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1412 Stittsville Main Street

SITE SERVICING & STORMWATER MANAGEMENT REPORT

Elite Property Developments Inc.

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Prepared by:

Tatham Engineering Limited
5335 Canotek Road, Unit 100
Ottawa, Ontario K1J 9L4
T 613-747-3636
tathameng.com

Prepared for:

Elite Property Developments Inc.
10 Brad's Court
Stittsville, Ontario K2S 1V2

Authored by:	Reviewed by:
 <p>Jeremy Ash, B.Sc.Eng., P.Eng. Director, Manager – Ottawa Office</p>	 <p>Guillaume M. Courtois, C.E.T. Senior Technologist, Project Manager</p>

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1 Introduction

Tatham Engineering Limited (Tatham) has been retained by Elite Property Developments Inc. to prepare a Site Servicing & Stormwater Management (SWM) Report in support of Site Plan Approval (SPA) to allow for a proposed 306 m² three-storey, 18-unit, apartment building, with a semi-basement (sunken level), parking areas and landscaped areas at 1412 Stittsville Main Street in the City of Ottawa. Specifically, this report has been prepared to confirm the servicing and SWM designs for the site are in accordance with the appropriate municipal guidelines and the surrounding infrastructure has adequate capacity to service the development.

The site is approximately 0.14 ha and currently consists of an empty grassed lot. There is currently no existing vehicular entrance to the site.

The site and adjacent properties are zoned Traditional Mainstreet (TM9). The site is bounded by Stittsville Main Street to the northeast, a commercial plaza to the northwest, a treed area (as part of the neighbouring massage parlour) to the southwest, and a residential dwelling to the southeast. A key plan illustrating the site location is provided below, and on the drawings enclosed at the back of this report.

Figure 1: Existing Site Location



The servicing and SWM designs included herein are based on a topographic survey completed by Farley, Smith & Denis Surveying Ltd. completed on January 11, 2022.

2 Geotechnical Investigation

A geotechnical investigation to assess subsurface conditions was completed at the site by LRL Associates Ltd. (LRL) in September 2022. The report (dated September 2022, revised March 2025) has been submitted under separate cover.

A total of four boreholes, labelled BH1 through BH4, were drilled across the site (i.e. BH1 was drilled at the site frontage to the northeast and BH4 was drilled towards the back of the site) to obtain understanding of the site's soil conditions. The boreholes ranged from 2.18 m to 5.74 m below ground surface. At the surface of all boring locations, a 300 mm thick layer of topsoil was encountered. Sand was found underlying BH1 to a depth of 4.42 m. BH2-BH4 all were found to have a layer of glacial till underneath the topsoil to depths ranging between 2.18 and 5.74 m below grade.

Groundwater levels were observed within the boreholes at varying depths ranging from 1.8-2.0 m at BH 1, 2 and 3, while within BH4 groundwater was not encountered.

Practical auger refusal was encountered in all the boreholes, ranging in depths between 2.18 and 5.74 m, this was encountered on larger boulders within the glacial till, or possible bedrock.

3 Water Supply and Fire Protection

3.1 EXISTING SITE CONDITIONS

In the existing conditions, no water service is currently provided to the site. There is an existing 406 mm diameter watermain on Stittsville Main Street that provides a service connection opportunity for the proposed development.

In addition to a new proposed hydrant fronting the site, based on geoOttawa online mapping, there are four (4) municipal fire hydrants within 150 m of the site. The hydrants are located at:

- The southeast corner of the Stittsville Main Street and Wintergreen Drive intersection;
- The southwest corner of the Stittsville Main Street and Mulkins Street intersection;
- Near the end of Riverbank Court; and
- The southwest corner of the Stittsville Main Street and Beverly Street intersection.

The hydrants can be used for fire protection for the proposed development. The contributions of the existing nearby fire hydrants (and the proposed hydrant fronting the site) toward the proposed development's required fire flow are described in further detail in the sections below.

3.2 DOMESTIC WATER DEMANDS

The average day water consumption rate and maximum day and peak hour peaking factors used to calculate the water supply demands for the proposed development are based on the 2010 City of Ottawa Design Guidelines for Water Distribution, the 2010 City of Ottawa Technical Bulletin ISD-2010-2 and the 2018 City of Ottawa Technical Bulletin ISTB-2018-01.

Based on an average day water consumption rate of 280 L/c/d and maximum day peaking factor of 2.5 (multiplier with average day) and peak hour peaking factor of 2.2 (multiplier with maximum day) respectively, the water demand calculations for the proposed three-storey, 18-unit, apartment building confirm an average daily water demand of 0.08 L/s, a maximum daily demand of 0.21 L/s, and a peak hourly demand of 0.46 L/s. The water demands shall be re-confirmed by the mechanical engineer at the building permit phase.

The above water demands do not include allowances for fire protection (i.e. sprinkler systems, etc.), irrigation, etc.

The water demand calculations are included in Appendix A.

3.3 WATER SERVICE SIZING

Water service sizing calculations for the proposed condition have been completed using the demands established in Section 2.2 above.

Boundary condition results for the existing conditions were provided by the City of Ottawa and utilized to determine pressures for maximum day and peak hour scenarios as well as a third scenario for maximum day plus fire flow. The calculated pressures were found to be within the City of Ottawa pressure and demand objectives per Section 4.2.2 of the City of Ottawa Design Guidelines for Water Distribution, which are in conformity with MECP guidelines. The following pressures were calculated for the existing conditions:

- A maximum day demand pressure of 64.10 psi which is in the 50 to 80 psi MECP range;
- A peak hour demand pressure of 58.12 psi which is within the 40 to 80 psi MECP range; and
- A maximum day plus fire flow demand pressure of 55.0 psi which is not less than the 20 psi MECP desired pressure.

Based on the above, the proposed building will be serviced with a 100 mm diameter water service, from the existing municipal watermain on Stittsville Main Street to the three-storey, 18-unit, apartment building. The 100 mm diameter service provides additional capacity for potential unforeseen changes come the building permit phase and allows for potential future expansion of the proposed development.

The water service sizing and pressure calculations are included in Appendix A.

The existing municipal watermain on Stittsville Main Street and the required 100 mm diameter water service to the three-storey, 18-unit, apartment building are shown on the Site Servicing Plan (Drawing SS-1).

3.4 FIRE PROTECTION

The fire flow demand was calculated in accordance with the Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS, 2020). This method is based on the type of building construction and the floor area of the building to be protected while accounting for reductions and surcharges related to combustibility of contents and building exposure of surrounding structures. The fire flow calculations resulted in a fire water demand of 4,000 L/min.

The proposed building is located within 90 m of a hydrant (there is an existing hydrant on Riverbank Court as well as a proposed hydrant fronting the site), in compliance with OBC requirements. In addition to the two above-mentioned hydrants, fire flow protection can also be provided by the additional three hydrants mentioned in Section 3.1, which are within 150 m (uninterrupted path) of the proposed building.

Fire hydrant bonnets are color coded to indicate the available flow at a residual pressure of 150 kPa (20 psi), in accordance with the NFPA 291 Fire Flow Testing and Marking of Hydrants Code. The existing hydrants near the site, all consist of a blue bonnet and as such are Class AA-rated hydrants. The proposed hydrant fronting the site will also be a Class AA-rated hydrant. As summarized in Table 1, the required demand of 4,000 L/min for fire protection of the proposed building is available from the proposed hydrant fronting the site and existing hydrants on Riverbank Court, Mulkins Street, Wintergreen Drive, and Beverly Street.

Table 1: Hydrants Required for Fire Flow

HYDRANT CLASS	DISTANCE TO BUILDING (m) ¹	CONTRIBUTION TO REQUIRED FIRE FLOW (L/min)	NUMBER OF USABLE NEARBY HYDRANTS	MAXIMUM FLOW TO BE CONSIDERED (L/min)	CUMULATIVE MAXIMUM FLOW TO BE CONSIDERED (L/min)
AA	≤ 75	5,700	2	11,400	22,800
AA	> 75 & ≤ 150	3,800	3	11,400	
A	≤ 75	3,800	0	0	
A	> 75 & ≤ 150	2,850	0	0	
B	≤ 75	1,900	0	0	
B	> 75 & ≤ 150	1,500	0	0	
C	≤ 75	800	0	0	
C	> 75 & ≤ 150	800	0	0	

Notes: ¹- Distance of contributing hydrant from the structure, measured in accordance with NFPA 1.

A hydrant flow test is recommended to confirm the hydrant classes, thereby confirming adequate flow and pressure is available for fire protection.

The fire flow calculations are included in Appendix A.

4 Sewage Collection

4.1 EXISTING SITE CONDITIONS

In existing conditions, there is currently no sewage service to the site. There is an existing 600 mm diameter sanitary sewer on Stittsville Main Street that provides a service connection opportunity for the proposed development.

4.2 SEWAGE FLOWS

Sewage flow calculations for the proposed development have been completed using the 2012 City of Ottawa Sewer Design Guidelines and the 2018 City of Ottawa Technical Bulletin ISTB-2018-01.

The average daily sewage design flow for the proposed development was determined to be 0.22 L/s, inclusive of extraneous flow. The peak daily sewage flow is anticipated to be 0.44 L/s.

The increased flow to the downstream sanitary sewer system is considered negligible as the receiving 600 mm diameter sanitary sewer within Stittsville Main Street has an approximate capacity of 271.89 L/s. The calculated site flow of 0.44 L/s represents a marginal flow increase of 0.2% to the receiving sewer. Thus, the proposed development does not adversely affect the downstream sanitary sewer system and sufficient system capacity is available to service the development.

The sewage flow calculations are included in Appendix B.

4.3 SANITARY SERVICE SIZING

The design criteria used to size the sanitary service from the proposed building structure to the existing 600 mm diameter sanitary sewer on Stittsville Main Street are as per the 2012 City of Ottawa Sewer Design Guidelines, the 2018 City of Ottawa Technical Bulletin ISTB-2018-01, the 2008 Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Sewage Works, and the 2012 OBC. The design criteria are summarized as follows:

- Peak sewage flow derived from the Harmon formula;
- Permissible sewage velocity within MECP range of 0.6 and 3.0 m/s;
- Peak extraneous flow of 0.33 L/s/ha per City of Ottawa Technical Bulletin ISTB-2018-01; and
- Minimum sanitary sewer depth of 2.5 m as per City of Ottawa Sewer Design Guidelines.

Based on the above criteria, the peak sewage flow was calculated to be 0.44 L/s, inclusive of extraneous flow. A 150 mm diameter sanitary service is proposed and will be sufficient to convey the peak sewage flows to the existing municipal sewage collection system on Stittsville Main Street.

The sanitary service sizing calculations are included in Appendix B.

The proposed 150 mm diameter sanitary service is shown on the Site Servicing Plan (Drawing SS-1).

5 Stormwater Management

The primary objective of the SWM plan is to demonstrate that post-development conditions will not adversely impact the hydrologic cycle and surface water runoff characteristics of the area. This will be accomplished by evaluating the effects of the proposed development on local drainage conditions. Where necessary, solutions will be provided to mitigate any adverse impacts. The stormwater management sections of the report will present the following:

- Existing runoff conditions including constraints and opportunities for improvement;
- Criteria to be applied in the SWM design;
- An overall SWM plan that complies with municipal and agency technical SWM guidelines; and
- Erosion and sediment control strategies.

The SWM plan was prepared recognizing provincial guidelines on water resources and the environment, including the following publications:

- Design Criteria for Sanitary Sewers, Storm Sewers and Force mains for Alterations Authorized under Environmental Compliance Approval (The Ministry of the Environment, Conservation and Parks, 2022);
- The City of Ottawa Sewer Design Guidelines (2012) and relevant technical bulletins (ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04 and ISTB-2019-02);
- Erosion and Sediment Control Guide for Urban Construction (Toronto and Region Conservation Authority, 2019); and
- Carp River Watershed/Subwatershed Study (Robinson Consultants, 2004).

5.1 STORMWATER MANAGEMENT DESIGN CRITERIA

Criteria met regarding drainage and stormwater management on the site are summarized as follows:

- The site will be developed in accordance with applicable municipal, provincial, and conservation authority, guidelines and standards;
- Attenuate the proposed condition peak flow rates from all storm events (up to and including the 100-year storm) to the allowable 2-year existing condition peak flow rate;
- MECP “Enhanced” level water quality control, including 80% TSS removal, is required to ensure the development will have no negative impacts on the downstream receivers;

- Safe conveyance of runoff from all storms up to and including the 100-year storm;
- The proposed storm sewers will be sized for conveyance of the 5-year design storm;
- Carp River Watershed/Subwatershed Study infiltration target of 262 mm/yr; and
- Erosion and sediment control measures to be implemented during construction and to remain in place until the proposed development is complete and stabilized thereby minimizing the potential for erosion and sediment transport off-site.

5.2 EXISTING SITE DRAINAGE CONDITIONS

The existing topography, ground cover, and drainage patterns were obtained through a review of available plans, base mapping and site investigation. A detailed topographic survey of the site was completed by Farley, Smith & Denis Surveying Ltd. 2022, completed on January 11, 2022, to confirm the existing features and elevations.

The existing vacant site is approximately 0.14 ha and consists of grass and treed land. The topography of the site is relatively flat.

Runoff from the existing condition drainage area (Drainage Area 101), drains overland, from the site's northwest, southwest, and southeast property limits towards Stittsville Main Street where it is captured by an existing boulevard catch basin immediately northeast of the property line within Stittsville Main Street and conveyed to the existing 900 mm diameter municipal storm sewer on Stittsville Main Street.

The Ontario Soil Survey Complex characterizes the native soils onsite as Granby, having a corresponding hydrologic soil group B.

The Existing Condition Drainage Plan (Drawing DP-1), illustrating the existing condition drainage characteristics of the site, is attached at the back of this report.

5.3 EXISTING CONDITION HYDROLOGIC ANALYSIS

The Rational Method was used to quantify the existing condition peak flows from Drainage Area 101. The model input parameters are provided in Appendix C, including runoff coefficient and time of concentration.

The peak flow for the 2-year storm event was calculated using the City of Ottawa IDF data. The existing condition peak flow is shown in Table 2, and the detailed analysis is included in Appendix C.

Table 2: Existing Condition Peak Flow Summary

DESIGN STORM	EXISTING CONDITION PEAK FLOW (L/s)
	DRAINAGE AREA 101 0.14 ha
2-Year	4.2

5.4 PROPOSED SWM PLAN

The SWM plan recognizes the SWM requirements for the site and has been developed to follow the existing topography of the land as much as feasibly possible to maintain the existing condition drainage patterns, while safely conveying stormwater runoff overland through the site.

In the proposed condition, the site will consist of a 306 m² three-storey, 18-unit, apartment building, with basement, covered parking areas, and landscaped areas. The site entrance will be located near the east corner of the site on Stittsville Main Street and will provide access to the site.

Treated and controlled runoff from the site (Drainage Area 201) will discharge to the existing 900 mm diameter storm sewer on Stittsville Main Street.

The proposed SWM plan is summarized as follows:

- Controlled runoff from Drainage Area 201 (0.14 ha) will discharge to the existing 900 mm diameter storm sewer on Stittsville Main Street, to remain consistent with predevelopment conditions. The post development peak flow rate from this area during a 100-year event will be controlled to the 2-year pre-development peak flow from Drainage Area 101 (0.14 ha). The above reflects typical stormwater quantity control for sites fronting onto municipal roads serviced with municipal storm sewer.
- Runoff from Drainage Area 201 will be captured by a series of catchbasins and catchbasin-manholes as well as a series of lawn catchbasins located along the perimeter of the site, retained in an underground storage system consisting of underground storage chambers (Stormtech Model SC-310), and controlled by a flow restrictor (Hydrovex Model 75 VHV-1) located in CBMH 5.
- Downstream of the orifice flow control, runoff will be treated by a proposed Stormceptor Model EFO4 oil-grit separator (OGS) capable of providing MECP “Enhanced” level water quality treatment, including minimum 80% TSS removal from on-site runoff.
- All internal storm sewers will be sized based on the 5-year design storm. Additionally, storage volumes pertaining to the 2-year and 5-year post-development storm intensities will

be stored within the proposed underground storage chambers, pipes, and drainage structures. Post-development storm intensities greater than the 5-year storm will utilize underground storage as well as parking lot surface storage (up to a maximum ponding depth of 0.3m).

The Proposed Condition Drainage Plan (Drawing DP-2), illustrating the proposed condition drainage characteristics of the site, is attached at the back of this report.

5.5 WATER QUANTITY CONTROL

A Hydrovex model 75 VHV-1 flow restrictor, installed at the CBMH5 outlet, is proposed to control peak flows from Drainage Area 201, to ensure the 100-year post development peak flow from the site is less than or equal to the existing 2-year peak flow rate from Drainage Area 101 (existing condition).

The Modified Rational Method was used to quantify runoff rates and storage volumes required to attenuate proposed condition peak flow rates from all storm events (up to and including the 100-year storm) to the allowable 2-year existing condition peak flow rate. A summary of the existing and proposed condition peak flow rates is summarized in Table 3 below. The detailed peak flow calculations are included in Appendix C.

Table 3: Proposed Condition Peak Flow Summary

DESIGN STORM	PROPOSED CONDITION PEAK FLOW (L/s)	STORAGE VOLUME PROVIDED (m ³)	WATER LEVEL (m)
	DRAINAGE AREA 201 0.14 ha		
	CONTROLLED		
100-Year	4.2(4.2)	77.5	117.45

Note: (4.2) refers to allowable release rate (Peak flow attenuation to 2-yr existing condition peak flow rate).

Table 3 confirms the proposed SWM plan will attenuate the proposed condition 100-year peak flow to the existing condition 2-year peak flow.

In accordance with City of Ottawa guidelines, as the Rational Method was used to quantify the existing condition 2-year peak flow, and as the proposed on-site SWM facility will consist of an underground storage chamber system, the required storage volume was calculated using 0.5x the allowable release rate (2.1 L/s). The maximum storage required during a 100-year storm event was determined to be 72.8 m³, whereas 26.1 m³ of storage volume is provided underground (via the chamber system and drainage structures) and 51.4 m³ of storage is provided above ground (within the parking and drive aisle areas), totaling 77.5 m³ of available storage. The

underground storage chambers, drainage structures, pipes, and parking surface ponding areas are shown on Drawing SS-1.

5.6 WATER QUALITY CONTROL

The proposed water quality treatment objective under the proposed condition is to provide MECP enhanced level treatment including 80% TSS removal from on-site runoff.

Water quality control for the development will be provided via a proposed Stormceptor Model EFO4 oil-grit-separator (OGS). Details related to the OGS are discussed in the section below.

Further to the water quality treatment provided by the above-mentioned OGS unit, as infiltration measures are encouraged where possible by the Carp River Watershed/Sub watershed Study, on-site infiltration by means of underground open-bottom stormwater storage chambers have been incorporated into the proposed development's SWM design in an effort to promote infiltration to the extent possible. The underground open-bottom stormwater storage chambers will provide an opportunity for infiltration and pre-treatment of runoff upstream of the OGS.

5.6.1 Oil-grit-separator

All runoff from Drainage Area 201 will be treated by a Stormceptor Model EFO4 OGS prior to discharging into the 900 mm diameter storm sewer on Stittsville Main Street. The OGS has been sized to treat a minimum of 90% of annual runoff and provide 80% TSS removal based on a fine particle size distribution. The specified Stormceptor Model EFO4 will provide 97% TSS removal from the contributing drainage area, thus exceeding the MECP's requirement for enhanced level water quality control. The Stormceptor EFO Sizing Report is included in Appendix C.

5.7 WATER INFILTRATION

The development area is located in a high groundwater recharge area according to the Carp River Watershed/Subwatershed Study. According to the study, the site area has an infiltration target of 262 mm/yr. Based on this rate, and a site area of 0.14 ha, the target annual infiltration volume for the site is 366.8 m³.

Using the Environment Canada Climate Normals data from the Ottawa Airport (1981-2010), a rainfall analysis was completed to estimate the average annual rainfall volume within the site and the breakdown of discrete rainfall event depth as a percentage of total annual rainfall.

To meet the infiltration target of 366.8 m³/yr, increasing the depth of the clear stone bedding below the underground storage chamber system from the standard 0.15 m to 0.30 m is proposed and will provide a total infiltration storage volume of 8.1 m³. This infiltration storage volume will be available for all surface runoff directed to the underground storage chamber system, which includes 741 m² of impervious asphalt (see Figure INF-1 attached in Appendix D). On an annual

basis, the infiltration storage volume will provide 370,3 m³ of infiltration which surpasses the target of 366.8 m³ established by the Carp River Watershed/Subwatershed study.

Based on the geotechnical investigation report, BH3 which is located nearest to the proposed underground chambers system, reported groundwater at 1.9m below ground level, corresponding to an approximate elevation of 115.43 m. The bottom elevation of the underground chamber bed is 116.14 m, providing a separation of approximately 0.71m, which is slightly less than the 1.0 m recommended by the MECF. It is noted however that the proposed storm sewers and underground storage chambers are relatively shallow as currently designed and there is no opportunity for the system to be raised. On this basis, the infiltration design follows a best efforts type approach to achieve the target infiltration for the site. It is further noted that the infiltration calculations provided do not include infiltration contributions from the proposed enhanced grassed swales and the pervious areas within the site and therefore are conservative.

The Infiltration Figure (Figure INF-1), illustrating the contributing infiltration area, is included in Appendix D. The rainfall analysis and detailed infiltration calculations are also included in Appendix D.

6 Erosion and Sediment Control

Erosion and sediment control will be implemented for all construction activities within the development site, including vegetation clearing, topsoil stripping, drive aisle and parking area construction, and stockpiling of materials. The principles considered and to be utilised to minimize erosion and sedimentation at the site and resultant negative environmental impacts consist of the following:

- Minimize disturbance activities where possible;
- Expose the smallest possible land area to erosion for the shortest possible time;
- Institute specified erosion control measures immediately;
- Implement sediment control measures before the outset of construction activities;
- Carry out regular inspections of erosion/sediment control measures and repair or maintain as necessary; and
- Seed or sod exposed soils as soon as possible after construction and keep chemical applications to suppress dust and control pests and vegetation to a minimum.

The proposed grading and building construction for the subject site will be carried out in such a manner that a minimum amount of erosion occurs and such that sedimentation facilities control any erosion that does occur. Specific erosion, sediment, and pollution control measures included within the proposed design, which are to be utilized on-site, consist of the following:

- Installing and maintaining the sediment traps (specifically the Terrafix Siltsacks) within the specified drainage structures;
- Placing and maintaining a stone mud mat at the site's construction entrance;
- Installing and maintaining heavy duty silt fence, as per OPSD 219.180 along the perimeter of the site; and
- Bi-weekly inspections of control measures to be instituted through a monitoring and mitigation plan and repairs made as necessary.

The proposed erosion and sediment controls are shown on the Siltation and Erosion Control Plan (Drawing SC-1).

7 Summary

The proposed site development has been designed recognizing the pertinent Municipal, Agency, and Provincial guidelines along with site specific constraints and criteria.

The domestic water supply to the proposed building will be provided via a 100 mm diameter water service connected to the existing 406 mm diameter watermain on Stittsville Main Street. The available fire flow from the nearest hydrant on Riverbank Court alone is sufficient to protect the proposed structure from fire. The most up to date boundary conditions have been reviewed by Tatham to ensure they are still adequate for the proposed system.

A 150 mm diameter sanitary service is required from the building structure to the existing 600 mm diameter municipal sanitary sewage system on Stittsville Main Street. We have assumed the existing municipal sanitary sewer system, and the municipal wastewater treatment plant have adequate capacity to service the proposed development, however, these are required to be confirmed by the City.

The SWM plan for the site includes an underground storage system consisting of underground storage chambers to retain runoff. Runoff from the site will be controlled by a Hydrovex model 75 VHV-1 flow regulator, prior to discharging to the 900 mm diameter storm sewer on Stittsville Main Street. The 100-year post development peak flow will be controlled to the 2-year existing condition peak flow. Water quality control is proposed by means of a Stormceptor Model EFO4 OGS, which achieves MECP enhanced level water quality control.

We trust this report is sufficient to confirm the proposed development can be adequately serviced with domestic and fire water supply and sewage collection and will have no negative impact with regards to SWM.

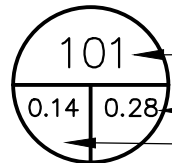
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SUBJECT PROPERTY BOUNDARY (APPROXIMATE)

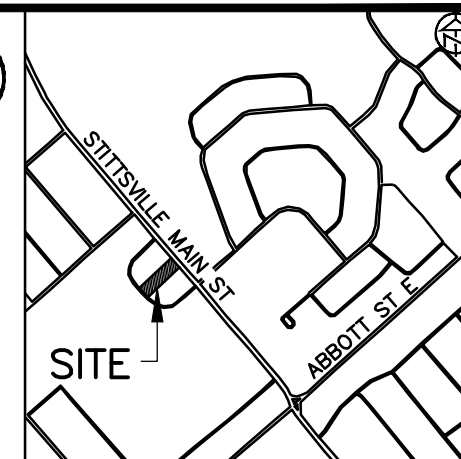
DRAINAGE AREA BOUNDARY

PRE-EXISTING CONDITION
DRAINAGE DIRECTION

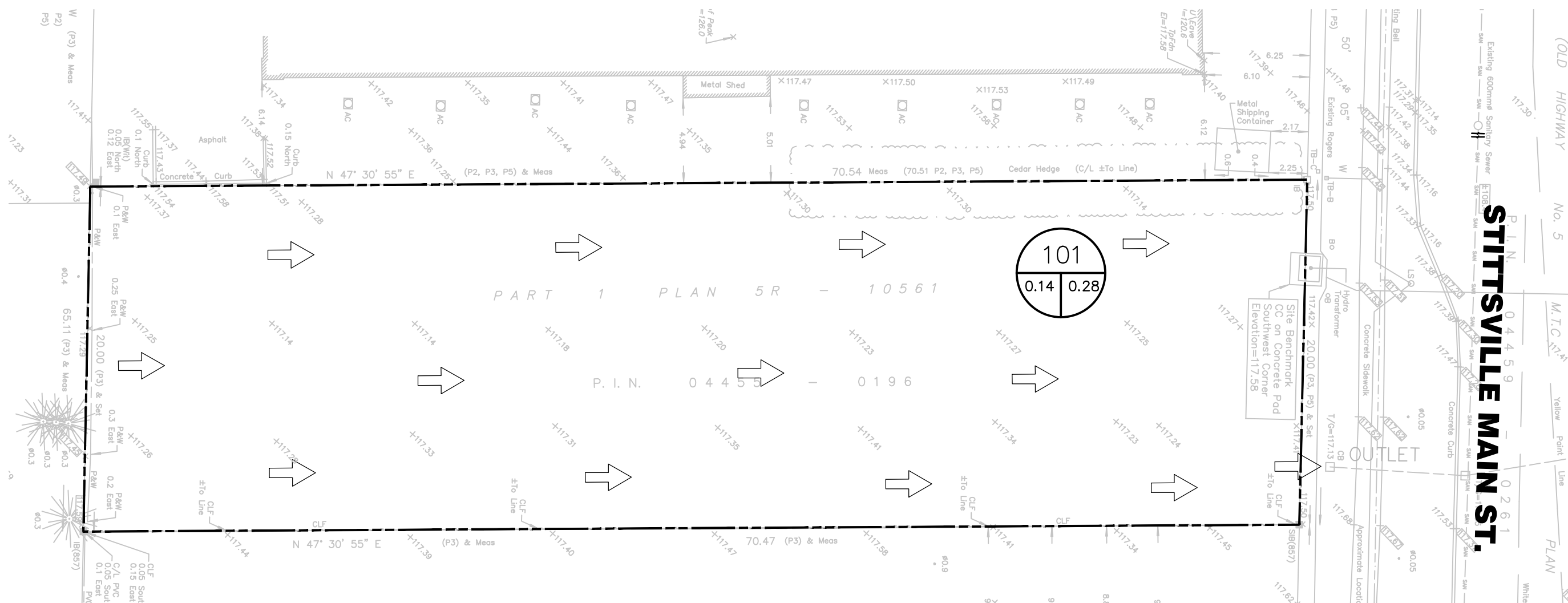


DRAINAGE AREA ID

RUNOFF COEFFICIENT
AREA (ha.)



KEY PLAN



CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

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EXISTING CONDITION DRAINAGE PLAN

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DATE: SEPT, 2024

DWG. No.

DP-1

JOB NO. 524659

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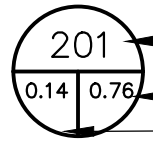


SUBJECT PROPERTY BOUNDARY (APPROXIMATE)

DRAINAGE AREA BOUNDARY



PRE-EXISTING CONDITION
DRAINAGE DIRECTION

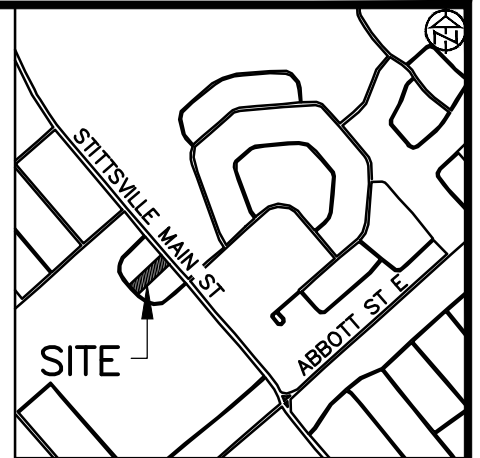


DRAINAGE AREA ID

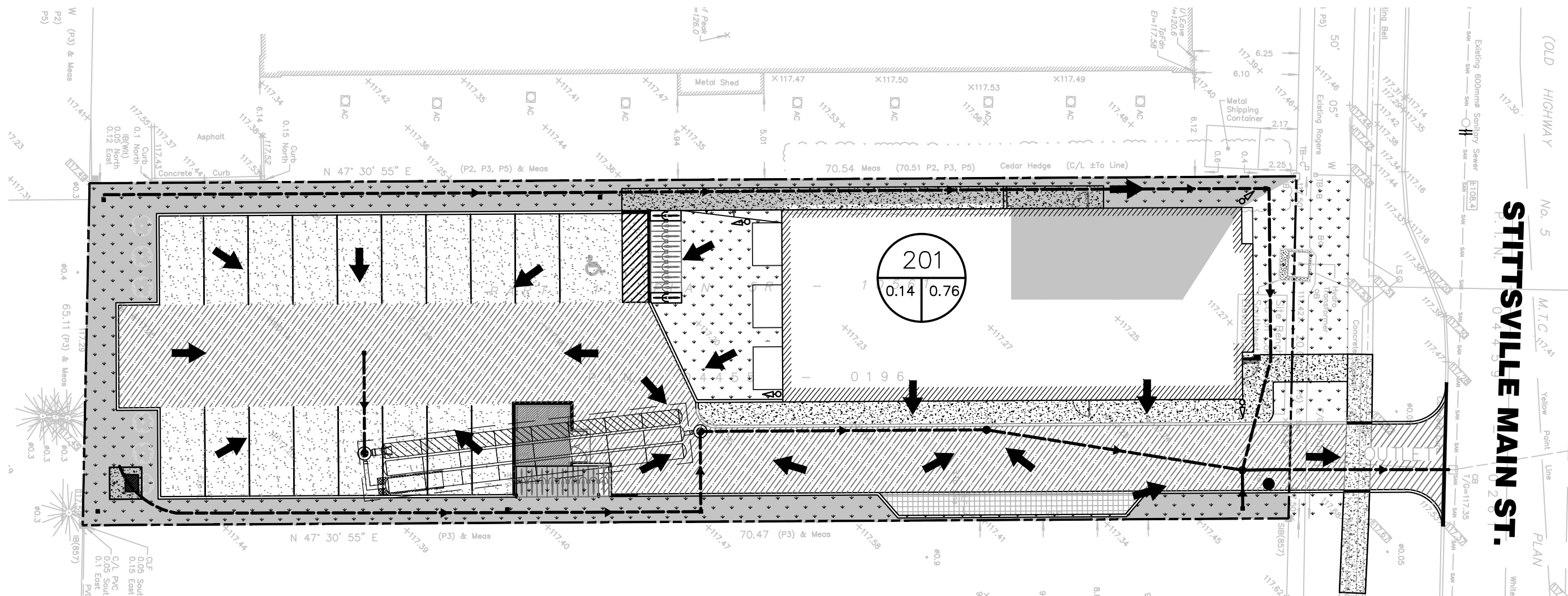
RUNOFF COEFFICIENT
AREA (ha.)



PROPOSED SWALE CONTRIBUTION AREA



KEY PLAN



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PROPOSED CONDITION DRAINAGE PLAN

DWG. No.

DP-2

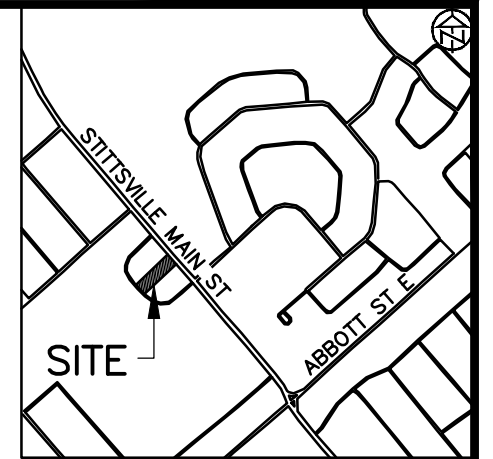
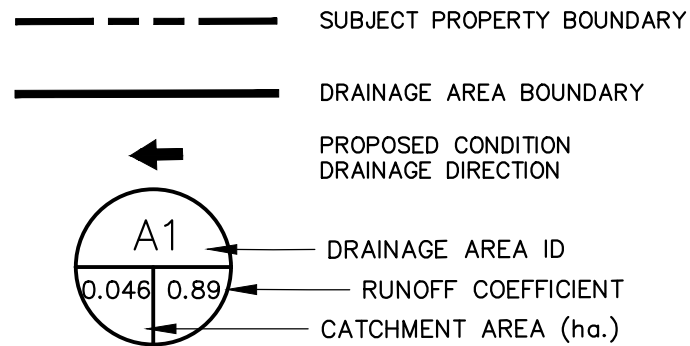
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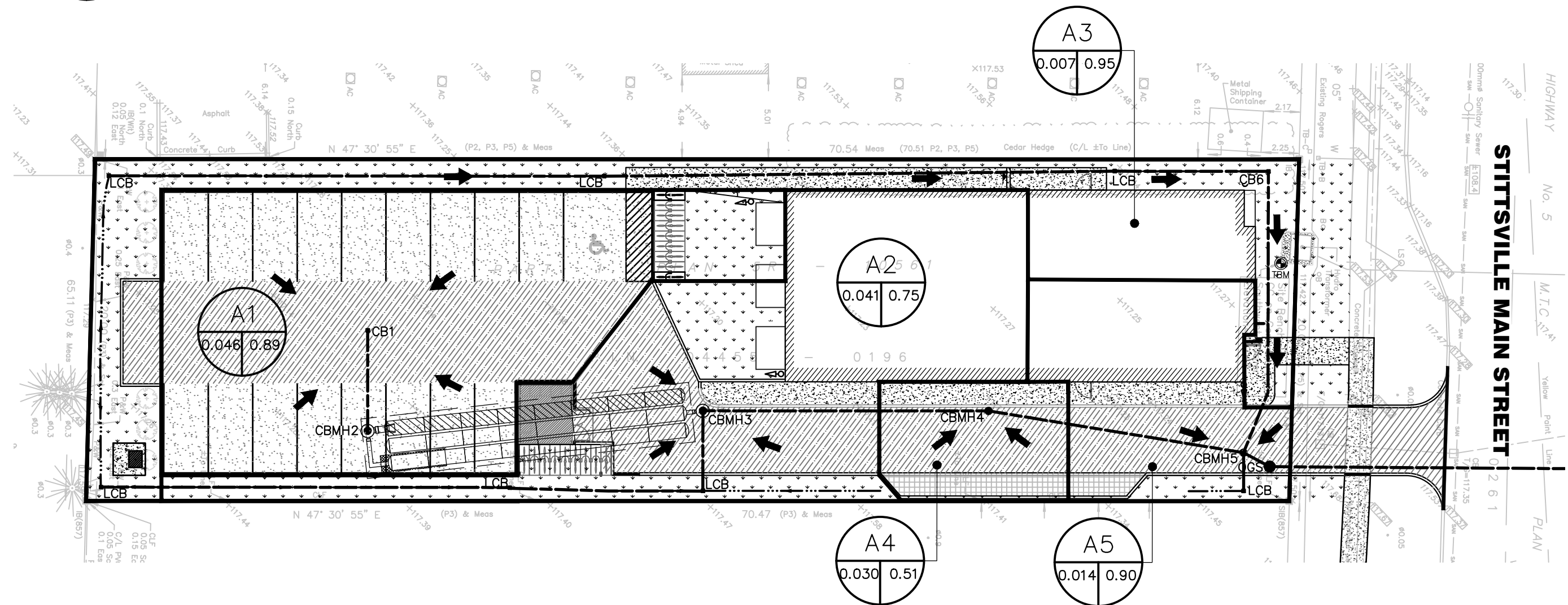
DATE: SEPT, 2024

JOB NO. 524659

LEGEND



KEY PLAN



CONTRACT DRAWINGS

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STORM CATCHMENT PLAN

DWG. No.

STM-1

SCALE: 1:250

DRAWN: HY

DATE: OCT, 2025

JOB NO. 524659

LEGEND

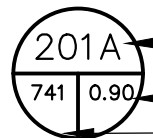


SUBJECT PROPERTY BOUNDARY (APPROXIMATE)

DRAINAGE AREA BOUNDARY

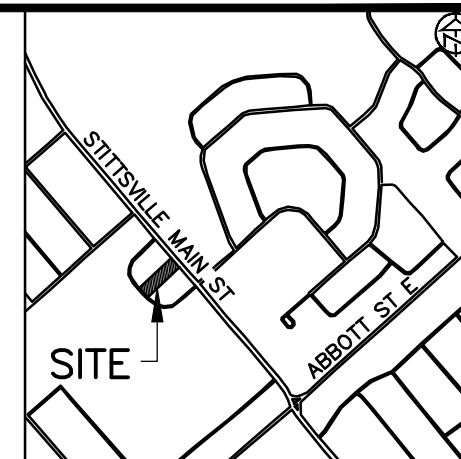


PRE-EXISTING CONDITION
DRAINAGE DIRECTION

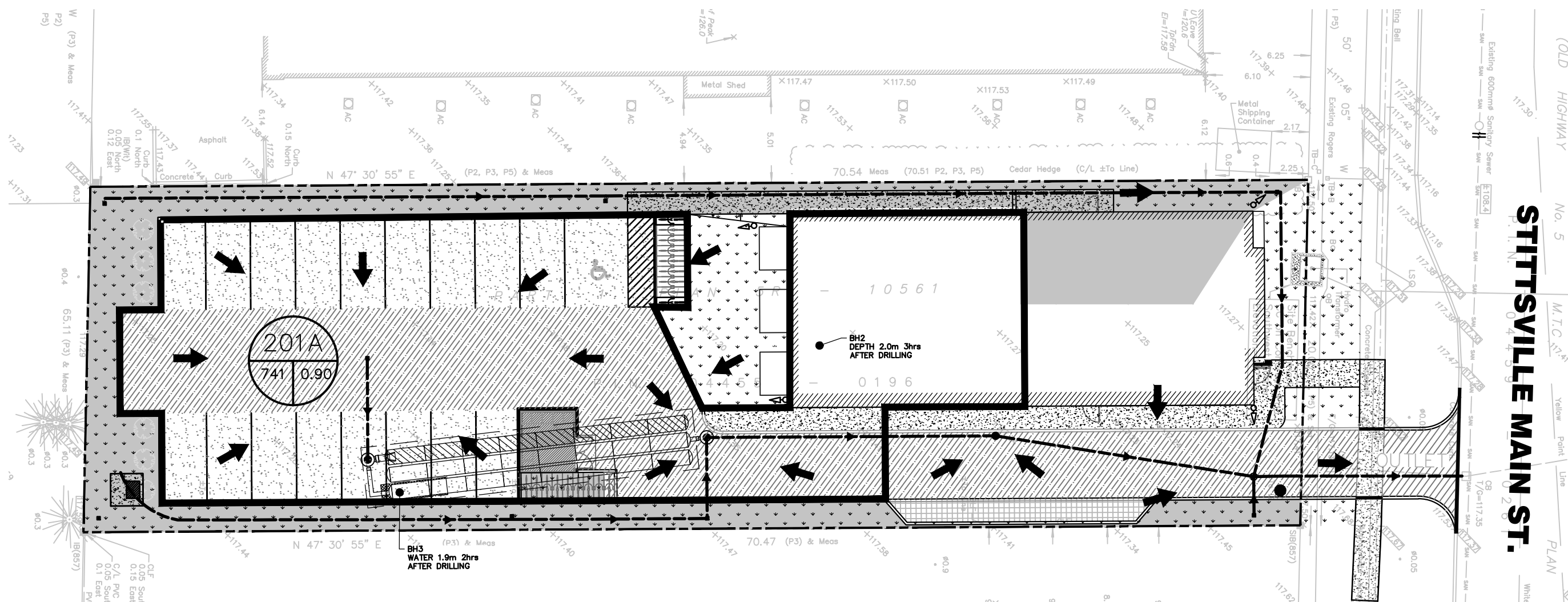


DRAINAGE AREA ID

RUNOFF COEFFICIENT
AREA (m²)



KEY PLAN



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INFILTRATION FIGURE

SCALE: 1:250

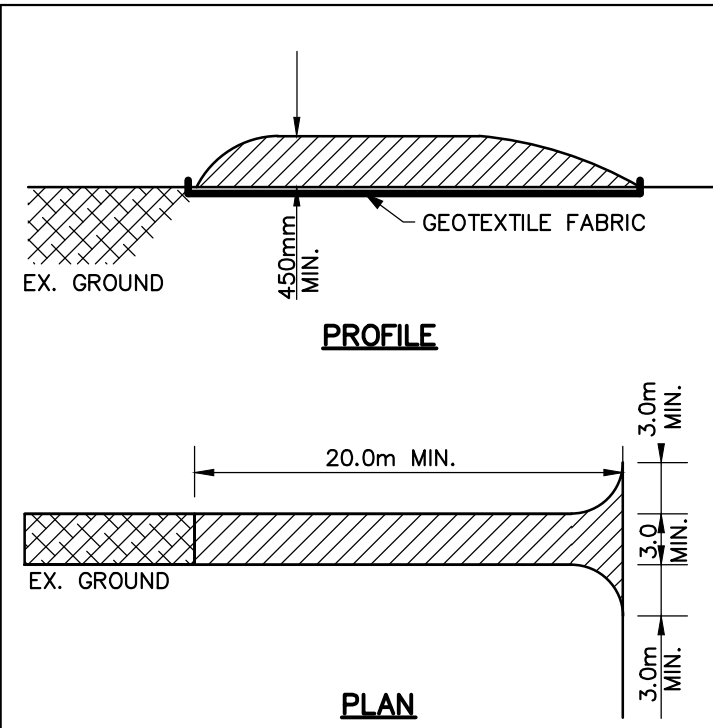
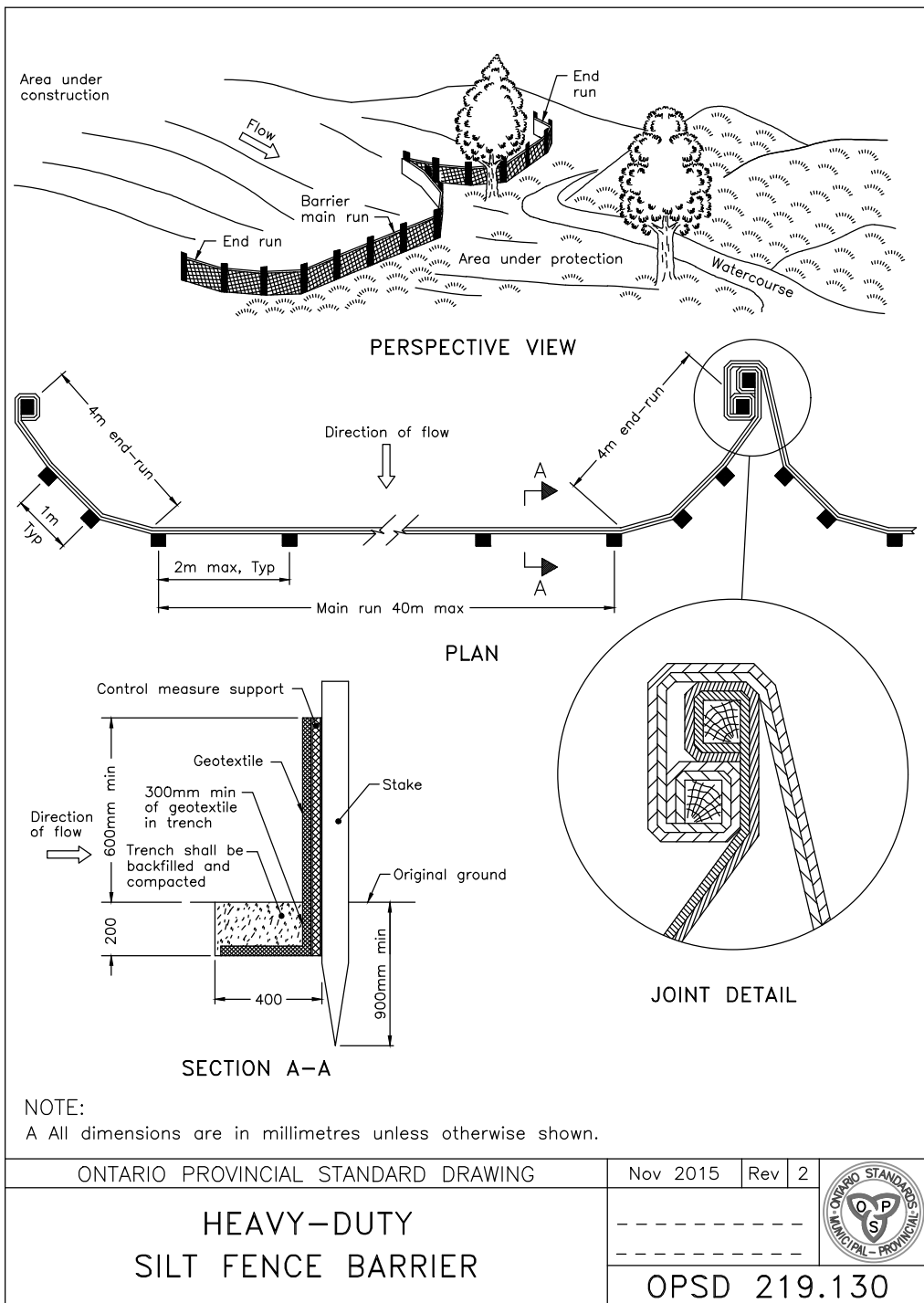
DRAWN: AA

DATE: OCT, 2025

DWG. No.

INF-1

JOB NO. 524659



STONE SIZE — THE STONE PAD SHALL BE A MIN. 450mm THICK. USE 50mm STONE OR RECLAIMED CONCRETE EQUIVALENT FOR FIRST 10m FROM ADJACENT ROAD & 150mm STONE. FOR REMAINDER OF STONE PAD.

LENGTH — AS REQUIRED BUT NOT LESS THAN 20m.

WIDTH — 4m MIN. BUT NOT LESS THAN THE WIDTH AT POINTS WHERE INGRESS. AND EGRESS OCCURS. GEOTEXTILE FABRIC (TERRAFIX 270R OR EQUAL) WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.

SURFACE WATER — ALL SURFACE WATER FLOWING OR DIRECTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE.

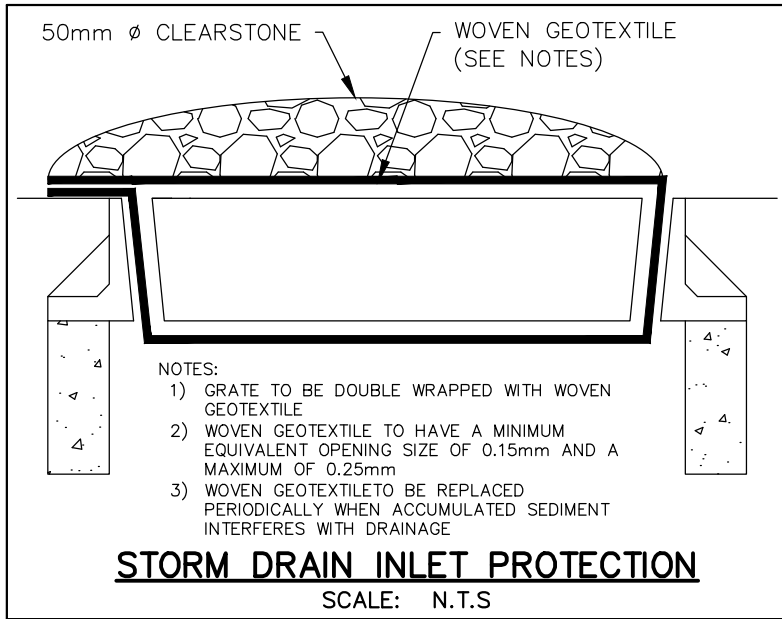
MAINTENANCE — THE CONTRACTOR SHALL MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR. UPON OBSERVATION OF CONTINUOUS MUD TRACKING ONTO ADJACENT STREETS, THE STONE MAT IS TO BE FULLY REPLACED.

WASHING — WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

INSPECTION AND REQUIRED MAINTENANCE AFTER EACH RAIN SHALL BE PROVIDED BY THE CONTRACTOR.

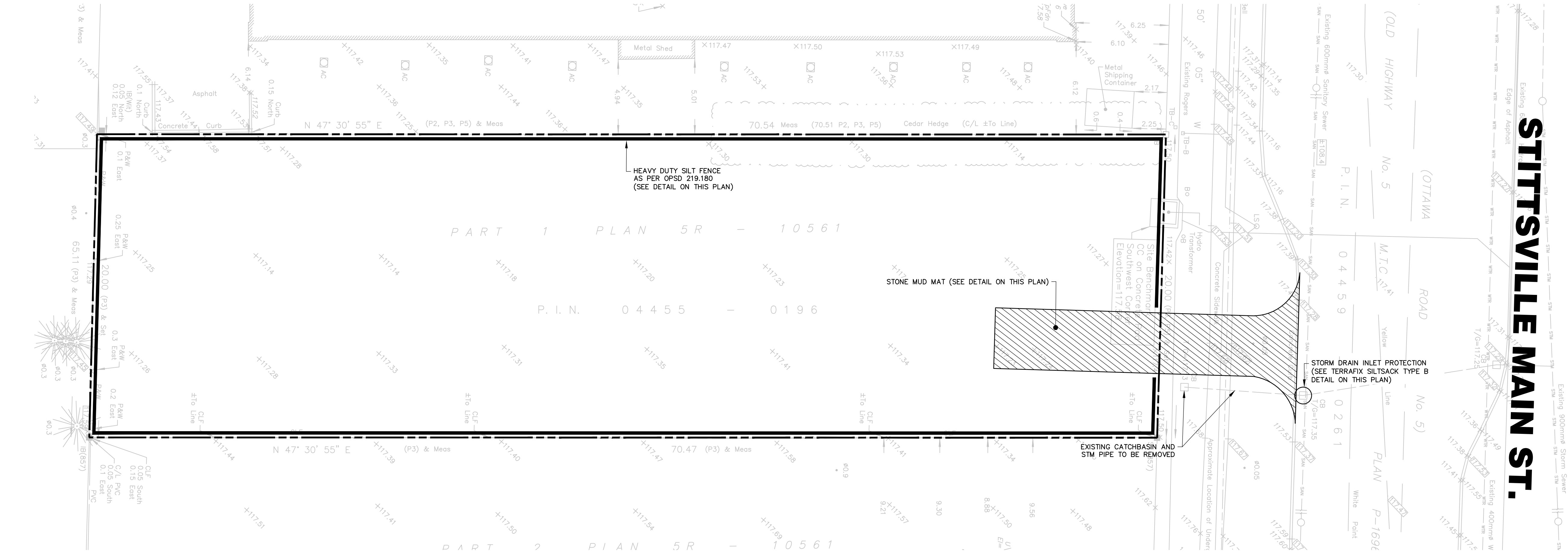
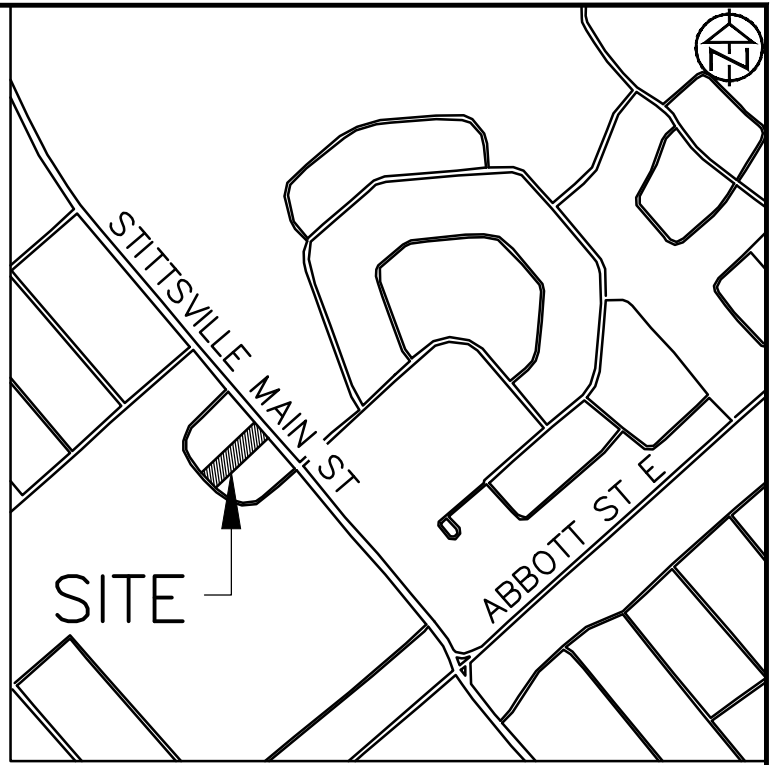
STONE MUD MAT DETAIL
SCALE: N.T.S.

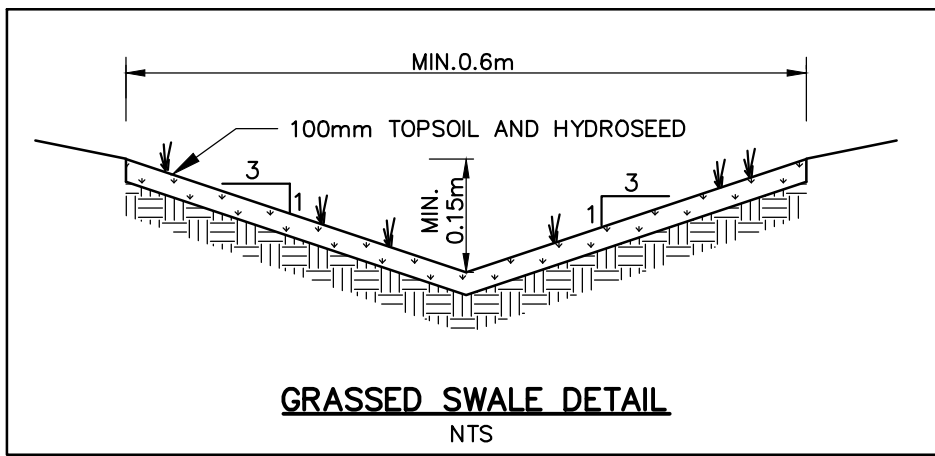
1. CONTRACTOR TO INSTALL AND MAINTAIN SILT FENCE AT LOCATIONS SHOWN OR AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR TO ARRANGE PRE-CONSTRUCTION MEETING WITH ENGINEER AFTER PLACING ALL SILTATION CONTROL WORKS.
3. SILTATION AND EROSION CONTROL WORKS MUST BE INSTALLED PRIOR TO CONSTRUCTION.
4. ALL SEDIMENT CONTROL WORKS MUST BE CLEANED AND MAINTAINED AFTER EACH MAJOR STORM EVENT OR AS DEEMED NECESSARY BY THE ENGINEER.
5. THE CONTRACTOR WILL INSPECT THE SEDIMENT AND EROSION CONTROL MEASURES WEEKLY AND AFTER EACH MAJOR STORM EVENT. THE CONTRACTOR WILL NOTIFY THE ENGINEER OF CORRECTIVE ACTIONS REQUIRED AS SOON AS DEFICIENCIES ARE NOTED. THE CONTRACTOR MAINTAINS ULTIMATE RESPONSIBILITY TO ENSURE PROPER SEDIMENT AND EROSION CONTROL MEASURES ARE IMPLEMENTED AND MAINTAINED. ALL DEFICIENCIES AND CORRECTIVE MEASURES WILL BE DOCUMENTED IN A WEEKLY INSPECTION REPORT. A COPY OF THE WEEKLY INSPECTION REPORT WILL BE PROVIDED TO THE ENGINEER.
6. IF CONSTRUCTION IS INTERRUPTED AND/OR INACTIVITY EXCEEDS 30 DAYS, THEN STOCKPILED, STRIPPED OR EXPOSED AREAS MUST BE STABILIZED BY HYDROSEEDING AND ANY OTHER APPROPRIATE GEOTEXTILE MATERIAL, IF REQUIRED.
7. REMOVAL OF ALL SILT FENCES AT THE END OF CONSTRUCTION TO BE APPROVED BY THE ENGINEER AFTER THE SITE HAS STABILIZED.
8. ALL SILT FENCE TO OPSD 219.130.
9. CLEARING OF VEGETATION AND TREE COVER IS TO OCCUR OUTSIDE OF BIRD BREEDING SEASON AS RECOMMENDED BY ENVIRONMENT CANADA (APRIL 15 — AUGUST 15)
10. ALL SIDE SLOPES 3:1 OR GREATER ARE TO BE STABILIZED IMMEDIATELY WITH HYDROSEED (USING A NATIVE SEED MIX) UNLESS OTHERWISE NOTED. USE OF AN EROSION CONTROL BLANKET SUCH AS TERRAFIX S-100 (OR APPROVED EQUAL) IS RECOMMENDED IF CONSTRUCTION OCCURS OUTSIDE OF THE GROWING SEASON.



SCHEDULE OF CONSTRUCTION WORKS

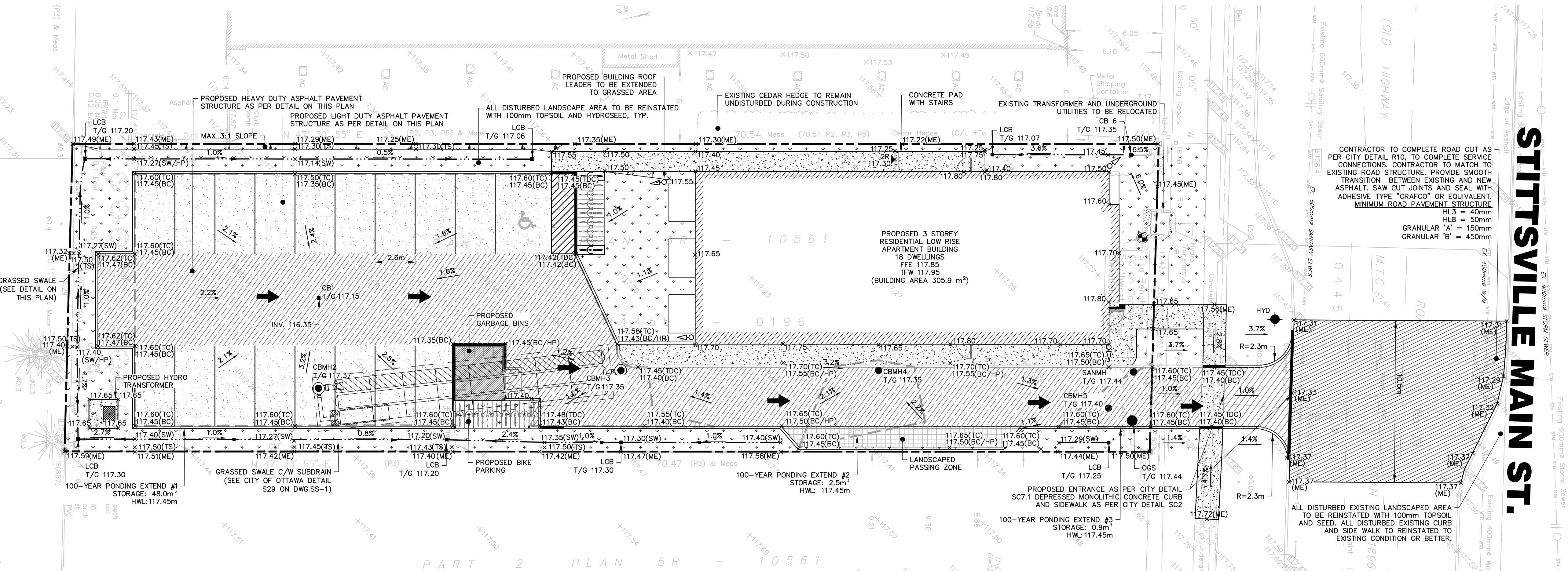
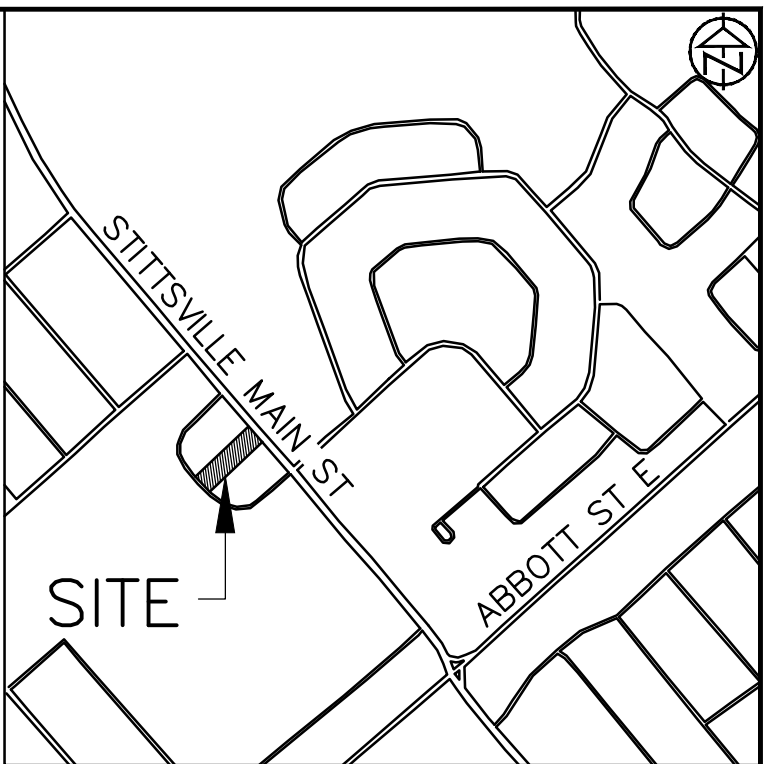
1. IMPLEMENTATION OF EROSION CONTROL MEASURES AS SPECIFIED ON THIS PLAN
2. REMOVALS AS SPECIFIED ON THIS PLAN
3. TOPSOIL STRIPPING AND STOCKPIILING
4. EARTH EXCAVATION AND GRADING





PAVEMENT STRUCTURE (PGAC 58-34)			
Course	Compaction Requirement	Light Duty	Heavy Duty
Surface Course Asphalt	OPSS 1150	50mm HL3	40mm HL3
Binder Course Asphalt	OPSS 1150		50mm HL8
Granular Base	100% SPMDD	150mm OPSS 1010 Granular A	150mm OPSS 1010 Granular A
Granular Subbase	100% SPMDD	350mm OPSS 1010 Granular B	450mm OPSS 1010 Granular B

PAVEMENT STRUCTURE AS PER GEOTECHNICAL INVESTIGATION PROVIDED BY LRL ENGINEERING LTD. DATED SEPTEMBER 2022.



LEGEND

	PROPOSED CURB	x 262.25	PROPOSED ELEVATION		PROPOSED ROOF LEADER
	PROPOSED DEPRESSED CURB	x 262.25 (HP)	PROPOSED HIGH POINT ELEVATION		PROPOSED CATCHBASIN
	EXISTING CATCHBASIN	x 262.25 (ME)	PROPOSED ELEVATION MATCH EXISTING		PROPOSED LAWN CATCHBASIN
	EXISTING MANHOLE	x 262.25 (TC)	PROPOSED TOP OF CURB		PROPOSED CATCHBASIN MANHOLE
	PROPOSED OVERLAND FLOW ROUTE	x 262.25 (BC)	PROPOSED BOTTOM OF CURB		PROPOSED STORM MANHOLE
	PROPOSED HEAVY DUTY ASPHALT	x 262.25 (TW)	PROPOSED TOP OF RETAINING WALL		PROPOSED SANITARY MANHOLE
	PROPOSED LIGHT DUTY ASPHALT	x 262.25 (BW)	PROPOSED BOTTOM OF RETAINING WALL		PROPOSED OIL GRIT SEPARATOR
		x 262.25 (SW)	PROPOSED BOTTOM OF SWALE		PROPOSED DOOR ENTRANCE/EXIT
		x 262.25 (TS)	PROPOSED TOP OF SWALE		APPROXIMATE PROPERTY BOUNDARY
		x 262.25 (TDC)	PROPOSED TOP OF DEPRESSED CURB		100 YEAR HIGH WATER LEVEL

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ELEVATIONS ARE DERIVED FROM ONTARIO CONTROL MONUMENT 0011968U118, HAVING A PUBLISHED ELEVATION OF 126.180m
TBM: CC ON THE SOUTHWEST CORNER OF THE HYDRO TRANSFORMER CONCRETE PAD. ELEV. 117.58

APPLICANT:
ELITE PROPERTY DEVELOPMENTS INC.

No.	REVISION DESCRIPTION	DATE
2.	RE-ISSUED FOR SPA	SEPT. 2024
3	RE-ISSUED FOR SPA	APR. 2025
4	RE-ISSUED FOR SPA	JUL. 2025
5.	RE-ISSUED FOR SPA	OCT. 2025
6.	RE-ISSUED FOR SPA	NOV. 2025

ENGINEER STAMP

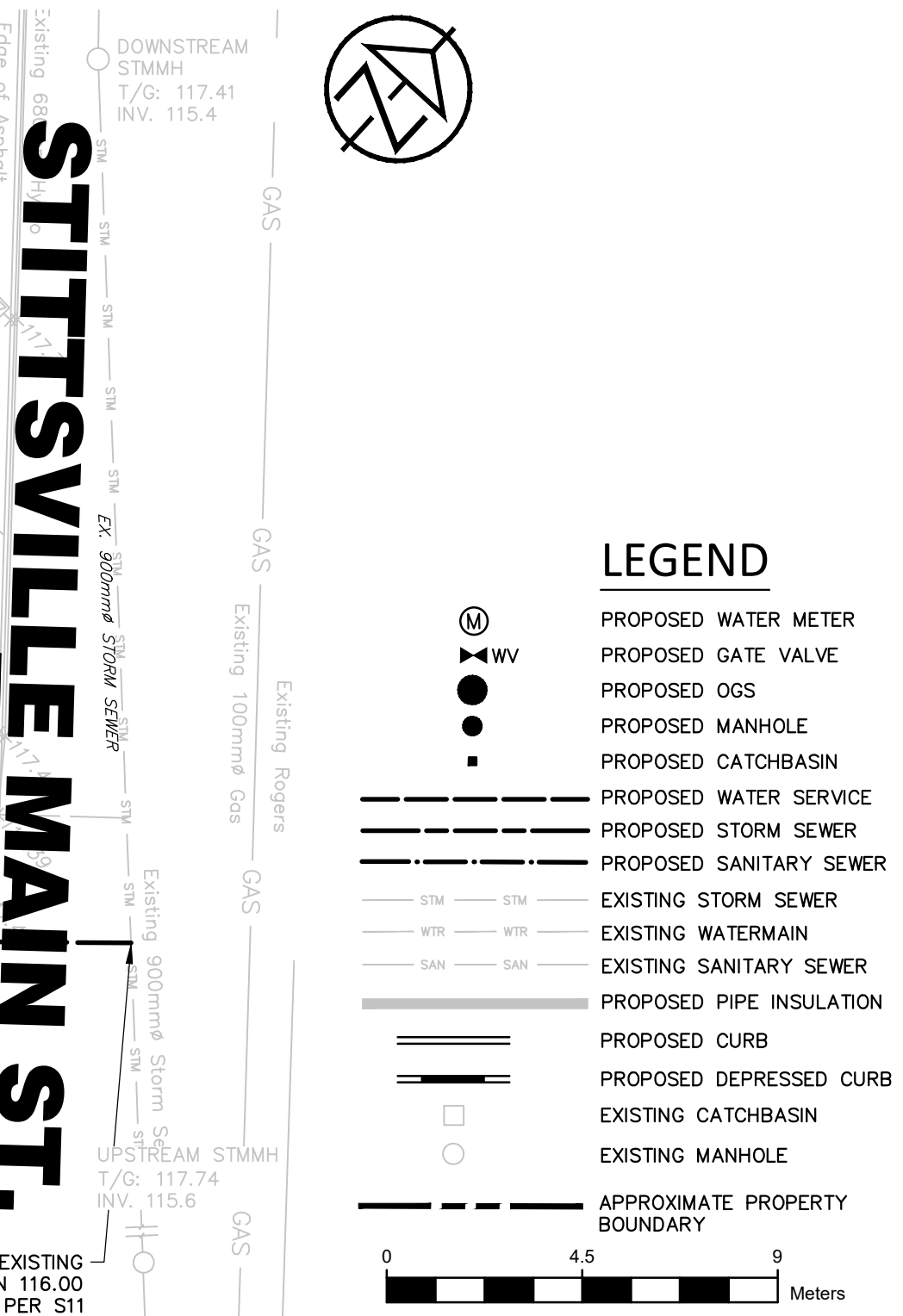
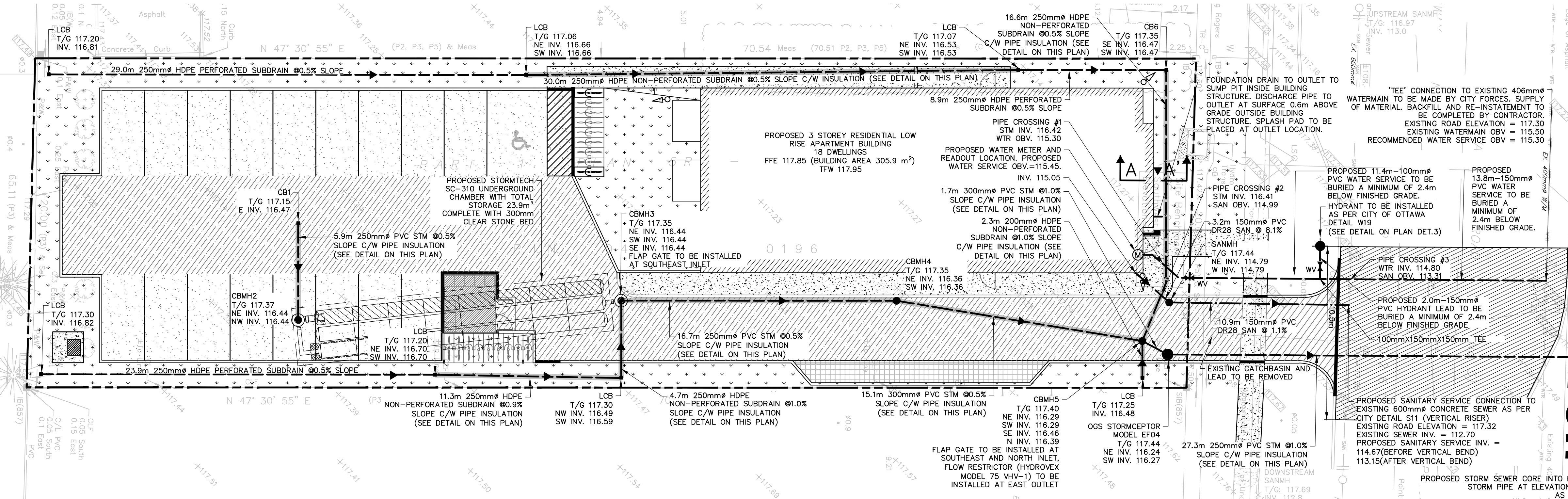
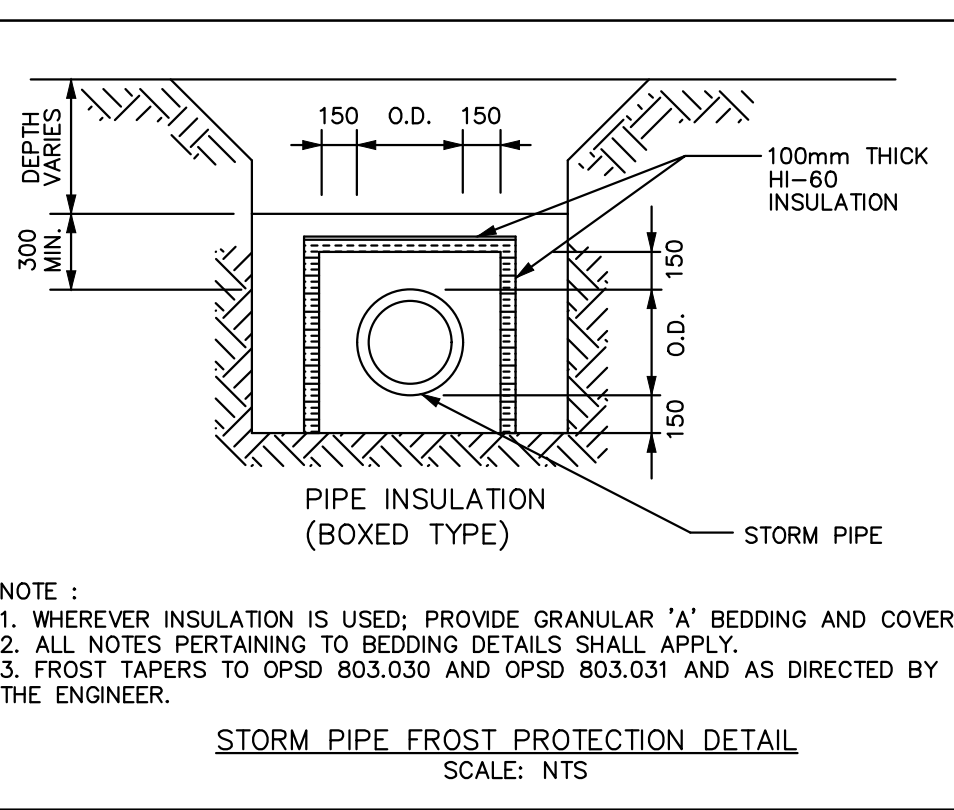
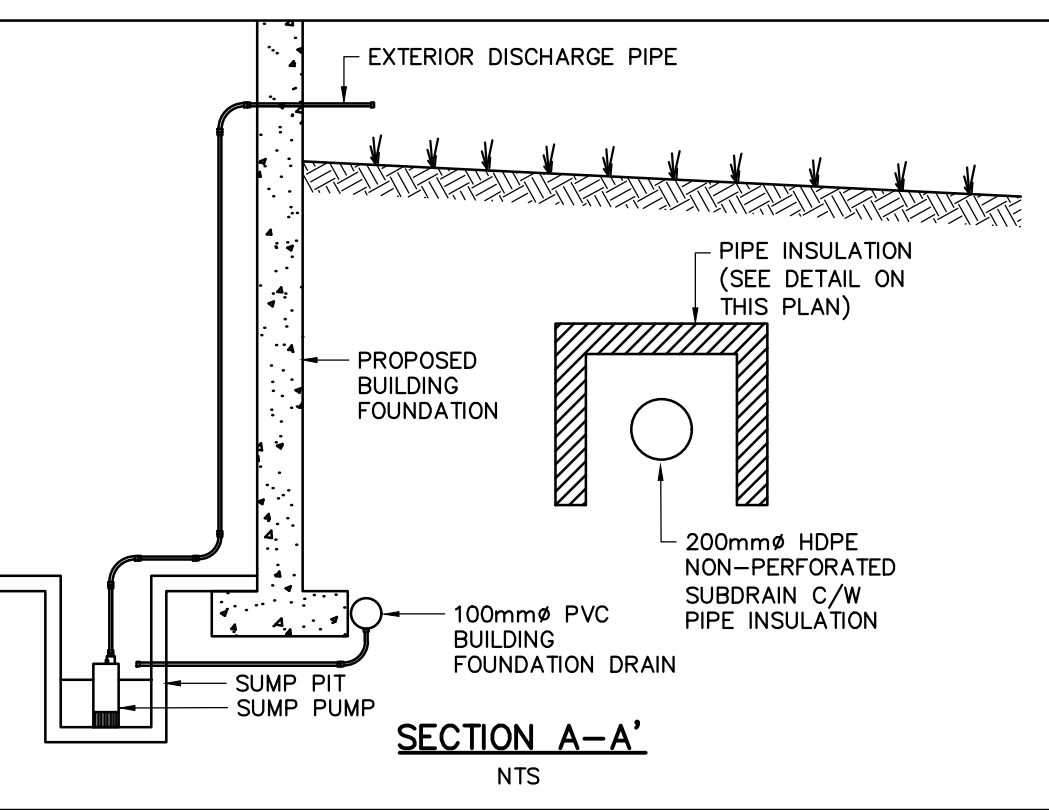
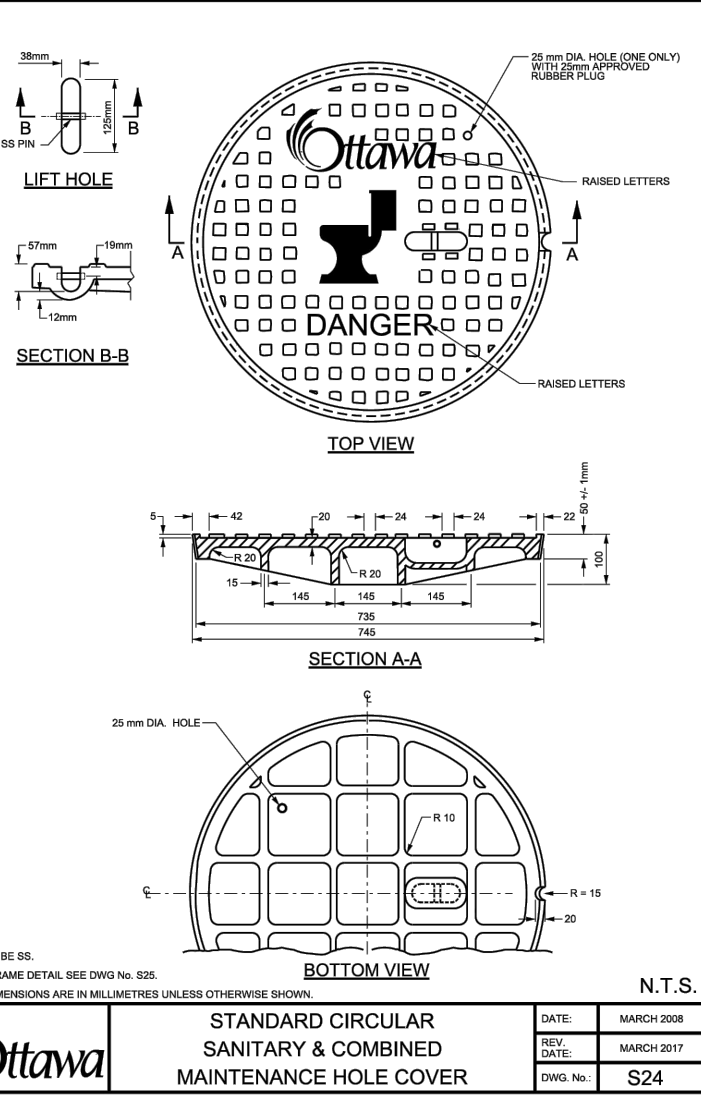
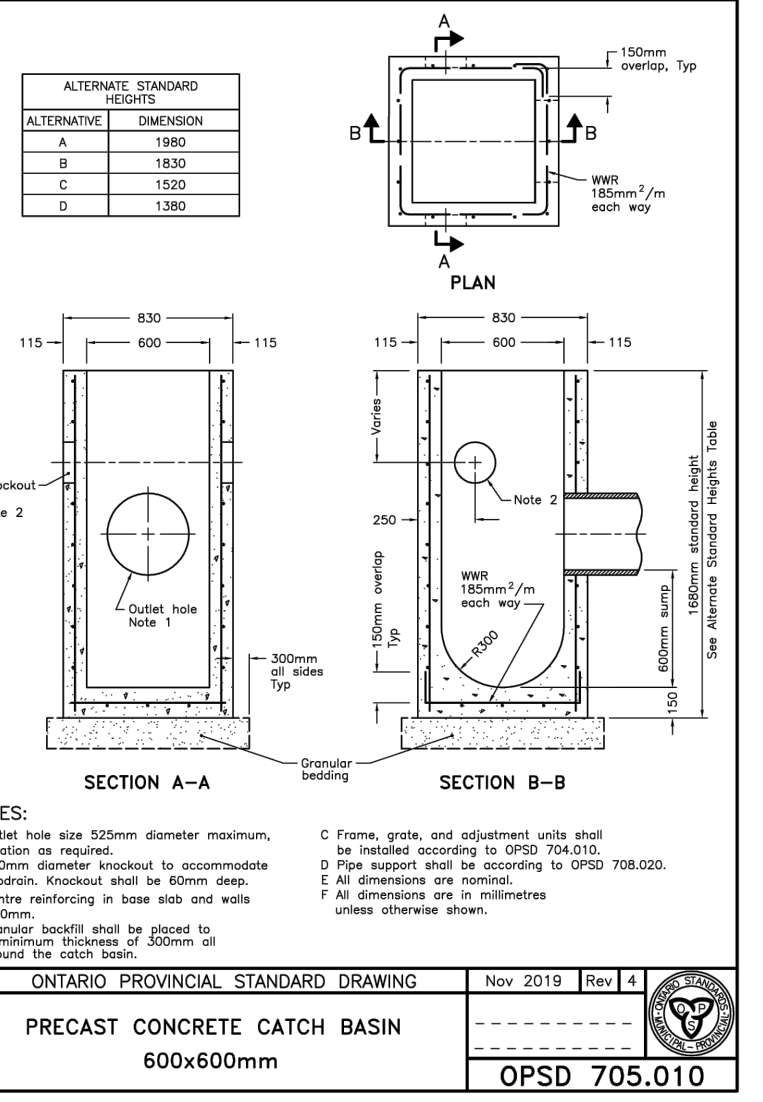
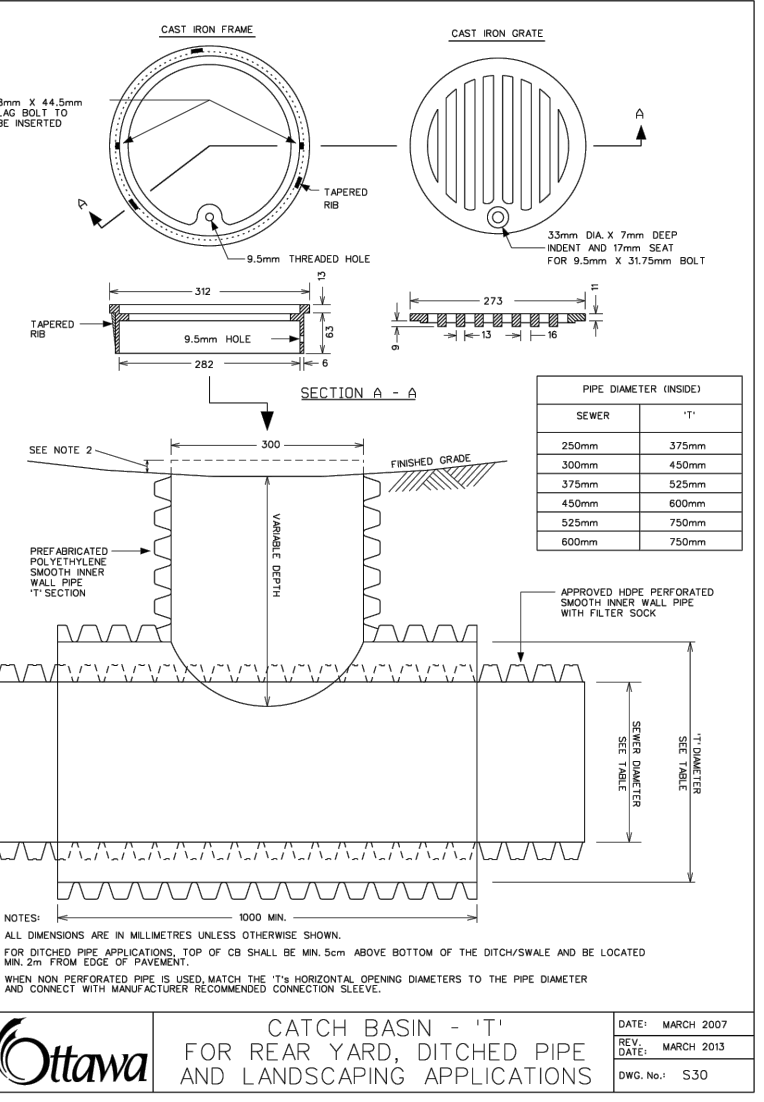
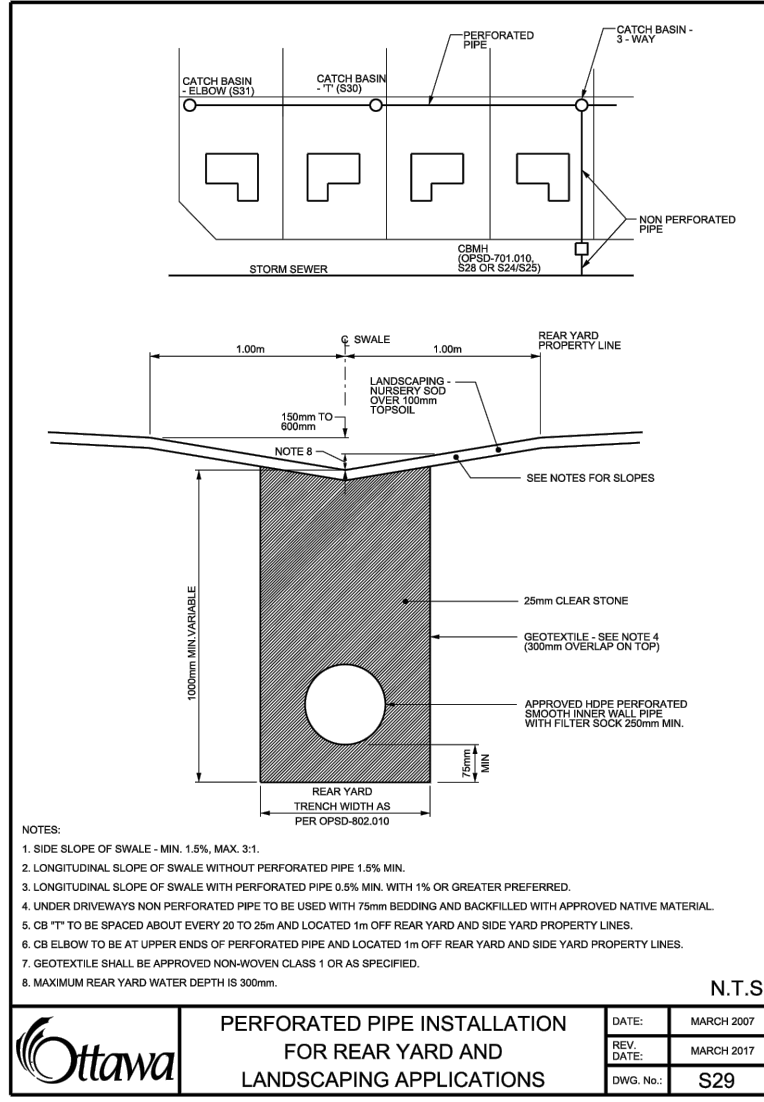
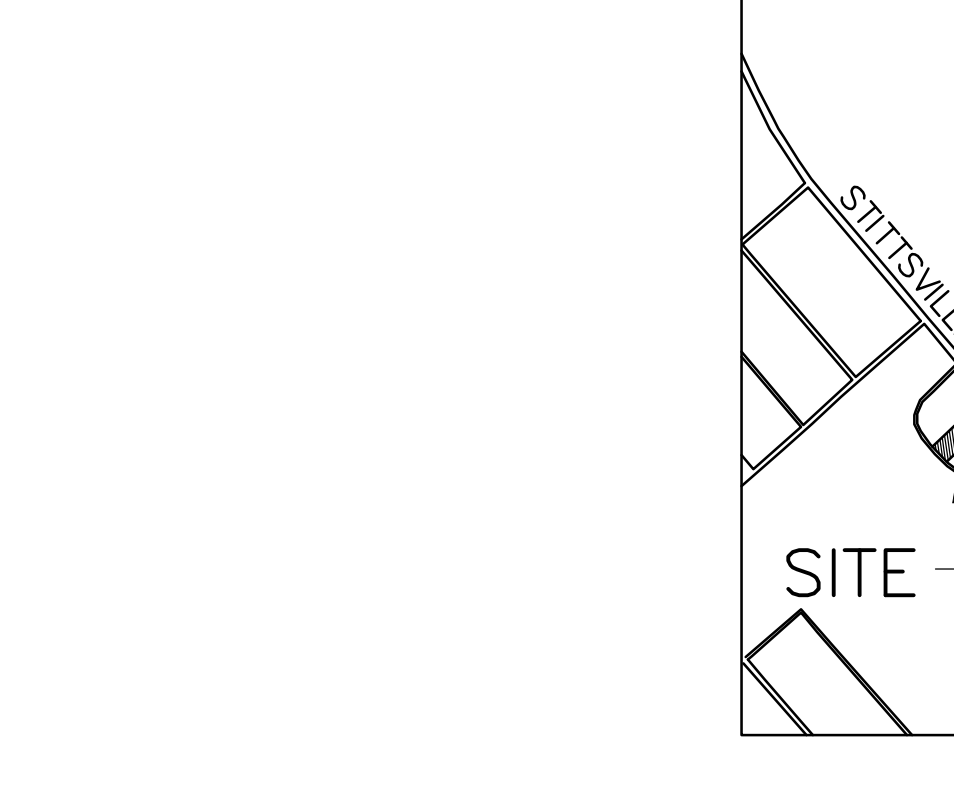
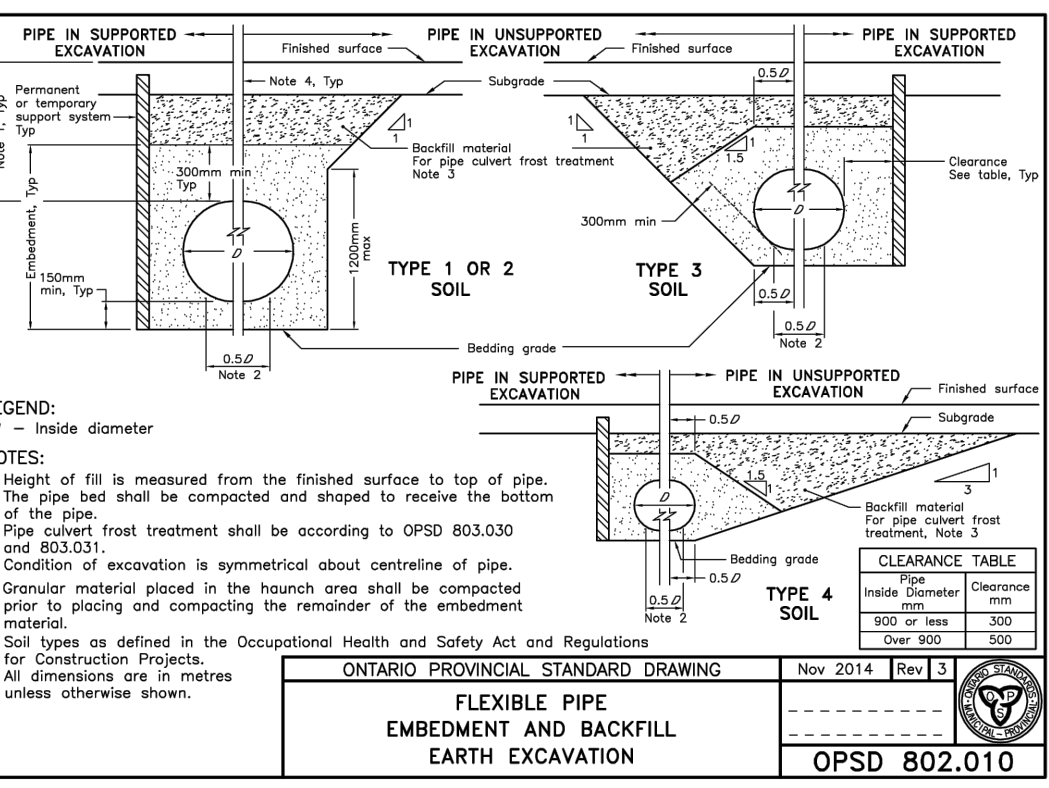
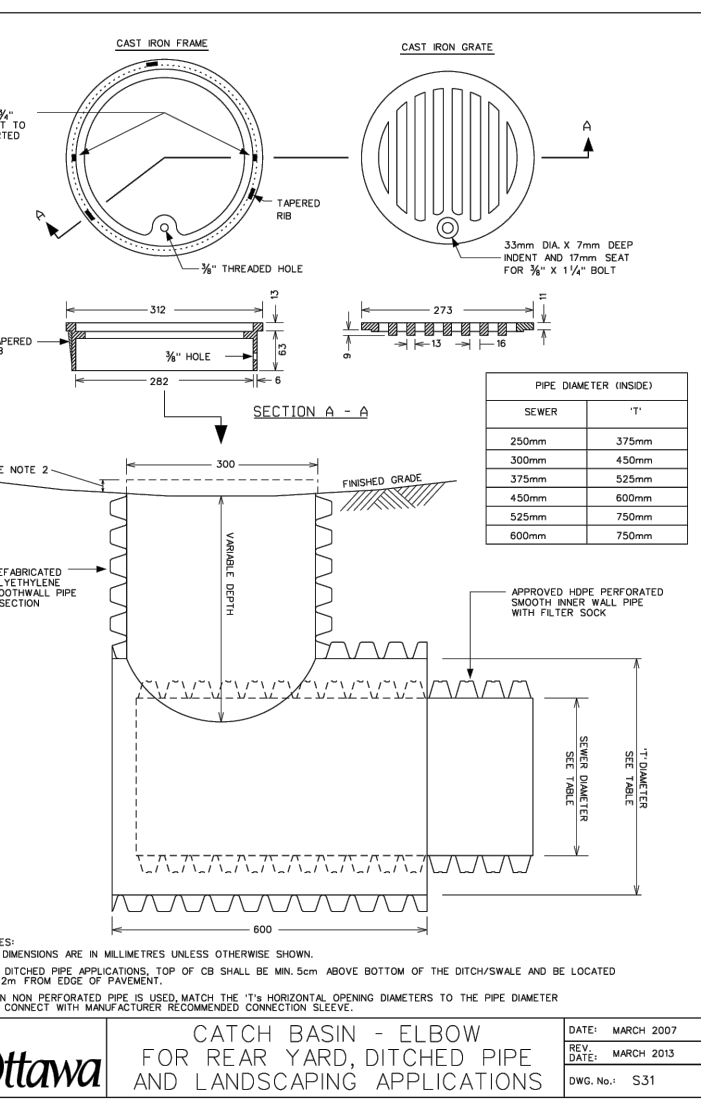
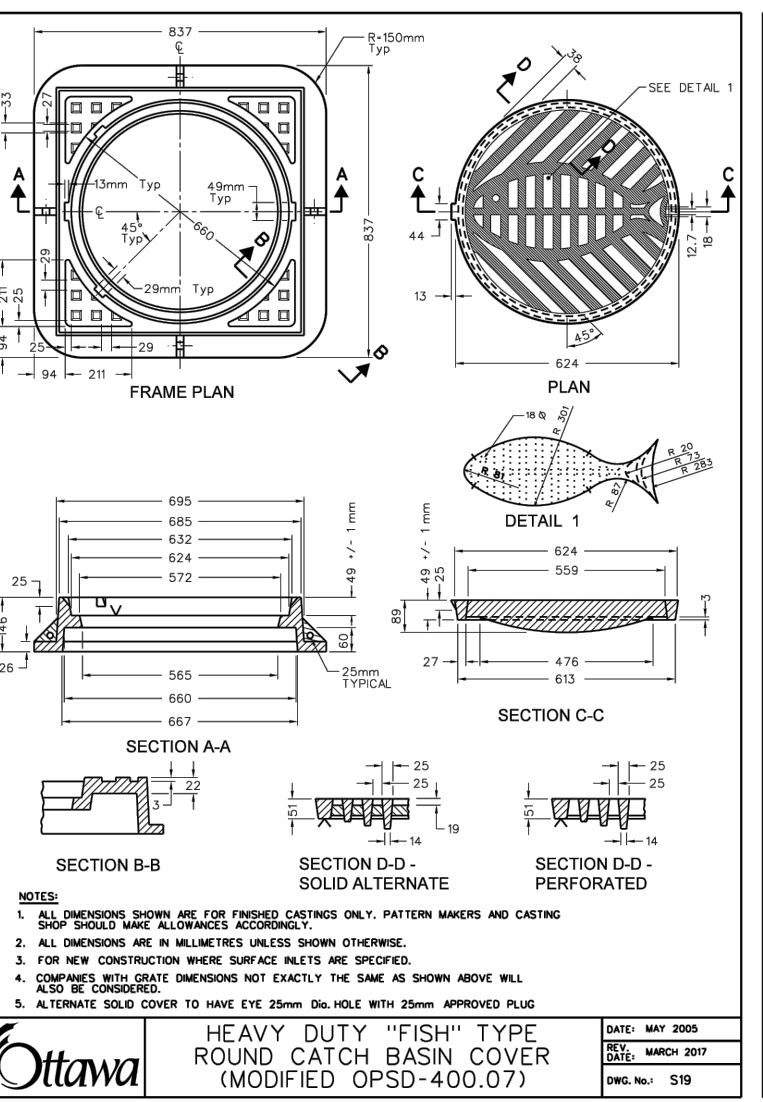
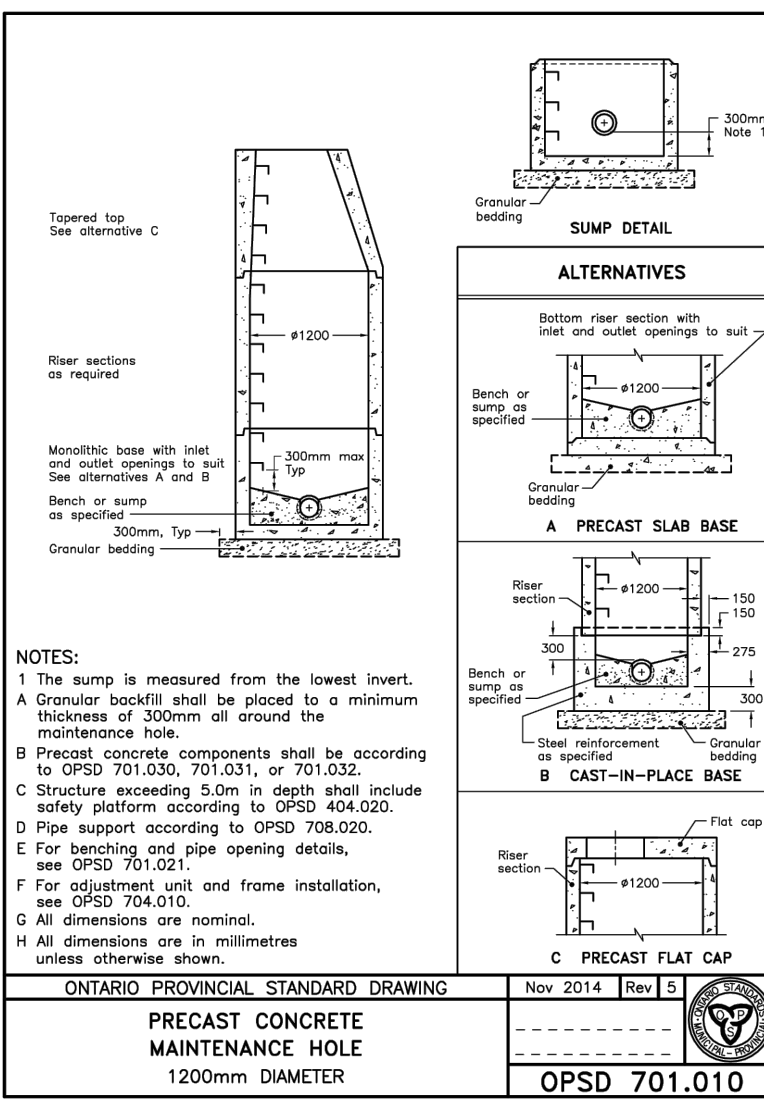
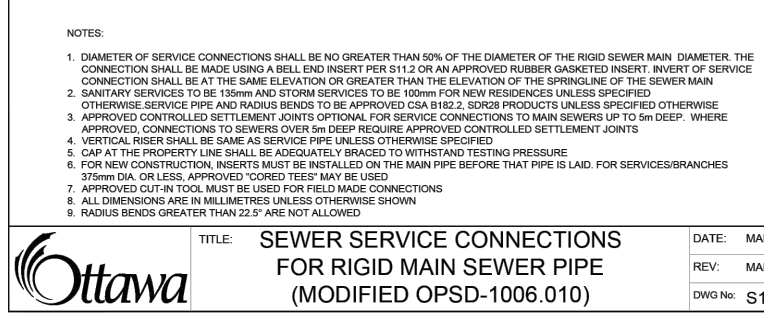
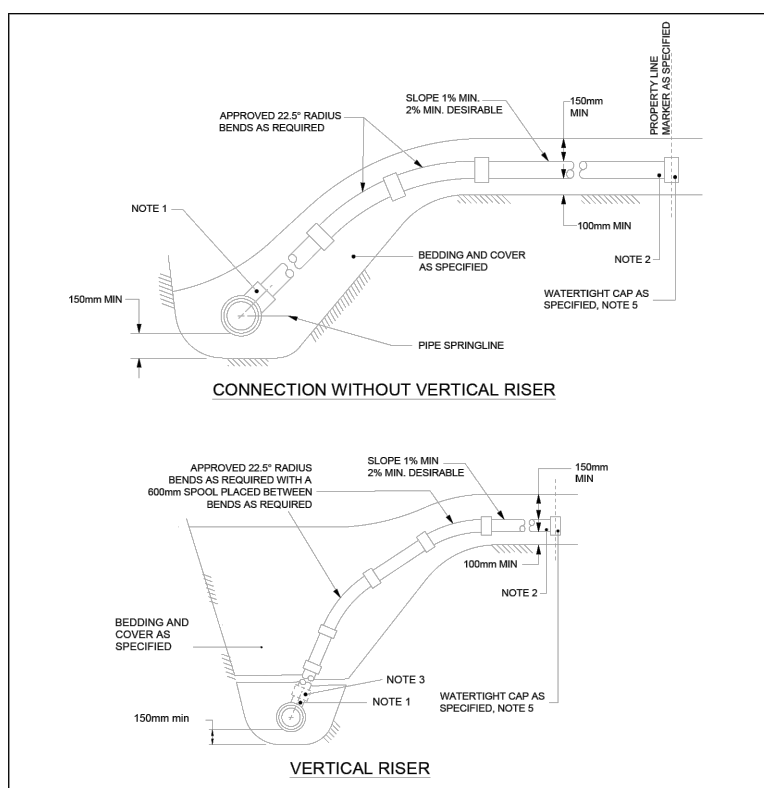


1412 STITTVILLE MAIN STREET
TOWNSHIP OF STITTVILLE

SITE GRADING PLAN



DESIGN: HY	FILE: 524659	DWG:
DRAWN: HY	DATE: SEPT 2024	SG-1
CHECK: GC	SCALE: 1:150	



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TBM: CC ON THE SOUTHWEST CORNER OF THE HYDRO TRANSFORMER CONCRETE PAD. ELEV. 117.58

APPLICANT: ELITE PROPERTY DEVELOPMENTS INC.

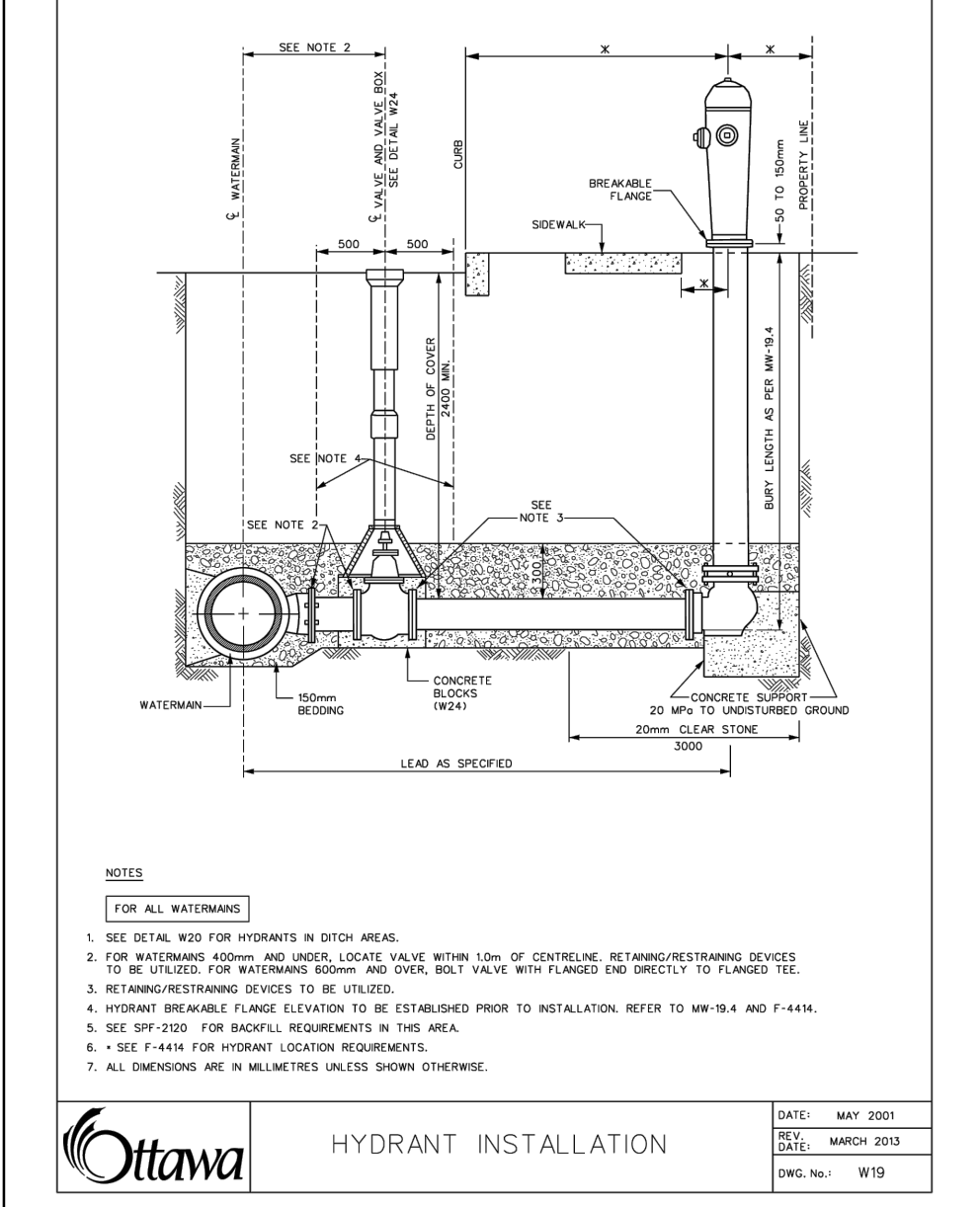
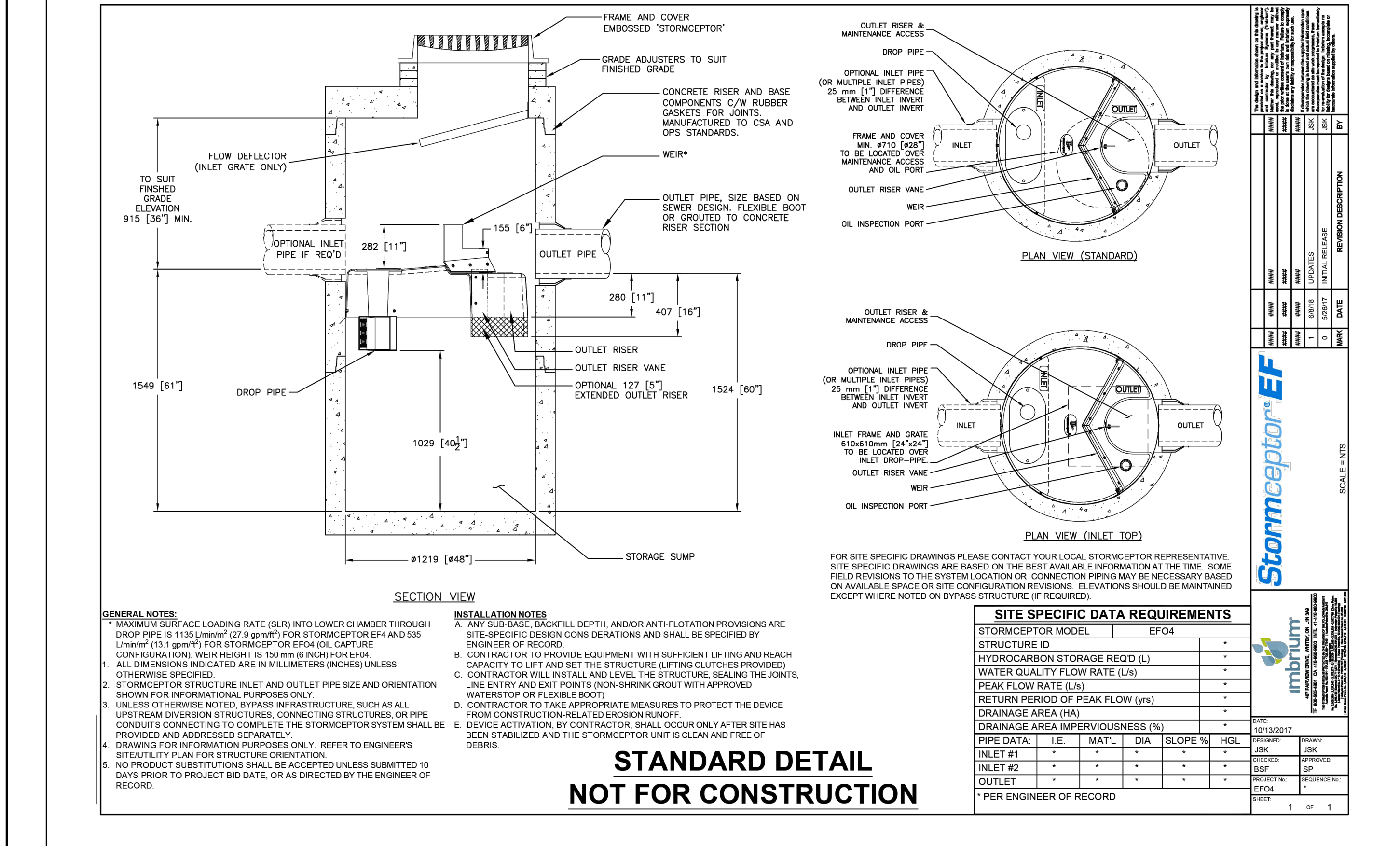
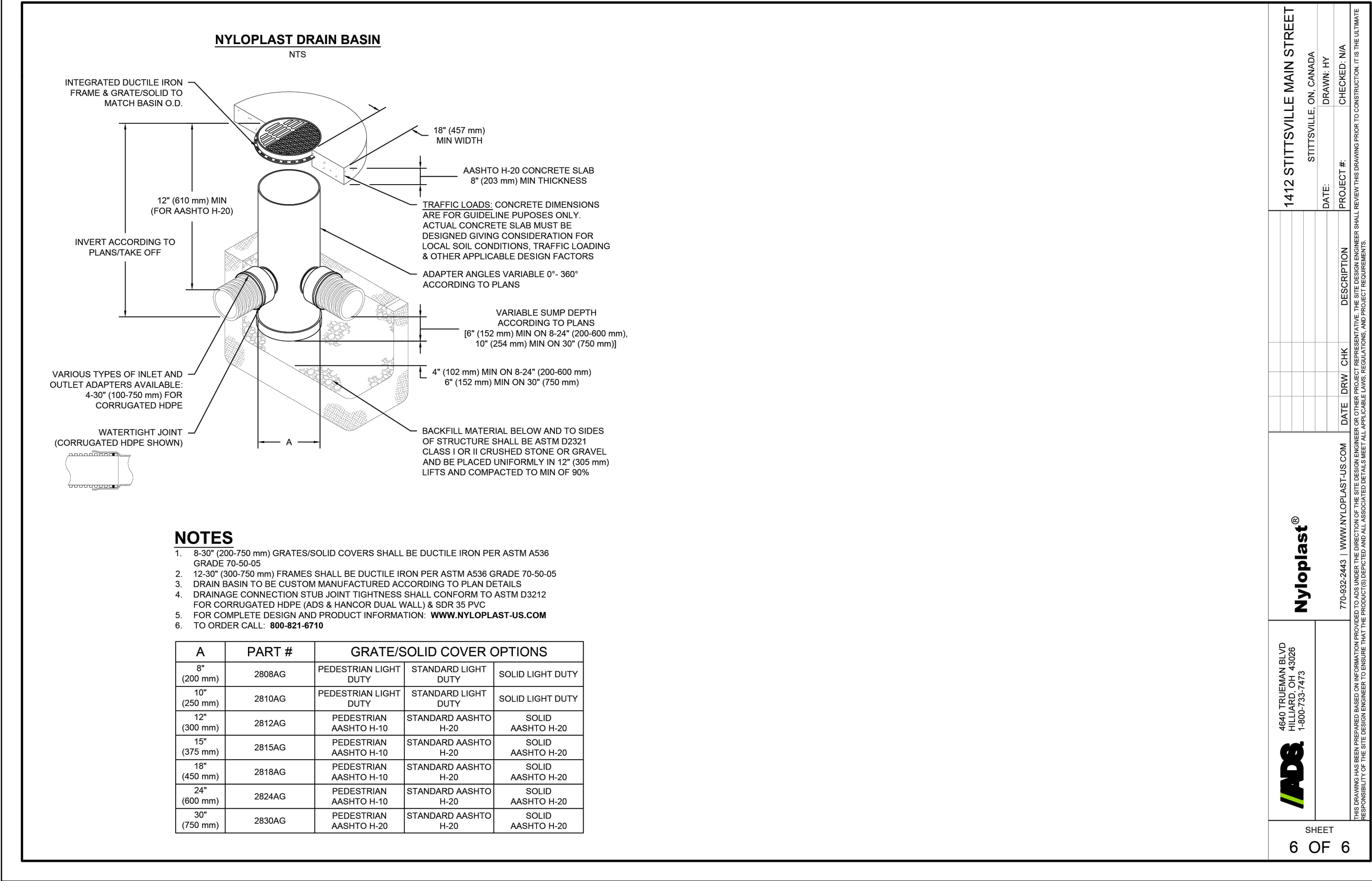
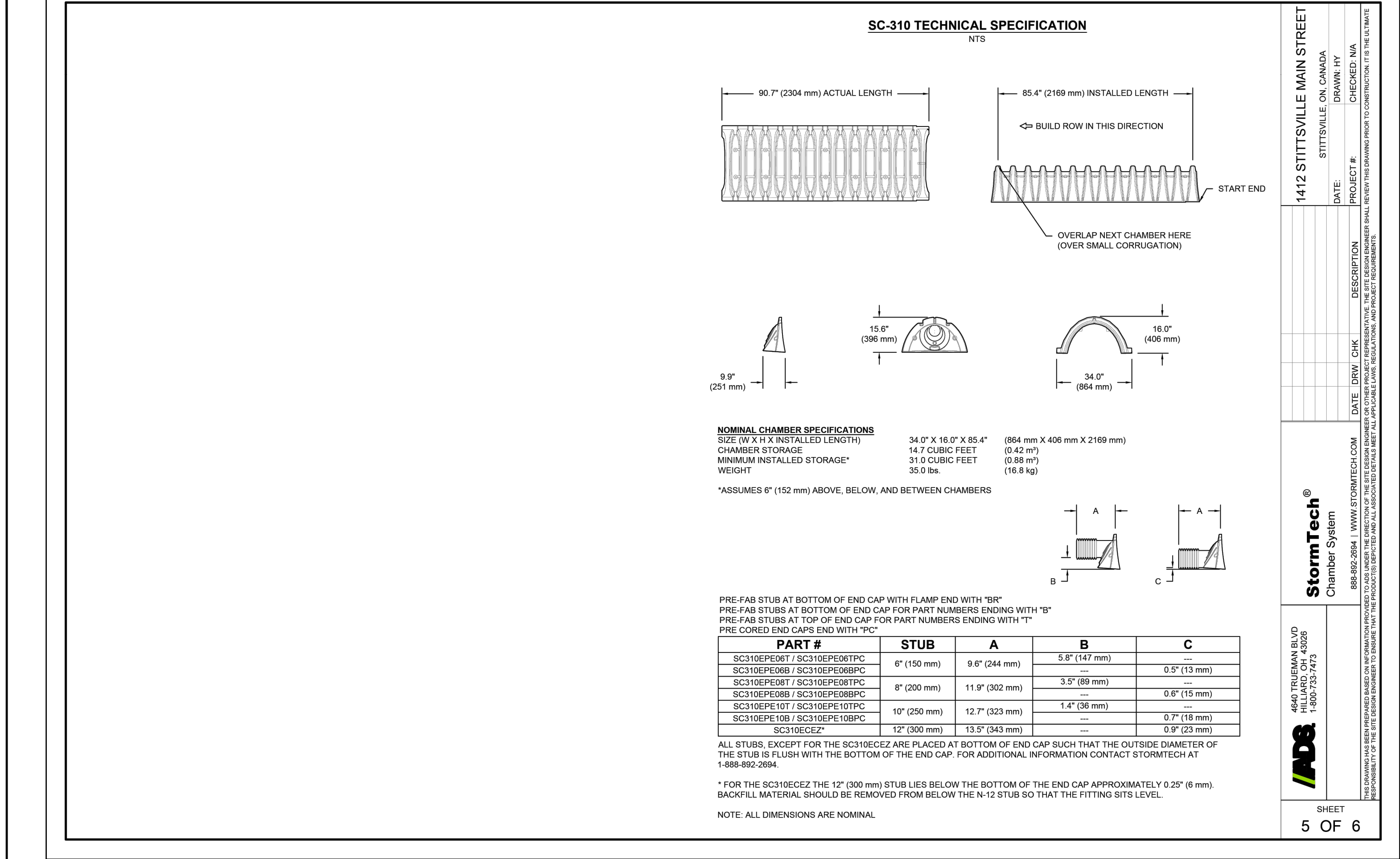
No.	REVISION DESCRIPTION	DATE
2.	RE-ISSUED FOR SPA	SEPT. 2024
3.	RE-ISSUED FOR SPA	APR. 2025
4.	RE-ISSUED FOR SPA	JUL. 2025
5.	RE-ISSUED FOR SPA	OCT. 2025
6.	RE-ISSUED FOR SPA	NOV. 2025



1412 STITTVILLE MAIN STREET TOWNSHIP OF STITTVILLE

SITE SERVICING PLAN

DESIGN: HY	FILE: 524659	DWG: SS-1
DRAWN: HY	DATE: SEPT 2024	
CHECK: GC	SCALE: 1:150	



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			<div>3.</div>	<div>RE-ISSUED FOR SPA</div>	<div>APR. 2025</div>						
			<div>4.</div>	<div>RE-ISSUED FOR SPA</div>	<div>JUL. 2025</div>						
			<div>5.</div>	<div>RE-ISSUED FOR SPA</div>	<div>OCT. 2025</div>						
			<div>6.</div>	<div>RE-ISSUED FOR SPA</div>	<div>NOV. 2025</div>						
			<div>DETAILS PLAN 3</div>								
<div>CHECK: GC</div>	<div>SCALE:</div>										

Appendix A: Water Supply Calculations



Water Service Calculations - Residential

Tatham File No. : 524659
Project : 1412 Stittsville Main St
Date : July 29, 2024
Designed by : EBW
Reviewed by : JA

Water Demands

Population			
Unit Type	Persons Per Unit	Number of Units	Population
Studio/1 Bedroom Apartment	1.4	18	25.2
2 Bedroom Apartment	2.1	0	0
3 Bedroom Apartment	3.1	0	0
		18	25.2

Population 26 Persons
Average Day Consumption Rate 280 L/c/d
Maximum Day Peaking Factor 2.5
Peak Hour Peaking Factor 2.2
Average Day Demand 7,280 L/d 0.08 L/s
Maximum Day Demand 18,200 L/d 0.21 L/s
Peak Hour Demand 40,040 L/d 0.46 L/s

(# of units is in accordance with architectural plans)
(Population per unit is in accordance with Table 4.1 of 2010 City of Ottawa Design Guidelines for Water Distribution)

(per table above)
(per 2018 City of Ottawa Technical Bulletin ISTB-2018-01)
(per Table 4.2 of 2010 City of Ottawa Design Guidelines for Water Distribution)
(per Table 4.2 of 2010 City of Ottawa Design Guidelines for Water Distribution and 2010 City of Ottawa Technical Bulletin ISD-2010-2)

Required Water Service Capacity

Fixture Count			
Fixture or Device	Fixture/Device Count	Private Use Hydraulic Load, Fixture Units	Total
Shower Head	18	1.4	25.2
Clothes washer	18	1.4	25.2
Dishwasher	18	1.4	25.2
Lavatory	18	0.7	12.6
Kitchen sink	18	1.4	25.2
Water closet	18	2.2	39.6
			153

Total Fixture Units 153
Peak Flow 81.25 gpm
442,893 L/d
5.13 L/s

(Fixture count is in accordance with Table 7.6.3.2.A of 2012 Ontario Building Code)

(Conversion of fixture units to gpm as per PS&D Table 13-4)

Building Water Service Pipe Sizing

$Q = VA$ Where:
 V = design velocity of 1.5 m/s x 3600 = 5400 m/h
 A = area of pipe = $(\pi/4) \times D^2$
 Q = water supply flow rate to be accounted for in m^3/h

(as per OBC guidelines)


Minimum required pipe diameter:
 $d = (4Q/\pi V)^{1/2}$
 $d = 0.066$ m
 $d = 66$ mm

(required water service capacity based on fixture method)

(derived from $Q = VA$ formula)

Proposed pipe diameter: 100 mm

(Notes:
- Larger pipe size allows for additional safety buffer in case of potential changes at building permit stage.
- Larger pipe size also allows for potential future expansion of development.
- Due to high pressure, IPEX "Pipe with the Stripe" (green stripe: rated for 100 psi) is preferred and is CSA certified).

				FUS Fire Flow Calculations					
				Tatham File no. : 524659					
				Project: 1412 Stittsville Main St					
				Date: 15-Jul-24					
				Designed by: EBW					
				Checked by: JA					
$RFF = 220C\sqrt{A}$ <p>Where:</p> <p>RFF = the Required Fire Flow in litres per minutes (LPM) C = the Construction Coefficient is related to the type of construction of the building A = the Total Effective Floor Area (effective building area) in square metres of the building</p>									
Determine the Construction Coefficient (C)									
1	Choose frame used for building	Coefficient C related to the type of construction	Type V Wood Frame Construction	1.5	Type II Noncombustible Construction	0.8			
			Type IV-A Mass Timber Construction	0.8					
			Type IV-B Mass Timber Construction	0.9					
			Type IV-C Mass Timber Construction	1.0					
			Type IV-D Mass Timber Construction	1.5					
			Type III Ordinary Construction	1.0					
			Type II Noncombustible Construction	0.8					
			Type I Fire Resistive Construction	0.6					
Determine Total Effective Floor Area (A)									
Option 1									
	The Construction coefficient is greater or equal to 1	FALSE	100% of all floor area (Excluding basements at least 50% below grade)		Total Effective Area	0	sq.m.		
Option 2									
	The Construction coefficient is less than 1	TRUE	Are vertical openings in the building protected? (Per NBC Division B, Section 3.5. Vertical Transportation)	YES	Are the floor areas uniform throughout the building	NO			
Unprotected Vertical Openings, Uniform Floor Area									
2	FALSE	Number of Floors		Area of Floor(s)		Total Effective Area	0	sq.m.	
	Unprotected Vertical Openings, Dissimilar Floor Area								
	FALSE	Area of 2 largest adjoining floors		Area of floors above 2 largest adjoining floors (up to a maximum of 8 floors)		Total Effective Area	0	sq.m.	
	Protected Vertical Openings, Uniform Floor Area								
	FALSE	Number of Floors		Area of Floor		Total Effective Area	0	sq.m.	
	Protected Vertical Openings, Dissimilar Floor Area								
	TRUE	Area of the largest floor	303.8	Area of floor directly above largest floor	299	Total Effective Area	452.025	sq.m.	
				Area of floor directly below largest floor	293.9				
Determine the Required Fire Flow									
3	Obtain Required Fire Flow	$RFF = 220C\sqrt{A}$			Required Fire Flow	4,000	L/min		
						66.7	L/s		
Reduction or Surcharge Due to Factors Affecting Burning									
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-0.25	Limited combustible	-0.15			
			Limited combustible	-0.15					
			Combustible	0					
			Free burning	0.15			3,400	L/min	
			Rapid burning	0.25			56.7	L/s	
5	Choose reduction for sprinklers	Sprinkler reduction	Sprinklers conforming to NFPA13 (wet or dry system)	-0.30	NO	0			
			Water supply is standard for both the system and fire department hose lines (siamese connection)	-0.10	NO	0			
			Fully supervised system (electronic monitoring system on at all times)	-0.10	NO	0			
			All buildings within 30m of the proposed structure are confirmed to have a sprinkler system	-0.25	NO	0	3,400	L/min	
							56.7	L/s	
Exposure Adjustment Charge									
6	Exposure distance between units	North side	3.1 to 10m	Length - Height Value Assumed worst case exposed building facing wall	>100	Exposure Adjustment Charge	0.04		
		East side	Over 30m		>100	Exposure Adjustment Charge	0		
		South side	10.1 to 20m		>100	Exposure Adjustment Charge	0.03		
		West side	Over 30m		>100	Exposure Adjustment Charge	0.00		
		Cumulative Required Fire Flow						3,638	L/min
							60.6	L/s	
Total Required Fire Flow									
7	Obtain fire flow, duration	Minimum required fire flow rate (rounded to nearest 1000)					4,000	L/min	
		Minimum required fire flow rate					66.7	L/s	
		Required duration of fire flow					2	Hrs	



Water Pressure Calculations

Tatham File No. : 524659
Project : 1412 Stittsville Main Street
Date : July 29, 2024
Designed by : MC
Reviewed by : JA

Piezometric Head Equation (Derived from Bernoulli's Equation)

$$h = \frac{p}{\gamma} + z$$

Where:

h = HGL (m)

p = Pressure (Pa)

γ = Specific weight (N/m³) =

9810

z = Elevation of centreline of pipe (m) =

115.25

Water Pressure at Phoenix Crescent Connection			
HGL (m)		Pressure	
		kPa	psi
Max Day	160.3	441.94	64.10
Peak Hour	156.1	400.74	58.12
Max. Day + Fire =	156.7	406.62	58.98

Hazen Williams Equation

$$h_f = \frac{10.67 \times Q^{1.85} \times L}{C^{1.85} \times d^{4.87}}$$

Where:

h_f = Head loss over the length of pipe (m)

Q = Volumetric flow rate (m³/s)

L = Length of pipe (m)

C = Pipe roughness coefficient

d = Pipe diameter (m)

Scenario 1: maximum daily demand

Q (L/s)	0.21	
C	150	
L (m.)	25.2	
I.D. (mm)	100	
V (m/s)	0.03	
h _f (m)	0.00	
Head Loss (psi)	0.00	
Pressure (psi)	64.10	
Service Obv. @ Street Connection (m)	115.30	
Service Obv. @ Building Connection (m)	115.45	
Pressure Adjustment (psi)	-0.21	(due to service elevation difference from street to building)
Adjusted Min. Pressure (psi)	63.88	(must not be less than 50 psi; must not be more than 80 psi)

Scenario 2: maximum hourly demand

Q (L/s)	0.46	
C	150	
L (m.)	25.2	
I.D. (mm)	100	
V (m/s)	0.06	
h _f (m)	0.00	
Head Loss (psi)	0.00	
Pressure (psi)	58.12	
Service Obv. @ Street Connection (m)	115.30	
Service Obv. @ Building Connection (m)	115.45	
Pressure Adjustment (psi)	-0.21	(due to service elevation difference from street to building)
Adjusted Min. Pressure (psi)	57.91	(must not be less than 40 psi; must not be more than 80 psi)

Boundary Conditions 1412 Stittsville Main St

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	5	0.08
Maximum Daily Demand	13	0.21
Peak Hour	29	0.48
Fire Flow Demand #1	4,000	66.67

Location



Results

Connection 1 – Stittsville Main St

Demand Scenario	Head (m)	Pressure¹ (psi)
Maximum HGL	160.3	60.1
Peak Hour	156.1	54.2
Max Day plus Fire Flow #1	156.7	55.0

¹ Ground Elevation = 118.0 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 B: Sewage Flow Calculations



Sanitary Flow Calculations

Tatham File No. : 524659
Project : 1412 Stittsville Main St
Date : April 1, 2025
Designed by : EBW
Reviewed by : JA

Sewage Design Flow

Sewage Design Flow

Population			
Unit Type	Persons Per Unit	Number of Units	Population
Studio/1 Bedroom Apartment	1.4	18	25.2
2 Bedroom Apartment	2.1	0	0
3 Bedroom Apartment	3.1	0	0
		18	25.2

Residential Flow
Population 26 Persons
Sewage Design Flow Rate 280 L/c/d
Residential Design Flow 7,280 L/d 0.08 L/s

Extraneous flow 0.33 L/s/ha
0.33 L/s * 0.4 ha
11,405 L/d 0.13 L/s

Sewage Design Flow 18,685 L/d 0.22 L/s

(# of units is in accordance with architectural plans)
(population per unit is in accordance with Table 4.2 of 2012 City of Ottawa Sewer Design Guidelines)

(per table above)
(per Technical Bulletin ISTB-2018-01)

(per Technical Bulletin ISTB 2018-01, (l/l dry: 0.05 L/s/ha) + (l/l wet: 0.28 L/s/ha))
(tributary area accounts for entire site (conservative))

Sewage Peak Flow

Peaking factor Harmon formula = $P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000} \right)^{\frac{1}{2}}} \right) * K$
= 3.69

Where: P = 25.2 Persons
K = 0.8 Correction Factor

Peak Site Sewage Flow 38,291 L/day 0.44 L/s



Sanitary Service Sizing Calculations

Tatham File No. : 524659
Project : 1412 Stittsville Main St
Date : April 1, 2025
Designed by : EBW
Checked by : JA

Design Parameters:

Design flow	18,685 L/day	0.22 L/s	(Inclusive of extraneous flow allowance)
Peaking factor	3.69		(Derived from Harmon formula)
Peak flow	38,291 L/day	0.44 L/s	
Manning's coefficient (n)	0.013		
Minimum velocity	0.6 m/s		
Maximum velocity	3.0 m/s		

From				To				Peak Flow		Pipe					
Tag	Grade level (m)	Invert level (m)	Cover (m)	Tag	Grade level (m)	Invert level (m)	Cover (m)	Peak Flow (L/day)	Peak Flow (L/s)	Length (m)	Dia. (mm)	Slope (%)	Full Capacity (L/s)	Velocity Full (m/s)	Q/Q _{full} (%)
BLDG	117.70	115.05	2.50	SANMH	117.44	114.79	2.50	38,291	0.44	3.2	150	8.1%	43.41	2.5	1.0
SANMH	117.44	114.79	2.50	MAIN	117.32	114.67	2.50	38,291	0.44	10.9	150	1.1%	15.98	0.9	2.8



Sanitary Sewer Main Calculations

Tatham File No. : 524659
Project : 1412 Stittsville Main St
Date : April 1, 2025
Designed by : EBW
Checked by : JA

Design Parameters:

Design flow	18,685 L/day	0.22 L/s	(Inclusive of extraneous flow allowance)
Peaking factor	3.69		(Derived from Harmon formula)
Peak flow	38,291 L/day	0.44 L/s	
Manning's coefficient (n)	0.013		
Minimum velocity	0.6 m/s		
Maximum velocity	3.0 m/s		

From				To				Peak Flow		Pipe					
Tag	Grade level (m)	Invert level (m)	Cover (m)	Tag	Grade level (m)	Invert level (m)	Cover (m)	Peak Flow (L/day)	Peak Flow (L/s)	Length (m)	Dia. (mm)	Slope (%)	Full Capacity (L/s)	Velocity Full (m/s)	Q/Q _{full} (%)
MHSA46712	117.14	112.95	3.59	MHSA51914	117.75	112.75	4.40	38,291	0.44	102.0	600	0.2%	271.89	1.0	0.2

Appendix C: Stormwater Management Calculations

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	524659
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Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)
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Prepared By

Name	HY
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Pre-Development Condition

Watershed:	N/A
Catchment ID:	101
Catchment Area (ha):	0.14
Impervious %:	

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		Kg											
Soil Series		Kars											
Hydrologic Soils Group		B											
Soil Texture		Sandy Loam											
Runoff Coefficient Type		2											
Area (ha)		0.14											
Percentage of Catchment		100%											
Land Cover Category	IA	A (ha)	CN	C	A (ha)	CN	C	A (ha)	CN	C	A (ha)	CN	C
Impervious	2		98	0.95									
Gravel	3		89	0.27									
Woodland	10		60	0.25									
Pasture/Lawns	5	0.14	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		69.00											
Average C		0.28											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	117.30
Min. Catchment Elev. (m):	117.10
Catchment Length (m):	65
Catchment Slope (%):	0.31%
Method: Airport Method	
Time of Concentration (mins):	31.80

Summary

Catchment CN:	69.0
Catchment C:	0.28
Catchment IA (mm):	5.00
Time of Concentration (hrs):	0.53
Catchment Time to Peak (hrs):	0.35
Catchment Time Step (mins):	4.24

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Project Number	524659
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Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)
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Prepared By

Name	HY
------	----

Pre-Development Condition

Watershed:	N/A
Catchment ID:	201
Catchment Area (ha):	0.14
Impervious %:	71%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)


Soil Symbol		Gsl											
Soil Series		Granby											
Hydrologic Soils Group		B											
Soil Texture		Sand Loam											
Runoff Coefficient Type		2											
Area (ha)		0.14											
Percentage of Catchment		100%											
Land Cover Category	IA	A (ha)	CN	C	A (ha)	CN	C	A (ha)	CN	C	A (ha)	CN	C
Impervious	2	0.10	98	0.95									
Gravel	3		89	0.27									
Woodland	10		60	0.25									
Pasture/Lawns	5	0.04	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		89.71											
Average C		0.76											
Average IA		2.86											

Time to Peak Calculations

Max. Catchment Elev. (m):	117.30
Min. Catchment Elev. (m):	117.00
Catchment Length (m):	20
Catchment Slope (%):	1.50%
Method:	Bransby-Williams Formula
Time of Concentration (mins):	1.28

Summary

Catchment CN:	89.7
Catchment C:	0.76
Catchment IA (mm):	2.86
Time of Concentration (hrs):	0.02
Catchment Time to Peak (hrs):	0.01
Catchment Time Step (mins):	0.17

	Project:	1412 Stittsville Main Street	Date:	Jul-24
	File No.:	524659	Designed By:	HY
	Subject:	Pre Storm Dischage	Checked By:	GC

PRE DEVELOPMENT ANALYSIS

CATCHMENT 101

Runoff Coefficient (Municipal Standard)

2 Year	0.28	
5 Year	0.28	
10 Year	0.28	
25 Year	0.31	=C _s *1.10
50 Year	0.34	=C _s *1.20
100 Year	0.35	=C _s *1.25

Peak Rainfall Intensity (Ottawa Macdonald Cartier)

	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
A	733.0	998.1	1174.2	1402.9	1569.0	1735.7
B	0.810	0.814	0.816	0.819	0.820	0.820
C	6.199	6.053	6.014	6.018	6.014	6.014

Drainage Area 0.14 ha

T_c 31.80 min

Peak Runoff Rate - Rational Method (L/s) (Allowable)

2 Year	4.2
5 Year	5.6
10 Year	6.6
25 Year	8.6
50 Year	10.4
100 Year	12.0

Project:	1412 Stittsville Main Street	Date:	Jul-24
File No.:	524659	Designed By:	HY
Subject:	Post Storm Discharge	Checked By:	GC

POST DEVELOPMENT ANALYSIS

CATCHMENT 201

Runoff Coefficient (Municipal Standard)

2 Year	0.76	
5 Year	0.76	
10 Year	0.76	
25 Year	0.83	=C _s *1.10
50 Year	0.91	=C _s *1.20
100 Year	0.95	=C _s *1.25

Peak Rainfall Intensity (Ottawa Macdonald Cartier)

	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
A	733.0	998.1	1174.2	1402.9	1569.0	1735.7
B	0.810	0.814	0.816	0.819	0.820	0.820
C	6.199	6.053	6.014	6.018	6.014	6.014

Drainage Area 0.14 ha

Uncontrolled Runoff Rate - Rational Method (L/s)

Dur. Td	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
10	22.7	30.8	36.1	47.0	57.2	65.9
20	15.4	20.7	24.3	31.6	38.4	44.3
30	11.8	15.9	18.6	24.2	29.4	33.9
40	9.7	13.0	15.2	19.8	24.1	27.7
50	8.3	11.1	13.0	16.9	20.5	23.6
60	7.3	9.7	11.4	14.7	17.9	20.6
70	6.5	8.7	10.1	13.1	15.9	18.4
80	5.9	7.8	9.1	11.9	14.4	16.6
90	5.4	7.2	8.4	10.8	13.2	15.2
100	4.9	6.6	7.7	10.0	12.1	14.0
110	4.6	6.1	7.2	9.3	11.3	13.0
120	4.3	5.7	6.7	8.7	10.5	12.1
130	4.0	5.4	6.3	8.2	9.9	11.4
140	3.8	5.1	5.9	7.7	9.3	10.8
150	3.6	4.8	5.6	7.3	8.8	10.2
160	3.4	4.6	5.3	6.9	8.4	9.7
170	3.3	4.4	5.1	6.6	8.0	9.2

Allowable Outflow Rate From Pre-Dev.101 (L/s)

2 YR	5YR	10 YR	25 YR	50 YR	100 YR
4.2	4.2	4.2	4.2	4.2	4.2

Controlled Outflow Rate From Post-Dev. 201 (L/s)

2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
4.2	4.2	4.2	4.2	4.2	4.2

Required Storage Volumes (m³)

Dur.	2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
10	12.3	17.2	20.4	26.9	33.1	38.3
20	15.9	22.4	26.6	35.4	43.6	50.6
30	17.5	24.9	29.7	39.8	49.2	57.2
40	18.2	26.3	31.5	42.5	52.7	61.5
50	18.5	27.0	32.6	44.3	55.1	64.5
60	18.5	27.5	33.3	45.5	56.9	66.7
70	18.4	27.6	33.7	46.3	58.2	68.4
80	18.0	27.6	33.8	46.9	59.1	69.6
90	17.6	27.4	33.8	47.2	59.8	70.6
100	17.1	27.1	33.7	47.4	60.2	71.3
110	16.5	26.7	33.4	47.4	60.5	71.9
120	15.8	26.3	33.1	47.3	60.7	72.3
130	15.1	25.7	32.7	47.2	60.8	72.6
140	14.4	25.2	32.3	47.0	60.8	72.7
150	13.7	24.6	31.7	46.7	60.7	72.8
160	12.9	23.9	31.2	46.3	60.5	72.8
170	12.0	23.2	30.6	45.9	60.3	72.7

Note: Required storage volume is based on 0.5x the allowable release rate(2.1L/s) as required by the City when using the rational method and underground chambers.



Project :	1412 Stittsville Main Street
File No.	524659
Date:	Jul-24
Designed By:	HY
Checked By:	GC
Subject:	Outlet Control

OUTLET CONTROL

Invert Elevation (m):	116.29
Outlet Pipe Size (mm):	300
Top water level	117.45
Waterhead	1.16
Hydrovex 75VHV-1 Discharge (m3/s)	0.0042
5-Year Storage required	27.60
Underground Storage provided	28.41
100-Year Storage required	72.81
Total Storage provided	77.46

	Project :	1412 Stittsville Main Street
	File No.	524659
	Date:	May-24
	Designed By:	HY
	Checked By:	GC
	Subject:	Stage Storage

Underground Storage Chambers (Stormtech Model SC-310)

Elevation	Depth	Quantity Volume	Total chambers	Total Volume
(m)	(m)	(m ³)	(ea)	(m ³)
116.45	0.00	0.00	24	0.0
116.50	0.00	0.13	24	3.0
116.55	0.05	0.25	24	6.0
116.60	0.10	0.37	24	8.8
116.65	0.15	0.48	24	11.5
116.70	0.20	0.58	24	14.0
116.75	0.25	0.68	24	16.3
116.80	0.30	0.76	24	18.1
116.85	0.35	0.82	24	19.7
116.90	0.40	0.88	24	21.1
116.95	0.45	0.93	24	22.4
117.00	0.50	0.99	24	23.9

Storm Structure Storage

Elevation	Depth	Quantity Volume	Total chambers	Total Volume
(m)	(m)	(m ³)	(ea)	(m ³)
116.45	0.00	0.00	3	0.0
116.50	0.05	0.06	3	0.2
116.55	0.10	0.11	3	0.2
116.60	0.15	0.17	3	0.3
116.65	0.20	0.23	3	0.5
116.70	0.25	0.28	3	0.7
116.75	0.30	0.34	3	0.8
116.80	0.35	0.40	3	1.0
116.85	0.40	0.45	3	1.2
116.90	0.45	0.51	3	1.4
116.95	0.50	0.57	3	1.5
117.00	0.55	0.62	3	1.7
117.05	0.60	0.68	3	1.9
117.10	0.65	0.74	3	2.0
117.15	0.70	0.79	3	2.2

Parking surface ponding 1

Elevation	Depth	Increasing Area	Accum Area	Volume	Total Volume
(m)	(m)	(m ²)	(m ²)	(m ³)	(m ³)
117.15	0.00	0.0	0.0	0.0	0.0
117.20	0.05	13.3	13.3	0.2	0.2
117.25	0.10	40.0	53.3	1.6	1.8
117.30	0.15	66.7	120.0	4.2	6.0
117.35	0.20	93.3	213.3	8.2	14.2
117.40	0.25	120.0	333.3	13.6	27.8
117.45	0.30	146.7	480.0	20.2	48.0

Parking surface ponding 2

Elevation	Depth	Increasing Area	Accum Area	Volume	Total Volume
(m)	(m)	(m ²)	(m ²)	(m ³)	(m ³)
117.35	0.00	0.0	0.0	0.0	0.0
117.40	0.05	1.2	1.2	0.0	0.0
117.45	0.10	3.6	4.8	0.1	0.2
117.50	0.15	6.0	10.8	0.4	0.5
117.55	0.20	8.4	19.2	0.7	1.3
117.60	0.25	10.8	30.0	1.2	2.5

Parking surface ponding 3

Elevation	Depth	Increasing Area	Accum Area	Volume	Total Volume
(m)	(m)	(m ²)	(m ²)	(m ³)	(m ³)
117.40	0.00	0.0	0.0	0.0	0.0
117.45	0.05	0.8	0.8	0.0	0.0
117.50	0.10	2.5	3.4	0.1	0.1
117.55	0.15	4.2	7.6	0.3	0.4
117.60	0.20	5.9	13.5	0.5	0.9



Project: 1412 Stittsville Main Street

Date: Mar-25

File No.: 524659

Designed: HY

Subject: Swale Capacity Calcs.

Checked GC

Swale Capacity Calculation

Swale Characteristics

Design Storms
100 year flow (m ³ /s)
0.066

Channel Depth	Channel Type	Manning's N	Base Width	Side Slopes	Min. Slope	Total Area	Area Contributing
0.15 m	Grass Ditch	0.035	0.00 m	3H : 1V	0.80%	0.140	0.030

Storm Conditions		Swale Flow Conditions					
Return Period	Peak Flow (m³/s)	Flow Depth	Area (m²)	WP	R	Q (m³/s)	V (m/s)
100-year storm	0.021	0.150	0.07	0.95	0.07	0.030	0.44
Comments:	Contributed area to swale has total peak flow of 0.021 m³/s, 0.15m deep swale Max capacity is 0.03m³/s						

Engineer Stamp

Year	A	B
10	1.00	0.00
25	1.00	0.00
50	1.20	0.00
100	1.25	0.00

[illegible]

Stormceptor®EF Sizing Report

Imbrium® Systems

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

07/17/2025

Province:	Ontario	Project Name:	1412 Stittsville Main Street
City:	Ottawa	Project Number:	524659
Nearest Rainfall Station:	OTTAWA CDA RCS	Designer Name:	David Fendler
Climate Station Id:	6105978	Designer Company:	Tatham
Years of Rainfall Data:	20	Designer Email:	dfendler@tathameng.com
		Designer Phone:	613-747-3636
Site Name:		EOR Name:	
		EOR Company:	
Drainage Area (ha):	0.14	EOR Email:	
Runoff Coefficient 'c':	0.76	EOR Phone:	

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0
Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	3.43
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	4.20
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	100
Estimated Average Annual Sediment Load (kg/yr):	71
Estimated Average Annual Sediment Volume (L/yr):	58

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	97
EFO5	99
EFO6	100
EFO8	100
EFO10	100
EFO12	100

Recommended Stormceptor EFO Model: **EFO4**
 Estimated Net Annual Sediment (TSS) Load Reduction (%): **97**
 Water Quality Runoff Volume Capture (%): **> 90**

Stormceptor® EF Sizing Report

THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

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

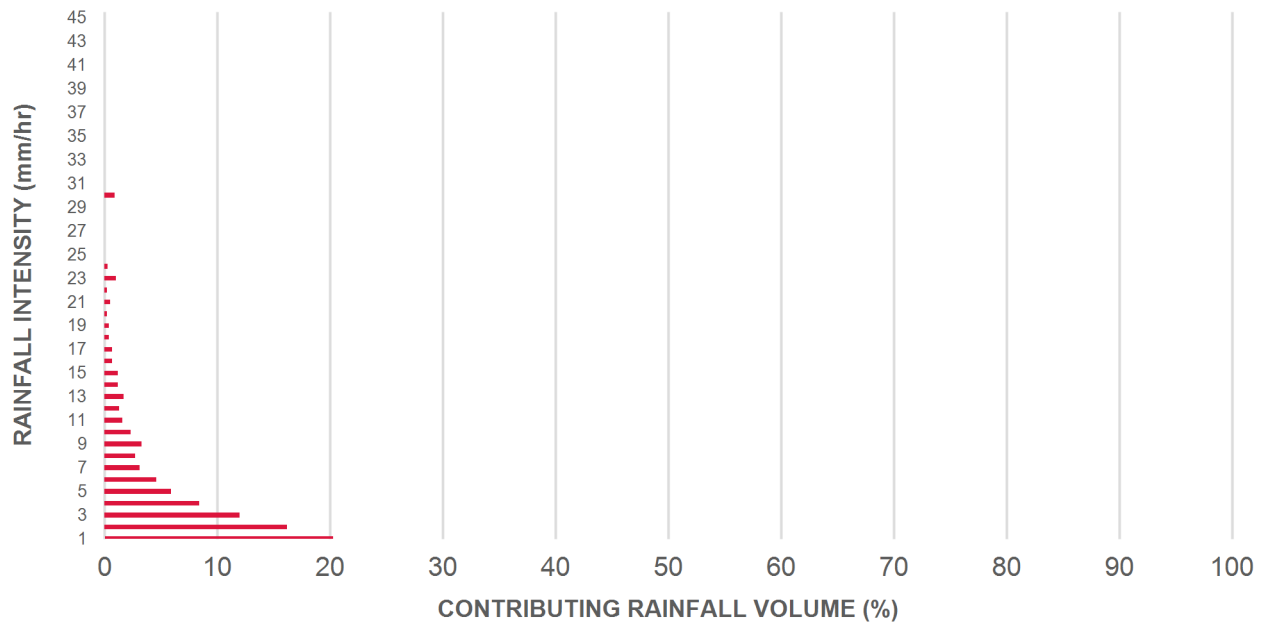
Upstream Flow Controlled Results

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.6	8.6	0.15	9.0	7.0	100	8.6	8.6
1.00	20.3	29.0	0.30	18.0	15.0	100	20.3	29.0
2.00	16.2	45.2	0.59	35.0	30.0	100	16.2	45.2
3.00	12.0	57.2	0.89	53.0	44.0	100	12.0	57.2
4.00	8.4	65.6	1.18	71.0	59.0	100	8.4	65.6
5.00	5.9	71.6	1.48	89.0	74.0	100	5.9	71.6
6.00	4.6	76.2	1.77	106.0	89.0	98	4.6	76.1
7.00	3.1	79.3	2.07	124.0	104.0	96	2.9	79.1
8.00	2.7	82.0	2.37	142.0	118.0	95	2.6	81.7
9.00	3.3	85.3	2.66	160.0	133.0	92	3.1	84.7
10.00	2.3	87.6	2.96	177.0	148.0	91	2.1	86.8
11.00	1.6	89.2	3.25	195.0	163.0	88	1.4	88.2
12.00	1.3	90.5	3.55	213.0	177.0	87	1.1	89.3
13.00	9.5	100.0	3.85	231.0	192.0	84	8.0	97.3
14.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
15.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
16.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
17.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
18.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
19.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
20.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
21.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
22.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
23.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
24.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
25.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
30.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
35.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
40.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
45.00	0.0	100.0	4.00	240.0	200.0	83	0.0	97.3
Estimated Net Annual Sediment (TSS) Load Reduction =								97 %

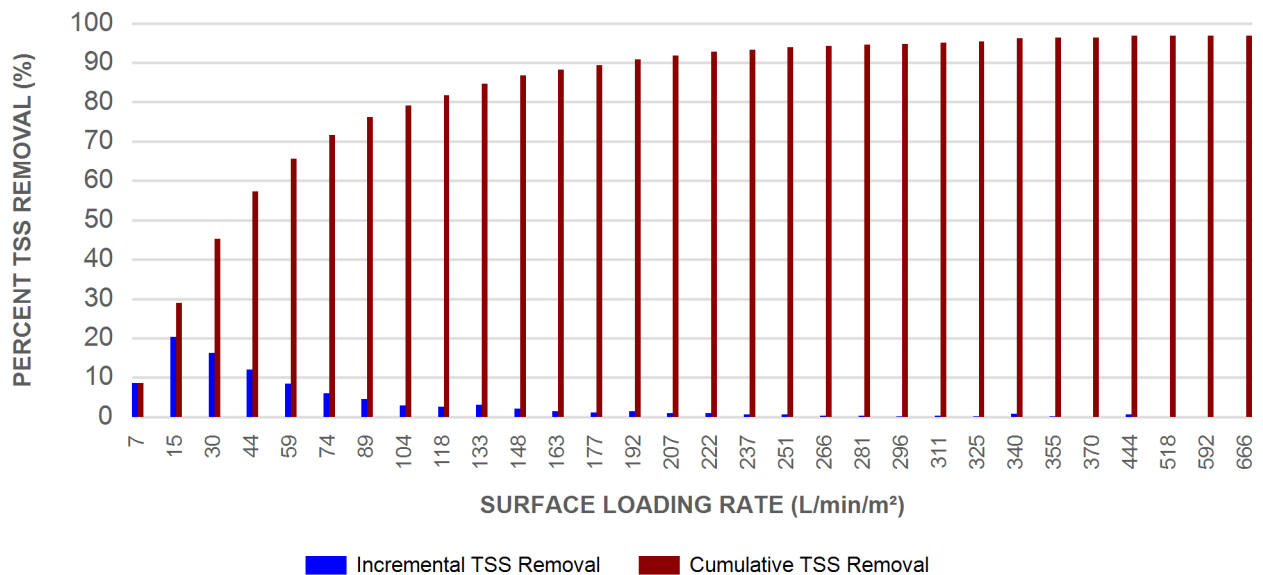
Climate Station ID: 6105978 Years of Rainfall Data: 20

Stormceptor®EF Sizing Report

RAINFALL DATA FROM OTTAWA CDA RCS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Stormceptor® EF Sizing Report

Maximum Pipe Diameter / Peak Conveyance

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

SCOUR PREVENTION AND ONLINE CONFIGURATION

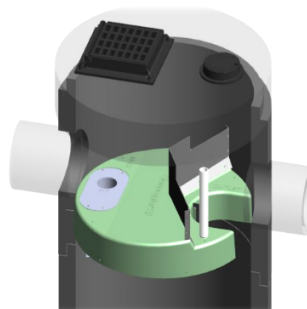
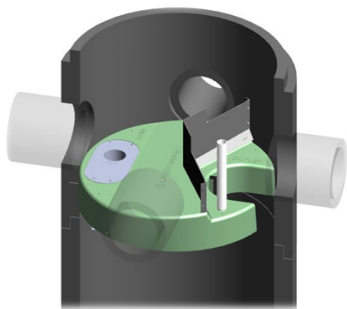
► **Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

DESIGN FLEXIBILITY

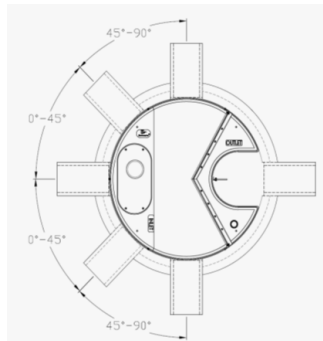
► **Stormceptor® EF and EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

OIL CAPTURE AND RETENTION

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



Stormceptor® EF Sizing Report



INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

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

For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³)

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

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

PART 3 – PERFORMANCE & DESIGN

Stormceptor®EF Sizing Report

3.1 GENERAL

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

3.2 SIZING METHODOLOGY

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

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

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

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

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid

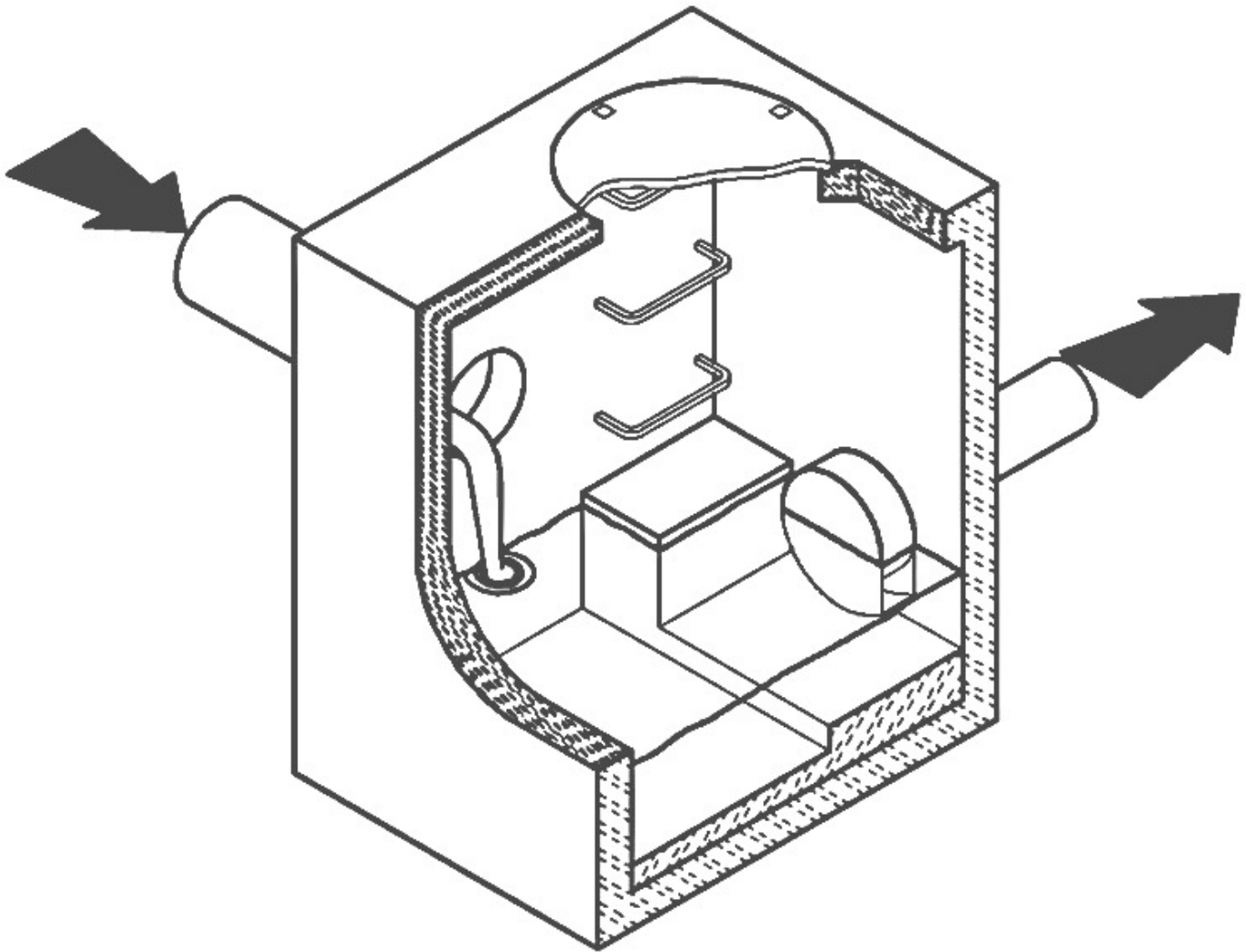
Stormceptor®EF Sizing Report

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.



HYDROVEX[®] VHV / SVHV Vertical Vortex Flow Regulator



JOHN MEUNIER

HYDROVEX® VHV / SVHV VERTICAL VORTEX FLOW REGULATOR

APPLICATIONS

One of the major problems of urban wet weather flow management is the runoff generated after a heavy rainfall. During a storm, uncontrolled flows may overload the drainage system and cause flooding. Due to increased velocities, sewer pipe wear is increased dramatically and results in network deterioration. In a combined sewer system, the wastewater treatment plant may also experience significant increases in flows during storms, thereby losing its treatment efficiency.

A simple means of controlling excessive water runoff is by controlling excessive flows at their origin (manholes). **John Meunier Inc.** manufactures the **HYDROVEX® VHV / SVHV** line of vortex flow regulators to control stormwater flows in sewer networks, as well as manholes.

The vortex flow regulator design is based on the fluid mechanics principle of the forced vortex. This grants flow regulation without any moving parts, thus reducing maintenance. The operation of the regulator, depending on the upstream head and discharge, switches between orifice flow (gravity flow) and vortex flow. Although the concept is quite simple, over 12 years of research have been carried out in order to get a high performance.

The **HYDROVEX® VHV / SVHV** Vertical Vortex Flow Regulators (refer to **Figure 1**) are manufactured entirely of stainless steel, and consist of a hollow body (1) (in which flow control takes place) and an outlet orifice (7). Two rubber "O" rings (3) seal and retain the unit inside the outlet pipe. Two stainless steel retaining rings (4) are welded on the outlet sleeve to ensure that there is no shifting of the "O" rings during installation and use.

1. BODY

2. SLEEVE

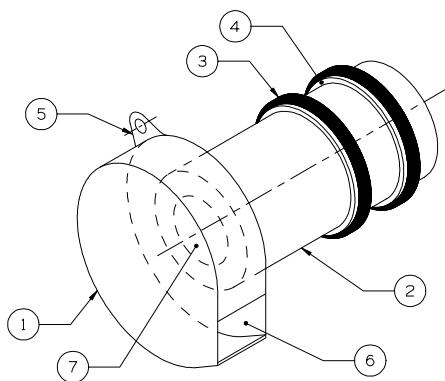
3. O-RING

4. RETAINING RINGS
(SQUARE BAR)

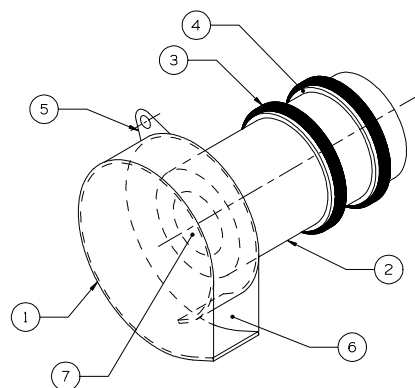
5. ANCHOR PLATE

6. INLET

7. OUTLET ORIFICE



VHV



SVHV

FIGURE 1: HYDROVEX® VHV-SVHV VERTICAL VORTEX FLOW REGULATORS

ADVANTAGES

- The **HYDROVEX® VHV / SVHV** line of flow regulators are manufactured entirely of stainless steel, making them durable and corrosion resistant.
- Having no moving parts, they require minimal maintenance.
- The geometry of the **HYDROVEX® VHV / SVHV** flow regulators allows a control equal to an orifice plate, having a cross section area 4 to 6 times smaller. This decreases the chance of blockage of the regulator, due to sediments and debris found in stormwater flows. **Figure 2** illustrates the comparison between a regulator model 100 SVHV-2 and an equivalent orifice plate. One can see that for the same height of water, the regulator controls a flow approximately four times smaller than an equivalent orifice plate.
- Installation of the **HYDROVEX® VHV / SVHV** flow regulators is quick and straightforward and is performed after all civil works are completed.
- Installation requires no special tools or equipment and may be carried out by any contractor.
- Installation may be carried out in existing structures.

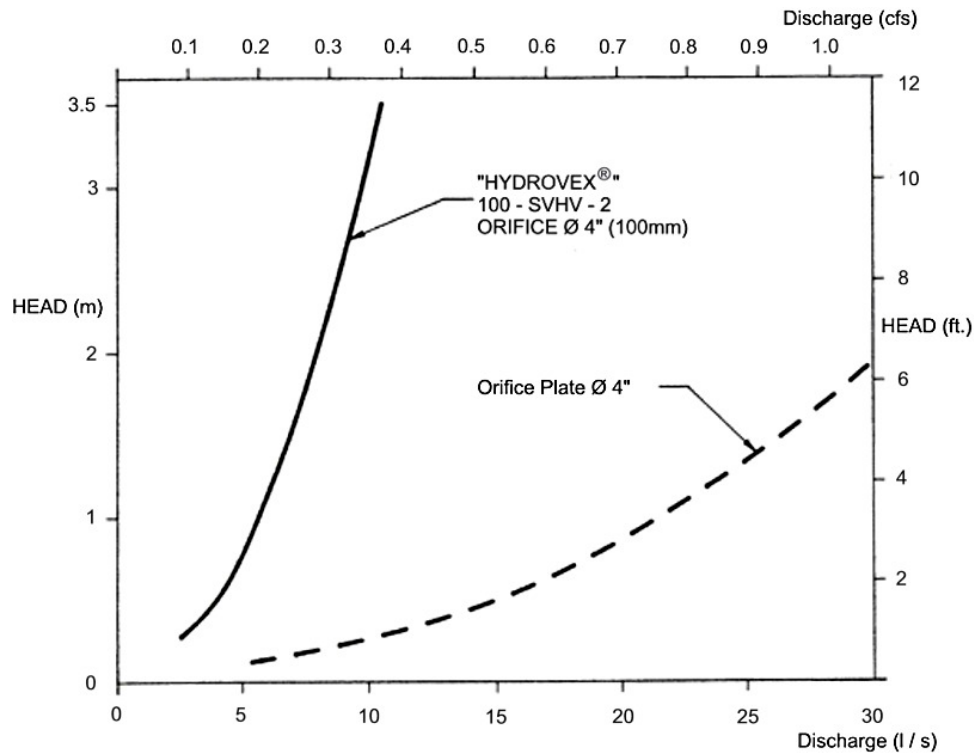


FIGURE 2: DISCHARGE CURVE SHOWING A HYDROVEX® FLOW REGULATOR VS AN ORIFICE PLATE

SELECTION

Selection of a **VHV** or **SVHV** regulator can be easily made using the selection charts found at the back of this brochure (see **Figure 3**). These charts are a graphical representation of the maximum upstream water pressure (head) and the maximum discharge at the manhole outlet. The maximum design head is the difference between the maximum upstream water level and the invert of the outlet pipe. All selections should be verified by John Meunier Inc. personnel prior to fabrication.

Example:

- ✓ Maximum design head 2m (6.56 ft.)
- ✓ Maximum discharge 6 L/s (0.2 cfs)
- ✓ Using **Figure 3** - VHV model required is a **75 VHV-1**

INSTALLATION REQUIREMENTS

All **HYDROVEX® VHV / SVHV** flow regulators can be installed in circular or square manholes. **Figure 4** gives the various minimum dimensions required for a given regulator. ***It is imperative to respect the minimum clearances shown to ensure easy installation and proper functioning of the regulator.***

SPECIFICATIONS

In order to specify a **HYDROVEX**[®] regulator, the following parameters must be defined:

- The model number (ex: 75-VHV-1)
- The diameter and type of outlet pipe (ex: 6" diam. SDR 35)
- The desired discharge (ex: 6 l/s or 0.21 CFS)
- The upstream head (ex: 2 m or 6.56 ft.) *
- The manhole diameter (ex: 36" diam.)
- The minimum clearance "H" (ex: 10 inches)
- The material type (ex: 304 s/s, 11 Ga. standard)

* *Upstream head is defined as the difference in elevation between the maximum upstream water level and the invert of the outlet pipe where the **HYDROVEX**[®] flow regulator is to be installed.*

PLEASE NOTE THAT WHEN REQUESTING A PROPOSAL, WE SIMPLY REQUIRE THAT YOU PROVIDE US WITH THE FOLLOWING:

- *project design flow rate*
- *pressure head*
- *chamber's outlet pipe diameter and type*



Typical VHV model in factory

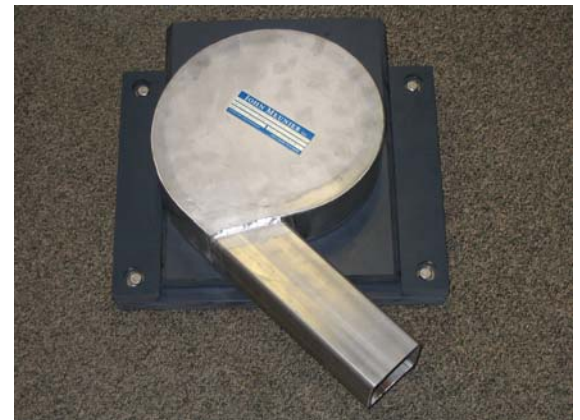
OPTIONS



VHV-1-O (standard model with odour control inlet)



FV – SVHV (mounted on sliding plate)



FV – VHV-O (mounted on sliding plate with odour control inlet)



VHV with Gooseneck assembly in existing chamber without minimum release at the bottom



VHV with air vent for minimal slopes



VHV Vertical Vortex Flow Regulator

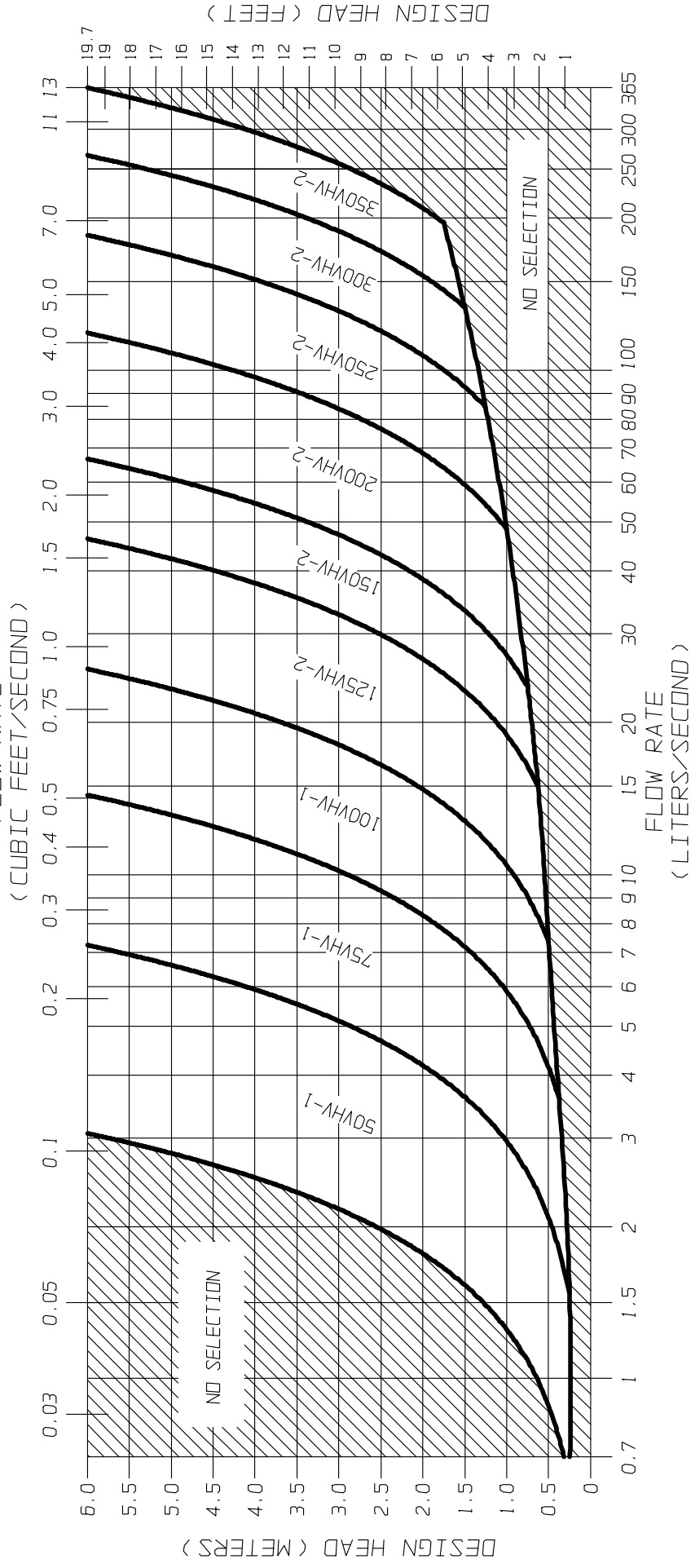


FIGURE 3 - VHV

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SVHV Vertical Vortex Flow Regulator

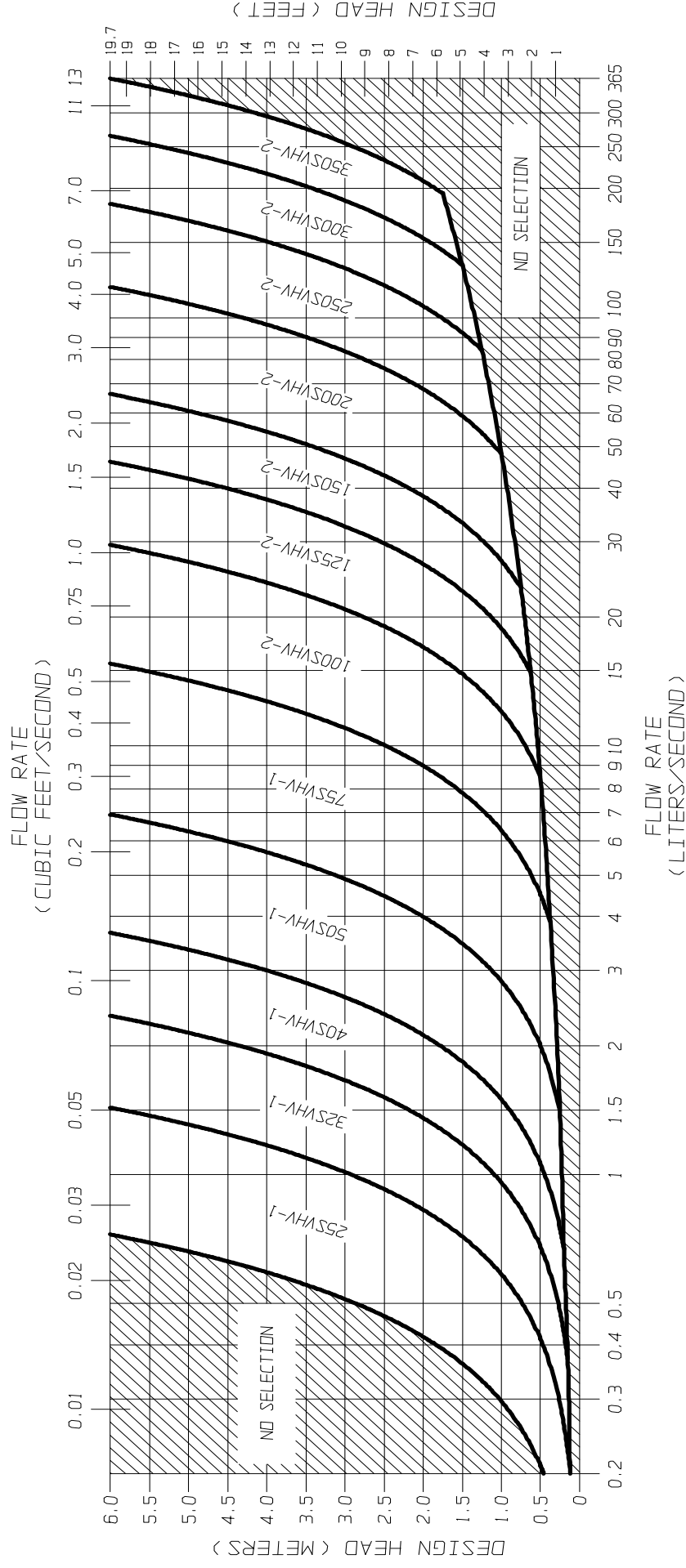
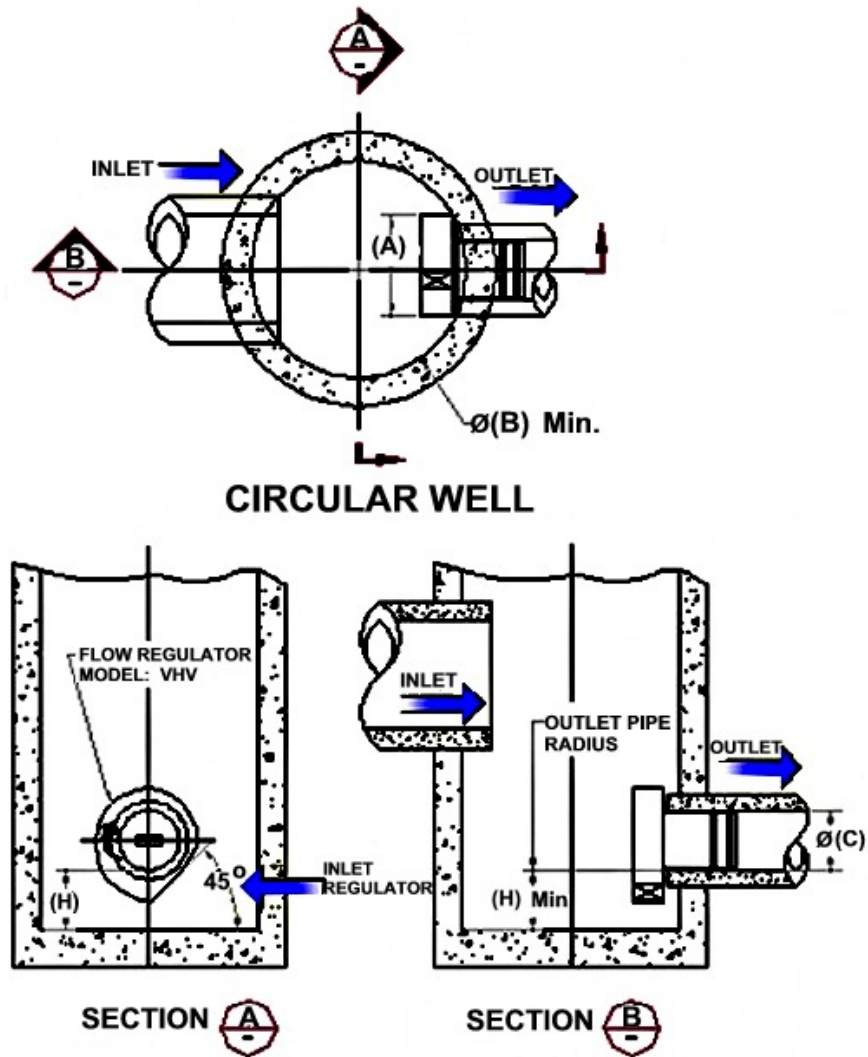


FIGURE 3 - SVHV

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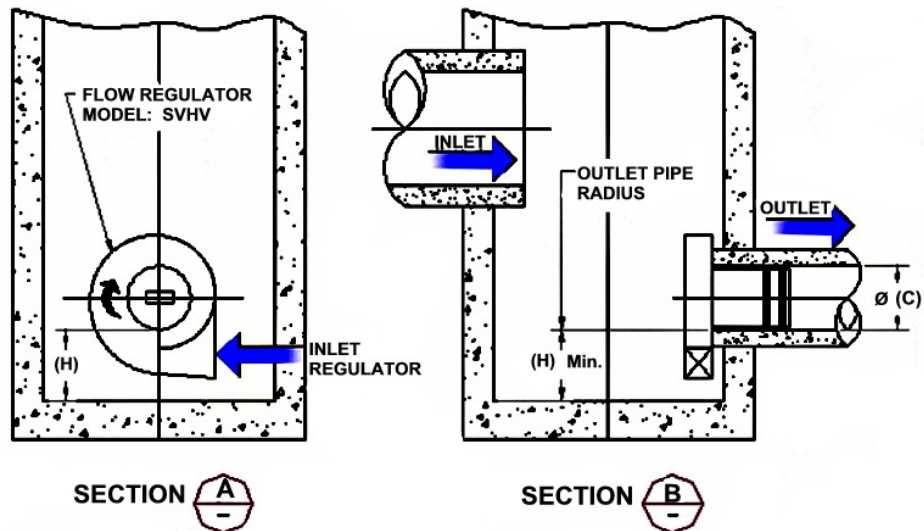
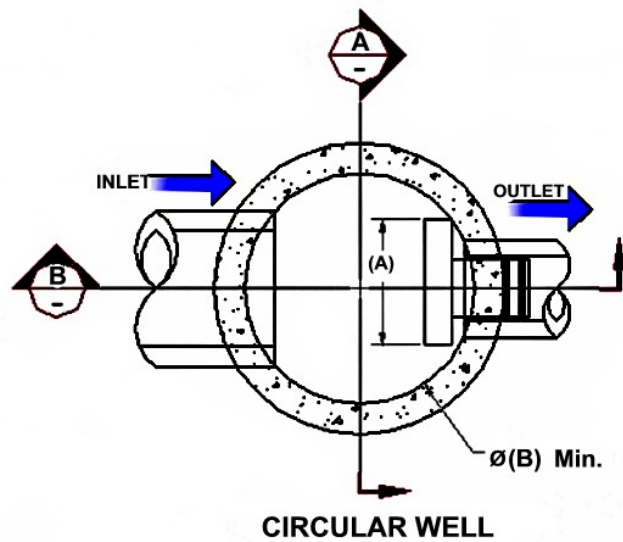
FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL VHV)

Model Number	Regulator Diameter		Minimum Manhole Diameter		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	A (in.)	B (mm)	B (in.)	C (mm)	C (in.)	H (mm)	H (in.)
50VHV-1	150	6	600	24	150	6	150	6
75VHV-1	250	10	600	24	150	6	150	6
100VHV-1	325	13	900	36	150	6	200	8
125VHV-2	275	11	900	36	150	6	200	8
150VHV-2	350	14	900	36	150	6	225	9
200VHV-2	450	18	1200	48	200	8	300	12
250VHV-2	575	23	1200	48	250	10	350	14
300VHV-2	675	27	1600	64	250	10	400	16
350VHV-2	800	32	1800	72	300	12	500	20



FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL SVHV)

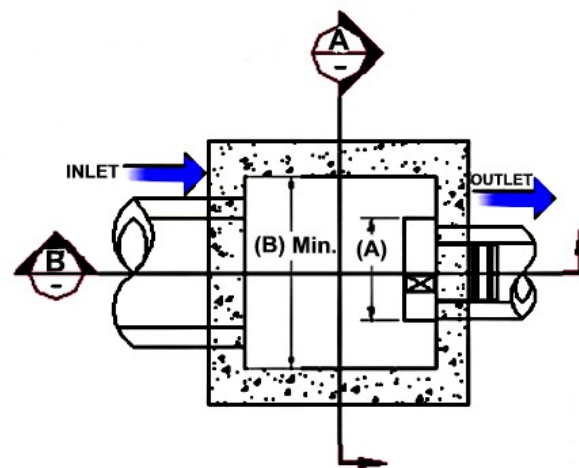
Model Number	Regulator Diameter		Minimum Manhole Diameter		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	A (in.)	B (mm)	B (in.)	C (mm)	C (in.)	H (mm)	H (in.)
25 SVHV-1	125	5	600	24	150	6	150	6
32 SVHV-1	150	6	600	24	150	6	150	6
40 SVHV-1	200	8	600	24	150	6	150	6
50 SVHV-1	250	10	600	24	150	6	150	6
75 SVHV-1	375	15	900	36	150	6	275	11
100 SVHV-2	275	11	900	36	150	6	250	10
125 SVHV-2	350	14	900	36	150	6	300	12
150 SVHV-2	425	17	1200	48	150	6	350	14
200 SVHV-2	575	23	1600	64	200	8	450	18
250 SVHV-2	700	28	1800	72	250	10	550	22
300 SVHV-2	850	34	2400	96	250	10	650	26
350 SVHV-2	1000	40	2400	96	250	10	700	28



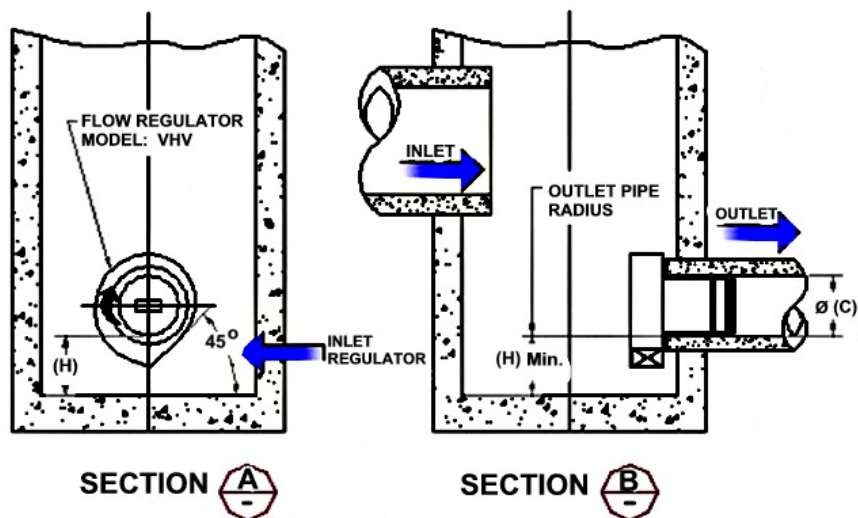
FLOW REGULATOR TYPICAL INSTALLATION IN SQUARE MANHOLE
FIGURE 4 (MODEL VHV)

Model Number	Regulator Diameter		Minimum Chamber Width		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	A (in.)	B (mm)	B (in.)	C (mm)	C (in.)	H (mm)	H (in.)
50VHV-1	150	6	600	24	150	6	150	6
75VHV-1	250	10	600	24	150	6	150	6
100VHV-1	325	13	600	24	150	6	200	8
125VHV-2	275	11	600	24	150	6	200	8
150VHV-2	350	14	600	24	150	6	225	9
200VHV-2	450	18	900	36	200	8	300	12
250VHV-2	575	23	900	36	250	10	350	14
300VHV-2	675	27	1200	48	250	10	400	16
350VHV-2	800	32	1200	48	300	12	500	20

NOTE: *In the case of a square manhole, the outlet flow pipe must be centered on the wall to ensure enough clearance for the unit.*



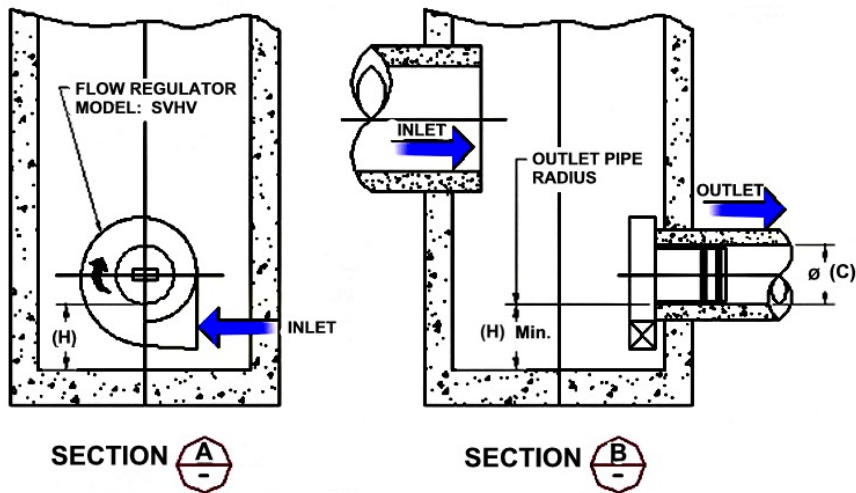
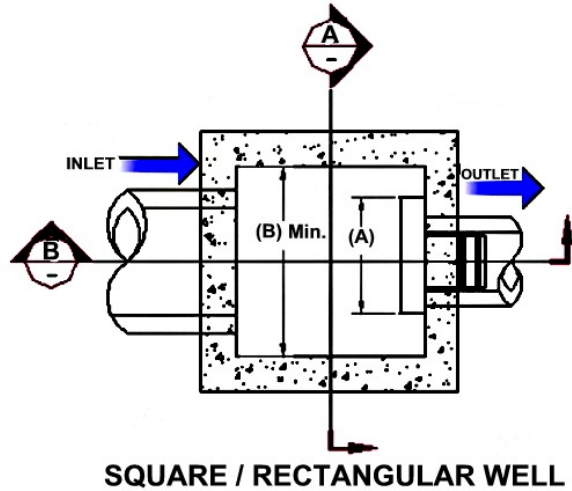
SQUARE / RECTANGULAR WELL



FLOW REGULATOR TYPICAL INSTALLATION IN SQUARE MANHOLE
FIGURE 4 (MODEL SVHV)

Model Number	Regulator Diameter		Minimum Chamber Width		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	A (in.)	B (mm)	B (in.)	C (mm)	C (in.)	H (mm)	H (in.)
25 SVHV-1	125	5	600	24	150	6	150	6
32 SVHV-1	150	6	600	24	150	6	150	6
40 SVHV-1	200	8	600	24	150	6	150	6
50 SVHV-1	250	10	600	24	150	6	150	6
75 SVHV-1	375	15	600	24	150	6	275	11
100 SVHV-2	275	11	600	24	150	6	250	10
125 SVHV-2	350	14	600	24	150	6	300	12
150 SVHV-2	425	17	600	24	150	6	350	14
200 SVHV-2	575	23	900	36	200	8	450	18
250 SVHV-2	700	28	900	36	250	10	550	22
300 SVHV-2	850	34	1200	48	250	10	650	26
350 SVHV-2	1000	40	1200	48	250	10	700	28

NOTE: *In the case of a square manhole, the outlet flow pipe must be centered on the wall to ensure enough clearance for the unit.*



INSTALLATION

The installation of a **HYDROVEX**[®] regulator may be undertaken once the manhole and piping is in place. Installation consists of simply fitting the regulator into the outlet pipe of the manhole. **John Meunier Inc.** recommends the use of a lubricant on the outlet pipe, in order to facilitate the insertion and orientation of the flow controller.

MAINTENANCE

HYDROVEX[®] regulators are manufactured in such a way as to be maintenance free; however, a periodic inspection (every 3-6 months) is suggested in order to ensure that neither the inlet nor the outlet has become blocked with debris. The manhole should undergo periodically, particularly after major storms, inspection and cleaning as established by the municipality

GUARANTY

The **HYDROVEX**[®] line of **VHV / SVHV** regulators are guaranteed against both design and manufacturing defects for a period of 5 years. Should a unit be defective, **John Meunier Inc.** is solely responsible for either modification or replacement of the unit.

John Meunier Inc.

ISO 9001 : 2008

Head Office

4105 Sartelon
Saint-Laurent (Quebec) Canada H4S 2B3
Tel.: 514-334-7230 www.johnmeunier.com
Fax: 514-334-5070 cs@johnmeunier.com

Ontario Office

2000 Argentia Road, Plaza 4, Unit 430
Mississauga (Ontario) Canada L5N 1W1
Tel.: 905-286-4846 www.johnmeunier.com
Fax: 905-286-0488 ontario@johnmeunier.com

USA Office

2209 Menlo Avenue
Glenside, PA USA 19038
Tel.: 412- 417-6614 www.johnmeunier.com
Fax: 215-885-4741 astele@johnmeunier.com

Guillaume Courtois

From: Haider Nasrullah <Haider.Nasrullah@adspipe.com>
Sent: Friday, July 18, 2025 11:12 AM
To: Haoran Yu
Cc: Guillaume Courtois
Subject: RE: ADS Chamber Cover Question

Follow Up Flag: Follow up
Flag Status: Completed

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Hey Haoran,

As long as the minimum required cover over the chambers is met, they are okay to replace a small portion of the Granular B.

Regards,

Haider Nasrullah, P.Eng., PMP
Engineered Products Manager
haider.nasrullah@adspipe.com
(647) 850-9417



www.ads-pipcanada.ca



From: Haoran Yu <hyu@tathameng.com>
Sent: Thursday, July 17, 2025 3:03 PM
To: Haider Nasrullah <Haider.Nasrullah@adspipe.com>
Cc: Guillaume Courtois <gcourtois@tathameng.com>
Subject: ADS Chamber Cover Question

This email originated outside of ADS. Be cautious when opening any links or documents. If you have questions, contact ITSecurity@ads-pipe.com..

Hello Haider

Hope everything is going well with you!

I had another project designed with ADS chambers in Ottawa, the issue we are having right now is about cover, the top of Chamber is encroaching into granular B by 165mm (Please see attached screenshot)

The City reviewer is concerning if that will work, can you please confirm if that's OK?

Thanks



Haoran Yu C.E.T.
Technologist

hyu@tathameng.com **T** 613-747-3636 x2120 **C** 613-661-6399
5335 Canotek Road, Unit 100, Ottawa, Ontario K1J 9L4

tathameng.com [in](#) [@](#) [f](#)



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Appendix D: Infiltration Calculations



PROJECT	1412 Stittsville Main Street, Stittsville	FILE	524659
		DATE	10/23/2025
SUBJECT	StormTech SC-310 Infiltration Calculations	NAME	DVF
		PAGE	1 OF 1

Target Infiltration Volume		
Target Infiltration Rate	262 mm/yr	(per Carp River Watershed/Subwatershed Study)
Area of site	0.14 ha	
Total Infiltration Volume Target	366.8 m ³	(Target Infiltration Rate x Area of the site)

StormTech Chambers Infiltration Storage Volume		
Bed Length	19.3 m	(Per StormTech Chamber Design)
Bed Width	3.5 m	(Per StormTech Chamber Design)
Infiltration Storage Depth	0.30 m	(Increased from 0.15m to 0.30m)
Porosity of Clear Stone	0.4	
Proposed Infiltration Storage Volume	8.1 m ³	(Bed Length x Width x Storage Depth x Porosity)

Note: The above storage volume is located below the outlet invert elevation

Maximum Allowable Infiltration Storage Depth below the StormTech Chamber System		
P, percolation rate	10.0 mm/hr	(Section 4.8 of the Geotechnical Investigation Report by LRL dated August 2016)
T, Drawdown Time	48.0 hr	
Equation 4.2	$d = \frac{PT}{1,000}$	(Equation 4.2, Stormwater Management Planning and Design Manual, MOE , 2006)
d, maximum allowable depth	0.5 m	

Per equation 4.2, the maximum allowable depth for the Infiltration Storage Volume below the StormTech Chambers is greater the proposed infiltration storage depth.

Target Infiltration Design Rainfall Depth		
Contributing Area 201A (See Figure INF-1)	741 m ²	(All contributing area is impervious)
Proposed Infiltration Storage Volume	8.1 m ³	(Calculated above)
Runoff from Impervious Area as a % of Total Rainfall	90 %	(10% of rainfall considered evaporation per standard practice)
Infiltration Storage Volume + Evaporation Loss	9.0 m ³	(Proposed infiltration volume/Runoff as a % of rainfall)
Target Design Rainfall Depth	12.2 mm	(Infiltration storage volume + Evaporation loss/Contributing area)

Infiltration Volume		
Contributing Area 201A (See Figure INF-1)	741 m ²	
Annual Cumulative Rainfall Depth (Infiltration and Evaporation) at Target Design Rainfall of 12.2	555.2 mm	(See Detailed Rainfall Analysis Sheet)
Annual Rainfall Volume at Design Rainfall of 12.2	411.4 m ³	(Contributing area 201A x Annual cumulative rainfall depth)
% of Annual Rainfall Volume Converted to Runoff from 201A	90 %	
Annual Rainfall Volume over 201A converted to runoff and captured by proposed infiltration storage volume in the StormTech Chamber System	370.3 m ³	(Annual rainfall volume at target design rainfall x % of annual rainfall converted to runoff from 201A)

The annual infiltration contribution of the StormTech SC-310 chambers via the 0.3 m depth of clearstone bedding, is 370.3 m³ which is greater than the required 366.8 m³

PROJECT	1412 Stittsville Main Street, Stittsville	FILE	524659
		DATE	10/23/2025
SUBJECT	Rainfall Analysis	NAME	DVF
		PAGE	1 OF 1

Climate Normals Station

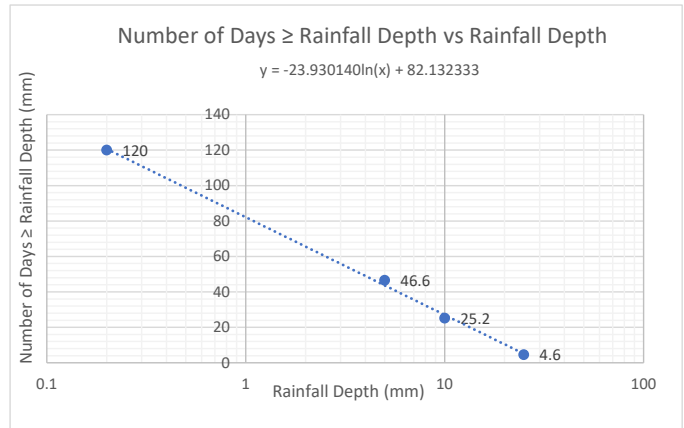
Ottawa (Airport) Climate Normals (1981-2010)

Normal Rainfall Depth (mm)	Normal Days Rainfall Depth (Days)
0.2	120
5	46.6
10	25.2
25	4.6

Normal Annual Rainfall Depth (mm) 757.2

Normal Annual Days with Rainfall 0.2mm 120

Normal Annual Precipitation Depth (mm) 929.8



Simulated Depth (mm)	Simulated Days Simulated Depth (Days)	Average Event Depth (mm)	Simulated Days Equal to Average Depth (mm)	Assumed IA (mm)	Runoff (Rain-IA) (mm)	INF Design Rainfall (mm)	Event Based Maximum Design INF Depth (mm)	Event Based Design INF Depth (mm)	Annual Incremental Design INF Depth (mm)	Annual Cumulative Design INF Depth (mm)	Annual Incremental Total Rain Depth (mm)	Annual Percent of Total Rain (%)	Annual Cumulative Total Rain Depth (mm)	Annual Cumulative Percent of Total Depth (%)
0.2	120.65													
0.5	98.72	0.2 - 0.5	21.93	0	0	12.2	12.2	0.0	0.00	0.00		0.000	0	0%
1.5	72.43	1	26.29	0	1	12.2	12.2	1.0	26.29	26.29	26.29	0.035	26.3	3%
2.5	60.21	2	12.22	0	2	12.2	12.2	2.0	24.45	50.74	24.45	0.032	50.7	7%
3.5	52.15	3	8.05	0	3	12.2	12.2	3.0	24.16	74.89	24.16	0.032	74.9	10%
4.5	46.14	4	6.01	0	4	12.2	12.2	4.0	24.06	98.95	24.06	0.032	98.9	13%
5.5	41.34	5	4.80	0	5	12.2	12.2	5.0	24.01	122.96	24.01	0.032	123.0	16%
6.5	37.34	6	4.00	0	6	12.2	12.2	6.0	23.99	146.95	23.99	0.032	146.9	19%
7.5	33.92	7	3.42	0	7	12.2	12.2	7.0	23.97	170.92	23.97	0.032	170.9	23%
8.5	30.92	8	3.00	0	8	12.2	12.2	8.0	23.96	194.88	23.96	0.032	194.9	26%
9.5	28.26	9	2.66	0	9	12.2	12.2	9.0	23.95	218.83	23.95	0.032	218.8	29%
10.5	25.86	10	2.40	0	10	12.2	12.2	10.0	23.95	242.78	23.95	0.032	242.8	32%
11.5	23.69	11	2.18	0	11	12.2	12.2	11.0	23.95	266.73	23.95	0.032	266.7	35%
12.5	21.69	12	2.00	0	12	12.2	12.2	12.0	23.94	290.67	23.94	0.032	290.7	38%
13.5	19.85	13	1.84	0	13	12.2	12.2	12.2	22.46	313.14	23.94	0.032	314.6	42%
14.5	18.14	14	1.71	0	14	12.2	12.2	12.2	20.86	333.99	23.94	0.032	338.6	45%
15.5	16.54	15	1.60	0	15	12.2	12.2	12.2	19.47	353.46	23.94	0.032	362.5	48%
16.5	15.05	16	1.50	0	16	12.2	12.2	12.2	18.25	371.71	23.94	0.032	386.4	51%
17.5	13.64	17	1.41	0	17	12.2	12.2	12.2	17.17	388.88	23.94	0.032	410.4	54%
18.5	12.31	18	1.33	0	18	12.2	12.2	12.2	16.22	405.10	23.94	0.032	434.3	57%
19.5	11.05	19	1.26	0	19	12.2	12.2	12.2	15.37	420.46	23.94	0.032	458.2	61%
20.5	9.85	20	1.20	0	20	12.2	12.2	12.2	14.60	435.06	23.94	0.032	482.2	64%
21.5	8.71	21	1.14	0	21	12.2	12.2	12.2	13.90	448.96	23.93	0.032	506.1	67%
22.5	7.63	22	1.09	0	22	12.2	12.2	12.2	13.27	462.23	23.93	0.032	530.0	70%
23.5	6.58	23	1.04	0	23	12.2	12.2	12.2	12.69	474.92	23.93	0.032	554.0	73%
24.5	5.59	24	1.00	0	24	12.2	12.2	12.2	12.16	487.09	23.93	0.032	577.9	76%
25.5	4.63	25	0.96	0	25	12.2	12.2	12.2	11.68	498.76	23.93	0.032	601.8	79%
26.5	3.71	26	0.92	0	26	12.2	12.2	12.2	11.23	509.99	23.93	0.032	625.8	83%
27.5	2.82	27	0.89	0	27	12.2	12.2	12.2	10.81	520.80	23.93	0.032	649.7	86%
28.5	1.97	28	0.85	0	28	12.2	12.2	12.2	10.42	531.22	23.93	0.032	673.6	89%
29.5	1.14	29	0.83	0	29	12.2	12.2	12.2	10.07	541.29	23.93	0.032	697.6	92%
30.5	0.35	30	0.80	0	30	12.2	12.2	12.2	9.73	551.02	23.93	0.032	721.5	95%
31.5	0.00	31	0.35	0	31	12.2	12.2	12.2	4.22	555.24	10.72	0.014	732.2	97%
32	0.00	32	0.00	0.00	32	12.2	12.2	12.2	0.00	555.24	24.97	0.033	757.2	100%

Appendix E: Correspondence with MVCA

Guillaume Courtois

From: Guillaume Courtois
Sent: Friday, October 24, 2025 3:06 PM
To: mliedtke@mvc.on.ca
Cc: eogden@mvc.on.ca
Subject: RE: 1412 Stittsville Main Street, City of Ottawa (Tatham Proj. #524659)

Hi Mercedes,

Following our correspondence with Erica below, we have been instructed by the City to reach out to you specifically. I tried reaching out to you via phone earlier but believe you are busy. So that you are aware, we have added a Water Infiltration section (Section 5.7) to the Site Servicing & SWM report to include a discussion regarding the Carp River Watershed/Subwatershed Study and the associated target infiltration rate for the site, as well as a summary confirming the proposed infiltration volume on the site achieves the established infiltration target. After the updated report has been distributed to you, and you have had time to review, should you require anything further from us on this subject, please feel free to contact us anytime and we would be happy to assist you anyway we can.

Thank you Mercedes,
Guillaume



Guillaume Courtois C.E.T.
Senior Technologist, Project Manager

gcourtois@tathameng.com T 613-747-3636 x2021
5335 Canotek Road, Unit 100, Ottawa, Ontario K1J 9L4

tathameng.com in @ f



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From: Guillaume Courtois
Sent: Friday, July 18, 2025 12:21 PM
To: eogden@mvc.on.ca
Subject: RE: 1412 Stittsville Main Street, City of Ottawa (Tatham Proj. #524659)

Hi Erica,

Further to the emails below, and upon review of the June 18, 2025 review authority comments, we understand water temperature is no longer a concern. However, we did want to follow up with you regarding infiltration requirements. Any input would be greatly appreciated.

Thank you Erica,
Guillaume



Guillaume Courtois C.E.T.
Senior Technologist, Project Manager

gcourtois@tathameng.com T 613-747-3636 x2021
5335 Canotek Road, Unit 100, Ottawa, Ontario K1J 9L4

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From: Guillaume Courtois
Sent: Thursday, March 27, 2025 9:51 AM
To: 'eogden@mvc.on.ca' <eogden@mvc.on.ca>
Subject: RE: 1412 Stittsville Main Street, City of Ottawa (Tatham Proj. #524659)

Hello again Erica,

Further to my email below, if we understand correctly, water temperature requirements found within the Carp River Watershed/Subwatershed Study seem to align more so with natural water courses (specifically relating to stream temperatures for fish communities) opposed to municipal sewers. With regards to infiltration, the study seems to encourage infiltration when possible, depending on soil and geological conditions (Infiltration methods include on-site infiltration measures and centralized facilities such as infiltration trenches and basins). As such, on-site infiltration measures, by means of enhanced grassed swales and underground open-bottom stormwater storage chambers, will be incorporated into the proposed development's SWM design in an effort to promote infiltration to the extent possible.

Thanks Erica. Have a good rest of the day.
Guillaume



Guillaume Courtois C.E.T.
Senior Technologist, Project Manager

gcourtois@tathameng.com T 613-747-3636 x2021
5335 Canotek Road, Unit 100, Ottawa, Ontario K1J 9L4

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From: Guillaume Courtois
Sent: Wednesday, March 26, 2025 3:49 PM
To: eogden@mvc.on.ca
Subject: 1412 Stittsville Main Street, City of Ottawa (Tatham Proj. #524659)

Good Afternoon Erica,

Tatham is working on the civil scope of the 1412 Stittsville Main Street development and understand you are the main point of contact at the MVCA for this project. Accordingly, we wanted to reach out to you to confirm any specific stormwater management criteria or special requirements the MVCA may have for the subject site in terms of stormwater quality control.

Further, we have been asked by the City to contact the MVCA to confirm any infiltration requirements, based on the City of Ottawa's Carp River Watershed Study and discuss temperature mitigation (as the site ultimately drains to Poole Creek which is considered a cool water system), as applicable.

Any input on the above would be greatly appreciated.

Our civil drawings are located within the attached Site Servicing & Stormwater Management Report for your reference.

Thank you Erica,
Guillaume



Guillaume Courtois C.E.T.
Senior Technologist, Project Manager

gcourtois@tathameng.com T 613-747-3636 x2021
5335 Canotek Road, Unit 100, Ottawa, Ontario K1J 9L4

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