Functional Servicing and Stormwater Management Report

5688 Main Street

May 2026 — Project No. 100319
Hyson Properties Inc.

TYLin

Contents

Figures

Appendices

1. Introduction

TYLin has been retained by Hyson Properties Inc. to prepare a detailed Functional Servicing and Stormwater Management Report along with a corresponding grading and servicing design in support of the Zoning By-law Amendment (ZBA) application for the proposed development. The subject property is located at the north-west corner of Main Street and Palmwood gate at municipal address 5688 Main Street in the Town of Whitchurch-Stouffville, Ontario (refer to **Figure 1-1**).

This report will:

- Provide background information regarding the subject property;
- Summarize the existing site conditions;
- Provide information regarding the proposed development conditions;
- Outline the proposed grading for the development; and
- Outline the existing and proposed municipal servicing.

The recommended servicing has been developed in accordance with the applicable design criteria and requirements of the Town of Whitchurch-Stouffville (the Town), the Regional Municipality of York (the Region) and Lake Simcoe Region Conservation Authority (LSRCA).

Figure 1-1 Location Plan

1.1. PROJECT BACKGROUND

The subject property is 4,022 m^2 in area at municipal address 5688 Main Street in the Town of Whitchurch-Stouffville. The site is presently occupied by a single commercial building and a parking lot.

The subject site is bound by Main Street to the south, future residential development to the west, residential to the north and Palmwood Gate to the east. The site is located in an area that is well established and serviced by a network of municipal infrastructure including roads, sewer, watermains, and other services and utilities.

The existing topography of the site is generally flat with gentle sloping from north to south. Existing site drainage primarily is captured by internal catchbasins which are connected and discharged to existing adjacent municipal storm infrastructure. No external drainage enters the site.

1.2. PROPOSED DEVELOPMENT

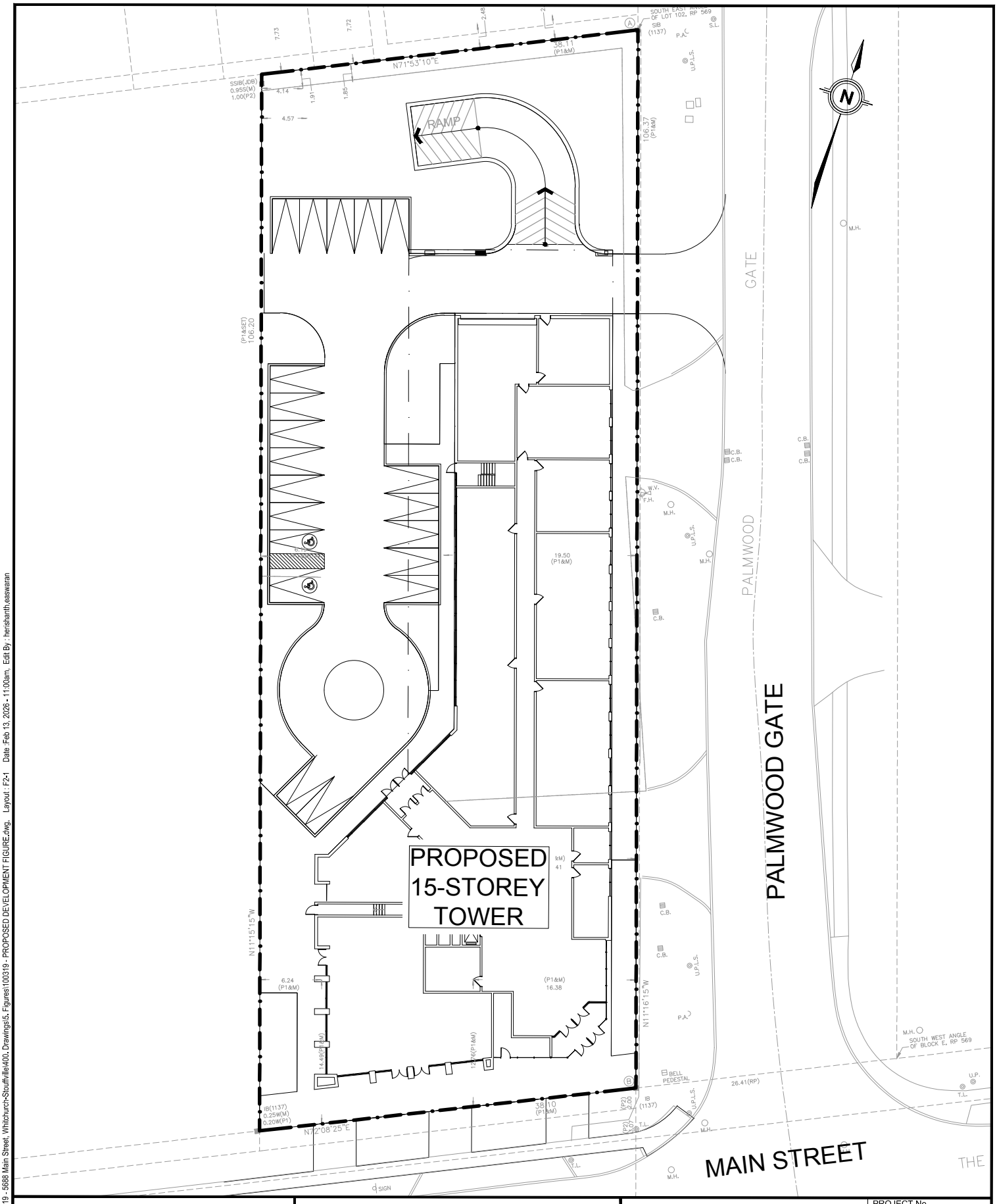
The proposed development includes the demolition of the existing buildings and the construction of a 15-storey mixed-use building with a 6-storey podium totalling 185 residential units. The building will have one level of underground parking structure which will cover most of the subject site. Refer to **Figure 1.2** for the proposed development plan.

1.3. SITE ACCESS

The site's main vehicular access will be through an entrance along the east side off Palmwood Gate with pedestrian access along the east and south sides of the property. Site loading and underground parking structure ramp access will be along the north side of the building. The proposed site vehicular access to the site will require the removal of existing curb and gutter and construction of a new vehicular entrance.

1.4. UTILITIES

As this site is a redevelopment of an existing property within a developed area of Town of Whitchurch-Stouffville, all utilities including telephone, cable, electricity and gas are readily available to service the subject property.



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5688 MAIN STREET
HYSON PROPERTIES INC.
PROPOSED DEVELOPMENT PLAN

SCALE:		PROJECT No. 100319
DATE:	FEB 2026	
DESIGNED BY:	H.E.	FIGURE No. 1-2
CHECKED BY:	H.E.	

2. Stormwater Management

2.1. Existing Stormwater Management

The existing topography of the site is generally flat with gentle sloping from north to south. Existing site drainage primarily drains towards catchbasins along the east side of the site within the municipal boulevard. Based on review of existing record drawings it appears that these catchbasins are then connected and discharge out towards the Palmwood Gate right-of-way existing municipal storm sewers, which then flow into the storm sewers along Main Street. Under existing conditions, it appears that external drainage enters the site from the neighbouring property on the north, and that there are no stormwater management quantity or quality controls exist on site. Refer to **Figure 2.1** for the **Existing Drainage Area Plan**.

The existing site servicing details obtained from The Town of Whitchurch-Stouffville engineering plan and profiles and a topographical survey completed of the area, indicate that there is an existing 900mm storm sewer on the west side of Palmwood Gate adjacent to the subject site. It appears that the subject site catchbasins are connected to this sewer in existing conditions. It appears that the catchbasins in the adjacent Main Street and Palmwood Gate rights-of-ways also connect to this storm sewer. The 900mm storm sewer flows south down Palmwood Gate and connects to the storm sewer along Main Street. The existing sewer infrastructure is shown on **Servicing Plan (S1)**.

2.1.1. Stormwater Management Design Criteria

The proposed stormwater management design is based on the MOE 2003 Stormwater Management Planning & Design (SWMPD), The Town of Whitchurch-Stouffville "Design Guidelines and Standard Drawings" (April 2021), and The Toronto and Region Conservation Authority "Stormwater Management Criteria" (August 2012).

The subject site is within the Rouge River Watershed. The subject site drainage flows south through municipal storm infrastructure on Main Street, which ultimately discharges into the Rouge River and subsequently Lake Ontario.

Stormwater Quantity Control

- The design of the storm sewer drainage system shall provide controls to match the existing capacity of the adjacent storm sewer, which is designed to the 2-year storm event. All site flows up to and including the post development 100-year storm event will be captured and controlled to the existing 5-year design flow rate.

Stormwater Quality Control

- A minimum of "Normal" level of water quality treatment, as defined in the MOE design guidelines (2003) is required for all SWM facilities. This is equivalent to a 70% TSS reduction.

Stormwater Water Balance

- As per the SWM Design Manual (MOE, 2003), water balance impacts should be evaluated during the design of a site stormwater management system. All efforts should be made to match pre- and post-development infiltration volumes in order to maintain groundwater recharge.
- A minimum of 5mm for all storm events will be retained through infiltration, evapotranspiration and/or rainwater reuse.

Construction Erosion and Sediment Control

- All applicants must include an Erosion and Sediment Control plan demonstrating that fish habitat and water quality are not affected by sediment from the property during or following site construction.
- Guidelines and strategies to develop Erosion and Sediment Control plans can be found in the *Erosion and Sediment Control Guidelines for Urban Construction* manual (GGHA CA, 2006).

2.1.2. Proposed Stormwater Outlet Connection

The proposed storm connection will be made to the existing 900mm storm sewer adjacent to the south-east corner of the site via a 300mm storm service connection at 1.0% within Palmwood Gate. Based on the review of the existing record drawings, it appears that the 900mm storm sewer in Palmwood Gate currently receives drainage from the subject property. In order to discharge to this storm sewer, the proposed development will be required to match the post development storm flows to the existing development flows. The 900mm storm sewer is located higher than the P1 level, which requires a pump to be located within the storm tank which will pump the captured storm flows into the control manhole which will discharge into the Palmwood Gate right-of-way 900mm storm sewer.

The proposed sewer infrastructure is shown on the **Servicing Plan (S1).**

2.1.3. Stormwater Management Design Strategy

Since the subject proposed development has nearly full coverage underground parking structure, the proposed stormwater management will need to be located within the building parking structure. It is expected that the vast majority of the quantity storage will be contained with a stormwater tank on the P1 level of the building. For water quality an oil-grit-separator (EF04) will be required for treatment of the surface runoff upstream from the stormwater tank. The tank will have a re-use chamber to retain clean stormwater run-off for site landscape irrigation purposes. The storm control maintenance hole will have an pump (designed by others) to control site flows to the existing development flows. It is anticipated that the proposed design will have a net improvement on the downstream storm sewer network and the Rouge River watershed.

2.1.4. Stormwater Quantity Control

The subject site stormwater management design criteria are based on The Town of Whitchurch-Stouffville "Design Guidelines and Standard Drawings" (April 2021). The design of the storm sewer drainage system shall provide controls to match the existing capacity of the adjacent storm sewer, which is designed to the 2-year storm event. All site flows up to and including the post development 100-year storm event will be captured and controlled to the existing 2-year design flow rate.

The existing allocation for the allowable release rate has been determined based the exiting site topography and area land use. Under proposed conditions the site will be required to control storm water runoff to the 2-year rate which is currently discharging to the 900mm storm sewer in Palmwood Gate. All stormflows greater than the 2-year event which exceed the capacity of the sewer will be controlled on site through a proposed stormwater management tank. The existing site area is a mix of landscaping, rooftop, and asphalt. Based on these areas a composite runoff coefficient was determined.

The stormwater flows were determined using a time of concentration 10 minutes and a composite runoff coefficient of 0.78 for existing and 0.70 for proposed, which includes the external drainage form the north. Town of Stouffville design guidelines were used in conjunction with pre and post site

condition data to compute the storm water management design. See **Figure 2-1 and 2-2** for area type breakdown and catchment areas.

The total required stormwater storage to achieve the allowable post development flows is 29.7m^3. This will be achieved through a storm vault storage on the P1 level. The tank will be equipped with a pump (designed by others) which will control peak 100-year storm discharge to the existing 2-year allowable release rate of 96.45L/s and therefore achieving the stormwater quantity criteria objective.

2.1.5. Stormwater Quality Control

Based on the requirements of the MOE and The Town of Whitchurch-Stouffville, stormwater quality is required to achieve an average of 80% long-term removal of total suspended solids based on an annual loading basis from all runoff leaving the site.

Most of the site is rooftop or pedestrian hardscape and landscape. Runoff from rooftop areas is considered "clean" water and does not require quality control. Asphalt pavement driveways and vehicular loading areas of the proposed development area will have the potential to generate contaminated runoff and will require treatment to achieve the water quality objective. An analysis was completed to determine the TSS removal rate would achieve a 48% removal rate without any additional controls. In order to achieve the requirement, an Oil Grit Separator (EF04) is proposed which will increase overall treatment of TSS removal to be 80%, achieving the TSS removal requirement.

2.1.6. Stormwater Water Balance

The site has been designed so that at minimum, the 5mm storm event can be retained on site through infiltration. Based on a total developed area of 4,022m^2, the 5mm volume required to be retained on site based on the various land types is 20.1m^3 (4,022m^2 x 5mm).

The first step in the analysis of water balance is initial abstraction. The initial abstraction of water depends on the surface with which the water lands. For example, a landscaped area with permeable soils has an initial abstraction of 5mm whereas an impervious surface like an asphalt road has an initial abstraction of 1mm. The initial abstraction for the is 10.2m^3 for the total site area therefore the remaining 9.9m^3 of water will need to be retained and reused on site. As per the landscape architect irrigation demand, 11.54m^3 will be used for irrigation in a 72-hour period. As a result, 11.54m^3 of storage has been provided in the storm tank in addition to the 29.7m^3 required for active storage. Therefore, 41.24m^3 of storage is required in the storm tank.

2.2. CONSTRUCTION EROSION & SEDIMENT CONTROL

Details for erosion and sedimentation control during construction will be subject to the Town of Whitchurch-Stouffville approval prior to issuance of Building Permit. During the site grading and servicing works, there is potential for sediment-laden runoff to be directed toward the adjoining properties, municipal streets, and existing storm infrastructure. Therefore, prior to any grading activity, sediment control fencing and hoarding must be installed along the site perimeter. Additional measures will include construction of an entrance "mud-mat' on the access to be used during construction to minimize mud tracking offsite. Material stockpiles are to be located in appropriate locations. Inlet sediment control devices are to be used on existing catchbasins in municipal right-of-ways that may be affected by the construction of this site. The sequencing of the implementation of the above and additional erosion and sediment control measures is summarized in the following table.

Table 2-1: Erosion Control Sequencing

Activity	Erosion Control Practice
Area Grading	• Construct and maintain entrance “mud-mat”. • Construct and maintain sediment control fencing around the downstream perimeter of the site. • Locate stockpiles away from sensitive areas.
Servicing and Asphalt Works	• Limit open trench lengths to minimize erosion potential of excavated material. • Prevent erosion of material stockpiles. • During work stoppages or inclement weather, plug ends of open sewers to prevent downstream sedimentation. • Protect catchbasin inlets with Terrafix Silt Sack.
Maintenance	• Remove accumulated sediments when depth exceeds 0.30 m. • Maintain and repair sediment control fencing as required. • Maintain and repair catchbasin sediment controls as required.

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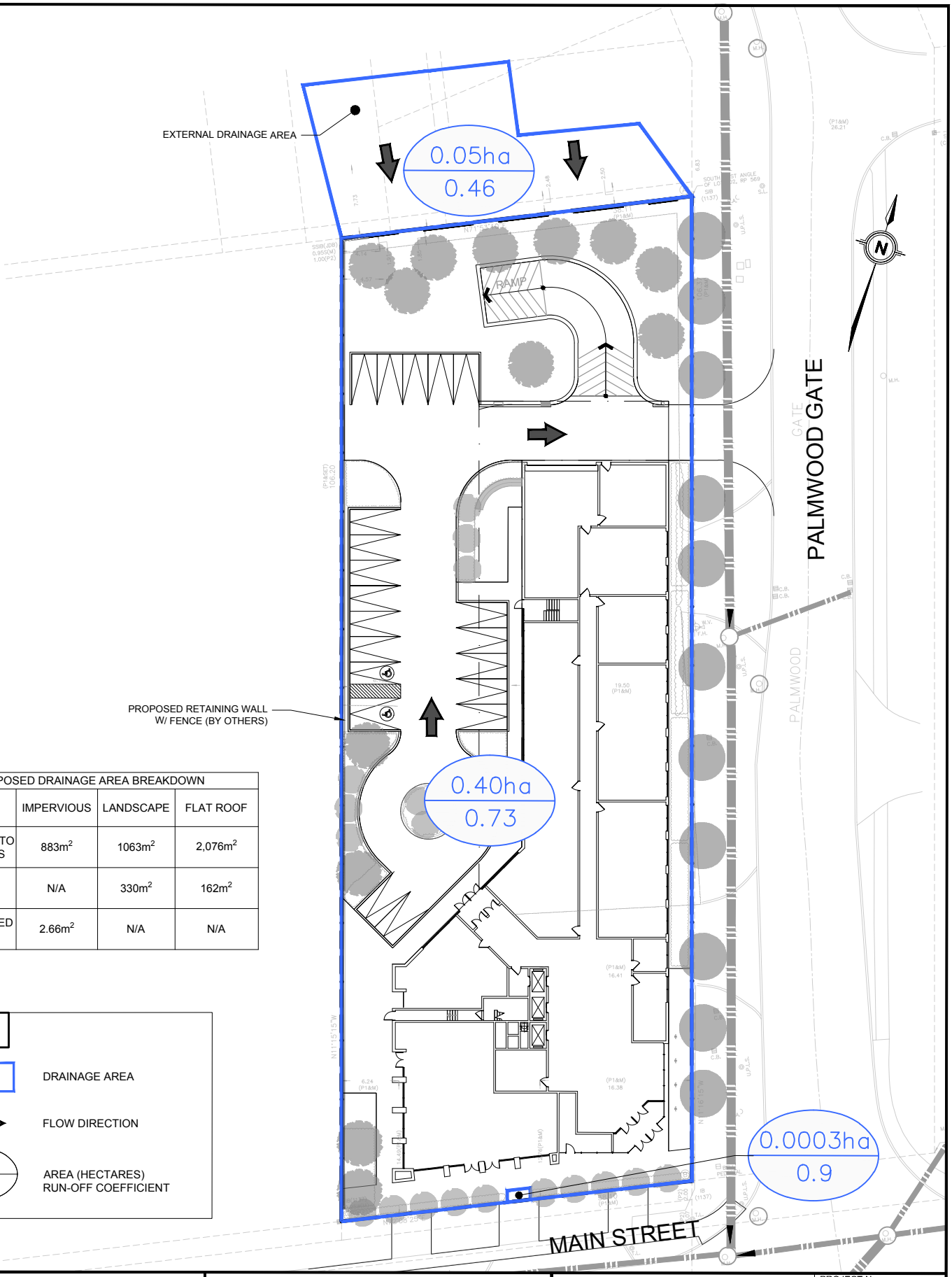
5688 MAIN STREET
HYSON PROPERTIES INC.
EXISTING DRAINAGE PLAN

SCALE:	N.T.S.
DATE:	FEB 2026
DESIGNED BY:	H.E.
CHECKED BY:	H.E.

PROJECT No. 100319

FIGURE No. 2-1



PROPOSED DRAINAGE AREA BREAKDOWN			
TYPE	IMPERVIOUS	LANDSCAPE	FLAT ROOF
CONTROLLED TO AREA DRAINS	883m^2	1063m^2	2,076m^2
EXTERNAL DRAINAGE	N/A	330m^2	162m^2
UNCONTROLLED TO MAIN ST	2.66m^2	N/A	N/A

LEGEND

- DRAINAGE AREA
- FLOW DIRECTION
- 0.8HA / XXX — AREA (HECTARES) / RUN-OFF COEFFICIENT

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FIGURE No. 2-2

3. Sanitary Servicing

3.1. Existing Sanitary Servicing

The existing site servicing details obtained from The Town of Whitchurch-Stouffville engineering plan and profiles and a topographical survey completed of the area indicate that there is sanitary sewer infrastructure in the vicinity of the site. The following sanitary infrastructure is adjacent to the subject site;

- A 200mm diameter sanitary sewer in Palmwood Gate flowing south. This sewer conveys sanitary flow north of the site towards Main Street and then connects into a 200mm sanitary sewer which flows west on Main Street.
- A 200mm diameter sanitary sewer in Main Street flowing west.

The site is currently occupied by a single commercial building and a parking lot. Based on the Town of Whitchurch-Stouffville design flow rate of 350L/d/capital and population density of 80 person/hectare, the total peak sanitary flow for the existing condition (including infiltration allowance) has been calculated as 0.18L/s. Refer to **Appendix B** for the sanitary calculations and **Servicing Drawing (S1)** for the existing sanitary sewer infrastructure and proposed sanitary service design.

3.2. Proposed Sanitary Servicing

The average flows and densities for the various areas of the site and building types was obtained from the Town of Whitchurch-Stouffville *Design Guidelines and Standard Drawings*. The total peak sanitary flow for the proposed development (including the infiltration allowance) has been calculated as 5.90L/s. This is an estimated peak increase of 5.72L/s from the existing sanitary flow rate of 0.18 L/s. This flow rate would represent 20.9% of the capacity of the existing 200mm sanitary sewer main on Main Street. Refer to **Appendix B** for details of the calculations.

The subject site's proposed sanitary sewer outlet will be to the existing 200mm sanitary sewer along Main Street. The subject site sanitary sewer will connect directly into the Main Street sanitary sewer via a 200mm storm service connection at 1.0% slope into a proposed maintenance hole. Refer to **Servicing Drawing (S1)** for the location of the proposed sanitary infrastructure.

4. Water Servicing

4.1. Existing Water Servicing

The existing site servicing details obtained from The Town of Whitchurch-Stouffville engineering plan and profiles and a topographical survey completed of the area, indicate that there is watermain infrastructure in the vicinity of the site. The following watermain infrastructure is adjacent to the subject site;

- A 250mm diameter watermain on the west side of Palmwood Gate,
- A 250mm diameter watermain on the north side of Main Street,

Refer to the **Servicing Drawing (S1)** for the location of the existing watermain infrastructure.

4.2. Proposed Water Servicing

The proposed water service connection will be made to the 250 mm diameter watermain located within the Main Street right-of-way just south of the site. The connection will consist of a proposed 200mm fire line connection with 150mm domestic watermain as per Town of Whitchurch-Stouffville standard drawing WS-614. The water service will have a backflow preventer and meter located in the mechanical room within the building's P1 level. Refer to **Servicing drawing (S1)** for additional details.

Under proposed conditions the development is anticipated to have a maximum required fire flow demand of 150L/s based on the Town standard. The maximum day, minimum hour, and peak hour domestic flow demands for the development under proposed conditions has been calculated as 2.49L/s, 1.33L/s, and 3.73L/s, respectively.

A hydrant flow test was completed on November 9, 2023 in order to verify that the watermain has adequate flow and pressure to service the development. In accordance with the Fire Underwriters Survey (FUS), fire flows for residential areas will not be less than 4,800 L/min (80L/s) for a 2-hour duration in addition to maximum daily domestic demand, delivered with a residual pressure of not less than 140kPa (20.3psi). With a maximum day demand + fire flow of 72.5L/s, accounting for major and minor losses in the system from the residual hydrant from the flow test, the residual pressure is above the minimum requirement of 20.3psi.

Refer to **Appendix C** for fire and domestic flow demand calculations and the proposed and existing watermain infrastructure are shown on the **Servicing Drawing (S1)**.

4.3. Fire Hydrant Coverage

There is one main existing fire hydrant located within the proximity of the proposed development:

- An existing fire hydrant at the east side of the site on Palmwood Gate, located approximately 60m north of Main Street.

Due to the height and size of the proposed development there will be a siamese connection required which will need to be serviced within 45m of a fire hydrant. The siamese connection will be next to the primary entrance of the proposed development.

5. Conclusion

The proposed development will see the construction of a 220-unit mixed-use development at 5688 Main Street in the Town of Whitchurch-Stouffville. The proposed development can be serviced utilizing the existing and proposed infrastructure outlined in the **Servicing Drawing (S1)**. Our conclusions and recommendations for servicing of the proposed development is summarized as follows:

Stormwater Servicing

- The proposed development will match 100-year post-development peak flows to existing development peak 2-year flows.
- The proposed development site stormwater drainage will have a net improvement to the downstream sewer infrastructure.
- Stormwater quality will be achieved by the high percentage of rooftop, landscape coverage, and the installation of the proposed oil-grit-separator.
- The proposed development will be serviced by a new 300mm storm sewer with a slope of 1.0%, connecting to the existing 900mm storm sewer within the Palmwood Gate.
- Under post-development conditions it is expected that stormwater runoff will have had an improvement in quality and quantity as compared with existing development condition.
- A stormwater storage vault will be constructed within the the underground parking facility. The vault will be designed with a mechanical pump, restricting flows and achieving a total minimum storage volume of 29.7m^3 to control the 100-year post-development flows to the allowable release rate of 96.45L/s.

Sanitary Servicing

- The anticipated peak sanitary peak flow for the proposed development is 5.90L/s.
- It is expected that this additional loading will not have a negative impact on the existing municipal sanitary sewer system and will sufficiently handle the increased loading.
- The new service connection will consist of 200 mm diameter connection at a 1.0% slope and will be made to the existing 200mm sanitary sewer within Main Street.

Water Servicing

- The fire flow demand due to the proposed development is 150L/s.
- The calculated maximum day, peak hour, and minimum hour domestic demands are 2.49L/s, 3.73L/s, and 1.33L/s, respectively.
- The proposed development will be serviced by the proposed fire and domestic service connections provided off of the 250mm diameter watermain on Main Street.
- Under fire flow demand loading condition, water pressure will remain at approximately 72.5 psi, which is above the minimum required pressure of 20.3 psi.
- Additional confirmation of the fire and domestic branch sizing and fire flow requirements should be provided by the Mechanical Consultant at the Building Permit stage of approval.

Recommendations

In summary, the site can be adequately serviced in respect to water supply, sanitary drainage, stormwater drainage, and stormwater management. The stormwater quantity and quality controls can be implemented in accordance with The Toronto Region Conservation Authority "Stormwater Management Criteria" (August 2012).

Accordingly, we hereby recommend the adoption of this report as it relates to the provision of servicing works, and for the purposes of site plan application, and building permit application approvals. We trust that this Functional Servicing and Stormwater Management Report is sufficient for your purposes. If you have any questions or comments, please do not hesitate to contact the undersigned.

Sincerely,

TYLin

Prepared and Reviewed by:

Herishanth Easwaran, P.Eng.

Project Engineer, Urban Development

Appendix A

STORMWATER MANAGEMENT CALCULATIONS

OGS SIZING REPORT AND MANUAL

TYLin	Project:	**5688 Main Street**	Prepared by:	**H.E.**
	Task:	**Runoff Coefficients**	Checked by:	**H.E.**
	Date:	**February 13, 2026**	Project no.:	**100319**

Pre-Development Site Statistics

Subject Site		**Area (m^2)**	**Runoff C**
	Landscape	500	0.25
	Paved	3522	0.90
	Total	4022	

Subject Site Runoff C = 0.82
% Imperviousness = 88%

External Drainage		**Area (m^2)**	**Runoff C**
	Landscape	330	0.25
	Roof	162	0.90
	Total	493	

External Area Runoff C = 0.46
% Imperviousness = 33%

Total Pre-Dev		**Area (m^2)**	**Runoff C**
	Subject Site	4022	0.82
	External Drainage	493	0.46
	Total	4514	

External Area Runoff C = 0.78
% Imperviousness = 82%

Post-Development Site Statistics - Controlled Flow

Subject Site - Controlled Flow	**Area (m^2)**	**Runoff C**			
		2-yr - 10 yr	**25-yr**	**50-yr**	**100-yr**
Landscape	1063	0.25	0.28	0.30	0.31
Impervious & Outdoor Roof Amenity	1773	0.90	0.99	1.00	1.00
Clean Roof	1183	0.90	0.99	1.00	1.00
Total	4019				
Total Combined Runoff C =		0.73	0.80	0.81	0.82
% Imperviousness =		74%			

Subject Site - Uncontrolled Flow	**Area (m^2)**	**Runoff C**			
		2-yr - 10 yr	**25-yr**	**50-yr**	**100-yr**
Landscape	0	0.25	0.28	0.30	0.31
Impervious	3	0.90	0.99	1.00	1.00
Roof	0	0.90	0.99	1.00	1.00
Total	3				
Total Combined Runoff C =		0.90	0.80	0.81	0.82
% Imperviousness =		100%			

External Drainage	**Area (m^2)**	**Runoff C**			
		2-yr - 10 yr	**25-yr**	**50-yr**	**100-yr**
Landscape	330	0.25	0.28	0.30	0.31
Roof	162	0.90	0.99	1.00	1.00
Paved	0	0.90	0.99	1.00	1.00
Total	493				
Total Combined Runoff C =		0.46	0.51	0.53	0.54
% Imperviousness =		33%			

Total Post-Dev Controlled	**Area (m^2)**	**Runoff C**			
		2-yr - 10 yr	**25-yr**	**50-yr**	**100-yr**
Subject Site	4019	0.73	0.80	0.81	0.82
External Drainage	493	0.46	0.51	0.53	0.54
Total	4512				
Total Combined Runoff C =		0.70	0.77	0.78	0.79
% Imperviousness =		69%			

TYLin	5688 Main Street 100319 2/13/2026	Prepared By: **H.E.** Checked By: **H.E.**

Pre Development Flow / Allowable Release Rate

Pre-Development Flows

The pre-development flows from the site to the Palmwood Gate sewer shall be calculated as per Regional 2-year storm IDF parameters with a time of concentration of 10 minutes.

$$i = 3454/(T+20)$$

where; i = Rainfall Intensity in millimeters per hour
T = Time of Concentration in minutes

Storm Event	Area (ha)	C	i (mm/h)	Q (L/s)
2-year	0.45	0.78	98.7	96.59

Therefore, the allowable release rate from the site to the Palmwood Gate storm sewer is 96.59L/s.

TYLin

5688 Main Street
100319
2/13/2026

Prepared By: **H.E.**
Checked By: **H.E.**

Allowable Release Rate

Post Development Uncontrolled Flow

Storm Event	Area (ha)	C	a	b	c	T	i (mm/h)	Q (L/s)
2-Year	0.0003	0.90	696.7	5	0.811	10	77.7	0.05
5-Year	0.0003	0.90	1016.0	5	0.826	10	107.0	0.07
10-Year	0.0003	0.90	1279.7	6	0.841	10	126.2	0.08
25-Year	0.0003	0.99	1546.8	6	0.845	10	150.6	0.11
50-Year	0.0003	1.00	1802.6	6	0.853	10	169.1	0.13
100-Year	0.0003	1.00	2051.7	6	0.860	10	186.7	0.14

Pre Development 10-year Flow

Q = 96.59 L/s

Allowable Release Rate

Q_{all} = 2yr Pre
= **96.45 L/s**

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Project:	**5688 Main Street**	Prepared by:	**H.E.**
Task:	**TSS / Quality Control Calculations**	Checked by:	**H.E.**
Date:	**February 13, 2026**	Project no.:	**100319**

Jellyfish TSS Removal = 80%

Land Type	Treated / Untreated	Area (m^2)	TSS Rem. (A)	TSS Rem. with Oil Grit Separator (R)
Clean Roof	Treated	1,183	80%	95%
Landscape	Treated	1,063	80%	100%
Outdoor Roof Amenity	Treated	470	25%	80%
Impervious	Treated	1,303	0%	50%
TOTAL		4,019	**48%**	**80%**

NJDEP Calculation for TSS removal rates for BMP in Series:
R = A + B - [(AxB)/100]
A = TSS Removal rate from First (Upstream BMP)
B = TSS Removal rate from Second (Downstream BMP)

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Project: **5688 Main Street** | Prepared by: **H.E.**

Task: **Orifice Sizing Calculations** | Checked by: **H.E.**

Date: **February 13, 2026** | Project no.: **100319**

Orifice Equation: $Q = C \times A \times \sqrt{2gh}$

HWL =	259.25	
Pipe Invert =	257.69	
Orifice Size =	**180**	**mm**
Orifice Area =	0.0254	m^2
Allowable Release Rate =	96.45	L/s
Discharge Coefficient =	0.62	
Head =	1.56	m
Orifice Flow =	0.087	m3/s
	96.45	L/s
Storage Requirement =	**29.7**	**m^3**
Minimum Tank Area Required =	19.1	m^2
Tank Area Provided =	33.6	m^2
Storage Provided =	**52.3**	**m^3**

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Project:	**5688 Main Street**	Prepared by:	**H.E.**
Task:	**100 Year Storage Required**	Checked by:	**H.E**
Date:	**February 13, 2026**	Project no.:	**100319**

			Total Site	
100 Year		Runoff Coeff. (C):	0.79	
a	2051.707	Drainage Area (A):	0.33	ha
b	6.23	Rooftop Control	42.00	L/s/ha
c	0.86	Rooftop Area	0.12	ha
		Rooftop Flow	4.97	L/s
			0.0050	m^3/s
		Orifice Flow :	96.4	L/s
			0.096	m^3/s

Storm Duration	i	Inflow	Flow	Max Storage	max
	100-year	CIA/360	Stored	Required	
minutes	(mm/hr)	(m^3/s)	(m^3/s)	(m^3)	
5	256.3	0.192	0.095	28.6	
6	238.2	0.178	0.082	29.5	
7	222.6	0.167	0.071	29.7	
8	209.1	0.157	0.061	29.2	
9	197.2	0.149	0.052	28.2	
10	186.7	0.141	0.045	26.7	
11	177.4	0.134	0.038	24.9	
12	169.0	0.128	0.032	22.8	
13	161.4	0.123	0.026	20.3	
14	154.5	0.118	0.021	17.7	
15	148.2	0.113	0.016	14.8	
20	123.6	0.095	0.000	0.0	
25	106.4	0.082	0.000	0.0	
30	93.6	0.073	0.000	0.0	
35	83.8	0.066	0.000	0.0	
40	75.9	0.060	0.000	0.0	
45	69.5	0.056	0.000	0.0	
50	64.1	0.052	0.000	0.0	
55	59.6	0.048	0.000	0.0	
60	55.7	0.046	0.000	0.0	

TYLin	Project:	**5688 Main Street**	Prepared by:	**H.E.**
	Task:	**Water Balance**	Checked by:	**H.E.**
	Date:	**2/13/2026**	Project no.:	**100319**

Retention Criteria

The Town of Stoufville water balance objectives require that controls be in place such that the 5mm storm can be retained on site through infiltration, evapotranspiration and/or water reuse.

Site Area	=	4021.8	m^2
Storm Event to be Captured	=	5.0	mm
Storage Volume Required	=	20.1	m^3

Initial Abstraction Calculation

	Depth (mm)	Area (m^2)	IA (m^3)
TOTAL		**4019**	**10.2**
Landscape	5	1062.9	5.3
Impervious	0.6	1303.4	0.8
Rooftop+Outdoor Amenity	2.5	1652.8	4.1
Initial Abstraction	=	10.2	m^3
Remaning Retention Volume Required	**=**	**9.9**	**m^3**

Retention Storage Provided

Retention Section Area =	33.60	m^2
Retention Volume Provided =	**11.54**	**m^3**
Sump Height =	0.34	m
Irrigation Volume Requirement/72 hours =	11.54	m^3 (per calculation provided by EXP Services Inc. Dec 2024)

Stormceptor®

Stormceptor® EF Sizing Report

Rinker MATERIALS™

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

01/26/2026

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

Site Name:	5688 MAIN STREET

Drainage Area (ha):	0.40
% Imperviousness:	73.60

Runoff Coefficient 'c': 0.74

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):	9.58
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	227
Estimated Average Annual Sediment Volume (L/yr):	185

Project Name:	5688 MAIN STREET
Project Number:	69884
Designer Name:	herishanth easwaran
Designer Company:	TY LIN
Designer Email:	herishanth.easwaran@tylin.com
Designer Phone:	647-239-4772
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	60
EF5	63
EF6	65
EF8	68
EF10	69
EF12	70

Recommended Stormceptor EF Model: EF4

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

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

PARTICLE SIZE DISTRIBUTION (PSD)

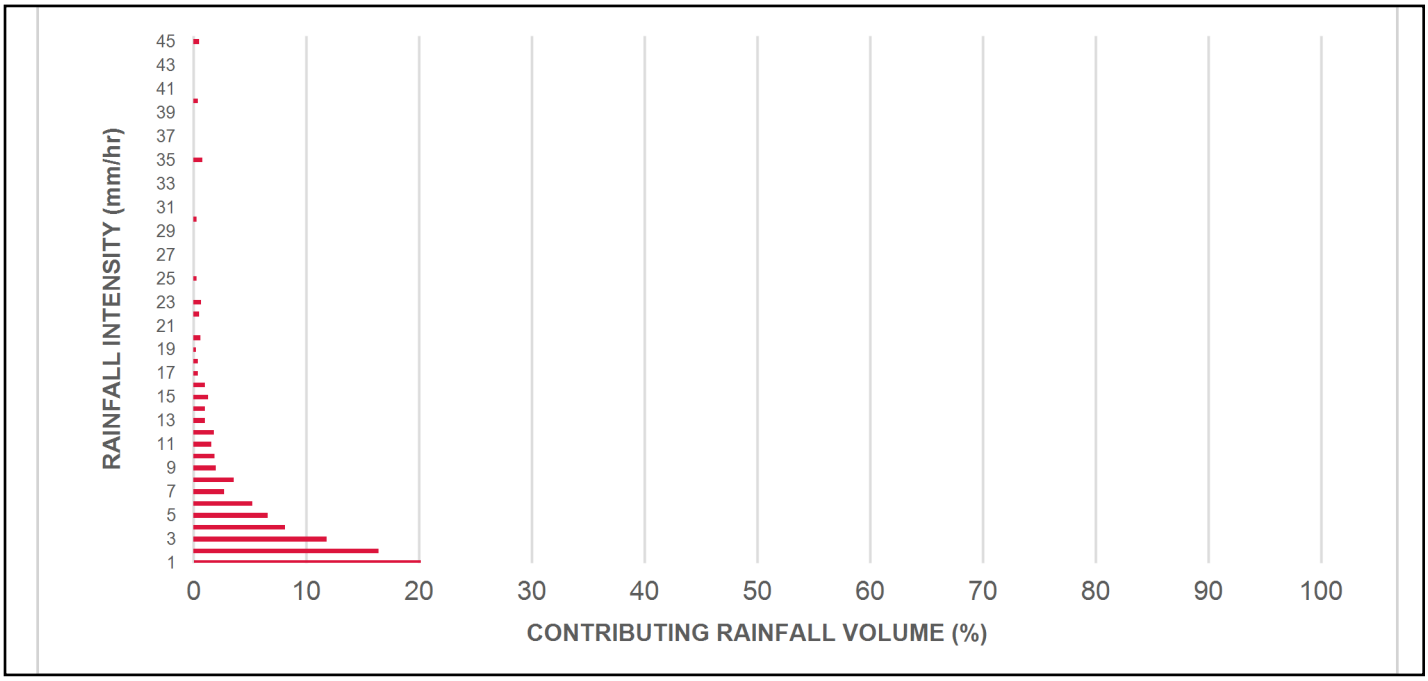
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a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

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

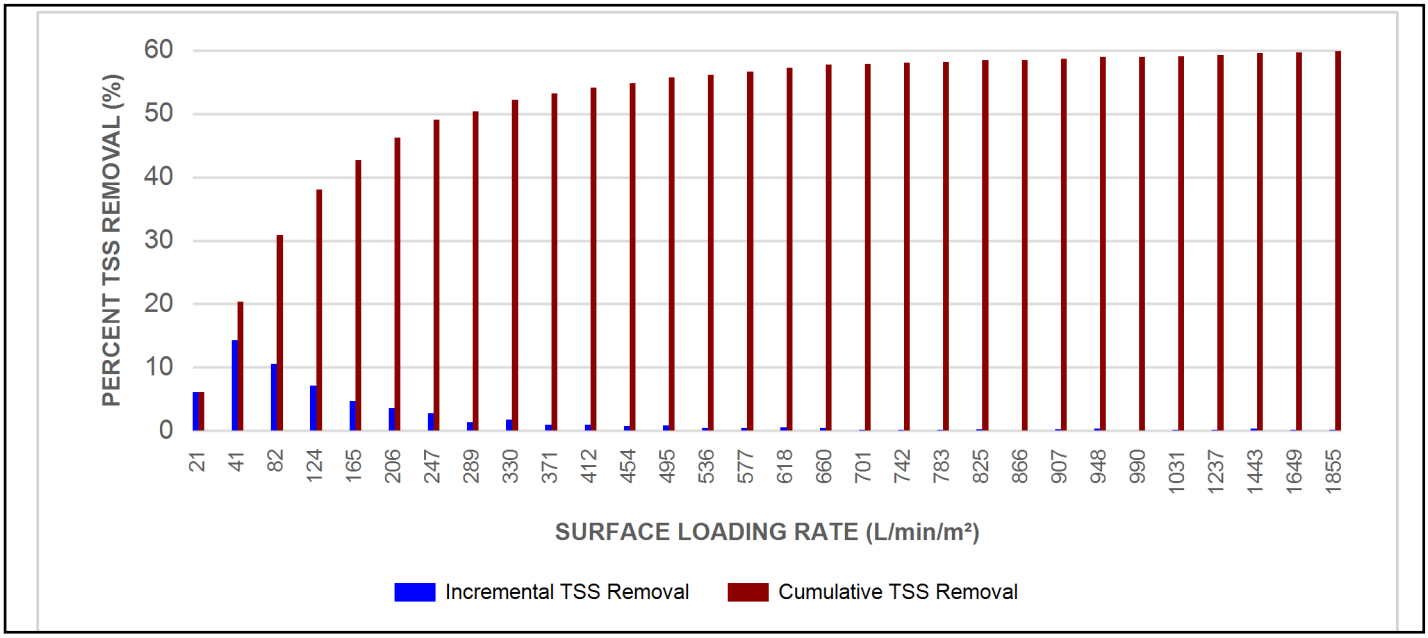
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.7	8.7	0.41	25.0	21.0	70	6.1	6.1
1.00	20.2	28.9	0.82	49.0	41.0	70	14.2	20.4
2.00	16.4	45.3	1.65	99.0	82.0	64	10.5	30.9
3.00	11.8	57.1	2.47	148.0	124.0	61	7.1	38.0
4.00	8.1	65.2	3.30	198.0	165.0	57	4.7	42.7
5.00	6.6	71.9	4.12	247.0	206.0	54	3.6	46.2
6.00	5.2	77.1	4.95	297.0	247.0	53	2.8	49.0
7.00	2.7	79.8	5.77	346.0	289.0	52	1.4	50.4
8.00	3.6	83.4	6.60	396.0	330.0	50	1.8	52.2
9.00	2.0	85.4	7.42	445.0	371.0	49	1.0	53.2
10.00	1.9	87.3	8.25	495.0	412.0	48	0.9	54.1
11.00	1.6	88.9	9.07	544.0	454.0	48	0.8	54.8
12.00	1.8	90.7	9.90	594.0	495.0	47	0.8	55.7
13.00	1.0	91.6	10.72	643.0	536.0	47	0.5	56.1
14.00	1.0	92.7	11.55	693.0	577.0	46	0.5	56.6
15.00	1.3	93.9	12.37	742.0	618.0	46	0.6	57.2
16.00	1.0	95.0	13.19	792.0	660.0	46	0.5	57.7
17.00	0.4	95.3	14.02	841.0	701.0	46	0.2	57.8
18.00	0.4	95.7	14.84	891.0	742.0	45	0.2	58.0
19.00	0.2	95.9	15.67	940.0	783.0	45	0.1	58.1
20.00	0.6	96.5	16.49	990.0	825.0	45	0.3	58.4
21.00	0.0	96.5	17.32	1039.0	866.0	45	0.0	58.4
22.00	0.5	97.0	18.14	1089.0	907.0	45	0.2	58.6
23.00	0.7	97.7	18.97	1138.0	948.0	44	0.3	58.9
24.00	0.0	97.7	19.79	1188.0	990.0	44	0.0	58.9
25.00	0.3	98.0	20.62	1237.0	1031.0	44	0.1	59.0
30.00	0.3	98.3	24.74	1484.0	1237.0	47	0.1	59.2
35.00	0.8	99.1	28.86	1732.0	1443.0	48	0.4	59.5
40.00	0.4	99.5	32.99	1979.0	1649.0	42	0.2	59.7
45.00	0.5	100.0	37.11	2227.0	1855.0	37	0.2	59.9
Estimated Net Annual Sediment (TSS) Load Reduction =								**60 %**

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

RAINFALL DATA FROM TORONTO CITY RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

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

SCOUR PREVENTION AND ONLINE CONFIGURATION

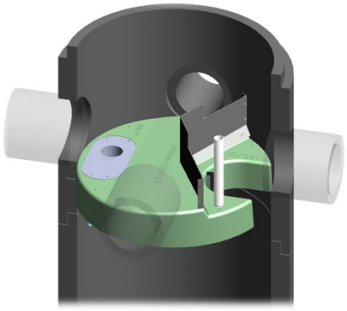
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

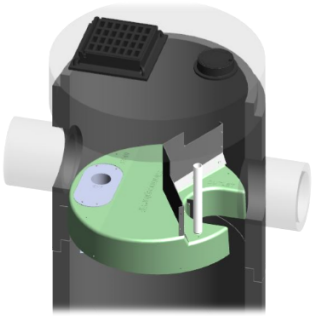
DESIGN FLEXIBILITY

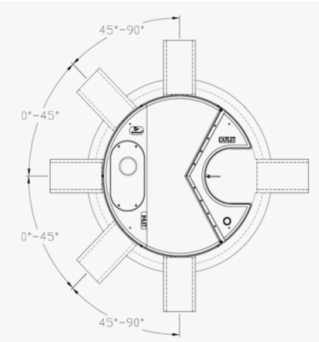
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

OIL CAPTURE AND RETENTION

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







INLET-TO-OUTLET DROP

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

HEAD LOSS

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

Pollutant Capacity

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

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

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

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

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

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

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

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

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

3.2 SIZING METHODOLOGY

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

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

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

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

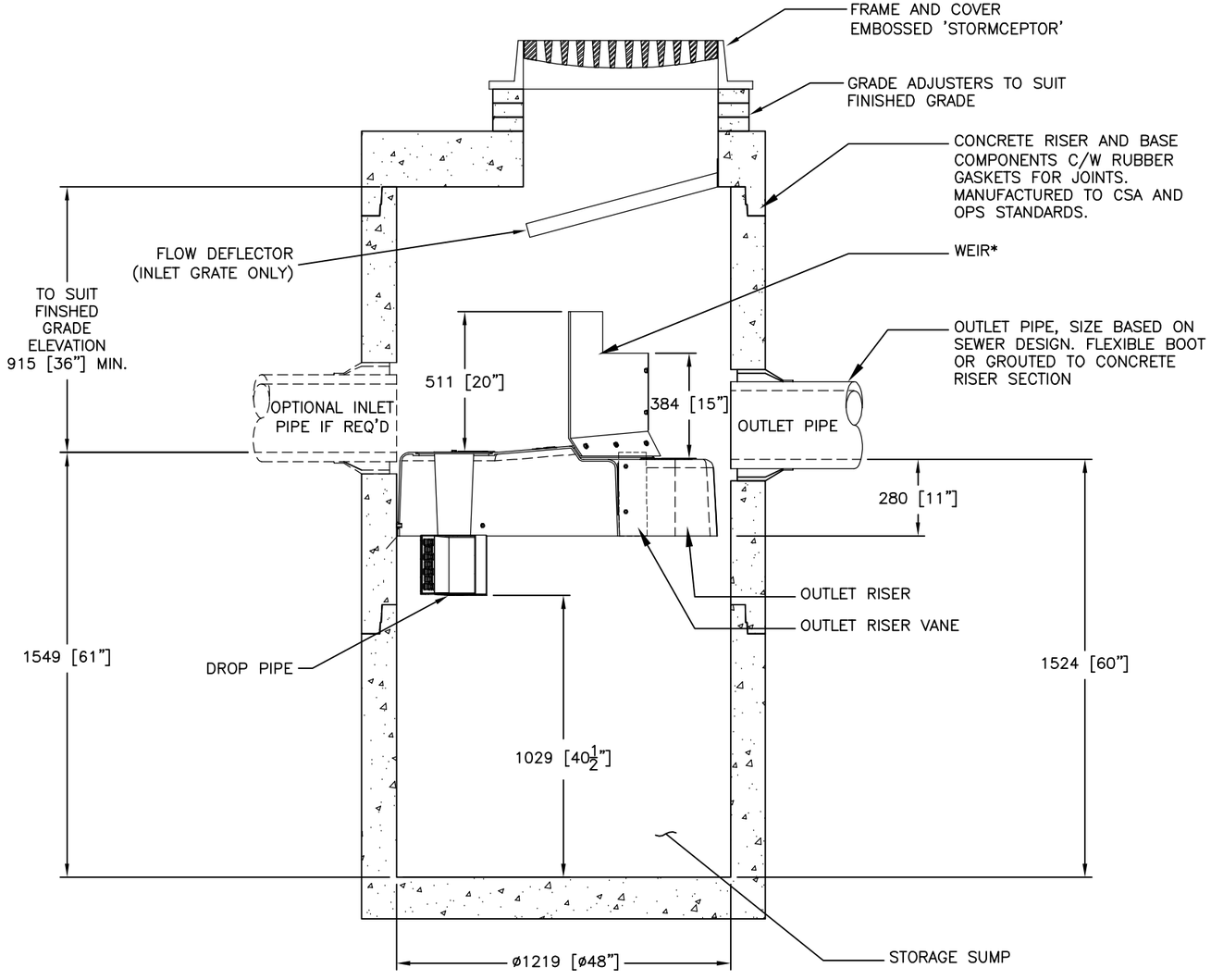
3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2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

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

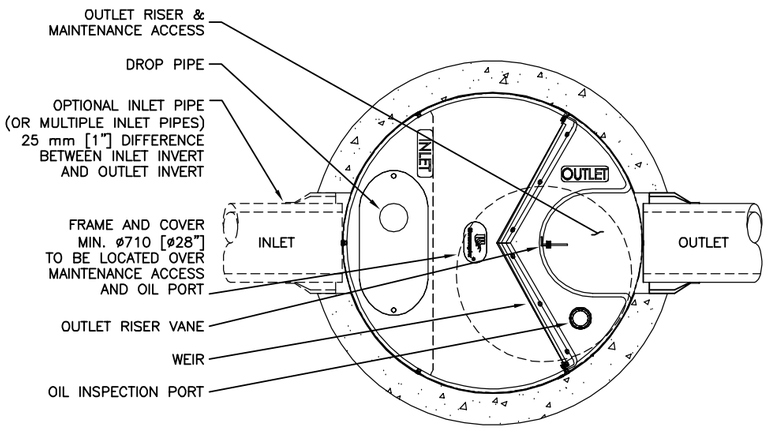
3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

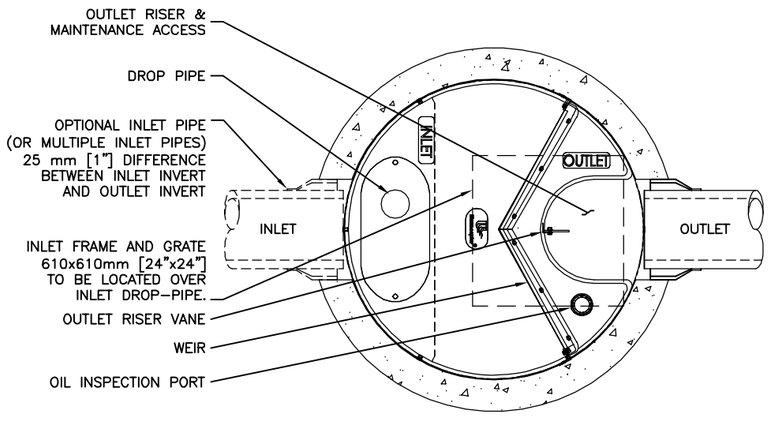
3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

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).

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF4 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO4 (OIL CAPTURE CONFIGURATION). WEIR HEIGHT IS 150 mm (6 INCH) FOR EF04.

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.

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EF4
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

MARK	DATE	REVISION DESCRIPTION	BY
1	6/8/18	UPDATES	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
7007 RIDGE ROAD, SUITE 350, HANOVER, MD 21076
USA 888-279-9828 CA 800-388-4601 INTL +1-416-960-9900

DATE: 5/26/2017

DESIGNED:	DRAWN:
JSK	JSK
CHECKED:	APPROVED:
BSF	SP
PROJECT No.:	SEQUENCE No.:
EF4	*

SHEET: 1 OF 1

Appendix B

SANITARY CALCULATIONS

Project Name : **5688 Main Street**
Project # : **100319**
Sanitary Servicing Analysis

TYLin

Prepared by: H.E.
Checked by: H.E.
Date: February 13, 2026

Standards = Stouffville

Formulas

Peaking Factor (Harmon) = $1+14/[4+(P/1000)^{1/2}]$

Peak Flow = p(q)M(unit conversion) + infiltration

Existing Sanitary Design Flow

Land Type	Area (m^2)	# of Units /Floor Area	Density	Population (p)	Average Flow (q)	Peaking Factor (M)	Peak Flow (Q) (L/s)
Infiltration Allowance	4021.77				0.26 L/s/ha		0.10
Commercial - 1 Storey	571.12		0.008 Persons/m2	5	350 L/day/person	4.00	0.07
Total	**571.12**						**0.18**

Proposed Sanitary Design Flow

Land Type	Area (m^2)	# of Units /Floor Area	Density	Population (p)	Average Flow (q)	Peaking Factor (M)	Peak Flow (Q) (L/s)
Infiltration Allowance	4021.77				0.26 L/s/ha		0.10
Residential (1Bedroom)		12 Units	2.2 Persons/Unit	26	350 L/day/person	3.50	0.37
Residential (2 Bedroom)		140 Units	2.2 Persons/Unit	308	350 L/day/person	3.50	4.37
Residential (3 Bedroom)		33 Units	2.2 Persons/Unit	73	350 L/day/person	3.50	1.03
Commercial	205.63		0.008 Persons/m2	2	350 L/day/person	4.00	0.03
Total	**205.63**						**5.90**

Summary

Existing Sanitary Design Flow =	0.18	L/s
Proposed Sanitary Design Flow =	5.90	L/s
Increased Flow =	5.72	L/s

Service Connection	Diameter (m)	Slope (%)	Velocity (m/s)	Full Flow Capacity (L/s)	Spare Capacity (L/s)	Usage Increased (%)	Total Usage (%)
Service	200	1.0	1.04	32.80	26.90	-	18.0%
Ex. Main	200	0.7	0.90	28.21	22.31	20.3%	20.9%

Notes

1. The proposed development is an increase of 5.72 L/s of peak sanitary flow to the downstream sanitary sewer system.
2. This increase is equal to 20.3% of the total pipe capacity of the existing 200mm municipal sanitary sewer.
3. This flow is equal to 18% of the total pipe capacity of the proposed 200mm diameter service connection.

Appendix C

WATER DEMAND CALCULATIONS

FIRE HYDRANT FLOW TEST (BRUCEFIRE ENGINEERING)

TYLin

5688 Main Street
100319
Required Fire Flow

Prepared by: **HE**
Checked by: **HE**
Date: **2/13/2026**

as per Fire Underwriters Survey Water Supply for Public Fire Protection, 2020

1. Initial Required Fire Flow (Step A, B, C)

Construction Type =	Type II Noncombustible Construction	
Construction Coefficient, C =	0.8	
4th Floor Area =	1690.01m^2	25% considered
5th Floor Area =	1690.01m^2	100% considered
6th Floor Area =	1690.01m^2	25% considered
Total Effective Area, A =	2536.515 m^2	
Required Fire Flow, RFF =	8864.03 LPM	
RFF, rounded =	**9000 LPM**	

2. Occupancy and Contents Adjustment Factor (Step D)

Contents =	Limited combustible contents	
Adjustment Factor =	-15%	
RFF =	**7650 LPM**	

3. Automatic Sprinkler Protection (Step E)

Sprinkler Design	**Designed**	**Building Coverage**	**Credit**
Automatic sprinkler protection designed and installed in accordance with NFPA 13	Yes	100%	30%
Water supply is standard for both the system and Fire Department hose lines	Yes	100%	10%
Fully supervised system	Yes	100%	10%
	Total Sprinkler Credit =		50%

Reduction = 3825 LPM

4. Exposure Adjustment Charge (Step F)

Direction	Distance	Charge
North	20.1m to 30m	10%
South	Greater than 30m	0%
East	Greater than 30m	0%
West	20.1m to 30m	10%

Total Charge = 20%

Charge = 1530 LPM

5. Final Required Fire Flow (Step G)

RFF =	7650	LPM
Reduction =	3825	LPM
Charge =	1530	LPM
RFF =	5355	LPM

Final RFF, rounded =	5000	LPM
	1321	GPM
	83	L/s
Town of Whitchurch-Stouffville Minimum Fire Flow =	**150**	**L/s**

TYLin

5688 Main Street
100319
Domestic Demand

Prepared by: **HE**
Checked by: **HE**
Date: **2/13/2026**

as per York Region Design Guidelines

Population =	409	
Per Capita Demand =	350	L/cap/day
Average Daily Demand =	143150	L/day
	1.66	L/s

	Average Day	Minimum Hour	Peak Hour	Maximum Day	
Peaking Factor	n/a	0.80	2.25	1.50	
Demand	**1.66**	**1.33**	**3.73**	**2.49**	**L/s**
	26.26	21.01	59.09	39.39	GPM

Fire Flow = 150.0 L/s
Max Day Flow = 2.49 L/s
Total Flow = **152.5 L/s**

Domestic

Diameter	Area (m^2)	Length (m)	Velocity (m/s)	Hydraulic Radius	S	Headloss (m)	Headloss (psi)
150	0.0177	3.4	0.1	0.0375	0.00	0.00	0.001
					Total major loss (psi) =		**0.001**

Fire

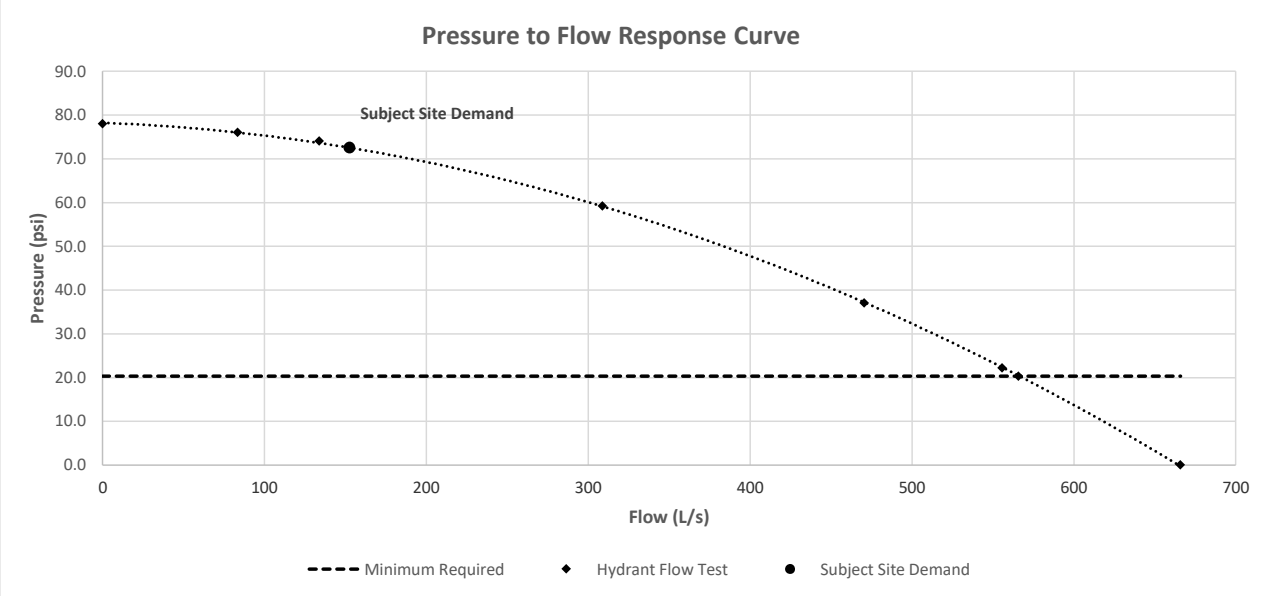
Diameter	Area (m^2)	Length (m)	Velocity (m/s)	Hydraulic Radius	S	Headloss (m)	Headloss (psi)
200	0.0314	3.4	0.1	0.05	0.00	0.00	0.000
					Total major loss (psi) =		**0.000**

Total Headloss = **0.001 psi**

Flow Test Results & Servicing Hydraulic Analysis

Pressure (psi)	*Flow (L/s)*	
78	0	*Static Pressure*
76	83.4	
74	133.9	

Flow Requirement = ***152.5*** L/s
Theoretical Pressure = ***72.5*** psi
With Pressure Losses = ***72.5*** psi
Minimum Required = ***20.3*** psi



"Fire Protection with Intelligence"
BRUCE Fire Engineering

Bruce Fire Engineering Ltd.

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Vaughan, Ontario
L4K 0C3

Phone: 905 482 4678
Fax: 905 581 3203
Toll Free Phone/Fax: 1 800 260 0187

Email: artem@brucefire.ca

Professional Engineers Ontario

HYDRANT FLOW TEST REPORT

TEST DATE: **Nov 9, 2023.** **TIME:** **1:30 pm**

LOCATION: **5688 Main St, Whitchurch-Stouffville, ON L4A 2T1**

TESTED BY: **Artem Matthew – Bruce Fire Engineering**

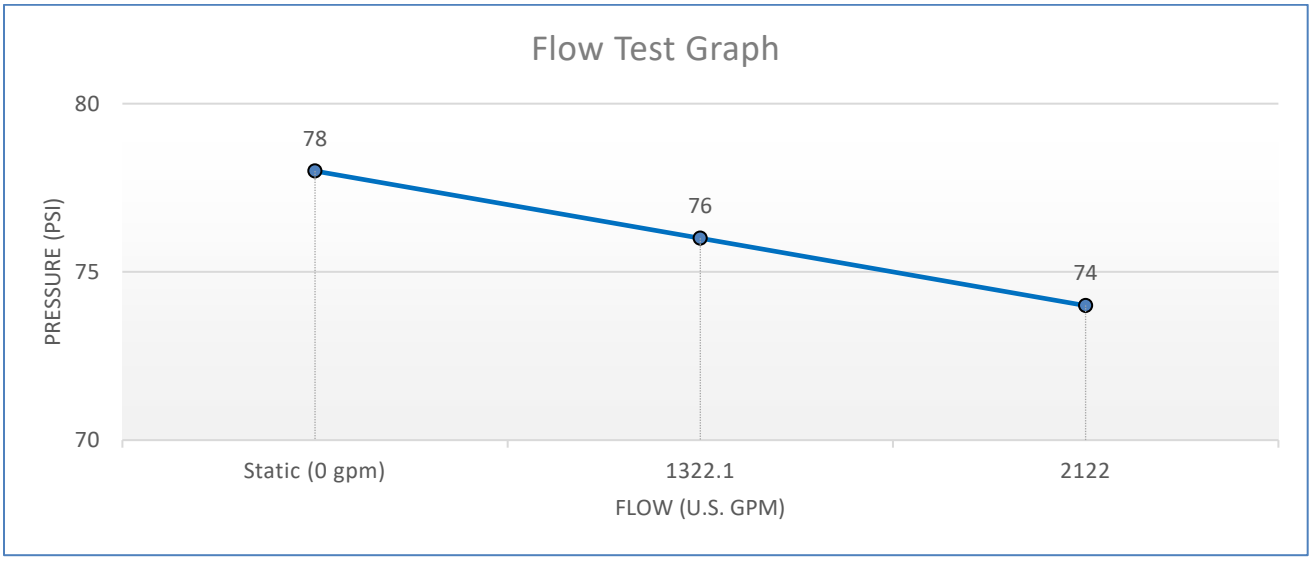
TEST RESULTS:

STATIC PRESSURE (psi)	78

TEST NO.	NO. OF NOZZLES	NOZZLE DIAMETER (inch)	DISCHARGE COEFFICIENT	RESIDUAL PRESSURE (psi)	PITOT PRESSURE (psi)	DISCHARGE (gpm)
1	1	2½"	0.9	76	62	1322.1
2	2	2½"	0.9	74	38/38	2124

Flow test done as per NFPA 291 recommendations.

Calculated Flow 9002 gpm @ 20 psi



AREA MAP


Rupert Ave
Service Rd
Palmwood Gate
Service Rd
Tokyo Smoke Stouffville Main
Reesor's Market & Bakery
Shoppers Drug Mart
Leggat Stouffville Ford
Car dealer
LCBO
Let Us Shop For You Today
STATIC AND RESIDUAL HYDRANT
Main St
Main St
FLOW HYDRANT
Main St
Main St
Main St
Palmwood Gate
Firehouse Subs Stouffville
Sandwich · $$
The Beer Store
CIBC Branch with
Firehouse Subs Stouffville
Order Firehouse Subs Today
East Side Mario's
All-You-Can-Eat
One Plant Cannabis Dispensary - Stouffville
Mostar St
Starbucks
A New Spin On Festive Flavours