J+B ENGINEERING INC.
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STORMWATER MANAGEMENT REPORT

FOR PROPERTY OF PETRO-CANADA LOCATED AT

8605 PROMENADE CAMPEAU DRIVE, OTTAWA, ON

Prepared For
SUNCOR ENERGY PRODUCTS PARTNERSHIP

Prepared By
J and B Engineering Inc.
25 Centurion Drive, Suite 201
Markham, Ontario
L3R 5N8

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1. INTRODUCTION

1.1 Study Area

The subject property is located at the south-east corner of Campeau Drive & Palladium Drive, Ottawa ON. The civic address for this property is 8605 Campeau Drive, Ottawa and is shown in Figure 1-1.

The existing study area is an undeveloped site with an approximate area of 0.907 ha. The area is proposed to be developed as a commercial area with one single storey commercial building, pump islands and associated canopy, underground storage tanks and a car wash. The development will be in two phases.

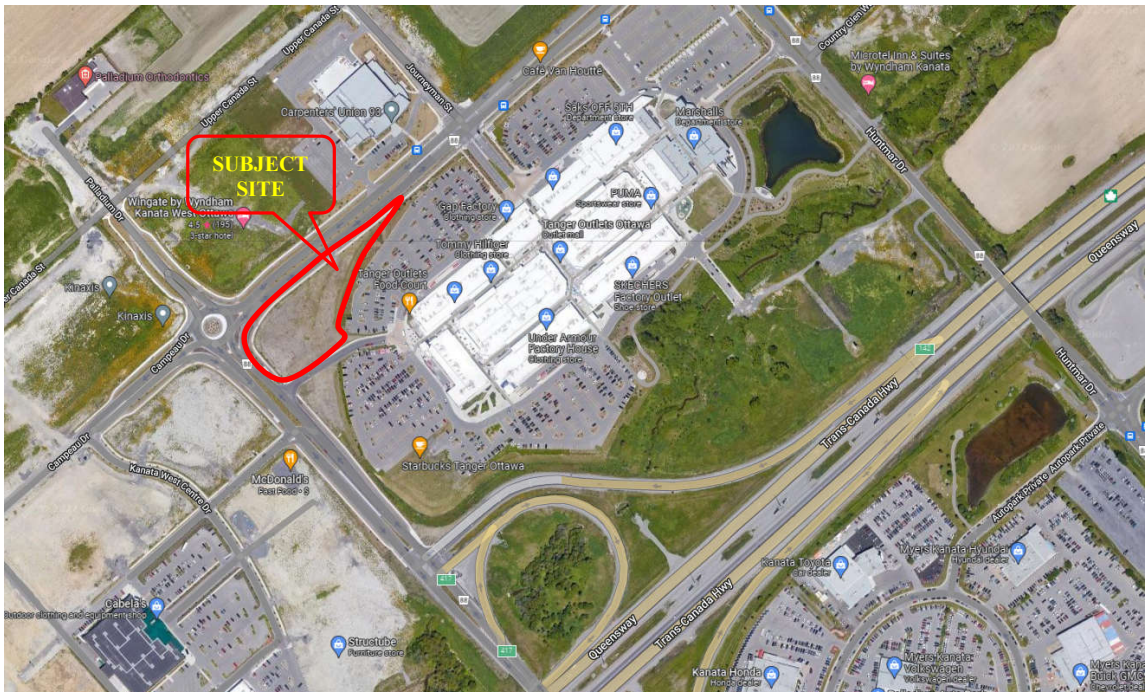


Figure 1-1: Study Area

1.2 Background

This study addresses the Stormwater Management (SWM) requirements for the proposed facility and provides details for stormwater quantity and quality controls to ensure that the proposed development will not have any adverse effects on the existing drainage system.

According to the Design Brief - Kanata West Business Park (KWBP) – Phase 5, 425 Huntmar Drive, prepared by IBI dated September 2019, the subject property is part of the overall development, and this parcel is designed to discharge to Pond 6 East located to the east of the

Tanger Mall Outlet. KWBP – Phase 5 Design Brief also establishes the minor system capture rates and on-site storage requirements for KWBP (Refer to section 4.3.2, Section 4.4.1.2 and Table 4.2 and Appendix C of KWBP – Phase 5 Design Brief).

1.3 Objectives of Drainage and Stormwater Management Study

The objectives of the SWM study are to develop a strategy that will:

- Identify potential stormwater runoff (quality and quantity) impacts to the receiving watercourses from the proposed development area.
- Address concerns from the review agencies including the City of Ottawa, Mississippi Valley Conservation Authority (MVCA) and the Ministry of Environment, Conservation and Parks (MECP) for the preparation of a Stormwater Management study for quantity & quality purposes.
- Provide an appropriate site drainage system for safe operational use.

2. SITE DRAINAGE CONDITIONS

General Stormwater Management guidelines and information was obtained from the City of Ottawa Design Criteria and Standard Drawings and the Design Brief - Kanata West Business Park (KWBP) – Phase 5, 425 Huntmar Drive, prepared by IBI.

2.1 Existing Drainage Conditions

The subject property is an undeveloped parcel consisting of mainly landscape and is approximately 0.907 **ha** in size with no storm infrastructure in place. Based on existing topography, the site drains in the southeast direction into an existing conveyance swale and ultimately discharges into the Carp River.

In addition, there is external flow from an adjacent landscape area approximately 0.26ha in size (Refer to calculations provided by IBI located in Appendix) which is conveyed via existing drainage swales and a 600mm dia. culvert located along south property limits. Refer to Drainage Plan P-303 for reference.

According to the Design Brief - Kanata West Business Park (KWBP) – Phase 5, 425 Huntmar Drive report prepared by IBI, the subject property is part of the overall development and is identified with Area ID 135A (Table 4.2). This parcel is designed such that the minor storm events runoff is discharged to Pond 6 East (Figure 1 of KWBP – Phase 5 Design Brief) located to the east of the Tanger Mall Outlet and will provide both quantity and quality treatment control Plan.

2.2 Allowable Release Rate

The allowable release rate for the site, as per Table 4.2 of Design Brief - KWBP – Phase 5, September 2019, the subject site (Area #135 A) has a contribution area of 1.12 ha with an established allowable release rate of 257 l/s and storage requirement of 111m^3.

However, the runoff coefficient and the area for the subject site differs from the KWBP Phase 5 Design Brief. The subject site is approximately 0.907ha in area and the adjacent landscape area from which the drainage is captured on to this site is approximately 0.26ha. Therefore, SWM of overall area of approximately 1.167ha is addressed in this report. Detailed calculations have been carried out using the "Modified Rational Method" to establish the 5yr allowable release rate using a conservative runoff coefficient of **C=0.2** for the site as follows:

$$Q = 0.00278\ C\ I\ A \quad \leftarrow Equation\ (1)$$

$Where\ Q: = Maximum\ Runoff\ Rate\ (m^3/sec)$

$C: = Runoff\ Coefficient$

$I: = Rainfall\ Intensity\ (mm/hr)\ \ (5 - year\ storm\ event)$

$A: = Drainage\ Area\ (ha)$

$Q_{5\text{-year pre}}$= 0.00278 * 0.2 * 104.19 * 1.16

$Q_{5\text{-year pre}}$= 0.0676 m^3/sec → 5-year allowable release rate

2.3 Proposed Drainage Conditions

The post-development hydrologic conditions for the entire site (Phase 1 and 2) were established utilizing the City of Ottawa's 2-Year to 100-Year IDF curve (Appendix A). A conservative surface run-off coefficient of 0.90 was used for impervious surfaces (i.e. Roof drainage, driveways and parking area) and 0.20 was used for landscaped areas (Refer to Pre/Post Drainage Plan P-303 in Appendix B).

Due to existing grading constraints, the external flow from the adjacent landscape area which is approximately 0.26ha is proposed to be captured, stored and discharged to an appropriate outlet at a controlled rate by the proposed new storm infrastructure as part of this development.

The study area is delineated into three sub-catchments, identified as controlled sub-catchment 1, uncontrolled sub-catchment 2 and uncontrolled sub-catchment 3 (Refer to Drainage Plan P-303), for stormwater management purposes and are described below.

Sub-catchment-1 (Controlled)

The controlled sub-catchement-1 consist of the majority of the site area (0.858 ha). The stormwater runoff from sub-catchment-1 will be captured by various drainage structures located around the proposed development. The flow will be treated by an OWS and controlled by an orifice tube installed at the outlet of STM.MH#02, prior to discharging onto 1350mm existing storm network on Campeau Dr. (Refer to Servicing Plan P-301 in Appendix C). This is consistent with the calculations and figure provided in the Appendix C of KWBP – Phase 5 Design Brief.

Additionally, the runoff from the adjacent landscape (0.26ha) south of the Palladium Drive Tanger Outlet entrance, will be included into the overall area of sub-catchment 1 for quantity purposes. Hence the total area under consideration is 1.118ha. The existing and proposed runoff coefficients for sub-catchment-1 are shown in Table 2- 1 below:

Surface Composition		Impervious	Pervious	Combined
Existing Condition	(m^2)	0.00	11042.38	11042.38
	(ha)	0.000	1.104	1.104
Runoff Coefficient		0.90	0.20	0.20

Surface Composition		Impervious	Pervious	Combined
Proposed Condition	(m^2)	5120.94	5921.44	11042.38
	(ha)	0.512	0.592	1.104
Runoff Coefficient		0.90	0.20	0.52

Table 2- 1 Existing and proposed runoff coefficients for Sub-catchment 1

For estimating flows using the Rational Method for storms greater than the 10-year return storm, individual components of the weighted runoff coefficients are increased 10%, 20% and 25% for the 25-year, 50-year and 100-year storms respectively to account for additional runoff due to soil saturation and the reduced accuracy associated with larger storms. (Refer to Table 2- 2 below)

St. Event	Existing	Proposed
2-Year	0.20	0.52
5-Year	0.20	0.52
10-Year	0.20	0.52
25-Year	0.20	0.58
50-Year	0.20	0.63
100-Year	0.20	0.66

Table 2- 2 Adjusted runoff coefficients for 2-100-yr events (Sub-catchments-1)

Sub-catchment-2 (Uncontrolled)

The uncontrolled sub-catchment -2 (0.009 ha) represents a small strip of landscape area along the east property limits. This area will flow uncontrolled towards the Tanger outlet parking lot following the existing drainage pattern due to grading constraints. The proposed runoff coefficients for the uncontrolled sub-catchment-2 are shown below in Table 2- 3.

Surface Composition		Impervious	Pervious	Combined
Existing and Proposed Condition	(m^2)	0.00	90.00	90.00
	(ha)	0.000	0.009	0.009
Runoff Coefficient		0.90	0.20	0.20

Table 2- 3 Proposed runoff coefficients for Sub-catchment 2

Sub-catchment-3 (Uncontrolled)

The uncontrolled sub-catchment -3 (0.040 ha) represents small strip of landscape area along the west property limits and the carwash building. Since the flow from the carwash building will be directed towards the landscape, we have considered the subject area as impervious. This area will flow uncontrolled towards the Campeau Dr, ROW following the existing drainage pattern due to grading constraints. The proposed runoff coefficients for the uncontrolled sub-catchment-3 are shown below in Table 2- 4.

Surface Composition		Impervious	Pervious	Combined
Existing & Proposed Condition	(m^2)	0.00	534.20	534.20
	(ha)	0.000	0.053	0.053
Runoff Coefficient		0.90	0.20	0.20

Table 2- 4 Existing and proposed runoff coefficients for Sub-catchment 3

2.4 Overland Flow

Stormwater runoff for the majority of the site is captured by an internal storm drainage system and is conveyed into the proposed dry pond located at the N/E corner of the subject property. During a 100-year event the dry pond will provide the required quantity storage considering it is the lowest point within the site. In an overflow situation, the dry pond will overflow in the N/E direction and ultimately onto Campeau Drive ROW. The existing grades along North and West property limits are higher than the existing grades of the subject site. Due to grading constraints some storm water is expected to sheet

flow onto the Tanger outlet entrances during significant storm events if the localized drainage structure is blocked.

The flow from the uncontrolled subcatchemnt-3 will flow towards Campeau Drive ROW and from the Uncontrolled sub-catchment -2 will flow towards Tanger Outlet entrance

3. PROPOSED STORMWATER MANAGEMENT PLAN

3.1 Quantity Control

The drainage pattern is expected to change due to increase in impervious surfaces for the proposed development. In order to satisfy the City and MVCA requirements, quantity controls have been provided to ensure post development peak run-off is controlled to pre-development levels for the 5-100-year storm events.

Onsite storage and flow control is provided using an orifice tube restrictor located at the outlet for controlled sub-catchments 1 prior to discharge off-site to limit the release rates to the target rates.

Considering this is a relatively small area the "Modified Rational Method" was used to generate the surface runoff for each storm event as follows:

Sub-catchment 1 (Controlled)

The results of peak flow rates (m^3) generated by the "Modified Rational Method" for existing and proposed conditions for the sub-catchment-1 is shown in Table 3- 1.

Storm Event	Rainfall Intensity (mm/hr)				<Equation 1> Flow Rate (m^3/sec)		
	a	b	c	I	Existing	Proposed	Excess Flow
2-Year	732.951	0.810	6.199	76.81	0.0472	0.1237	0.0765
5-Year	998.071	0.814	6.053	104.19	0.0640	0.1678	0.1038
10-Year	1174.184	0.816	6.014	122.14	0.0750	0.1967	0.1217
25-Year	1402.884	0.819	6.018	144.69	0.0888	0.2563	0.1675
50-Year	1569.580	0.820	6.014	161.47	0.0991	0.3121	0.2129
100-Year	1735.688	0.820	6.014	178.56	0.1096	0.3595	0.2498

Table 3- 1 Peak Flows 2 - 100 Year Events (Sub-Catchment-1)

As per Table 3- 1, the allowable release rate for sub-catchment-1 is based on the 5-year storm event which has a flow rate of 0.0640 m^3/s. However, this flow rate will be reduced to compensate for the uncontrolled flow from sub-catchment 2 and sub-catchment 3. The target release rate will be achieved using an orifice tube restrictor at the outlet of STM.MH#02 and an on-site dry pond with a max. ponding elevation set at 102.60.

Sizing of the orifice is given by the formula.

$$Q = C\,A\,\sqrt{2\,g\,h} \quad \leftarrow Equation\ (2)$$

$$Where\ Q := Flow\ Rate\ Through\ Orifice\ (m^3/sec) = Q_{Allowable}$$

$$C := Contraction\ Coefficient = 0.80\ (For\ Orifice\ Pipe)$$

$$A := Area\ of\ Orifice\ Pipe\ (m^2)$$

$$g := Acceleration\ Due\ To\ Gravity\ (m/sec^2) = 9.81\ (m/sec^2)$$

$$h := Pressure\ Head\ To\ Be\ Dissipated\ (m)$$

By trial-and-error calculations, a 110mm orifice pipe is required to control the flow to the Target release rate.

$$Q = \frac{(0.80)\pi\left(\frac{0.110}{2}\right)^2\sqrt{2 * 9.81 * \left(102.60 - 99.51 - \left(\frac{0.110}{2}\right)\right)}}{}$$

$Q = 0.0587\ m^3/\sec = 0.0587\ \ m^3/\ sec\ (target\ release\ rate)$

Based on the calculated orifice release rate of Q= 0.0587m^3/s, the required storage for the 100-year storm event is calculated using the "Modified Rational Method" and is shown below in Table 3- 2

Stm Event	Td	Id	Qpost	Qorifce	Excess Flow	Volume(cum)
	5	243	0.4886	0.0587	0.430	128.977
	7	212	0.4261	0.0587	0.367	154.327
	10	179	0.3595	0.0587	0.301	180.476
	15	143	0.2877	0.0587	0.229	206.096
	20	120	0.2415	0.0587	0.183	219.368
100 Year	25	104	0.2091	0.0587	0.150	225.583
	30	92	0.1849	0.0587	0.126	227.293
	35	83	0.1662	0.0587	0.108	225.903
	40	75	0.1513	0.0587	0.093	222.262
	45	69	0.1390	0.0587	0.080	216.916
	50	64	0.1287	0.0587	0.070	210.240
	55	60	0.1200	0.0587	0.061	202.496
	60	56	0.1125	0.0587	0.054	193.879
	65	53	0.1060	0.0587	0.047	184.534
	70	50	0.1002	0.0587	0.042	174.574
				Max Volume Required	cum	**227.29**

Table 3- 2 Required Storage Volume for 100yr storm event (Sub-catchment 1)

Therefore, the 110mm orifice tube at the outlet of STM.MH#02 will generate an on-site required storage of 227.29 m^3. The storage is met by a combination of underground piping, storm drainage structures (CB's and MH's) and a proposed dry pond at the northeast corner of the subject property. Dry pond stage storage information is provided in Table 3- 3 and the generated storage is illustrated in Table 3- 4 below.

Water Surface Elevation m (input)	Corresponding Contour Area m^2 (input)	Volume above Datum m^3 (output)
102.15	327.92	0.00
102.20	327.92	24.66
102.30	360.36	74.01
102.40	393.93	111.01
102.50	430.36	160.35
102.60	465.09	202.64
102.70	500.39	246.70
102.90	572.69	333.04

Table 3- 3 Stage Storage for the Dry pond

Structure	Diameter (mm)	Area (m^2)	Maximum. Water	Invert	Volume (m^3)
CB#1	600x600	0.36	102.15	99.89	0.81
CB#2	600x600	0.36	102.70	99.95	0.99
CB#3	600x600	0.36	102.65	101.12	0.55
CB#4	600x600	0.36	102.70	101.20	0.54
CB#5	600x600	0.36	102.70	101.17	0.55
CB/MH#1	1200.00	1.13	102.70	99.70	3.39
CB/MH#2	1200.00	1.13	102.70	100.51	2.48
CB/MH#3	1200.00	1.13	102.70	100.91	2.02
STM/MH#2	1200.00	1.13	102.70	99.64	3.46
STM/MH#3	1200.00	1.13	102.70	100.96	1.97
				Sum	**16.77**

U/G Conduit	Diameter (m)	Area (m^2)	Length (m)	Volume (m^3)
1	250	0.05	110	5.40
2	300	0.07	42	2.97
3	400	0.13	59.5	7.48
4	400	0.13	3.5	0.44
			Sum	**16.29**

Storage Volume For 100-Year Event (m^3)	
Catch Basins & Manholes	16.77
Underground Conduits	16.29
Dry Pond	202.64
Total Provided	**235.69**

Table 3- 4 Summary of Actual Storage Provided for Sub-catchment 1

The total storage provided on site for stormwater runoff is 235.69m^3 which is more than the required volume of 227.29m^3.

Sub-catchment 2 (Uncontrolled)

The results of peak flow rates (m^3) generated by the "Modified Rational Method" for existing and proposed conditions for the South sub-catchment is shown in Table 3- 5.

Storm Event	Rainfall Intensity (mm/hr)				<Equation 1> Flow Rate (m^3/sec)		
	a	b	c	I	Existing	Proposed	Excess Flow
2-Year	732.951	0.810	6.199	76.81	0.0004	0.0004	0.0000
5-Year	998.071	0.814	6.053	104.19	0.0005	0.0005	0.0000
10-Year	1174.184	0.816	6.014	122.14	0.0006	0.0006	0.0000
25-Year	1402.884	0.819	6.018	144.69	0.0007	0.0008	0.0001
50-Year	1569.580	0.820	6.014	161.47	0.0008	0.0010	0.0002
100-Year	1735.688	0.820	6.014	178.56	0.0009	0.0011	0.0002

Table 3- 5 Peak flows 2 – 100 Year Events (Sub-Catchment-2)

As per the table above, the release rate for Sub-catchment 2 is based on the 100-year storm event, which has a flow rate of Q=0.0011 m^3/s.

Sub-catchment 3 (Uncontrolled)

The results of peak flow rates (m^3) generated by the "Modified Rational Method" for existing and proposed conditions for the South sub-catchment is shown in Table 3- 6

Storm Event	Rainfall Intensity (mm/hr)				<Equation 1> Flow Rate (m^3/sec)		
	a	b	c	I	Existing	Proposed	Excess Flow
2-Year	732.951	0.810	6.199	76.81	0.0023	0.0023	0.0000
5-Year	998.071	0.814	6.053	104.19	0.0031	0.0031	0.0000
10-Year	1174.184	0.816	6.014	122.14	0.0036	0.0036	0.0000
25-Year	1402.884	0.819	6.018	144.69	0.0043	0.0047	0.0004
50-Year	1569.580	0.820	6.014	161.47	0.0048	0.0057	0.0010
100-Year	1735.688	0.820	6.014	178.56	0.0053	0.0066	0.0013

Table 3- 6 Peak flows 2 – 100 Year Events (Sub-Catchment-3)

As per the table above, the release rate for Sub-catchment 3 is based on the 100-year storm event, which has a flow rate of Q=0.0066 m^3/s.

3.2 SWM Summary

The overall release rate for the site is the sum of the controlled flow rate from the Sub-catchment 1+ the uncontrolled flow from the Sub-catchment 2. See below for overall release rate.

Overall release rate for the site = Sub-catchment 1 + Sub-catchment 2

Q = 0.0587 + 0.0011+0.0066

Q= 0.0664 m^3/s

Therefore, the overall release rate is 0.0664m^3/s which is less than the allowable release rate of 0.0676m^3/s as per calculations shown in section 2.2.

The controlled flow from the site will discharge into the existing 1350mm City storm sewer via existing STM MH#108 along Campeau Dr. and is consistent with the calculations and figures of KWBP – Phase 5 Design Brief.

3.3 Infiltration

Section 4.3.5 of the Design Brief - KWBP – Phase 5, September 2019 indicates that each block will be required to provide infiltration galleries fed by rooftop drains. That study indicated that a range of 50 - 70mm/year of runoff be infiltrated from the eastern portion of the KWBP site, and a range of 70 - 100mm/year of runoff be infiltrated from the western portion of the KWBP site.

The subject development is on the eastern portion of the KWBP site and is only 1.4% of the overall area of the KWBP Phase 5.

The primary objective of the Water Balance Targets/Criteria is to capture and manage annual rainfall on the development site itself to preserve the pre-development hydrology through a combination of infiltration, evapotranspiration, landscaping, rainwater reuse and/or other low impact development practices. The water balance target for this site is to retain runoff from a **5mm, 24-hour event** as illustrated in Table 3- 7.

Total Site Area	9065.65	m^2
Rainfall Depth to be retained	5	mm
Volume at 5mm	45.33	m^3

Table 3- 7 Water balance requirement for the site

To achieve the required water balance, the site composition is assigned an initial abstraction value as follows: 5mm (landscape), 5mm (roof draining to landscape) and 1mm (hard surface -roof/asphalt).

Initial Abstraction:				
Surface	**Area (m^2)**	**IA (mm)**	**Volume**	**Unit**
Landscape	3,360.24	5.0	16.8	m^3
Asphalt	5,655.41	1.0	5.7	m^3
Building	286.25	1.0	0.3	m^3
Total	**9,301.90**		**22.7**	**m^3**

Table 3- 8 Water Balance - Initial Abstraction

Additionally, a 6.5m x 3.0m x 1.5m infiltration gallery is proposed to direct the rooftop drainage towards the infiltration gallery to promote ground water recharge.

Based on the Geotech report prepared by Terrapex dated January 24, 2020, the groundwater depth at the vicinity of the proposed infiltration gallery is approx. 3.5m and the coefficient of permeability of the soil is estimated to be less than 10^{-8} cm/sec, that corresponds to a very low permeability.

Considering the permeability of the soil is very low, we are proposing a bioretention pond/rain garden based on the best management practices, which will act as a temporary storage and enhance ground water infiltration.

The proposed infiltration gallery will not interfere with the groundwater table as the ground water table is much deeper. Table below shows the infiltration volume of the infiltration gallery.

Infiltration Gallery #	Dimension	Porosity	Volume (m^3)
Infiltration Gallery #1	10.0mx5.0mx1.0m	0.4	20.0

Table 3- 9 Infiltration Gallery Volume

Therefore, the total storage provided for the proposed development is 42.7m^3. These infiltration galleries will promote groundwater recharge for the site.

Overall, various water balance techniques were explored, and best management practices have been implemented on this project, however, the estimated target was short by approximately 2.63m^3.

3.4 Quality Control

A treatment train approach has been adopted for this site by incorporating the following treatment methods:

- Installation of the Stormceptor EFO6 at the outlet of the storm system prior to discharge into the existing City storm network on Campeau Dr. The EFO6 has ETV verification and has a TSS removal rate of 85% based on the sizing report in the Appendix D.
- Upstream of EFO6 is a proposed grass swale, infiltration gallery and a dry pond which provides additional on-site quality control.

The approval for site runoff quality control to be provided by the City as per the response received from Mississippi Valley Conservation (MVC), attached in appendix

3.5 Culvert Assessment

The existing 47.0m long x 600mm diameter CSP culvert crossing the Tanger Outlet entrance will be maintained as required and connected to the new CB via a 1.0m long, 300mm size reducer. Based on the calculations the proposed 300mm size reducer will be adequate to convey the proposed flows from the adjacent landscape parcel. Refer Appendix for calculations.

4. EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

The erosion potential of the study area was assessed using methods described in the "*MTO Drainage Management Manual*" of temporary erosion and sediment control measures suitable for construction sites close to highways.

During Site construction, various temporary measures will be implemented to prevent the discharge of sediment laden Stormwater from the Site. These measures include silt fencing, catchbasin silt-sacks and mud-mats, etc. as shown on DWG P-302 - Erosion Control Plan.

In addition to the above, the following "good housekeeping" measures are recommended:

- All exposed soil shall be stabilized as soon as possible with a seed and mulch application as directed by the Engineer.
- No construction activity or machinery shall intrude beyond the silt/snow fence or limit of construction area. All construction vehicles shall leave the site at designated locations as shown on the plans.
- Stockpiles of soil shall be set back from any watercourse and stabilized against erosion as soon as possible. A set back of at least 15m from any top-of-bank, watercourse or pond is required.
- Cleaning and repairs of mud-mats and any other temporary sediment control measures shall be completed as deemed necessary through regular inspection.
- Sediment/slit shall be removed from the sediment control devices after storm events and deposited in areas as approved by the engineer.
- All re-graded areas within the development which are not occupied by buildings, roadways, sidewalks, or driveways shall be top-soiled and sodded/seeded immediately after completion of final grading operations as directed by the engineer.

5. SUMMARY AND CONCLUSION

In summary, required conditions of the City of Ottawa and other authorities have been satisfied as follows:

- The Stormwater flow from the Site is controlled to pre-development conditions.
- The proposed SWM facilities provide ENHANCED level of protection as specified by the MECP
- The proposed SWM techniques meet both quantity and quality requirements.
- The Sediment and Erosion Control Plan demonstrates how erosion and sedimentation will be minimized during construction

This SWM Report satisfies all requirements for stormwater quantity, sedimentation, and erosion control.

James Sam, P.Eng
Tel (416) 229-2636
j.sam@jandb-inc.com

Appendix

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297

APPENDIX A: IDF CURVE

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297

STORMWATER MANAGEMENT REPORT

Ottawa IDF curve

Storm	IDF Curve Equation
2-Year	$I = 732.951 / (Tc + 6.199)^{0.810}$
5-Year	$I = 998.071 / (Tc + 6.053)^{0.814}$
10-Year	$I = 1174.184 / (Tc + 6.014)^{0.816}$
25-Year	$I = 1402.884 / (Tc + 6.018)^{0.819}$
50-Year	$I = 1569.580 / (Tc + 6.014)^{0.820}$
100-Year	$I = 1735.688 / (Tc + 6.014)^{0.820}$

APPENDIX B: IBI CALCULATIONS-EXTERNAL FLOW

ARCADIS | IBI GROUP
500–333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

2023-02-13

File: 14289-5.7

Mr. Alex Turner
Development Manager
Taggart Realty Management
Suite 708 - 225 Metcalfe Street
Ottawa, Ontario
K2P 1P9

Dear Mr. Turner,

8605 Campeau Drive - Ottawa

Arcadis - IBI has been engaged by Taggart Realty Management to quantify the temporary off-site stormwater flow that will need to be collected and conveyed to an appropriate outlet by the storm sewer infrastructure proposed as part of the development located at 8605 Campeau Drive. More precisely, the stormwater flow from a parcel of property located to the south of the Palladium Drive Tanger Outlet entrance. The parcel of land in question is currently undeveloped, represents an approximate area of 2600m2 and currently drains via a swale across the entrance road via a culvert.

Formulas and Descriptions:

i_{100yr} = 1:100 year Intensity = $1735.688 / (T_c+6.014)^{0.820}$
T_c = Time of Concentration (min)
C = Average Runoff Coefficient
A = Area (Ha)
Q = Flow = 2.78CiA (L/s)

C =	0.25	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.26	Ha
Flow=	32.27	L/s

Upon our review we have access the temporary off-site stormwater flow to be collected as 32.27 L/s.

If you have any questions, please do not hesitate to contact the undersigned.

Yours sincerely,

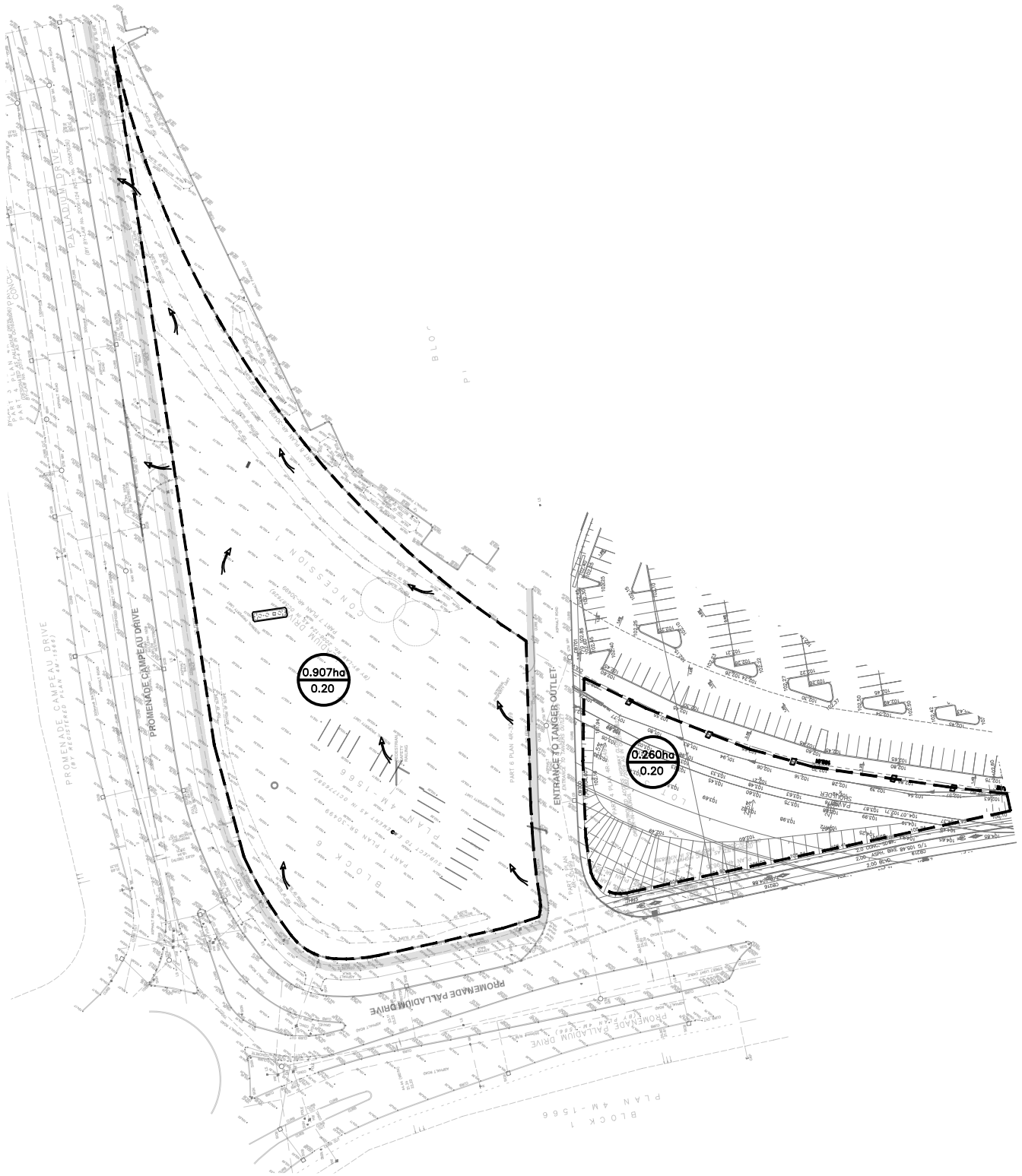
IBI Group

Terry Brule, P.Eng.
Associate Director - Practice Lead, Land Engineering

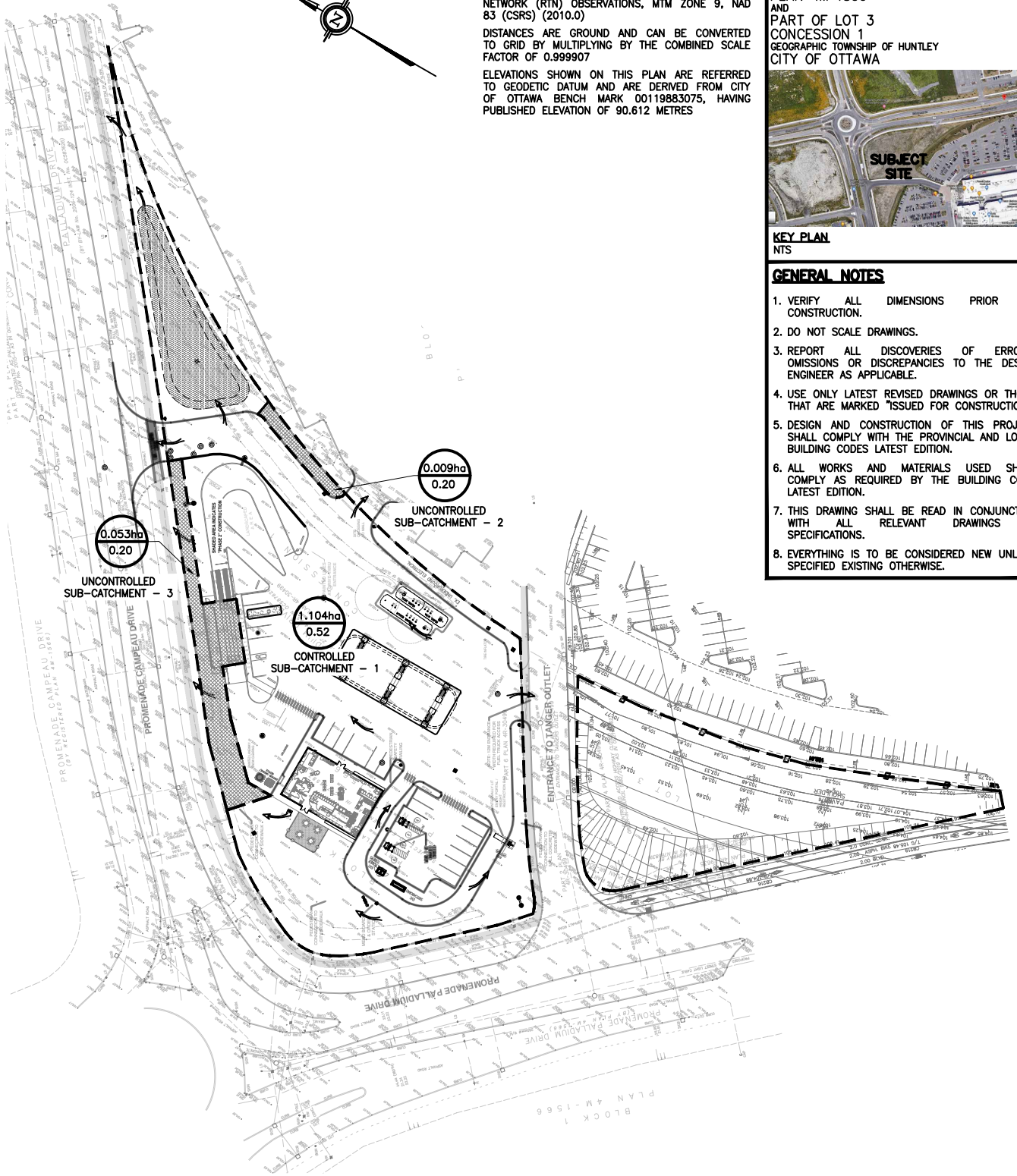
APPENDIX B: PRE-POST DRAINAGE PLAN

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297



1 PRE-DEVELOPMENT DRAINAGE PLAN
SCALE: 1:700



2 POST-DEVELOPMENT DRAINAGE PLAN
SCALE: 1:700

NOTES

BEARINGS AND MTM GRID, DERIVED BY REAL TIME NETWORK (RTN) OBSERVATIONS, MTM ZONE 9, NAD 83 (CSRS) (2010.0)

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999907

ELEVATIONS SHOWN ON THIS PLAN ARE REFERRED TO GEODETIC DATUM AND ARE DERIVED FROM CITY OF OTTAWA BENCH MARK 00119883075, HAVING PUBLISHED ELEVATION OF 90.612 METRES

PLAN OF SURVEY
PART 1 - PLAN OF SURVEY OF
PART OF BLOCK 6
PLAN 4M-1566
AND
PART OF LOT 3
CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HUNTLEY
CITY OF OTTAWA

KEY PLAN
NTS

GENERAL NOTES

1. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. DO NOT SCALE DRAWINGS.
3. REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGN ENGINEER AS APPLICABLE.
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5. DESIGN AND CONSTRUCTION OF THIS PROJECT SHALL COMPLY WITH THE PROVINCIAL AND LOCAL BUILDING CODES LATEST EDITION.
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7. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS & SPECIFICATIONS.
8. EVERYTHING IS TO BE CONSIDERED NEW UNLESS SPECIFIED EXISTING OTHERWISE.

REVISION TABLE

REV.	DESCRIPTION	DRAWN	APP'D.
		DATE	
0	REVISED AS PER SITE PLAN MAR 14,2023 AND CITY COMMENTS	MJ 14 MAR 23	JS

ISSUE TABLE

TO	FOR	DATE
SUNCOR	FOR REVIEW	08 JUL 22
CITY	ISSUED FOR SPA	28 JUL 22
SUNCOR	FOR REVIEW	24 FEB 23
CITY	RE-ISSUED FOR SPA	17 MAR 23

METRIC

ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.. CONTRACTOR TO CHECK/VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. ALL DESCREPANCIES TO BE REPORTED TO THE PROJECT DESIGNER. DO NOT SCALE DRAWINGS.

SEAL:

CONSULTANT:

J + B ENGINEERING INC.
TORONTO
25 CENTURIAN DR,
SUITE 201
MARKHAM, ON L3R 6N8
416 229 2838
CALGARY
1014 11TH AVE, SW
SUITE 150
CALGARY AB T2R 0B3
403 355 2095

PETRO-CANADA
A Suncor Energy Business

DRAWING TITLE:
PRE-POST DRAINAGE PLAN

PROJECT:
PROMENADE PALLADIUM DRIVE
@ PROMENADE CAMPEAU DRIVE
OTTAWA, ON

LEGEND

EXISTING ELEVATION	DRAINAGE AREA (ha) RUNOFF COEFFICIENT
EXISTING CATCHBASIN	OVERLAND FLOW
EXISTING MANHOLE	CATCHMENT BOUNDARY
NEW CATCHBASIN	UNCONTROLLED AREA
NEW C.B./M.H.	SURFACE PONDING AREA
NEW MANHOLE	PHASE 2
PROPERTY LINE	
RIDGE LINE	

DRAWN BY:	BR
DRAWING SCALE:	1:300
DATE DRAWN:	2022-07-01
CHECKED BY:	JS
APPROVED BY:	JK

CAD INFO.:
SHEET SIZE
D (559 x 864)
PETRO-CANADA CAD FILE No.
CONSULTANT CAD FILE No. 200258-P303
PLOT SCALE
1:1
PLOT DATE
PLOT CONFIGURATION

STD No./OUTLET No.
10565

P303

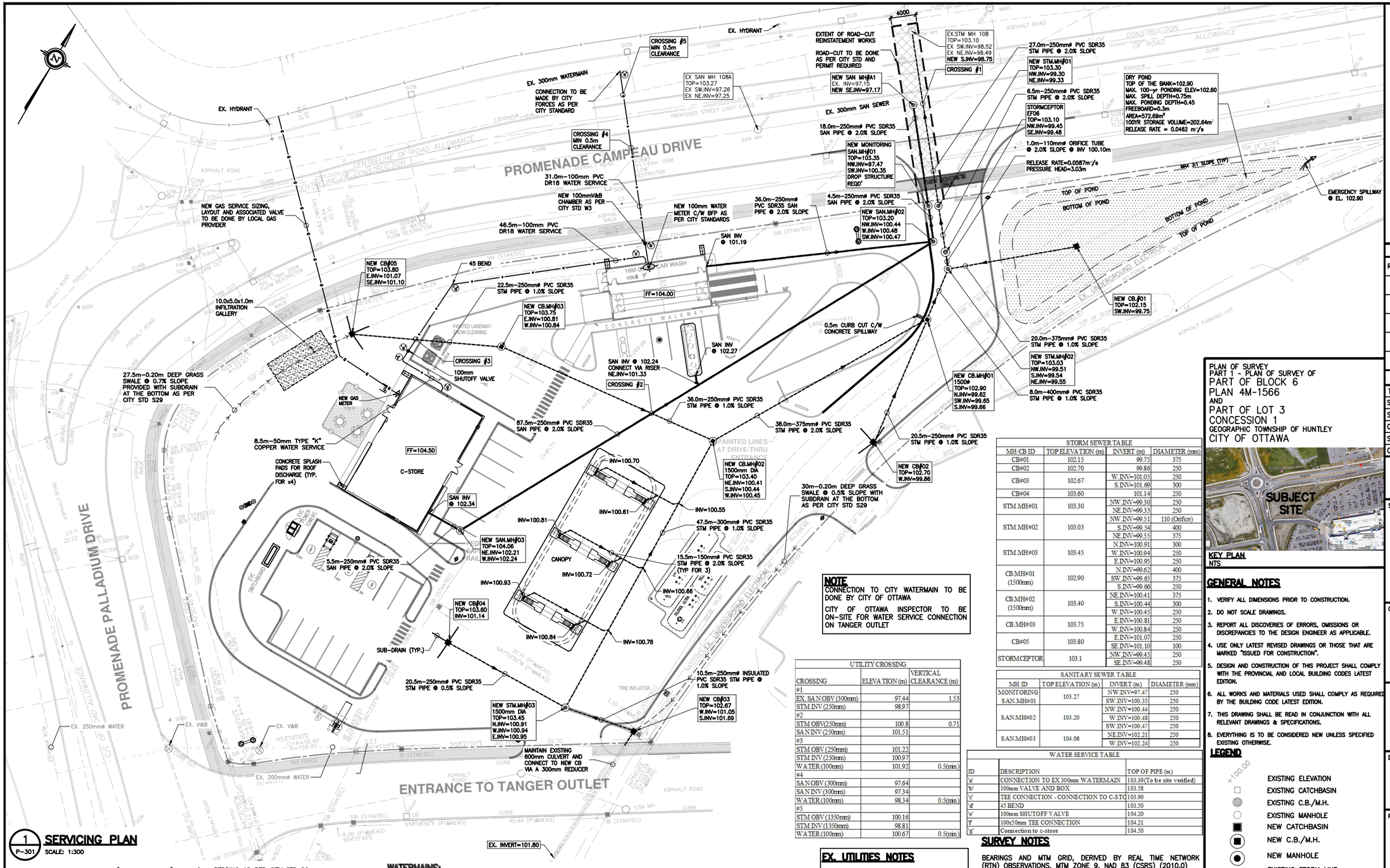
D07-12-21-0155

#18629

APPENDIX C: SITE SERVICING PLAN

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297



1 P-301 **SERVICING PLAN**
SCALE: 1:300

SPECIFICATIONS FOR C.B'S AND M.H.'S

STORM:

1. DROP STRUCTURE IF REQUIRED AS CITY SPECIFICATION AND PER OPSD 1003.010.
2. 600x600 PRECAST CB AS PER OPSD 705.010 c/w FRAME AND GRATE AS PER S19. GOSS TRAP AND SUBDRAINS AS PER CITY STANDARD.1
3. ALL CB TO HAVE 3.0m –150mmø PERFORATED SUBDRAIN IN ALL 4 DIRECTIONS AS PER CITY STANDARDS.
4. 1200ø PRECAST MH AS PER OPSD 701.010 c/w FRAME AS PER S25 AND COVER AS PER S24.1 AND S28.1.
5. BENCHING AS PER OPSD 701.021.
6. BEDDING AS PER CITY STD S6.
7. ADJUSTMENT UNITS AND CAPS AS PER OPSD 704.01.
8. SEWER COVER–GRANULAR 'A' CONFORMING TO OPSD 802.03.
9. PIPE–PVC SDR35 UNLESS NOTED OTHERWISE.
10. CB CONNECTIONS AS PER OPSD 708.03
11. ALL EX. STORM AND SANITARY ABANDONED SHOWN ON THE PLAN OR ENCOUNTERED DURING CONSTRUCTION ARE TO BE EXCAVATED AT THE STREET LINE AND SEALED TO CITY STD.
12. WHEN THE DEPTH OF THE COVER OVER THE PROP. SANITARY OR STORM SEWERS IS LESS THAN 2.0m, SEWER LINES ARE TO BE INSULATED AS PER CITY STD. THE INSULATION TO BE STYROFOAM BRAND H.I. TYPE IV OR EQUAL.

WATERMAINS:

1. ALL NEW WATERMAIN CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY STANDARDS.
2. WATERMAIN AND/OR WATER SERVICES TO HAVE A MINIMUM OF 1.0m HORIZONTAL SEPARATION FROM OTHER UTILITIES AS PER CITY STANDARDS.
3. WHERE WATERMAIN AND/OR WATER SERVICES CROSSES UNDER SANITARY OR STORM SEWER A MINIMUM CLEARANCE OF 0.5m SHALL BE PROVIDED.
4. BEDDING MATERIAL TO BE INSTALLED AS PER CITY STANDARDS.
5. WATER SERVICE TO HAVE MIN. 2.4m COVER. WHERE THE MINIMUM COVER IS NOT POSSIBLE INSULATE AS PER CITY OF OTTAWA STANDARD W22
6. ALL TEES, PLUGS AND BENDS TO HAVE CONCRETE THRUST BLOCKS AS PER CITY STD
7. CONTRACTOR TO PROVIDE PRESSURE TEST RESULTS OF NEW WATERMAIN AND FIRE MAIN.
8. WATERMAIN TO BE INSTALLED WITH TRACER WIRE.

SANITARY

1. 1200ø PRECAST M.H'S AS PER OPSD 701.01 c/w FRAME AS PER S25 AND COVER AS PER S24.
2. DROP STRUCTURE IF REQUIRED AS CITY SPECIFICATION AND PER OPSD 1003.010.
3. BEDDING AS AS PER CITY STD S6.
4. BENCHING AS PER OPSD 701.021.
5. SANITARY PIPES TO BE PVC SDR35.
6. ALL SANITARY SEWERS TO BE TESTED IN ACCORDANCE WITH THE REQUIREMENT OF OBC 7.3.6

NOTE
CONNECTION TO CITY WATERMAIN TO BE DONE BY CITY OF OTTAWA

CITY OF OTTAWA INSPECTOR TO BE ON-SITE FOR WATER SERVICE CONNECTION ON TANGER OUTLET

UTILITY CROSSING		
CROSSING	ELEVATION (m)	VERTICAL CLEARANCE (m)
#1		
EX. SAN OBV (300mm)	97.44	1.53
STM INV (250mm)	98.97	
#2		
STM OBV(250mm)	100.8	0.71
SAN INV (250mm)	101.51	
#3		
STM OBV (250mm)	101.22	
STM INV (250mm)	100.97	
WATER (100mm)	101.92	0.5(min)
#4		
SAN OBV (300mm)	97.64	
SAN INV (300mm)	97.34	
WATER (100mm)	98.34	0.5(min)
#5		
STM OBV (1350mm)	100.16	
STM INV (1350mm)	98.81	
WATER (100mm)	100.67	0.5(min)

EX. UTILITIES NOTES

EXISTING INFORMATION REGARDING UTILITIES ALONG PALLADIUM DR. AND CAMPEAU DR. TO BE SITE VERIFIED

INFORMATION REGARDING EXISTING STORM, SANITARY AND WATER EXTRACTED FROM PROJECT 14289 DWG #103, DATED 2020-05-27 AND DWG #107, DATED 2018-09-14 BY IBI GROUP

SERVICES NOTES:

CONTACT LOCAL UTILITY AGENCIES (GAS, HYDRO & TELEPHONE) TO LOCATE THE EXISTING INCOMING SERVICES, AND USE THE SAME TO SERVE NEW INSTALLATIONS (IF APPLICABLE).

STORM SEWER TABLE			
MH/CB ID	TOP ELEVATION (m)	INVERT (m)	DIAMETER (mm)
CB#01	102.15	99.75	375
CB#02	102.70	99.86	250
CB#03	102.67	W.INV=101.05	250
		S.INV=101.09	300
CB#04	103.60	101.14	250
STM.MH#01	103.30	NW.INV=99.30	250
		NE.INV=99.33	250
STM.MH#02	103.03	NW.INV=99.51	110 (Orifice)
		S.INV=99.54	400
		NE.INV=99.55	375
STM.MH#03	103.45	N.INV=100.91	300
		W.INV=100.94	250
		E.INV=100.95	250
CB.MH#01 (1500mm)	102.90	N.INV=99.62	400
		SW.INV=99.65	375
		S.INV=99.66	250
CB.MH#02 (1500mm)	103.40	NE.INV=100.41	375
		S.INV=100.44	300
		W.INV=100.45	250
CB.MH#03	103.75	E.INV=100.81	250
		W.INV=100.84	250
CB#05	103.80	E.INV=101.07	250
		SE.INV=101.10	100
STORMCEPTOR	103.1	NW.INV=99.45	250
		SE.INV=99.48	250

SANITARY SEWER TABLE			
MH ID	TOP ELEVATION (m)	INVERT (m)	DIAMETER (mm)
MONITORING S.AN.MH#01	103.27	NW.INV=97.47	250
		SW.INV=100.35	250
S.AN.MH#02	103.20	NW.INV=100.44	250
		W.INV=100.48	250
		SW.INV=100.47	250
S.AN.MH#03	104.06	NE.INV=102.21	250
		W.INV=102.24	250

WATER SERVICE TABLE		
ID	DESCRIPTION	TOP OF PIPE (m)
'a'	CONNECTION TO EX 300mm WATERMAIN	103.39(To be site verified)
'b'	100mm VALVE AND BOX	103.58
'c'	TEE CONNECTION - CONNECTION TO C-STO	103.90
'd'	45 BEND	103.50
'e'	100mm SHUTOFF VALVE	104.20
'f'	100x50mm TEE CONNECTION	104.21
'g'	Connection to c-store	104.50

SURVEY NOTES

BEARINGS ARE MTM GRID, DERIVED BY REAL TIME NETWORK (RTN) OBSERVATIONS, MTM ZONE 9, NAD 83 (CSRS) (2010.0)

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999907

ELEVATIONS SHOWN ON THIS PLAN ARE REFERRED TO GEODETIC DATUM AND ARE DERIVED FROM CITY OF OTTAWA BENCH MARK 00119883075, HAVING PUBLISHED ELEVATION OF 90.612 METRES

ISSUE TABLE		
TO	FOR	DATE
SUNCOR	FOR REVIEW	24 FEB 23
CITY	RE-ISSUED FOR SPA	17 MAR 23

PLAN OF SURVEY
PART 1 - PLAN OF SURVEY OF
PART OF BLOCK 6
PLAN 4M-1566
AND
PART OF LOT 3
CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HUNTLEY
CITY OF OTTAWA

KEY PLAN
NTS

GENERAL NOTES

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7. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS & SPECIFICATIONS.
8. EVERYTHING IS TO BE CONSIDERED NEW UNLESS SPECIFIED EXISTING OTHERWISE.

LEGEND

- +100.00 EXISTING ELEVATION
- EXISTING CATCHBASIN
- EXISTING C.B./M.H.
- EXISTING MANHOLE
- NEW CATCHBASIN
- NEW C.B./M.H.
- NEW MANHOLE
- EXISTING STORM LINE
- EXISTING SANITARY LINE
- PROPERTY LINE
- SETBACK LINE
- NEW SANITARY LINE
- NEW STORM LINE
- W NEW WATER LINE
- PHASE 2
- PIPE INSULATION
- SUB-DRAIN
- EXTENT OF ROAD CUT

REVISION TABLE			
REV.	DESCRIPTION	DRAWN	APP'D.
		DATE	
0	REVISED AS PER CLIENT COMMENTS	RP	JS
		11 FEB 21	
1	REVISED AS PER SITE PLAN AND CITY COMMENTS	BR	JS
		15 JUL 22	
2	WATER SERVICE REVISED	BR	JS
		05 AUG 22	
4	REVISED AS PER SITE PLAN MAR 14,2023 AND CITY COMMENTS	MJ	JS
		14 MAR 23	

ISSUE TABLE		
TO	FOR	DATE
SUNCOR	75% REVIEW	11 NOV 20
SUNCOR	PRICING	04 DEC 20
CITY	ISSUED FOR SPA	18 DEC 20
SUNCOR	FOR REVIEW	08 JUL 22
CITY	RE-ISSUED FOR SPA	05 AUG 22

METRIC
ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.. CONTRACTOR TO CHECK/VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. ALL DESCREPANCIES TO BE REPORTED TO THE PROJECT DESIGNER. DO NOT SCALE DRAWINGS.

SEAL:

CONSULTANT:
J + B ENGINEERING INC.
TORONTO
25 CONTURRA DR, SUITE 201
MARKHAM, ON L3R 6N8
449.229.2538
CALGARY
7514 10TH AVE, SW SUITE 150
CALGARY AB T3H 0B3
403.355.2255

PETRO-CANADA
A Suncor Energy Business

DRAWING TITLE:
SERVICING PLAN

PROJECT:
PROMENADE PALLADIUM DRIVE
@ PROMENADE CAMPEAU DRIVE
OTTAWA, ON

DRAWN BY: RP	CAD INFO.: SHEET SIZE D (559 x 864)
DRAWING SCALE: 1:300	PETRO-CANADA CAD FILE No.
DATE DRAWN: 2020-10-14	CONSULTANT CAD FILE No. 200258-P301
CHECKED BY: BR	PLOT SCALE 1:1
APPROVED BY: JS	PLOT DATE
	PLOT CONFIGURATION
STD No./OUTLET No. 10565	P301

D07-12-21-0155

#18629

APPENDIX D: STORMCEPTOR SIZING REPORT

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297

Stormceptor® FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

02/27/2023

Province:	Ontario
City:	Ottawa
Nearest Rainfall Station:	OTTAWA CDA RCS
Climate Station Id:	6105978
Years of Rainfall Data:	20

Site Name:	

Drainage Area (ha):	1.118
% Imperviousness:	90.00

Runoff Coefficient 'c': 0.84

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Project Name:	8605 Promenade Campeau Drive
Project Number:	60853
Designer Name:	Mary Joseph
Designer Company:	J and B Engineering
Designer Email:	m.joseph@jandb-inc.com
Designer Phone:	647-762-4026
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	30.31
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	58.40
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	73
EFO6	85
EFO8	91
EFO10	95
EFO12	98

Recommended Stormceptor EFO Model: EFO6

Estimated Net Annual Sediment (TSS) Load Reduction (%): 85

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.

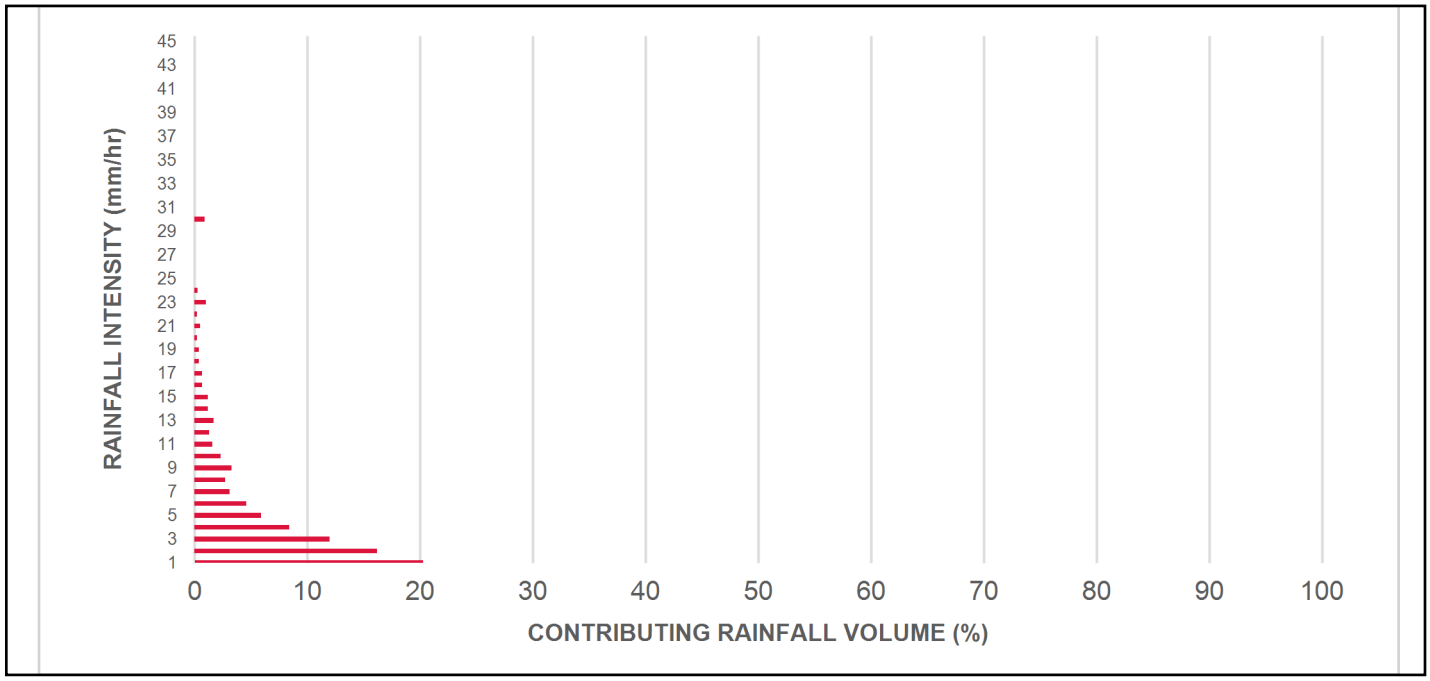
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

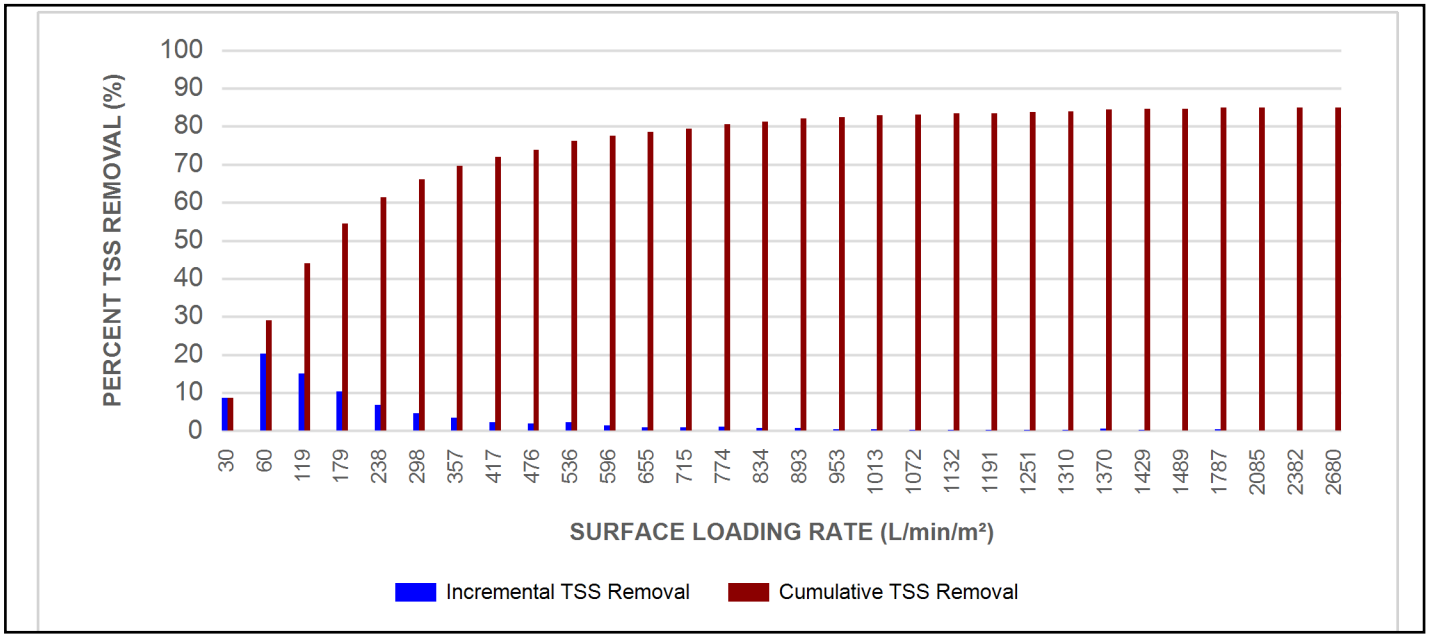
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.6	8.6	1.31	78.0	30.0	100	8.6	8.6
1	20.3	29.0	2.61	157.0	60.0	100	20.3	29.0
2	16.2	45.2	5.22	313.0	119.0	93	15.1	44.1
3	12.0	57.2	7.83	470.0	179.0	87	10.4	54.5
4	8.4	65.6	10.44	627.0	238.0	82	6.9	61.4
5	5.9	71.6	13.05	783.0	298.0	79	4.7	66.1
6	4.6	76.2	15.66	940.0	357.0	76	3.5	69.6
7	3.1	79.3	18.28	1097.0	417.0	73	2.2	71.9
8	2.7	82.0	20.89	1253.0	476.0	71	1.9	73.8
9	3.3	85.3	23.50	1410.0	536.0	68	2.3	76.1
10	2.3	87.6	26.11	1566.0	596.0	65	1.5	77.6
11	1.6	89.2	28.72	1723.0	655.0	64	1.0	78.6
12	1.3	90.5	31.33	1880.0	715.0	64	0.8	79.4
13	1.7	92.2	33.94	2036.0	774.0	63	1.1	80.5
14	1.2	93.5	36.55	2193.0	834.0	63	0.8	81.3
15	1.2	94.6	39.16	2350.0	893.0	62	0.7	82.0
16	0.7	95.3	41.77	2506.0	953.0	62	0.4	82.4
17	0.7	96.1	44.38	2663.0	1013.0	61	0.5	82.9
18	0.4	96.5	46.99	2820.0	1072.0	60	0.2	83.1
19	0.4	96.9	49.60	2976.0	1132.0	59	0.2	83.4
20	0.2	97.1	52.22	3133.0	1191.0	57	0.1	83.5
21	0.5	97.5	54.83	3290.0	1251.0	56	0.3	83.8
22	2.5	100.0	57.44	3446.0	1310.0	54	1.3	85.1
23	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
24	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
25	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
30	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
35	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
40	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
45	0.0	100.0	58.00	3480.0	1323.0	54	0.0	85.1
Estimated Net Annual Sediment (TSS) Load Reduction =								**85 %**

Climate Station ID: 6105978 *Years of Rainfall Data*: 20

RAINFALL DATA FROM OTTAWA CDA RCS 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
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

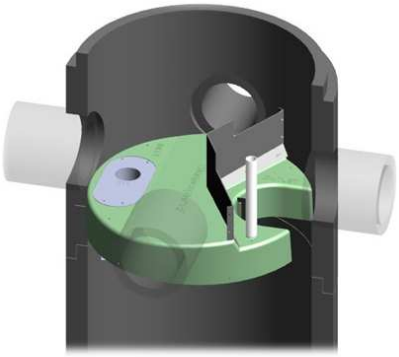
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

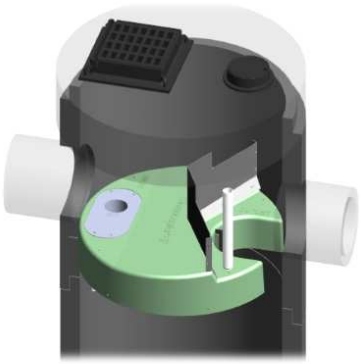
DESIGN FLEXIBILITY

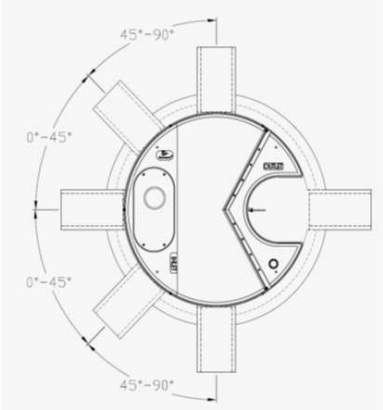
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

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** S**eparators**

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
	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.

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/m^2 to 2600 L/min/m^2) 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.

APPENDIX E: CULVERT ASSESSMENT

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297

8605 Promenade Campeau Dr.
Ottawa, ON

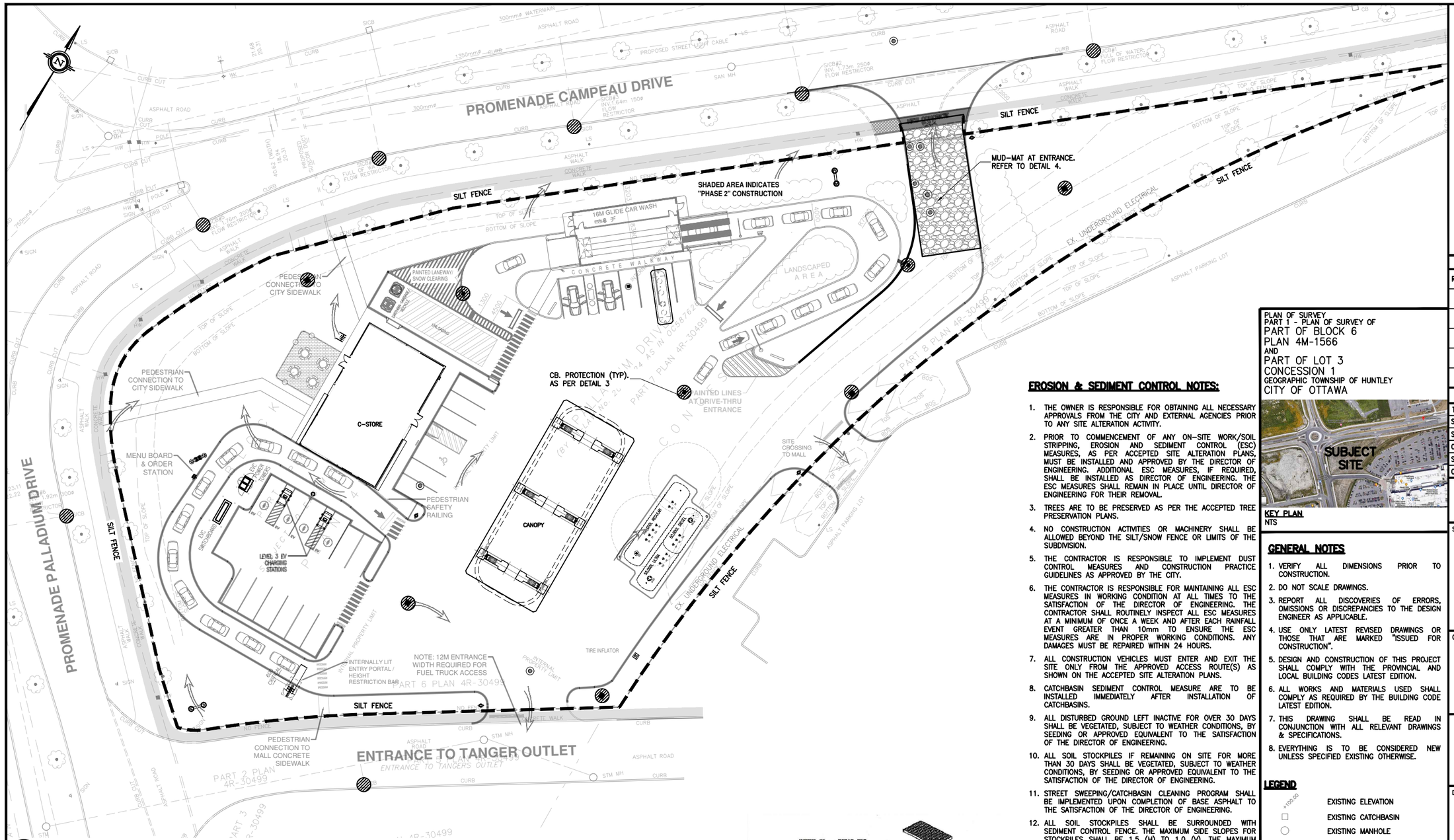
STORMWATER MANAGEMENT REPORT

Design Information				
Design Discharge		**Q =**	**0.032**	cms
Pipe Diameter		D =	0.300	m
Inlet Edge Type			Square End Projection	
Inlet Invert Elevation		I_e =	101.800	m
Outlet Invert Elevation		O_e =	101.690	m
Pipe Length		L =	1.000	m
Pipe Manning's n		n =	0.013	
Bend Loss Coefficient		K_b =	0.900	
Exit Loss Coefficient		K_x =	0.720	
Tailwater Water Surface Elevation		El. Y_t =	101.229	m
Calculations				
Pipe Cross Sectional Area		A_o =	0.071	sqm
Culvert Slope		S_o =	0.004	m/m
Normal Flow Depth		Y_n =	0.064	m
Critical Flow Depth		Y_c =	0.137	m
Headwater Depth by Inlet Control				
Headwater Depth by Inlet Control		**HW-inlet=**	0.183	m
Headwater Depth by Outlet Control				
Tailwater Depth for Design		d =	0.219	m
Friction Loss Coefficient over Culvert Length		K_f =	0.100	
Sum of All Loss Coefficients		K_s =	1.920	
Headwater Depth by Outlet Control		**HW-outlet=**	0.137	m
Design Headwater Depth		**HW=**	**0.183**	m
HW/D Ratio =		**HW/D=**	**0.610**	

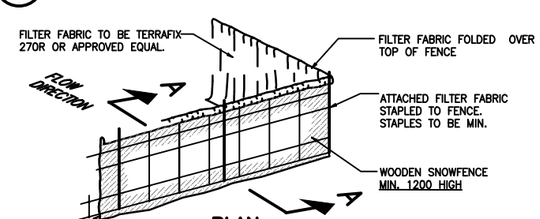
APPENDIX F: ESC PLAN

TORONTO (HEAD OFFICE)
25 Centurian Drive, Suite 201
Markham, ON, L3R 5N8
T: 416 229 2636 F: 416 229 6965

CALGARY
707 – 10TH AVE SW, SUITE 150
CALGARY, AB, T2R 0B3
T: 403 355 2295 F: 403 355 2297

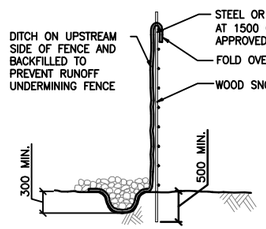


1 EROSION AND SEDIMENT CONTROL PLAN
P-302 SCALE: 1:300

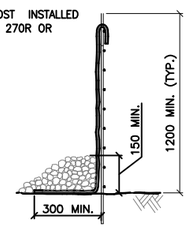


PLAN

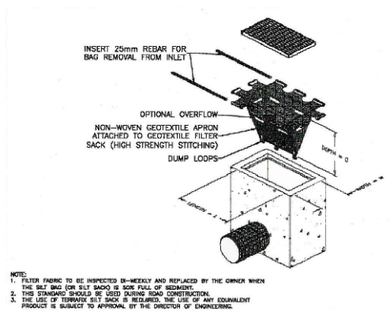
2 SEDIMENT CONTROL FENCE
P-302 SCALE: NTS



SECTION 'A'–'A'

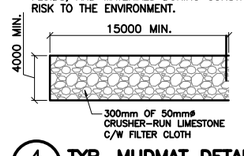


FROZEN CONDITION



NOTE:
1. FILTER FABRIC TO BE INSPECTED BI-WEEKLY AND REPLACED BY THE OWNER WHEN THE SILT BAG (OR SILT SACK) IS SOIL FULL OF SEDIMENT.
2. THIS STANDARD SHOULD BE USED DURING ROAD CONSTRUCTION.
3. THE USE OF TERRAFIX SILT SACK IS REQUIRED. THE USE OF ANY EQUIVALENT PRODUCT IS SUBJECT TO APPROVAL BY THE DIRECTOR OF ENGINEERING.

3 TYP. CATCHBASIN SEDIMENT PROTECTION DETAIL
P-302 SCALE: NTS



4 TYP. MUDMAT DETAIL
P-302 SCALE: NTS

EROSION & SEDIMENT CONTROL NOTES:

1. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS FROM THE CITY AND EXTERNAL AGENCIES PRIOR TO ANY SITE ALTERATION ACTIVITY.
2. PRIOR TO COMMENCEMENT OF ANY ON-SITE WORK/SOIL STRIPPING, EROSION AND SEDIMENT CONTROL (ESC) MEASURES, AS PER ACCEPTED SITE ALTERATION PLANS, MUST BE INSTALLED AND APPROVED BY THE DIRECTOR OF ENGINEERING. ADDITIONAL ESC MEASURES, IF REQUIRED, SHALL BE INSTALLED AS DIRECTOR OF ENGINEERING. THE ESC MEASURES SHALL REMAIN IN PLACE UNTIL DIRECTOR OF ENGINEERING FOR THEIR REMOVAL.
3. TREES ARE TO BE PRESERVED AS PER THE ACCEPTED TREE PRESERVATION PLANS.
4. NO CONSTRUCTION ACTIVITIES OR MACHINERY SHALL BE ALLOWED BEYOND THE SILT/SNOW FENCE OR LIMITS OF THE SUBDIVISION.
5. THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT DUST CONTROL MEASURES AND CONSTRUCTION PRACTICE GUIDELINES AS APPROVED BY THE CITY.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ESC MEASURES IN WORKING CONDITION AT ALL TIMES TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING. THE CONTRACTOR SHALL ROUTINELY INSPECT ALL ESC MEASURES AT A MINIMUM OF ONCE A WEEK AND AFTER EACH RAINFALL EVENT GREATER THAN 10mm TO ENSURE THE ESC MEASURES ARE IN PROPER WORKING CONDITIONS. ANY DAMAGES MUST BE REPAIRED WITHIN 24 HOURS.
7. ALL CONSTRUCTION VEHICLES MUST ENTER AND EXIT THE SITE ONLY FROM THE APPROVED ACCESS ROUTE(S) AS SHOWN ON THE ACCEPTED SITE ALTERATION PLANS.
8. CATCHBASIN SEDIMENT CONTROL MEASURE ARE TO BE INSTALLED IMMEDIATELY AFTER INSTALLATION OF CATCHBASINS.
9. ALL DISTURBED GROUND LEFT INACTIVE FOR OVER 30 DAYS SHALL BE VEGETATED, SUBJECT TO WEATHER CONDITIONS, BY SEEDING OR APPROVED EQUIVALENT TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.
10. ALL SOIL STOCKPILES IF REMAINING ON SITE FOR MORE THAN 30 DAYS SHALL BE VEGETATED, SUBJECT TO WEATHER CONDITIONS, BY SEEDING OR APPROVED EQUIVALENT TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.
11. STREET SWEEPING/CATCHBASIN CLEANING PROGRAM SHALL BE IMPLEMENTED UPON COMPLETION OF BASE ASPHALT TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.
12. ALL SOIL STOCKPILES SHALL BE SURROUNDED WITH SEDIMENT CONTROL FENCE. THE MAXIMUM SIDE SLOPES FOR STOCKPILES SHALL BE 1.5 (H) TO 1.0 (V). THE MAXIMUM HEIGHT OF STOCKPILE SHALL NOT EXCEED 3.0 m.
13. THE CONTRACTOR SHALL ENDEAVOR TO PREVENT MUD TRUCKING ONTO EXISTING RIGHT-OF-WAY AND SHALL PROVIDE CLEAN UP AT HIS/HER OWN EXPENSE AS DIRECTED BY THE DIRECTOR OF ENGINEERING.
14. THE CONTRACTOR SHALL CARE AND CONTROL SPILLS, FLUIDS, AND MATERIALS DURING CONSTRUCTION TO MINIMIZE RISK TO THE ENVIRONMENT.

GENERAL NOTES

1. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
2. DO NOT SCALE DRAWINGS.
3. REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGN ENGINEER AS APPLICABLE.
4. USE ONLY LATEST REVISED DRAWINGS OR THOSE THAT ARE MARKED "ISSUED FOR CONSTRUCTION".
5. DESIGN AND CONSTRUCTION OF THIS PROJECT SHALL COMPLY WITH THE PROVINCIAL AND LOCAL BUILDING CODES LATEST EDITION.
6. ALL WORKS AND MATERIALS USED SHALL COMPLY AS REQUIRED BY THE BUILDING CODE LATEST EDITION.
7. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS & SPECIFICATIONS.
8. EVERYTHING IS TO BE CONSIDERED NEW UNLESS SPECIFIED EXISTING OTHERWISE.

LEGEND

- EXISTING ELEVATION (×100.00)
- EXISTING CATCHBASIN
- EXISTING MANHOLE
- NEW CATCHBASIN
- NEW C.B./M.H.
- NEW MANHOLE
- PROPERTY LINE
- INLET PROTECTION
- SILT FENCE
- OVERLAND FLOW ROUTE
- PHASE 2

ISSUE TABLE

TO	FOR	DATE
SUNCOR	FOR REVIEW	24 FEB 23
CITY	RE-ISSUED FOR SPA	17 MAR 23

REVISION TABLE

REV.	DESCRIPTION	DRAWN	APP'D.	DATE
0	REVISED AS PER CLIENT COMMENTS	RP	JS	11 FEB 21
1	REVISED AS PER SITE PLAN AND CITY COMMENTS	BR	JS	15 JUL 22
2	REVISED AS PER SITE PLAN DEC 15,2022 AND CITY COMMENTS	MJ	JS	24 FEB 23
3	REVISED AS PER SITE PLAN MAR 14,2023 AND CITY COMMENTS	MJ	JS	14 MAR 23

ISSUE TABLE

TO	FOR	DATE
SUNCOR	75% REVIEW	11 NOV 20
SUNCOR	PRICING	04 DEC 20
CITY	ISSUED FOR SPA	18 DEC 20
SUNCOR	FOR REVIEW	08 JUL 22
CITY	RE-ISSUED FOR SPA	28 JUL 22

PLAN OF SURVEY
PART 1 - PLAN OF SURVEY OF
PART OF BLOCK 6
PLAN 4M-1566
AND
PART OF LOT 3
CONCESSION 1
GEOGRAPHIC TOWNSHIP OF HUNTLEY
CITY OF OTTAWA

KEY PLAN
NTS

METRIC
ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.. CONTRACTOR TO CHECK/VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK. ALL DESCREPANCIES TO BE REPORTED TO THE PROJECT DESIGNER. DO NOT SCALE DRAWINGS.

SEAL:

CONSULTANT:
J + B ENGINEERING INC.
TORONTO
21 CENTURION DR, UNIT 201
MARKHAM, ON L3R 0M3
416 329 2636
CALGARY
707-48TH AVE. SW
UNIT 200
CALGARY AB T2H 0R3
403 355 2295

PETRO-CANADA
A Suncor Energy Business

DRAWING TITLE:
EROSION AND SEDIMENT CONTROL PLAN

PROJECT:
PROMENADE PALLADIUM DRIVE
@ PROMENADE CAMPEAU DRIVE
OTTAWA, ON

DRAWN BY:	RP
DRAWING SCALE:	1:300
DATE DRAWN:	2020-10-13
CHECKED BY:	BR
APPROVED BY:	JS

CAD INFO.:
SHEET SIZE: D (559 x 864)
PETRO-CANADA CAD FILE No.
CONSULTANT CAD FILE No. 200258-P302
PLOT SCALE: 1:1
PLOT DATE
PLOT CONFIGURATION

STD No./OUTLET No.: 10565
P302

D07-12-21-0155

#18629

APPENDIX F: EMAIL CORRESPONDENCE WITH MVC

Mary Joseph <m.joseph@jandb-inc.com>

Enquiry regarding project at 8605 Campeau Drive, Ottawa

Mercedes Liedtke <mliedtke@mvc.on.ca> Thu, Mar 9, 2023 at 4:05 PM
To: Mary Joseph <m.joseph@jandb-inc.com>
Cc: James Sam <j.sam@jandb-inc.com>

Good afternoon Mary,

Thank you for the inquiry. As of January 1, 2023, MVCA is concentrating on water quantity reviews with respect to natural hazards. It would be best to contact the City in regard to the water quality requirements.

Please let me know if you have any questions.

Thank you,

Mercedes Liedtke, MSc.| Environmental Planner | Mississippi Valley Conservation Authority

10970 Highway 7, Carleton Place, ON K7C 3P1

www.mvc.on.ca | t. 613 253 0006 ext. 267 | f. 613 253 0122 | mliedtke@mvc.on.ca

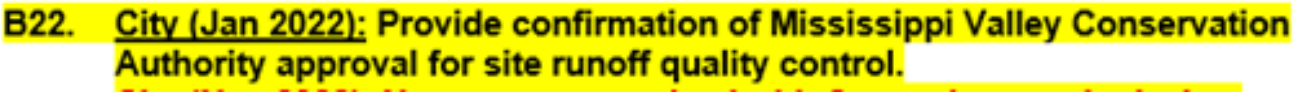
From: Mary Joseph <m.joseph@jandb-inc.com>
Sent: March 9, 2023 3:32 PM
To: Mercedes Liedtke <mliedtke@mvc.on.ca>
Cc: James Sam <j.sam@jandb-inc.com>
Subject: Enquiry regarding project at 8605 Campeau Drive, Ottawa

Hello Mercedes,

Good Evening and hope all is well with you!

J+B Engineering Inc is the Civil engineering consultant working on the project at **8605 Campeau Drive** and would appreciate it if you could advise us regarding the proposed site run-off quality control for the site.

Based on the comments received from the City (See screenshot below), we understand that we require approval from the Conservation regarding the quality control.


B22. City (Jan 2022): Provide confirmation of Mississippi Valley Conservation Authority approval for site runoff quality control.

We are proposing a Stormceptor EFO6 at the downstream of the storm network which will provide 85% TSS removal prior to discharge into the existing City storm network. In addition to that we are implementing best management practices upstream of the proposed stormceptor, such as installing an infiltration gallery, grass swales and a dry pond which would further enhance the quality of water. See attached draft Site Servicing Plan and the stormceptor design sheet/spec for your review.

Please let us know if this approach would be acceptable to the Conservation and we look forward to your comments/feedback.

Thanks and Regards,

Mary Joseph, EIT, M.Eng.

J+B Engineering Inc.

25 Centurian Drive, Suite 201

Markham, ON L3R 5N8

O: 416.229.2636 x 215
