SITE SERVICING AND STORMWATER MANAGEMENT REPORT

Project Address – 3817 – 3843 Innes Road, Vars

Owner/Client: **Bridor Development**
Address: **996-B St-Augustin Rd, Embrun ON**
City file Number:

By Blanchard Letendre Engineering Ltd.
Date – April 5, 2021
Our File Reference: 20-184

Submission
April 5, 2021

Previous Submission
December 17, 2020

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APPENDIX TABLE

1.0 INTRODUCTION

Blanchard Letendre Engineering Ltd. (BLEL) was retained by Bridor Development. to complete their site servicing and stormwater management for the new proposed site located at 3817 – 3843 Innes Road in Ottawa. This report summarized proposed site servicing and stormwater management and should be read in conjunction with the engineering drawings prepare by BLEL. This report and site servicing plan have been prepared based on the site plan proposed by P-Square Concepts and the site survey completed by Annis O'Sullivan Vollebekk. The information contained herein is based on the provided drawings and if there is any discrepancy with the survey or site plan, BLEL should be informed in order to verify the information and complete the changes if required.

2.0 SITE PLAN

The proposed site is to be located in Orleans, Ontario. As per the aerial picture in figure 1, the existing site consist of and green space area with four (4) existing building that will be demolished prior to construction. The property located at 3817- 3843 Innes Road, consist of approximately 0.661ha of undeveloped land. The land will be developed with three (3) new residential apartments building and be severed into three separate properties with two (2) shared entrances.

Figure 1- Existing site at 3817 – 3843 Innes Road, Orleans, Ontario

3.0 STORM WATER MANAGEMENT

3.1 Existing Site Condition

The existing site currently has no stormwater management nor storm service connection. The site currently drains uncontrolled towards Innes road where the stormwater generated from the site is captured by the road site catchbasin. The existing property naturally grades towards Innes road away from the residential development on the north and west portion of the property. There is an existing gras station at the east side of the property that is developed at a lower elevation than the existing property. Refer to BL Engineering drawing C400 for the pre-development drainage area and existing grading showing the current drainage of the site.

3.2 Proposed Storm Water Management

The development of the site will consist of adding three (3) new residential apartment building, where two of the buildings will consist of three (3) storeys apartment and the other will be a five (5) storeys apartments. The site will be modified by adding a total of 7268 square meter building (Block A = 2452m^2; Block B = 2508m^2 ; Block C = 2308m^2) asphalt parking and driving and amities areas. As the runoff coefficient will increase due to addition of hard surfaces, post-development stormwater quantity and quality will be implemented.

The site stormwater management has been prepared in correlation with the existing site grading. To minimize the fill and site work required, the stormwater management has been developed to follow the existing site grading. As the property naturally drains towards Innes Road, the proposed stormwater management will outlet to City storm sewer on Innes Road. The overland flow route has also been designed to convey the storm runoff towards Innes road.

The stormwater generated by the new hard surfaces will be directed to a series of catchbasins which will capture and covey the water runoff to existing the surrounding ditches. The catchment areas have been delineated as per the proposed grading plan. Refer to Appendix ‘A’, for the catchment area and runoff coefficient. In order to respect the 5 year pre-development allowable release rate, the outlets will be controlled by undersized 300mm diameter storm pipe which will act as an orifice and limit the flow outletting to City storm sewer on Innes road. By throttling the flow, stormwater retention will be completed with the use of overland ponding and underground storage which was designed to hold the 100 year storm event. Refer to Appendix ‘A’ for the stormwater flow and storage calculations.

3.3 Proposed Storm Water Management

The pre-development flow of the 5-year storm was calculated using a 5-year storm and a 10-minute time of concentration for the affected area. The pre-development flow of the 100-year storm was calculated using a 100-year storm and a 10-minute time of concentration for the affected area.

From intensity duration curves established for the Ottawa area, the intensity was evaluated at of 104.2 mm/hr for the 5yr predevelopment flow and 178.6mm/hr for the 100-year predevelopment flow. A run-off coefficient of 0.45 was used as per the evaluated, see Appendix 'A' – Pre-Development Drainage Area table.

Using the Rational Method and considering the tributary areas of the proposed (see Appendix 'A'), the pre-development allowable release rate for the site was evaluated at **93.85 L/s**. See also the Storm Sewer Design Sheet in Appendix 'A'.

Allowable Release Rate (Q) =	**2.78CIA (L/s)**
I_5 =	**$998.071 / (Tc + 6.053)^{0.814}$**
C =	0.45
I =	104.2 mm/hr
Tc =	10 min
Total =	0.661 ha
Allowable Release Rate=	**86.16 L/s**

3.4 Proposed Stormwater Quantity Control

The proposed stormwater management for the site will be achieve primarily through the use of underground pipe storage and overland surface ponding. The grading of the site has been designed to direct the stormwater towards the series of catchbasins connected to the underground stormwater chambers before outleting south into the 1350mm diameter storm city sewer. The proposed underground stormwater chambers and cathcbasins are shown on the attached drawings in Appendix 'E'.

The proposed site has been graded to outlet overland onto Innes Road on the south side of the property. As the site naturally grades from the north side to the south side, the grades have been adjusted to suit this profile, to minimize the grade raise of the site. All catchment areas were designed to directed the stormwater overland to the south-east corner and to will be conveyed captured through a series of parking catchbasins and landscaping drains with subdrains.

The stormwater generated from site will be discharged to the existing storm sewer on Innes road and be controlled using an undersized pipe which will throttle the flow direct to the municipal sewer. The proposed 300mm diameter pipe will release a total of **86.16 L/s** with a maximum head of 2.38m (HWL = 92.00) during the 100 year event. As the flow will be restricted, 130.44m^3 of stormwater storage will be required for this area. This storage will be provided with underground stormwater chambers and surface ponding. The underground storage has been designed to hold and convey the stormwater water to the sewer on Innes road. The underground chambers will prove 120.9 m^3 where as the remaining will be stored on the parking and driving areas. An additional 30.21m^3 of storage was designed overland which combined with the underground chambers (120.9 m^3 + 30.21m^3 = 151.11 m^3) can hold more than the minimum required storage. Refer to the underground chambers in Appendix 'D'.

The three (3) underground parking ramp will be drained with separate catchbasin that will capture and convey the storm water generated from the ramps to the underground chambers. Backflow preventers will be installed in the receiving catchbasins (MHCB03 and MHCB05) to prevent stormwater from ponding in the ramps area. Storage has been provided in each area to store the 100 year event when the underground chambers will fill during storm events greater than the 5 year.

3.4.1 Roof Drainage

The proposed roofs are flat roof with roof drains. Drain and scuppers will be installed to drain the water onto the pavement area.

3.4.2 Underground Chambers

The underground storage chambers have been designed to hold and convey the stormwater generated from the site. The underground chambers have been designed to hold most of the stormwater under the proposed parking/ driving area. The chambers, which have been designed as isolator rows, were designed to also provide some filtration which is favorable for the final site TSS. A total of 120.9 m^3 will be provide by the underground chambers. The chambers will be connected to the proposed manhole catchbasin which will facilitates the maintenance of the chambers. The maintenance of the chambers is to be in accordance with the manufacture. Refer to Appendix “D” for Stormwater Storage Chambers.

3.5 Proposed Stormwater Quality Control

A water quality control requirement of 80% TSS removal was set by the City of Ottawa. In order to meet the requirements, a storm treatment unit will be installed and the downstream end of the system. Using the Stormceptor sizing software, the EF06 was selected. The software generated report has been attached (See Appendix "D").

4.0 SANITARY SEWER DESIGN

4.1 Existing Site Conditions

The existing site is currently being service by a three separate service which services the existing three parcels and are connected to the existing 250mm diameter sanitary on Innes Road. The existing connection will be removed and reinstated with three new connection that will service the new buildings.

4.2 Existing Site Conditions

The new residential apartment building, which proposes 33 units for Block A, 31 units for Block B and 33 units for Block C will discharge to the city via three new 150mm diameter sanitary services. The services are to be located on the south face of the buildings and will discharge to the existing 250mm diameter city sewer running along Innes road. The proposed 150mm diameter service will be installed at a minimum of 1.00% slope directly to the city sewer. No monitoring manhole are proposed for these three new connections. Refer to drawing C300 – Site Servicing Plan for the existing and proposed sanitary service.

Based on the City of Ottawa Sanitary Design Guidelines, the sanitary peak loads were evaluated as follow; Block A: **0.88 L/s,** Block B: **0.84L/s** and Block C: **0.88L/s.** As per the City specific design parameters, the sanitary flow was evaluated based on the new building footprint and the total site area for each individual building. Refer to Appendix 'B' for the sanitary sewer design calculation and design parameters set by the City of Ottawa.

5.0 WATER CONNECTION DESIGN

5.1 Existing Site Conditions

The existing site is currently being service by a three separate 19mm diameter water service which services the existing three parcels and are connected to the existing 250mm diameter watermain on Innes Road. The existing connection will be removed and reinstated with three new connection that will service the new buildings. There is currently two (2) city fire hydrant at the front of the property. The two (2) hydrants are located on the south side of Innes Road both within the 90m radius from the building main entrance. Refer to drawing C300 – Site Servicing Plan for the existing and proposed water services and city existing infrastructure.

5.2 Proposed Domestic Water Service

The new residential apartment buildings water services were sized based on the City of Ottawa Design Guidelines and the AWWA Standards. Based on the number of fixtures proposed and on the average water demand for residential developments the daily water consumption was evaluated for the proposed building. As per the city guidelines, the average water demand per person of is **350L/c/d** was applied to the population of the new building. The daily and hourly peak factor of **2.5** and **2.2** respectively were applied to the water demand as stated in the City of Ottawa guideline. By using the average demand and peaking factors, the daily water demand for the new buildings were evaluated as follow:

	BLOCK A	BLOCK B	BLOCK C	UNITS
Average Water Demand =	**17640.00**	**16660.00**	**17640.00**	L/d
Maximum Daily =	**44100.00**	**41650.00**	**44100.00**	L/d
Maximum Hourly =	**97020.00**	**91630.00**	**97020.00**	L/d
Total Domestic Flow =	**1.12**	**1.06**	**1.12**	**L/s**
Total Fire Flow =	**145.00**	**81.67**	**145.00**	**L/s**

Refer to Appendix 'C' for the water flow calculation sheet.

5.3 Proposed Fire Demand

The new property will be serviced by a new fire hydrant located in front of Block B. Since the fire hydrants are located on the south side of Innes Road, the 45 meters of unobstructed path of travel is not possible hence the new fire hydrant will be installed. The fire hydrant will be installed in the city right of way and have a separate connection to the city 405mm diameter watermain.

The new residentials buildings Block A and Block C will not have a sprinkler system as it is not required in the building code. Hence the new services were sized to supply only the domestic water. Therefore the buildings Block A and Block C will be serviced with two (2) new 50mm water service which will connect to the existing 405mm diameter watermain on Innes Road. The new service will be installed at the south elevation of the new buildings and be placed in the same trench as the other services.

The new residentials buildings Block B will have a sprinkler system, the new services were sized to supply the fire flow. Based on the Ontario building code calculations, the water flow was evaluated at **81.67L/s** (refer to above table). Refer to Appendix 'C' for the fire flow calculation sheet. Therefore the proposed building Block B will be serviced with a new 150mm water service which will connect to the existing 405mm diameter watermain on Innes Road. The new service will be installed at the south elevation of the new buildings and be placed in the same trench as the other services.

5.4 Water Capacity Comments

The boundary conditions and HGL for hydraulic analysis for 3817 Innes was obtained from the city. See attached copy in Appendix 'E'. From the boundary conditions, the minimum HGL was evaluated at 130.3 m for the water main elevation at 91.6m and a maximum pressure estimate of 55.1 psi.

6.0 EROSION AND SEDIMENT CONTROL

During the construction, sediment and erosion protect will be implemented around the property to prevent any sediments from leaching off site. The construction and maintenance of the sediment

controls must comply with the Ontario Provision Standard Specification OPSS 577. Refer to drawing C100 – Erosion and Sediment Control for the perimeter fence proposed.

7.0 CONCLUSION AND LIMITATION OF REPORT

7.1 Stormwater Management

The stormwater management proposed for the site will maintain the site to its pre-development release rate conditions and meet the requirements from the City of Ottawa. The post development release rate will be maintained to its pre-development rate of **86.16 L/s** thought undersizing the outlet to the sewer main on Innes Road. Stormwater quantity control will be achieved with 120.90m^3 underground chamber and 30.21 m^3 overland. The stormwater quality control will be met through the use of a stormwater treatment unit and isolator rows in the underground chambers.

7.2 Sanitary Service

The current site will be services with three new 150mm sanitary connection onto Innes Road. The estimated sanitary flow of; Block A: **0.88 L/s,** Block B: **0.84L/s** and Block C: **0.88L/s,** for the new connections will be directed to the existing sanitary sewer along Innes Road.

7.3 Water Service

Currently the existing buildings on site are serviced with an existing 19mm diameter water service that will be replaced with two (2) new 50mm diameter water service and one (1) new 150mm diameter water service all to connected to the existing 406mm diameter main on Innes Road. The existing connections will be all be replaced with new water services. The water demand for the building was evaluated at: Block A: **1.12 L/s,** Block B: **1.06L/s** and Block C: **1.12L/s** and the fire flow demand at Block A: **145.00 L/s,** Block B: **81.67 L/s** and Block C: **145.00L/s.** Sprinkler system is proposed for Block B only. There will also be a new fire hydrant installed on the property at the front of Block B in the city right of way.

8.0 LIMITATION

This report was prepared for **Bridor Developement.**, and is only applicable for the property at 3817 – 3843 Innes Road, Ottawa.

Any changes to the existing site may require a review by Blanchard Letendre engineering Ltd. to ensure all information is consistent with the proposed design.

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

Sincerely Yours,

Guillaume Brunet, P. Eng.

Benjamin Falconer, E.I.T.

APPENDIX "A"
Stormwater Management Design

BLANCHARD LETENDRE
ENGINEERING

File No. 20-184
Project: Proposed Apartment Buildings
Project Address: 3817-3843 - Innes Road
Client: Bridor Development

Date: December 17, 2020
Designed: Guillaume Brunet
Checked: Guillaume Brunet
Drawing Reference: C200 & C300

STORM WATER MANAGEMENT DESIGN SHEET

SEWER DESIGN

LOCATION			AREA (ha)			FLOW					STORM SEWER DATA							
WATERSHED / STREET	From MH	To MH	C = 0.30	C = 0.80	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (l/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})
WS-11	GRASS	LCB10.2	0.050	0.000	0.020	0.08	0.08	10.00	104.19	8.11	200	PVC	0.25%	12.0	16.40	0.52	0.38	**0.49**
	LCB10.2	LCB10.1	0.000	0.000	0.000	0.00	0.08	10.38	102.21	7.96	200	PVC	0.25%	14.0	16.40	0.52	0.45	**0.49**
	LCB10.1	LCB09	0.000	0.000	0.000	0.00	0.08	10.38	102.21	7.96	200	PVC	0.25%	28.2	16.40	0.52	0.90	**0.49**
	LCB09	LCB08	0.000	0.000	0.000	0.00	0.08	11.28	97.87	7.62	200	PVC	0.25%	30.2	16.40	0.52	0.96	**0.46**
	LCB08	CBMH07	0.000	0.000	0.000	0.00	0.08	12.25	93.65	7.29	200	PVC	0.25%	14.2	16.40	0.52	0.45	**0.44**
WS-02 - WS-09 + WS-04	CBMH04	CBMH05	0.010	0.000	0.079	0.20	0.20	13.96	87.09	17.78	375	PVC	0.40%	13.6	110.89	1.00	0.23	**0.16**
WS-06 + WS-05	CBMH05	CBMH06	0.001	0.000	0.126	0.31	0.52	13.70	88.02	45.68	375	PVC	0.40%	15.7	110.89	1.00	0.26	**0.41**
WS-10	CBMH06	CBMH07	0.000	0.000	0.055	0.14	0.66	13.40	89.11	58.51	375	PVC	0.40%	17.8	110.89	1.00	0.30	**0.53**
WS-07	CBMH07	MH01	0.013	0.000	0.060	0.16	0.89	12.70	91.80	81.87	375	PVC	0.40%	42.1	110.89	1.00	0.70	**0.74**
WS-01 + WS-03	CBMH03	CBMH02	0.015	0.000	0.092	0.24	0.44	14.18	86.30	38.23	375	PVC	0.40%	15.7	110.9	1.00	0.26	**0.34**
WS-08	CBMH02	MH01	0.000	0.000	0.090	0.23	0.67	14.44	85.40	57.06	375	PVC	0.40%	74.8	110.9	1.00	1.24	**0.51**
WS-12	LCB14	LCB13	0.040	0.000	0.010	0.05	0.05	10.00	104.19	4.92	200	PVC	0.25%	24.8	16.40	0.52	0.79	**0.30**
	LCB13	LCB12	0.000	0.000	0.000	0.00	0.05	10.79	100.19	4.73	200	PVC	0.25%	25.5	16.40	0.52	0.81	**0.29**
	LCB12	LCB11	0.000	0.000	0.000	0.00	0.05	11.61	96.41	4.56	200	PVC	0.25%	20.4	16.40	0.52	0.65	**0.28**
	LCB11	MH01	0.000	0.000	0.000	0.00	0.05	12.26	93.61	4.42	200	PVC	0.25%	12.3	16.4	0.52	0.39	**0.27**
	MH01	TREATMENT	0.000	0.000	0.000	0.00	1.61	15.68	81.41	130.84	300	PVC	0.94%	3.1	93.8	1.33	0.04	**1.40**
	TREATMENT	CITY	0.000	0.000	0.000	0.00	1.61	15.72	81.29	130.65	300	PVC	0.94%	10.9	93.8	1.33	0.14	**1.39**

DESIGN PARAMETERS NOTES

Runoff Coefficient (C)

Grass	0.30
Gravel	0.80
Asphalt / rooftop	0.90

Q = 2.78 AIC, where
Q = Peak flow in Litres per second (L/s)
A = Area in hectares (ha)
I = Rainfall Intensity (mm/hr)
C = Runoff Coefficient

Ottawa Macdonald-Cartier International Airport IDF curve
$I_5 = 998.071 / (T_c + 6.053)^{0.814}$
Min. velocity = 0.76 m/s
Manning's "n" = 0.013

BLANCHARD LETENDRE
ENGINEERING

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STORM WATER MANAGEMENT DESIGN SHEET

SEWER DESIGN

LOCATION		MANHOLE INFORMATION						
From MH	To MH	Up Invert (m)	Down Invert (m)	T/G Up Stream (m)	T/G Down Stream	Up Depth obv (m)	Down Depth obv (m)	Up Depth inv (m)
GRASS	LCB10	90.76	90.73	92.10	92.10	1.14	1.17	1.14
LCB10	LCB09	90.67	90.60	92.10	92.00	1.23	1.20	1.23
LCB09	LCB08	90.54	90.47	92.00	92.00	1.26	1.33	1.26
LCB08	CBMH07	89.87	89.83	92.00	92.00	1.93	1.97	1.93
CBMH04	CBMH05	89.77	89.72	92.00	91.85	2.03	1.76	2.03
CBMH05	CBMH06	89.66	89.60	91.85	91.95	1.82	1.98	1.82
CBMH06	CBMH07	89.54	89.46	91.95	91.80	2.04	1.96	2.04
CBMH07	MH01	89.40	89.35	91.80	91.90	2.02	2.18	2.02
CBMH03	CBMH02	89.77	89.71	91.90	91.90	1.75	1.82	1.75
CBMH02	MH01	89.65	89.35	91.90	92.00	1.88	2.28	1.88
LCB14	LCB13	90.68	90.61	92.00	92.00	0.95	1.01	0.95
LCB13	LCB12	90.55	90.49	92.00	92.00	1.07	1.51	1.07
LCB12	LCB11	90.43	90.38	92.00	92.00	1.19	1.32	1.19
LCB11	MH01	89.38	89.35	92.00	92.00	2.24	2.28	2.24
MH01	TREATMENT	87.55	87.52	92.00		4.15		4.15
TREATMENT	CITY	87.47	87.37	92.00		4.23		4.23

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PRE-DEVELOPMENT DRAINAGE AREA (AFFECTED AREA)

Catchment Area	Runoff Coefficient			Total Area (ha)	Combined C
	C = 0.3	C = 0.80	C = 0.90		
E-01	0.501	0.000	0.160	0.661	0.45
TOTAL	0.501	0.000	0.160	0.661	0.45

POST-DEVELOPMENT DRAINAGE AREA

Catchment Area	Runoff Coefficient			Total Area (ha)	Combined C
	C = 0.30	C = 0.80	C = 0.90		
WS-01	0.015	0.000	0.090	0.105	0.81
WS-02	0.010	0.000	0.077	0.087	0.83
WS-03 - Ramp	0.000	0.000	0.002	0.002	0.90
WS-04 - Ramp	0.000	0.000	0.002	0.002	0.90
WS-05 - Ramp	0.000	0.000	0.002	0.002	0.90
WS-06	0.001	0.000	0.034	0.035	0.88
WS-07	0.013	0.000	0.060	0.073	0.79
WS-08 - Roof	0.000	0.000	0.090	0.090	0.90
WS-09 - Roof	0.000	0.000	0.055	0.055	0.90
WS-10 - Roof	0.000	0.000	0.090	0.090	0.90
WS-11	0.050	0.000	0.020	0.070	0.47
WS-12	0.040	0.000	0.010	0.050	0.42
TOTAL	0.129	0.000	0.532	0.661	0.78

RUNOFF COEFFICIENT (C)

Grass	0.30
Gravel	0.80
Asphalt / rooftop	0.90

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STORM WATER MANAGEMENT DESIGN SHEET
5 YEAR STORM EVENT

PRE-DEVELOPMENT STORMATER MANAGEMENT

Runoff	Catchment Area	Area			$\sum R_5$
Un-Controlled	EWS-01	0.661	ha	R=	0.45
	Total Uncontrolled =	**0.661**	**ha**	**∑R=**	**0.45**

PRE-DEVELOPMENT ALLOWABLE RELEASE RATE

Q = 2.78CIA (L/s)

$$\mathbf{I_5 = 998.071 / (Tc + 6.053)^{0.814}}$$

C =	0.45	up to a maximum of 0.5 as per City of Ottawa Sewer Design Guidelines
I =	104.2	mm/hr
Tc =	10	min
Total =	0.661	ha
Allowable Release Rate=	**86.16**	**L/s**

POST-DEVELOPMENT STORMATER MANAGEMENT

Runoff	Catchment Area	Area			$\sum R_5$	$\sum R_{100}$
Controlled	WS-01	0.105	ha	R=	0.81	1.00
	WS-02	0.087	ha	R=	0.83	1.00
	WS-03 - Ramp	0.002	ha	R=	0.90	1.00
	WS-04 - Ramp	0.002	ha	R=	0.90	1.00
	WS-05 - Ramp	0.002	ha	R=	0.90	1.00
	WS-06	0.035	ha	R=	0.88	1.00
	WS-07	0.073	ha	R=	0.79	0.99
	WS-08 - Roof	0.090	ha	R=	0.90	1.00
	WS-09 - Roof	0.055	ha	R=	0.90	1.00
	WS-10 - Roof	0.090	ha	R=	0.90	1.00
	WS-11	0.070	ha	R=	0.47	0.59
	WS-12	0.050	ha	R=	0.42	0.53
	Total Contolled =	**0.661**	**ha**	**∑R=**	**0.78**	**0.92**

$$\mathbf{I_5 = 998.071 / (Tc + 6.053)^{0.814}}$$

* WS-09 will not be accounted for as it will remain unaffected

		REQUIRED STORAGE				
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**
10	104.2	149.92	38.26	86.16	0.00	86.16
15	83.6	120.23	30.66	86.16	0.00	86.16
20	70.3	101.08	17.91	86.16	0.00	86.16
25	60.9	87.62	2.20	86.16	0.00	86.16
30	53.9	77.60	0.00	86.16	0.00	86.16
35	48.5	69.81	0.00	86.16	0.00	86.16
40	44.2	63.58	0.00	86.16	0.00	86.16
45	40.6	58.46	0.00	86.16	0.00	86.16
50	37.7	54.18	0.00	86.16	0.00	86.16
60	32.9	47.40	0.00	86.16	0.00	86.16
70	29.4	42.26	0.00	86.16	0.00	86.16
80	26.6	38.22	0.00	86.16	0.00	86.16
90	24.3	34.95	0.00	86.16	0.00	86.16
500	6.3	9.04	0.00	86.16	0.00	86.16
720	4.7	6.74	0.00	86.16	0.00	86.16
1440	2.7	3.84	0.00	86.16	0.00	86.16

Storage Volume = (Controlled Runoff - Controlled RR)/1000 * (Time*60s)

STORMATER STORAGE REQUIREMENTS

Total Storage Required =	**38.26 m^3**
Surface Ponding =	30.21 m^3
Underground Chambers =	120.90 m^3
Total Available Storage =	**151.11 m^3**

BLANCHARD LETENDRE
ENGINEERING

File No.	20-184	**Date:**	December 17, 2020
Project:	Proposed Apartment Buildings	**Designed:**	Guillaume Brunet
Project Address:	3817-3843 - Innes Road	**Checked:**	Guillaume Brunet
Client:	Bridor Development	**Drawing Reference:**	C200 & C300

STORM WATER MANAGEMENT DESIGN SHEET
100 YEAR STORM EVENT

PRE-DEVELOPMENT STORMATER MANAGEMENT

Runoff	Catchment Area	Area			$\sum R_5$
Un-Controlled	EWS-01	0.661	ha	R=	0.45
	Total Uncontrolled =	**0.661**	**ha**	**∑R=**	**0.45**

PRE-DEVELOPMENT ALLOWABLE RELEASE RATE

Q = 2.78CIA (L/s)

$$\mathbf{I_5 = 998.071 / (Tc + 6.053)^{0.814}}$$

C =	0.45	up to a maximum of 0.5 as per City of Ottawa Sewer Design Guidelines
I =	104.2	mm/hr
Tc =	10	min
Total =	0.661	ha

Allowable Release Rate= **86.16** **L/s**

POST-DEVELOPMENT STORMATER MANAGEMENT

Runoff	Catchment Area	Area			$\sum R_5$	$\sum R_{100}$
	WS-01	0.105	ha	R=	0.81	1.00
	WS-02	0.087	ha	R=	0.83	1.00
	WS-03 - Ramp	0.002	ha	R=	0.90	1.00
	WS-04 - Ramp	0.002	ha	R=	0.90	1.00
	WS-05 - Ramp	0.002	ha	R=	0.90	1.00
	WS-06	0.035	ha	R=	0.88	1.00
	WS-07	0.073	ha	R=	0.79	0.99
	WS-08 - Roof	0.090	ha	R=	0.90	1.00
	WS-09 - Roof	0.055	ha	R=	0.90	1.00
	WS-10 - Roof	0.090	ha	R=	0.90	1.00
	WS-11	0.070	ha	R=	0.47	0.59
	Total Contolled =	**0.611**	**ha**	**∑R=**	**0.81**	**0.95**

$$\mathbf{I_{100} = 1735.688 / (Tc + 6.014)^{0.820}}$$

		REQUIRED STORAGE				
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**
10	178.6	288.76	121.56	86.16	0.00	86.16
15	142.9	231.09	130.44	86.16	0.00	86.16
20	120.0	193.98	129.39	86.16	0.00	86.16
25	103.8	167.94	122.67	86.16	0.00	86.16
30	91.9	148.57	112.34	86.16	0.00	86.16
35	82.6	133.55	99.51	86.16	0.00	86.16
40	75.1	121.52	84.88	86.16	0.00	86.16
45	69.1	111.67	68.88	86.16	0.00	86.16
50	64.0	103.43	51.80	86.16	0.00	86.16
60	55.9	90.39	15.24	86.16	0.00	86.16
90	41.1	66.48	0.00	86.16	0.00	86.16
120	32.9	53.20	0.00	86.16	0.00	86.16
360	13.7	22.19	0.00	86.16	0.00	86.16
500	*10.5*	17.01	0.00	86.16	0.00	86.16
720	7.8	12.65	0.00	86.16	0.00	86.16

Storage Volume = (Controlled Runoff - Controlled RR)/1000 * (Time*60s)

STORMATER STORAGE REQUIREMENTS

Total Storage Required =	**130.44 m^3**
Surface Ponding =	30.21 m^3
Underground Chambers =	120.90 m^3
Total Available Storage =	**151.11 m^3**

APPENDIX "B"
Sanitary Design

BLANCHARD LETENDRE
ENGINEERING

File No. 20-184
Project: Proposed Apartment Buildings
Project Address: 3817-3843 - Innes Road
Client: Bridor Development

Date: December 17, 2020
Designed: Guillaume Brunet
Checked: Guillaume Brunet
Drawing Reference: C200 & C300

SANITARY DESIGN SHEET
SEWER DESIGN

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE						MANHOLE	
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE AREA (Ha)	CUMMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)		LENGTH (m)	DIA. (mm)	MATERAIL	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	UP INVERT (m)	DOWN INVERT (m)
SITE	PROP. BLDG C	CITY	0.240	50.4	0.24	50.4	4.0	0.82	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.24	0.24	0.07	0.88	25.3	150	PVC	1.00%	15.23	0.86	86.85	86.60
SITE	PROP. BLDG B	TRUNK	0.240	47.6	0.24	47.6	4.0	0.77	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.24	0.24	0.07	0.84	25.3	150	PVC	1.00%	15.23	0.86	86.90	86.65
SITE	PROP. BLDG A	TRUNK	0.240	50.4	0.24	50.4	4.0	0.82	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.24	0.24	0.07	0.88	25.3	150	PVC	1.00%	15.23	0.86	87.06	86.81

DESIGN PARAMETERS NOTES

Average Daily Flow =	350	L/p/day
Commercial and Institutional Flow =	50000	L/ha/da
Industrial Flow =	35000.00	L/ha/da
Maximum Resedential Peak Flow =	4	
Commection and Intitutional Peak Factor =	1.5	

Industrial Peak Factor =	7	as per Appendix 4-B
Extraneous Flow =	0.28	L/s/ha
Minimum Velocity =	0.76	m/s
Mannings n =	0.013	

Appartments:	Person Per Unit	Building C	Building B	Building A
Bachelor =	1.4	0	0	0
1 Bedroom =	1.4	27	25	27
2 Bedroom =	2.1	6	6	6
3 Bedroom =	3.1	0	0	0

APPENDIX "C"
Watermain Design

BLANCHARD LETENDRE
ENGINEERING

File No.	20-184	**Date:**	April 5, 2021
Project:	Proposed Apartment Buildings	**Designed:**	Guillaume Brunet
Project Address:	3817-3843 - Innes Road	**Checked:**	Guillaume Brunet
Client:	Oligo Developemtn	**Drawing Reference:**	C200 & C300

WATER CONSUMPTION CALCULATION

	BLOCK A	BLOCK B	BLOCK C	
Total Building Floor Area =	**892.05**	**557.05**	**892.05**	m^2
Site Total Area =	**0.24**	**0.24**	**0.24**	ha
Total Population =	50.40	47.60	50.40	ea.
Average Demand Per People =	350	350	350	L/c/d
Average Water Demand =	**17640.00**	**16660.00**	**17640.00**	L/d
Maximum Daily Peak Factor =	2.5	2.5	2.5	* As per City of Ottawa
Maximum Daily Residential =	**44100.00**	**41650.00**	**44100.00**	L/d
Maximum Hourly Peak Factor =	2.2	2.2	2.2	* As per City of Ottawa
Maximum Hourly Residentiall =	**97020.00**	**91630.00**	**97020.00**	L/d
Total Domestic Flow =	**1.12**	**1.06**	**1.12**	**L/s**
Total Fire Flow =	**145.00**	**81.67**	**145.00**	**L/s**

Appartments:	Person Per Unit	Building C	Building B	Building A
Bachelor =	1.4	0	0	0
1 Bedroom =	1.4	27	25	27
2 Bedroom =	2.1	6	6	6
3 Bedroom =	3.1	0	0	0
		50.40	**47.60**	**50.40**

BLOCK A	1 Bedroom	2 Bedroom	Unit Counts	WSFU	Total
Unrinal Flush Tank	1	1	33	2	66
Sinks	2	2	66	1	66
Bathub	1	1	33	4	132
Diswasher	1	1	33	1.5	49.5
Washing Machine	1	1	33	2	66
Total					**379.5**

BLOCK B	1 Bedroom	2 Bedroom	Unit Counts	WSFU	Total
Unrinal Flush Tank	1	1	31	2	62
Sinks	2	2	62	1	62
Bathub	1	1	31	4	124
Diswasher	1	1	31	1.5	46.5
Washing Machine	1	1	31	2	62
Total					**356.5**

BLOCK C	1 Bedroom	2 Bedroom	Unit Counts	WSFU	Total
Unrinal Flush Tank	1	1	33	2	66
Sinks	2	2	66	1	66
Bathub	1	1	33	4	132
Diswasher	1	1	33	1.5	49.5
Washing Machine	1	1	33	2	66
Total					**379.5**

BLANCHARD LETENDRE
ENGINEERING

File No.	20-184	**Date:**	April 5, 2021
Project:	Proposed Apartment Buildings	**Designed:**	Guillaume Brunet
Project Address:	3817-3843 - Innes Road	**Checked:**	Guillaume Brunet
Client:	Oligo Developemtn	**Drawing Reference:**	C200 & C300

BLOCK A & C

Term	Options	Multiplier	Choose:	Value	unit	Fire Flow
Coefficient C related to the type of construction	Wood Frame	1.5	Non-combustible construction	0.8		
	Ordinary Construction	1.0				
	Non-combustible construction	0.8				
	Fire resistive construction <2 hrs	0.7				
	Fire resistive construction >2 hrs	0.6				
Type of housing	Single family dwelling	0	Building - no. of units per floor	12	unit	
	Townhouse - no. of units	0				
	Building - no. of units per floor	2				
	Number of floors excluding the basement			3	floor	
	Floor space per unit	1	892	894	sq.m.	
Required fire flow	**Fire Flow = 220 x C x Area^0.5**				L/min	**9,115**
					L/s	152
Occupancy hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15		
	Limited combustible	-0.15				
	Combustible	0				
	Free burning	0.15			L/min	**7,747**
	Rapid burning	0.25			L/s	129
Sprinkler reduction	Sprinklers (NFPA13)	-0.30	False	0		
	Water supply is standard for both the system and fire department hose lines	-0.10	False	0	L/min	**6,973**
	Fully supervised system	-0.10	True	-0.1	L/s	116
Exposure distance between units	North side	Over 45m	0			
	East side	10.1 to 20m	0.15			
	South side	Over 45m	0		L/min	**8,716**
	West side	20.1 to 30m	0.1	0.25	L/s	145
			Minimum required fire flow rate (rounded to nearest 100)		L/min	**8,700**
			Minimum required fire flow rate		L/s	**145**
			Required duration of fire flow		min	**30**

BLANCHARD LETENDRE
ENGINEERING

File No.	20-184	**Date:**	April 5, 2021
Project:	Proposed Apartment Buildings	**Designed:**	Guillaume Brunet
Project Address:	3817-3843 - Innes Road	**Checked:**	Guillaume Brunet
Client:	Oligo Developemtn	**Drawing Reference:**	C200 & C300

BLOCK B

Term	Options	Multiplier	Choose:	Value	unit	Fire Flow
Coefficient C related to the type of construction	Wood Frame	1.5	Non-combustible construction	0.8		
	Ordinary Construction	1.0				
	Non-combustible construction	0.8				
	Fire resistive construction <2 hrs	0.7				
	Fire resistive construction >2 hrs	0.6				
Type of housing	Single family dwelling	0	Building - no. of units per floor	7	unit	
	Townhouse - no. of units	0				
	Building - no. of units per floor	2				
	Number of floors excluding the basement			5	floor	
	Floor space per unit	1	557	557	sq.m.	
Required fire flow	**Fire Flow = 220 x C x Area^0.5**				L/min	**9,288**
					L/s	155
Occupancy hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15		
	Limited combustible	-0.15				
	Combustible	0				
	Free burning	0.15			L/min	**7,895**
	Rapid burning	0.25			L/s	132
Sprinkler reduction	Sprinklers (NFPA13)	-0.30	True	-0.3		
	Water supply is standard for both the system and fire department hose lines	-0.10	True	-0.1	L/min	**3,948**
	Fully supervised system	-0.10	True	-0.1	L/s	66
Exposure distance between units	North side	Over 45m	0			
	East side	10.1 to 20m	0.15			
	South side	Over 45m	0		L/min	**4,935**
	West side	20.1 to 30m	0.1	0.25	L/s	82
				Minimum required fire flow rate (rounded to nearest 100)	L/min	**4,900**
				Minimum required fire flow rate	L/s	**82**
				Required duration of fire flow	min	**30**

APPENDIX "D"
Underground Chambers & Stormwater Treatment Unit

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	HAIDER NASRULLAH 647-850-9417 HAIDER.NASRULLAH@ADS-PIPE.COM
ADS SALES REP:	MICHAEL REID 613-882-4186 MICHAEL.REID@ADS-PIPE.COM
PROJECT NO:	S201666
ADS SITE COORDINATOR:	MATTHEW BEGHIN 519-710-3687 MATTHEW.BEGHIN@ADS-PIPE.COM

ADVANCED DRAINAGE SYSTEMS, INC.

SiteASSIST™ by StormTech

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3817-3843 INNES ROAD

EMBRUN, ON.

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 150 mm (6") SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 20-50 mm (3/4-2").
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT

43	STORMTECH SC-740 CHAMBERS
14	STORMTECH SC-740 END CAPS
152	STONE ABOVE (mm)
152	STONE BELOW (mm)
40	% STONE VOID
120.9	**INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED)**
204.8	SYSTEM AREA (m²)
191.0	SYSTEM PERIMETER (m)

PROPOSED ELEVATIONS - HH01 TO MHCB02

92.190	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.362	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.209	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.209	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.209	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
89.904	TOP OF STONE:
89.752	TOP OF SC-740 CHAMBER:
89.308	300 mm TOP MANIFOLD INVERT:
89.020	300 mm ISOLATOR ROW INVERT:
88.990	BOTTOM OF SC-740 CHAMBER:
88.838	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB02 TO MHCB03

92.320	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.492	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.339	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.339	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.339	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.034	TOP OF STONE:
89.882	TOP OF SC-740 CHAMBER:
89.150	300 mm ISOLATOR ROW INVERT:
89.120	BOTTOM OF SC-740 CHAMBER:
88.968	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB04 TO MHCB05

92.590	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.762	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.609	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.609	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.609	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.304	TOP OF STONE:
90.152	TOP OF SC-740 CHAMBER:
89.408	250 mm BOTTOM CONNECTION INVERT:
89.420	300 mm ISOLATOR ROW INVERT:
89.390	BOTTOM OF SC-740 CHAMBER:
89.238	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB05 TO MHCB06

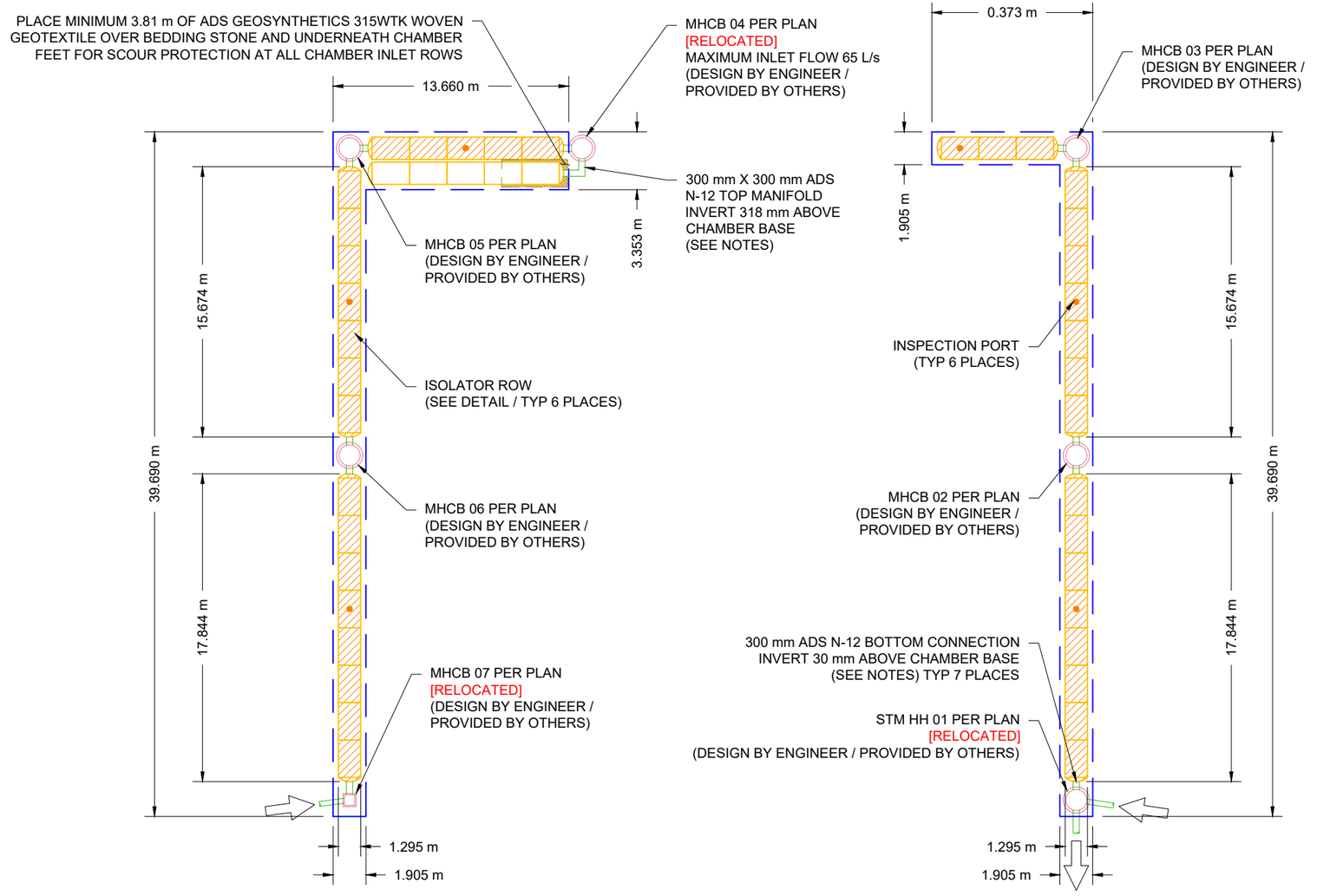
92.740	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.912	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.759	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.759	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.759	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.454	TOP OF STONE:
90.302	TOP OF SC-740 CHAMBER:
89.570	300 mm ISOLATOR ROW INVERT:
89.540	BOTTOM OF SC-740 CHAMBER:
89.388	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB06 TO MHCB07

92.870	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
91.042	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.889	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.889	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.889	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.584	TOP OF STONE:
90.432	TOP OF SC-740 CHAMBER:
89.700	300 mm ISOLATOR ROW INVERT:
89.670	BOTTOM OF SC-740 CHAMBER:
89.518	BOTTOM OF STONE:

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.



3817-3843 INNES ROAD
EMBRUN, ON.

DATE: 09/16/20 | DRAWN: RCT | CHECKED: NPB | PROJECT #: S201666

DATE	DRWN	CHKD	DESCRIPTION
10/06/20	BRE	NPB	REVISED PER COMMENTS
09/17/20	RCT	NPB	REVISED SCALE PER COMMENTS

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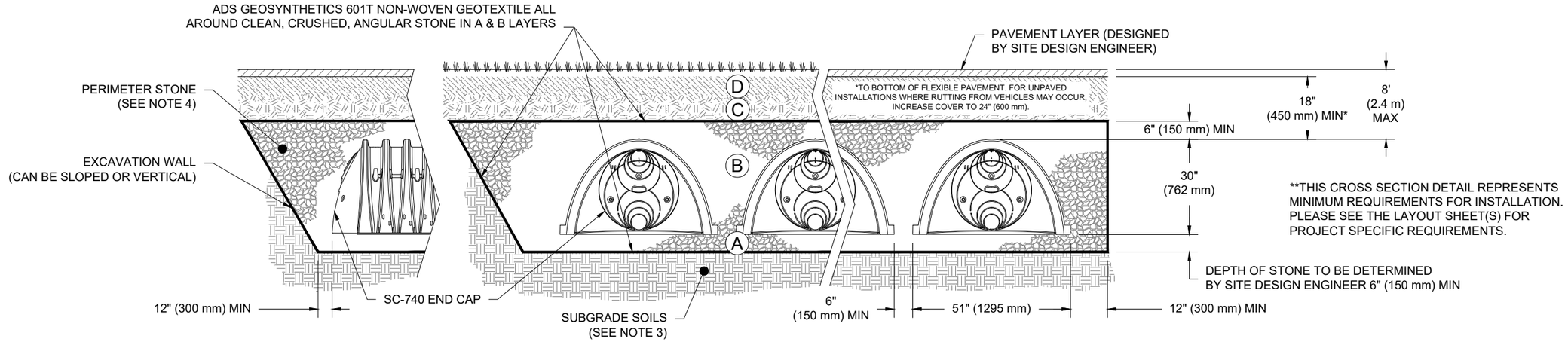
4640 TRUEMAN BLVD
HILLIARD, OH 43026

SCALE = 1 : 300

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

3817-3843 INNES ROAD
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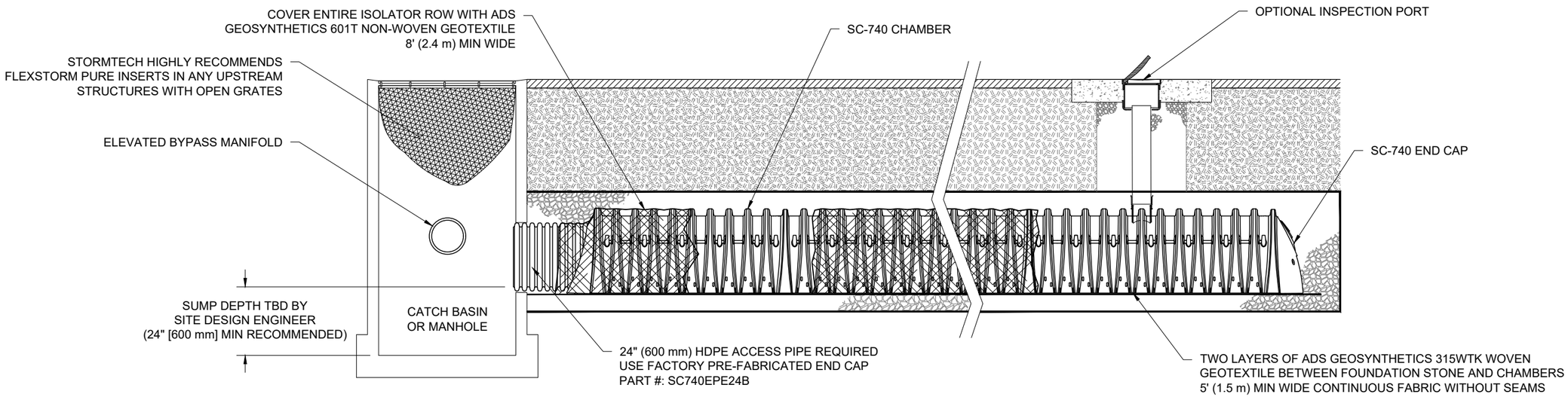


SC-740 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

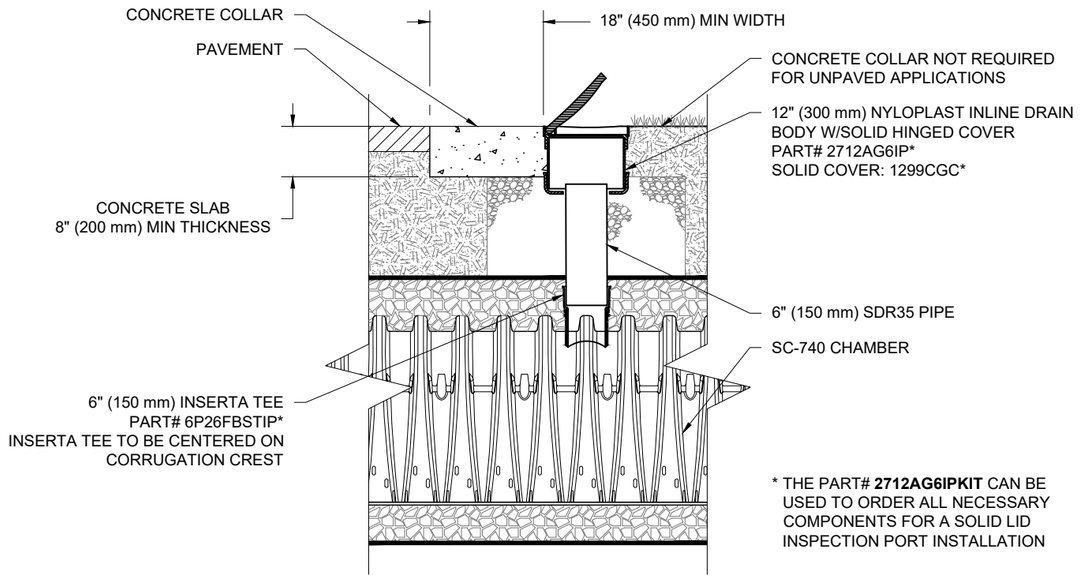
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

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PROJECT #: S201666 | CHECKED: NPB

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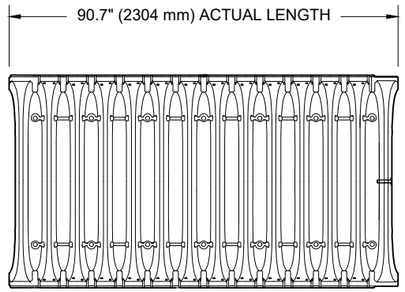
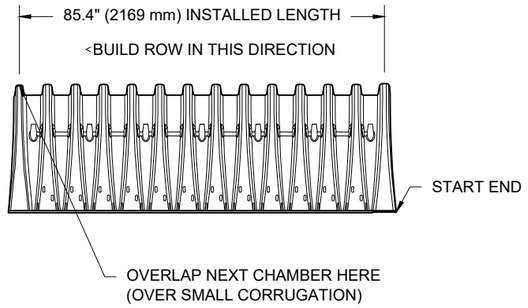
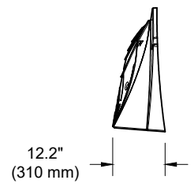
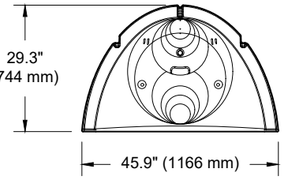
SC-740 TECHNICAL SPECIFICATION

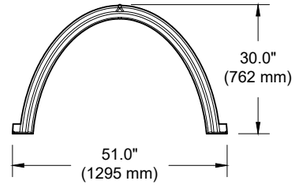
NTS







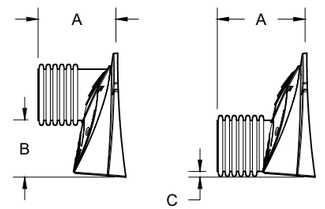




NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

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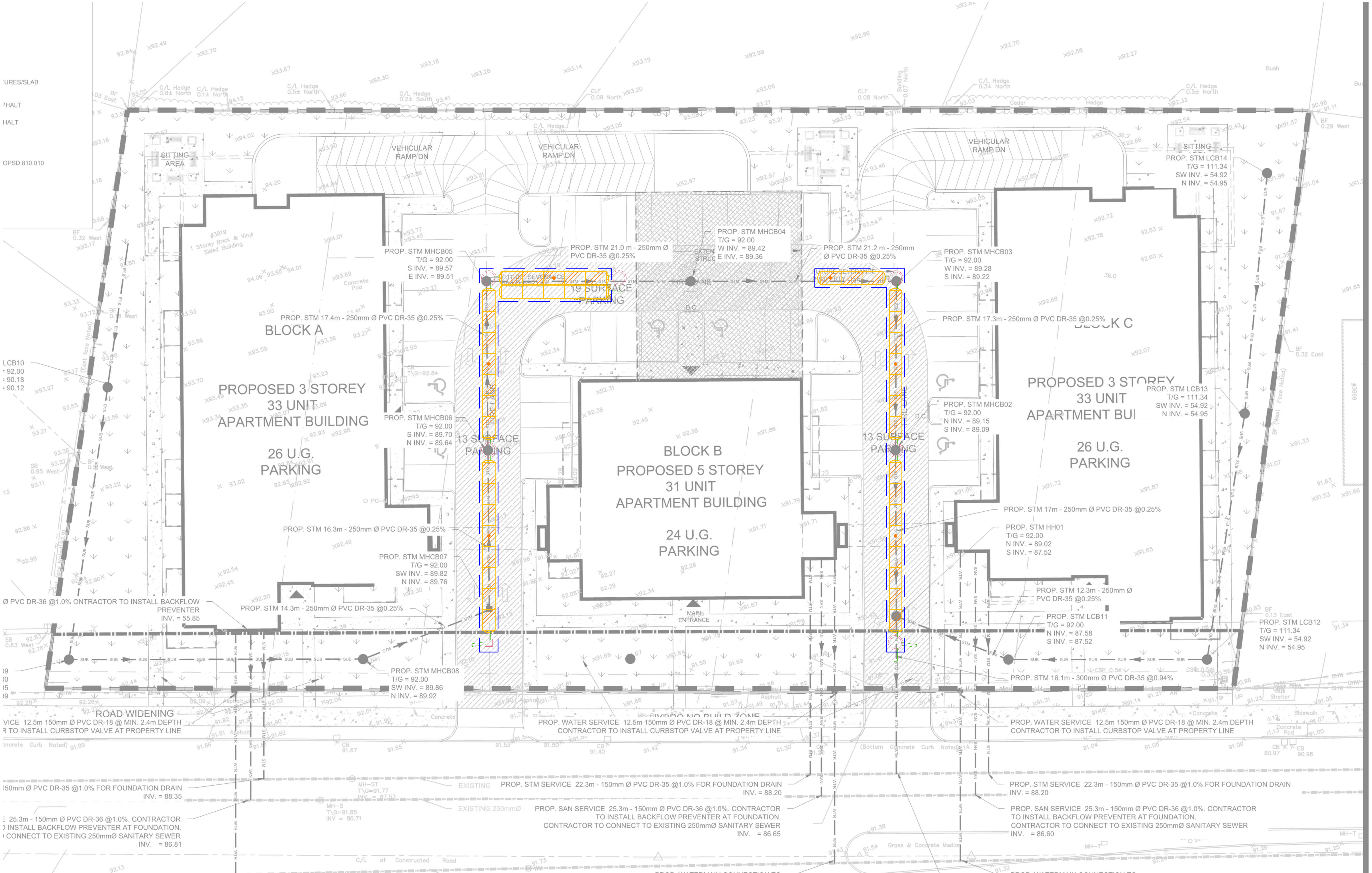
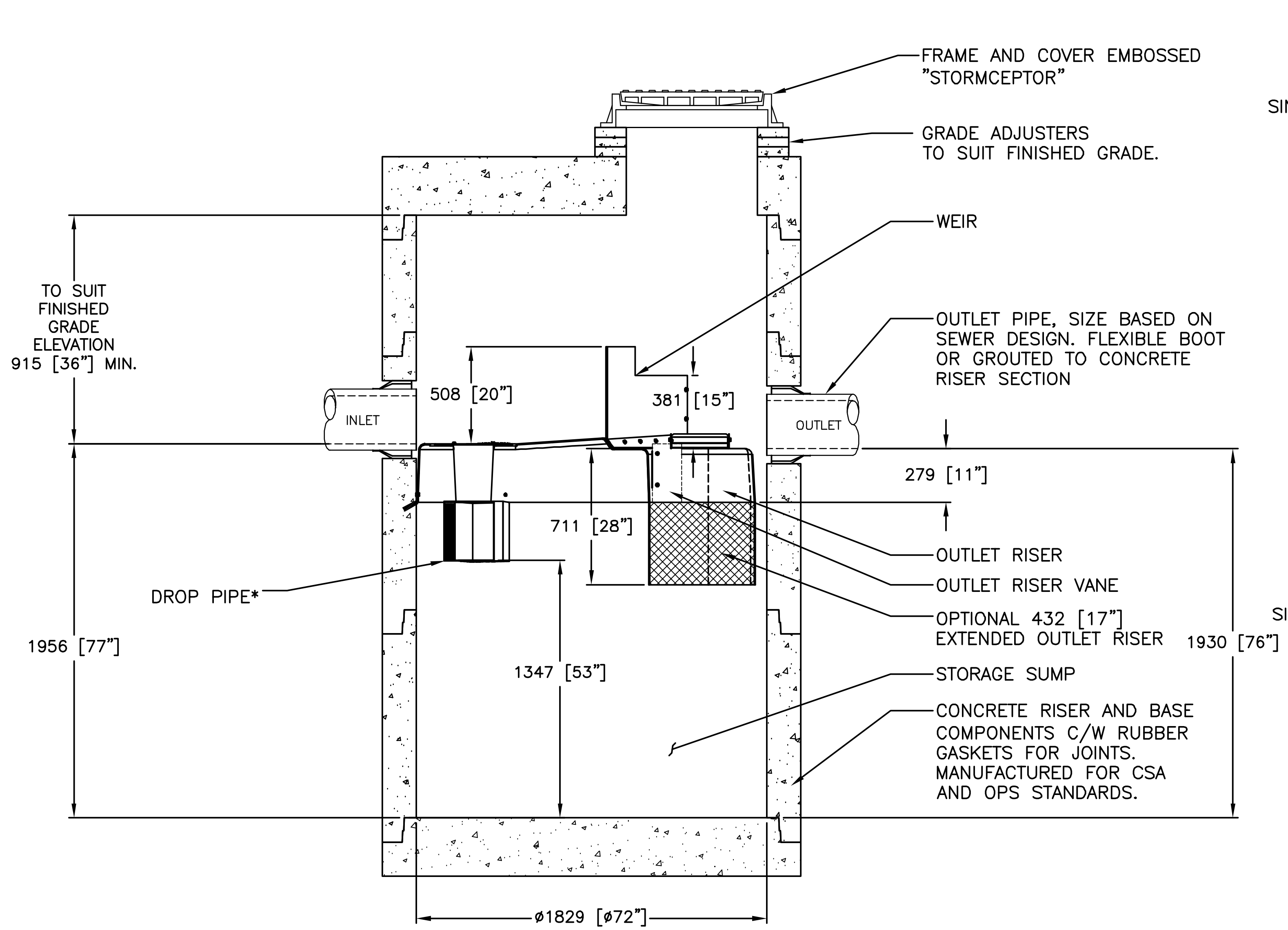
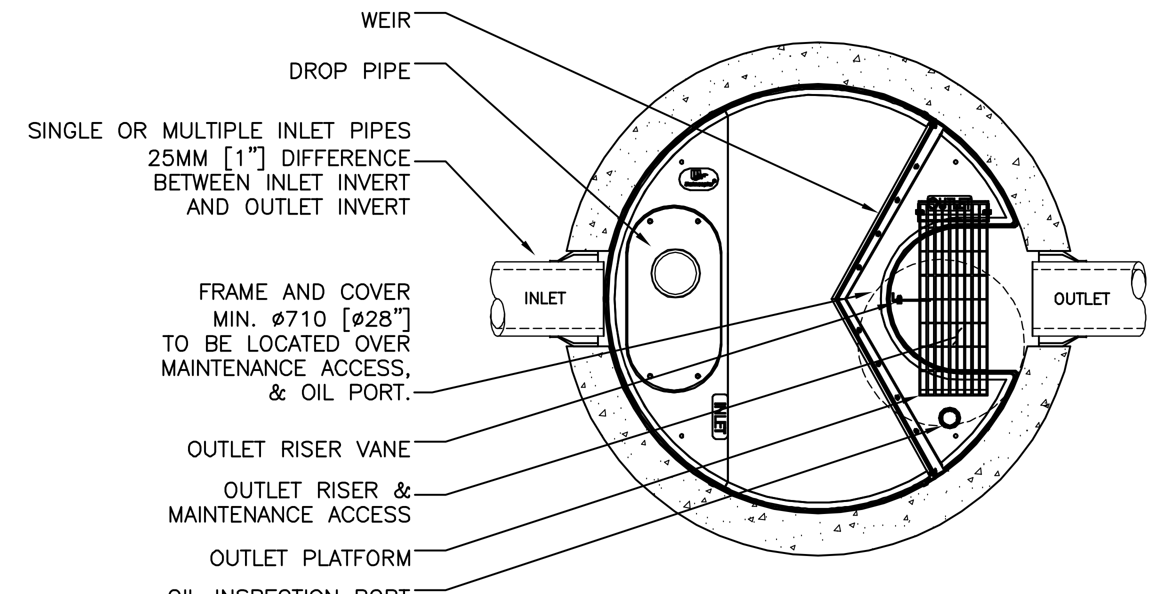


VEHICULAR RAMP DN
VEHICULAR RAMP DN
VEHICULAR RAMP DN
SITTING AREA
SITTING
BLOCK A
PROPOSED 3 STOREY
33 UNIT
APARTMENT BUILDING
26 U.G.
PARKING
BLOCK B
PROPOSED 5 STOREY
31 UNIT
APARTMENT BUILDING
24 U.G.
PARKING
BLOCK C
PROPOSED 3 STOREY
33 UNIT
APARTMENT BUI
26 U.G.
PARKING
19 SURFACE PARKING
13 SURFACE PARKING
13 SURFACE PARKING
MAIN ENTRANCE
ROAD WIDENING
PROP. STM MHCB05
T/G = 92.00
S INV. = 89.57
E INV. = 89.51
PROP. STM 21.0 m - 250mm Ø PVC DR-35 @0.25%
PROP. STM MHCB04
T/G = 92.00
W INV. = 89.42
E INV. = 89.36
PROP. STM 21.2 m - 250mm Ø PVC DR-35 @0.25%
PROP. STM MHCB03
T/G = 92.00
W INV. = 89.28
S INV. = 89.22
PROP. STM LCB14
T/G = 111.34
SW INV. = 54.92
N INV. = 54.95
PROP. STM 17.4m - 250mm Ø PVC DR-35 @0.25%
PROP. STM 17.3m - 250mm Ø PVC DR-35 @0.25%
LCB10
= 92.00
= 90.18
= 90.12
PROP. STM MHCB06
T/G = 92.00
S INV. = 89.70
N INV. = 89.64
PROP. STM MHCB02
T/G = 92.00
N INV. = 89.15
S INV. = 89.09
PROP. STM LCB13
T/G = 111.34
SW INV. = 54.92
N INV. = 54.95
PROP. STM 16.3m - 250mm Ø PVC DR-35 @0.25%
PROP. STM 17m - 250mm Ø PVC DR-35 @0.25%
PROP. STM HH01
T/G = 92.00
N INV. = 89.02
S INV. = 87.52
PROP. STM MHCB07
T/G = 92.00
SW INV. = 89.82
N INV. = 89.76
PROP. STM 12.3m - 250mm Ø PVC DR-35 @0.25%
Ø PVC DR-36 @1.0% ONTRACTOR TO INSTALL BACKFLOW PREVENTER
INV. = 55.85
PROP. STM 14.3m - 250mm Ø PVC DR-35 @0.25%
PROP. STM LCB11
T/G = 92.00
N INV. = 87.58
S INV. = 87.52
PROP. STM LCB12
T/G = 111.34
SW INV. = 54.92
N INV. = 54.95
PROP. STM MHCB08
T/G = 92.00
SW INV. = 89.86
N INV. = 89.92
PROP. STM 16.1m - 300mm Ø PVC DR-35 @0.94%
VICE 12.5m 150mm Ø PVC DR-18 @ MIN. 2.4m DEPTH
R TO INSTALL CURBSTOP VALVE AT PROPERTY LINE
PROP. WATER SERVICE 12.5m 150mm Ø PVC DR-18 @ MIN. 2.4m DEPTH
CONTRACTOR TO INSTALL CURBSTOP VALVE AT PROPERTY LINE
PROP. WATER SERVICE 12.5m 150mm Ø PVC DR-18 @ MIN. 2.4m DEPTH
CONTRACTOR TO INSTALL CURBSTOP VALVE AT PROPERTY LINE
HYDRO NO BUILD ZONE
150mm Ø PVC DR-35 @1.0% FOR FOUNDATION DRAIN
INV. = 88.35
PROP. STM SERVICE 22.3m - 150mm Ø PVC DR-35 @1.0% FOR FOUNDATION DRAIN
INV. = 88.20
PROP. STM SERVICE 22.3m - 150mm Ø PVC DR-35 @1.0% FOR FOUNDATION DRAIN
INV. = 88.20
EXISTING
EXISTING 250mmØ
25.3m - 150mm Ø PVC DR-36 @1.0%. CONTRACTOR
INSTALL BACKFLOW PREVENTER AT FOUNDATION.
CONNECT TO EXISTING 250mmØ SANITARY SEWER
INV. = 86.81
PROP. SAN SERVICE 25.3m - 150mm Ø PVC DR-36 @1.0%. CONTRACTOR
TO INSTALL BACKFLOW PREVENTER AT FOUNDATION.
CONTRACTOR TO CONNECT TO EXISTING 250mmØ SANITARY SEWER
INV. = 86.65
PROP. SAN SERVICE 25.3m - 150mm Ø PVC DR-36 @1.0%. CONTRACTOR
TO INSTALL BACKFLOW PREVENTER AT FOUNDATION.
CONTRACTOR TO CONNECT TO EXISTING 250mmØ SANITARY SEWER
INV. = 86.60
PROP. WATERMAIN CONNECTION TO
PROP. WATERMAIN CONNECTION TO
EXISTING 406mm Ø DI WATERMAIN
C/L of Constructed Road
Grass & Concrete Median
OPSD 810.010

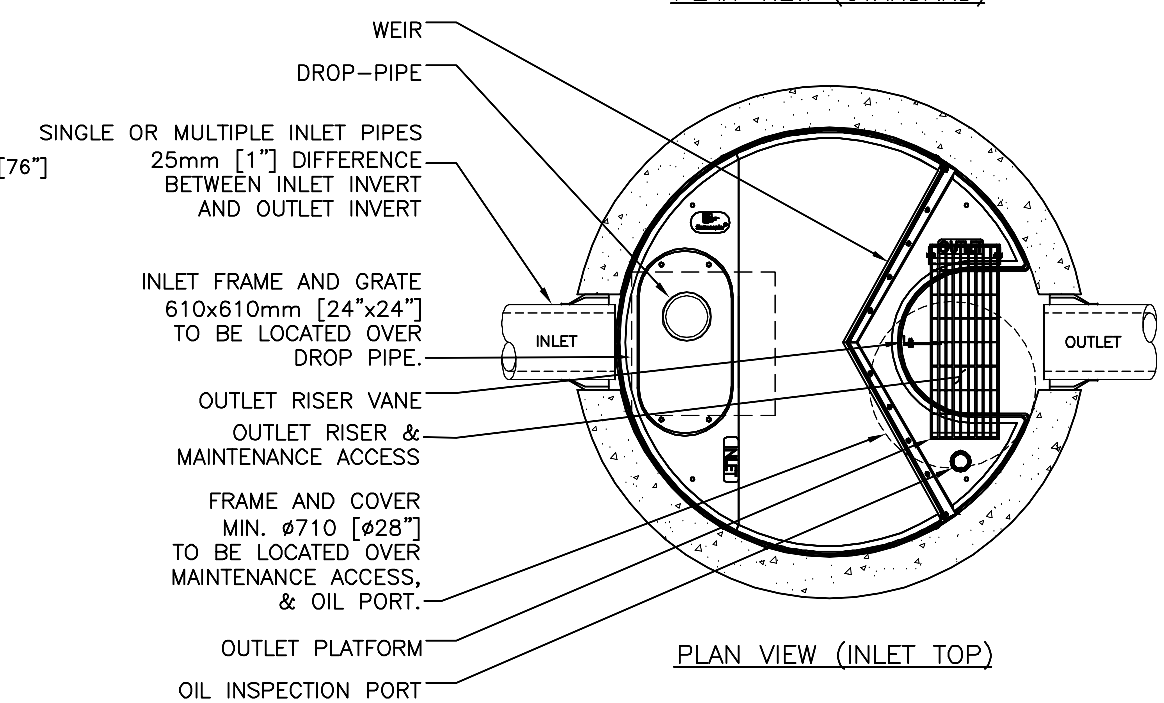
DRAWING NOT TO BE USED FOR CONSTRUCTION



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

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 EF6 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO6 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

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

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

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EFO6				
STRUCTURE ID					*
HYDROCARBON STORAGE REQ'D (L)					*
WATER QUALITY FLOW RATE (L/s)					*
PEAK FLOW RATE (L/s)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
DRAINAGE AREA (HA)					*
DRAINAGE AREA IMPERVIOUSNESS (%)					*
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
####	####	####	####
####	####	####	####
####	####	####	####
1	6/8/18	OUTLET PLATFORM	JSK
0	05/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
407 FAIRVIEW DRIVE, WHITBY, ON L1N 3A9
TF 800-565-4801 CA 416-960-9900 INTL +1-416-960-9900

DATE: 10/13/2017	
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: SP
PROJECT No.: EFO6	SEQUENCE No.: *
SHEET: 1 OF 1	

I:\IMBRIUM\PRODUCTS\STORMCEPTOR EF\40 DRAWINGS & DETAILS\STANDARD DETAILS\EFO STANDARD DETAILS\EFO6-DETAIL.DWG 4/12/2019 11:05 AM

Stormceptor® FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

09/25/2020

Province:	Ontario
City:	Ottawa
Nearest Rainfall Station:	OTTAWA MACDONALD-CARTIER INT'L AP
NCDC Rainfall Station Id:	6000
Years of Rainfall Data:	37

Site Name:	Innes Road
Drainage Area (ha):	0.72
Runoff Coefficient 'c':	0.80
Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Project Name:	Innes Road
Project Number:	20-184
Designer Name:	GUILLAUME BRUNET
Designer Company:	BL ENGINEERING
Designer Email:	guillaume@blengineering.ca
Designer Phone:	613-693-0700
EOR Name:	GUILLAUME BRUNET
EOR Company:	BL ENGINEERING
EOR Email:	guillaume@blengineering.ca
EOR Phone:	613-693-0700

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	20.82
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	93.85
Site Sediment Transport Rate (kg/ha/yr):	480.00
Estimated Average Annual Sediment Load (kg/yr):	276.48

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	74
EFO6	83
EFO8	87
EFO10	89
EFO12	90

Recommended Stormceptor EFO Model: EFO6

Estimated Net Annual Sediment (TSS) Load Reduction (%): 83

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

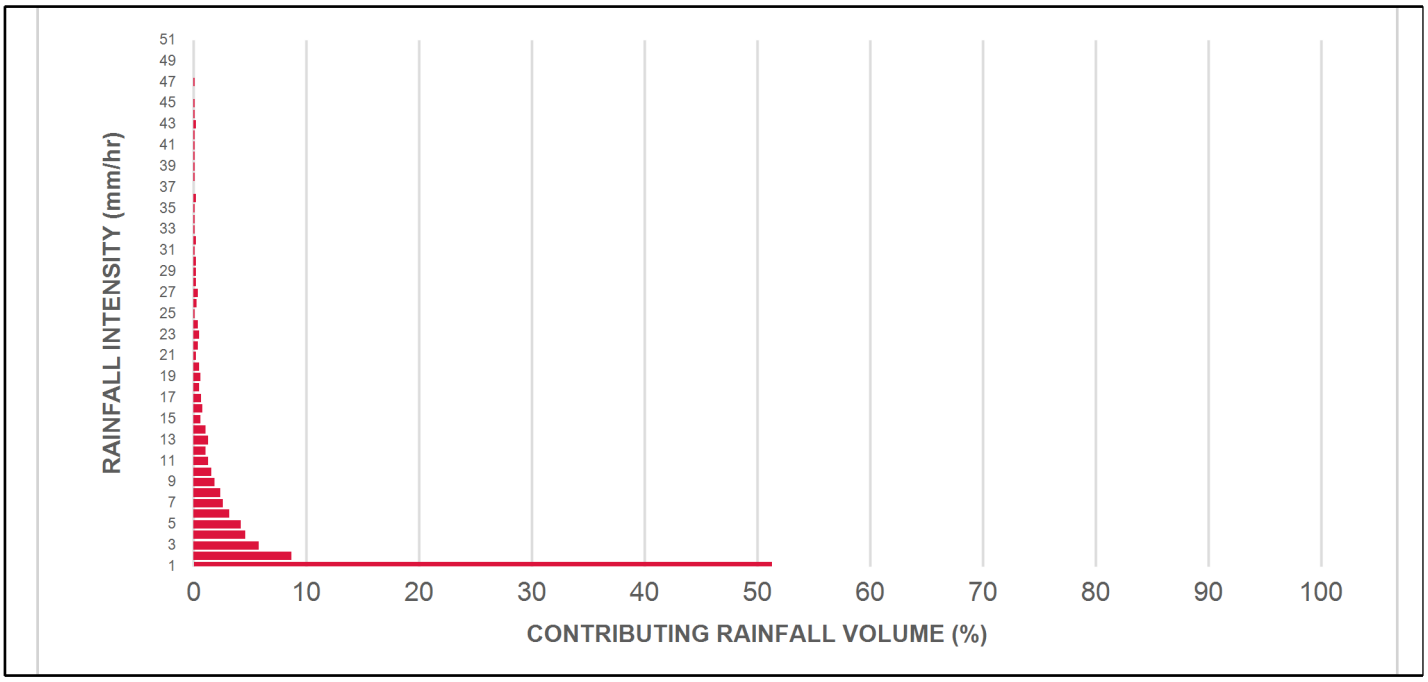
Stormceptor® EF Sizing Report

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 (%)
1	51.3	51.3	1.60	96.0	37.0	93	47.7	47.7
2	8.7	60.0	3.20	192.0	73.0	90	7.8	55.5
3	5.8	65.8	4.80	288.0	110.0	86	5.0	60.5
4	4.6	70.4	6.41	384.0	146.0	83	3.8	64.3
5	4.2	74.6	8.01	480.0	183.0	78	3.3	67.6
6	3.2	77.8	9.61	576.0	219.0	74	2.4	70.0
7	2.6	80.4	11.21	673.0	256.0	72	1.9	71.8
8	2.4	82.8	12.81	769.0	292.0	68	1.6	73.5
9	1.9	84.7	14.41	865.0	329.0	65	1.2	74.7
10	1.6	86.3	16.01	961.0	365.0	62	1.0	75.7
11	1.3	87.6	17.61	1057.0	402.0	58	0.8	76.4
12	1.1	88.7	19.22	1153.0	438.0	57	0.6	77.1
13	1.3	90.0	20.82	1249.0	475.0	56	0.7	77.8
14	1.1	91.1	22.42	1345.0	511.0	55	0.6	78.4
15	0.6	91.7	24.02	1441.0	548.0	54	0.3	78.7
16	0.8	92.5	25.62	1537.0	584.0	53	0.4	79.1
17	0.7	93.2	27.22	1633.0	621.0	52	0.4	79.5
18	0.5	93.7	28.82	1729.0	658.0	52	0.3	79.8
19	0.6	94.3	30.42	1825.0	694.0	52	0.3	80.1
20	0.5	94.8	32.03	1922.0	731.0	51	0.3	80.3
21	0.2	95.0	33.63	2018.0	767.0	51	0.1	80.4
22	0.4	95.4	35.23	2114.0	804.0	51	0.2	80.6
23	0.5	95.9	36.83	2210.0	840.0	51	0.3	80.9
24	0.4	96.3	38.43	2306.0	877.0	51	0.2	81.1
25	0.1	96.4	40.03	2402.0	913.0	50	0.1	81.1

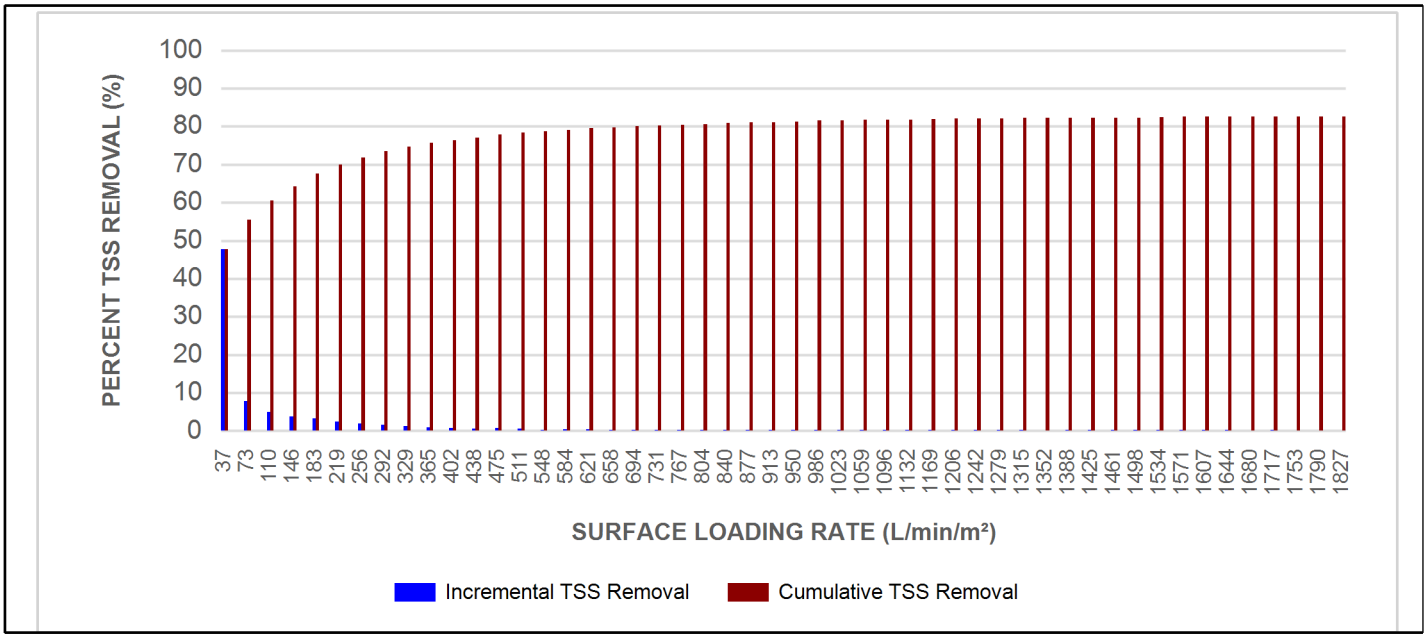
Stormceptor® EF Sizing Report

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 (%)
26	0.3	96.7	41.63	2498.0	950.0	50	0.2	81.3
27	0.4	97.1	43.23	2594.0	986.0	50	0.2	81.5
28	0.2	97.3	44.84	2690.0	1023.0	50	0.1	81.6
29	0.2	97.5	46.44	2786.0	1059.0	49	0.1	81.7
30	0.2	97.7	48.04	2882.0	1096.0	49	0.1	81.8
31	0.1	97.8	49.64	2978.0	1132.0	49	0.0	81.8
32	0.2	98.0	51.24	3074.0	1169.0	48	0.1	81.9
33	0.1	98.1	52.84	3171.0	1206.0	48	0.0	82.0
34	0.1	98.2	54.44	3267.0	1242.0	48	0.0	82.0
35	0.1	98.3	56.04	3363.0	1279.0	47	0.0	82.1
36	0.2	98.5	57.65	3459.0	1315.0	47	0.1	82.2
37	0.0	98.5	59.25	3555.0	1352.0	47	0.0	82.2
38	0.1	98.6	60.85	3651.0	1388.0	46	0.0	82.2
39	0.1	98.7	62.45	3747.0	1425.0	45	0.0	82.3
40	0.1	98.8	64.05	3843.0	1461.0	44	0.0	82.3
41	0.1	98.9	65.65	3939.0	1498.0	43	0.0	82.3
42	0.1	99.0	67.25	4035.0	1534.0	42	0.0	82.4
43	0.2	99.2	68.86	4131.0	1571.0	41	0.1	82.5
44	0.1	99.3	70.46	4227.0	1607.0	40	0.0	82.5
45	0.1	99.4	72.06	4323.0	1644.0	39	0.0	82.5
46	0.0	99.4	73.66	4420.0	1680.0	38	0.0	82.5
47	0.1	99.5	75.26	4516.0	1717.0	38	0.0	82.6
48	0.0	99.5	76.86	4612.0	1753.0	37	0.0	82.6
49	0.0	99.5	78.46	4708.0	1790.0	36	0.0	82.6
50	0.0	99.5	80.06	4804.0	1827.0	35	0.0	82.6
Estimated Net Annual Sediment (TSS) Load Reduction =								**83 %**

RAINFALL DATA FROM OTTAWA MACDONALD-CARTIER INT'L AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
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

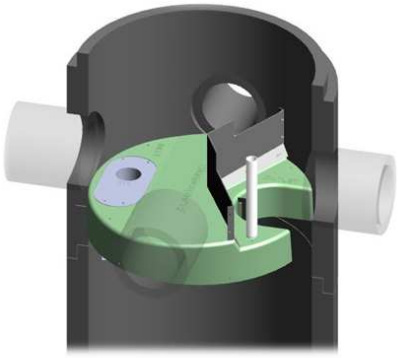
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

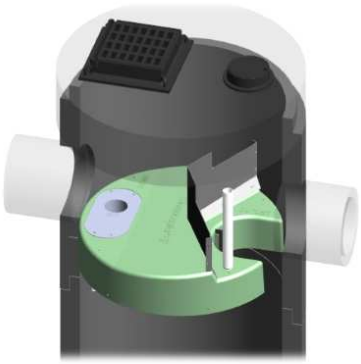
DESIGN FLEXIBILITY

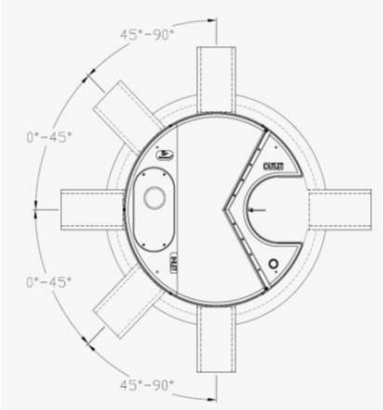
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend 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 shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. 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/m2 to 2600 L/min/m2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

APPENDIX "E"
Boundary Conditions

Boundary Conditions
3817-3843 Innes Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	769	12.82
Maximum Daily Demand	1,154	19.23
Peak Hour	1,385	23.08
Fire Flow Demand #1	5,600	93.33

Location

Results

Connection 1 – Innes Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.3	55.1
Peak Hour	127.1	50.5
Max Day plus Fire 1	129.3	53.7

[1] Ground Elevation = 91.6 m

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

APPENDIX "F"
Engineering Drawings

EROSION AND SEDIMENT CONTROL MEASURES:

** CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES **

1. PRIOR TO START OF CONSTRUCTION:

1.1. PRIOR TO THE REMOVAL OF ANY VEGETATIVE COVER, MOVING OF ANY SOIL, AND CONSTRUCTION:
1.1.1. INSTALL SILT FENCE IMMEDIATELY DOWNSTREAM FROM AREAS TO BE DISTURBED (SEE PLAN FOR LOCATION).
1.1.2. INSTALL GEOSOCK INSERTS WITH AN OVERFLOW IN ALL THE DOWNSTREAM CATCH BASINS AND MANHOLES.
1.1.3. INSTALL SILTSACK FILTERS IN ALL CONCRETE CATCH BASIN STRUCTURES.
1.1.4. INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.

2. DURING CONSTRUCTION:

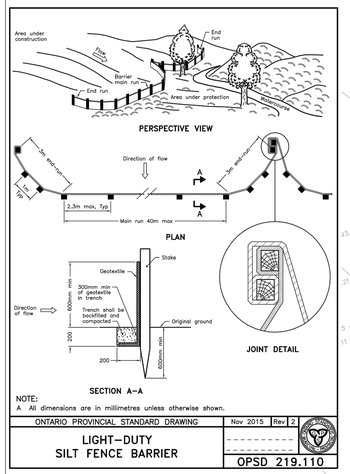
2.1. WORK TO BE DONE IN THE VICINITY OF MAJOR WATERWAYS TO BE CARRIED OUT FROM JULY TO SEPTEMBER ONLY.
2.2. MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE.
2.3. PROTECT DISTURBED AREAS FROM RUNOFF.
2.4. PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILIATED WITHIN 30 DAYS.
2.5. INSPECT SILT FENCE, FILTER CLOTHS, AND CATCH BASIN SUMPS WEEKLY AND AFTER EVERY MAJOR STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY
2.6. PLAN TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION.
2.7. EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.
2.8. DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (30 DAYS).
2.9. CONTROL WIND-BLOWN DUST OFF SITE TO ACCEPTABLE LEVELS BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED).
2.10. ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
2.11. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THIS CONSULTING ENGINEER AND THE CITY DEPARTMENT OF PUBLIC WORKS. "TO PREVENT UNNECESSARY SEDIMENT DISCHARGE, THE CONTRACTOR IS PERMITTED TO PLACE ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES IN A TIMELY MANNER, IF REQUIRED. THE CONTRACTOR TO ADVISE CONSULTANT ONCE INSTALLED FOR INSPECTION."
2.12. CONTRACTOR RESPONSIBLE FOR CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING ETC, AT THE END OF EACH WORK DAY.
2.13. PROVIDE GRAVEL ENTRANCE WHEREVER EQUIPMENT LEAVES THE SITE TO PREVENT MUD TRACKING ONTO PAVED SURFACES. GRAVEL BED SHALL BE A MINIMUM OF 15m LONG. 4m WIDE AND 0.3m DEEP AND SHALL CONSIST OF COARSE (50mm CRUSHER-RUN LIMESTONE). MAINTAIN GRAVEL ENTRANCE IN CLEAN CONDITION.
2.14. DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
2.15. ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
2.16. TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.

3. AFTER CONSTRUCTION:

3.1. PROVIDE PERMANENT COVER CONSISTING OF TOPSOIL AND SEED TO DISTURBED AREA.
3.2. REMOVE STRAW BALE FLOW CHECK DAMS, SILT FENCES AND FILTER CLOTHS ON CATCH BASINS AND MANHOLE COVERS AFTER DISTURBED AREAS HAVE BEEN REHABILITATED AND STABILIZED.
3.3. INSPECT AND CLEAN CATCH BASIN SUMPS AND STORM SEWERS.

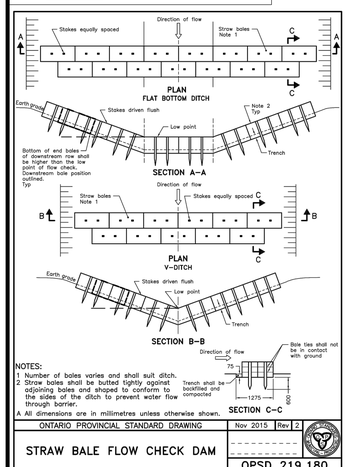
LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED EASEMENT
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED DOOR ENTRANCE/EXIT
- +50.00 PROPOSED ELEVATION
- +50.00HP PROPOSED HIGH POINT ELEVATION
- +50.00SW PROPOSED SWALE ELEVATION
- +50.00EX MATCH INTO EXISTING ELEVATION
- - 70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- PROPOSED SILT FENCE AS PER OPSD 219.110
- STM PROPOSED 250mmØ PERFORATED SUBDRAIN
- STM PROPOSED STORM SEWER
- SAN PROPOSED SANITARY SEWER
- WTR PROPOSED WATERMAIN
- SAN EXISTING SANITARY SEWER
- WTR EXISTING WATERMAIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION AS PER W22
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROL 100yr RUNOFF — WATERSHED NAME / RUNOFF COEFFICIENT / AREA IN HECTARES
- PROPOSED GRASS AREA
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED GRAVEL AREA
- PROPOSED RIP RAP AS PER OPSD 810.010
- (M) PROPOSED WATER METER
- PROPOSED SIEMIESE CONNECTION
- PROPOSED GROWING FIELD



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110



NOTES:
1. Number of bales varies and shall suit ditch.
2. Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
STRAW BALE FLOW CHECK DAM		OPSD 219.180

ENGINEERING STAMP

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CLIENT:
OLIGO DEVELOPMENT
996-B ST. AUGUSTIN RD,
EMBRUN, ON

PROJECT:
NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:
SEDIMENT & EROSION CONTROL PLAN

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SCALE:	1:250
PROJECT NUMBER:	20-184

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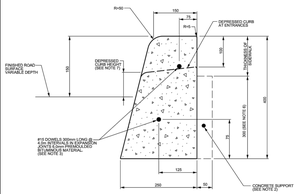

CONCRETE BARRIER CURB

NOTES:

1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE #10 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 25mm DEEP, FRONT, BACK AND TOP OF SECTION AT 2m SPACING.
6. FOR DEPRESSED CURB AT ENTRANCES USE 250.
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 25mm.

N.T.S.

Ottawa	CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)	DATE:	JANUARY 2003
		REV. DATE:	MARCH 2014
		DWG. No:	SC1.1

SWALE & SUBDRAIN - TYPICAL SECTION

(N.T.S.)

PONDING TABLE

100 year storm (P1 to P5 HWL = 92.00) (P6 to P8 HWL = 90.08)

PONDING AREA	VOLUME (m3)	DEPTH (mm)
P1	3.86	100
P2	4.09	100
P3	7.99	200
P4	3.69	50
P5	4.37	150
P6	2.06	180
P7	2.09	180
P8	2.06	180

PAVEMENT STRUCTURE

COURSE	MATERIAL	THICKNESS (mm) LIGHT DUTY	THICKNESS (mm) HEAVY DUTY
SURFACE	HL.3 A/C (PG 58-28)	50	40
BINDER	HL.8 A/C (PG 58-28)	--	50
BASECOURSE	GRANULAR "A"	150	150
SUBBASE	GRANULAR "B" TYPE II	300	400

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LICENSED PROFESSIONAL ENGINEER
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100191036
05/04/2021
PROVINCE OF ONTARIO

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OLIGO DEVELOPMENT
996-B ST. AUGUSTIN RD.
EMBRUN, ON

PROJECT:

NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:

SITE GRADING PLAN

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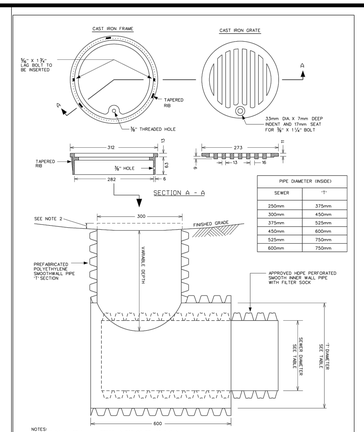
LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED EASEMENT
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED DOOR ENTRANCE/EXIT
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00SW PROPOSED SWALE ELEVATION
- ×50.00EX MATCH INTO EXISTING ELEVATION
- 7519 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED 250mmØ PERFORATED SUBDRAIN
- STM PROPOSED STORM SEWER
- SAN PROPOSED SANITARY SEWER
- WTR PROPOSED WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION AS PER W22
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX — WATERSHED NAME
- CONTROLLER / AREA / RUNOFF — RUNOFF COEFFICIENT
- AREA IN HECTARES
- PROPOSSED GRASS AREA
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED GRAVEL AREA
- PROPOSED RIP RAP AS PER OPSD 810.010
- M PROPOSED WATER METER
- DS PROPOSED SIEMIESE CONNECTION
- PROPOSED GROWING FIELD



PIPE DIAMETER (INSIDE)	
SEWER	T
250mm	375mm
300mm	450mm
375mm	525mm
450mm	600mm
525mm	750mm
600mm	750mm

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. FOR DITCHED PIPE APPLICATIONS, TOP OF CB SHALL BE MIN. 5cm ABOVE BOTTOM OF THE DITCH/SWALE AND BE LOCATED MIN. 0m FROM EDGE OF PAVEMENT.
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 7½ HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.

Ottawa | CATCH BASIN - 'T' FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS | DATE: MARCH 2007 | REV. DATE: MARCH 2013 | DWG. No.: S.S0

PIPE DIAMETER (INSIDE)	
SEWER	T
250mm	375mm
300mm	450mm
375mm	525mm
450mm	600mm
525mm	750mm
600mm	750mm

NOTES:
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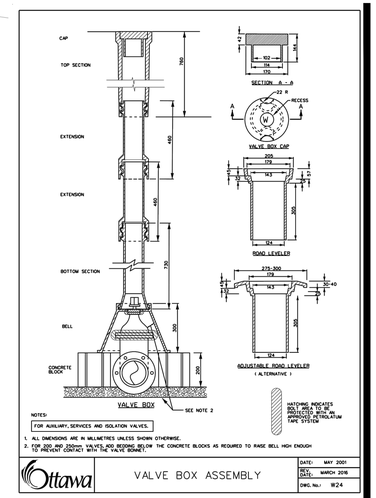
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 7½ HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.

Ottawa | CATCH BASIN - ELBOW FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS | DATE: MARCH 2007 | REV. DATE: MARCH 2013 | DWG. No.: S.S1



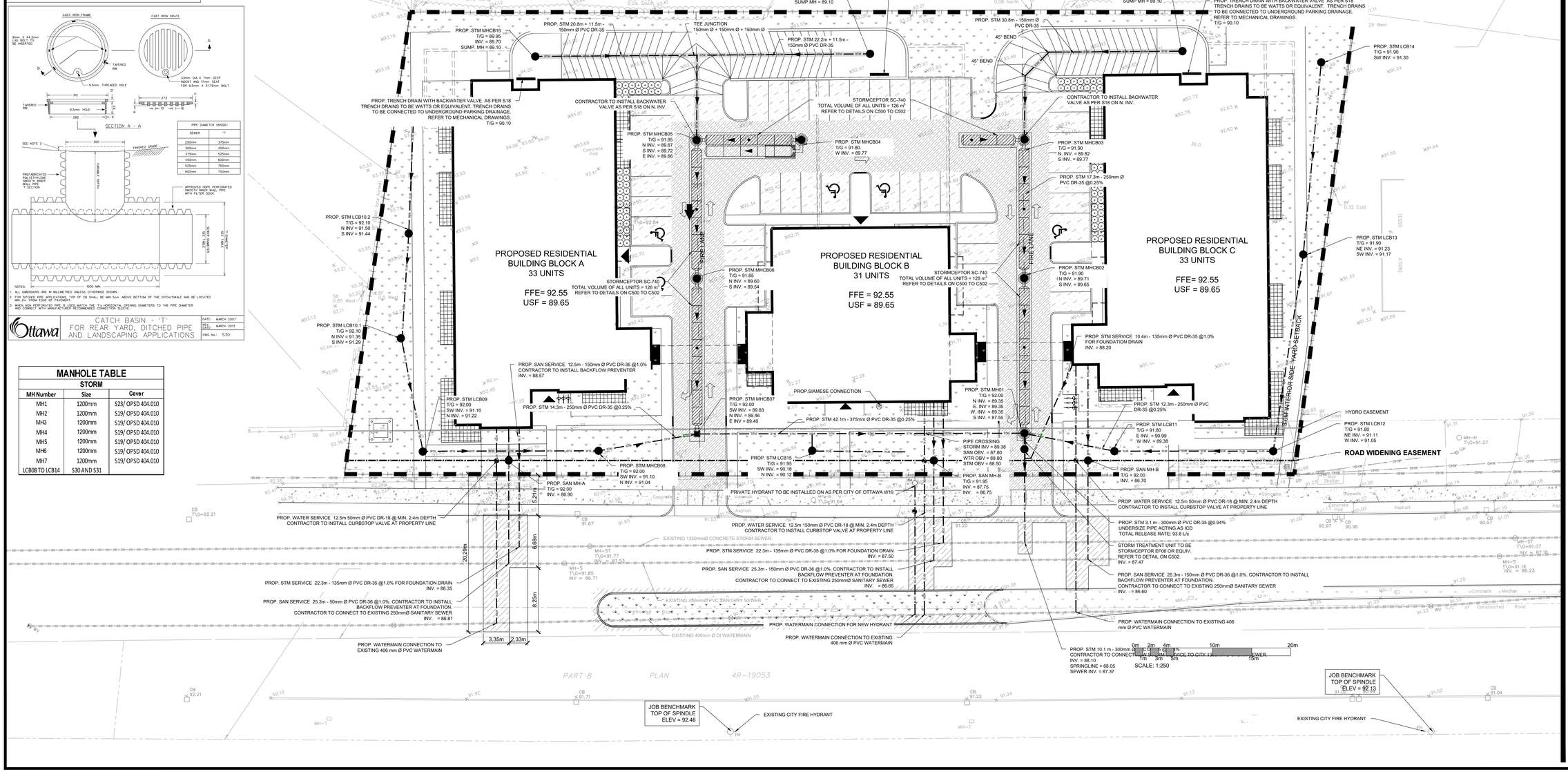
NOTES:
FOR AUXILIARY, SERVICES AND ISOLATION VALVES.

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. FOR 200 AND 250mm VALVES, ADD BRICKING BELOW THE CONCRETE BLOCKS AS REQUIRED TO RAISE BELL HIGH ENOUGH TO PREVENT CONTACT WITH THE VALVE BONNET.

Ottawa | VALVE BOX ASSEMBLY | DATE: MAY 2001 | REV. DATE: MARCH 2016 | DWG. No.: W24

MANHOLE TABLE

STORM		
MH Number	Size	Cover
MH1	1200mm	S23/ OPSD 404.010
MH2	1200mm	S19/ OPSD 404.010
MH3	1200mm	S19/ OPSD 404.010
MH4	1200mm	S19/ OPSD 404.010
MH5	1200mm	S19/ OPSD 404.010
MH6	1200mm	S19/ OPSD 404.010
MH7	1200mm	S19/ OPSD 404.010
LCB08 TO LCB14	S30 AND S31	



ENGINEERING STAMP

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OLIGO DEVELOPMENT
996-B ST. AUGUSTIN RD.
EMBRUN, ON

PROJECT:
NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:
SITE SERVICING PLAN

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LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
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- PROPOSED DOOR ENTRANCE/EXIT
- +50.00 — PROPOSED ELEVATION
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- WS-XX / 0.00 / AREA / RUNOFF — WATERSHED NAME; RUNOFF COEFFICIENT; AREA IN HECTARES
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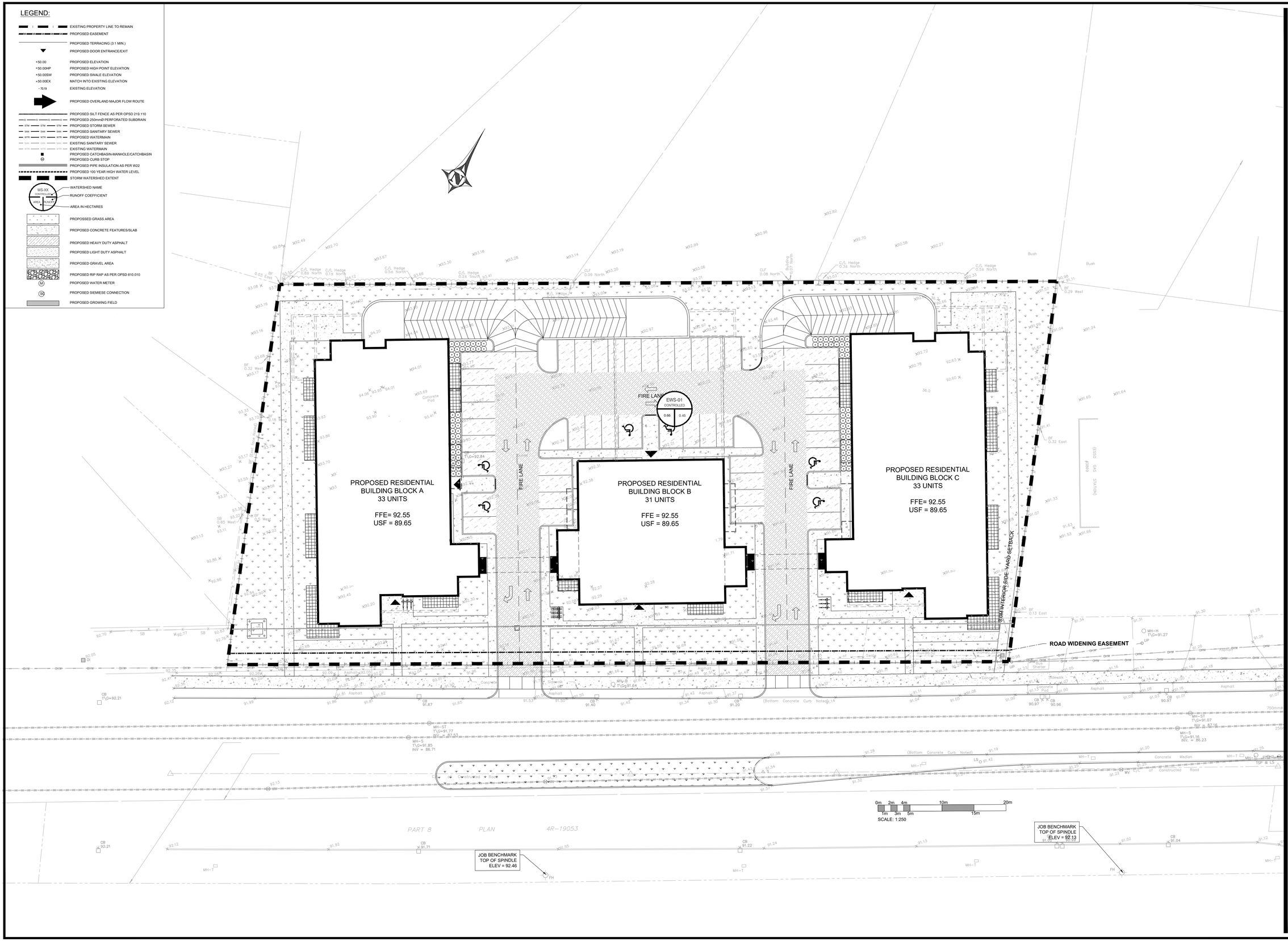
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED GRAVEL AREA
- PROPOSED RIP RAP AS PER OPSD 810.010
- W — PROPOSED WATER METER
- SIAMESE — PROPOSED SIEMIESE CONNECTION
- PROPOSED GROWING FIELD



ENGINEERING STAMP

LICENSED PROFESSIONAL ENGINEER
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100191036
05/04/2021
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EMBRUN, ON

PROJECT:
NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:
PRE-DEVELOPMENT STORAGE AREA

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- PROPOSED RIP RAP AS PER OPSD 810.010
- W — PROPOSED WATER METER
- SIAMESE — PROPOSED SIEMIESE CONNECTION
- PROPOSED GROWING FIELD

PROPOSED RESIDENTIAL BUILDING BLOCK A
33 UNITS

FFE= 92.55
USF = 89.65

PROPOSED RESIDENTIAL BUILDING BLOCK B
31 UNITS

FFE = 92.55
USF = 89.65

PROPOSED RESIDENTIAL BUILDING BLOCK C
33 UNITS

FFE = 92.55
USF = 89.65

FIRE LANE

ROAD WIDENING EASEMENT

SIDE YARD SETBACK

PROP. STM MHCB16 T/G = 89.90
PROP. STM MHCB17 T/G = 89.90
PROP. STM MHCB18 T/G = 89.90
PROP. STM MHCB04 T/G = 91.80
PROP. STM MHCB05 T/G = 91.85
PROP. STM MHCB06 T/G = 91.85
PROP. STM MHCB03 T/G = 91.90
PROP. STM MHCB02 T/G = 91.90
PROP. STM MH01 T/G = 92.00
PROP. STM LCB10.2 T/G = 92.10
PROP. STM LCB10.1 T/G = 92.10
PROP. STM LCB09 T/G = 92.00
PROP. STM LCB08 T/G = 92.00
PROP. STM LCB15 T/G = 91.90
PROP. STM LCB11 T/G = 91.80
PROP. STM LCB12 T/G = 91.80
PROP. STM LCB13 T/G = 91.90
PROP. STM LCB14 T/G = 91.90
PROP. SAN MH-A T/G = 92.00
PROP. SAN MH-B T/G = 91.95
PROP. SAN MH-C T/G = 91.95
PROP. TREATMENT UNIT T/G = 91.90

WS-01 CONTROLLED 0.113 0.83
WS-02 CONTROLLED 0.087 0.83
WS-03 CONTROLLED 0.002 0.90
WS-04 CONTROLLED 0.002 0.90
WS-05 CONTROLLED 0.002 0.90
WS-06 CONTROLLED 0.035 0.89
WS-07 CONTROLLED 0.108 0.72
WS-08 CONTROLLED 0.090 0.90
WS-09 CONTROLLED 0.055 0.90
WS-11 CONTROLLED 0.076 0.46
WS-11 CONTROLLED 0.090 0.90
WS-12 CONTROLLED 0.060 0.45
WS-08 CONTROLLED 0.03 0.67

JOB BENCHMARK TOP OF SPINDLE ELEV = 92.46

JOB BENCHMARK TOP OF SPINDLE ELEV = 92.13

PART 8 PLAN 4R-19053

SCALE: 1:250

ENGINEERING STAMP

LICENSED PROFESSIONAL ENGINEER — G. L. BRUNET — 100191036 — 05/04/2021 — PROVINCE OF ONTARIO

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CLIENT:
OLIGO DEVELOPMENT
996-B ST. AUGUSTIN RD.
EMBRUN, ON

PROJECT:
NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:
POST DEVELOPMENT STORAGE AREA

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ADS SALES REP:	MICHAEL REID 613-882-4186 MICHAEL.REID@ADS-PIPE.COM
PROJECT NO:	S201666
ADS SITE COORDINATOR:	MATTHEW BEGHIN 519-710-3687 MATTHEW.BEGHIN@ADS-PIPE.COM

ADVANCED DRAINAGE SYSTEMS, INC.

SiteASSIST by StormTech
FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

3817-3843 INNES ROAD

EMBRUN, ON.

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 150 mm (6") SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 20-50 mm (3/4-2").
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT	
43	STORMTECH SC-740 CHAMBERS
14	STORMTECH SC-740 END CAPS
152	STONE ABOVE (mm)
152	STONE BELOW (mm)
40	% STONE VOID
120.9	**INSTALLED SYSTEM VOLUME (m^3) (PERIMETER STONE INCLUDED)**
204.8	SYSTEM AREA (m^2)
191.0	SYSTEM PERIMETER (m)

PROPOSED ELEVATIONS - HH01 TO MHCB02	
92.190	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.362	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.209	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.209	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.209	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
89.904	TOP OF STONE:
89.752	TOP OF SC-740 CHAMBER:
89.308	300 mm TOP MANIFOLD INVERT:
89.020	300 mm ISOLATOR ROW INVERT:
88.990	BOTTOM OF SC-740 CHAMBER:
88.838	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB02 TO MHCB03	
92.320	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.492	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.339	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.339	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.339	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.034	TOP OF STONE:
89.882	TOP OF SC-740 CHAMBER:
89.150	300 mm ISOLATOR ROW INVERT:
89.120	BOTTOM OF SC-740 CHAMBER:
88.968	BOTTOM OF STONE:

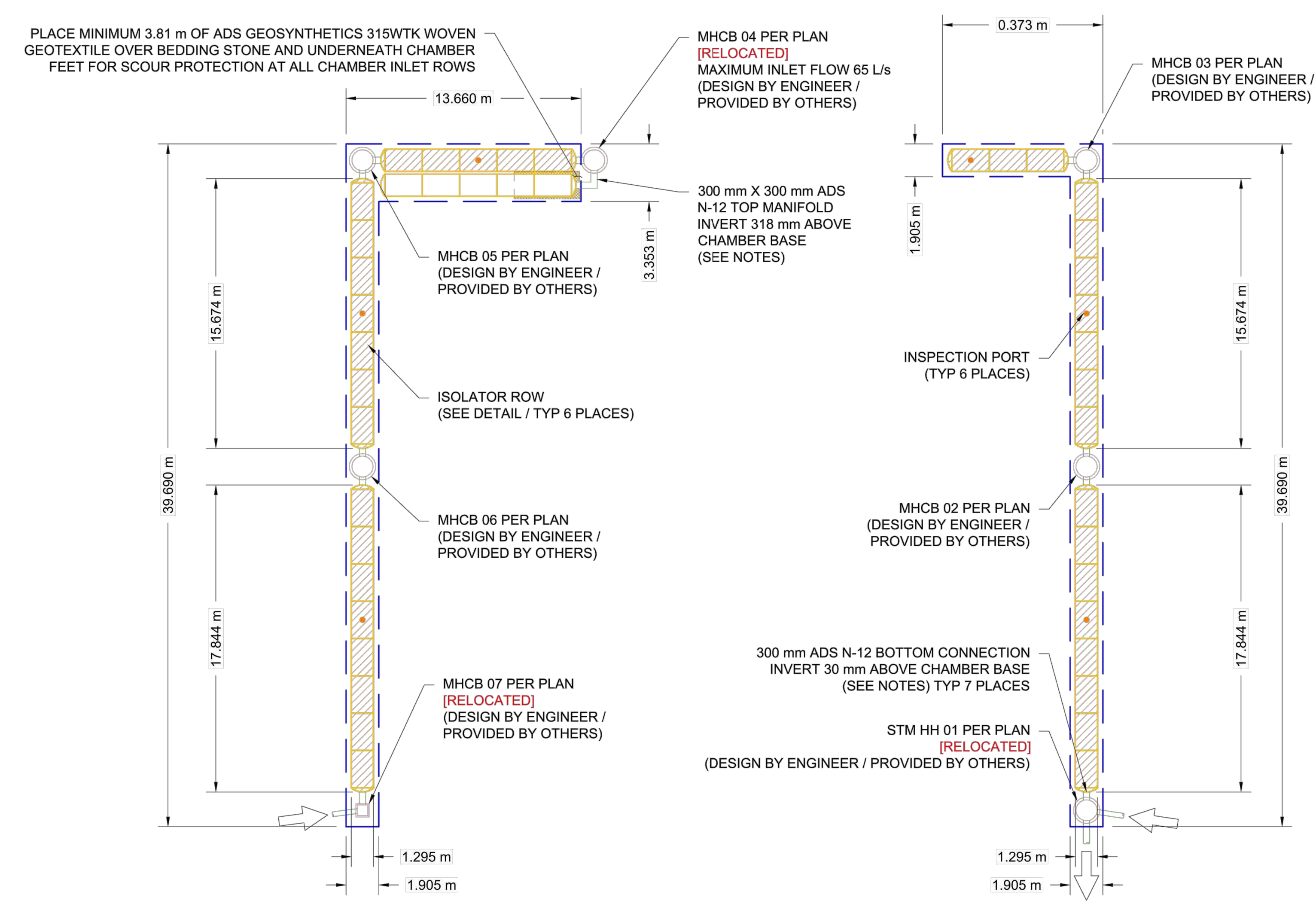
PROPOSED ELEVATIONS - MHCB04 TO MHCB05	
92.590	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.762	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.609	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.609	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.609	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.304	TOP OF STONE:
90.152	TOP OF SC-740 CHAMBER:
89.408	250 mm BOTTOM CONNECTION INVERT:
89.420	300 mm ISOLATOR ROW INVERT:
89.390	BOTTOM OF SC-740 CHAMBER:
89.238	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB05 TO MHCB06	
92.740	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
90.912	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.759	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.759	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.759	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.454	TOP OF STONE:
90.302	TOP OF SC-740 CHAMBER:
89.570	300 mm ISOLATOR ROW INVERT:
89.540	BOTTOM OF SC-740 CHAMBER:
89.388	BOTTOM OF STONE:

PROPOSED ELEVATIONS - MHCB06 TO MHCB07	
92.870	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
91.042	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
90.889	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
90.889	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
90.889	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
90.584	TOP OF STONE:
90.432	TOP OF SC-740 CHAMBER:
89.700	300 mm ISOLATOR ROW INVERT:
89.670	BOTTOM OF SC-740 CHAMBER:
89.518	BOTTOM OF STONE:

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.



3817-3843 INNES ROAD
EMBRUN, ON.
DATE: 09/16/20 DRAWN: RCT
PROJECT #: S201666 CHECKED: NPB

StormTech
ADS ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026

SCALE = 1 : 300

SHEET 2 OF 5

ENGINEERING STAMP

LICENSED PROFESSIONAL ENGINEER
G. L. BRUNET
100191036
05/04/2021
PROVINCE OF ONTARIO

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#8		
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#1	ISSUED FOR SPA	14 / 10 / 2020

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NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

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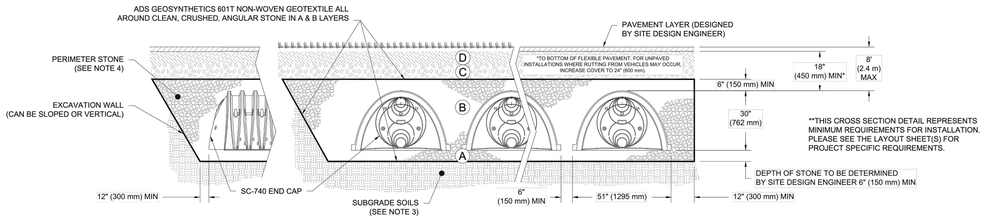
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

3817-3843 INNES ROAD
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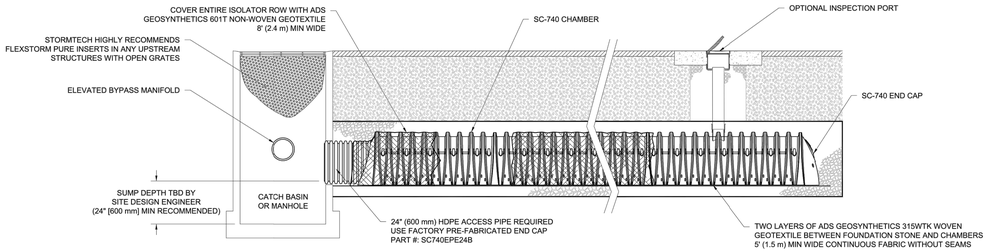
3 SHEET OF 5



SC-740 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

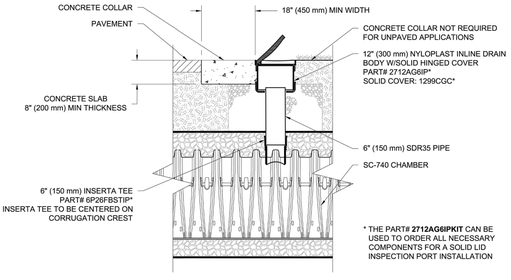
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

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4 SHEET OF 5

ENGINEERING STAMP

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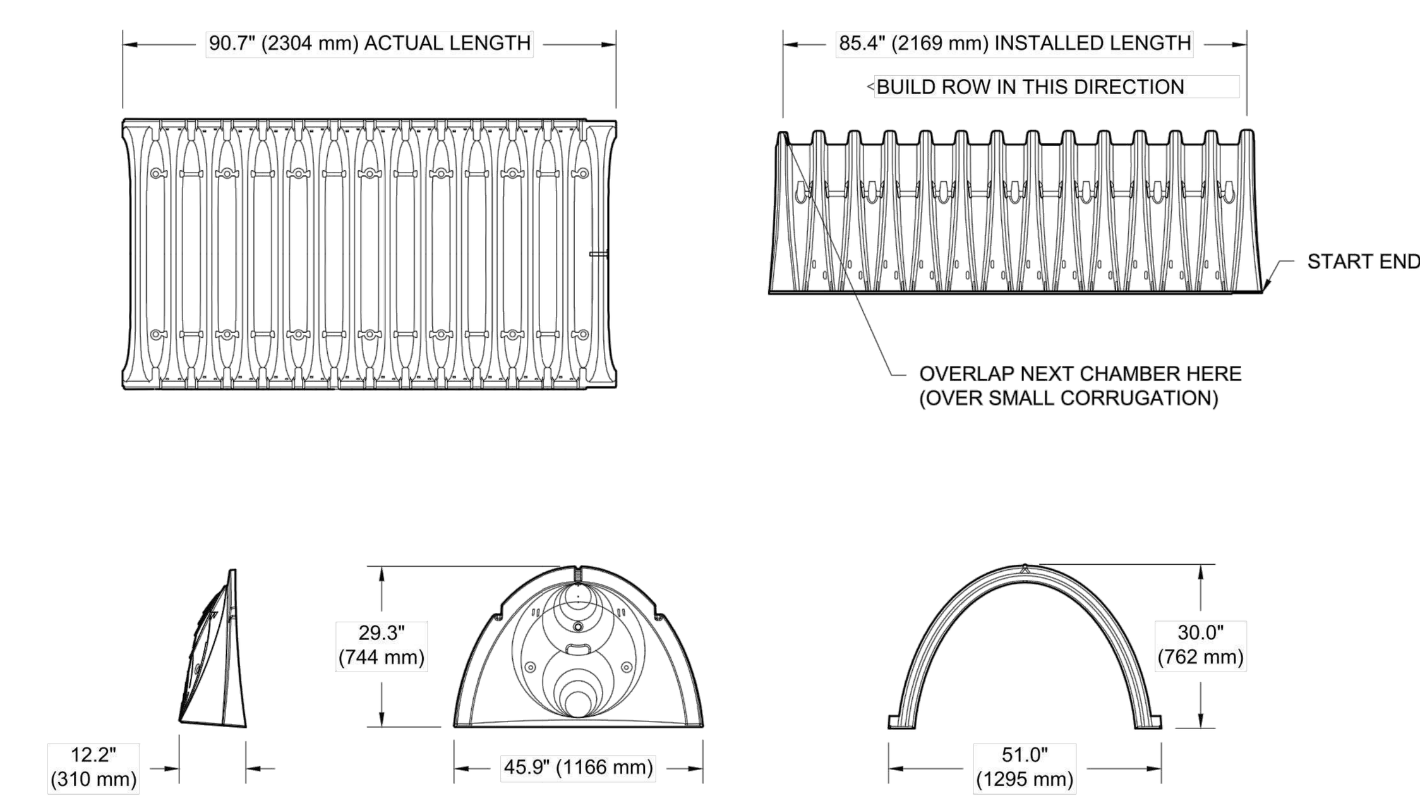
SC-740 TECHNICAL SPECIFICATION

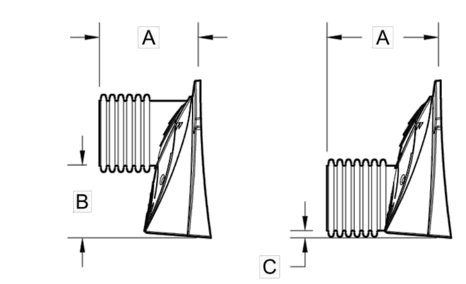
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

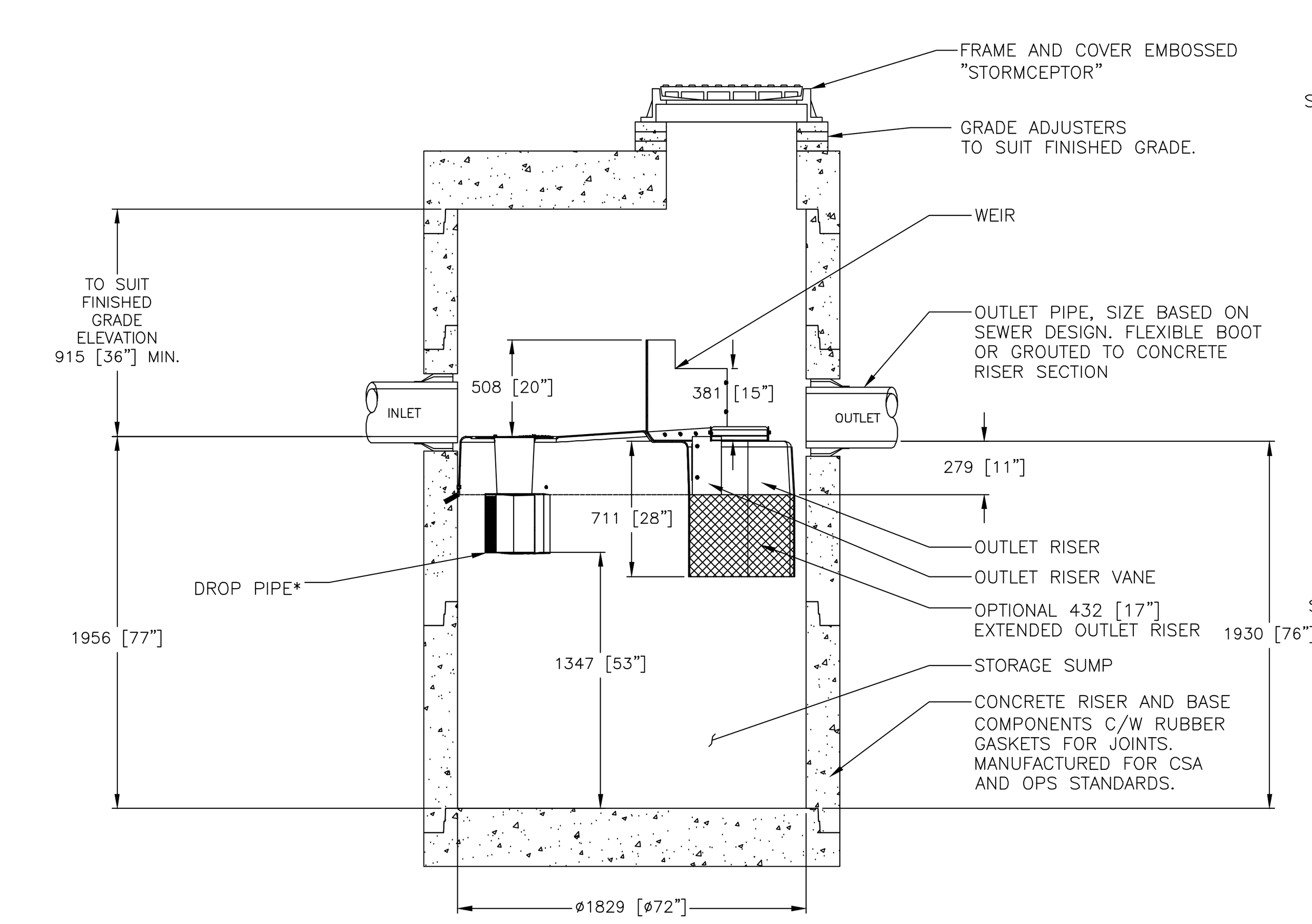
3817-3843 INNES ROAD
EMBRUN, ON.

DATE: 09/16/20 | DRAWN: RCT
PROJECT #: S201666 | CHECKED: NPB

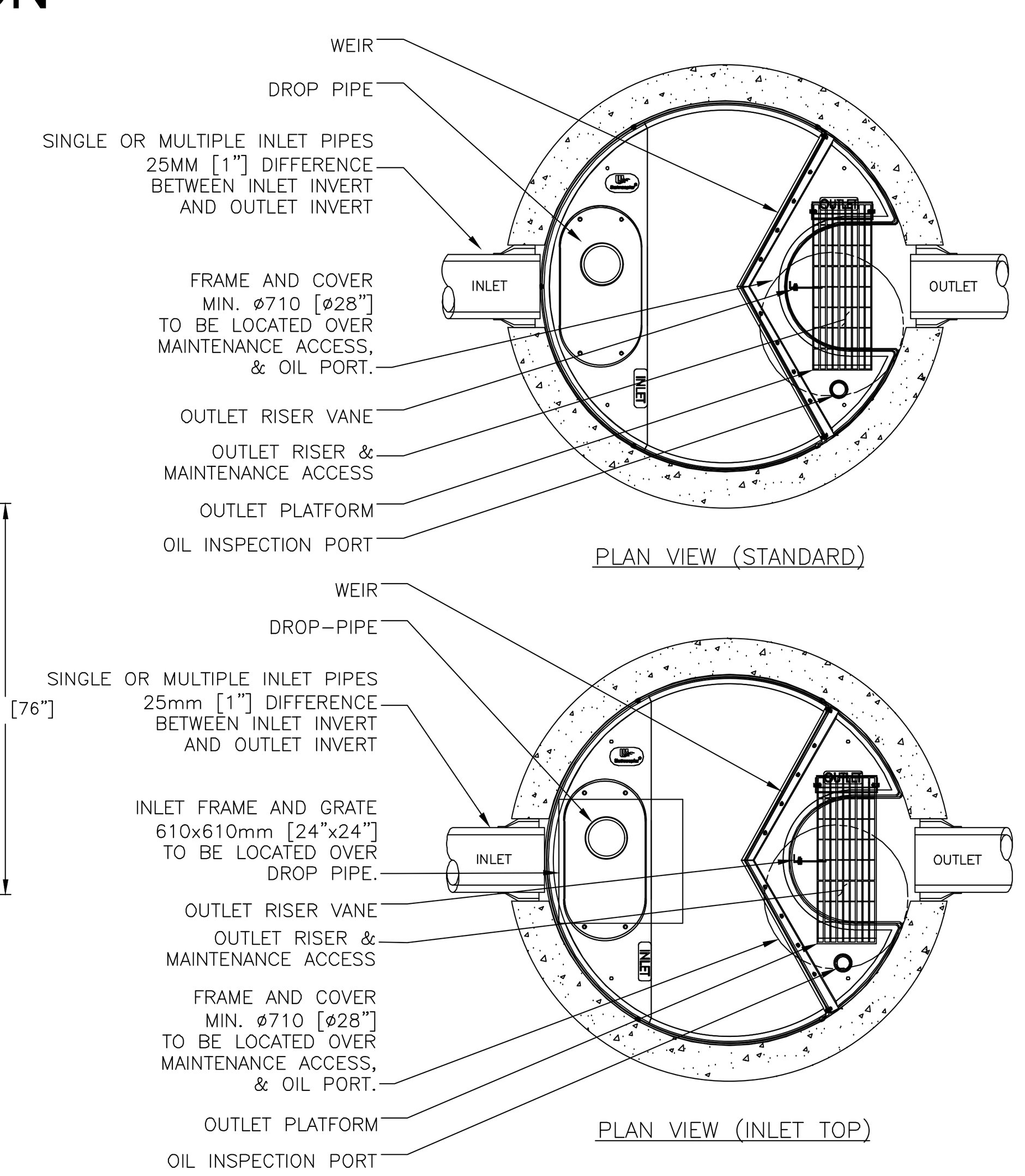
StormTech
4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 5 OF 5

DRAWING NOT TO BE USED FOR CONSTRUCTION



SECTION VIEW



GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m2 (27.9 gpm/ft2) FOR STORMCEPTOR EF6 AND 535 L/min/m2 (13.1 gpm/ft2) FOR STORMCEPTOR EFO6 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

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

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

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS					
STORMCEPTOR MODEL	EFO6				
STRUCTURE ID	*				
HYDROCARBON STORAGE REQ'D (L)	*				
WATER QUALITY FLOW RATE (L/s)	*				
PEAK FLOW RATE (L/s)	*				
RETURN PERIOD OF PEAK FLOW (yrs)	*				
DRAINAGE AREA (HA)	*				
DRAINAGE AREA IMPERVIOUSNESS (%)	*				
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

SCALE = NTS

imbrium
407 FAIRVIEW DRIVE, WHITBY, ON L1N 3A9
TF 800-565-4801 CA 416-960-9900 INTL +1-416-960-9900

DATE: 10/13/2017	
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: SP
PROJECT No.: EFO6	SEQUENCE No.: *
SHEET: 1 OF 1	

ENGINEERING STAMP

NO.	REVISION	DATE (DD/MM/YYYY)
#8		
#7		
#6		
#5		
#4		
#3	ISSUED FOR CITY COMMENTS	05 / 04 / 2021
#2	ISSUED FOR CITY COMMENTS	17 / 12 / 2020
#1	ISSUED FOR SPA	14 / 10 / 2020

BLANCHARD LETENDRE ENGINEERING
767, Notre-Dame, Local 42, Embrun, Ontario, K0A 1W
(613) 693-0700 blengineering.ca

CLIENT:
OLIGO DEVELOPMENT
996-B ST. AUGUSTIN RD.
EMBRUN, ON

PROJECT:
NEW RESIDENTIAL DEVELOPMENT
3817 - 3843 INNES RD,
ORLEANS, ON

DRAWING:
DETAILS - 3

PAPER FORMAT:	24x36
DRAWN BY:	BF + GB
CHECKED BY:	GB
DATE:	04-2021
SCALE:	
PROJECT NUMBER:	20-184

PAGE: C502

DRAWING NUMBER : 18285

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