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Proposed 1-Storey Warehouse

3113 Carp Road, Ottawa, On

**Site Servicing and Site grading, Erosion and Sediment control
Report**

PALA-001-CR-01

Review	Issued	Date
01	For permit	2025-12-29
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1 Introduction

The existing site, as illustrated in Figure 1 of Section 1.1, where the new Carp Road warehouse will be constructed, is currently undeveloped and contains no buildings. The project involves the construction of a new warehouse. The site, including the areas designated for parking facilities, covers a total surface area of 30 558 m² ha.

All works on this site are subject to the requirements of the City of Ottawa's Stormwater Management By-law. To comply with these requirements, MEGHA HOLDINGS Inc. has mandated Daurald Consultant inc. to prepare the civil permit drawings and report necessary to ensure proper management of stormwater runoff.

This technical memorandum accompanies the plans submitted as part of the civil permit application. It outlines the key requirements of the City of Ottawa and Ontario's Environmental Protection Act. It also summarizes the calculations related to the allowable release rate, the required detention volume, stormwater quality treatment, as well as the proposed stormwater management strategy.

Appendix C provides the consolidated comments, recommendations, and discussion items arising from the pre-consultation meeting held on April 16, 2025, between the City of Ottawa and Megha Holdings. These comments have been considered in the development of the proposed site design and servicing strategy.

1.1 Project Location

The subject site is located at 3113 Carp Road in the City of Ottawa. The site is separated from the West Ottawa Christian Community property by a local roadway, an intervening property, and an access easement that may provide secondary access to the site in addition to the proposed main access from Carp Road.



Figure 1: Project Warehouse Location

1.2 Site Green and Impervious Areas

The project site has an area of 3.05 ha. Landscaped and grass-covered areas total approximately 9,600 m², including a 15 m setback from the existing watercourse. The site has an overall imperviousness of 68%. Figure 2 illustrates the distribution of pervious and impervious surfaces across the site.

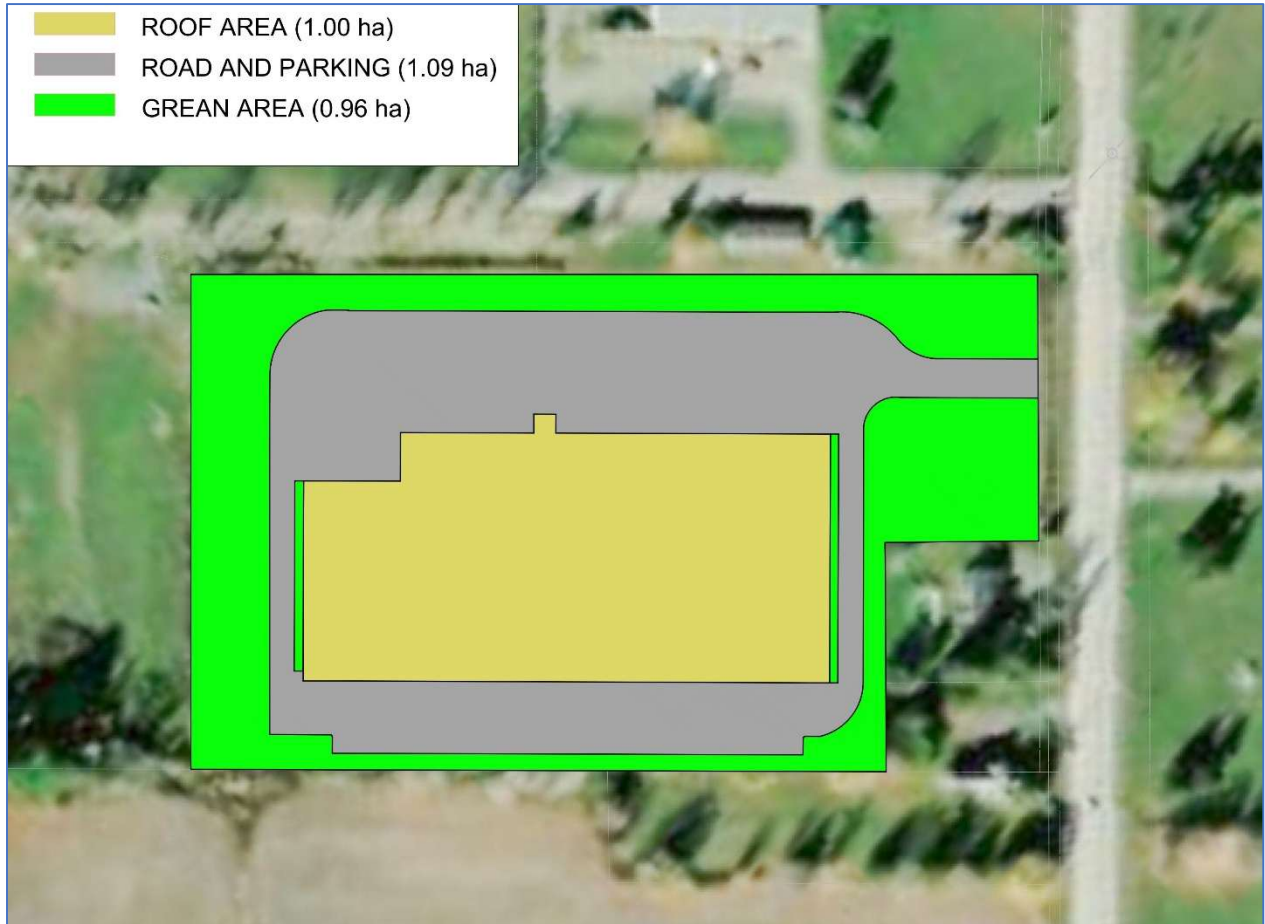


Figure 2: Distribution of Green and Impervious Areas on the Study Site

2 Methodology

The methodology adopted for the development of stormwater management plans is structured around the following key components:

- Applicable project-specific standards and regulatory requirements
- Data acquisition and data analysis
- Regulatory frameworks and design criteria
- Hydraulic modeling of the drainage system using PCSWMM software to estimate pre- and post-construction runoff volumes and peak flow rates
- Definition and modeling of stormwater management measures required to meet performance objectives



- Technical analysis and recommendation

3 Standards and Regulations – Municipal and Provincial

- Sewer design guidelines the city of Ottawa (second edition, October 2012)
- Technical Bulletin PIEDTB-2016-01 revisions to Ottawa design guidelines- sewer
- Storm sewer management planning and design manual, ministry of the environment, Ontario, March 2003
- Drainage Management manual, Ministry of Transportation Ontario (MTO), 1995
- Drinking water Facility Standards city of Ottawa, May 29, 2020

4 Available Data

- Received plans (architectural, mechanical, structural, landscaping)
- Topographic survey
- Digital Terrain Model (DTM)
- Hydrogeological assessment and terrain analysis, July 31, 2026 (Paterson Group)
- Geotechnical Investigation, August 4, 2026 (Paterson Group)
- Phase-I- Environmental site assessment, June 3, 2022 (Paterson group)
- Environmental Impact Statement, July 31, 2026 (Gemtec)

5 Assumptions / Design Criteria

- Water quality control: 80 % of TSS removal
- Water quantity control: Post-development flows for all design storms (2-year to 100-year return periods) shall be less than or equal to the pre-development 2-year flow rate
- 100-year spill elevation will be 300 mm lower than the warehouse opening and ramp
- The maximum permissible ponding depth for the 100-year + 20% event is 1500 mm
- No spill is allowed onto any permanent structures for 100-year +20% event
- No Surface ponding on parking areas for 2-Year storm event
- The minimum diameter of orifice is 83mm
- The minimum flow rate from a vortex is 6 l/s
- Roof drains are connected downstream of Inlet Control Devices (ICD) not to foundation drain
- Minimum diameter for minor sewer 300 mm
- Maximum flow depth on parking lot 350 mm

5.1 Design rainfall

Table 1: Design rainfall

Rainfall	Description	Reference
Quantity control/Major system design	100-year return period + 20%	Technical bulletin PIEDTB-2016-01 revisions to Ottawa Design Guidelines- Sewer
Quality control	25 mm	MOE Stormwater Management planning and Design Manual pg. 4-57
Erosion control	2- year return	city of Ottawa, October 2012

5.2 PCSWMM Software Modeling Parameters

For the purposes of the hydraulic calculations, hydrologic and hydraulic simulations were carried out to estimate the runoff volumes and flow rates generated on the study site. The parameters presented in Table 2 are used for the hydraulic simulation with the SWMM model. These parameters are recommended by the city of Ottawa, October 2012.

Table 2: PCSWMM Modeling Parameters

Parameter	Value	Reference
Routing Model	Dynamic Wave	City of Ottawa, October 2012
Inertial Term	Dampen	City of Ottawa, October 2012
Normal Flow Criterion	Froude and slope (both)	City of Ottawa, October 2012



Infiltration Model	Horton	City of Ottawa, October 2012
Maximum Infiltration Rate	76.2 mm	City of Ottawa, October 2012(5.4.5.5)
Minimum Infiltration Rate	13.2 mm	City of Ottawa, October 2012(5.4.5.5)
Decay Constant	4 h ⁻¹	City of Ottawa, October 2012
Drying Time	7 days	City of Ottawa, October 2012
Basin Roughness – Impervious N	0.016	City of Ottawa, October 2012
Basin Roughness – Pervious N	0.26	City of Ottawa, October 2012
Impervious Surface Storage	1.57 mm	City of Ottawa, October 2012(5.4.5.4)
Pervious Surface Storage	4.67 mm	City of Ottawa, October 2012(5.4.5.4)
Zero-Impervious	25%	City of Ottawa, October 2012
Pressurized Conduit Equations	Hazen-Williams	City of Ottawa, October 2012
Roughness – New sewer	0.013	City of Ottawa, October 2012(6.1.2.1)
Clean Stone Porosity	20% void	City of Ottawa, October 2012

Outfall Conditions	Full pipe	City of Ottawa, October 2012
Runoff Coefficient	Paved and roof: 0.9	City of Ottawa, October 2012

5.3 Pre-Development Site Conditions

The subject site is presently undeveloped and utilized as agricultural land. The existing ground surface is generally flat, with site elevations marginally lower than the adjacent roads and surrounding properties, resulting in localized drainage toward the site.

Under pre-development conditions, the approximately 3.9 ha, including the current development site and lot at the north-east corner, study area was divided into 30 subbasins, identified as S1 through S30, based on the existing topographic survey and the corresponding overland drainage patterns. The subbasin boundaries were delineated along existing drainage divides, while the flow paths were established based on the direction of the existing ground slopes. As illustrated in Figure 3, runoff generated within each subcatchment follows the existing topography and is conveyed toward the natural low points and the existing 450 mm diameter culvert located along the road on the west side of the property. Although the available topographic survey does not depict the roadside ditch, its presence was confirmed during a site reconnaissance, where an existing ditch was observed adjacent to the roadway.

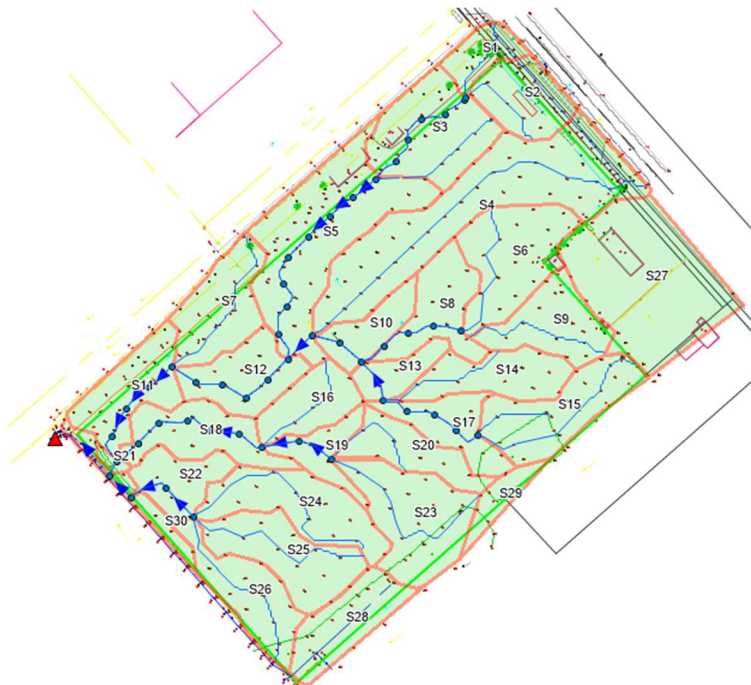


Figure 3: pre-development Sud-catchment

Table 3: Pre-development run-off coefficient

Simulated run-off coefficient

Name	Area (ha)	Runoff Coefficient (100 ans)	Runoff Coefficient (50 ans)	Runoff Coefficient (10 ans)	Runoff Coefficient (5 ans)
S1	0.0553	0.567	0.535	0.42	0.334
S10	0.0723	0.48	0.441	0.317	0.233
S11	0.1239	0.489	0.451	0.327	0.242
S12	0.116	0.422	0.383	0.263	0.187
S13	0.053	0.503	0.465	0.341	0.255
S14	0.1148	0.419	0.38	0.26	0.185
S15	0.1556	0.595	0.552	0.406	0.299
S16	0.0916	0.448	0.409	0.286	0.206
S17	0.0936	0.462	0.423	0.299	0.218
S18	0.1262	0.406	0.367	0.249	0.175
S19	0.0636	0.488	0.45	0.326	0.241
S2	0.1041	0.515	0.478	0.354	0.267
S20	0.0937	0.43	0.391	0.27	0.193
S21	0.0089	0.557	0.528	0.414	0.321
S22	0.0826	0.451	0.412	0.289	0.209
S23	0.1836	0.406	0.366	0.247	0.173
S24	0.1596	0.357	0.319	0.209	0.144
S25	0.1516	0.433	0.391	0.264	0.184
S26	0.1233	0.426	0.387	0.267	0.19
S27	0.333	0.407	0.368	0.25	0.176
S28	0.117	0.278	0.244	0.153	0.101

S29	0.0392	0.239	0.208	0.127	0.083
S3	0.1827	0.481	0.442	0.318	0.234
S30	0.0474	0.33	0.293	0.189	0.128
S4	0.3871	0.367	0.329	0.217	0.15
S5	0.3081	0.405	0.366	0.248	0.174
S6	0.1747	0.412	0.372	0.254	0.179
S7	0.133	0.465	0.426	0.302	0.22
S8	0.1145	0.446	0.407	0.284	0.205
S9	0.1221	0.451	0.412	0.289	0.209

5.4 Pre-Development Flow Results for Return Periods

Table 4: pre-development flow 2 year@100year

Pre-development flows				
Storm Event	Flow (l/s)	Drained area (ha)	Corresponding unit flow (l/s/ha)	Flow limit based on site limits of 3.2 ha (l/s)
2 yr	78	3.93	20	64
5 yr	237	3.93	60	193
10 yr	389	3.93	99	316
50 yr	762	3.93	194	621
100 yr	919	3.93	234	748

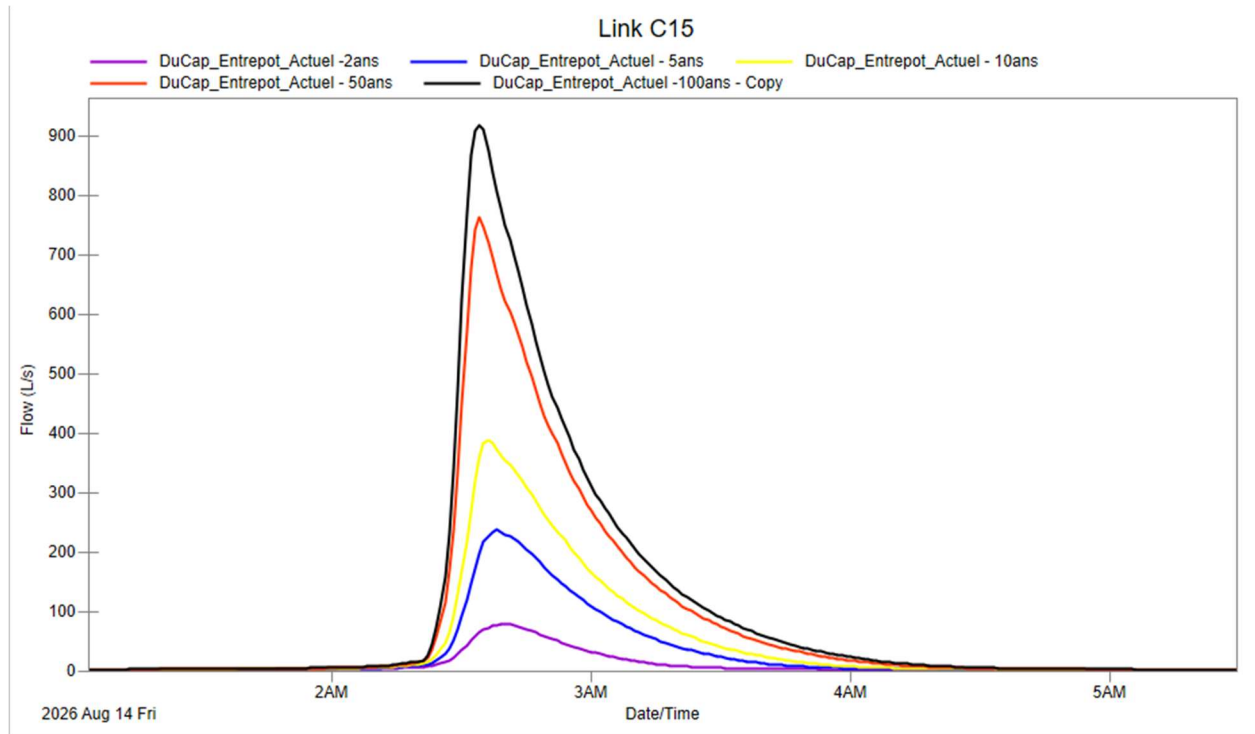


Figure 4: Obtained flow at the outfall of the site - pred-development conditions - 2 to 100 years rainfall

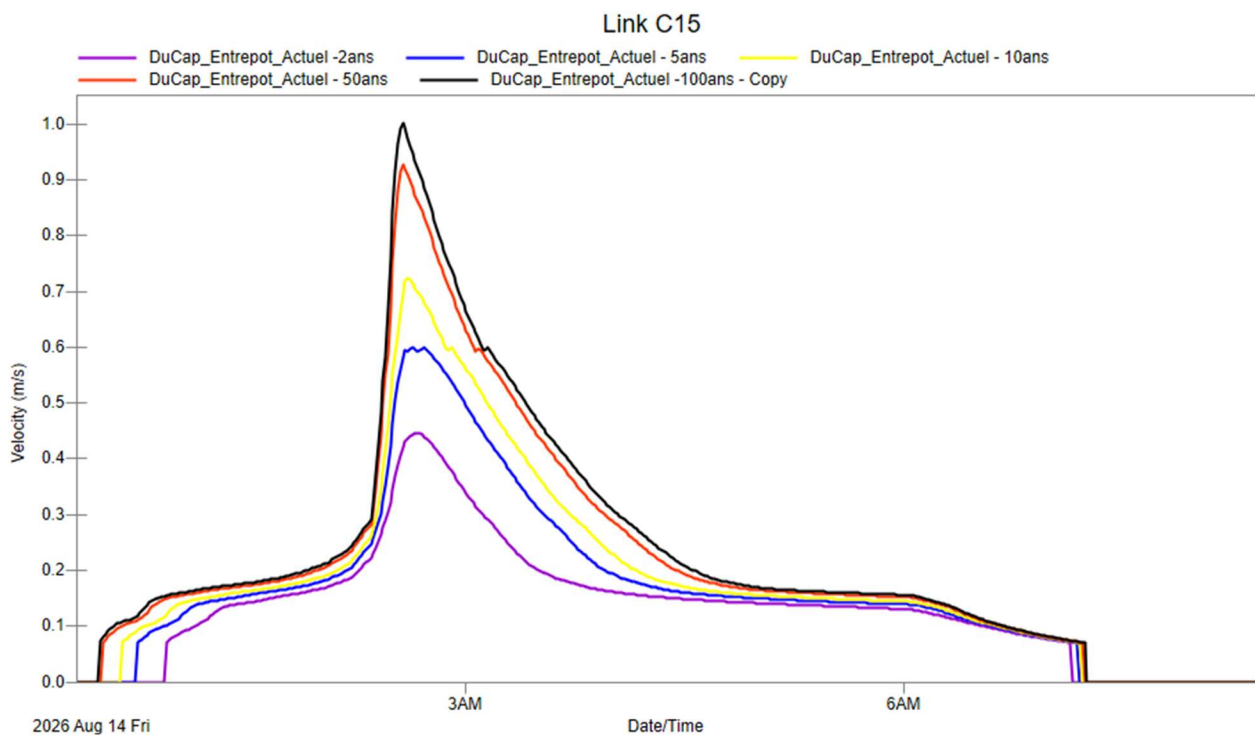


Figure 5: Obtained velocity at the outfall - pred-development conditions - 2 to 100 years rainfall

5.4.1 Projected Hydraulic Conditions of the Study Site Post-Development

This section presents the characteristics of the proposed stormwater sub-catchment and the overall hydraulic performance of the site in relation to compliance with the City of Ottawa design guidelines. It also identifies the interventions required to achieve compliance with the City of Ottawa's regulatory requirements, including quantity control, water quality treatment, and erosion control. Additionally, it describes roof storage and the characteristics of roof drains.

5.4.2 Characterization of Stormwater Sub-catchment

As illustrated in Figure 6, the proposed drainage system consists of three main subcatchment categories: roof areas, uncontrolled drainage areas, and controlled drainage areas. Runoff from the controlled drainage areas is collected and conveyed to the proposed retaining pond through two main drainage networks. Detained flows are subsequently controlled at manhole STMH-04, treated by the proposed offline Jellyfish Filter (JF-01), and discharged to the existing culvert through the existing roadside ditch.

The first drainage network comprises the storm sewer network, which collects runoff from the northern and eastern portions of the site and directs it through the proposed stormwater storage chambers before discharging to the retaining pond. The second drainage network consists of a dry swale located along the west side of the property, which conveys runoff from the site access and loading/parking areas to the retaining pond.

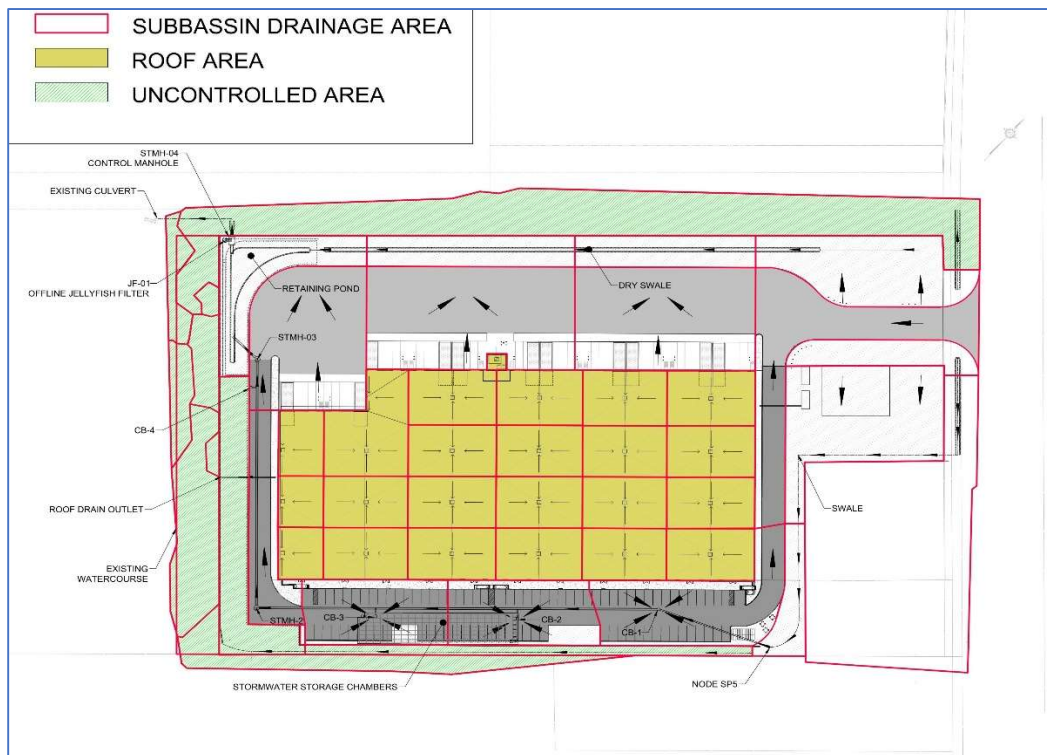


Figure 6: Stormwater Sub-catchments of the Study Site



6 Stormwater Management

Subject to confirmation that the stormwater management works will remain privately owned and will not be transferred to or assumed by the municipality, that all processing, repair and maintenance activities will be conducted indoors, that the works will not receive process water, cooling water, wash water or sanitary sewage, and that the future site operation does not fall within an excluded category under O. Reg. 137/25, the proposed stormwater management works will require registration in the Environmental Activity and Sector Registry (EASR) prior to construction.

For the surface ponding of each feature (retaining pond, dry swale, underground stormwater storage, roof) Surface ponding volumes were calculated in PCSWMM based on the geometry and stage-storage relationships of the proposed storage features. The calculated storage volumes were independently verified in Civil 3D by comparing the proposed finished grade surface to a flat reference surface established at the maximum ponding depth elevation. The results were found to be consistent between both methods.

Efforts to reduce stormwater runoff primarily focus on the following drainage strategies:

- Conveyance of runoff from impervious areas to catch basins or sumps
- Surface retention in parking areas (peak flow control)
- Pond retention equivalent (peak flow control)
- Roof storage (controlled flow roof drains)
- Water quality control to remove 80% of suspended solids (jellyfish filter or equivalent)

This section also allows for the determination of runoff volumes and flow rates under the projected conditions of the study site. Analysis of the results helps to determine the necessity of implementing stormwater management systems to comply with By-law. A hydraulic analysis of runoff on the proposed site was carried out. A summary of the results is presented in the following sections and in Appendix A – network profiles.

6.1 Water quantity control

The hydrologic and hydraulic analysis confirms that post-development discharge rates for all assessed storm events (2-, 5-, 10-, 25-, 50-, and 100-year) are controlled to the 2-year pre-development peak flow rate of 64 L/s, in accordance with the City's pre-consultation requirements. The proposed stormwater management system therefore provides the required quantity control for all design storm events up to and including the 100-year storm event plus 20%.

Areas of uncontrolled runoff are illustrated in figure 6. These areas include runoff originating from the adjacent property to the northeast and west, and the 15 m watercourse setback area along the southern property boundary.

Table 5: Pre-development flow vs Post-development flow

Post-development flows				
Storm Event	pre-development flows (l/s)	Post-development flows to the outfall (l/s)		
		Retaining pond outfall	Roof Drain outfall	Total
2 yr	64	26	24	50
5 yr	193	29	24	53
10 yr	316	32	24	56
50 yr	621	38	24	62
100 yr	748	40	24	64

Table 6: Total post-development flow to the watercourse

Post-development flows to watercourse		
Storm Event	Uncontrolled flow (l/s)	Flow to the existing culvert (l/s)
2 yr	15	64
5 yr	44	97
10 yr	72	128
50 yr	142	203
100 yr	171	235

6.2 100-year spill elevation will be 300 mm lower than the warehouse opening and ramp

Catch basins CB-1, CB-2, and CB-3 are in front of the warehouse at the light vehicle parking area. The hydraulic modelling indicates that no surface ponding occurs at these catch basins during the 2-year design storm event. During the 100-year design storm event plus 20%, the maximum



modeled HGLs at CB-1, CB-2, and CB-3 are respectively 118.28 m, 118.26 m, and 118.26 m, corresponding to maximum ponding depths of 105 mm, 85 mm, and 85 mm. The maximum predicted ponding depth is therefore 105 mm, which remains below the applicable 350 mm criterion. The modeled HGL and ponding results are summarized in Table 7.

Table 7: HGL and ponding results

Name	2yr		10 yr		100 yr	
	Max. HGL (m)	Max. Depth (mm)	Max. HGL (m)	Max. Depth (mm)	Max. HGL (m)	Max. Depth (mm)
R. Pond	116.476	448	116.68	657	116.96	930
Roof-1	S/O	80	S/O	110	S/O	140
Roof-2	S/O	80	S/O	110	S/O	140
Roof-3	S/O	80	S/O	110	S/O	140
Roof-4	S/O	80	S/O	110	S/O	140
Roof-5	S/O	80	S/O	100	S/O	130
Roof-6	S/O	80	S/O	100	S/O	130
Roof-7	S/O	80	S/O	110	S/O	140
Roof-8	S/O	80	S/O	110	S/O	140
Roof-9	S/O	80	S/O	110	S/O	130
Roof-10	S/O	80	S/O	110	S/O	130
Roof-11	S/O	80	S/O	110	S/O	140
Roof-12	S/O	80	S/O	110	S/O	140
Roof-13	S/O	80	S/O	110	S/O	140
Roof-14	S/O	80	S/O	110	S/O	140
Roof-15	S/O	80	S/O	120	S/O	150
Roof-16	S/O	80	S/O	120	S/O	150
Roof-17	S/O	80	S/O	110	S/O	130
Roof-18	S/O	80	S/O	110	S/O	130

Roof-19	S/O	90	S/O	120	S/O	150
Roof-20	S/O	60	S/O	90	S/O	120
Roof-21	S/O	60	S/O	90	S/O	120
Roof-22	S/O	70	S/O	100	S/O	120
CB-1	118.13	0			118.28	105
CB-2	118.08	0			118.26	85
CB-3	118	0			118.26	85
D. Swale	116.476	356		565	116.96	841

6.3 The maximum permissible ponding depth for the 100-year + 20% event is 1.5 m

The retaining pond and the dry swale are designed as retention facilities to temporarily store and attenuate stormwater runoff. The hydraulic modelling results confirm that the maximum water depths within both facilities remain below the 1.5 m maximum ponding-depth criterion referenced in the City of Ottawa Sewer Design Guidelines for the assessed design storm events. The simulated maximum hydraulic grade lines and corresponding water depths are summarized in Table 7.

7 Retention Volume from the PCSWMM Model

This section presents the results of the hydraulic analysis regarding the estimated retention volume on the east parking area, the retaining pond, the building roof, the western dry swale and in the underground stormwater storage chambers, respectively. The total retention storage volume for the site is summarized in Table 8.

Table 8: Site retention Volume

Name	Max. Volume 2 yr	Max. Volume 5 yr	Max. Volume 10 yr	Max. Volume 50 yr	Max. Volume 100 yr
DT-1 (Roof)	10	15	19	26	30
DT-2 (Roof)	10	15	19	26	30
DT-3 (Roof)	11	16	20	27	31
DT-4 (Roof)	11	16	20	27	31
DT-5 (Roof)	9	14	17	24	27



DT-6 (Roof)	9	14	17	24	27
DT-7 (Roof)	10	15	18	26	29
DT-8 (Roof)	10	15	18	26	30
DT-9 (Roof)	10	14	18	25	28
DT-10 (Roof)	9	14	18	25	28
DT-11 (Roof)	10	15	19	27	30
DT-12 (Roof)	10	15	19	27	30
DT-13 (Roof)	10	14	18	25	29
DT-14 (Roof)	10	14	18	25	29
DT-15 (Roof)	11	17	21	30	35
DT-16 (Roof)	11	17	21	30	35
DT-17 (Roof)	9	14	17	24	28
DT-18 (Roof)	9	14	17	24	28
DT-19 (Roof)	11	17	21	30	34
DT-20 (Roof)	3	6	7	10	12
DT-21 (Roof)	3	6	7	10	12
DT-22 (Roof)	5	8	10	14	16
CB-1 (parking)	0	8	13	25	30
CB-2 (parking)	0	7	11	21	26
CB-3 (parking)	0	6	11	21	25
<i>BR-1(Retaining Pond)</i>	<i>129</i>	<i>171</i>	<i>204</i>	<i>270</i>	<i>302</i>
<i>Dry Swale</i>	<i>87.61</i>	<i>159.91</i>	<i>227</i>	<i>394</i>	<i>459</i>
<i>Stormtech Chambers</i>	<i>77</i>	<i>133</i>	<i>177</i>	<i>261</i>	<i>289</i>
Total (m3)	494.61	789.91	1022	1524	1740



7.1 Parking Surface Retention

For verification of the hydraulic calculations, the available surface-storage volume was determined by comparing a horizontal surface established at the maximum ponding elevation with the proposed final grading surface. The maximum ponding elevation and associated contour limits are illustrated on Site Servicing Plan C-001.

7.2 Retaining pond

The dry retaining pond, located at the outlet of the parking lot and roof drainage network, stores and attenuates runoff from 2-year to 100-year storm events + 20% before releasing it to the downstream existing ditch through the control manhole and the offline jellyfish filter. It also allows infiltration and meets the pre-development requirements set by the City of Ottawa. The basin has a total area of 550 m² and a depth of 1.2 m for a provided volume of 515 m³. Based on the modeled 100-year storm event + 20% water surface elevation of 116.96 m, a freeboard of 0.30 m has been provided, resulting in an overflow weir elevation of 117.26 m. The storm drainage network collects runoff from the swale located at the northeast corner of the property, as well as from the four catch basins serving the western parking area and fire route and conveys it to the main stormwater management pond. In addition, runoff collected by the western dry swale is conveyed to the stormwater management pond through a 450 mm diameter pipe, ensuring that all flows from the minor drainage system are directed to the pond for control.

For storm events exceeding the 100-year return period + 20%, a major overland flow route has been identified. The site grading has been designed to direct runoff from major storm events away from the parking areas and safely convey it through the stormwater management pond toward the setback adjacent to the existing watercourse along the southern boundary of the property.

7.3 Roof retention

The flat roof areas designated for stormwater retention will have a maximum slope of 2.3% around the roof drain and will be subdivided into twenty-two drainage sub-basins for a maximum ponding depth of 0.15 m as requested by structural engineer and OBC 7.4.10.4. Stormwater will be temporarily retained on the roof and released through controlled-flow Murphco-type roof drains or approved equivalent. Emergency overflow scuppers will be provided at the roof perimeter to provide an independent exterior drainage path if a controlled-flow roof drain becomes obstructed or if the water level exceeds the intended roof-retention elevation as per OBC 7.4.10.4. The scuppers will discharge directly outside the building envelope and will be positioned to prevent the maximum allowable ponding depth and structural roof-loading criteria from being exceeded. The roof-retention volumes, controlled release rates and estimated drain-down times are provided in Table 8. The roof drains convey runoff through an internal 300 mm diameter storm sewer and discharge to the uncontrolled setback area located on the east side of the building at a maximum controlled flow rate of 24 L/s.

7.4 Dry swale

A dry swale is proposed along the west side of the warehouse, adjacent to the vehicle entrance. The swale is designed as a linear stormwater retention and infiltration facility rather than solely as a conventional conveyance swale. The facility will temporarily store runoff, attenuate peak discharge rates, and promote infiltration into the underlying soils through a 500 mm deep clear-stone reservoir extending across the 1,000 mm wide swale bottom.

Runoff generated from the loading dock and the adjacent parking area will be collected and conveyed to the dry swale. A portion of the retained runoff will infiltrate into the underlying soils through the clear-stone reservoir. Flows exceeding the available infiltration and storage capacity will be conveyed through a 450 mm diameter outlet pipe to the downstream retention pond. Figure 7 illustrates the proposed dry-swale configuration, while Tables 7 and 8 summarizes the corresponding maximum ponding depths and available retention volumes.

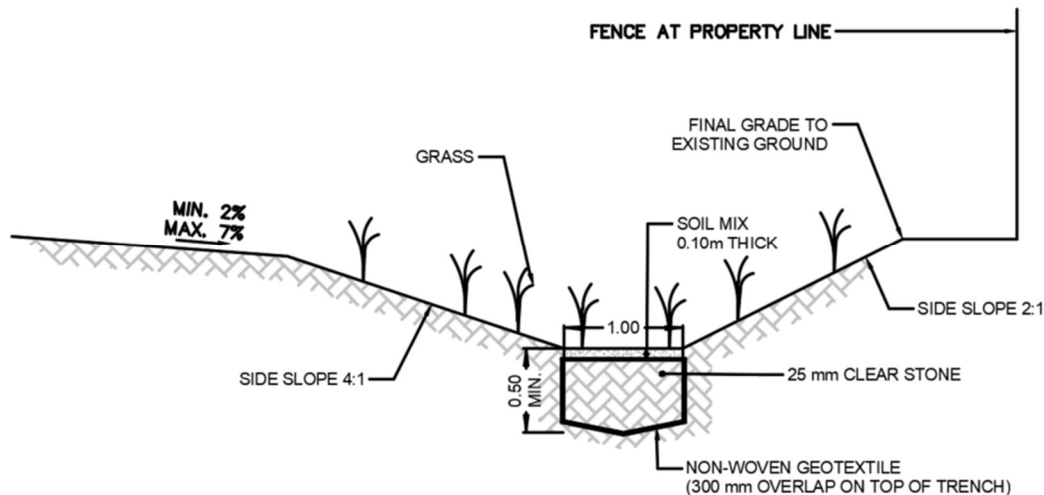


Figure 7: dry swale proposal

7.5 Stormwater storage chambers

Due to the anticipated high groundwater conditions, enclosed StormTech SC-800 chambers have been incorporated into the design to provide the majority of the required retention volume. The proposed system consists of 153 StormTech SC-800 chambers and 14 end caps, providing approximately 293.8 m³ of effective storage volume just more than the required 289 m³. Stormwater runoff collected from the controlled drainage areas is conveyed to the underground storage chambers, where it is temporarily detained and attenuated prior to discharging to the proposed retaining pond. The proposed storage chambers reduce post-development peak flows and assist in meeting the site's quantity control requirements. In addition, the chambers promote infiltration for water balance objectives while minimizing surface ponding across the site. Further details regarding the selected storage chamber system are provided in Appendix F.



7.6 Control Manhole

A two-compartment stormwater flow-control maintenance hole is proposed downstream of the retaining pond. The first and second compartments are separated by a diversion wall that directs the designated treatment flow to the offline Jellyfish filtration unit. This configuration provides stormwater quality treatment and quantity control before runoff is released to the downstream drainage system. Appendix B provides more detailed information about the control manhole STMH-4.

8 Water quality control

Stormwater quality control will be provided by a Jellyfish JF-01 membrane filtration treatment unit installed in an offline configuration with a regulation manhole at the retaining pond. The system utilizes sedimentation, floatation, and membrane filtration to remove oil, debris, trash, coarse and fine particulates, particulate-bound pollutants, metals, and nutrients from stormwater runoff. The proposed unit consists of a 1,829 mm diameter precast concrete structure equipped with two high-flow cartridges and one draindown cartridge and has a maximum treatment flow capacity of 32.8 L/s excluding the 32 L/s 10 year event flow from the retaining pond. Flows exceeding the unit's treatment capacity will be conveyed through the external bypass arrangement. The unit will be installed, inspected, and maintained in accordance with the manufacturer's specifications and recommendations. Manufacturer's technical details are provided in Appendix B.

The proposed Jellyfish unit will provide stormwater quality treatment through a combination of sedimentation, flotation, and membrane filtration. According to the manufacturer's specifications, the unit achieves a minimum median Total Suspended Solids (TSS) removal efficiency of 85%. The system also captures fine particles and associated pollutants, thereby contributing to the applicable stormwater quality objectives for the development. Additional details regarding the proposed Jellyfish stormwater quality treatment unit are provided in Appendix B – Jellyfish Filter Specifications and Technical Documentation.

9 Proposed Drainage Network

The layout of the stormwater drainage network for the warehouse is illustrated on the Site Servicing Plan C-001 accompanying this technical memorandum. The network was modeled using the PCSWMM software, considering the parameters presented in Table 2. The project's drainage network is connected to a 450 mm culvert, which conveys runoff from the development area as well as roof drainage from the warehouse to the watercourse. Appendix A – Network Profiles illustrates the PCSWMM simulation results for the two drainage networks conveying runoff to the proposed retaining pond.

10 Downstream outlet

10.1 capacity assessment

A hydraulic capacity assessment was completed for the existing 450 mm diameter corrugated steel pipe using HY-8. The culvert has a modelled length of 9.0 m, an inlet invert elevation of 115.99 m, an outlet invert elevation of 115.9 m, and a longitudinal slope of approximately 0.1%.

The assessment considered flows ranging from 0.064 m³/s for the 2-year event to the governing 10-year post-development flow of 0.128 m³/s, consistent with the City of Ottawa Sewer Design Guidelines adopted for this project.

At the governing 10-year post-development flow, interpolation of the HY-8 results indicates:

- a headwater elevation of approximately 116.42 m;
- an approximate existing road elevation of 116.80 m;
- an outlet velocity of approximately 1.35 m/s;
- a tailwater velocity of approximately 0.50 m/s; and

The calculated headwater elevation remains below the existing road elevation, and the hydraulic model does not predict roadway overtopping during the governing 10-year post-development event. This represents the normal hydraulic operating condition of the existing culvert at the design discharge and does not constitute hydraulic failure.

The proposed stormwater management system controls the post-development peak discharge to a rate lower than the corresponding pre-development peak discharge. Consequently, the proposed development will not increase the hydraulic loading on the existing culvert or worsen the existing downstream drainage condition. Instead, the proposed quantity-control measures reduce the peak flow conveyed through the existing culvert compared with the existing condition.

Based on the HY-8 hydraulic assessment and the reduction in peak discharge relative to pre-development conditions, the existing 450 mm diameter culvert provides adequate hydraulic capacity for the proposed development. The proposed development does not increase the frequency or magnitude of roadway overtopping and does not create an additional hydraulic impact on the downstream ditch, roadway, or adjacent properties.

The existing 450 mm diameter culvert is therefore considered acceptable for continued use, and its replacement or enlargement is not required as part of the proposed development. The complete results of the existing culvert assessment are presented in Figure 8.

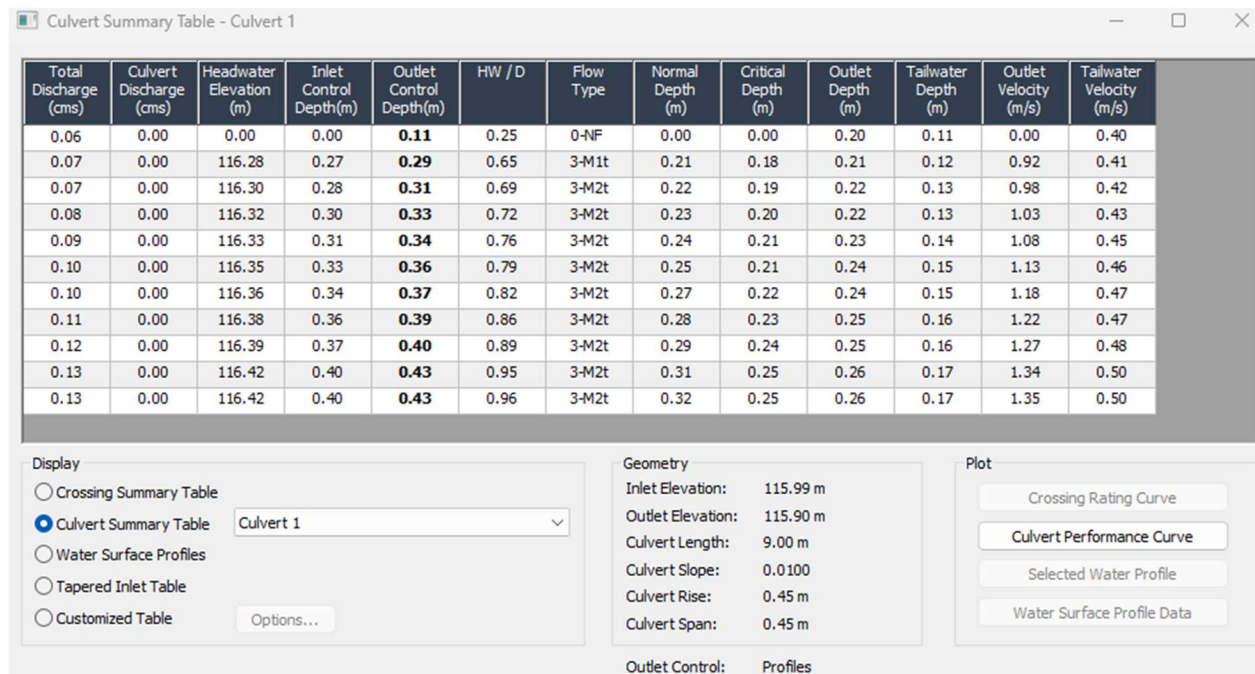


Figure 8: Existing downstream culvert assessment

10.2 Legal and Sufficient Outlet

The proposed stormwater management system restricts post-development peak flows for all design storms up to and including the 100-year event to the 2-year pre-development peak flow rate of 64 L/s. As a result, peak discharge rates to the receiving ditch will not increase from existing conditions. The Owner is currently securing the necessary legal authorization and permission from the downstream landowner(s) for the proposed outlet. The executed agreement will be provided to the City prior to approval.

11 Sanitary Service

There is no sanitary sewer located within Carp Road nearby this current project. The sanitary outflows that will be produced by the current site are treated by a septic system, and release via leaching bed.

The proposed development will be serviced via a treatment system and leaching bed, to be buried at the rear (north) of the property beside the main entrance facing Carp Road.

The total anticipated wet sanitary flow was estimated to be 5,400 l/day refer to plan PH5068-1 "Sewage system layout plan".

Refer to Appendix E for the sanitary sewer design sheet. On October 21, 2025, the Rideau Valley Conservation Authority has provided the permit 25-380 to build the sewage system.

12 Water Supply and fire protection

12.1 Supply Domestic Water

As no municipal water service is available to the site, domestic water service for the proposed development will be provided by a recently installed drilled well located approximately 3.6m from the exterior wall of the building's fire pump room. The well will be connected to the building's domestic water distribution system.

A "Hydrogeological Assessment and Terrain Analysis" prepared for this current project has demonstrated that the preferred water supply intercepted by this new well contains a water supply that is potable and contains only elevated concentrations of hardness.

For details related to pumps and pipes that provide domestic water supply, see Mechanical Engineering.

12.2 Water Supply for Firefighting

The closest fire station km which is Ottawa Fire Station 64 is located at 4.1km at 475 Donald B. Munro Dr, Kinburn, On.

Appendix D presents the calculation of the required fire water supply in accordance with the Fire Underwriters Survey (FUS). The determined minimum water supply, flow rate, and storage requirements for fire protection are as follow:

- Minimum required water supply: 588,541 L
- Required FUS Fire Flow: 7,000 L for 30 minutes
- Effective Storage: 4 tanks of 151,400 L each for a total of 605,600 L

The four water storage tanks will supply adequate water by connecting to a safety blue dry hydrant in accordance with City of Ottawa Standard Drawings W53 and W54.

Prepared by:

Daurald Consultant Inc.



Fritz Gérald St Fleur, P. Eng.

Civil Engineer



Appendix A: Existing drainage and Proposed Network Profiles

EXISTING DRAINAGE

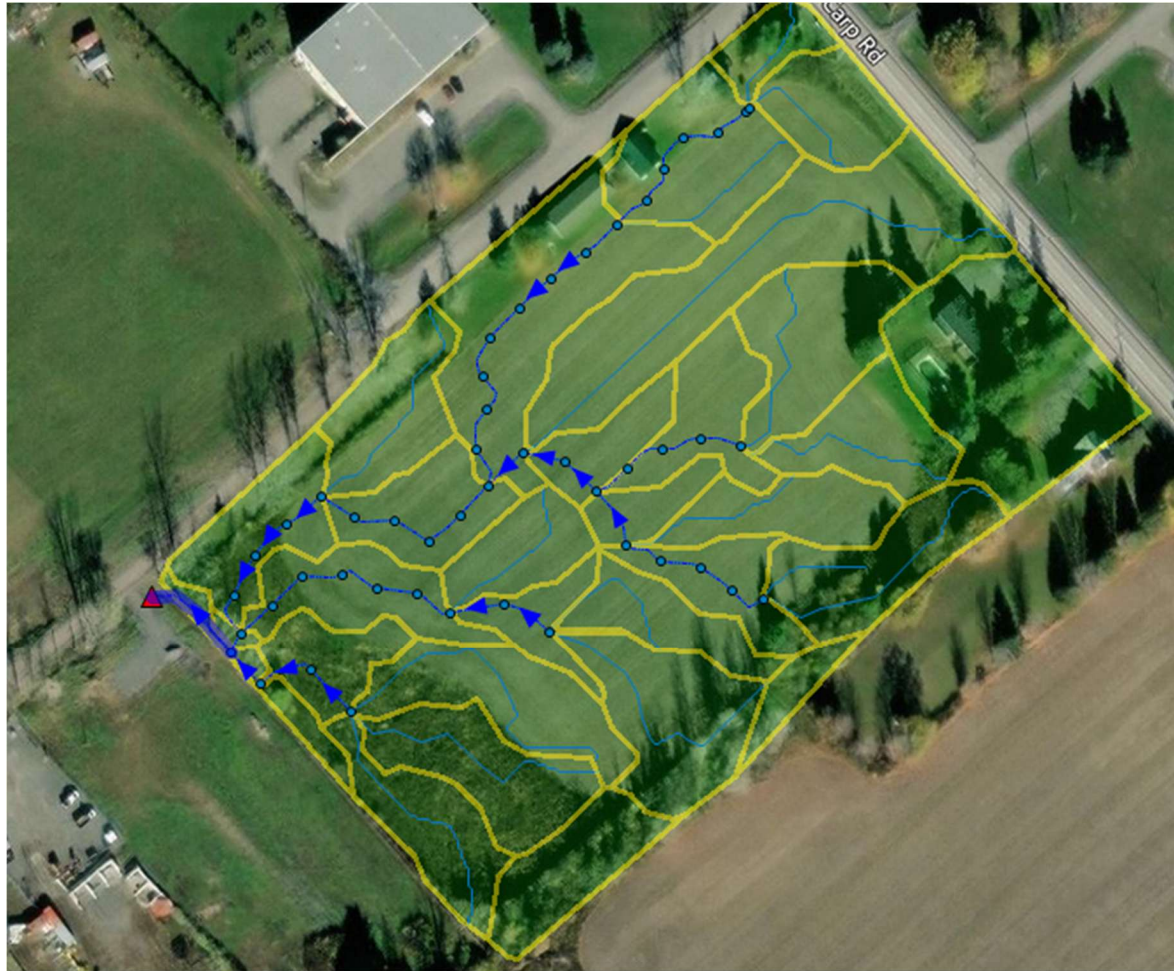


Figure 1: Plan View of the natural drainage watershed and drainage system in the site limits

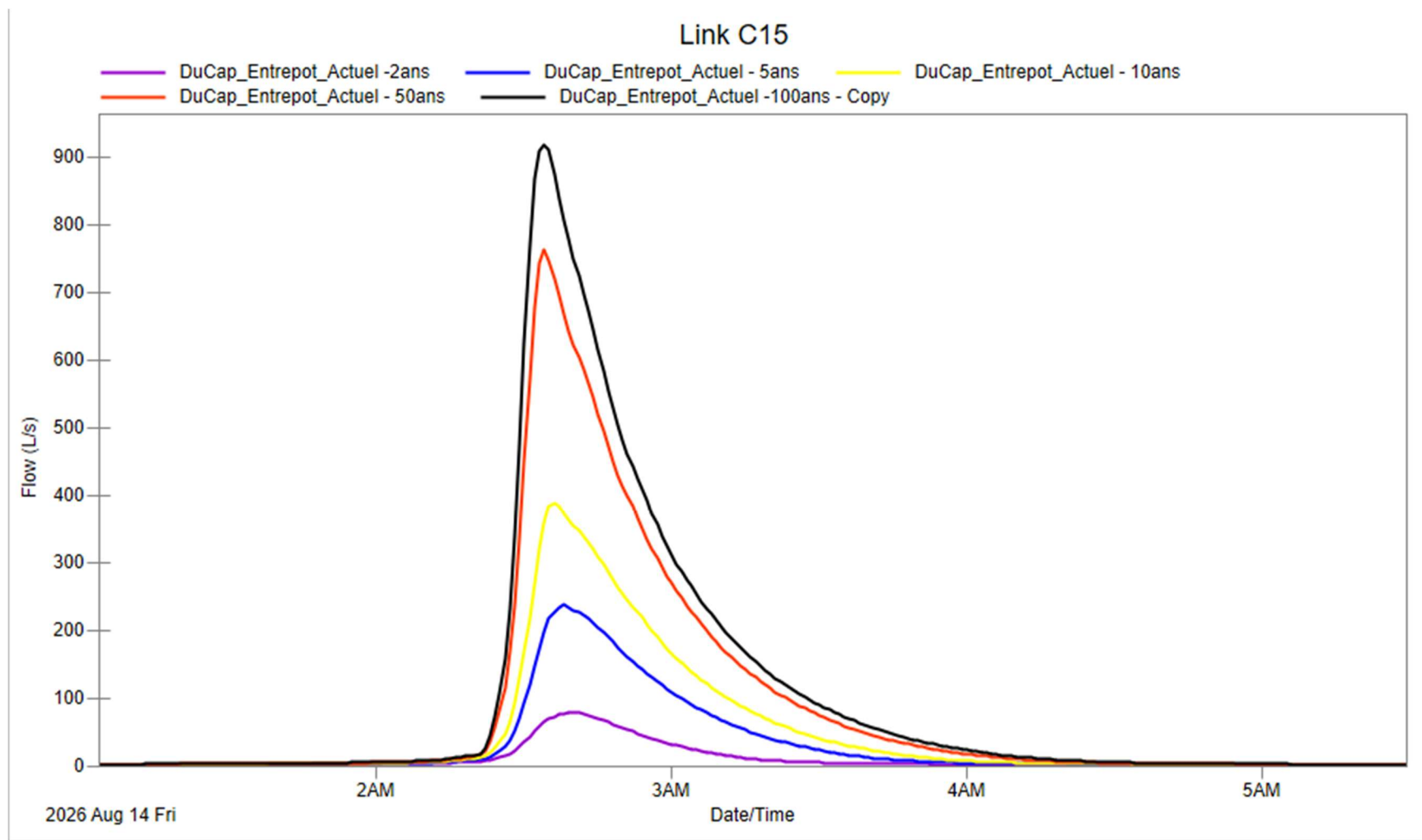


Figure 2: Obtained flow at the outfall of the site - pred-development conditions - 2 to 100 years rainfall

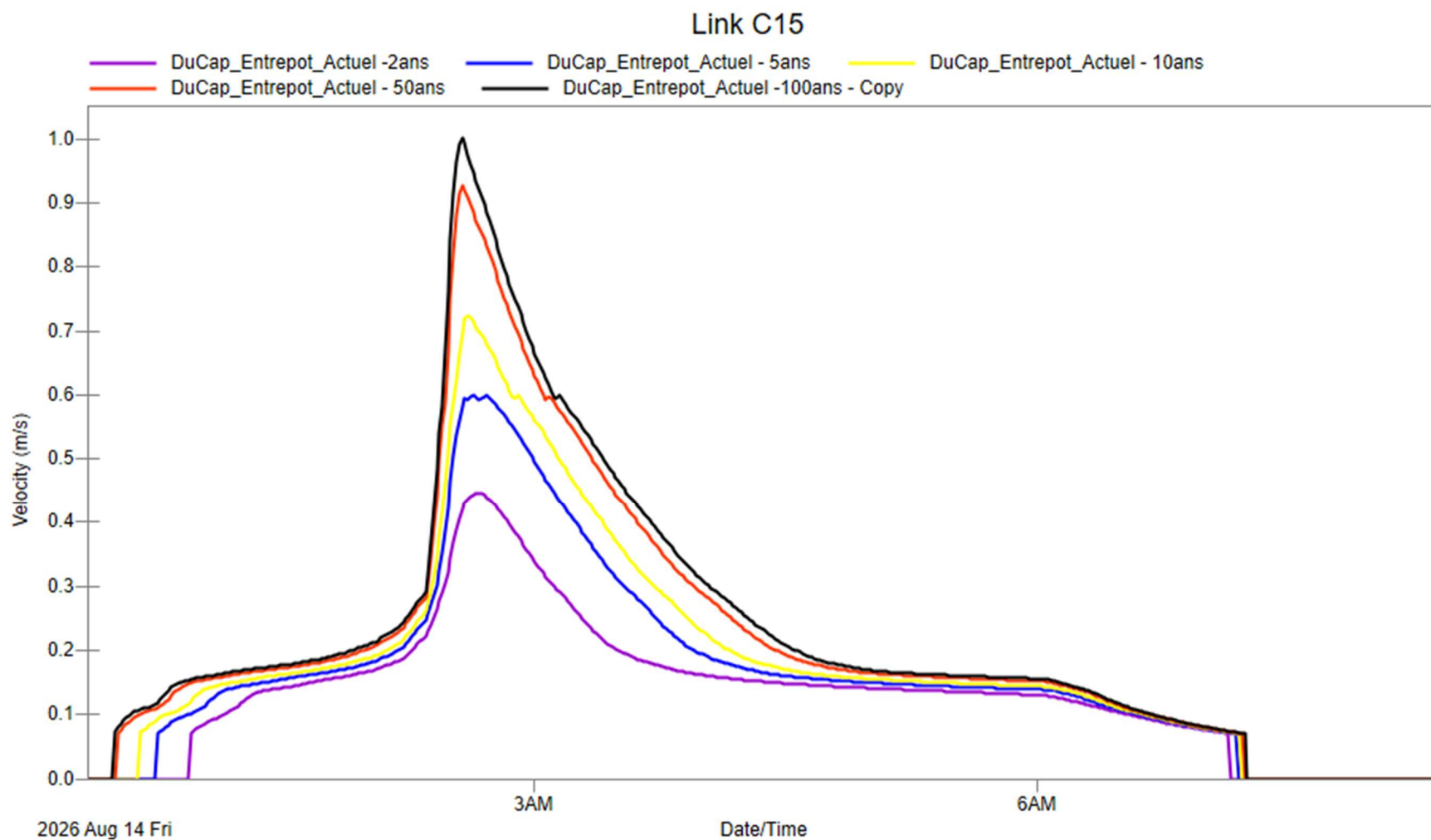


Figure 3: Obtained velocity at the outfall - pred-development conditions - 2 to 100 years rainfall

PROPOSED NETWORK PROFILES



Figure 1: Plan View of the proposed pipe showed on the profile- from Node SP5 to outfall

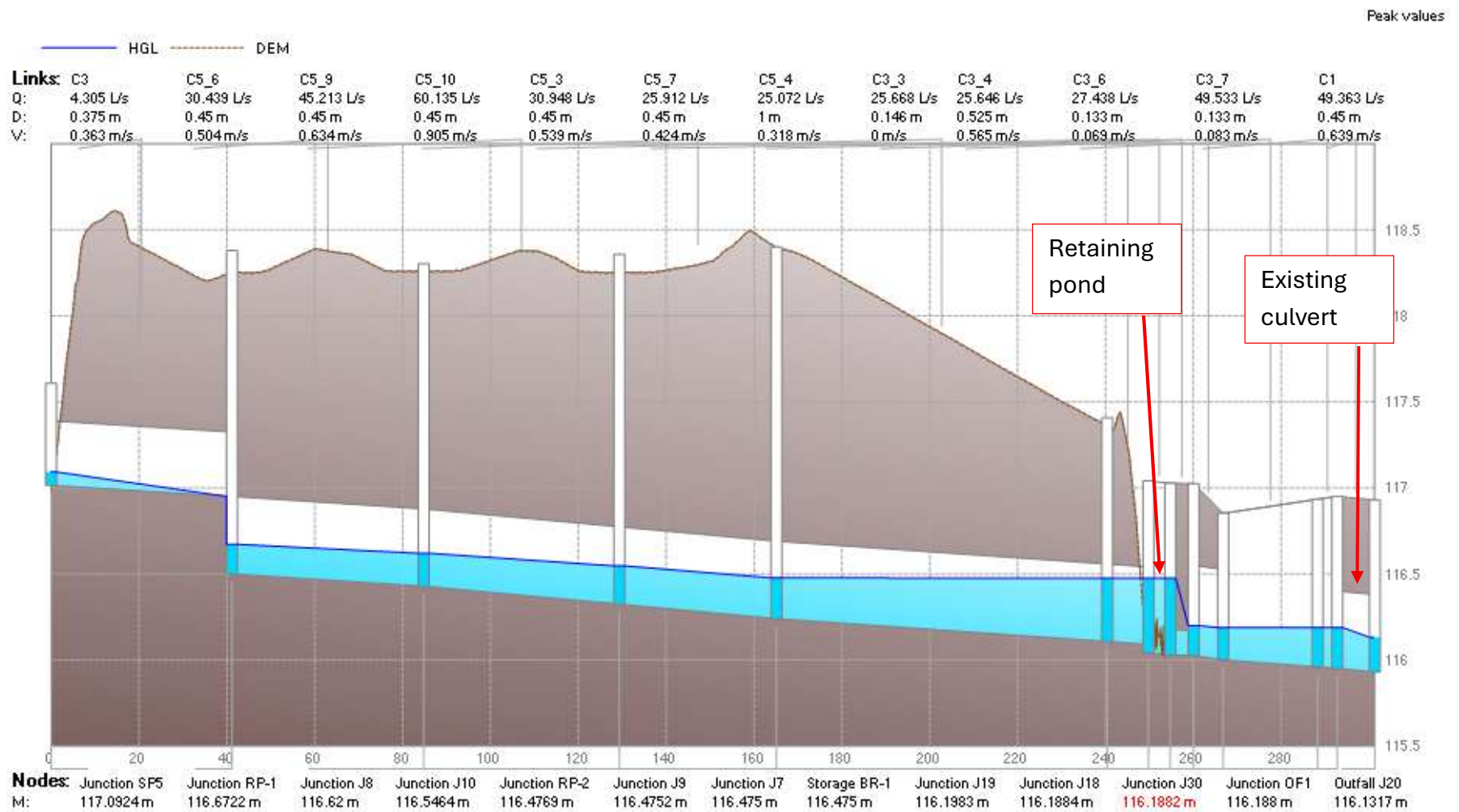


Figure 2: Hydraulic profile -proposed pipe- from Node SP5 to outfall – 1/ 2 years rainfall

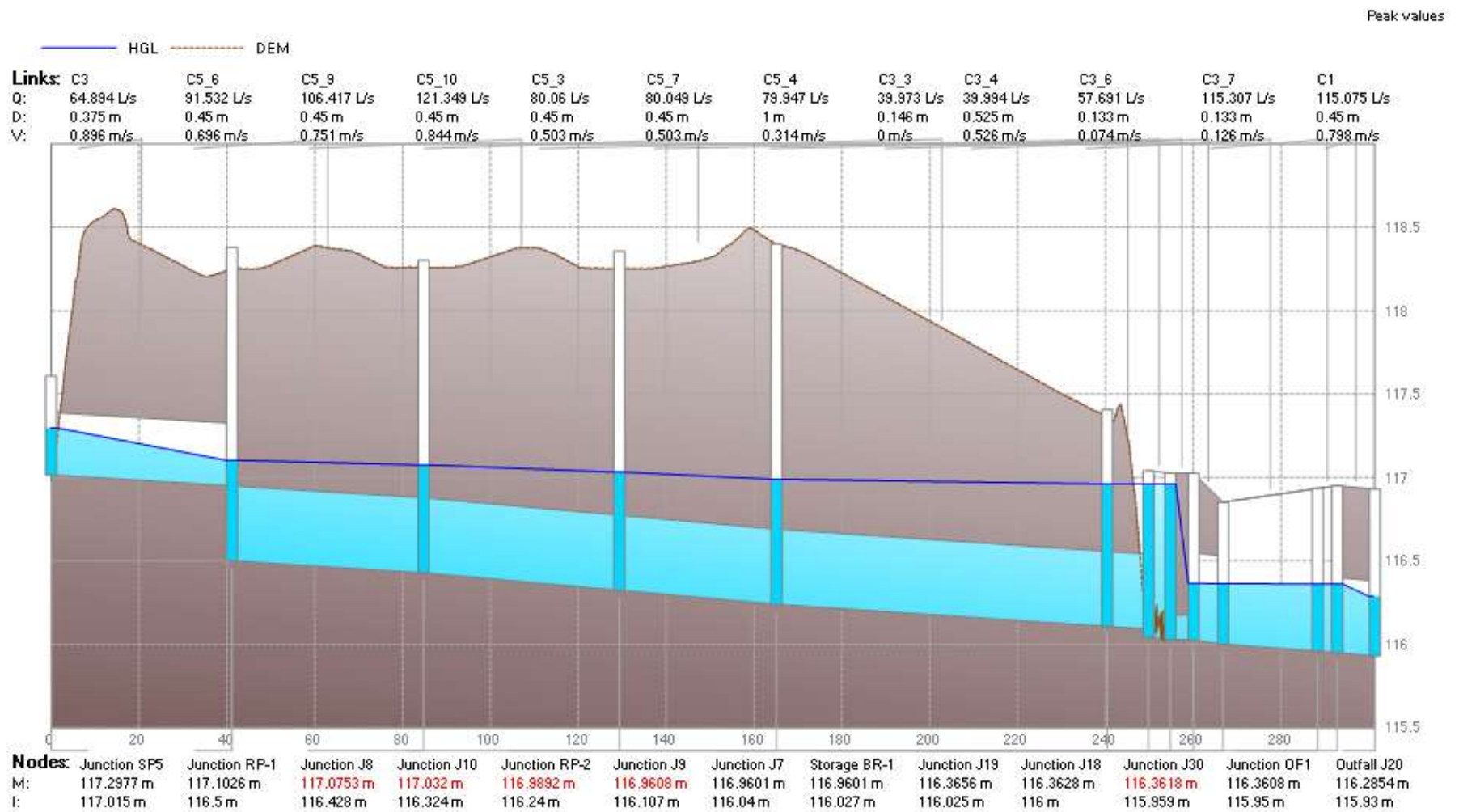


Figure 3: Hydraulic profile -proposed pipe- from Node SP5 to outfall – 1/ 100 years rainfall

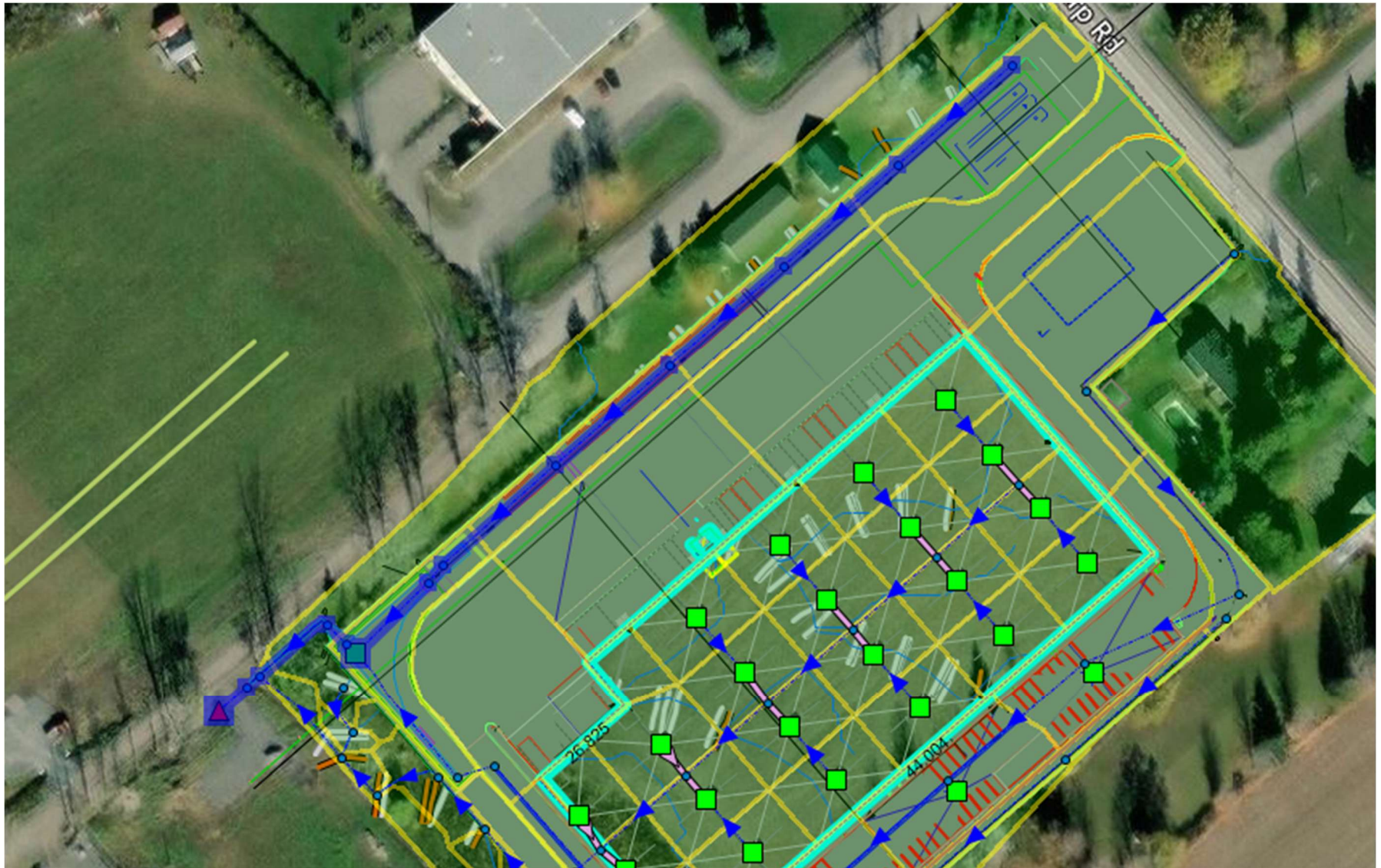


Figure 4: Plan View of the proposed pipe showed on the profile- from Swale to the outfall

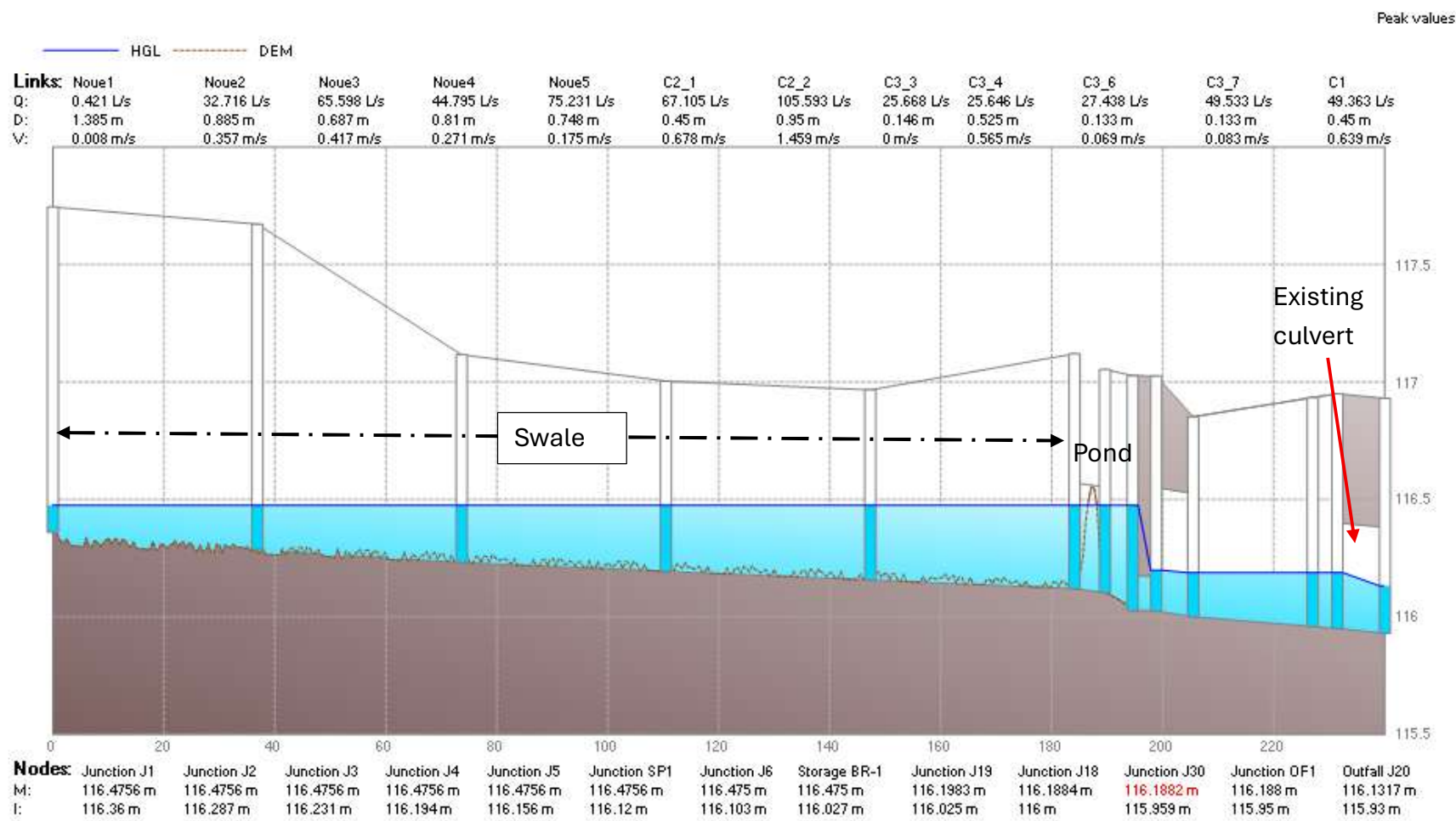


Figure 5: Hydraulic profile -proposed drainage - from Swale to the outfall – 1/2 years rainfall

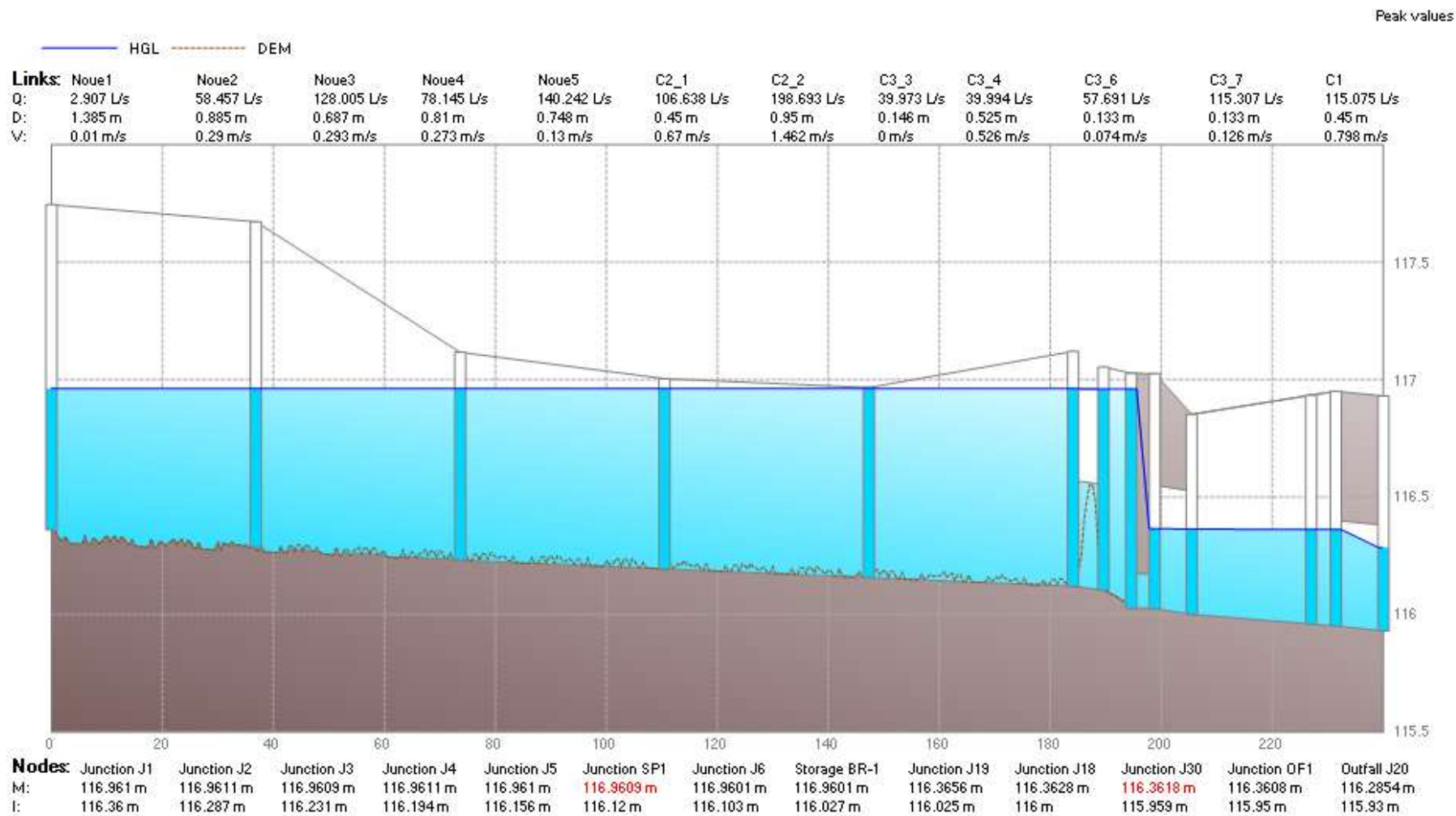


Figure 6: Hydraulic profile -proposed drainage - from Swale to the outfall – 1/100 years rainfall

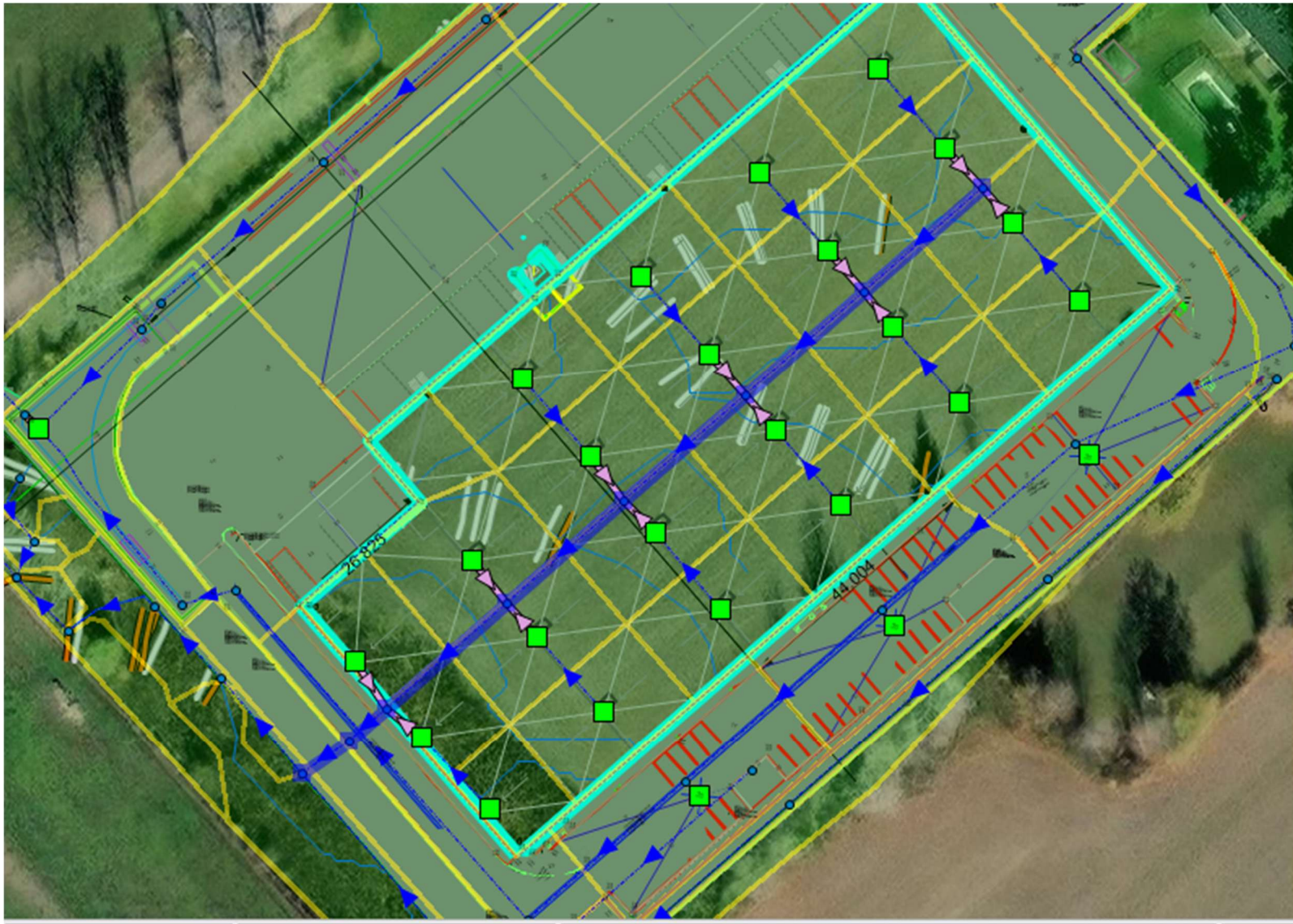


Figure 7: Plan View of the proposed pipe showed on the profile- proposed building drainage system

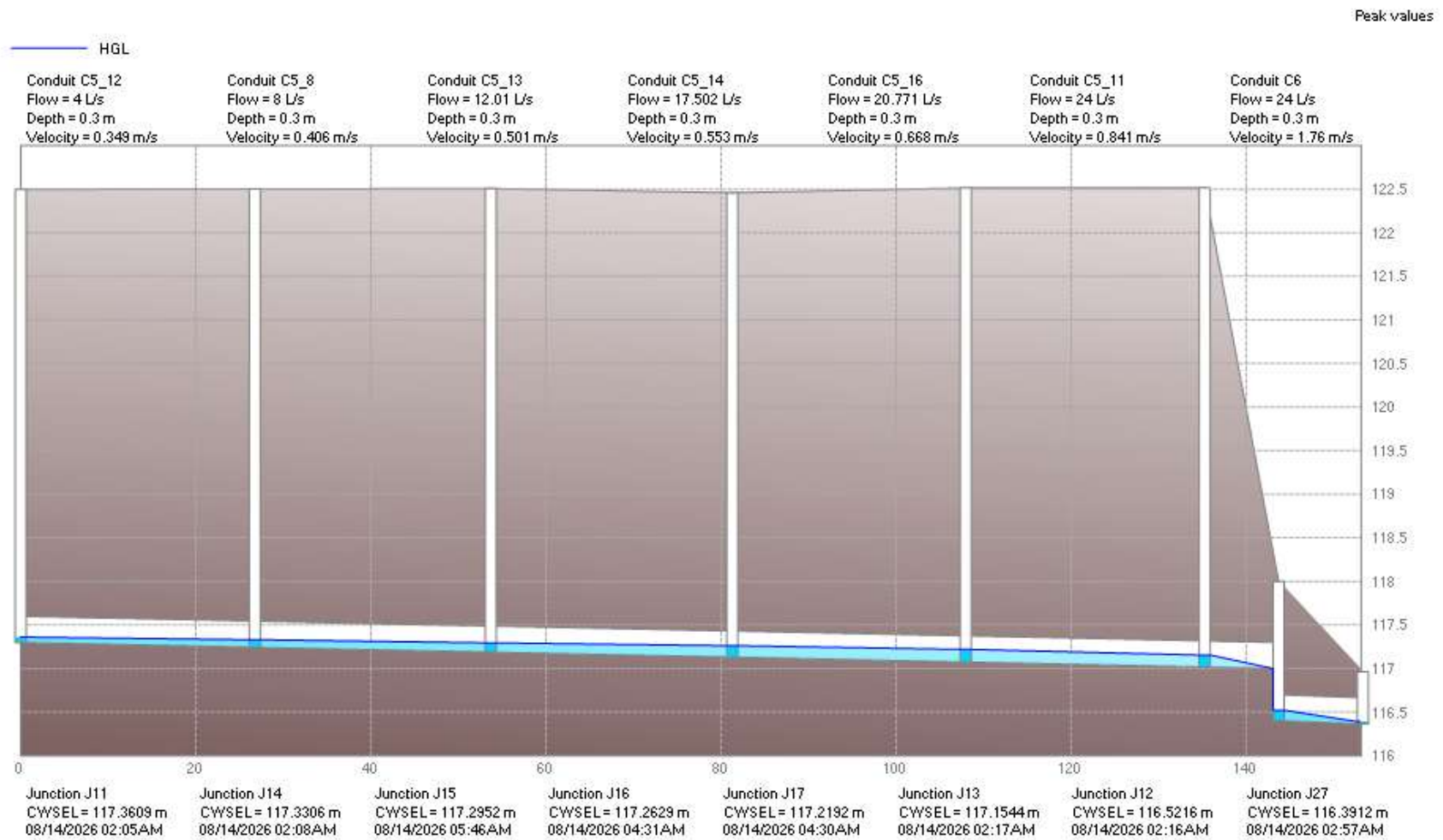


Figure 8: Hydraulic profile -proposed building drainage system - from node J11 to outfall – 1/2 years rainfall

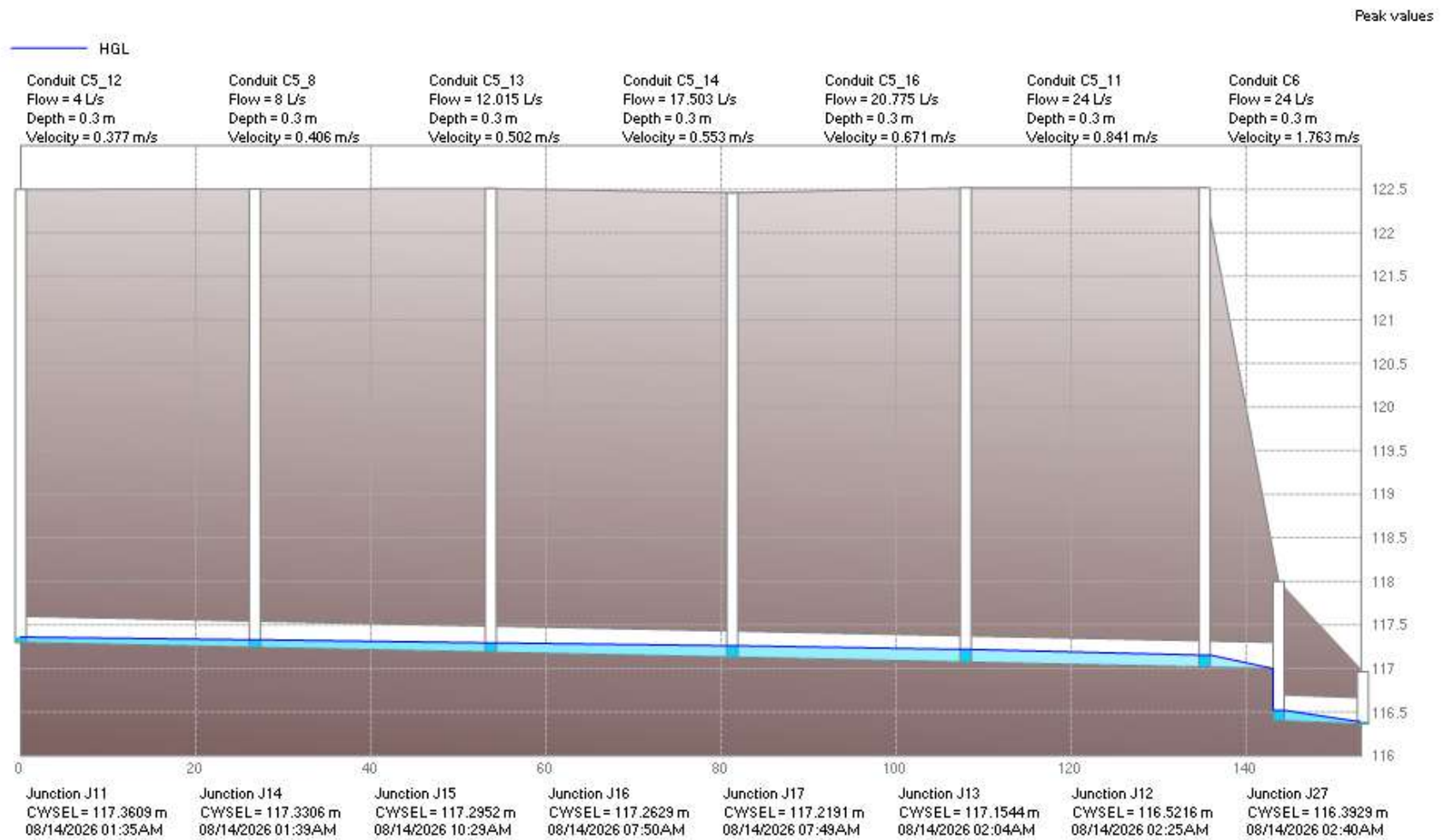


Figure 9: Hydraulic profile -proposed building drainage system - from node J11 to outfall – 1/100 years rainfall

Link C3_4

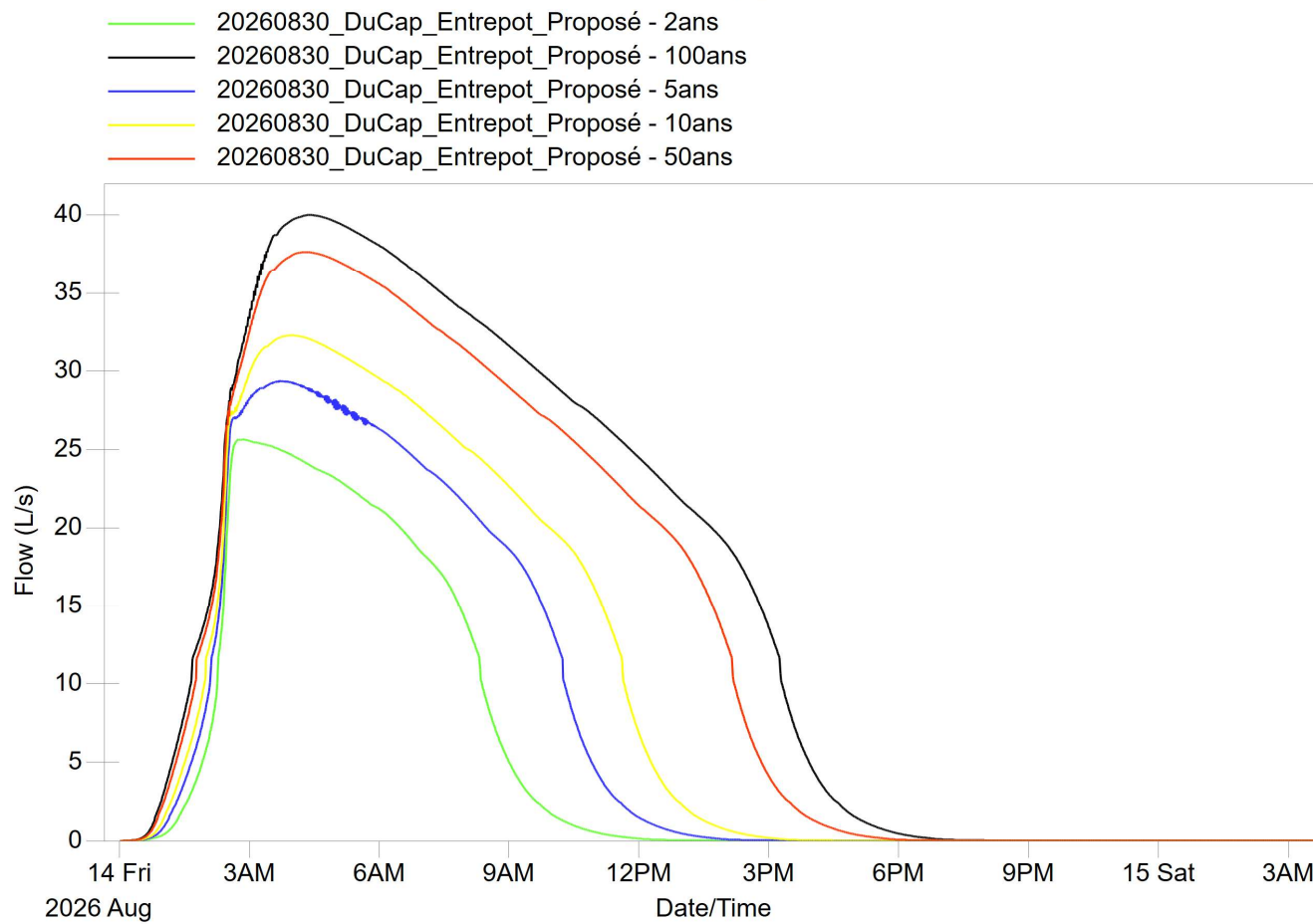


Figure 10: Obtained flow at the outfall (Pond outfall) - 2 to 100 years rainfall

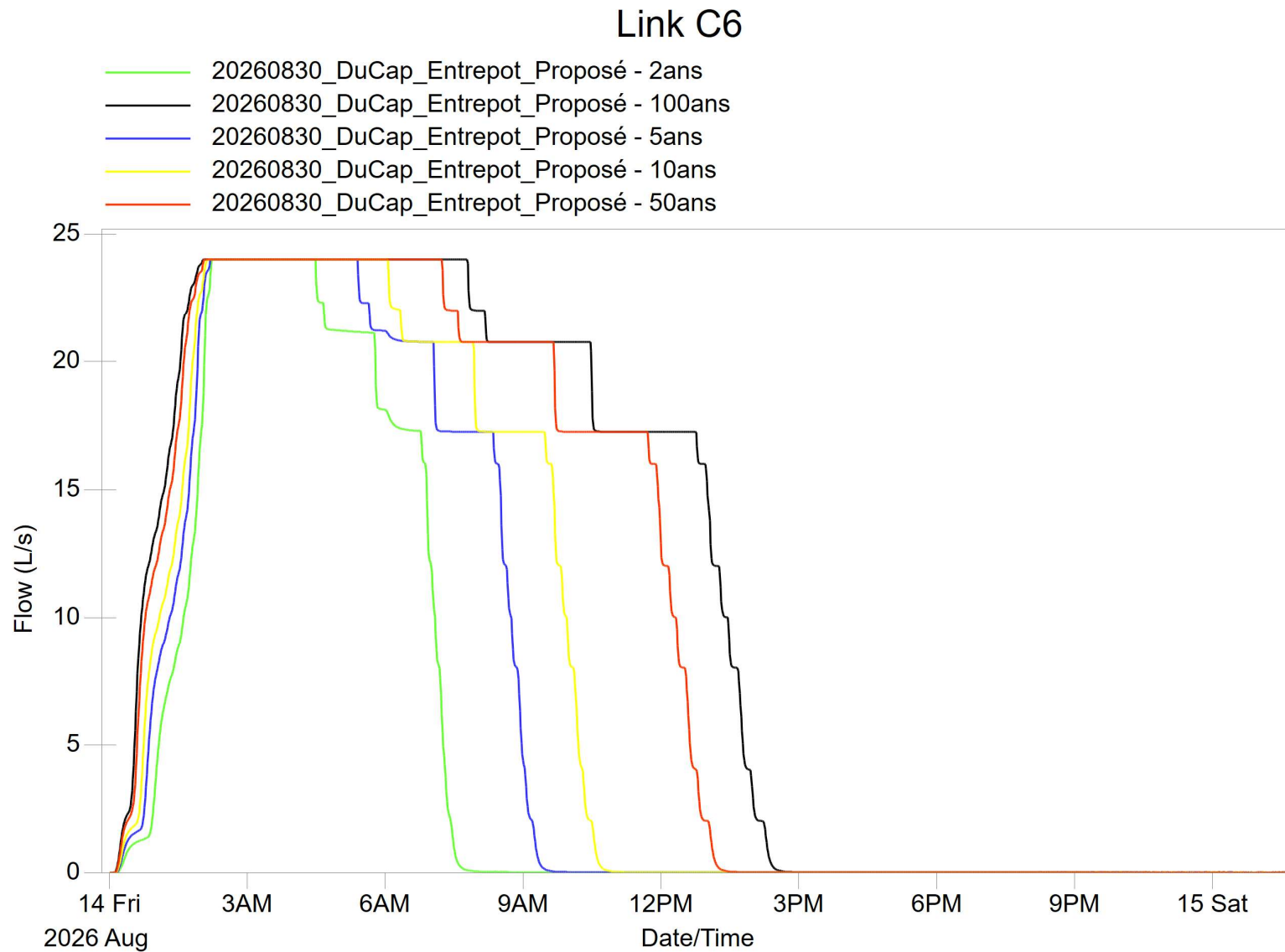


Figure 11: Obtained flow at the outfall (Building outfall) - 2 to 100 years rainfall

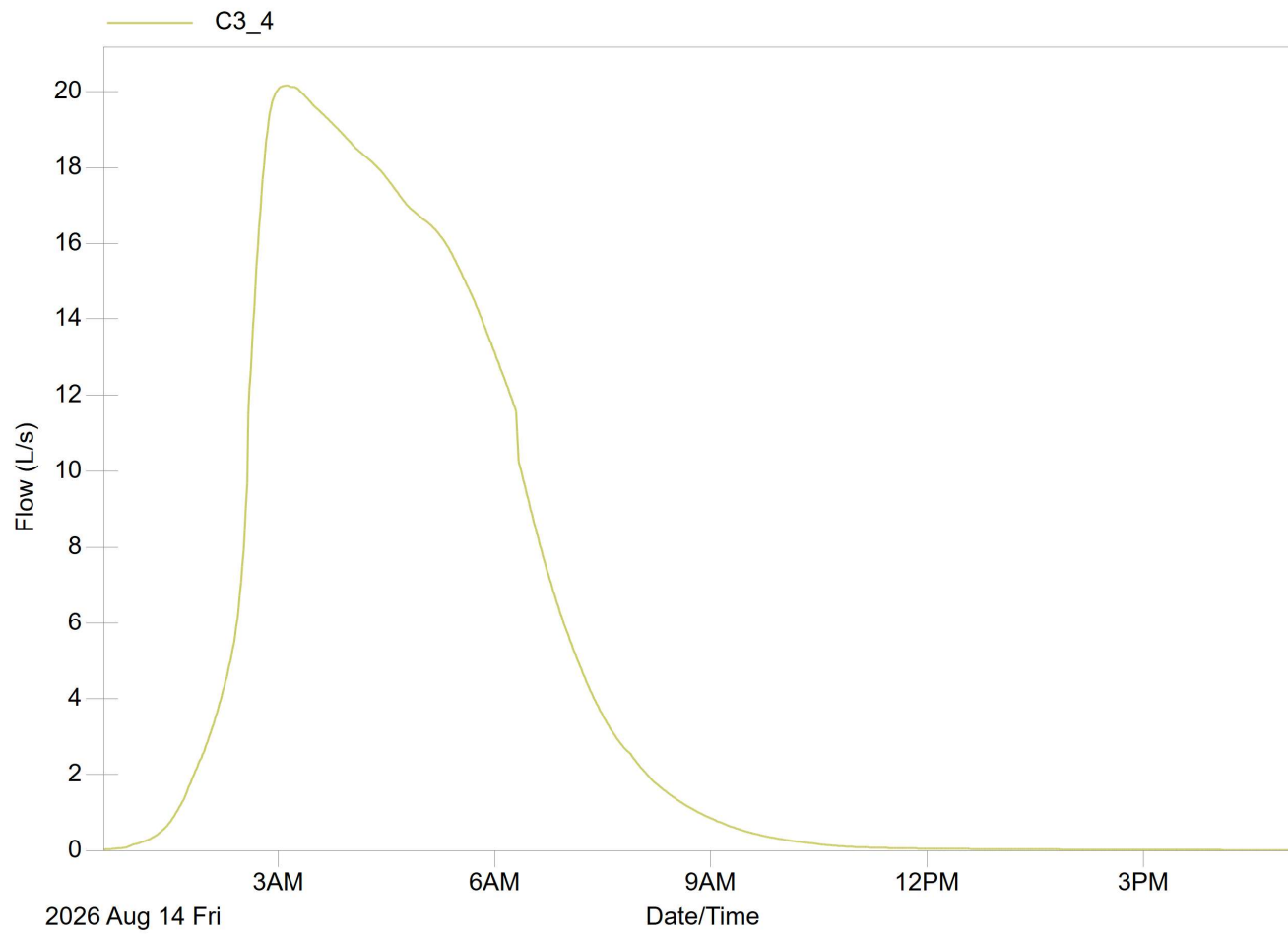


Figure 12: Obtained quality flow at the main outfall (pond outfall)

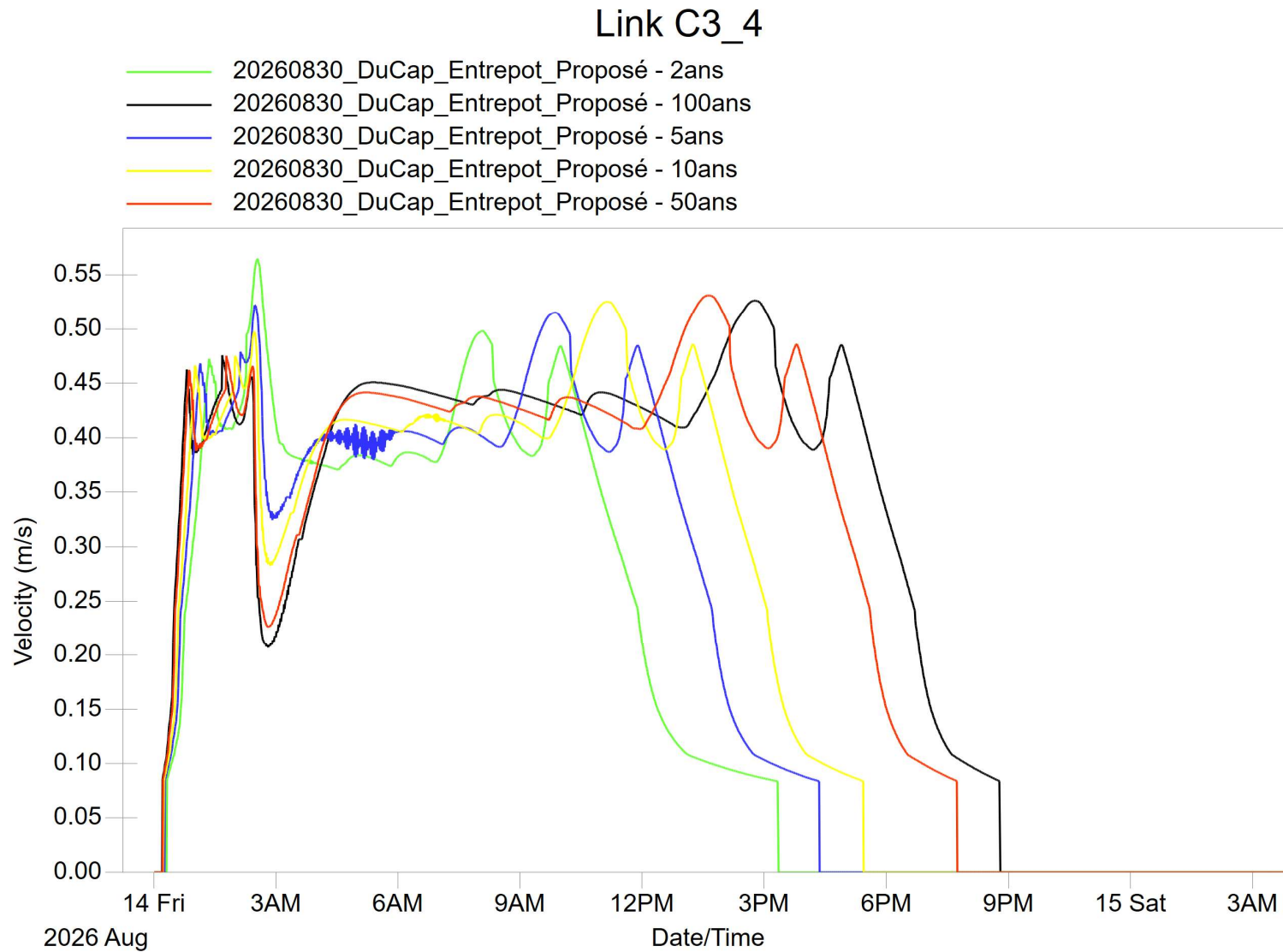


Figure 13: Obtained velocity at the main outfall – 2 to 100 years rainfall

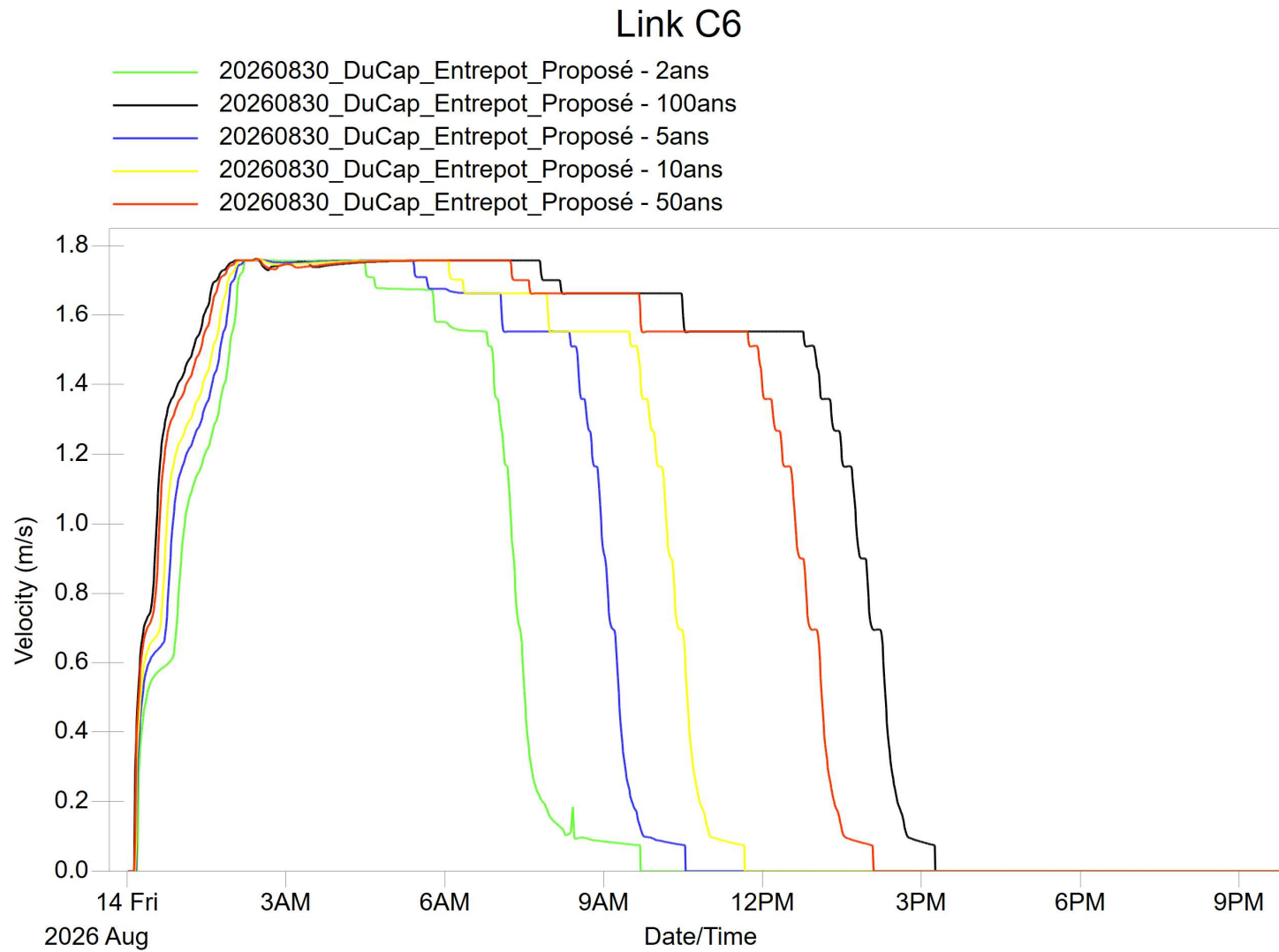


Figure 14: Obtained flow at the outfall (Building) - 2 to 100 years rainfall

Appendix B- Jellyfish Filter Specifications and Technical Documentation

JELLYFISH® FILTER - SPECIFICATIONS

GENERAL

- A. **WORK INCLUDED:** SPECIFIES REQUIREMENTS FOR CONSTRUCTION AND PERFORMANCE OF AN UNDERGROUND STORMWATER QUALITY, MEMBRANE FILTRATION, AND TREATMENT DEVICE THAT REMOVES POLLUTANTS FROM STORMWATER RUNOFF THROUGH THE UNIT OPERATIONS OF SEDIMENTATION, FLOATATION, AND MEMBRANE FILTRATION.
- B. **REFERENCE STANDARDS:**
ASTM C 891: SPECIFICATION FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES
ASTM C 478: SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
ASTM C 990: SPECIFICATION FOR JOINTS FOR CONCRETE MANHOLES USING PREFORMED FLEXIBLE JOINT SEALANTS
ASTM D 4101: SPECIFICATION FOR COPOLYMER STEPS CONSTRUCTION
- C. **SHOP DRAWINGS:** SHOP DRAWINGS FOR THE STRUCTURE AND PERFORMANCE ARE TO BE SUBMITTED WITH EACH ORDER TO THE CONTRACTOR. CONTRACTOR SHALL FORWARD SHOP DRAWING SUBMITTAL TO THE CONSULTING ENGINEER FOR APPROVAL. SHOP DRAWINGS ARE TO DETAIL THE STRUCTURE PRECAST CONCRETE AND CALL OUT OR NOTE THE FIBERGLASS (FRP) INTERNALS/COMPONENTS.
- D. **PRODUCT SUBSTITUTIONS:** NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD. SUBMISSIONS FOR SUBSTITUTIONS REQUIRE REVIEW AND APPROVAL BY THE ENGINEER OF RECORD, FOR HYDRAULIC PERFORMANCE, IMPACT TO PROJECT DESIGNS, EQUIVALENT TREATMENT PERFORMANCE, AND ANY REQUIRED PROJECT PLAN AND REPORT (HYDROLOGY/HYDRAULIC, WATER QUALITY, STORMWATER POLLUTION) MODIFICATIONS THAT WOULD BE REQUIRED BY THE APPROVING JURISDICTIONS/AGENCIES. CONTRACTOR TO COORDINATE WITH THE ENGINEER OF RECORD ANY APPLICABLE MODIFICATIONS TO THE PROJECT ESTIMATES OF COST, BONDING AMOUNT DETERMINATIONS, PLAN CHECK FEES FOR CHANGES TO APPROVED DOCUMENTS, AND/OR ANY OTHER REGULATORY REQUIREMENTS RESULTING FROM THE PRODUCT SUBSTITUTION.
- E. **HANDLING AND STORAGE:** PREVENT DAMAGE TO MATERIALS DURING STORAGE AND HANDLING.

PRODUCTS

- A. THE DEVICE SHALL BE A CYLINDRICAL OR RECTANGULAR, ALL CONCRETE STRUCTURE (INCLUDING RISERS), CONSTRUCTED FROM PRECAST CONCRETE RISER AND SLAB COMPONENTS OR MONOLITHIC PRECAST STRUCTURE(S), INSTALLED TO CONFORM TO ASTM C 891 AND TO ANY REQUIRED STATE HIGHWAY, MUNICIPAL OR LOCAL SPECIFICATIONS; WHICHEVER IS MORE STRINGENT. THE DEVICE SHALL BE WATERTIGHT.
- B. THE CYLINDRICAL CONCRETE DEVICE SHALL INCLUDE A FIBERGLASS CARTRIDGE DECK INSERT. THE RECTANGULAR CONCRETE DEVICE SHALL INCLUDE A COATED ALUMINUM INSERT. IN EITHER INSTANCE, THE INSERT SHALL BE BOLTED AND SEALED WATERTIGHT INSIDE THE PRECAST CONCRETE CHAMBER. THE INSERT SHALL SERVE AS: (A) A HORIZONTAL DIVIDER BETWEEN THE LOWER TREATMENT ZONE AND THE UPPER TREATED EFFLUENT ZONE; (B) A DECK FOR ATTACHMENT OF FILTER CARTRIDGES SUCH THAT THE MEMBRANE FILTER ELEMENTS OF EACH CARTRIDGE EXTEND INTO THE LOWER TREATMENT ZONE; (C) A PLATFORM FOR MAINTENANCE WORKERS TO SERVICE THE FILTER CARTRIDGES (MAXIMUM MANNED WEIGHT = 450 POUNDS); (D) A CONDUIT FOR CONVEYANCE OF TREATED WATER TO THE EFFLUENT PIPE.
- C. MEMBRANE FILTER CARTRIDGES SHALL BE COMPRISED OF REUSABLE CYLINDRICAL MEMBRANE FILTER ELEMENTS CONNECTED TO A PERFORATED HEAD PLATE. THE NUMBER OF MEMBRANE FILTER ELEMENTS PER CARTRIDGE SHALL BE A MINIMUM OF ELEVEN 2.75-INCH (70-MM) OR GREATER DIAMETER ELEMENTS. THE LENGTH OF EACH FILTER ELEMENT SHALL BE A MINIMUM 15 INCHES (381 MM). EACH CARTRIDGE SHALL BE FITTED INTO THE CARTRIDGE DECK BY INSERTION INTO A CARTRIDGE RECEPTACLE THAT IS PERMANENTLY MOUNTED INTO THE CARTRIDGE DECK. EACH CARTRIDGE SHALL BE SECURED BY A CARTRIDGE LID THAT IS THREADED ONTO THE RECEPTACLE, OR SIMILAR MECHANISM TO SECURE THE CARTRIDGE INTO THE DECK. THE MAXIMUM TREATMENT FLOW RATE OF A FILTER CARTRIDGE SHALL BE CONTROLLED BY AN ORIFICE IN THE CARTRIDGE LID, OR ON THE INDIVIDUAL CARTRIDGE ITSELF, AND BASED ON A DESIGN FLUX RATE (SURFACE LOADING RATE) DETERMINED BY THE MAXIMUM TREATMENT FLOW RATE PER UNIT OF FILTRATION MEMBRANE SURFACE AREA. THE MAXIMUM FLUX RATE SHALL BE 0.21 GPM/FT2 (0.142 LPS/M2). EACH MEMBRANE FILTER CARTRIDGE SHALL ALLOW FOR MANUAL INSTALLATION AND REMOVAL.
- D. ALL FILTER CARTRIDGES AND MEMBRANES SHALL BE REUSABLE AND ALLOW FOR THE USE OF FILTRATION MEMBRANE RINSING PROCEDURES TO RESTORE FLOW CAPACITY AND SEDIMENT CAPACITY; EXTENDING CARTRIDGE SERVICE LIFE.
- E. ACCESS SHALL HAVE A MINIMUM CLEAR HEIGHT OF 60" OVER ALL OF THE FILTER CARTRIDGES, OR BE ACCESSIBLE BY A HATCH OR OTHER MECHANISM THAT PROVIDES MINIMUM 60" VERTICAL CLEAR SPACE OVER ALL OF THE FILTER CARTRIDGES. FILTER CARTRIDGES SHALL BE ABLE TO BE LIFTED STRAIGHT VERTICALLY OUT OF THE RECEPTACLES AND DECK FOR THE ENTIRE LENGTH OF THE CARTRIDGE.
- F. THE DEVICE SHALL INCLUDE A MINIMUM 24 INCHES (610 MM) OF SUMP BELOW THE BOTTOM OF THE CARTRIDGES FOR SEDIMENT ACCUMULATION, UNLESS OTHERWISE SPECIFIED BY THE DESIGN ENGINEER. DEPTHS LESS THAN 24" MAY HAVE AN IMPACT ON THE TOTAL PERFORMANCE AND/OR LONGEVITY BETWEEN CARTRIDGE MAINTENANCE/REPLACEMENT OF THE DEVICE.
- G. ALL PRECAST CONCRETE COMPONENTS SHALL BE MANUFACTURED TO A MINIMUM LIVE LOAD OF HS-20 TRUCK LOADING OR GREATER BASED ON LOCAL REGULATORY SPECIFICATIONS, UNLESS OTHERWISE MODIFIED OR SPECIFIED BY THE DESIGN ENGINEER, AND SHALL BE WATERTIGHT.
- H. GASKETS AND/OR SEALANTS TO PROVIDE WATER TIGHT SEAL BETWEEN CONCRETE JOINTS. JOINTS SHALL BE SEALED WITH PREFORMED JOINT SEALING COMPOUND CONFORMING TO ASTM C 990.
- I. FRAME AND COVERS MUST BE MANUFACTURED FROM CAST-IRON OR OTHER COMPOSITE MATERIAL TESTED TO WITHSTAND H-20 OR GREATER DESIGN LOADS, AND AS APPROVED BY THE LOCAL REGULATORY BODY. FRAMES AND COVERS MUST BE EMBOSSED WITH THE NAME OF THE DEVICE MANUFACTURER OR THE DEVICE BRAND NAME.
- J. DOOR AND HATCHES, IF PROVIDED SHALL MEET DESIGNATED LOADING REQUIREMENTS OR AT A MINIMUM FOR INCIDENTAL VEHICULAR TRAFFIC.
- K. ALL CONCRETE COMPONENTS SHALL BE MANUFACTURED ACCORDING TO LOCAL SPECIFICATIONS AND SHALL MEET THE REQUIREMENTS OF ASTM C 478.
- L. THE FIBERGLASS PORTION OF THE FILTER DEVICE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING STANDARD: ASTM D-4097: CONTACT MOLDED GLASS FIBER REINFORCED CHEMICAL RESISTANT TANKS.
- M. STEPS SHALL BE CONSTRUCTED ACCORDING TO ASTM D4101 OF COPOLYMER POLYPROPYLENE, AND BE DRIVEN INTO PREFORMED OR PRE-DRILLED HOLES AFTER THE CONCRETE HAS CURED, INSTALLED TO CONFORM TO APPLICABLE SECTIONS OF STATE, PROVINCIAL AND MUNICIPAL BUILDING CODES, HIGHWAY, MUNICIPAL OR LOCAL SPECIFICATIONS FOR THE CONSTRUCTION OF SUCH DEVICES.
- N. ALL PRECAST CONCRETE SECTIONS SHALL BE INSPECTED TO ENSURE THAT DIMENSIONS, APPEARANCE AND QUALITY OF THE PRODUCT MEET LOCAL MUNICIPAL SPECIFICATIONS AND ASTM C 478.

PERFORMANCE

- A. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL FUNCTION TO REMOVE POLLUTANTS BY THE FOLLOWING UNIT TREATMENT PROCESSES; SEDIMENTATION, FLOATATION, AND MEMBRANE FILTRATION.
- B. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL REMOVE OIL, DEBRIS, TRASH, COARSE AND FINE PARTICULATES, PARTICULATE-BOUND POLLUTANTS, METALS AND NUTRIENTS FROM STORMWATER DURING RUNOFF EVENTS.
- C. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL TYPICALLY UTILIZE AN EXTERNAL BYPASS TO DIVERT EXCESSIVE FLOWS. INTERNAL BYPASS SYSTEMS SHALL BE EQUIPPED WITH A FLOATABLES BAFFLE, AND MUST PASS WATER OVER THE CARTRIDGE DECK, AND AVOID PASSAGE THROUGH THE SUMP AND/OR CARTRIDGE FILTRATION ZONE.
- D. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL TREAT 100% OF THE REQUIRED WATER QUALITY TREATMENT FLOW BASED ON A MAXIMUM TREATMENT FLUX RATE (SURFACE LOADING RATE) ACROSS THE MEMBRANE FILTER CARTRIDGES NOT TO EXCEED 0.21 GPM/FT2 (0.142 LPS/M2).
- E. AT A MINIMUM, THE STORMWATER QUALITY FILTER DEVICE SHALL HAVE BEEN FIELD TESTED AND VERIFIED WITH A MINIMUM 25 QUALIFYING STORM EVENTS AND FIELD MONITORING CONDUCTED ACCORDING TO THE TARP TIER II OR TAPE FIELD TEST PROTOCOL, AND HAVE RECEIVED NJCAT VERIFICATION.
- F. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL HAVE DEMONSTRATED A MINIMUM MEDIAN TSS REMOVAL EFFICIENCY OF 85% AND A MINIMUM MEDIAN SSC REMOVAL EFFICIENCY OF 95%.
- G. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL HAVE DEMONSTRATED THE ABILITY TO CAPTURE FINE PARTICLES AS INDICATED BY A MINIMUM MEDIAN REMOVAL EFFICIENCY OF 75% FOR THE PARTICLE FRACTION LESS THAN 25 MICRONS, AN EFFLUENT D50 OF 15 MICRONS OR LOWER FOR ALL MONITORED STORM EVENTS, AND AN EFFLUENT TURBIDITY OF 15 NTUS OR LOWER.
- H. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL HAVE DEMONSTRATED A MINIMUM MEDIAN TOTAL PHOSPHORUS REMOVAL OF 55%, AND A MINIMUM MEDIAN TOTAL NITROGEN REMOVAL OF 50%.
- I. THE STORMWATER QUALITY FILTER TREATMENT DEVICE SHALL HAVE DEMONSTRATED A MINIMUM MEDIAN TOTAL ZINC REMOVAL OF 50%, AND A MINIMUM MEDIAN TOTAL COPPER REMOVAL OF 75%.

INSPECTION AND MAINTENANCE

- A. DURABILITY OF MEMBRANES ARE SUBJECT TO GOOD HANDLING PRACTICES DURING INSPECTION AND MAINTENANCE (REMOVAL, RINSING, AND REINSERTION) EVENTS, AND SITE SPECIFIC CONDITIONS THAT MAY HAVE HEAVIER OR LIGHTER LOADING ONTO THE CARTRIDGES, AND POLLUTANT VARIABILITY THAT MAY IMPACT THE MEMBRANE STRUCTURAL INTEGRITY. MEMBRANE MAINTENANCE AND REPLACEMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- B. INSPECTION WHICH INCLUDES TRASH AND FLOATABLES COLLECTION, SEDIMENT DEPTH DETERMINATION, AND VISIBLE DETERMINATION OF BACKWASH POOL DEPTH SHALL BE EASILY CONDUCTED FROM GRADE (OUTSIDE THE STRUCTURE).
- C. MANUAL RINSING OF THE REUSABLE FILTER CARTRIDGES SHALL PROMOTE RESTORATION OF THE FLOW CAPACITY AND SEDIMENT CAPACITY OF THE FILTER CARTRIDGES, EXTENDING CARTRIDGE SERVICE LIFE.
- D. SEDIMENT REMOVAL FROM THE FILTER TREATMENT DEVICE SHALL BE ABLE TO BE CONDUCTED USING A STANDARD MAINTENANCE TRUCK AND VACUUM APPARATUS, AND A MINIMUM ONE POINT OF ENTRY TO THE SUMP THAT IS UNOBSTRUCTED BY FILTER CARTRIDGES.
- E. MAINTENANCE ACCESS SHALL HAVE A MINIMUM CLEAR HEIGHT OF 60" OVER ALL OF THE FILTER CARTRIDGES, OR BE ACCESSIBLE BY A HATCH OR OTHER MECHANISM THAT PROVIDES MINIMUM 60" VERTICAL CLEAR SPACE OVER ALL OF THE FILTER CARTRIDGES. FILTER CARTRIDGES SHALL BE ABLE TO BE LIFTED STRAIGHT VERTICALLY OUT OF THE RECEPTACLES AND DECK FOR THE ENTIRE LENGTH OF THE CARTRIDGE.
- F. FILTER CARTRIDGES SHALL BE ABLE TO BE MAINTAINED WITHOUT THE USE OF ADDITIONAL LIFTING EQUIPMENT.

EXECUTION

- A. THE INSTALLATION OF A WATERTIGHT PRECAST CONCRETE DEVICE SHOULD CONFORM TO ASTM C 891 AND TO ANY STATE HIGHWAY, MUNICIPAL OR LOCAL SPECIFICATIONS FOR THE CONSTRUCTION OF MANHOLES, WHICHEVER IS MORE STRINGENT. SELECTED SECTIONS OF A GENERAL SPECIFICATION THAT ARE APPLICABLE ARE SUMMARIZED BELOW.
- B. THE WATERTIGHT PRECAST CONCRETE DEVICE IS INSTALLED IN SECTIONS IN THE FOLLOWING SEQUENCE:
- AGGREGATE BASE
 - BASE SLAB
 - TREATMENT CHAMBER AND CARTRIDGE DECK RISER SECTION(S)
 - BYPASS SECTION
 - CONNECT INLET AND OUTLET PIPES
 - CONCRETE RISER SECTION(S) AND/OR TRANSITION SLAB (IF REQUIRED)
 - MAINTENANCE RISER SECTION(S) (IF REQUIRED)
 - FRAME AND ACCESS COVER
- C. INLET AND OUTLET PIPES SHOULD BE SECURELY SET INTO THE DEVICE USING APPROVED PIPE SEALS (FLEXIBLE BOOT CONNECTIONS, WHERE APPLICABLE) SO THAT THE STRUCTURE IS WATERTIGHT, AND SUCH THAT ANY PIPE INTRUSION INTO THE DEVICE DOES NOT IMPACT THE DEVICE FUNCTIONALITY.
- D. ADJUSTMENT UNITS (E.G. GRADE RINGS) SHOULD BE INSTALLED TO SET THE FRAME AND COVER AT THE REQUIRED ELEVATION. THE ADJUSTMENT UNITS SHOULD BE LAID IN A FULL BED OF MORTAR WITH SUCCESSIVE UNITS BEING JOINED USING SEALANT RECOMMENDED BY THE MANUFACTURER. FRAMES FOR THE COVER SHOULD BE SET IN A FULL BED OF MORTAR AT THE ELEVATION SPECIFIED.
- E. IN SOME INSTANCES THE MAINTENANCE ACCESS WALL, IF PROVIDED, SHALL REQUIRE AN EXTENSION ATTACHMENT AND SEALING TO THE PRECAST WALL AND CARTRIDGE DECK AT THE JOB SITE, RATHER THAN AT THE PRECAST FACILITY. IN THIS INSTANCE, INSTALLATION OF THESE COMPONENTS SHALL BE PERFORMED ACCORDING TO INSTRUCTIONS PROVIDED BY THE MANUFACTURER.
- F. FILTER CARTRIDGES SHALL BE INSTALLED IN THE CARTRIDGE DECK AFTER THE CONSTRUCTION SITE IS FULLY STABILIZED AND IN ACCORDANCE WITH THE MANUFACTURERS GUIDELINES AND RECOMMENDATIONS. CONTRACTOR TO CONTACT THE MANUFACTURER TO SCHEDULE CARTRIDGE DELIVERY AND REVIEW PROCEDURES/REQUIREMENTS TO BE COMPLETED TO THE DEVICE PRIOR TO INSTALLATION OF THE CARTRIDGES AND ACTIVATION OF THE SYSTEM.
- G. MANUFACTURER SHALL COORDINATE DELIVERY OF FILTER CARTRIDGES AND OTHER INTERNAL COMPONENTS WITH CONTRACTOR. FILTER CARTRIDGES SHALL BE DELIVERED AND INSTALLED COMPLETE AFTER SITE IS STABILIZED AND UNIT IS READY TO ACCEPT CARTRIDGES. UNIT IS READY TO ACCEPT CARTRIDGES AFTER IS HAS BEEN CLEANED OUT AND ANY STANDING WATER, DEBRIS, AND OTHER MATERIALS HAVE BEEN REMOVED. CONTRACTOR SHALL TAKE APPROPRIATE ACTION TO PROTECT THE FILTER CARTRIDGE RECEPTACLES AND FILTER CARTRIDGES FROM DAMAGE DURING CONSTRUCTION, AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND GUIDANCE. FOR SYSTEMS WITH CARTRIDGES INSTALLED PRIOR TO FULL SITE STABILIZATION AND PRIOR TO SYSTEM ACTIVATION, THE CONTRACTOR CAN PLUG INLET AND OUTLET PIPES TO PREVENT STORMWATER AND OTHER INFLUENT FROM ENTERING THE DEVICE. PLUGS MUST BE REMOVED DURING THE ACTIVATION PROCESS.
- H. THE MANUFACTURER SHALL PROVIDE AN OWNER'S MANUAL UPON REQUEST.
- I. AFTER CONSTRUCTION AND INSTALLATION, AND DURING OPERATION, THE DEVICE SHALL BE INSPECTED AND CLEANED AS NECESSARY BASED ON THE MANUFACTURER'S RECOMMENDED INSPECTION AND MAINTENANCE GUIDELINES AND THE LOCAL REGULATORY AGENCY/BODY.
- J. WHEN REPLACEMENT MEMBRANE FILTER ELEMENTS AND/OR OTHER PARTS ARE REQUIRED, ONLY MEMBRANE FILTER ELEMENTS AND PARTS APPROVED BY THE MANUFACTURER FOR USE WITH THE STORMWATER QUALITY FILTER DEVICE SHALL BE INSTALLED.

END OF SECTION

The design and information shown on this drawing is provided as information to the user. It is not intended to be used as a substitute for the user's own design and engineering. The user is responsible for the design and engineering of the project. The user is responsible for the design and engineering of the project. The user is responsible for the design and engineering of the project.		#	#	#	#	#	BSF	BY
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Appendix C- Pre-Consultation: Review Feedback



File No.: PC2025-0105

April 25, 2025

Nikhil Sarna
Megha Holdings
Via email: nikhilsarna@meghaholdings.com

**Subject: Pre-Consultation: Review Feedback
Proposed Site Plan Control – 3113 Carp Road**

Please find below consolidated comments from the above-noted pre-consultation meeting held on April 16, 2025.

Pre-Consultation Preliminary Assessment

1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Planning

Comments:

1. Relevant Official Plan Policies include:

- 5.5 – Greenbelt and Rural Transect areas – Recognize a rural pattern of built form and site design.
- 9.3 Rural Industrial and Logistics – provide for a full range of activities across multiple industry sectors, which include warehouse, distribution, light and heavy industrial uses and small offices.
- The Carp Road Corridor Area Specific Policy applies. The Subject Site is designated Corridor Commercial – permitted uses include light industrial uses.

2. Pursuant to the City of Ottawa Zoning By-law (2008-250) the Subject site is zoned Rural Commercial subzone 9 (RC9). Light Industrial and Warehouse are permitted uses.

3. Provide the lot coverage percentage on the Site Plan. Note that the maximum lot coverage in the RC9 zone is 25%.

4. The required parking rate for a 11,282m² light industrial and/or warehouse is 65 spaces (0.8 per 100 m² for the first 5000 m² of gross floor area and then 0.4 per 100m² for gross floor area above 5000 m²). Almost twice this amount of parking is provided. Removing surplus parking could permit additional landscaping including buffers to neighbouring properties and aid tree retention.
5. As discussed, there may be efficiencies to be gained in the parking layout by reducing the aisle width.

Urban Design

Submission requirements :

- Design Brief
- Site Plan
- Landscape Plan
- Elevations

Preliminary Design Comments :

6. An Urban Design Brief will be required as part of a complete application. Please see the Terms of Reference attached.
7. The subject property is within the boundaries of the Carp Road Corridor Community Design Plan. The built form directions of the CDP must be addressed in the Design Brief. Particular attention must be paid to building design, site layout and landscaping in order to maintain and enhance the rural identity and character of the area.
8. A landscaped perimeter should be provided that includes natural vegetation for screening.
9. Additional setback and landscaped buffer should be provided to surrounding residential.
10. Landscaping and street trees should be provided along the Carp Road frontage. Please also consider decorative features such as low stone walls or post and rail fencing.
11. The applicant is strongly encouraged to retain existing mature trees along the perimeter of this site. Additional tree planting is strongly encouraged.
12. The façade of the building should address Carp Road.
13. An outdoor amenity area should be provided for employees of the future building.

Feel free to contact Lisa Stern Urban Design lisa.stern@ottawa.ca for follow-up questions. <mailto:Lisa.Stern@ottawa.ca>

Engineering

Geotechnical Investigation; prepared by: Paterson Group, revision no: 2; dated: 19-April-2024.

Phase I - Environmental Site Assessment, prepared by: Paterson Group, dated: 03-Jun-2022.

14. Stormwater Management:

- a) The site will need a legal and sufficient outlet for the site's stormwater flows. To our understanding the ditch located on the southern area of the site is located entirely on adjacent property and will require permission from the neighbor.
 - i) A MVCA permit to alter a water course might be required.
 - ii) An ECA might also be required.
- b) **Water Quality Control**: based on the proposed site plan please provide enhanced levels of protection of 80% for total suspended solids removal required by the MVCA.
 - i) An OGS might require ECA approval from the MECP and must drain to a legal outlet (ditch).
- c) **Water Quantity Control**: Please control the hard surfaces post-development runoff from the subject site to the 2-year pre-development event for all storm events up to and including the 100-year post development storm event.
- d) Please provide a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.
- e) Ponding Notes:
 - i) 100-year spill elevation must be 300mm lower than any building opening or ramp.
 - ii) Demonstrate that the stress test spill elevation (100-year +20% event) does not spill onto any permanent structures.
 - iii) The maximum permissible ponding depth for the 100-year storm event is 350mm. No spilling to adjacent sites.
 - iv) Please note that as per Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14) there shall be no surface ponding on private parking areas during the 2-year storm rainfall event. 100-year spill elevation must be 300mm lower than any building opening or ramp

- f) Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- g) Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.
- h) If rooftop control and storage is proposed as part of the SWM solutions, sufficient details (Cl. 8.3.8.4) shall be discussed and documented in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a Roof Drain Plan as part of the submission.
- i) **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
 - i) When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate. In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modelers in the Water Resources Group. Regarding all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.
 - ii) Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 5- and 100-year event storage requirements.

15. General Servicing

- a) It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an Existing Conditions Plan.
- b) Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A legal survey plan shall be provided, and all easements shall be shown on the engineering plans.
- c) All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles.

16. Environmental Compliance Approval

- a) The consultant shall determine if this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. It shall be determined if the exemptions set out under Ontario Regulation 525/98: *Approval Exemptions* are satisfied. All regulatory approvals shall be documented and discussed in the report.

17. Septic System

- a) If less than 10,000 L/day - the septic permit from the Ottawa Septic System Office (OSSO) must be issued prior to future Site Plan Approval being granted.
- b) If above 10,000 L/day - the septic system(s) is regulated by the Ministry of the Environment, Conservation and Parks (MECP) and requires a direct submission Environmental Compliance Approval (ECA) application.
 - i) Groundwater Impact Assessment will be required if the site-wide daily design flow is greater than 10,000 L/day.

18. Water:

- a) Fire Services
 - i) Underground storage tanks for Fire Fighting purposes are required for buildings above 600 square meters in size. (Technical Bulletin IWSTB-2024-05 applies.)
 - ii) Contact Allan Evans (Allan.Evans@ottawa.ca) with Ottawa Fire Services to determine the water supply requirements for firefighting at the site.
 - iii) Any proposed fire (emergency) route is to be to the satisfaction of Fire Services.

b) Well

- i) Hydrogeological and Terrain Analysis will be required for this development.
Please refer to comments from the Hydrogeology Subject Matter Expert.

19. Grading and Erosion

- a) Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A topographical plan of survey shall be provided as part of the submission and a note provided on the plans.
- b) Erosion and sediment control plan must be provided.
- c) Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site, please indicate this on the plan(s).
- d) Street catch basins are not to be located at any proposed entrances.

20. General Note: Ensure all studies being used for this Site Plan Control application and were submitted as part of previous applications for this property are updated to note the current owner of the property.

21. Environmental

- a) A Phase I ESA update is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- b) The Phase I ESA update shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- c) [Official Plan: Section 10. Protection of Health and Safety \(ottawa.ca\)](#)

22. Geotechnical

- a) A Geotechnical Investigation was submitted as part of the pre-consult application.

- i) Please provide further discussion regarding the 'running sand' found on the site. How extensive is this layer of running sand? How will this affect the proposed building or septic system? What can be done to mitigate its negative effects? Discuss. (Section 4.2, Page 8 of 46).
 - ii) How does the existence of running sand affect the grade raise restrictions? Discuss. (Page 13 of 46)
 - b) Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long-term damages associated with lowering the groundwater in this area.
 - c) Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications. [Geotechnical Investigation and Reporting \(ottawa.ca\)](#)
 - d) If Sensitive marine clay soils are present in this area that are susceptible to soil shrinkage that can lead to foundation and building damages. All six (6) conditions listed in the Tree Planting in Sensitive Marine Clay Soils-2017 Guidelines are required to be satisfied. Note that if the plasticity index of the soil is determined to be less than 40% a minimum separation between a street tree and the proposed building foundations of 4.5m will need to be achieved. A memorandum addressing the Tree in Clay Soil Guidelines prepared by a geotechnical engineer is required to be provided to the City. [Tree Planting in Sensitive Marine Clay Soils - 2017 Guidelines \(ottawa.ca\)](#)
23. Development is within the Carp Road Corridor and Carp River Watershed/Sub watershed Study area. The applicant should identify and demonstrate within the servicing report how the requirements of these studies/plans are being met.
24. For any proposed exterior light fixtures, please provide certification from a licensed professional engineer confirming lighting has been designed only using fixtures that meet the criteria for full cut-off classification as recognized by the Illuminating Engineering Society of North America and result in minimal light spillage onto adjacent properties (maximum allowable spillage is 0.5 fc). Additionally, include in the submission the location of the fixtures, fixture type (make, model, part number and mounting height).

Feel free to contact Anton Chetnar, Infrastructure Project Manager, for follow-up questions at anton.chetnar@ottawa.ca .

Noise

No comments.

Transportation

25. Follow Transportation Impact Assessment Guidelines:

- a) Note that the TIA Guidelines have been updated, the changes are available on the City's website.
- b) Revise the Screening Form, the trip generation trigger is met.
- c) A Transportation Impact Assessment is required. Please submit the Scoping/Forecasting report to josiane.gervais@ottawa.ca at your earliest convenience. The applicant is responsible to submit the Scoping Report prior to application and must allow for a 14 day circulation period.
- d) The Strategy Report (including Synchro files) must be submitted with the formal submission to deem complete. The applicant is strongly encouraged to submit the Strategy Report to the TPM prior to formal submission and allow for a 14 day circulation period.
- e) If an RMA is required to support the proposed development, the functional plan and/or RMA plans must be submitted with the formal submission to deem complete. Request base mapping asap if RMA is required, contact Engineering Services

26. ROW Protection:

- a) Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16.
- b) Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

27. Clear throat requirements for an industrial site >10,000 m² on an arterial is 30m. Ensure this length is provided. The clear throat length is measured from the ends of the driveway curb return radii at the roadway and the point of first conflict on-site. Note the minimum throat length provided must be maintained with the future ROW protection (as applicable).

28. Carp Road is a truck route.

29. As the proposed site is commercial/industrial and for general public use, AODA legislation applies.

- a) Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.

- b) Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
- c) Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements.

30. On site plan:

- a) All dimensions must be metric.
- b) Show all details of the roads abutting the site; include such items as pavement markings, signage, accesses, on-street parking, and/or sidewalks.
- c) Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
- d) Turning movement diagrams required for internal movements (loading areas, garbage).
- e) Ensure site access meets the City's Private Approach Bylaw.
- f) Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
- g) It is understood heavy vehicles must be accommodated on this. Consider use of concrete aprons to accommodate turning movements of heavy vehicles.
- h) Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)

Feel free to contact Josiane Gervais, Transportation Project Manager
josiane.gervais@ottawa.ca for follow-up questions.

Hydrogeological

31. A revised Hydrogeological and Terrain Analysis Report will be required to support the site plan control application to establish that there is an adequate quantity and quality of groundwater to support the proposed development(s) and that there is sufficient septic dilution to accommodate the proposed sewage flows. The requirements for the Hydrogeological and Terrain Analysis Report are outlined in the City of Ottawa's Hydrogeological and Terrain Analysis Guidelines (HTAG), section 5.0 for Site Plans (pages 81 to 83). The study forms part of the requirements for Site Plan Control applications noted in the Studies and Plan Identification List, provided with the feedback documents.

- a) It is noted that a previous pump test was completed and that should the consultant look to re-use this data, it must be demonstrated that it is still representative of the maximum daily demand rate of the revised proposal.

- b) It appears that the building size and hard surface areas have increased which may impact the septic impact risk assessment previously completed. As this application is a site plan (not lot creation nor a zoning application) septic treatment (i.e. tertiary treatment with nitrate reduction) may be considered as part of the septic impact assessment calculations. A septic system must be certified through NSF/ANSI 245 or CAN/BNQ 3680-600 if total nitrogen reduction systems are required to meet nitrate impact limits at the property boundary.
- c) Technical consultation with the hydrogeological report reviewer is recommended for all site plan control applications. Please contact the reviewer assigned to the file to arrange for the consultation. The hydrogeological consultant, for this application, could prepare the proposed modifications to the report and a possible work plan for discussion prior to a technical consultation meeting.

32. The previous Hydrogeological reviewer provided the following comments on the previous report, which should be considered in the preparation of the revised study:

- a) Paterson included recommendations related to the supply well and septic system on page 13 of the report provided.
- b) A Sewage System Permit needs to be issued as part of the Site Plan Application and the septic permit must be included with the submission to ensure that the systems referenced in the nitrate impact assessment is the system that will be installed.
- c) Since water softening is recommended to reduce hardness, the report recommendation section should also identify that sodium is already elevated over the health-related warning level in the raw (untreated) groundwater and using a sodium-based water softener may further increase sodium which may pose a risk to individuals on a sodium-restricted diet. As such, a separate tap which by-passes the softener, should be installed to supply un-softened drinking water. Alternatively, a non-sodium-based water softener (i.e., potassium-based water softener) may be recommended. Note that the sodium exceedance should be registered on title.
- d) It was noted in the technical consultation with the developer's consultant on October 3rd, 2022, that the site is located within the area identified as moderate recharge in the Carp Road Corridor, and it was noted that the report should include a water budget and demonstrate how clean recharge will be maintained onsite. No water budget and/or clean recharge discussion was included in the report provided by Paterson, this information should be included in the next submission.
- e) Given the site is identified as a highly vulnerable aquifer, it was further noted in the technical consultation, with the developer's consultant on October 3rd,

2022, that the report should include a description of the proposed activities and outline how the aquifer will be protected in the long-term. This was not provided in Paterson's report and should be included in the next submission.

- f) The Predictive Assessment for Residential Development (i.e., Section 5.6.2 of MECP Guideline D-5-4) was used for septic impact assessment. Given the nature of the proposal, the Predictive Assessment for Industrial/Commercial Development (i.e., Section 5.6.3 of MECP Guideline D-5-4) should be used. Please provide an updated calculation based on commercial/industrial development, note that the result will be a maximum septic flow; the flow design for the proposed septic system must be less than the maximum septic flow predicted in the impact assessment calculation.

Feel free to contact Travis Smith, Senior Project Manager, Hydrogeology, for follow-up questions.

Environment

- 33. Please provide an up-to-date Environmental Impact Statement/Tree Conservation Report (TCR) and ensure adherence to the Official Plan adopted by Council on November 24, 2021. To date, EIS information references old documents. For example, please refer to (but not limited to), OP Sections 4.8, 5.6.4.,7, 9.9, and 10.1. Please also refer to the Natural Heritage Policy Primer, the Water policy Primer, the EIS Guidelines, and the City of Ottawa Protocol for Wildlife Protection during Construction, etc.
- 34. Due to the potential for species at risk, at a minimum, please include an Information Gathering Form with the Ministry (MECP), and please provide the official results of that correspondence within the EIS.
- 35. Please examine the surface water feature located along the southern boundary of the subject property, as well as the benefits of that surface water feature. This feature was verified in proximity to the road near County Canines Play Park by staff a few months ago, and it appears to flow into a headwater feature to the north-west of the subject lands. Although the feature may be dry at certain times of the year, it may still play a significant role (i.e., groundwater recharge, a supply of surface water for woodlands and other vegetation and species at certain times of the year, habitat, etc.).
- 36. The subject area is a known recharge area with a highly vulnerable aquifer; therefore, the EIS should discuss this, along with the soil type, overburden and bedrock geology, etc.
- 37. Setbacks from watercourses will be applicable. This setback must be left in a natural vegetated condition and consider the natural system overlay. In addition, management recommendations must discuss the need to protect, conserve, mitigate, recharge or maintain/replicate terrestrial linkages associated with any drainage features, etc. For example, the EIS should discuss appropriate setbacks

based on the Carp River Watershed Subwatershed Study, as well as the current Official Plan.

38. Please ensure the proposed SWM Pond, parking area, snow dump, laneways, etc. respect watercourse and natural heritage setbacks as per an updated EIS.
39. The City of Ottawa via the Official Plan has a “no net loss” approach as it concerns forest cover and trees in the rural area. The incorporation of local appropriate native species and trees shall be a requirement. In addition, the use of LID SWM strategies, where feasible, is encouraged, and may help achieve additional greenspace and trees (OP Section 4.8). Please provide an up-to-date Landscape Plan.
40. Sediment and erosion control measures along the perimeter of the site will be important, as well as careful consideration for snow storage, parking, etc.
41. Any outlet to the surface water feature may require a review and/or permit approval from various agencies (i.e., Department of Fisheries and Oceans/DFO, the local Conservation Authority, etc.). Although the 2023 EIS report says no in-water work will take place, surface water swales with corresponding outlets must also be considered. Please discuss and include any relevant agency response within the EIS.

Please feel free to contact Kimberley MacDonald, Environmental Planner, for follow-up questions.

Trees

EIS/TCR; Gemtec; Oct. 4, 2023

Geotechnical Report; Paterson; April 19, 2024

Tree Protection:

42. The Tree Protection By-law applies only to City trees in this location, of which there are none. It should, however, be a priority to retain any existing trees on shared and adjacent properties, providing sufficient setbacks for their adequate protection and survival.
43. Shared and adjacent trees must be retained and protected unless written permission is provided by the owners for their removal. It is a very high priority to retain any existing trees bordering residential properties, to provide screening and privacy.
44. A TCR has been provided, but requires more information in accordance with the TCR Guidelines outlined in Schedule E of the Tree Protection By-law:
 - The table must clarify ownership of all trees and provide justification for any proposed removals.

- Map 2 must have the tree locations overlaid on the updated site or grading plan to accurately determine any impacts related to setbacks from the building, septic, swales, services, potential retaining walls, regrading, etc. At least one plan must be at the same scale as the Site/Grading plan.
- Tree protection fencing locations for trees to be retained must be demonstrated on the plan.
- Please differentiate between trees to be removed and retained.

Landscaping

45. A Landscape Plan is required and must include all elements of the [Landscape Plan Terms of Reference](#).

- A canopy cover projection (as a percentage) is required, accounting for any existing trees removed and new trees to be planted. The City-wide canopy cover target established in the Official Plan is 40%.
- Please show existing trees to be retained and include tree planting within any gaps to provide sufficient screening for adjacent properties.
- Confirm that sufficient soil volumes and setbacks are provided from above and below-ground services, curbs, etc. Measurements (metric) should be provided on the plans.
- Ensure sufficient setbacks are provided between the proposed septic bed and overhead Hydro to allow for planting of trees along Carp Rd in accordance with the Carp Rd CDP.

46. Section 4.8.2 of the Official Plan provides direction for site plans to provide space internal to the site for tree planting to contribute to canopy cover. The parking proposed is triple what is required. Please reduce the amount of parking to prioritize the provision of softscape, particularly around the perimeter, for tree retention and planting.

47. Large trees and native species are a high priority for planting where space allows. Conifers are recommended for year-round screening along the portions of the site abutting residential properties.

48. It is a Best Management Practice to plant 1 new 50mm tree for every 5 parking spaces, preferably within the vicinity of parking lots to provide shade, screening, and to reduce the Urban Heat Island Effect.

49. The geotechnical report notes areas of low-medium Sensitive Marine Clay on site, allowing for the setbacks between small and medium trees and building foundations to be reduced to 4.5m where the following 5 conditions are met. These must be included in the notes block on the site, grading, and landscape plans, with confirmation that each condition has been met through the plan design.

- The underside of footing (USF) is 2.1 m or greater below the lowest finished grade must be satisfied for footings within 10 m from the tree, as measured from the centre of the tree trunk and verified by means of the Grading Plan as indicated procedural changes below.
- A small tree must be provided with a minimum of 25 m³ of available soil volume while a medium tree must be provided with a minimum of 30 m³ of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally un-compacted when backfilling in street tree planting locations.
- The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.
- The foundation walls are to be reinforced at least nominally (minimum of two upper and two lower 15M bars in the foundation wall).
- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the subdivision Grading Plan

Please contact Nancy Young, Planning Forester, with any questions.

Parkland

No additional comments. Parkland dedication will be a condition of site plan approval, the owner will be responsible in providing cash-in-lieu of parkland.

Submission Requirements and Fees

- Additional information regarding fees related to planning applications can be found [here](#).
- The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
 - The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
- All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Consultation with Technical Agencies

You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Ireland".

James Ireland, Planner III

Appendix D- Water supply for firefighting

OBC Fire Protection Calculations

Water supply for firefighting

Project	Proposed 1-storey warehouse
Client	MEGHA HOLDINS Inc.
Address	3113 Carp Road, Ottawa, On
Methode	Ontario Building Code
Designed by	Fritz Gérald St Fleur, P. Eng
Date/Revision	2026-07-14 Rev. 02

INPUT DATA

- Warehouse area: 9,876 m² (6 compartments)
 - Largest typical compartment Area: 1,842.8 m²
 - Height: 9.62 m
 - Building Group: F-3 (Low hazard industrial)
 - Sprinkler system: Entire building
 - Construction type: Non-combustible
 - OBC Coefficient (K): 12 (As per OBC Table 1)
 - Spatial Coefficient (S_{Tot}): 1.0
 - Closest Fire Station: Ottawa Fire Station 64 within 4.1 km (475 Donald B. Munro Dr, Kinburn, On) < 5 km
-
- Exposure distance: 38.9 m Noth, 110.6 m West, 121.6 m South

CALCULATION (OBC FORMULA)

$Q = K \times V \times S_{Tot}$ (Required water supply in liters)

- Volume: $9,876 \times 9.62 = 95,007 \text{ m}^3$
- OBC Coefficient (K): 12 (As per OBC Table 1)
- Spatial Coefficient (S_{Tot}): 1.0
 $= 1.0 + S_{side N} + S_{side E} + S_{side W} + S_{side S}$
 $= 1.0 + 0 + 0 + 0 + 0$
 $= 1.0$

$Q = 1,140,085 \text{ L (1,140 m}^3\text{)}$

Duration: 30 minutes

Flow = $1,140,085 / 30 = 38,002.8 \text{ L/min}$

MINIMUM WATER SUPPLY FLOW RATE

As per OBC A-3.2.5.7 Table 2

$Q > 270,000 \text{ L}$

Minimum Flow = 9,000 L/min

Minimum 9,000 L/min; therefore, FUS formula is applicable.

See the following FUS Calculation.

FUS Fire Protection Calculations

Water supply for firefighting

Project	Proposed 1-storey warehouse
Client	MEGHA HOLDINS Inc.
Address	3113 Carp Road, Ottawa, On
Methode	Ontario Building Code
Designed by	Fritz Gérald St Fleur, P. Eng
Date/Revision	2026-07-14

Input Data

Parameter	Value
Warehouse area	9,876 m ²
Height	9.62 m
Construction Type	Non-combustible
Construction Coefficient (C)	0.80
Occupancy	F-3 Low Hazard Industrial
Sprinkler Protection	100% NFPA 13
Exposure distance	38.9 m Noth, 110.6 m West, 121.6 m South
Closest Fire Station	Ottawa Fire Station 64 within 4.1 km (475 Donald B. Munro Dr, Kinburn, On) < 5 km
Closest approved water supply (Private)	Hydrant 342020HP001 within 1.0 km (273 Russ Bradley Road, Ottawa, ON) < 2.5 km

Based on the **Fire Underwriters Survey (FUS) Guide for Determination of Required Fire Flow**, the required fire flow is calculated using:

$$F = 220 \times C \times \sqrt{A}$$

Where:

- *F* = Required fire flow (L/min)
- *C* = Construction coefficient
- *A* = Largest floor area or fire compartment area (m²)

Step 1 – Base Fire Flow

$$F = 220 \times 0.80 \times \sqrt{9876}$$

$$F = 220 \times 0.80 \times 99.37$$

$$F = 17,490.5 \text{ L/min}$$

Step 2 – Occupancy Reduction

For a low hazard industrial occupancy, a reduction of 15% may be applied.

$$F_1 = 17,490.5 \times (1 - 0.15)$$

$$F_1 = 14,867 \text{ L/min}$$

Step 3 – Sprinkler Reduction

Assuming a fully sprinklered building and applying the 50% reduction used in your OBC calculation:

$$F_2 = 14,867 \times (1 - 0.50)$$

$$F_2 = 7,433.48 \text{ L/min}$$

Step 4 – Exposure Adjustment

No exposure surcharge is required.

$$F_{final} = 7,433.48 \text{ L/min}$$

Rounded to the nearest 1,000 L/min:

$$F_{US} = 7,000 \text{ L/min}$$

FUS Summary

Item	Value
Base Fire Flow	17,490.5 L/min
Low Hazard Reduction (-15%)	14,867 L/min
Sprinkler Reduction (-50%)	7,433.48 L/min
Exposure Surcharge	0%
Required FUS Fire Flow	7,000 L/min (rounded)

$$V_1 = 7,000 \text{ L/min} \times 30 \text{ min}$$

$$V_1 = 210,000 \text{ L}$$

MINIMUM WATER SUPPLY FOR THE SPRINKLER SYSTEM

$$V_2 = 378,541 \text{ L } (100,000 \text{ gallons, See attached calculation by Bruce Fire Protection})$$

STORAGE VOLUME

$$\text{Storage Volume} = V_1 + V_2 = 210,000 + 378,541 = 588,541 \text{ L}$$

Tank capacity: 151,400 L (40,000 gallons, See attached details)

$$\text{Number of tanks required: 4 units } (588,541/151,400 = 3.88)$$

$$\text{Effective Storage volume: 605,600 L}$$



Bruce Fire Protection Ltd.

400 Applewood Cres., Suite 100
Vaugan, Ontario
L4K 0C3

Phone: 905 482 8099

Fax: 905 581 3203

Toll Free Phone/Fax: 1 800 260 0187

Email: info1@brucefire.ca
www.brucefire.ca

BCIN: 36466



INSPECTION REPORT

June 24, 2025

RE: 3113 Carp Road Warehouse

To whom it may concern:

In respect to amount of water required for abovementioned building for ESFR system.

Having minimum volume of 1500 gpm (conservatively) required for duration of 60 min the minimum volume of stored water is 90000 gallons. I'd would add 10% for safety volume, so about 100000 gal would be adequate.

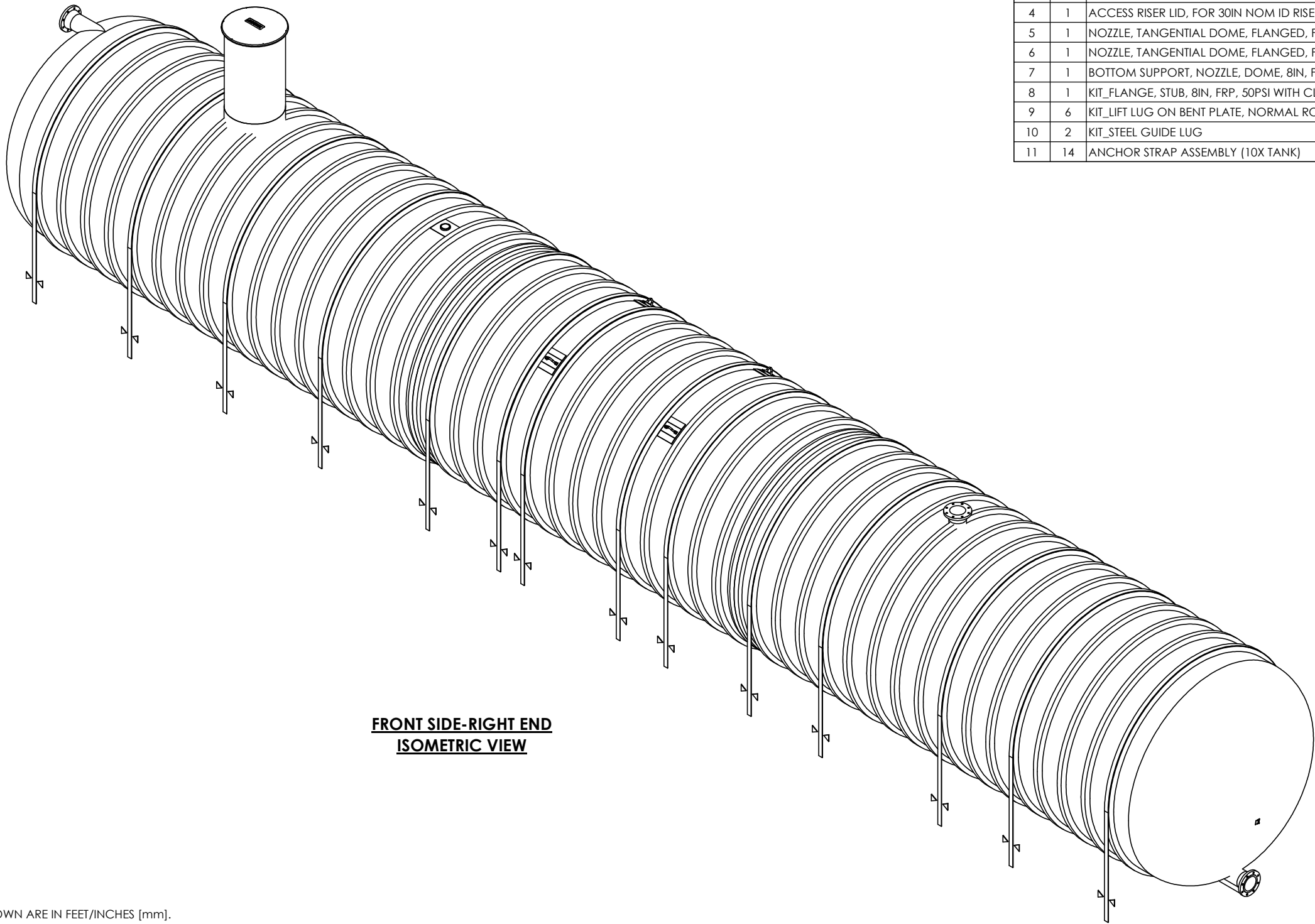
We cannot give you the number of tanks required as it depends on size of those tanks

Yours truly,

M. Matthew, P.Eng

License # 100084762, Individual BCIN: 32049

Bruce Fire Protection Ltd.



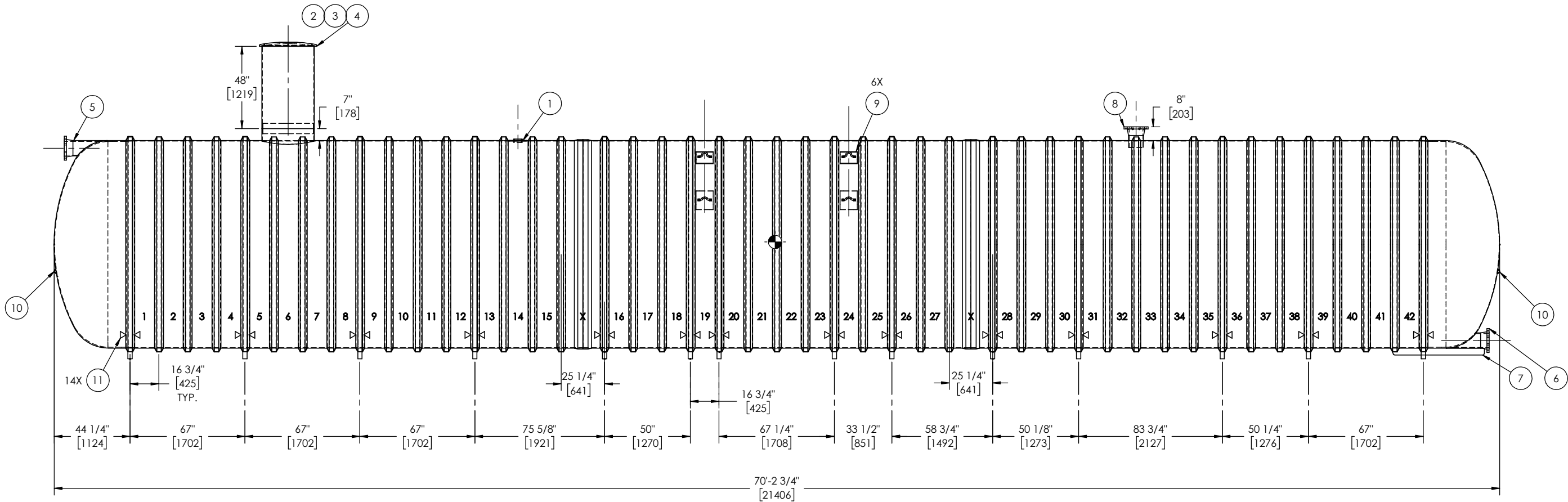
FRONT SIDE-RIGHT END
ISOMETRIC VIEW

- NOTES:
1. ALL DIMENSIONS SHOWN ARE IN FEET/INCHES [mm].
 2. ONLY MATERIALS THAT HAVE BEEN TESTED AND APPROVED BY XERXES SHOULD BE USED FOR BONDING OF CONTAINMENT SUMP OR ACCESS RISER COMPONENTS.
 3. DRAWING EXPIRATION: DRAWING VALID FOR SIX (6) MONTHS FROM DATE OF LAST REVISION. XERXES RESERVES THE RIGHT TO REVIEW AND UPDATE.
 4. ROTATE SHIPMENT ON TRAILER TO AVOID COMPONENT DAMAGE.
 5. TANK SPECIFIED FOR STANDARD BURIAL UP TO 7'-0".
 6. NOMINAL TANK WEIGHT: 16100 LBS [7300 KG]

ITEM NO	QTY	DESCRIPTION	PART NO
1	1	KIT_FITTING, SINGLE, CS, 4IN H, LAYUP, ON 10FT TANK	C310102
2	1	ACCESS OPENING, FRP, 30IN, WITH ALIGN RING, NO INTERNAL FLG	-
3	1	KIT_ACCESS OPENING, FRP RISER EXTENSION, SW, 30IN, 48IN HT, WITH LID CLIPS	-
4	1	ACCESS RISER LID, FOR 30IN NOM ID RISER, XERXES BY BRENLIN, GREEN	C520419
5	1	NOZZLE, TANGENTIAL DOME, FLANGED, FRP, 8IN, ON 10FT SWX TANK	C600049
6	1	NOZZLE, TANGENTIAL DOME, FLANGED, FRP, 8IN, ON 10FT SWX TANK	C600049
7	1	BOTTOM SUPPORT, NOZZLE, DOME, 8IN, FRP ENCASED 2X4, ON 10FT SWX TANK	C600055
8	1	KIT_FLANGE, STUB, 8IN, FRP, 50PSI WITH CL150 BOLT PATTERN, 12IN LONG	C270008
9	6	KIT_LIFT LUG ON BENT PLATE, NORMAL ROTATION SPACING, ADHESIVE	C340010
10	2	KIT_STEEL GUIDE LUG	C340014
11	14	ANCHOR STRAP ASSEMBLY (10X TANK)	-

CUSTOMER TANK DESIGNATION:
MEGHA HOLDINGS

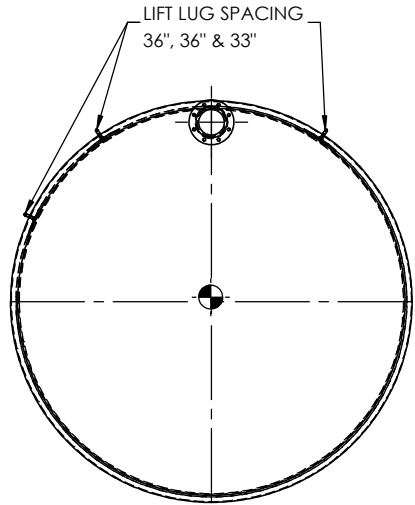
INDUSTRY M204-WATER COLLECTION AND CONSERVATION					
SALES MANAGER DENNIS PARDY		THIRD ANGLE PROJECTION			
PROPRIETARY AND CONFIDENTIAL THIS DRAWING IS THE PROPERTY OF MATR CORP. THE COPYRIGHT/ OWNERSHIP OF THIS DRAWING IS AND WILL REMAIN WITH MATR CORP. THE PHYSICAL POSSESSION OF THIS DRAWING DOES NOT CONVEY THE RIGHT TO USE ITS DESIGN CONCEPT, OR TO REPRODUCE IT, OR TO MANUFACTURE IN WHOLE OR IN PART THE ITEM(S) DEPICTED HEREIN WITHOUT WRITTEN PERMISSION AND AUTHORIZATION OF MATR CORP.		UNITS: INCH [mm] DATE: 04-10-26		DESCR: 10FT SWX NUL CAP. 150,000 USG OTTAWA	
		DRAWN BY: FTZ		SIZE B	
		APPR. BY: LJB			
		APPR. DATE: 04-10-26		DWG NO. XS-011561	
SHEET: 1 of 3 - ISOMETRIC-BOM					



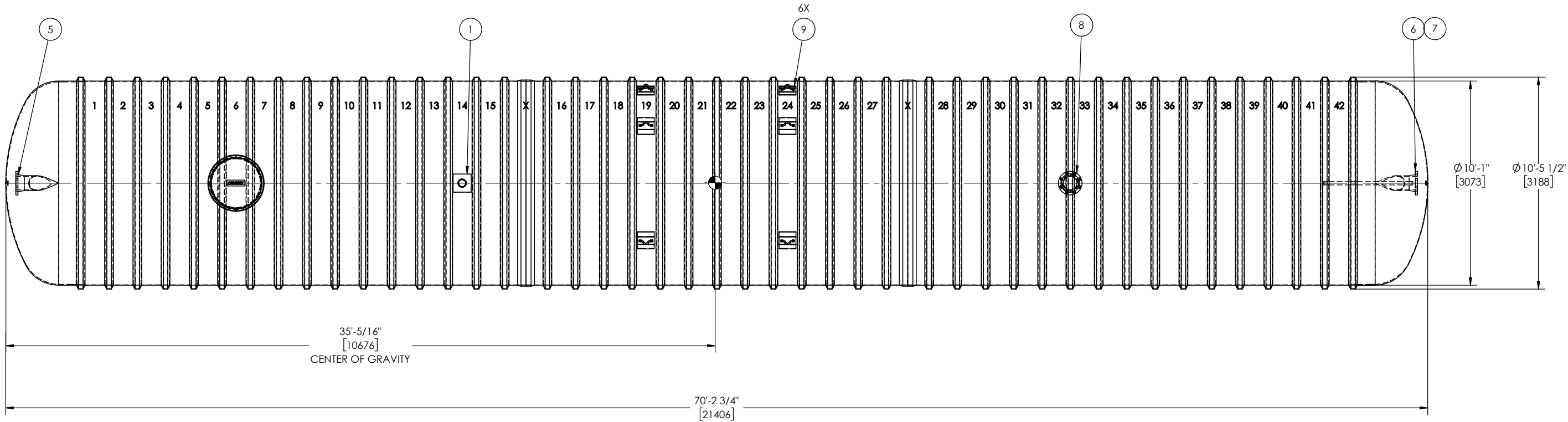
FRONT ELEVATION

ITEM NO.	QTY.	DESCRIPTION	PART NO.
1	1	KIT_FITTING, SINGLE, CS, 4IN H, LAYUP, ON 10FT TANK	C310102
2	1	ACCESS OPENING, FRP, 30IN, WITH ALIGN RING, NO INTERNAL FLG	-
3	1	KIT_ACCESS OPENING, FRP RISER EXTENSION, SW, 30IN, 48IN HT, WITH LID CLIPS	-
4	1	ACCESS RISER LID, FOR 30IN NOM ID RISER, XERXES BY BRENLIN, GREEN	C520419
5	1	NOZZLE, TANGENTIAL DOME, FLANGED, FRP, 8IN, ON 10FT SWX TANK	C600049
6	1	NOZZLE, TANGENTIAL DOME, FLANGED, FRP, 8IN, ON 10FT SWX TANK	C600049
7	1	BOTTOM SUPPORT, NOZZLE, DOME, 8IN, FRP ENCASED 2X4, ON 10FT SWX TANK	C600055
8	1	KIT_FLANGE, STUB, 8IN, FRP, 50PSI WITH CL150 BOLT PATTERN, 12IN LONG	C270008
9	6	KIT_LIFT LUG ON BENT PLATE, NORMAL ROTATION SPACING, ADHESIVE	C340010
10	2	KIT_STEEL GUIDE LUG	C340014
11	14	ANCHOR STRAP ASSEMBLY (10X TANK)	-

INDUSTRY M204-WATER COLLECTION AND							
SALES MANAGER CONSERVATION DENNIS PARDY		THIRD ANGLE PROJECTION UNITS: INCH (mm) DATE: 04-10-26					
PROPRIETARY AND CONFIDENTIAL THIS DRAWING IS THE PROPERTY OF MATR CORP. THE COPYRIGHT/ OWNERSHIP OF THIS DRAWING IS AND WILL REMAIN WITH MATR CORP. THE PHYSICAL POSSESSION OF THIS DRAWING DOES NOT CONVEY THE RIGHT TO USE ITS DESIGN CONCEPT, OR TO REPRODUCE IT, OR TO MANUFACTURE IN WHOLE OR IN PART THE ITEM(S) DEPICTED HEREIN WITHOUT WRITTEN PERMISSION AND AUTHORIZATION OF MATR CORP.				DESCR: 10FT SWX NUL CAP. 150,000 USG OTTAWA			
				DRAWN BY: FTZ	SIZE B	DWG NO. XS-011561	REV. 0
				APPR. BY: LJB			
				APPR. DATE: 04-10-26			



LEFT END VIEW
LIFT LUG ORIENTATION



TOP VIEW

ITEM NO.	QTY.	DESCRIPTION	PART NO.
1	1	KIT_FITTING, SINGLE, CS, 4IN H, LAYUP, ON 10FT TANK	C310102
2	1	ACCESS OPENING, FRP, 30IN, WITH ALIGN RING, NO INTERNAL FLG	-
3	1	KIT_ACCESS OPENING, FRP RISER EXTENSION, SW, 30IN, 48IN HT, WITH LID CLIPS	-
4	1	ACCESS RISER LID, FOR 30IN NOM ID RISER, XERXES BY BRENLIN, GREEN	C520419
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7	1	BOTTOM SUPPORT, NOZZLE, DOME, 8IN, FRP ENCASED 2X4, ON 10FT SWX TANK	C600055
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9	6	KIT_LIFT LUG ON BENT PLATE, NORMAL ROTATION SPACING, ADHESIVE	C340010
10	2	KIT_STEEL GUIDE LUG	C340014
11	14	ANCHOR STRAP ASSEMBLY (10X TANK)	-

INDUSTRY		M204-WATER COLLECTION AND					
SALES MANAGER		CONSERVATION DENNIS PARDY					
PROPRIETARY AND CONFIDENTIAL THIS DRAWING IS THE PROPERTY OF MATR CORP. THE COPYRIGHT/ OWNERSHIP OF THIS DRAWING IS AND WILL REMAIN WITH MATR CORP. THE PHYSICAL POSSESSION OF THIS DRAWING DOES NOT CONVEY THE RIGHT TO USE ITS DESIGN CONCEPT, OR TO REPRODUCE IT, OR TO MANUFACTURE IN WHOLE OR IN PART THE ITEM(S) DEPICTED HEREIN WITHOUT WRITTEN PERMISSION AND AUTHORIZATION OF MATR CORP.				THIRD ANGLE PROJECTION		DESCR:	
				UNITS: INCH (mm) DATE: 04-10-26			
				DRAWN BY: FTZ		10FT SWX NUL CAP. 150,000 USG OTTAWA	
				APPR. BY: LJB			
				APPR. DATE: 04-10-26			
SIZE B		DWG NO. XS-011561		REV. 0			
SHEET: 3 of 3 - TOP VIEW-LIFT LUGS							

Appendix E- Sanitary Service

Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority			
Application number:		Permit number (if different): SEPTIC FILE #	
Date received:		Roll number: 25-380	
		OTTAWA	
Application submitted to: Ottawa Septic System Office (Name of municipality, upper-tier municipality, board of health or conservation authority)			
A. Project information			
Building number, street name		Unit number	Lot/con.
3113 Carp Road			
Municipality	Postal code	Plan number/other description	
Ottawa (Carp)	K0A 1L0	Lot 12 R.P. 5R-11999	
Project value est. \$		Area of work (m ²)	
B. Purpose of application			
☒ New construction	☐ Addition to an existing building	☐ Alteration/repair	☐ Demolition
		☐ Conditional Permit	
Proposed use of building		Current use of building	
Commercial			
Description of proposed work			
To construct a new class 4 sewage system, Eljen GSF A42 BMEC approval 25-07-425, System designed for Denitrification: DN450			
C. Applicant			
Applicant is:		☐ Owner or ☒ Authorized agent of owner	
Last name	First name	Corporation or partnership	
Van de Glind	Hendrik	Paterson Group Inc.	
Street address		Unit number	Lot/con.
9 Auriga Drive			
Municipality	Postal code	Province	E-mail
Ottawa	K2E 7T9	ON	hvandeglind@patersongroup.ca
Telephone number	Fax	Cell number	
613-226-7381			
D. Owner (if different from applicant)			
Last name	First name	Corporation or partnership	
Sarna	Nikhil	Megha Holdings	
Street address		Unit number	Lot/con.
1558 Blohm Drive			
Municipality	Postal code	Province	E-mail
Ottawa	K1G 4R7	ON	nikhilsarna@meghaholdings.com
Telephone number	Fax	Cell number	
613-501-1028			

E. Builder (optional)			
Last name	First name	Corporation or partnership (if applicable)	
Street address	Unit number	Lot/con.	
Municipality	Postal code	Province	E-mail
Telephone number	Fax	Cell number	

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 OCT 21 2025

SEPTIC FILE #
 25-380

25-380
 OTTAWA

F. Tarion Warranty Corporation (Ontario New Home Warranty Program)		
i. Is proposed construction for a new home as defined in the <i>Ontario New Home Warranties Plan Act</i> ? If no, go to section G.	☐ Yes	☒ No
ii. Is registration required under the <i>Ontario New Home Warranties Plan Act</i> ?	☐ Yes	☒ No
iii. If yes to (ii) provide registration number(s): _____		

G. Required Schedules		
i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.		
ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.		

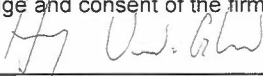
H. Completeness and compliance with applicable law		
i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the <i>Building Code</i> (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted). Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the <i>Building Code Act, 1992</i> , to be paid when the application is made.	☒ Yes	☐ No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> .	☒ Yes	☐ No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	☒ Yes	☐ No
iv) The proposed building, construction or demolition will not contravene any applicable law.	☒ Yes	☐ No

I. Declaration of applicant	
<div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> <p>Hendrik Van de Glind, L.E.T., C.E.T. - Paterson Group</p> <p style="text-align: center;">(print name)</p> </div> <div style="width: 15%; text-align: right;"> <p>declare that:</p> </div> </div> <ol style="list-style-type: none"> 1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge. 2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership. <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 30%;"> <p>October 9, 2025</p> <p>_____</p> <p style="text-align: center;">Date</p> </div> <div style="width: 60%; text-align: center;"> <p><i>[Signature]</i></p> <p>_____</p> <p style="text-align: center;">Signature of applicant</p> </div> </div>	

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name 3113 Carp Road		Unit no.	Lot/con.
Municipality Ottawa (Carp)	Postal code K0A 1L0	Plan number/ other description Lot 12, 5R 11999	
B. Individual who reviews and takes responsibility for design activities			
Name Hendrik Van de Glind, L.E.T., C.E.T.		Firm Paterson Group Inc.	
Street address 9 Auriga Drive		Unit no.	Lot/con.
Municipality Ottawa	Postal code K2E 7T9	Province ON	E-mail hvandeglind@patersongroup.ca
Telephone number 613-226-7381	Fax number	Cell number	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]			
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> ☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings </div> <div style="width: 30%;"> ☐ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection </div> <div style="width: 30%;"> ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☒ On-site Sewage Systems </div> </div>			
Description of designer's work On-site Sewage System Design			
D. Declaration of Designer			
I, <u>Hendrik Van de Glind, L.E.T., C.E.T. - Paterson Group</u> declare that (choose one as appropriate): (print name)			
I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: 111499			
Firm BCIN: 29346			
I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: _____			
Basis for exemption from registration: _____			
The design work is exempt from the registration and qualification requirements of the Building Code.			
Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge.			
2. I have submitted this application with the knowledge and consent of the firm.			
October 9, 2025			
Date		Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.



Schedule 2: Sewage System Installer Information

A. Project Information			
Building number, street name 3113 Carp Road		Unit number	Lot/con.
Municipality Ottawa (Carp)	Postal code K0A 1L0	Plan number/ other description Lot 12, RP-11999	
B. Sewage system installer			
Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?			
☐ Yes (Continue to Section C)		☐ No (Continue to Section E)	
		☒ Installer unknown at time of application (Continue to Section E)	
C. Registered installer information (where answer to B is "Yes")			
Name		BCIN	
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number	Fax	Cell number	
D. Qualified supervisor information (where answer to section B is "Yes")			
Name of qualified supervisor(s)		Building Code Identification Number (BCIN)	
R.V.C.A. RECEIVED OCT 21 2025		SEPTIC FILE # 25-380 OTTAWA	
E. Declaration of Applicant:			
I, <u>Hendrik Van de Glind, L.E.T., C.E.T. - Paterson Group</u> declare that:			
(print name)			
I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;			
OR			
I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge.			
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.			
October 9, 2025			
Date		Signature of applicant	



Schedule 4: Proposed Services

Complete Sections 1 through 7

SEPTIC FILE #
25-380
OTTAWA

Do Not Complete

Permit number: _____

Revision number: _____

Date _____

1 Engineered

- ☒ Yes
☐ No

2 Water supply

- ☐ Proposed
☒ Existing

3 Use

- ☐ Apartment
☒ Dwelling
☐ Commercial
☐ Industrial

4 Type of work proposed

- ☒ New Installation
☐ Replacement
☐ Alteration

5 Type of Well

- ☐ Dug/Bored/Sandpoint well
☒ Drilled well
☐ Municipal
☐ Other

6 Residential Sewage Design Flow Info.

Bedrooms _____
House (floor area) _____ m²
People _____
Total Fixture Units _____ (Schedule 8)
Residential Flow _____ L/day

7 Sewage Design Flow Other Occupancies

Design Flow 6000 L/day

Detailed sewage flow calculations:

Refer to PGI Drawing No PH5068-2(rev.2)

8 Type of System

- ☐ Class 2 – Leaching Pit
☐ Class 3 – Cesspool

Treatment Unit Eljen GSF A-42

☐ Class 4 – Trench (Schedule 9)

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☐ Class 4 – Filter Media (Schedule 10)

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☐ Class 4 – Shallow Buried Trench

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☒ Class 4 – BMEC Area Bed (Schedule 11)

- ☒ Fully raised
☐ Partially raised
☐ In-ground

☐ Class 4 – "Type A" Dispersal (Schedule 13)

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☐ Class 4 – "Type B" Dispersal (Schedule 14)

- ☐ Fully raised
☐ Partially raised
☐ In-ground

☐ Class 5 – Holding Tank (9000L min)

- ☐ Tank/Treatment Unit/Pump Chamber ONLY
☐ Effluent Filter/Risers ONLY
☐ Other _____



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OCT 21 2025

Schedule 5: Sewage System Details

SEPTIC FILE #

25-380

OTTAWA

Do Not Complete

Permit number:

Revision number:

Date

Complete below**Type of System** Eljen Biofilter BMEC 20-03-395 (DN450) (Schedule 4)Septic/Holding Tank Size: 18,000 (Litres)Make: ConcreteSeptic Tank Effluent Filter Make: N/AModel: (Polylok PL-525 or equivalent)Treatment Unit - Make & Model: Eljen GSF A-42Number of Units: 66Refer to Typical Drawing #: PH5068-1&2(rev.2)Pump ☒ Syphon ☐Pump(s) required: YesPump Rate: 250 + charge L/15min Hour**Mantle Information**Native or imported = min. 15m in N/A direction(s)

Slope subgrade _____ % slope

_____ direction(s)

Note: Alarm required for all pumping systemsInstalled ☐ Inside TBD By Installer @☐ Outside time of InstallationSite to be Scarified (If clay) Yes ☒ No ☐Clay Seal Required (If bedrock) Yes ☐ No ☐☐ **Trench**

Distribution Pipe Length _____ m

Loading Area _____ m²

Type of Chamber _____

Length of Chamber _____ m

☐ **Dispersal Bed**☒ **BMEC** ☐ Type A ☐ Type BStone _____ m²Sand 355.3 m²Pipe 80.52 m²Linear Loading _____ L/m²☐ **Shallow Buried Trench**Pipe Length _____ m²

Pipe _____

☐ **Filter Media Bed**

Stone _____ m

Extended Base _____ m²

Pipe _____

Weight of Filter Media _____ Kg

Loading Area _____ m²☐ Tank/Treatment Unit/Pump Chamber Replacement **ONLY**☐ Effluent Filter & Riser **ONLY**

Construction Notes:



SEPTIC FILE #

25-380

OTTAWA

Schedule 6: Soil and Water

Table Information (Minimum depth of test pit: 2 metres)

Do Not Complete

Permit number:

Revision number:

Date _____

Name of Applicant/Agent: Paterson Group Inc.

Date: June 23, 2022

Time:

Applicant/Agent Signature:

Inspector: _____

Date: _____ Time: _____

Inspector Signiture: _____

EG (___)	Soil Description
m	
m	Refer to PGI DWG
m	PH5068-2(rev.2)
m	
m	
m	
m	

 Professional Engineers
Ontario

Licensed Engineering Technologist

Name: H. G. VAN DE GLIND
Number: 100647862

Limitations: Inspecting, designing, and assessing residential and commercial sewage systems, grading designs and soil analysis, and overseeing installation and compliance

Association of Professional Engineers of Ontario

T-time 20 Min/cm

EG (___)	Soil Description
m	
m	
m	
m	
m	
m	
m	
m	
m	
	T-time _____ Min/cm

EG (___)	Soil Description
m	
m	
m	
m	
m	
m	

T-time
Min/cm

[illegible]

Legend

BR Bedrock
HGWT High ground water table
EG Existing grade

GWT Ground water table
M metres
T percolation rate



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Schedule 7: Layout Section

SEPTIC FILE #

25-380

OTTAWA

Do Not Complete

Permit number:

Revision number:

Date

Scale: 1 Block = _____

- Dug Well
- Drilled Well

- ▲ Neighbouring Homes
- ◇ Benchmark

- Tile Drainage
- ___ Property Line

Elevations (metric only)

B.M. 118.38 m

B.M Description Nail in Wooden Utility Pole

Along Carp Road

Exact Location

Min. of 5 elevations in proposed system area (in X pattern)

X₁ _____ X₂ _____

X₃ _____ X₄ _____

X₅ _____ X₆ (toe) _____

X₇ _____ X₈ _____



Schedule 8: Fixture unit count

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SEPTIC FILE #

25-380

OTTAWA

Do Not Complete

Permit number: Revision number: Date

Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom							
Bathroom group (toilet, sink and tub or shower) installed in the same room		+		X	6	=	0.00
Bathtub with/without overhead shower		+		X	1.5	=	0.00
Shower stall		+		X	1.5	=	0.00
Wash basin (SINK) (1½ inch trap)		+	12	X	1.5	=	18.00
Watercloset (TOILET) tank operated		+	12	X	4	=	48.00
Bidet		+		X	1	=	0.00
Kitchen							
Dishwasher		+		X	1	=	0.00
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+		X	1.5	=	0.00
Other							
Domestic washing machine		+		X	1.5	=	0.00
Combination sink and laundry tray single or double (Installed on 1½ trap)		+		X	1.5	=	0.00
Total*						=	66.00

*Insert the TOTAL in section 5 of Schedule 4 (O.Reg 151/13 Table 7.4.9.3)

1. Sump pumps and floor drains are not to be connected to the sewage system. Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.

2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

Hy U.S. G.W.

October 9, 2025

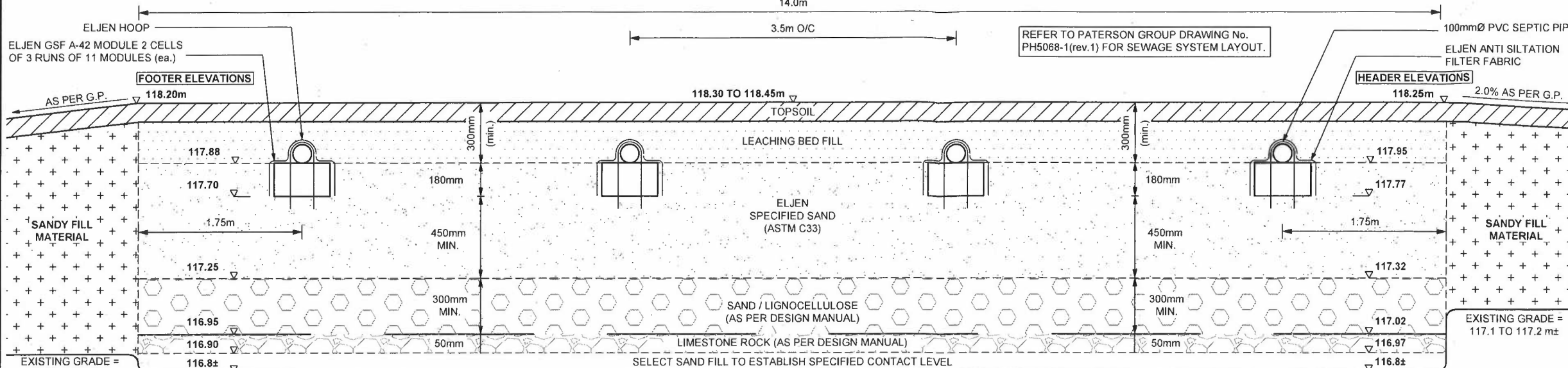
Agent/Owner signature

Date

COVER MATERIAL TO CONSIST OF LEACHING BED FILL FOLLOWED BY APPROX. 100mm OF SANDY TOPSOIL. LEACHING BED TO BE VEGETATED AS SOON AS POSSIBLE.

SEWAGE SYSTEM DESIGN, SPECIFICATION, DETAILS AND NOTES HAVE BEEN COMPLETED IN ACCORDANCE WITH ELJEN DENITRIFICATION SUPPLEMENTAL DESIGN AND INSTALLATION MANUAL.

FINAL GRADING SHALL BE SUITABLY SHAPED TO DIRECT SURFACE WATER AWAY FROM THE PROPOSED SEWAGE SYSTEM.



NOTES:

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

THE PROPOSED SEWAGE SYSTEM HAS BEEN DESIGNED TO SUPPORT A COMMERCIAL TYPE USAGE CONSISTING OF OFFICE, STORE AND WAREHOUSE SPACE. THE DAILY DESIGN SEWAGE FLOW RATE IS CALCULATED IN ACCORDANCE WITH O.B.C. TABLE 8.2.1.3.B.

OFFICE SPACE:

- 2 EMPLOYEES @ 75/LDAY/EMPLOYEE x 12 UNITS = 150 L/DAY x 12 UNITS
- ESTIMATE SEWAGE FLOW = 1,800 L/DAY

WAREHOUSE SPACE:

- 2 LOADING BAY x 150 L/DAY / LOADING BAY x 12 UNITS = 300 L/DAY x 12 UNITS
- ESTIMATE SEWAGE FLOW = 3,600 L/DAY

ESTIMATED SANITARY SEWAGE FLOW = 5,400 L/DAY
TOTAL DESIGN DAILY SANITARY SEWAGE FLOW = 6,000 L/DAY

2) SOIL CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON JUNE 23, 2022. REFER TO PATERSON GROUP REPORT PG6308-1 FOR FULL SOILS BREAKDOWN.

BH 1-22, ELEV. 117.21m

0-0.28 TOPSOIL
0.28-0.69 LOOSE BROWN SILTY SAND
0.69-1.45 STIFF BROWN SILTY CLAY
1.45-3.6 LOOSE TO COMPACT BROWN SISA TO SASI
INTERMITTENT LAYERS OF SILTY CLAY

- G.W.L. @ 1.67m DEPTH (115.54m)

BH 3-22, ELEV. 116.78m

0-0.28 TOPSOIL
0.28-0.69 LOOSE REDDISH BROWN SILTY SAND
0.69-2.59 STIFF BROWN SILTY CLAY
2.59-4.50 INTERBEDDED LAYERS OF LOOSE BROWN
SISA TO SASI AND STIFF BROWN SILT

- G.W.L. @ 1.22m DEPTH (115.56m)

3) PRETREATMENT TANK

- TANK SHALL BE CONNECTED TO BUILDING BY A 150mm Ø PVC PIPE SLEEVED THROUGH A 200mm Ø PVC SDR 28 PIPE AND OVERLAIN WITH 50mm T x 600mm W RIGID INSULATION BOARDS (UNDER ROADWAY) AND SHALL BE INSTALLED AT 2.0% (min.) SLOPE TO THE PRETREATMENT TANK.
- TANK SHALL BE INSTALLED LEVEL ON 150mm LAYER OF O.P.S.S. GRANULAR 'A' COMPACTED TO 98% S.P.M.D.D.
- MINIMUM WORKING CAPACITY OF PRETREATMENT TANK = $(3 \times Q) = 3 \times 6,000 \text{ L/DAY} = 18,000 \text{ L (min.)}$
- IT IS RECOMMENDED THAT A NEW 18,000L (min.) TWO-COMPARTMENT SEPTIC TANK BE INSTALLED.
- AN OBC APPROVED EFFLUENT FILTER (I.E. POLYLOK PL-525 EFFLUENT FILTER, OR EQUIVALENT) SHALL BE INSTALLED ON THE OUTLET PIPE IN THE PRETREATMENT TANK.
- THE ACCESS LIDS TO THE TANK OPENINGS SHALL BE EXTENDED TO THE GROUND SURFACE. INSTALL RISERS AND COVERS TO SUIT.
- ACCESS LIDS SHALL INCLUDE SAFETY DEVICES AS PER CSA B66-21.

4) LEACHING BED SIZING CRITERIA

- NO. OF MODULES REQUIRED = $Q/95 = 6,000/95 = 63.1$ MODULES
- USE 2 CELLS OF 3 RUNS OF 11 (66) ELJEN GSF A-42 MODULES EACH
- SAND AREA REQUIRED = $QT/400 = 6,000(20)/400 = 300\text{m}^2 \text{ (min.)}$
- SAND AREA PROVIDED = $16.92\text{m} \times 21.0\text{m} = 355.3\text{m}^2$

5) BALANCING TANK

- INSTALL A 6,000L (min.) BALANCING TANK IN SERIES AND DOWNSTREAM FROM THE NEW SEPTIC TANK.
- TANK SHALL BE INSTALLED LEVEL ON 150mm LAYER OF O.P.S.S. GRANULAR 'A' COMPACTED TO 98% S.P.M.D.D.
- A TIME OPERATED ALTERNATING DUPLEX PUMPING SYSTEM (I.E. MYERS ME3F, OR SIMILAR) AND A HIGH WATER ALARM SHALL BE INSTALLED IN THE BALANCING TANK.

STRIP ALL TOPSOIL, AND ANY FILL MATERIAL AND SUBEXCAVATE TO AT LEAST ELEV. 116.90m (WHICHEVER IS GREATER). RE-ESTABLISH THE SPECIFIED CONTACT LEVEL USING SELECT SAND FILL, WHERE REQUIRED.

LOOSE BROWN SILTY SAND
EST. T = 20 min/cm
(TO BE SCARIFIED)

PROFILE
N.T.S.

6) DISTRIBUTION BOX / FORCEMAIN

- A 38mm Ø (NOMINAL) PVC SCH 40 FORCEMAIN (2) SHALL BE USED TO CARRY THE EFFLUENT FROM THE BALANCING TANK TO EACH 3m L x 100mm Ø PVC SEWER PIPE.
- 100mm SEWER PIPE SHALL DRAIN BY GRAVITY TO A 3 OUTLET DISTRIBUTION BOX.
- THE FORCE MAIN SHALL BE INSTALLED TO GRAVITY DRAIN TO THE BALANCING TANK.
- THE FORCE MAIN SHALL BE OVERLAIN WITH 50mm T x 600mm W RIGID INSULATION.
- THE FORCEMAIN SHALL BE BEDDED ON A 150mm THICK LAYER OF COMPACTED SAND OR GRANULAR 'A'.
- THE DISTRIBUTION BOX SHALL BE EQUIPPED WITH AN INLET Baffle AND OUTLET PIPES (3).
- BOX SHALL BE INSTALLED LEVEL ON 150mm LAYER OF O.P.S.S. GRANULAR 'A' COMPACTED TO 98% S.P.M.D.D.
- EACH PIPING RUN SHALL BE FED BY A 3 OUTLET DISTRIBUTION BOX.
- THE DISTRIBUTION BOX SHALL BE CONNECTED TO THE DISTRIBUTION PIPING RUNS USING 100mm Ø SOLID PVC SEWER PIPE @ 2% (min.) SLOPE.

7) LEACHING BED CONSTRUCTION GUIDELINES

- REMOVE ALL EXISTING TOPSOIL, AND ANY FILL WITHIN LIMITS OF THE SAND AREA AND SUBEXCAVATE TO AT LEAST ELEVATION 116.90m, WHICHEVER IS GREATER. RE-ESTABLISH THE SPECIFIED CONTACT LEVEL USING SELECT SAND FILL, WHERE REQUIRED.
- THE SUBGRADE SURFACE SHALL BE SCARIFIED, UNDER DRY CONDITIONS.
- PLACE A 50mm MIN. THICK LAYER OF LIMESTONE ROCK OVER THE SUITABLY PREPARED SUBGRADE.
- LIMESTONE ROCK SHALL NO SMALLER THAN 25mm IN DIAMETER UP TO 50mm IN DIAMETER. THE ROCK SHALL CONTAIN GREATER THAN 15% LIMESTONE AS PER ELJEN DENITRIFICATION SUPPLEMENTAL DESIGN AND INSTALLATION MANUAL.
- PLACE A 300mm THICK LAYER OF SAND / LIGNOCELLULOSE OVER THE LIMESTONE ROCK LAYER.
- SAND / LIGNOCELLULOSE SHALL CONSIST OF WOOD CHIPS OR SAW DUST FROM HARD WOOD TREES THAT HAVE NOT BEEN FURTHER PROCESSED BY CHEMICALS. THE 300mm SAND AND LIGNOCELLULOSE LAYER SHALL BE 50/50 EQUAL MIXTURE OF ASTM C33 SAND AND WOOD CHIPS FROM HARD WOOD TREES. THE MIXTURE MUST NOT EXCEED 60/40 IN FAVOR OF THE MORE WOOD TO SAND.
- PLACE A 450mm MIN. THICK LAYER OF ELJEN SPECIFIED SAND FILL OVER THE LEACHING BED FILL.
- THE ELJEN SPECIFIED SAND FILL SHALL CONSIST OF WASHED SAND MEETING THE REQUIREMENTS OF ASTM C33 "STANDARD SPECIFICATION FOR CONCRETE AGGREGATES" WITH LESS THAN 5% PASSING 0.075mm SIEVE. ELJEN SPECIFIED SAND FILL SHALL BE PRE-APPROVED BY THE CONSULTANT.
- THE MODULES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- THE MODULES SHALL BE INSTALLED AT APPROXIMATELY A 0.5% SLOPE, END TO END WITH THE WHITE DEMARCATION LINE FACING UP.
- THE MODULAR BASE LEVEL (ELEV. 117.70 AT THE FOOTER TO 117.77m AT THE HEADER) SHALL BE ESTABLISHED WITH ELJEN SPECIFIED SAND FILL, HAVING A MINIMUM THICKNESS OF 450mm.
- THE ELJEN MODULES SHALL BE FED BY GRAVITY BY A 100mm Ø PVC SEWER PIPE @ 2% (min.) SLOPE FROM THE DISTRIBUTION BOX.
- THE DISTRIBUTION PIPE SHALL CONSIST OF A 100mm Ø PERFORATED PVC PIPE CENTRED OVER THE MODULES. THE PIPE SHALL BE SECURED TO THE TOP OF THE MODULES USING AN ELJEN HOOP (MINIMUM 1 HOOP PER MODULE).
- THE INVERT LEVEL OF THE DISTRIBUTION PIPE SHALL BE SET ON THE MODULES AT ELEVATION 117.88m AT THE FOOTER TO 117.95m AT THE HEADER. THE END OF THE PIPE RUNS SHALL BE CONNECTED TO A 100mm Ø SOLID PVC FOOTER PIPE.
- INSTALL ELJEN SYSTEM SAMPLING DEVICE AS PER MANUFACTURER'S RECOMMENDATIONS.
- THE ELJEN ANTI-SILTATION FILTER FABRIC SHALL BE SPREAD LENGTHWISE OVER THE PERFORATED SEPTIC PIPE AND DOWN THE SIDES OF THE MODULES. ENSURE ENDS OF MODULES ARE ALSO COVERED WITH FABRIC.

- THE MODULES SHALL BE BACKFILLED, WITH ELJEN SPECIFIED SAND FILL TO AT LEAST THE TOP OF THE ELJEN MODULES, FOLLOWED BY 200mm (min.) OF LEACHING BED FILL, FOLLOWED BY 100mm OF SANDY TOPSOIL, WITHIN THE LIMITS OF THE SAND AREA. THE BED AREA SHOULD BE VEGETATED AS SOON AS POSSIBLE.
- LEACHING BED SAND FILL SHALL BE UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2mm SIEVE, LESS THAN 5% PASSING 0.075mm SIEVE, AND HAVING A PERCOLATION TIME OF 6 TO 8 min/cm. LEACHING BED FILL SHALL BE PRE-APPROVED BY THE CONSULTANT.
- THE SIDES OF THE BED SHOULD BE SLOPED AT 3H:1V OR SHALLOWER.
- VENT SYSTEM SHALL BE INSTALLED ON THE FOOTER PIPE. CONNECT A 100mm Ø PVC VENT PIPE TO FOOTER PIPE, EXTENDING TO GROUND SURFACE. VENT PIPE TO BE INSTALLED IN 150mm Ø LANDSCAPE VALVE COVER.

8) MINIMUM CLEARANCE DISTANCE FROM DISTRIBUTION PIPE

- 5.7m FROM ANY PROPERTY LINE
- 7.7m FROM ANY STRUCTURE: 5.0m FROM ANY BASEMENTLESS STRUCTURE
- 17.7m FROM ANY DRILLED WELL
- 5.0m FROM ANY TREE (UNLESS OTHERWISE APPROVED)

9) MINIMUM CLEARANCE DISTANCE FROM TANK(S)

- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED OR DUG WELL
- 3.0m FROM ANY PROPERTY LINE

10) GENERAL

- SNOW STORAGE SHALL NOT BE LOCATED OVER PROPOSED SEWAGE SYSTEM.
- THE SEWAGE SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT TRAFFIC LOADING.
- THE BACKFILLING OF THE SEWAGE SYSTEM SHOULD MINIMIZE THE RISK OF OVER COMPACTION WITH THE USE RUBBER TRACKED EQUIPMENT AND BY AVOIDING THE CREATION OF ANY CONSTRUCTION ROUTES OR PATHWAYS OVER THE SYSTEM.
- ANY NEW IRRIGATION / SPRINKLER SYSTEM SHOULD NOT BE USED IN PROXIMITY OF THE PROPOSED SEWAGE SYSTEM.
- ENSURE WALKWAYS AND/OR SHURBBERY ARE NOT PLACED WITHIN PROXIMITY OF THE TANKAGE.
- THE BACKWASH WATERS FROM ANY WATER TREATMENT UNIT, SUCH AS WATER SOFTENER, SHOULD NOT DISCHARGE INTO THE SEWAGE SYSTEM.
- THE SEWAGE SYSTEM HAS NOT BEEN DESIGNED FOR THE USE OF A GARBAGE DISPOSAL.
- SEWAGE SYSTEM INSTALLER SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE AND SHALL BE AN AUTHORIZED ELJEN TREATMENT SYSTEM INSTALLER.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES AND REGULATIONS.
- CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THE CONSULTANT OF ANY ERRORS AND/OR OMISSIONS ON DESIGN DRAWINGS IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
- CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
- THE MANUFACTURER PROVIDES A LIMITED WARRANTY OF THE SYSTEM COMPONENTS. THE OWNER OF THE SYSTEM MUST SIGN A MAINTENANCE AGREEMENT WITH THE MANUFACTURER'S REPRESENTATIVE. THE HOMEOWNER IS RESPONSIBLE FOR THE ANNUAL FEES ASSOCIATED WITH THE MAINTENANCE.
- THE FIRM OF PATERSON GROUP INC. HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE.
- INSPECTIONS BY THE CONSULTANT DURING THE INSTALLATION OF THE SYSTEM IS A REQUIREMENT OF SOME REGULATING AUTHORITIES AND IS STRONGLY RECOMMENDED BY THIS FIRM.
- THE PROPERTY LINE / SEPARATION DISTANCES SHOULD BE CONFIRMED PRIOR TO CONSTRUCTION.
- CONSTRUCTION INSPECTIONS DURING THE INSTALLATION OF THE SEWAGE SYSTEM MAY BE REQUIRED BY THE REGULATING AUTHORITY AND ARE STRONGLY RECOMMENDED BY THIS FIRM. IF THIS FIRM IS TO COMPLETE ANY CONSTRUCTION INSPECTIONS, ADDITIONAL FEES MAY BE APPLIED. CONFIRMATION OF PAYMENT WILL BE REQUIRED PRIOR TO THE INSPECTION.
- THE TEST HOLE INFORMATION PROVIDED, IS INTENDED TO BE USED FOR DESIGN PURPOSES ONLY, AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. IF DISCREPANCIES ARE FOUND DURING THE CONSTRUCTION PROCESS, IT IS THE CLIENT'S RESPONSIBILITY TO CONTACT THIS FIRM TO MAKE ANY NECESSARY COMMENTS OR REVISIONS. ADDITIONAL REVISIONS ARE NOT CONSIDERED PART OF THE DESIGN WORKS AND WILL BE CONSIDERED AS AN ADDITIONAL COST.

V.C.A. RECEIVED
OCT 21 2025
SEPTIC E #
25-380
OTTAWA



Professional Engineers
Ontario

Licensed Engineering Technologist

Name: H. G. VAN DE GLIND
Number: 100647862

Limitations: inspecting, designing, and assessing residential and commercial sewage systems, grading designs and soil analysis, and overseeing installation and compliance.

Association of Professional Engineers of Ontario

DD/MM/YY	DESCRIPTION	REV.
07/10/25	Issued for Final Review	2
02/10/25	Issued for Client Review	1
30/09/25	Issued for Preliminary Discussion Purposes	0

Consultant:



PATERSON
GROUP

5 ARLINGDALE DRIVE
OTTAWA, ON
K2L 2S6
TEL: (613) 226-7381

Client:

MEGHA HOLDINGS INC.

Project:

PROPOSED WAREHOUSE
BUILDING

3113 CARP ROAD
OTTAWA (CARP), ONTARIO

Drawing:

SEWAGE SYSTEM
DETAILS AND NOTES
ELJEN DN450

Scale: N.T.S.

Drawn by: HV

Date: 10/2025

Checked by: MK

Drawing No.:

PH5068-2(rev.2)

p:\autocad drawings\hydrogeology\ph50xx\ph5068 - megha holdings -
3113 carp road, on\ph5068-2(rev.2).dwg

SEWAGE SYSTEM NOTES:

1. TANKAGE AREA SHALL BE PROTECTED FROM PUBLIC ACCESS. IF PUBLIC ACCESS CANNOT BE PREVENTED WITHIN THIS AREA, IT IS RECOMMENDED THAT TANK LIDS BE REINFORCED, LOCKABLE AND WATERTIGHT.
2. CONTROL PANEL SHALL BE INSTALLED WITHIN A LOCKABLE, TAMPER PROOF BOX.
3. PROPOSED SEWAGE SYSTEM SHALL BE GRASS COVERED ONLY.
4. PROPOSED LEACHING BED AREA SHALL BE PROTECTED FROM VEHICULAR TRAFFIC WITH BOLLAARDS OR CONCRETE CURBING.
5. TREES WITHIN 5m OF DISTRIBUTION PIPES TO BE REMOVED/RELOCATED OR, A ROOT BARRIER SHALL BE INSTALLED VERTICALLY ALONG THE EXCAVATION OF THE PROPOSED SEWAGE SYSTEM FROM THE BASE OF THE SYSTEM EXTENDING TO THE FINISHED GRADE.
6. SNOW STORAGE SHALL NOT BE LOCATED OVER PROPOSED SEWAGE SYSTEM.
7. IT IS RECOMMENDED THAT THE LEACHING BED AREA BE SODDED AS SOON AS POSSIBLE.
8. SURFICIAL DRAINAGE SHALL BE DIRECTED AWAY FROM THE PROPOSED SEWAGE SYSTEM.

TW 2:
WWR ID A437748
WELL MUST BE 3m (min.) FROM PROPERTY LINES, STRUCTURES AND PARKING AREAS
WELL MUST BE 3m (min.) FROM POTENTIAL CONTAMINATION (INCLUDING STORMWATER FEATURES, SEWAGE SYSTEMS AND OTHER SOURCES OF CONTAMINATION)
ELEVATION OF THE TOP OF CASING AND GROUND SURFACE AROUND THE WELL MUST BE SHOWN ON GRADING PLANS
WELL MUST BE PROTECTED FROM VEHICULAR TRAFFIC AND SHALL NOT BE WITHIN SNOW STORAGE AREA
WELL MUST BE ACCESSIBLE BY A DRILLING RIG

PROPOSED 1-STOREY LIGHT INDUSTRIAL BUILDING

TOTAL DESIGN DAILY SANITARY SEWAGE FLOW (T.D.D.S.F.)

- 12 UNITS:
- OFFICE SPACE = 2 EMPLOYEES @ 75 L/DAY/PERSON = 150 L/DAY
 - WAREHOUSE SPACE = 2 LOADING BAYS @ 150 L/DAY / DOOR = 300 L/DAY
 - TOTAL = (150 L/DAY + 300 L/DAY) x 12 UNITS = 450 L/DAY x 12 UNITS = 5,400 L/DAY

THE PRELIMINARY SEWAGE SYSTEM DESIGN HAS BEEN DESIGNED TO ACCOUNT FOR NITRATE REDUCTION AS REQUIRED BY REPORT No. PH5068-LET.01

NOTE:
SNOW STORAGE SHALL NOT BE LOCATED OVER PROPOSED SEWAGE SYSTEM.

2x 3m L. 100mmØ PVC PIPE WITH ELBOW @ 2% (min.) SLOPE

2x 38mmØ PVC SCH40 FORCE MAIN

INSTALL TO GRAVITY DRAIN AND OVERLAY WITH 50mm T x 600mm W INSULATION BOARDS

2x 3 OUTLET DISTRIBUTION BOX C/W INLET

BAFFLE AND POLYLOK FLOW EQUALIZERS

OUTLET INV. = 118.00m TBC

2 CELLS OF 3 RUNS OF 11 ELJEN GSF A-42 MODULES

MODULAR BASE ELEV. @ HEAD = 117.77m TBC

MODULAR BASE ELEV. @ FOOT = 117.70m TBC

ELJEN SPECIFIED SAND AREA

630 mm THICK (TOP OF MODULE TO BASE)

21.0m x 15.7m

FOLLOWED BY 300 mm THICK OF SAND/LIGNOCELLULOSE LAYER

FOLLOWED BY 50 mm THICK LAYER OF LIMESTONE

100mmØ PERFORATED PVC SEPTIC PIPE

INSTALLED @ 0.5% ON ELJEN MODULES

HEAD INV. = 117.95m TBC

FOOT INV. = 117.88m TBC

100mmØ SOLID PVC FOOTER PIPE

INV. = 117.88m TBC

100mmØ VENT PIPE INSTALLED IN

150mmØ LANDSCAPE VALVE COVER

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

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Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

TBC = 118.00m

Building Peak = 123.2m

EXISTING DWELLING

4207 Carp Rd.

LEGEND:

- Bore Hole Location
- Existing Ground Surface Elev. (m)
- Proposed Ground Surface Elev. (m)
- Groundwater Elev. (m) - June/2022
- Existing Structure
- Proposed Structure
- Water Supply Well

BENCHMARK INFORMATION:

TBM: Nail in Utility Pole on North Side of Property.
Approximate Geodetic Elevation = 118.38m

REFERENCE:

Base Plan and Topographic Information obtained from Topographic Plan No. 22958-22 Pt Lt 12C3 HU T F, dated June, 2022, by Annis O'Sullivan, Vollebakk Ltd.
Additional Base Plan information obtained from Site Plan No. A012, dated

SCALE: 1:750



Consultant



9 AURIGA DRIVE
OTTAWA, ON
K2E 1G8
TEL (613) 226-7381

07/10/25	Issued for Final review	2
02/10/25	Issued for Client review	1
30/09/25	Issued for Preliminary Discussion Purposes	0
DD/MM/YY	Description	Rev.

Client:

MEGHA HOLDINGS INC.

Project:

PROPOSED WAREHOUSE BUILDING
3113 CARP ROAD
OTTAWA (CARP), ONTARIO

Drawing:

SEWAGE SYSTEM LAYOUT PLAN

Scale:

1:750

Date:

10/2025

Drawing no.:

PH5068-1(rev.2)

Drawn by:

HV

Checked by:

MK

R.V.C.A. RECEIVED

OCT 21 2025

SEPTIC F

25-380

OTTAWA

Professional Engineers
Ontario

Licensed Engineering Technologist

Name: H. G. VAN DE GLIND

Number: 100647862

Limitations: Inspecting, designing, and assessing residential and commercial sewage systems, grading designs and soil analysis, and overseeing installation and compliance.

Association of Professional Engineers of Ontario



Permit
Part 8 – Sewage System
Ontario Building Code

Do Not Complete
Permit No 25-380
Revision No
Date
Related Application

A copy of this permit must be posted on the property at all time during construction. OBC, Division C — Part 1, Section 1.3.2.1

This permit verifies that the on-site sewage system was reviewed and approved for construction under the Ontario Building Code Act (Building Code Act, 1992, S.O. 1992, c. 23) and Ontario Building Code (O. Reg. 163/24) as amended.

Inspected & Recommended by: Matt Panciuk Owner: Megha Holdings
Inspection Date & Time: Weather:
Address: 3113 Carp Road Legal: Lot 12 R.P. 5R-11999
In the former Township/City of West Carleton - Huntley

Design Flow for Commercial / Institutional / Industrial (as per Table 8.2.1.3.B)

Q: 6000 L/day

pretreatment tank 1,800(min) L	weigh bills for Eljen Sand ☒ yes ☐ no
effluent filter YES	grain size analysis required ☒ yes ☐ no
pump rate 250 + Charge L/15 MIN	site to be scarified ☒ yes ☐ no
treatment unit Eljen GSF A42	clay seal inspection ☐ yes ☒ no
number of units 66	mantle required ☐ yes ☒ no
	sub-grade inspection ☒ yes ☐ no

ELEVATION ☐ In Ground ☐ Partially Raised ☒ Fully Raised

TYPE OF SYSTEM

☐ Trench

☒ Pipe and Stone or ☐ Chambers

type of chamber
loading area m²
total trench length m
trench configuration

☒ Dispersal Bed

☒ BMEC ☐ Type A ☐ Type B

stone N/A m²
sand 355.3 m²
pipe 3 rows of 11 Eljen @ 3.5m
weight of sand kg

☐ Shallow Buried Trench

pipe length m
orifice spacing m

☐ Filter Media Bed

stone m²
extended base m²
pipe
weight of filter media kg
loading area m²

☐ Class 5 Holding Tank

☐ Septic Tank Only

Manager, Septic System Approvals: Permit Date: October 31, 2025

Comments: Scarification inspection required prior to sand fill placement.

Eljen Biofilter BMEC 25-07-425(DN450)

☒ maintenance/pumping required

☒ ESA permit # required

☒ engineer to verify

☐ Class 5 Holding Tank approval only valid for three years from date of issue

☒ subgrade
☐ squirt height

Manager, Septic System Approvals: Revision Date:

Comments:

Appendix F- Stormwater Storage Chambers

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	



STOREY WAREHOUSE - 3113 CARP ROAD

OTTAWA, ON, CANADA

SC-800 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH SC-800.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL BE CERTIFIED TO CSA B184.2, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES FOR POLYPROPYLENE (PP) CHAMBERS"
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH CSA B184.0 AND CSA B184.2, "POLYMERIC SUBSURFACE STORMWATER MANAGEMENT STRUCTURES FOR POLYPROPYLENE CHAMBERS (PP)". THE STRUCTURAL DESIGN SHALL CONSIDER BOTH LONG-TERM (DEAD) AND SHORT-TERM (LIVE) LOADS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTORS SPECIFIED IN CSA S6, "CANADIAN HIGHWAY BRIDGE DESIGN CODE." DESIGN LOADS SHALL INCLUDE PERMANENT EARTH AND SURCHARGE LOADS, AS WELL AS TRAFFIC LOADS BASED ON THE CSA S6 CL-625 DESIGN TRUCK, INCLUDING CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE. STRUCTURAL PERFORMANCE SHALL BE VERIFIED BY TESTING IN ACCORDANCE WITH CLAUSE 7.2 OF CSA B184.2.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 700 LBS/FT/%. THE ASC IS DEFINED IN SECTION 7.2.2.6 OF CSA B184.0. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE COMPLIANCE WITH THE STRUCTURAL DESIGN AND PERFORMANCE REQUIREMENTS OF CSA B184.0 AND CSA B184.2, SPECIFICALLY WITH CLAUSES 4.1.2 AND 5 OF CSA B184.0, FOR APPLICABLE PERMANENT AND LIVE LOADS.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN SECTION 5.3 OF CSA B184.2 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-800 SYSTEM

- STORMTECH SC-800 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 75 mm (3") SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE; AASHTO M43 #3, 357, 4, 467, 5, 56, OR 57.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

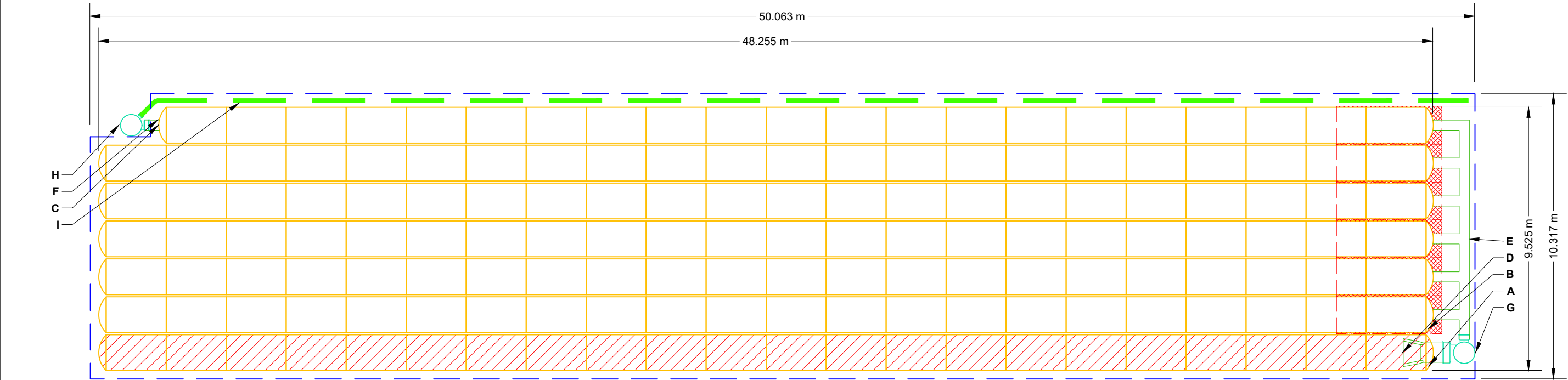
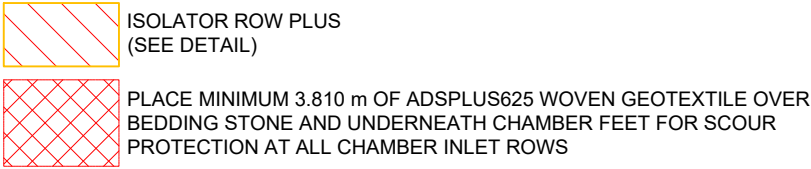
NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH SC-800 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
- THE USE OF CONSTRUCTION EQUIPMENT OVER SC-800 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH INSTALLATION GUIDE SC-310/DC-780/SC-800".
- FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

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

ADDITIONAL INSTRUCTIONS OR FOR SITE SPECIFIC DEVIATIONS FROM THESE GUIDELINE CAN BE OBTAINED DIRECTLY FROM YOUR LOCAL ADS REPRESENTATIVE OR BY LOGGING ON TO WWW.ADSPIPE.CA.

PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS		*INVERT ABOVE BASE OF CHAMBER				
				PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
153	STORMTECH SC-800 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	3.429	PREFABRICATED EZ END CAP	A	600 mm BOTTOM PREFABRICATED EZ END CAP, PART#: SC800ECEZ / TYP OF ALL 600 mm BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS		
14	STORMTECH SC-800 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	1.524					
152	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	1.372	PRE-CORED END CAP	B	300 mm TOP PRE-CORED END CAP, PART#: SC800EPE12TPC / TYP OF ALL 300 mm TOP CONNECTIONS		
152	STONE BELOW (mm)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	1.372					
20	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	1.372	PRE-CORED END CAP	C	300 mm BOTTOM PRE-CORED END CAP, PART#: SC800EPE12BPC / TYP OF ALL 300 mm BOTTOM CONNECTIONS		
293.8	INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	1.143					
		TOP OF SC-800 CHAMBER:	0.991	FLAMP	D	INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC80024RAMP		
		300 mm x 300 mm TOP MANIFOLD INVERT:	0.518					
		600 mm ISOLATOR ROW PLUS INVERT:	0.211	MANIFOLD	E	300 mm x 300 mm TOP MANIFOLD, ADS N-12	366 mm	
513.1	SYSTEM AREA (m²)	300 mm BOTTOM CONNECTION INVERT:	0.193				41 mm	
120.8	SYSTEM PERIMETER (m)	BOTTOM OF SC-800 CHAMBER:	0.152	PIPE CONNECTION	F	300 mm BOTTOM CONNECTION		
		UNDERDRAIN INVERT:	0.000					167 L/s IN
		BOTTOM OF STONE:	0.000	NYLOPLAST (INLET W/ ISO PLUS ROW)	G	750 mm DIAMETER (610 mm SUMP MIN)		
								57 L/s OUT
				NYLOPLAST (OUTLET)	H	750 mm DIAMETER (DESIGN BY ENGINEER)		
				UNDERDRAIN	I	150 mm ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		



NOTES

THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.

- NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

STOREY WAREHOUSE - CAP

OTTAWA, ON, CANADA

DATE: 08/30/2026

DRAWN: OT

PROJECT #:

CHECKED: N/A

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Chamber System

ADS

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SCALE = 1 : 150

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2 OF 6

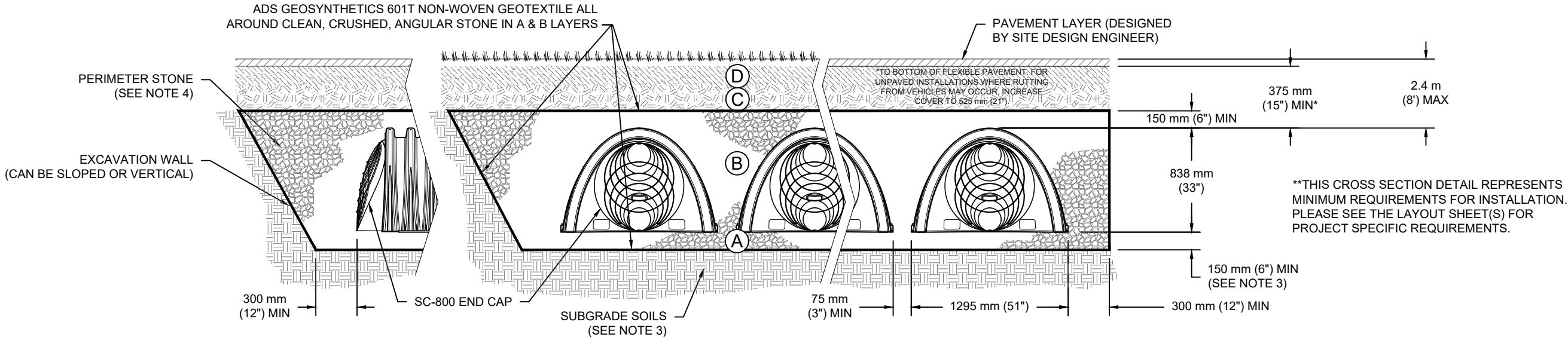
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ACCEPTABLE FILL MATERIALS: STORMTECH SC-800 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 375 mm (15") ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 300 mm (12") OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 150 mm (6") MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE ⁵	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 150 mm (6") (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF CSA B184.2 "POLYMERIC SUBSURFACE STORMWATER MANAGEMENT STRUCTURES FOR POLYPROPYLENE (PP) CHAMBERS".
2. SC-800 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH CSA B184.0 "POLYMERIC SUBSURFACE STORMWATER MANAGEMENT STRUCTURES".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS. REFERENCE STORMTECH DESIGN MANUAL FOR BEARING CAPACITY GUIDANCE.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 7.2.2.6 OF CSA B184.0 SHALL BE GREATER THAN OR EQUAL TO 700 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

STOREY WAREHOUSE - CAP

OTTAWA, ON, CANADA

DRAWN: OT

CHECKED: N/A

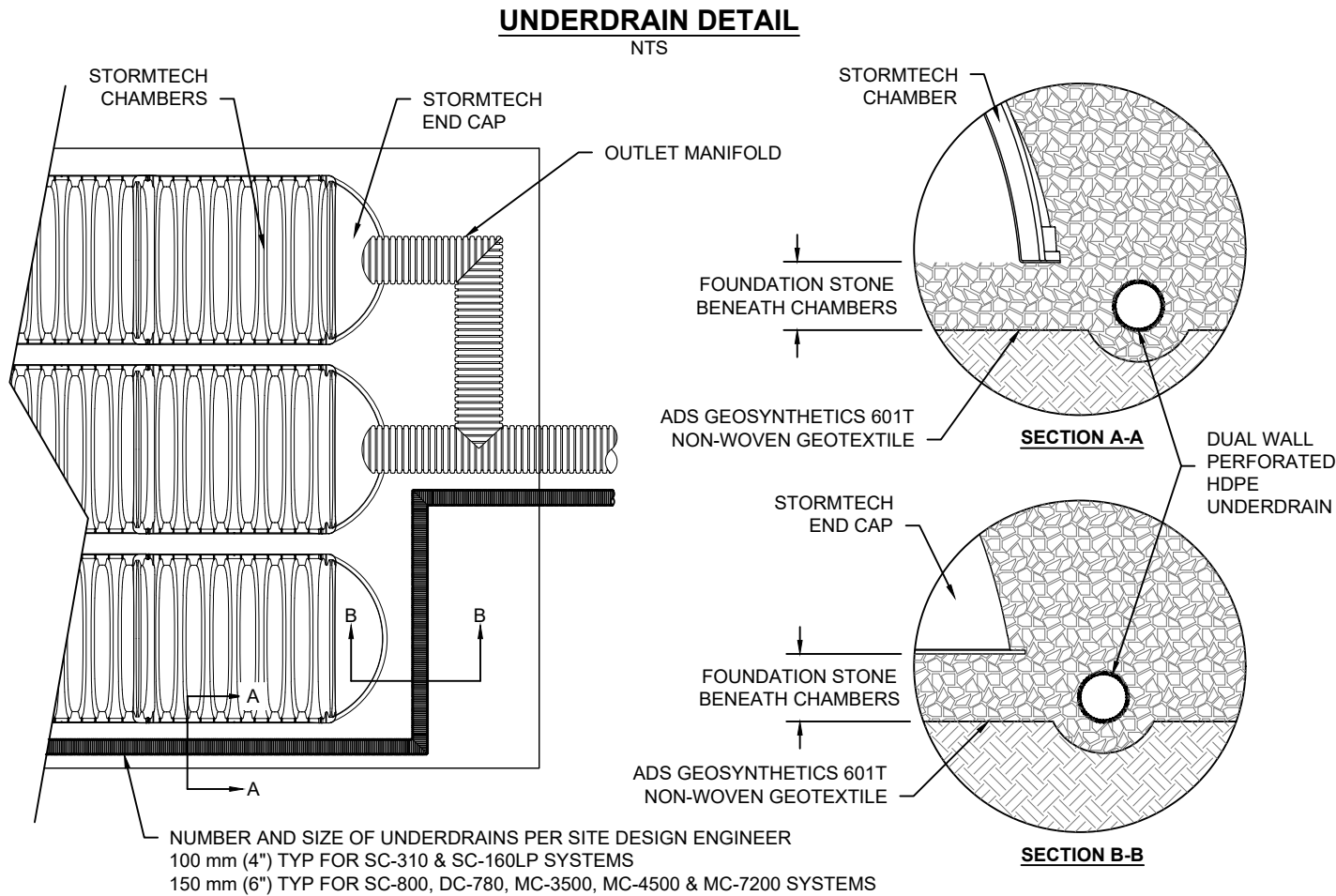
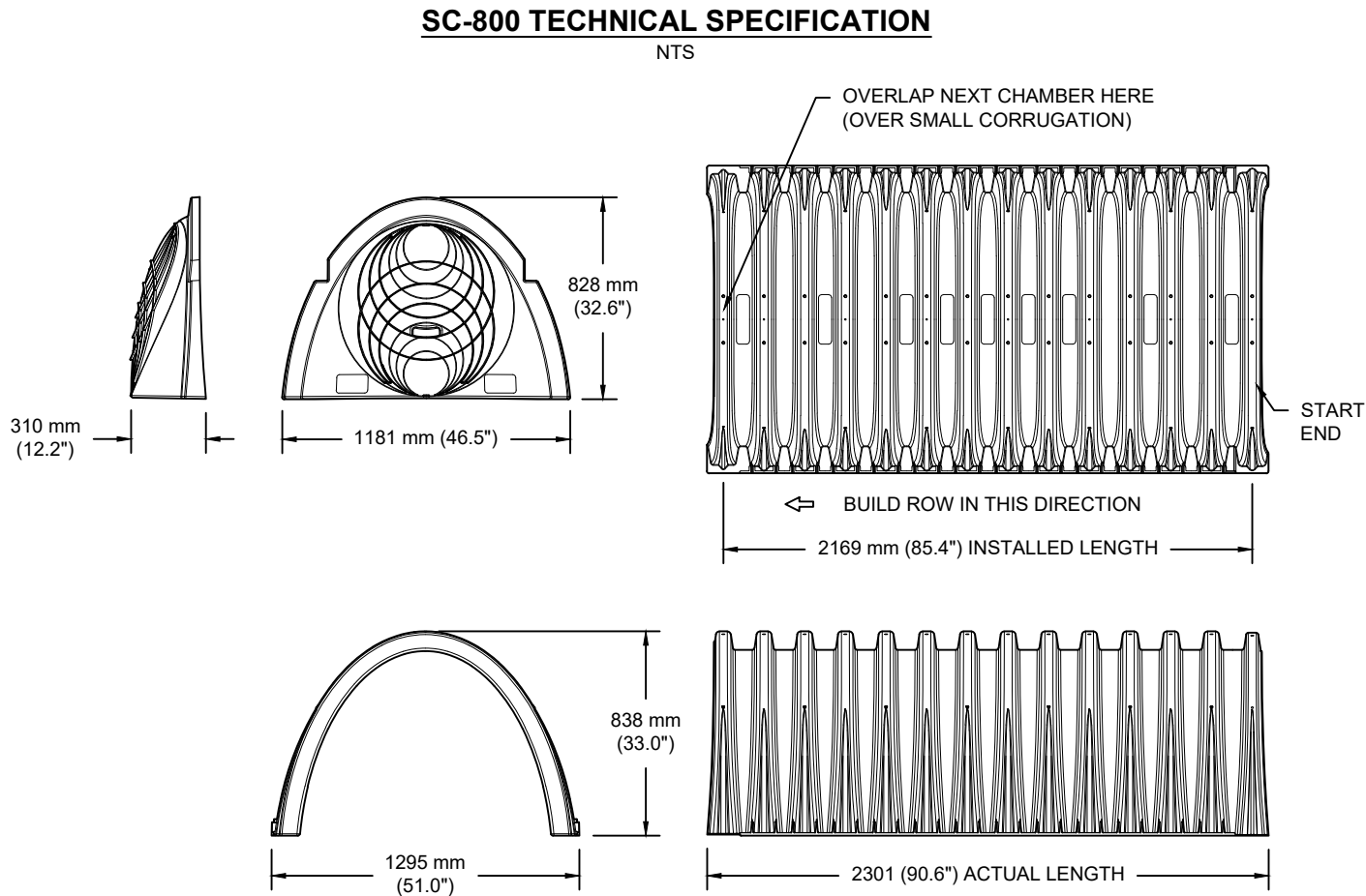
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NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	1295 mm X 838 mm X 2169 mm	(51.0" X 33.0" X 85.4")
CHAMBER STORAGE	1.43 m ³	(50.6 CUBIC FEET)
MINIMUM INSTALLED STORAGE*	2.22 m ³	(78.4 CUBIC FEET)
WEIGHT	37.1 kg	(81.8 lbs.)

NOMINAL END CAP SPECIFICATIONS

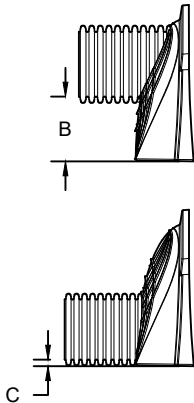
SIZE (W X H X INSTALLED LENGTH)	1181 mm X 828 mm X 267 mm	(46.5" X 32.6" X 10.5")
END CAP STORAGE	0.09 m ³	(3.4 CUBIC FEET)
MINIMUM INSTALLED STORAGE**	0.42 m ³	(14.7 CUBIC FEET)
WEIGHT	7.1 kg	(15.7 lbs.)

* ASSUMES 150 mm (6") STONE ABOVE AND BELOW CHAMBERS, 75 mm (3") BETWEEN CHAMBERS
**ASSUMES 150 mm (6") STONE ABOVE AND BELOW END CAPS, 75 mm (3") BETWEEN ROWS, 300 mm (12") BEYOND END CAPS

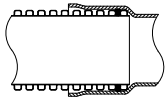
PRE-CORED HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "BPC"
PRE-CORED HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "TPC"

PART #	STUB	B	C
SC800EPE06TPC	150 mm (6")	544 mm (21.4")	---
SC800EPE06BPC		---	23 mm (0.9")
SC800EPE08TPC	200 mm (8")	488 mm (19.2")	---
SC800EPE08BPC		---	25 mm (1.0")
SC800EPE10TPC	250 mm (10")	432 mm (17.0")	---
SC800EPE10BPC		---	30 mm (1.2")
SC800EPE12TPC	300 mm (12")	366 mm (14.4")	---
SC800EPE12BPC		---	41 mm (1.6")
SC800EPE15TPC	375 mm (15")	287 mm (11.3")	---
SC800EPE15BPC		---	43 mm (1.7")
SC800EPE18TPC	450 mm (18")	203 mm (8.0")	---
SC800EPE18BPC		---	51 mm (2.0")
SC800ECEZ	600 mm (24")	---	58 mm (2.3")

NOTE: ALL DIMENSIONS ARE NOMINAL



NTS



1. 200-750 mm (8-30") GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 300-750 mm (12-30") FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
200 mm (8")	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
250 mm (10")	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
300 mm (12")	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
375 mm (15")	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
450 mm (18")	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
600 mm (24")	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
750 mm (30")	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

OTTAWA, ON, CANADA

DATE: 08/30/2026 DRAWN: OT

PROJECT #:	CHECKED: N/A
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6 OF 6