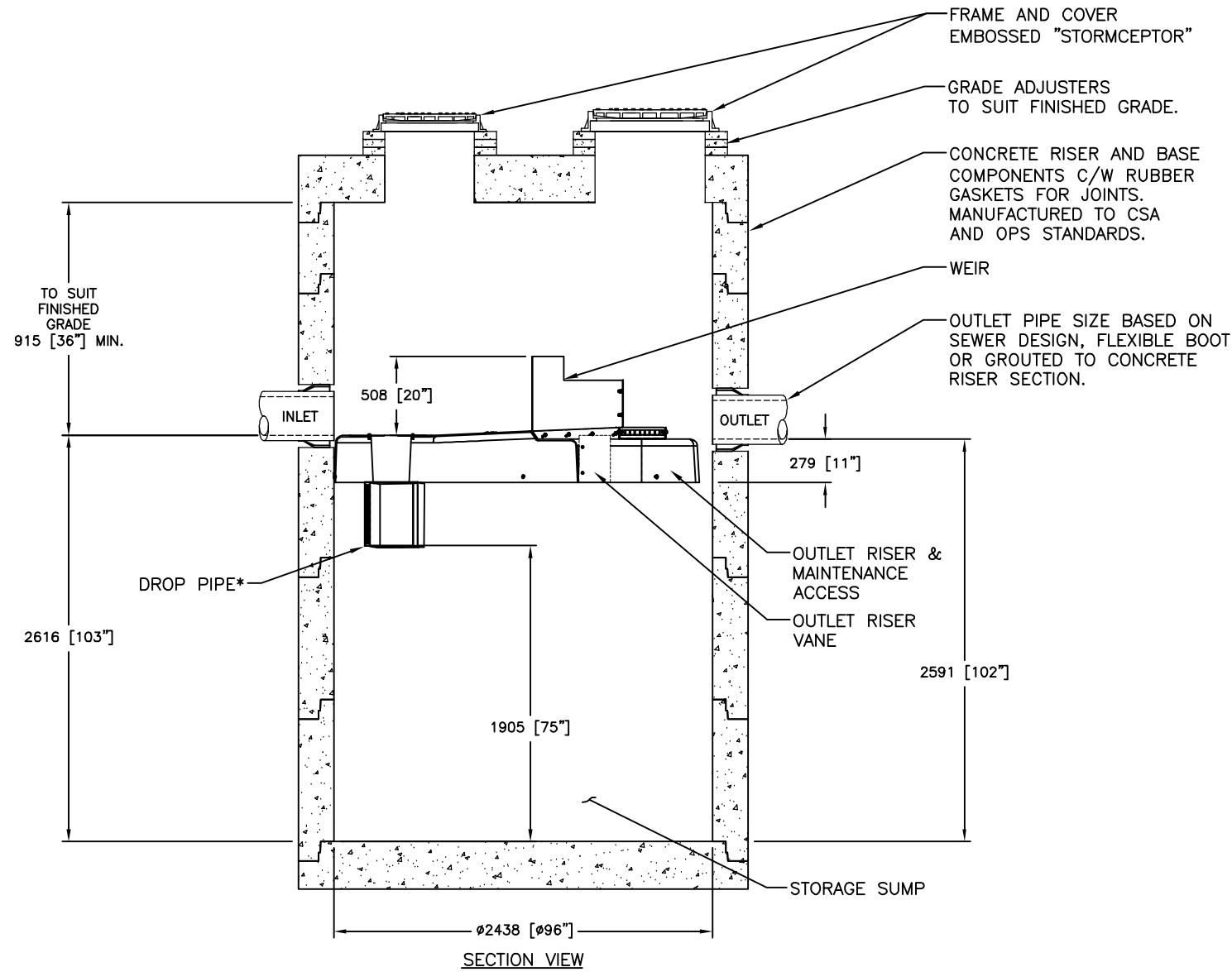
3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-

entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

DRAWING NOT TO BE USED FOR CONSTRUCTION



GENERAL NOTES:

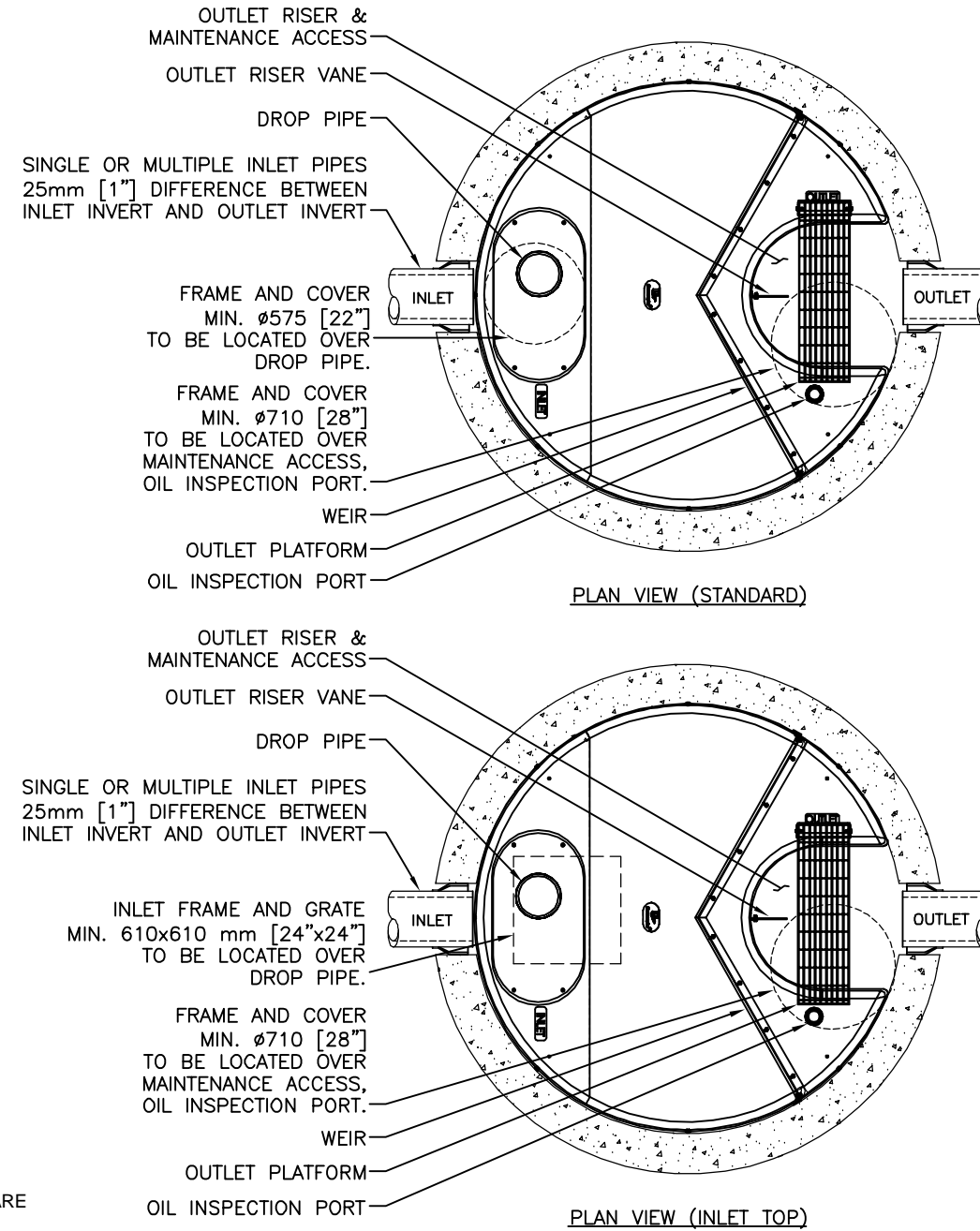
- * MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m² (27.9 gpm/ft²) FOR STORMCEPTOR EF8 AND 535 L/min/m² (13.1 gpm/ft²) FOR STORMCEPTOR EFO8 (OIL CAPTURE CONFIGURATION).
- 1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
- 2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
- 3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
- 4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
- 5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
- C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
- D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
- E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

STANDARD DETAIL NOT FOR CONSTRUCTION



SITE SPECIFIC DATA REQUIREMENTS					
STORMCEPTOR MODEL	EF8				
STRUCTURE ID	*				
WATER QUALITY FLOW RATE (L/s)	*				
PEAK FLOW RATE (L/s)	*				
RETURN PERIOD OF PEAK FLOW (yrs)	*				
DRAINAGE AREA (HA)	*				
DRAINAGE AREA IMPERVIOUSNESS (%)	*				
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*
* PER ENGINEER OF RECORD					

Stormceptor® EF

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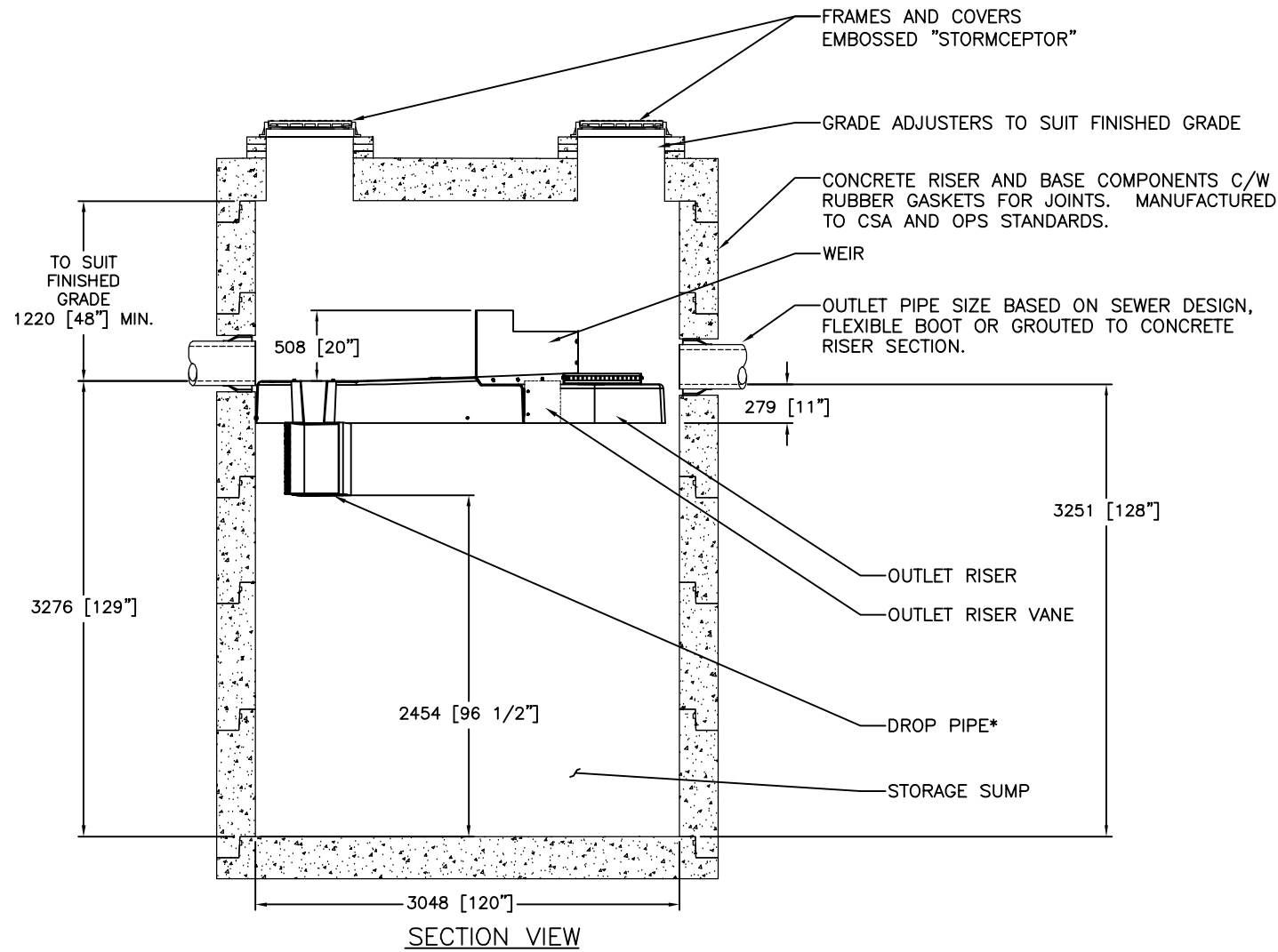
DATE: 5/26/2017

DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: *
PROJECT No.: EF8	SEQUENCE No.: *
SHEET: 1	OF 1

SCALE = NTS

IMBRIUMPRODUCTS\STORMCEPTOR EF80 DRAWINGS & DETAIL\STANDARD DETAIL\SEF8-DETAIL.DWG 4/12/2018 10:53 AM

DRAWING NOT TO BE USED FOR CONSTRUCTION



GENERAL NOTES:

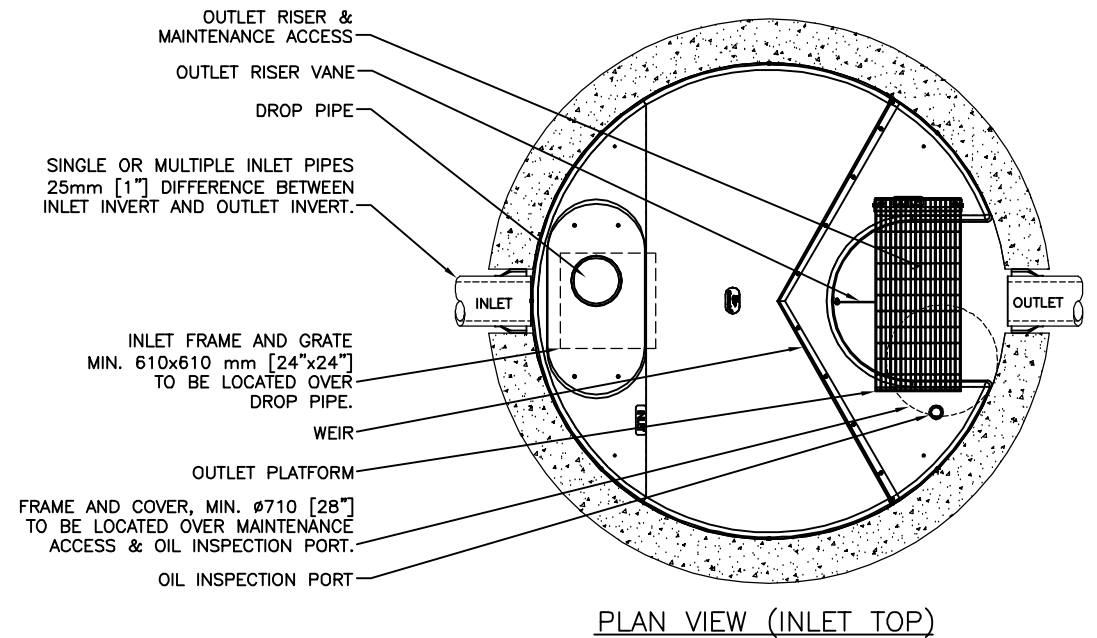
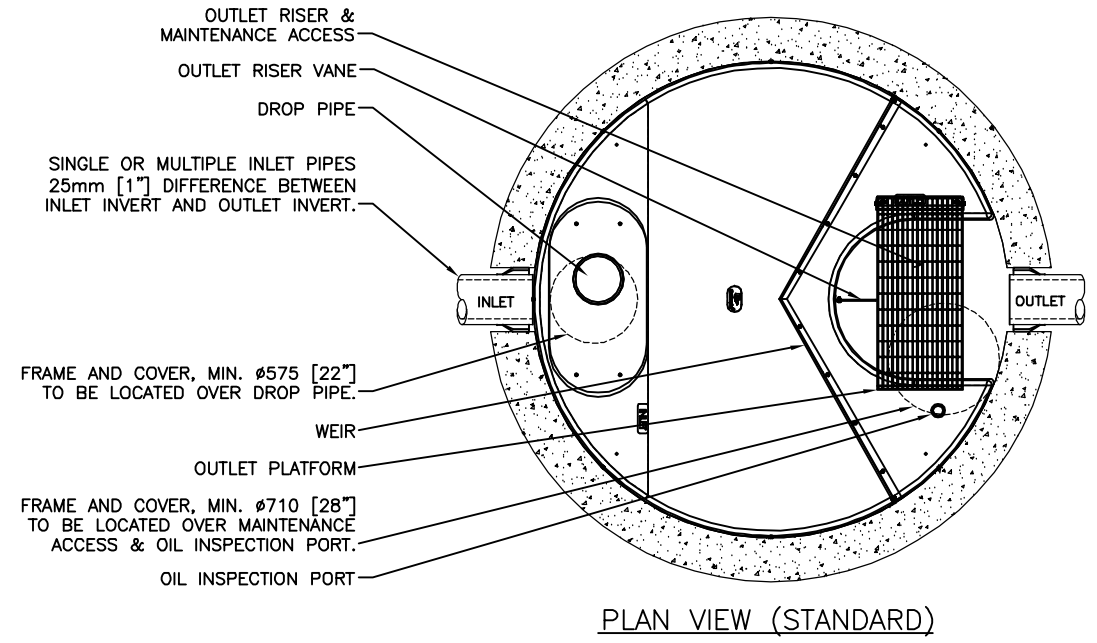
- * MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m² (27.9 gpm/ft²) FOR STORMCEPTOR EF10 AND 535 L/min/m² (13.1 gpm/ft²) FOR STORMCEPTOR EFO10 (OIL CAPTURE CONFIGURATION).
- 1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
- 2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
- 3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
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- 5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

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STANDARD DETAIL NOT FOR CONSTRUCTION



SITE SPECIFIC DATA REQUIREMENTS					
STORMCEPTOR MODEL	EFO10				
STRUCTURE ID	*				
HYDROCARBON STORAGE REQ'D (L)	*				
WATER QUALITY FLOW RATE (L/s)	*				
PEAK FLOW RATE (L/s)	*				
RETURN PERIOD OF PEAK FLOW (yrs)	*				
DRAINAGE AREA (HA)	*				
DRAINAGE AREA IMPERVIOUSNESS (%)	*				
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*
* PER ENGINEER OF RECORD					

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###	###	OUTLET PLATFORM	JSK
###	###	INITIAL RELEASE	JSK

SCALE = NTS

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DATE: 10/24/2017	
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: SP
PROJECT No.: EFO10	SEQUENCE No.: *
SHEET: 1 OF 1	

VERIFICATION STATEMENT

GLOBE Performance Solutions

Verifies the performance of

Stormceptor® EF4 and EFO4 Oil-Grit Separators

Developed by Imbrium Systems, Inc.,
Whitby, Ontario, Canada

In accordance with

ISO 14034:2016

**Environmental management —
Environmental technology verification (ETV)**



John D. Wiebe, PhD
Executive Chairman
GLOBE Performance Solutions



November 10, 2017
Vancouver, BC, Canada

Verification Body
GLOBE Performance Solutions
404 – 999 Canada Place | Vancouver, B.C | Canada | V6C 3E2

Technology description and application

The Stormceptor® EF4 and EFO4 are treatment devices designed to remove oil, sediment, trash, debris, and pollutants attached to particulates from Stormwater and snowmelt runoff. The device takes the place of a conventional manhole within a storm drain system and offers design flexibility that works with various site constraints. The EFO4 is designed with a shorter bypass weir height, which accepts lower surface loading rate into the sump, thereby reducing re-entrainment of captured free floating light liquids.

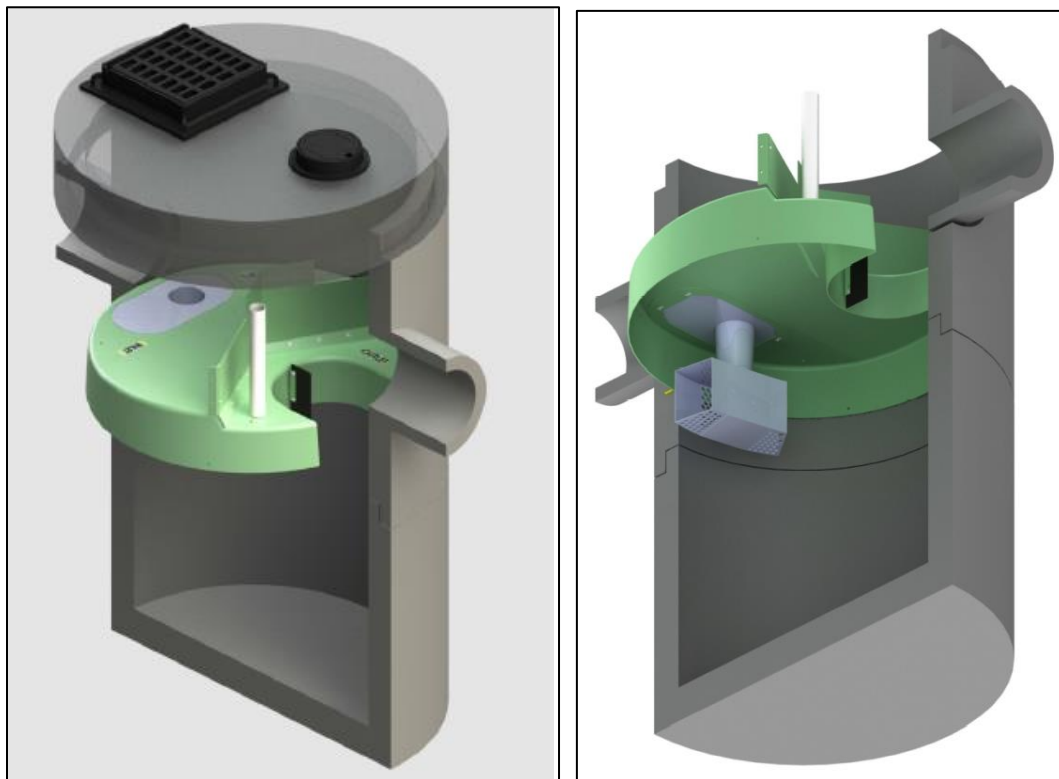


Figure 1. Graphic of typical inline Stormceptor® unit and core components.

Stormwater and snowmelt runoff enters the Stormceptor® EF/EFO's upper chamber through the inlet pipe(s) or a surface inlet grate. An insert divides the unit into lower and upper chambers and incorporates a weir to reduce influent velocity and separate influent (untreated) from effluent (treated) flows. Influent water ponds upstream of the insert's weir providing driving head for the water flowing downwards into the drop pipe where a vortex pulls the water into the lower chamber. The water diffuses at lower velocities in multiple directions through the drop pipe outlet openings. Oil and other floatables rise up and are trapped beneath the insert, while sediments undergo gravitational settling to the sump's bottom. Water from the sump can exit by flowing upward to the outlet riser onto the top side of the insert and downstream of the weir, where it discharges through the outlet pipe.

Maximum flow rate into the lower chamber is a function of weir height and drop pipe orifice diameter. The Stormceptor® EF and EFO are designed to allow a surface loading rate of 1135 L/min/m² (27.9 gal/min/ft²) and 535 L/min/m² (13.1 gal/min/ft²) into the lower chamber, respectively. When prescribed surface loading rates are exceeded, ponding water can overtop the weir height and bypass the lower treatment chamber, exiting directly through the outlet pipe. Hydraulic testing and scour testing demonstrate that the internal bypass effectively prevents scour at all bypass flow rates. Increasing the bypass flow rate does not increase the orifice-controlled flow rate into the lower treatment chamber where sediment is stored. This internal bypass feature allows for in-line installation, avoiding the cost of

additional bypass structures. During bypass, treatment continues in the lower chamber at the maximum flow rate. The Stormceptor® EFO's lower design surface loading rate is favorable for minimizing re-entrainment and washout of captured light liquids. Inspection of Stormceptor® EF and EFO devices is performed from grade by inserting a sediment probe through the outlet riser and an oil dipstick through the oil inspection pipe. The unit can be maintained by using a vacuum hose through the outlet riser.

Performance conditions

The data and results published in this Technology Fact Sheet were obtained from the testing program conducted on the Imbrium Systems Inc.'s Stormceptor® OGS device, in accordance with the Procedure for Laboratory Testing of Oil-Grit Separators (Version 3.0, June 2014). The Procedure was prepared by the Toronto and Region Conservation Authority (TRCA) for Environment Canada's Environmental Technology Verification (ETV) Program. A copy of the Procedure may be accessed on the Canadian ETV website at www.etvcanada.ca.

Performance claim(s)

Capture test^a:

During the capture test, the Stormceptor® EF OGS device, with a false floor set to 50% of the manufacturer's recommended maximum sediment storage depth and a constant influent test sediment concentration of 200 mg/L, removes 70, 64, 54, 48, 46, 44, and 49 percent of influent sediment by mass at surface loading rates of 40, 80, 200, 400, 600, 1000, and 1400 L/min/m², respectively.

Stormceptor® EFO, with a false floor set to 50% of the manufacturer's recommended maximum sediment storage depth and a constant influent test sediment concentration of 200 mg/L, removes 70, 64, 54, 48, 42, 40, and 34 percent of influent sediment by mass at surface loading rates of 40, 80, 200, 400, 600, 1000, and 1400 L/min/m², respectively.

Scour test^a:

During the scour test, the Stormceptor® EF and Stormceptor® EFO OGS devices, with 10.2 cm (4 inches) of test sediment pre-loaded onto a false floor reaching 50% of the manufacturer's recommended maximum sediment storage depth, generate corrected effluent concentrations of 4.6, 0.7, 0, 0.2, and 0.4 mg/L at 5-minute duration surface loading rates of 200, 800, 1400, 2000, and 2600 L/min/m², respectively.

Light liquid re-entrainment test^a:

During the light liquid re-entrainment test, the Stormceptor® EFO OGS device with surrogate low-density polyethylene beads preloaded within the lower chamber oil collection zone, representing a floating light liquid volume equal to a depth of 50.8 mm over the sedimentation area, retained 100, 99.5, 99.8, 99.8, and 99.9 percent of loaded beads by mass during the 5-minute duration surface loading rates of 200, 800, 1400, 2000, and 2600 L/min/m².

^a The claim can be applied to other units smaller or larger than the tested unit as long as the untested units meet the scaling rule specified in the Procedure for Laboratory of Testing of Oil Grit Separators (Version 3.0, June 2014)

Performance results

The test sediment consisted of ground silica (1 – 1000 micron) with a specific gravity of 2.65, uniformly mixed to meet the particle size distribution specified in the testing procedure. The *Procedure for Laboratory Testing of Oil Grit Separators* requires that the three sample average of the test sediment particle size distribution (PSD) meet the specified PSD percent less than values within a boundary threshold of 6%. The comparison of the average test sediment PSD to the CETV specified PSD in Figure 2 indicates that the test sediment used for the capture and scour tests met this condition.

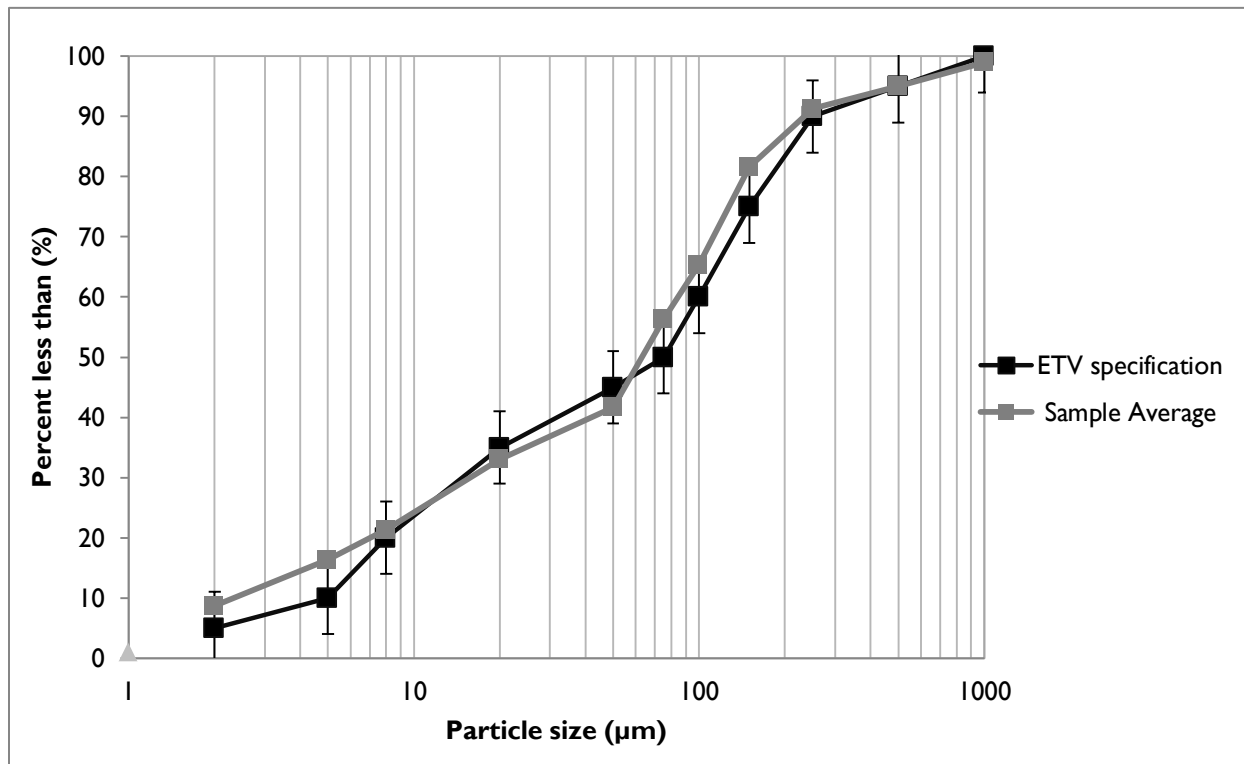


Figure 2. The three sample average particle size distribution (PSD) of the test sediment used for the capture and scour test compared to the specified PSD.

The capacity of the device to retain sediment was determined at seven surface loading rates using the modified mass balance method. This method involved measuring the mass and particle size distribution of the injected and retained sediment for each test run. Performance was evaluated with a false floor simulating the technology filled to 50% of the manufacturer's recommended maximum sediment storage depth. The test was carried out with clean water that maintained a sediment concentration below 20 mg/L. Based on these conditions, removal efficiencies for individual particle size classes and for the test sediment as a whole were determined for each of the tested surface loading rates (Table 1). Since the EF and EFO models are identical except for the weir height, which bypasses flows from the EFO model at a surface loading rate of 535 L/min/m² (13.1 gpm/ft²), sediment capture tests at surface loading rates from 40 to 400 L/min/m² were only performed on the EF unit. Surface loading rates of 600, 1000, and 1400 L/min/m² were tested on both units separately. Results for the EFO model at these higher flow rates are presented in Table 2.

In some instances, the removal efficiencies were above 100% for certain particle size fractions. These discrepancies are not unique to any one test laboratory and may be attributed to errors relating to the blending of sediment, collection of representative samples for laboratory submission, and laboratory

analysis of PSD. Due to these errors, caution should be exercised in applying the removal efficiencies by particle size fraction for the purposes of sizing the tested device (see [Bulletin # CETV 2016-11-0001](#)). The results for “all particle sizes by mass balance” (see Table 1 and 2) are based on measurements of the total injected and retained sediment mass, and are therefore not subject to blending, sampling or PSD analysis errors.

Table 1. Removal efficiencies (%) of the EF4 at specified surface loading rates

Particle size fraction (µm)	Surface loading rate (L/min/m ²)						
	40	80	200	400	600	1000	1400
>500	90	58	58	100*	86	72	100*
250 - 500	100*	100*	100	100*	100*	100*	100*
150 - 250	90	82	26	100*	100*	67	90
105 - 150	100*	100*	100*	100*	100*	100*	100
75 - 105	100*	92	74	82	77	68	76
53 - 75	Undefined ^a	56	100*	72	69	50	80
20 - 53	54	100*	54	33	36	40	31
8 - 20	67	52	25	21	17	20	20
5 – 8	33	29	11	12	9	7	19
<5	13	0	0	0	0	0	4
All particle sizes by mass balance	70.4	63.8	53.9	47.5	46.0	43.7	49.0

^a An outlier in the feed sample sieve data resulted in a negative removal efficiency for this size fraction.

* Removal efficiencies were calculated to be above 100%. Calculated values ranged between 101 and 171% (average 128%). See text and [Bulletin # CETV 2016-11-0001](#) for more information.

Table 2. Removal efficiencies (%) of the EFO4 at surface loading rates above the bypass rate of 535 L/min/m²

Particle size fraction (µm)	Surface loading rate (L/min/m ²)		
	600	1000	1400
>500	89	83	100*
250 - 500	90	100*	92
150 - 250	90	67	100*
105 - 150	85	92	77
75 - 105	80	71	65
53 - 75	60	31	36
20 - 53	33	43	23
8 - 20	17	23	15
5 – 8	10	3	3
<5	0	0	0
All particle sizes by mass balance	41.7	39.7	34.2

* Removal efficiencies were calculated to be above 100%. Calculated values ranged between 103 and 111% (average 107%). See text and [Bulletin # CETV 2016-11-0001](#) for more information.

Figure 3 compares the particle size distribution (PSD) of the three sample average of the test sediment to the PSD of the sediment retained by the EF4 at each of the tested surface loading rates. Figure 4 shows the same graph for the EFO4 unit at surface loading rates above the bypass rate of 535 L/min/m².

As expected, the capture efficiency for fine particles in both units was generally found to decrease as surface loading rates increased.

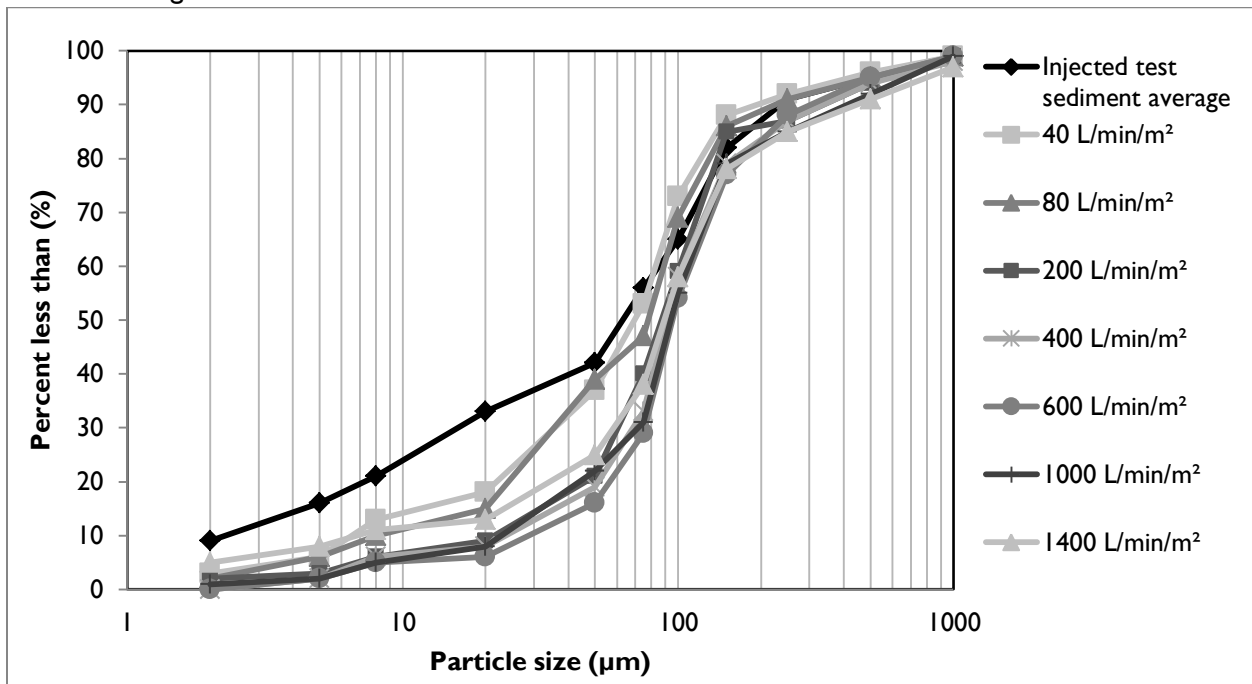


Figure 3. Particle size distribution of sediment retained in the EF4 in relation to the injected test sediment average.

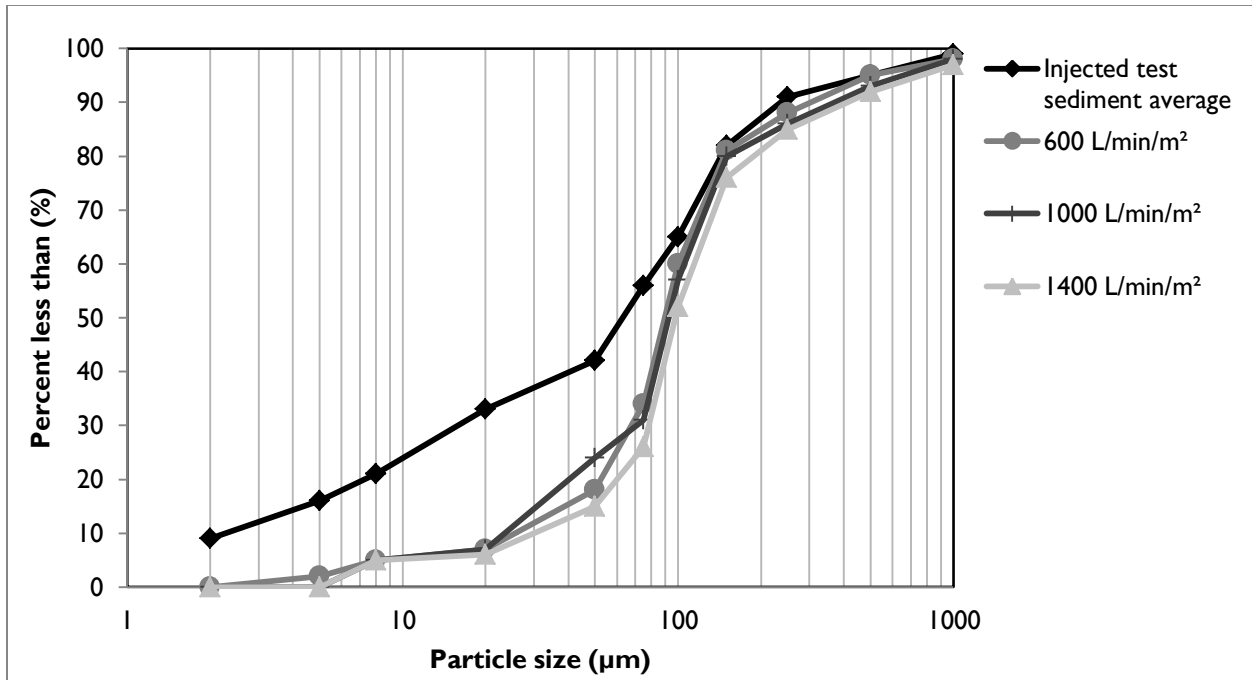


Figure 4. Particle size distribution of sediment retained in the EFO4 in relation to the injected test sediment average at surface loading rates above the bypass rate of 535 L/min/m²

Table 4 shows the results of the sediment scour and re-suspension test for the EF4 unit. The EFO4 was not tested as it was reasonably assumed that scour rates would be lower given that flow bypass occurs at a lower surface loading rate. The scour test involved preloading 10.2 cm of fresh test sediment into

the sedimentation sump of the device. The sediment was placed on a false floor to mimic a device filled to 50% of the maximum recommended sediment storage depth. Clean water was run through the device at five surface loading rates over a 30 minute period. Each flow rate was maintained for 5 minutes with a one minute transition time between flow rates. Effluent samples were collected at one minute sampling intervals and analyzed for Suspended Sediment Concentration (SSC) and PSD by recognized methods. The effluent samples were subsequently adjusted based on the background concentration of the influent water. Typically, the smallest 5% of particles captured during the 40 L/min/m² sediment capture test is also used to adjust the concentration, as per the method described in [Bulletin # CETV 2016-09-0001](#). However, since the composites of effluent concentrations were below the Reporting Detection Limit of the Laser Diffraction PSD methodology, this adjustment was not made. Results showed average adjusted effluent sediment concentrations below 5 mg/L at all tested surface loading rates.

It should be noted that the EF4 starts to internally bypass water at 1135 L/min/m², potentially resulting in the dilution of effluent concentrations, which would not normally occur under typical field conditions because the field influent concentration would contain a much higher sediment concentration than during the lab test. Recalculation of effluent concentrations to account for dilution at surface loading rates above the bypass rate showed sediment effluent concentrations to be below 1.6 mg/L.

Table 4. Scour test adjusted effluent sediment concentration.

Run	Surface loading rate (L/min/m ²)	Run time (min)	Background sample concentration (mg/L)	Adjusted effluent suspended sediment concentration (mg/L) ^a	Average (mg/L)
1	200	1:00	<RDL	11.9	4.6
		2:00		7.0	
		3:00		4.4	
		4:00		2.2	
		5:00		1.0	
		6:00		1.2	
2	800	7:00	<RDL	1.1	0.7
		8:00		0.9	
		9:00		0.6	
		10:00		1.4	
		11:00		0.1	
		12:00		0	
3	1400	13:00	<RDL	0	0
		14:00		0.1	
		15:00		0	
		16:00		0	
		17:00		0	
		18:00		0	
4	2000	19:00	1.2	0.2	0.2
		20:00		0	
		21:00		0	
		22:00		0.7	
		23:00		0	

		24:00		0.4	
5	2600	25:00	1.6	0.3	0.4
		26:00		0.4	
		27:00		0.7	
		28:00		0.4	
		29:00		0.2	
		30:00		0.4	

^a The adjusted effluent suspended sediment concentration represents the actual measured effluent concentration minus the background concentration. For more information see [Bulletin # CETV 2016-09-0001](#).

The results of the light liquid re-entrainment test used to evaluate the unit’s capacity to prevent re-entrainment of light liquids are reported in Table 5. The test involved preloading 58.3 L (corresponding to a 5 cm depth over the collection sump area of 1.17m²) of surrogate low-density polyethylene beads within the oil collection skirt and running clean water through the device continuously at five surface loading rates (200, 800, 1400, 2000, and 2600 L/min/m²). Each flow rate was maintained for 5 minutes with approximately 1 minute transition time between flow rates. The effluent flow was screened to capture all re-entrained pellets throughout the test.

Table 5. Light liquid re-entrainment test results for the EFO4.

Surface Loading Rate (L/min/m ²)	Time Stamp	Amount of Beads Re-entrained			
		Mass (g)	Volume (L) ^a	% of Pre-loaded Mass Re-entrained	% of Pre-loaded Mass Retained
200	62	0	0	0.00	100
800	247	168.45	0.3	0.52	99.48
1400	432	51.88	0.09	0.16	99.83
2000	617	55.54	0.1	0.17	99.84
2600	802	19.73	0.035	0.06	99.94
Total Re-entrained		295.60	0.525	0.91	--
Total Retained		32403	57.78	--	99.09
Total Loaded		32699	58.3	--	--

^a Determined from bead bulk density of 0.56074 g/cm³

Variations from testing Procedure

The following minor deviations from the *Procedure for Laboratory Testing of Oil-Grit Separators* (Version 3.0, June 2014) have been noted:

1. During the capture test, the 40 L/min/m² and 80 L/min/m² surface loading rates were evaluated over 3 and 2 days respectively due to the long duration needed to feed the required minimum of 11.3 kg of test sediment into the unit at these lower flow rates. Pumps were shut down at the end of each intermediate day, and turned on again the following morning. The target flow rate was re-established within 30 seconds of switching on the pump. This procedure may have allowed sediments to be captured that otherwise may have exited the unit if the test was

continuous. On the basis of practical considerations, this variance was approved by the verifier prior to testing.

2. During the scour test, the coefficient of variation (COV) for the lowest flow rate tested (200 L/min/m²) was 0.07, which exceeded the specified limit of 0.04 target specified in the OGS Procedure. A pump capable of attaining the highest flow rate of 3036 L/min had difficulty maintaining the lowest flow of 234 L/min but still remained within +/- 10% of the target flow and is viewed as having very little impact on the observed results. Similarly, for the light liquid re-entrainment test the COV for the flow rate of the 200 L/min/m² run was 0.049, exceeding the limit of 0.04, but is believed to introduce negligible bias.
3. Due to pressure build up in the filters, the runs at 1000 L/min/m² for the Stormceptor® EF4 and 1000 and 1400 L/min/m² for the Stormceptor® EFO4 were slightly shorter than the target. The run times were 54, 59 and 43 minutes respectively, versus targets of 60 and 50 minutes. The final feed samples were timed to coincide with the end of the run. Since >25 lbs of sediment was fed, the shortened time did not invalidate the runs.

Verification

The verification was completed by the Verification Expert, Toronto and Region Conservation Authority, contracted by GLOBE Performance Solutions, using the International Standard **ISO 14034:2016 Environmental management – Environmental technology verification (ETV)**. Data and information provided by Imbrium Systems Inc. to support the performance claim included the following: Performance test report prepared by Good Harbour Laboratories, and dated September 8, 2017; the report is based on testing completed in accordance with the Procedure for Laboratory Testing of Oil-Grit Separators (Version 3.0, June 2014).

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

ISO 14034:2016 specifies principles, procedures and requirements for environmental technology verification (ETV), and was developed and published by the *International Organization for Standardization (ISO)*. The objective of ETV is to provide credible, reliable and independent verification of the performance of environmental technologies. An environmental technology is a technology that either results in an environmental added value or measures parameters that indicate an environmental impact. Such technologies have an increasingly important role in addressing environmental challenges and achieving sustainable development.

For more information on the Stormceptor® EF4 and EFO4 please contact:

Imbrium Systems, Inc.
407 Fairview Drive
Whitby, ON
L1N 3A9, Canada
Tel: 416-960-9900
info@imbriumsystems.com

For more information on ISO 14034:2016 / ETV please contact:

GLOBE Performance Solutions
World Trade Centre
404 – 999 Canada Place
Vancouver, BC
V6C 3E2 Canada
Tel: 604-695-5018 / Toll Free: 1-855-695-5018
etv@globeperformance.com

Limitation of verification

GLOBE Performance Solutions and the Verification Expert provide the verification services solely on the basis of the information supplied by the applicant or vendor and assume no liability thereafter. The responsibility for the information supplied remains solely with the applicant or vendor and the liability for the purchase, installation, and operation (whether consequential or otherwise) is not transferred to any other party as a result of the verification.

Appendix C

Sanitary Data Analysis

2155 Leanne Blvd

Mixed Residential Project



NOTES: Post-development domestic sewage flow based upon a unit flow of 270 L/cap/d based on Regions Guidelines (2020)

Maximum flow velocity for pipe flowing full = 3.0 m/s.

Minimum flow velocity for pipe flowing partially full (actual flow) = 0.75 m/s.

Infiltration= 0.26 L/s/ha (0.26 L/s/ha for existing land)

Infiltration= 3.00 L/s/ha L/cap/d = 290 (residential)

Mannings= 0.013 L/cap/d = 270 (non-residential)

Sanitary Sewer Design Sheet

Project Name: 2155 Leanne Blvd

Project Number: 30327178

Date: April 2026

Designed By: SN

	From	To	DESIGN FLOW CALCULATIONS										SEWER DESIGN & ANALYSIS						Notes		
			Area (ha)	Density	Population	Cumulative Area (ha)	Cumulative Population	Peaking Factor	Sewage Flow (L/s) (1)	Infiltration Flow (L/s) (2)	Ground Water (L/s) (3)	Total Flow, Qd (L/s) (1)+(2)+(3)	Nominal Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Full Flow Capacity, Qf (L/s)	Full Flow Velocity (m/s)	Actual Velocity V (m/s)		Percent of Full Flow (%)	
Pre-Development			2.30		115	2.30	115	4.23	1.52	0.60	0.0	2.10									
Post-Development	Services		2.30		1106	2.30	1106	3.77	14.00	0.60	0.0	14.60	200	1.0%		34.2	0.00	0.00	42.7%		

Pre-Development			
	Area	Density	Population
Commercial / office	2.3 ha	50 ppl/ha	115
Pop. =			115

Post-Development				
	Type	Units	Density	Population
Midrise	1BD	58	1.7 ppl/unit	99
	2BD	133	3.1 ppl/unit	412
	3BD	12	3.1 ppl/unit	37
Townhouse		164	3.4 ppl/unit	558
Pop. =				1106



Appendix D

Water Demand Analysis

Project: 2155 Leanne Blvd, Mississauga
 Date: April 2026
 Prepared by: SN

Proj. # 30327178

Note:
 Based on the Region of Peel 2020 Watermain Design Criteria and the Ontario Building Code, Section 3.1.17.1 "Occupant Load Determination", Table 8.1.17.1.

	Site Component	EX	PROP MID-RISE	PROP TOWNHOUSE
Residential Occupancy Data	Studio / 1 / 1+d bed units	0	58	
	People per unit	1.7	1.7	1.4
	2 bed units / 2+D	0	133	
	People per unit	3.1	3.1	2.1
	3 bed units	0	12	
	People per unit	3.1	3.1	3.1
	4 bed units	0	0	
	People per unit	n/a	n/a	3.6
	Townhouse units	0		164
	People per unit	3.4	3.4	3.4
Commercial Occupancy Data	Commercial or Retail	2.3		
	person / ha	50.0		
	Institutional	0.0		
	Students	600.0		
	blank			
	blank			

Unit Quantity by Site Component	Water Demand	Units			
Residential Occupancies			Equivalent Population (persons)		
Residential	270	L/person/day	0	548	557.6
Commercial or Retail	250	L/person/day	115	0	0
Not used	-	-	-	-	-
Other Occupancies			Flow Rates (L/d)		
Commercial or Retail	250	L/person/day	-	-	-
Employment Average Day Demand	270	Lped	-	-	-
Not used	-	-	-	-	-
Daily Flow Rate (L/d)					
Residential Occupancies					
Residential			0.00	147,987.00	150,552.00
Commercial or Retail			28,732.70	0.00	0.00
Not used			0	0	0
Other Occupancies					
Commercial or Retail			0	0	0
Employment Average Day Demand			0.00	0	0
Not used			0	0	0
Average day (L/d)			28,732.70	147,987.00	150,552.00
Average day (L/s)			0.33	1.71	1.74
Max. day (L/hr)			1,676.07	11,099.03	11,291.40
Max day (L/s)			0.47	3.08	3.14
Min. hour (L/hr)			119.72	2,466.45	2,509.20
Peak hour (L/hr)			3,591.59	18,498.38	18,819.00
Peak hour (L/s)			1.00	5.14	5.23

Peaking Factors			
Land Use	Minimum Hour	Maximum Hour	Peak Hour
Residential	0.4	1.8	3.0
Institutional	0.1	1.4	3.0

Project: 2155 Leanne Blvd, Mississauga Proj. # 30327178
 Date: March 1, 2026
 Prepared by: SN

Fire Resistive Construction:	YES	Site Component:	EX	Prop	Townhouse
Note: Based on the Region of Peel 2010 Watermain Design Criteria and the Ontario Building Code, Section 3.1.17.1 "Occupant Load Determination", Table 8.1.17.1. $F = 220C \sqrt{A}$ F = Required fire flow L/min C = Coefficient related to construction A = Total area in m ² Calculations, formulas and factors are as per Fire Underwriter's Survey (FUS) Water Supply for Public Fire Protection	Total Floor Area	Largest Floor Area (m2)	2900	1145	
		Area Above (m2)	2900	1145	
		Area Below (m2)		1145	
		Total Floor Area (m2)	3625	1718	
	Flow (F)	C (dimensionless)	1.5	1.5	
		A (m2)	3625	1718	
		F (L/min)	20000	14000	
		F (L/s)	335	235	
	Reduction Factor	F (L/min)	20000	14000	
		f ₁ (dimensionless)	0.85	0.85	
		F' = F x f ₁ (L/min)	17000	11900	
		<i>f₁ = occupancy factor; ie, Residential, f₁ = 0.85; for Retail or Commercial, f₁ = 1.00</i>			
	Sprinkler and Exposure Increase or Decrease	f ₂ (sprinkler factor)	30%	30%	
		North Side	10%	15%	
		East Side	0%	25%	
		South Side	25%	15%	
		West Side	5%	0%	
		f ₃	40%	55%	
	<i>f₃ = Exposure factor not to exceed 75%, determined as per FUS Guide Item 4, page 18)</i>				
	F' (L/min)		17000	11900	
S = F' * f ₂ (L/min)		5100	3570		
E = F' * f ₃ (L/min)		6800	6545		

F''=F'-S+E (L/min) rounded to nearest 1,000	19000	15000	
F''(L/s)	317	250	
F''(USGPM)	5020	3970	
FF = Max F'' + Max Daily Demand/MDD (L/s)	320	250	
Max F'' + MDD (USGPM)	5080	3970	

Table 1

Sprinkler Reduction Factor (f ₂)		
No Sprinkler System	Sprinklered	Sprink. + Supervised
0%	30%	50%

Table 2

Construction Type "C" Factor			
Wood Frame	Ordinary Construction	Non-Combustible	Fire Resistive
1.5	1	0.80	0.60

Table 3

Occupancy Factor (f ₁)				
Rapid Burning	Free Burning	Combustible	Limited Combustible	Non-Combust.
25%	15%	0%	-15%	-25%

Table 4

Exposure Charge		
0 to 3m	3.1 to 10m	10.1 to 20m
25%	20%	15%

Appendix E

Engineering Drawings

LEGEND

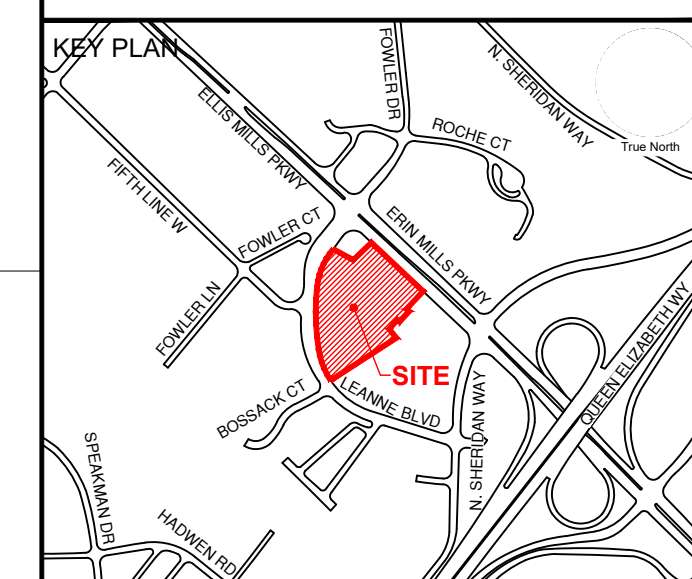
- PROPERTY LINE
- PHASE LIMIT
- DEVELOPMENT LIMIT
- OUTLINE OF BUILDING AT GROUND LEVEL
- OUTLINE OF UNDERGROUND LEVEL
- PROP. DEPRESSED CURB
- PROP. FLUSH CURB
- PROP. DOOR / OVERHEAD DOOR
- EX. ELEVATION
- PROP. ELEVATION
- PROP. OVERLAND FLOW ROUTE
- EX. OVERLAND FLOW ROUTE
- PROP. STORM CATCHBASIN MAINTENANCE HOLE
- PROP. SANITARY MAINTENANCE HOLE
- PROP. CATCHBASIN / DOUBLE CATCHBASIN
- PROP. AREA DRAIN
- EX. STORM MANHOLE
- EX. SANITARY MANHOLE
- EX. CATCHBASIN / DOUBLE CATCHBASIN
- PROP. VALVE AND BOX

CLIENT
**1000293648 ONTARIO
 INC. O/A DUNPAR
 DEVELOPMENTS**
 105 SIX POINT ROAD ETOBICOKE, ON
 M8Z 2X3 CANADA

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PRIME CONSULTANT
ARCADIS
 8133 Warden Avenue - Unit 300
 Markham ON L6G 1B3 Canada
 tel 905 763 2322
 www.arcadis.com

PROJECT
2155 LEANNE BOULEVARD
 2155 LEANNE BOULEVARD,
 CITY OF MISSISSAUGA

PROJECT NO: 30327174	SCALE 1:400
DRAWN BY: RJ	CHECKED BY: SN
PROJECT MGR: NG	APPROVED BY: NG

SHEET TITLE
SITE GRADING PLAN

SHEET NUMBER C100	ISSUE 01
-----------------------------	--------------------



File Location: C:\Users\jmezz1916\OneDrive\Arcadis\ACC-US\ACA-30327174-2155 Leanne Blvd ZBA\Project Files\10_WIP\04_CIVIL\Sheets\30327174-SHT-GRAD-C100.dwg
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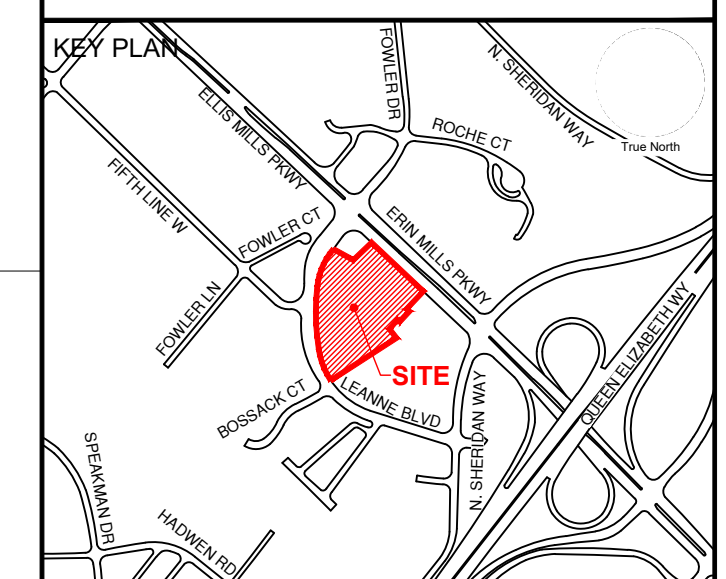
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- PHASE LIMIT
- DEVELOPMENT LIMIT
- OUTLINE OF BUILDING AT GROUND LEVEL
- LIMIT OF UNDERGROUND LEVEL
- PROP. DEPRESSED CURB
- PROP. FLUSH CURB
- PROP. DOOR / OVERHEAD DOOR
- PROP. STORM MAINTENANCE HOLE
- PROP. SANITARY MAINTENANCE HOLE
- PROP. CATCHBASIN / DOUBLE CATCHBASIN
- PROP. AREA DRAIN
- EX. STORM MANHOLE
- EX. SANITARY MANHOLE
- EX. CATCHBASIN / DOUBLE CATCHBASIN
- PROP. STORM SEWER
- PROP. SANITARY SEWER
- PROP. WATERMAIN
- PROP. VALVE AND BOX

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 CITY OF MISSISSAUGA

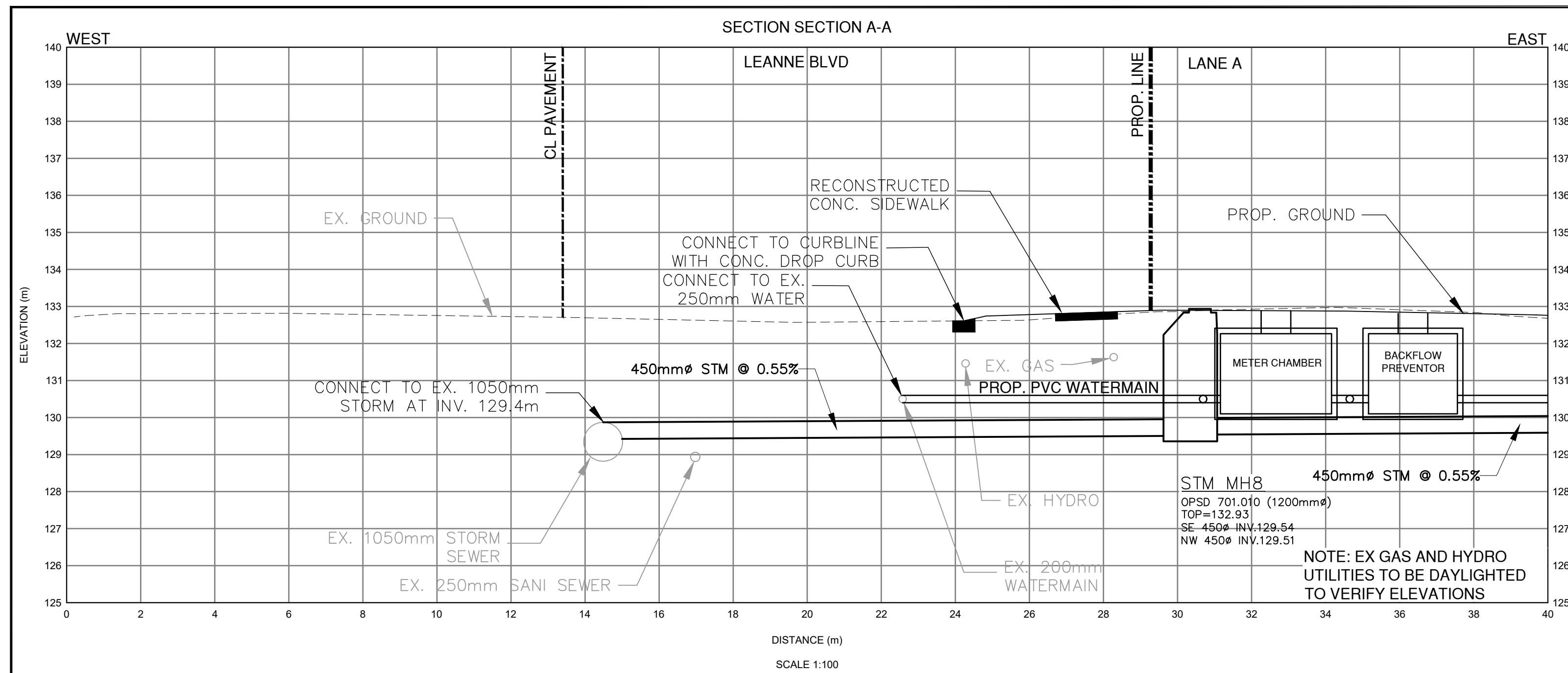
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DRAWN BY: RJ	CHECKED BY: SN
PROJECT MGR: NG	APPROVED BY: NG

SHEET TITLE
SITE SERVICING PLAN

SHEET NUMBER C101	ISSUE 01
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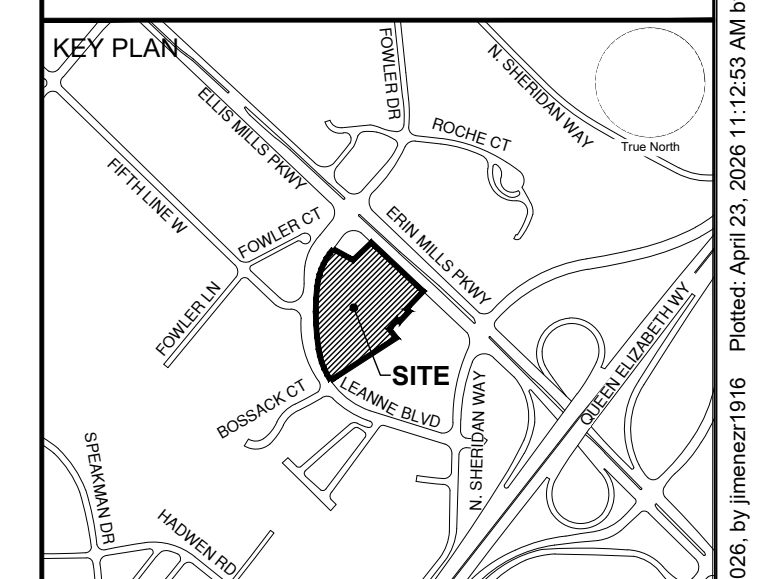


CLIENT
1000293648 ONTARIO INC. O/A DUNPAR DEVELOPMENTS
 105 SIX POINT ROAD ETOBICOKE, ON M8Z 2X3 CANADA

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Arcadis Professional Services (Canada) Inc.

ISSUES		
No.	DESCRIPTION	DATE
1	ZBA APPLICATION	24 APR 2026



PRIME CONSULTANT

 8133 Warden Avenue - Unit 300
 Markham ON L6G 1B3 Canada
 tel 905 763 2322
 www.arcadis.com

PROJECT
2155 LEANNE BOULEVARD
 2155 LEANNE BOULEVARD,
 CITY OF MISSISSAUGA

PROJECT NO: 30327174	SCALE 1:400
DRAWN BY: RJ	CHECKED BY: SN
PROJECT MGR: NG	APPROVED BY: NG

SHEET TITLE
CROSS SECTIONS

SHEET NUMBER C102	ISSUE 01
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 Printed: April 23, 2026 11:12:53 AM by jimeezr1916
 Last Saved: April 23, 2026 11:12:53 AM by jimeezr1916

LEGEND

PROPERTY LINE
 PROP. TEMPORARY HOARDING
 PROP. TEMP. SEDIMENT CONTROL FENCE PER STD. No. 2940.010
 PROP. TEMPORARY SEDIMENT TRAP (CB) PER STD No. 2930.040
 PROP. TEMPORARY GRAVEL MUD MAT

CONSTRUCTION ACCESS

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 105 SIX POINT ROAD ETOBICOKE, ON M8Z 2X3 CANADA

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Arcadis Professional Services (Canada) Inc.

ISSUES

No.	DESCRIPTION	DATE
1	ZBA APPLICATION	24 APR 2026



PRIME CONSULTANT
ARCADIS
 8133 Warden Avenue - Unit 300
 Markham ON L6G 1B3 Canada
 tel 905 763 2322
 www.arcadis.com

PROJECT
2155 LEANNE BOULEVARD
 CITY OF MISSISSAUGA

PROJECT NO: 30327174	SCALE 1:400
DRAWN BY: RJ	CHECKED BY: SN
PROJECT MGR: NG	APPROVED BY: NG

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER C103	ISSUE 01
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 Plotted: April 23, 2026, 11:14:13 AM by Jimenez, Raphael

GENERAL REFERENCES FOR DRAWINGS:

Table with 4 columns: REGION, DRAWING TITLE, REGIONAL CODE, and REGIONAL CODE. Lists various drawing titles and their corresponding regional codes.

GENERAL NOTES FOR PRECAST CONCRETE MAINTENANCE HOLES AND CHAMBERS:

- 1. ALL PRECAST CHAMBERS TO BE SUPPLIED BY A MANUFACTURER CERTIFIED UNDER THE OCPA PLANT PREQUALIFICATION PROGRAM.
2. SUBMIT SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR INFORMATION. ALL DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.

GENERAL REFERENCES FOR DRAWINGS: NOVEMBER 2011 REVISION AND APRIL 2014 REVISION

Table with 4 columns: REGION, DRAWING TITLE, REGIONAL CODE, and REGIONAL CODE. Lists various drawing titles and their corresponding regional codes.

GENERAL NOTES FOR PIPING:

- 1. SUBMIT COMPRESSURE PIPE SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR REVIEW AND COMMENT. ALL DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.

GENERAL NOTES FOR PIPING:

- 1. SUBMIT COMPRESSURE PIPE SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR REVIEW AND COMMENT. ALL DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.

ONTARIO PROVINCIAL STANDARD DRAWING REFERENCES TO BE READ IN CONJUNCTION WITH REGION OF PEEL STANDARD DRAWINGS

Table with 4 columns: REGION, DRAWING TITLE, REGIONAL CODE, and REGIONAL CODE. Lists various drawing titles and their corresponding regional codes.

PUBLIC WORKS STANDARD DRAWING

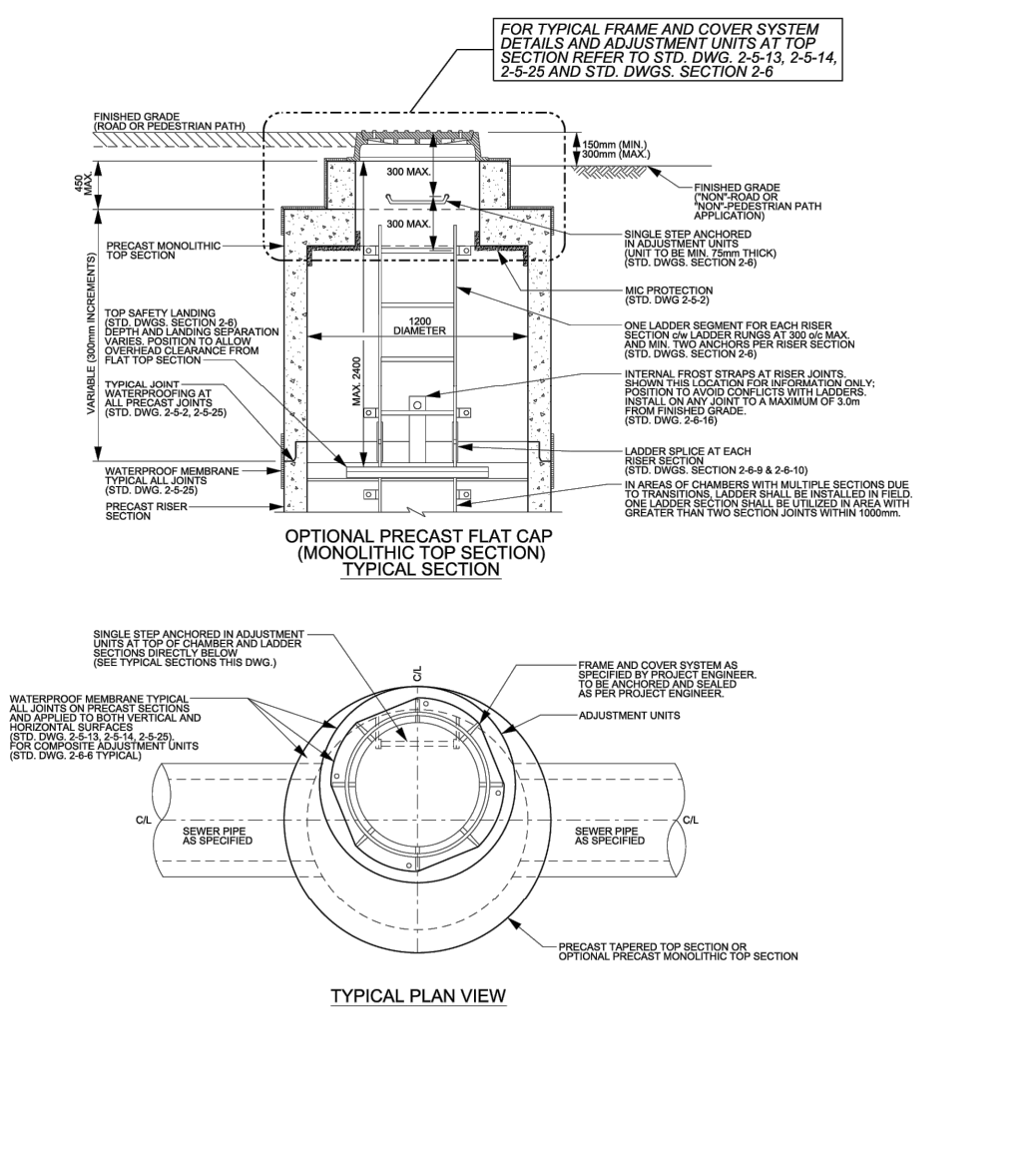
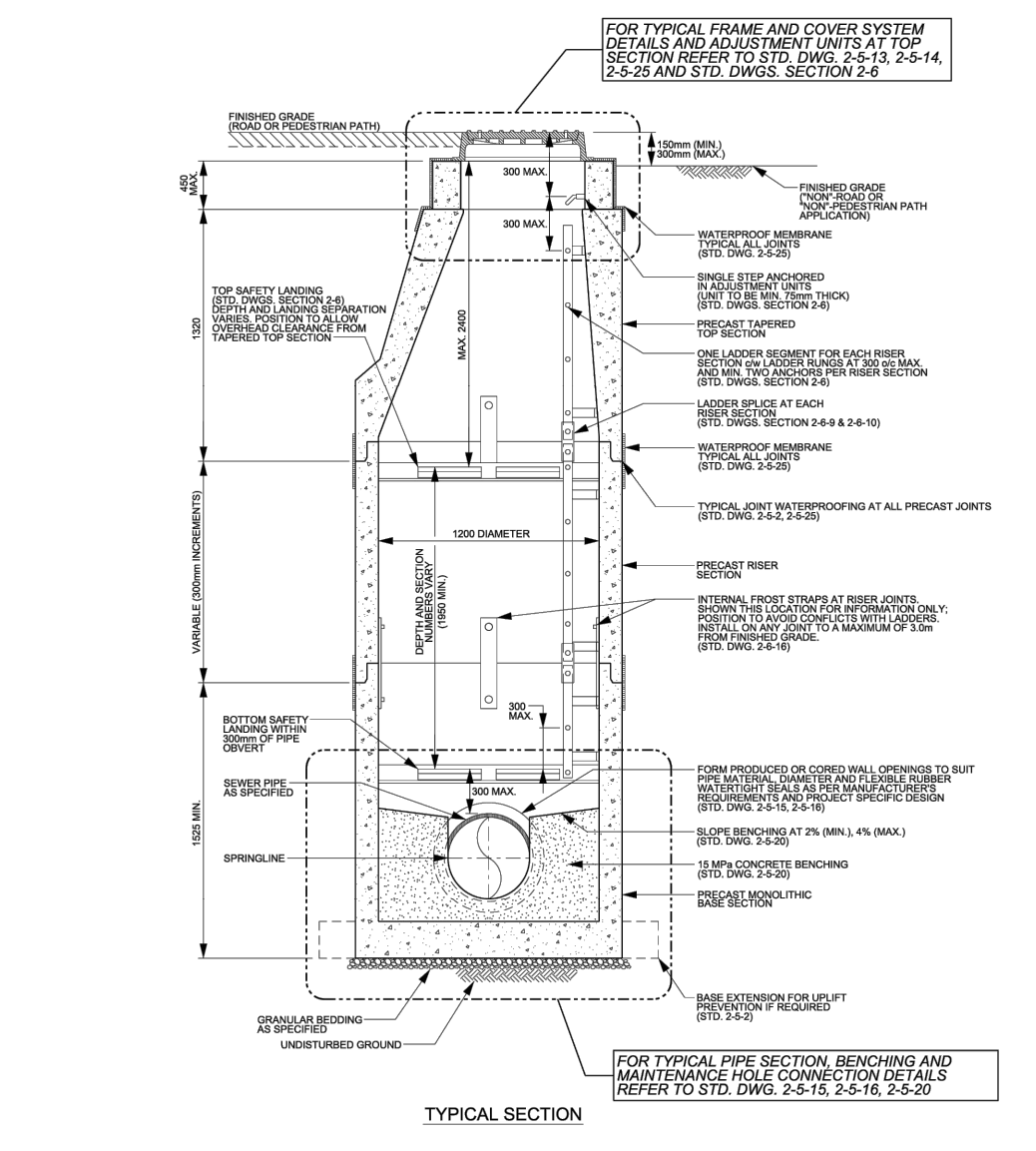
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GENERAL NOTES AND REFERENCES

PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.

GENERAL NOTES AND REFERENCES

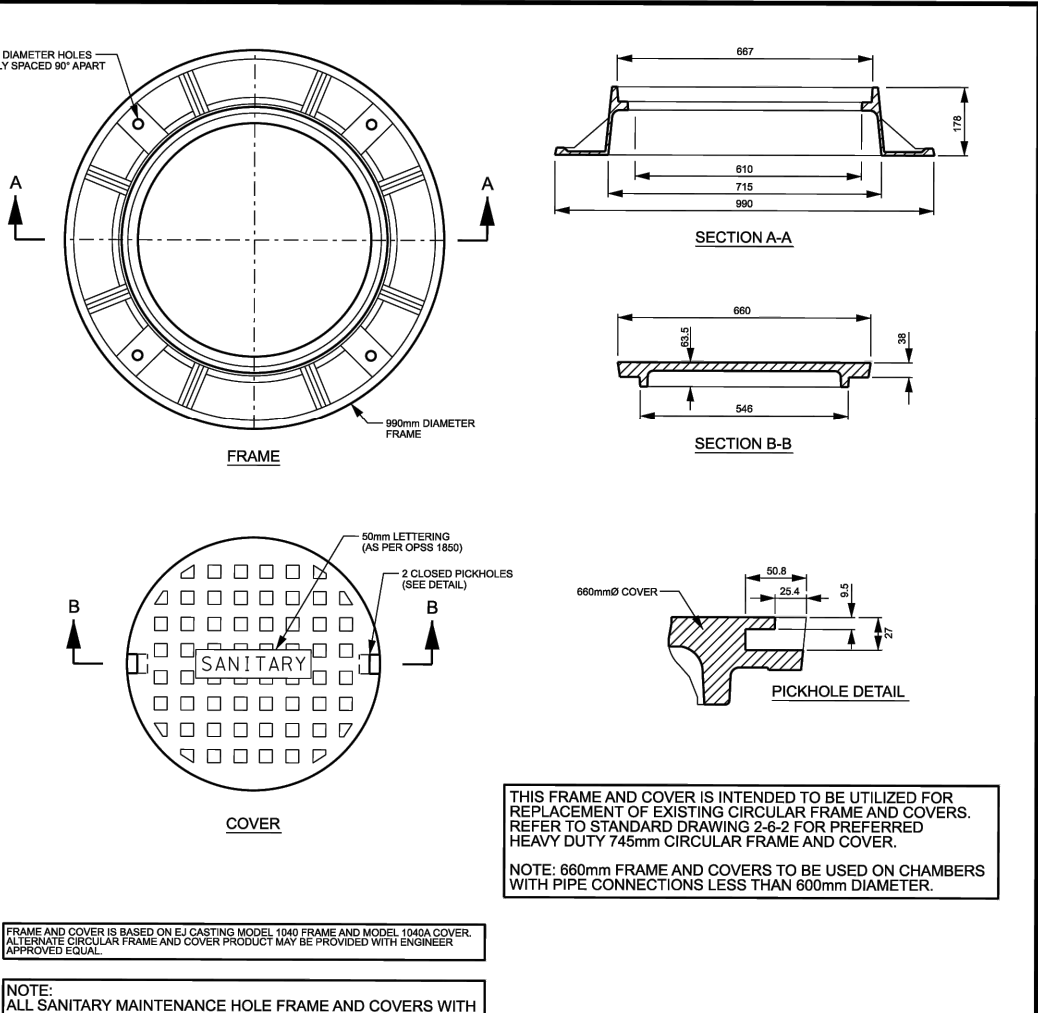


NOTE

- 1. REFER TO STANDARD DRAWING 2-5-1 FOR GENERAL NOTES PERTAINING TO PRECAST MAINTENANCE HOLES.
2. REFER TO STANDARD DRAWING 2-5-2 FOR TYPICAL INSTALLATION OPTIONS AND REQUIREMENTS.

PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.



NOTE

- 1. REFER TO STANDARD DRAWING 2-6-1, 2-7-1 AND 2-8-1 FOR GENERAL NOTES PERTAINING TO PRECAST MAINTENANCE HOLES.
2. REFER TO ATTACHED DIRECTLY TO PRECAST MAINTENANCE HOLE TOP. REFER TO STANDARD DRAWINGS 2-6-1 AND 2-8-1.

PUBLIC WORKS STANDARD DRAWING

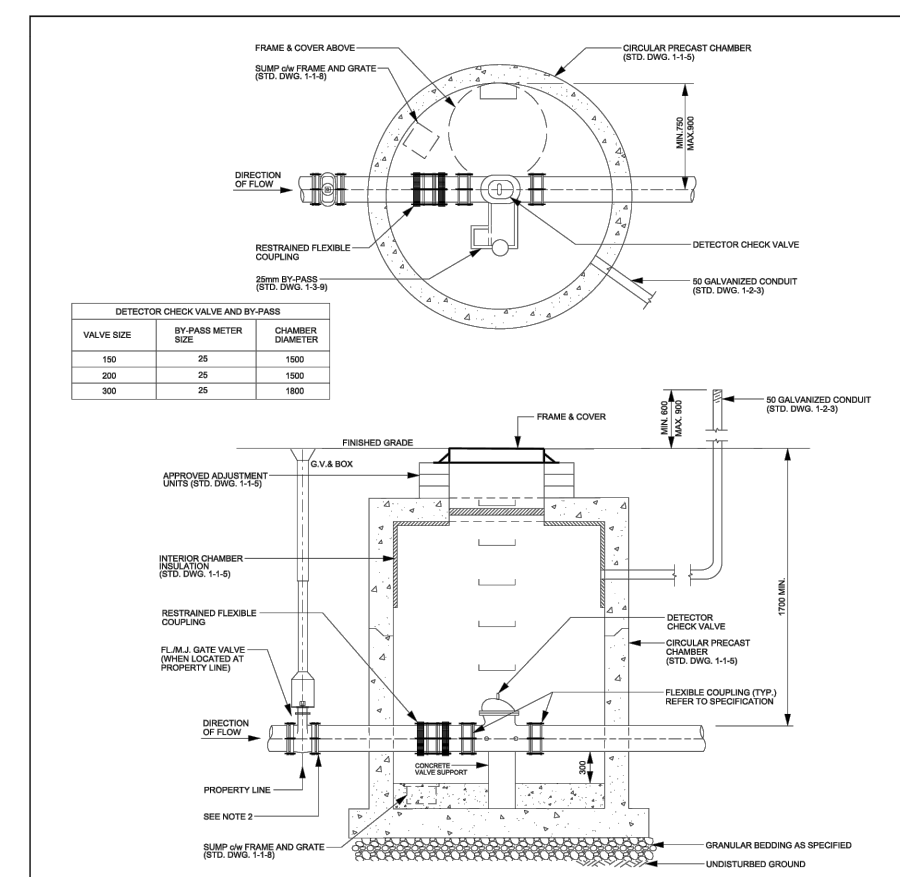
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PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.

PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.

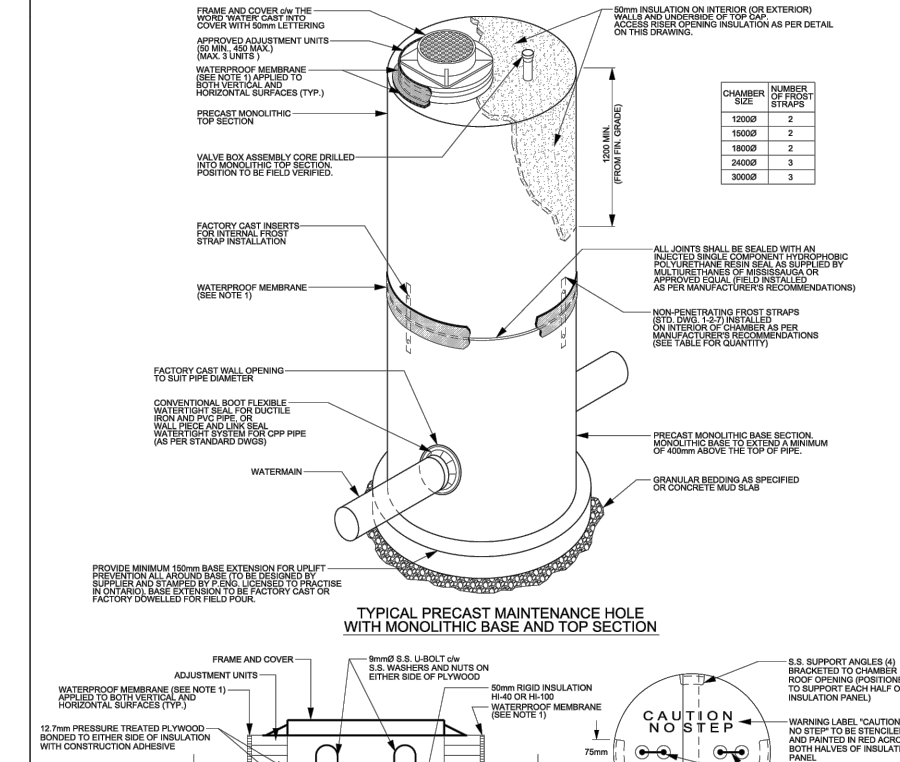


NOTE

- 1. INSTALL 30mm GALVANIZED CONDUIT FROM INSIDE CHAMBER WALL TO SUITABLE LOCATION 200mm MIN. BEYOND TRAFFIC AREA.
2. GATE VALVE FITTING AND PIPE SHALL BE RESTRAINED AS PER REGION OF PEEL REQUIREMENTS.

PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.



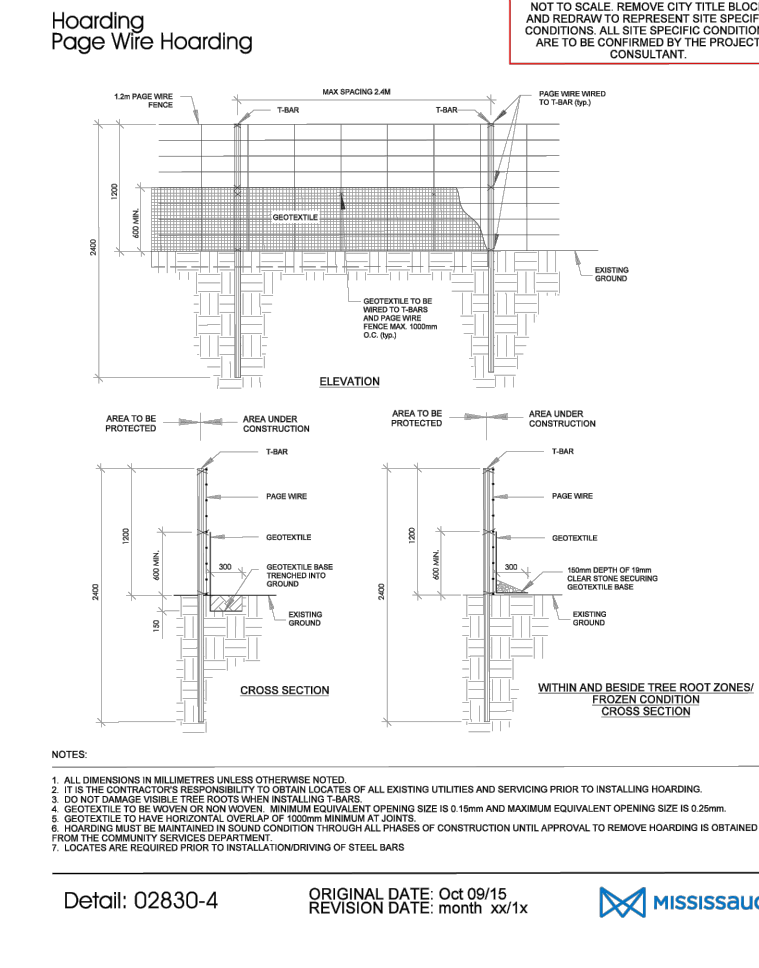
NOTE

- 1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHALL BE TO FACE UNLESS OTHERWISE NOTED.

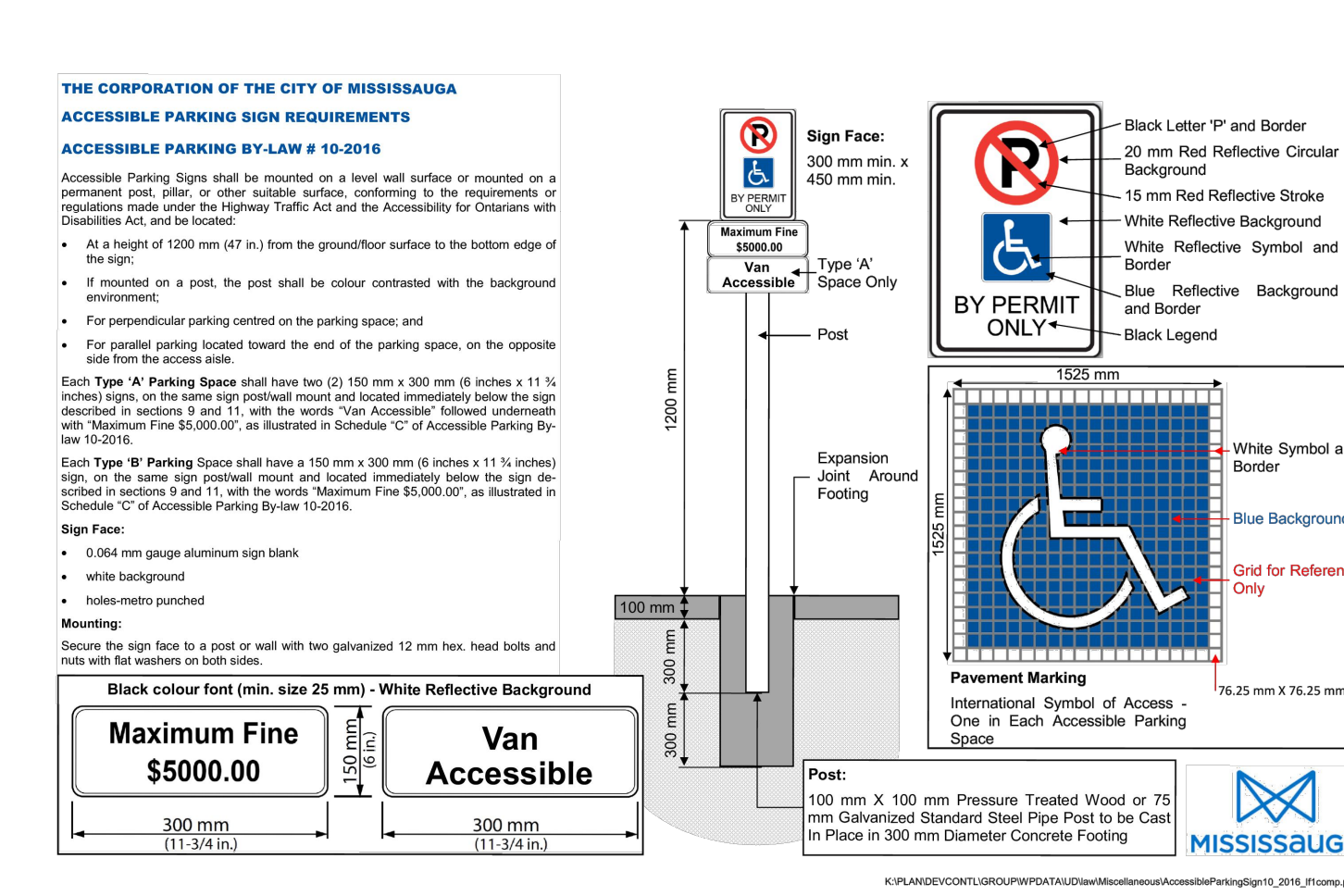
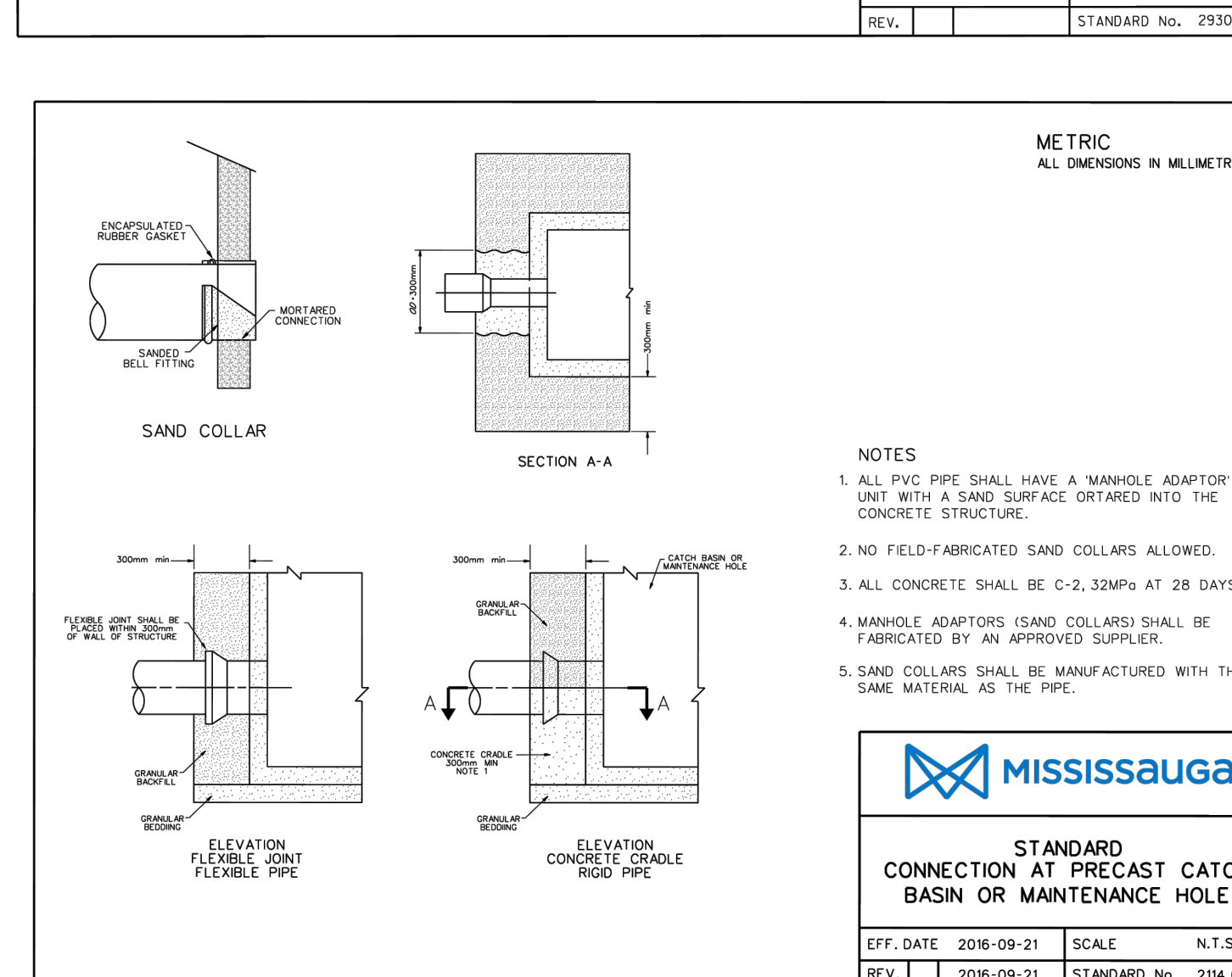
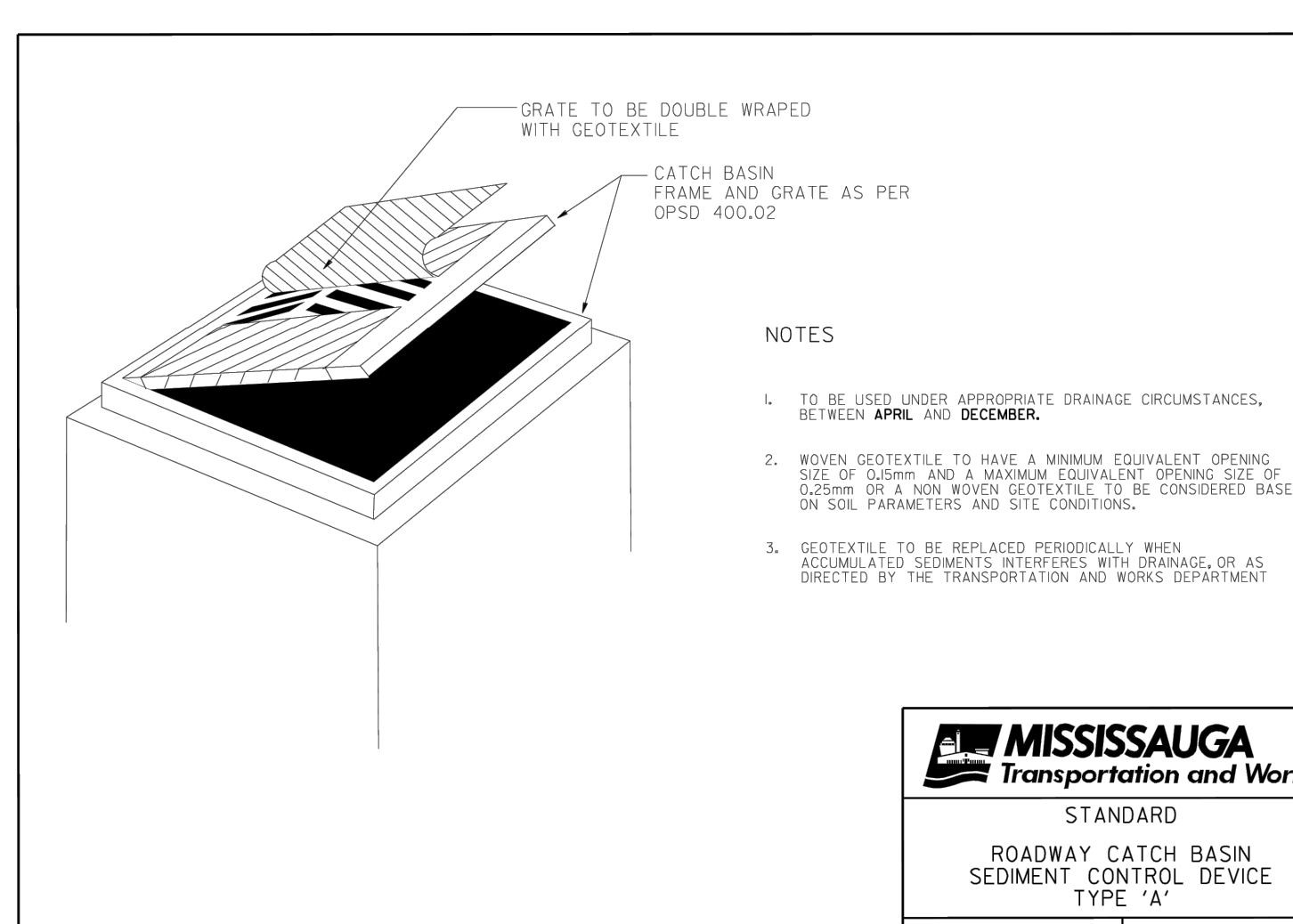
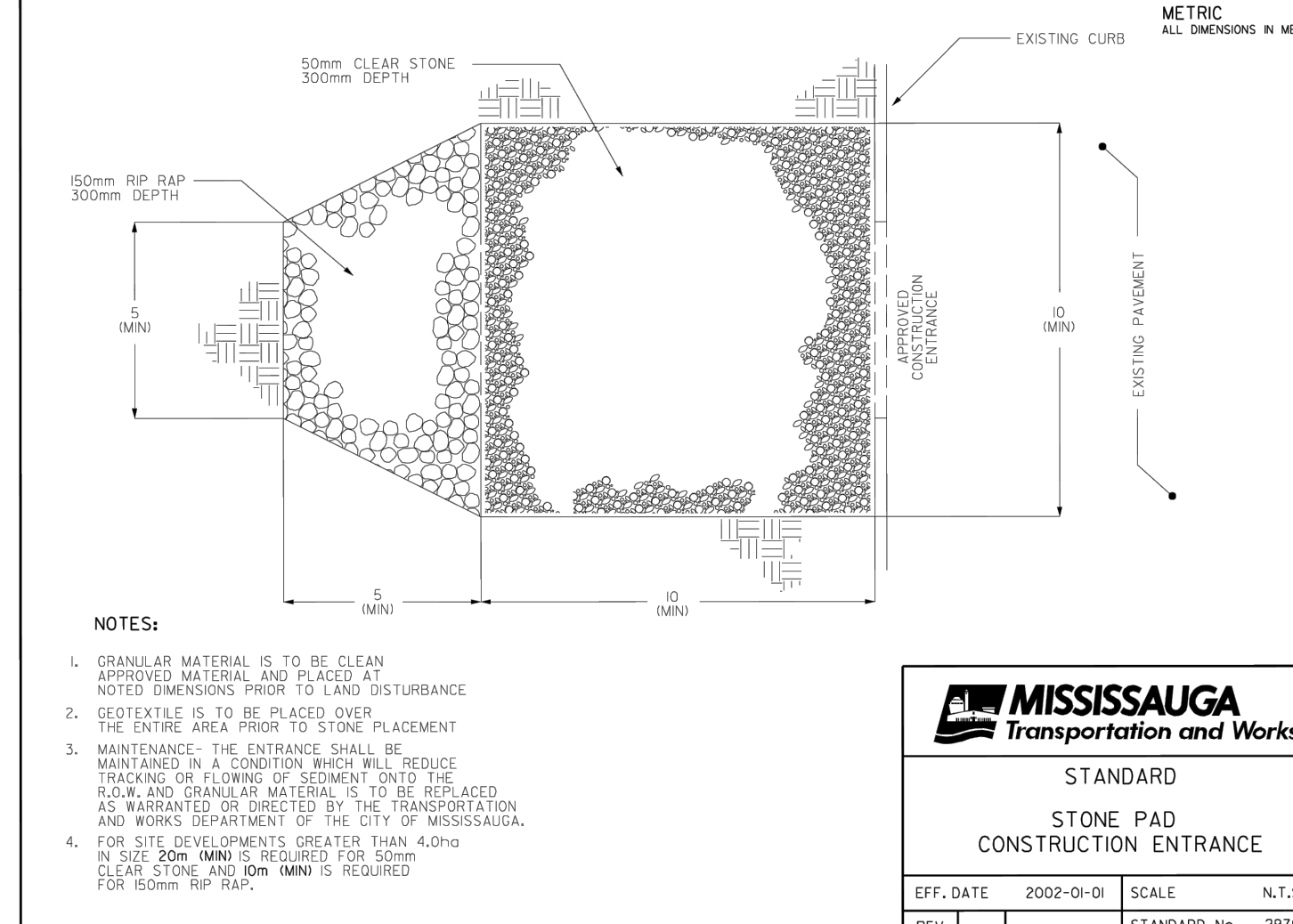
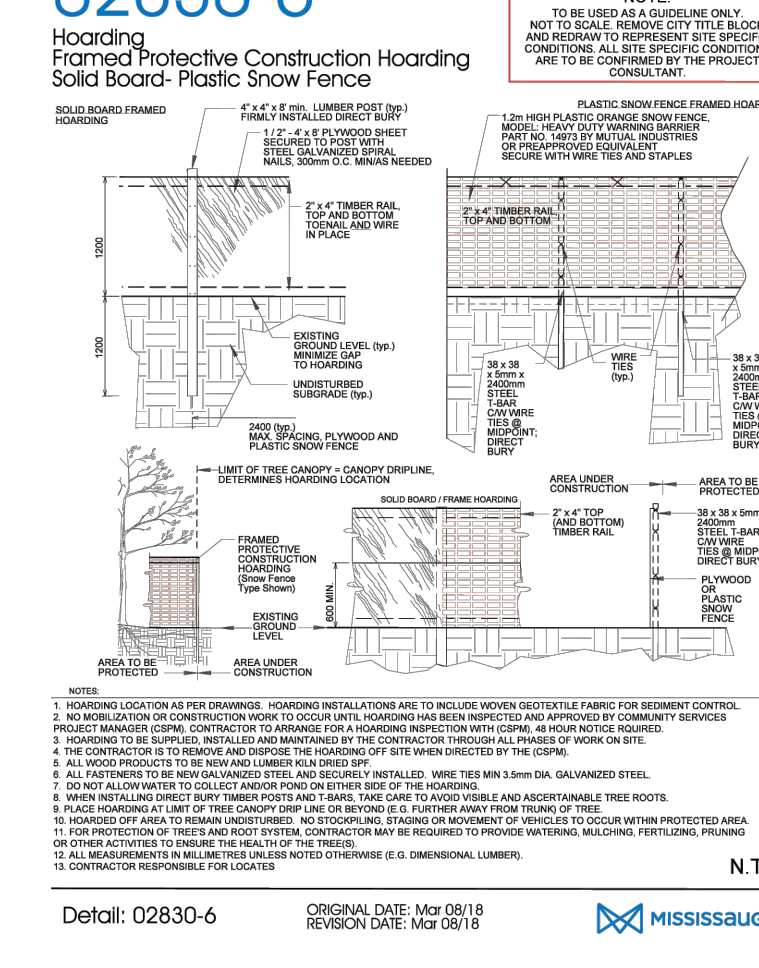
PUBLIC WORKS STANDARD DRAWING

Table with 4 columns: APPROVED BY, DRAWN BY, STD. DWG. NUMBER, and SCALE. Lists drawing details for Public Works Standard Drawing.

02830-4 Hoarding Page Wire Hoarding



02830-6 Hoarding Framed Protective Construction Hoarding Solid Board-Plastic Snow Fence



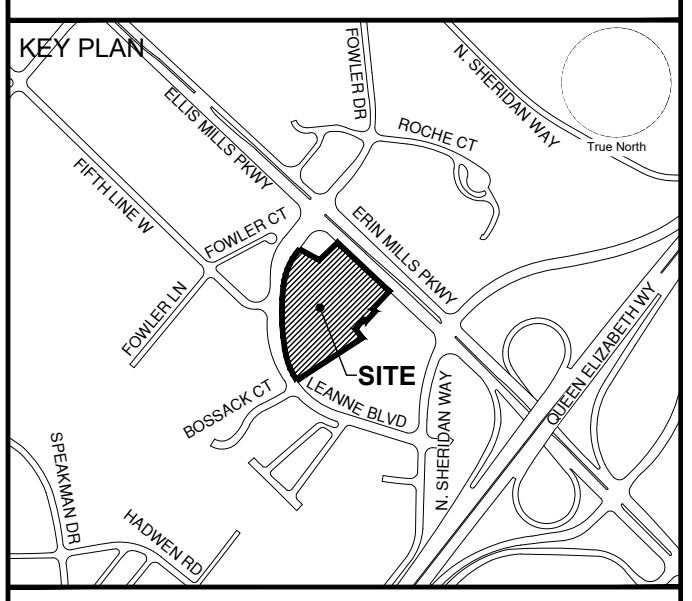
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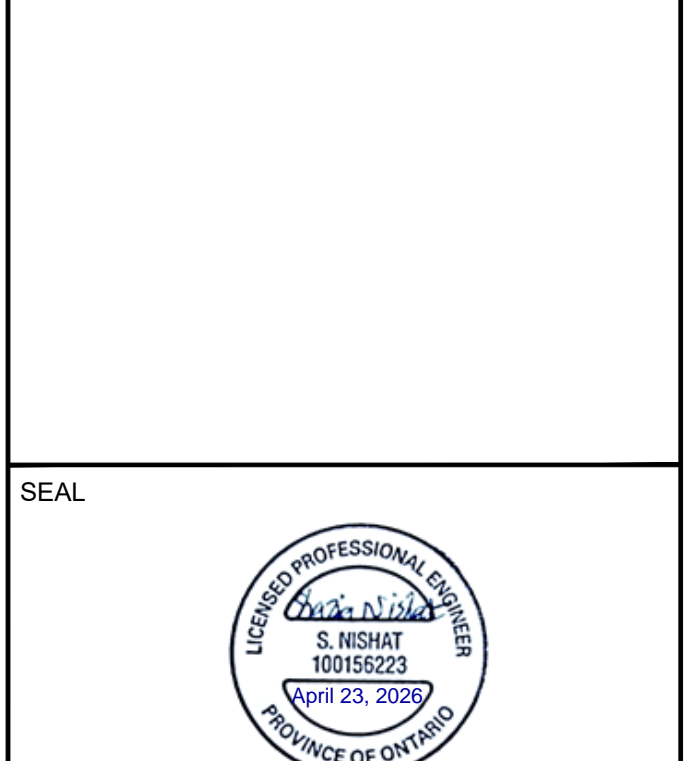
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Table with 3 columns: EFF. DATE, SCALE, STANDARD No. Lists drawing metadata.



PRIME CONSULTANT



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PROJECT 2155 LEANNE BOULEVARD CITY OF MISSISSAUGA

Table with 2 columns: PROJECT NO., SCALE, DRAWN BY, CHECKED BY, PROJECT MGR., APPROVED BY. Lists project details.

SHEET TITLE GENERAL NOTES AND DETAILS

SHEET NUMBER C104 ISSUE 01

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